START

Title: OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE. PATENTS.

Volume: 1170 Issues: 3-5
PATENT NO: 5,381,557-5,386,590

Date: JANUARY 17-31, 1995

UMI No: 10426.00 REEL 2

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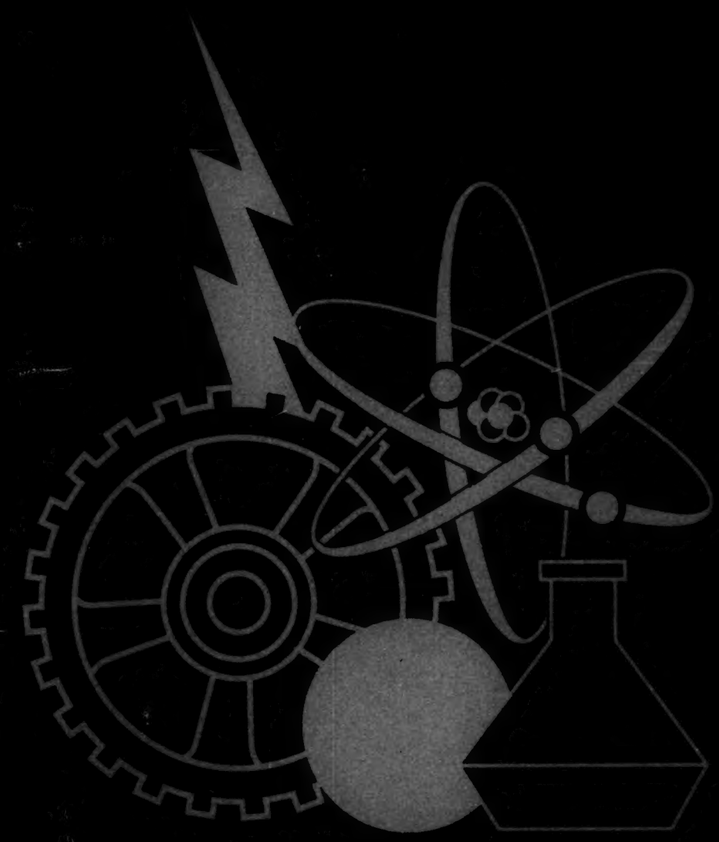
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENTS

January 17, 1995



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
January 17, 1995 Volume 1170 Number 3

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Dec. 12, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 14, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,079,775 through 5,081,713
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 12, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,715,122 through 4,719,649
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 10, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,424,595 through 4,425,666
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 4, 1994 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,168	07/214,932	02/20/90
(4,621,157)	(06/607,794)	(11/04/86)
4,357,719	06/238,511	11/09/82
4,357,735	06/270,768	11/09/82
4,357,736	06/265,228	11/09/82
4,357,745	06/244,351	11/09/82
4,357,760	06/230,854	11/09/82
4,357,768	06/241,115	11/09/82
4,357,805	06/299,351	11/09/82
4,357,810	06/218,306	11/09/82
4,357,836	06/218,231	11/09/82
4,357,868	06/233,792	11/09/82
4,357,870	06/283,672	11/09/82
4,357,889	06/250,719	11/09/82
4,357,902	06/284,629	11/09/82
4,357,921	06/272,609	11/09/82
4,357,945	06/269,578	11/09/82
4,357,953	06/238,436	11/09/82
4,357,979	06/243,129	11/09/82
4,357,985	06/247,657	11/09/82
4,357,990	06/271,414	11/09/82
4,357,992	06/224,637	11/09/82
4,358,010	06/292,171	11/09/82
4,358,027	06/226,140	11/09/82
4,358,047	06/241,477	11/09/82
4,358,051	06/232,753	11/09/82
4,358,079	06/311,535	11/09/82
4,358,108	06/271,480	11/09/82
4,358,117	06/288,061	11/09/82
4,358,127	06/223,424	11/09/82
4,358,140	06/221,265	11/09/82
4,358,180	06/241,547	11/09/82
4,358,182	06/270,074	11/09/82
4,358,196	06/267,663	11/09/82
4,358,206	06/221,243	11/09/82
4,358,264	06/245,034	11/09/82
4,358,279	06/293,492	11/09/82
4,358,286	06/221,636	11/09/82
4,358,293	06/230,062	11/09/82
4,358,298	06/300,817	11/09/82
4,358,299	06/272,532	11/09/82
4,358,305	06/304,538	11/09/82
4,358,312	06/218,731	11/09/82
4,358,328	06/225,519	11/09/82
4,358,346	06/260,954	11/09/82
4,358,349	06/233,596	11/09/82
4,358,351	06/266,148	11/09/82
4,358,355	06/298,614	11/09/82
4,358,358	06/309,293	11/09/82
4,358,362	06/225,293	11/09/82
4,358,363	06/225,294	11/09/82
4,358,364	06/262,281	11/09/82
4,358,365	06/257,042	11/09/82
4,358,368	06/263,339	11/09/82
4,358,381	06/219,594	11/09/82
4,358,382	06/242,862	11/09/82
4,358,383	06/232,039	11/09/82
4,358,398	06/247,708	11/09/82
4,358,399	06/246,828	11/09/82

Patent Number	Serial Number	Issue Date
4,358,400	06/224,712	11/09/82
4,358,410	06/299,984	11/09/82
4,358,414	06/263,696	11/09/82
4,358,415	06/236,201	11/09/82
4,358,417	06/266,398	11/09/82
4,358,427	06/321,289	11/09/82
4,358,431	06/286,134	11/09/82
4,358,446	06/269,173	11/09/82
4,358,455	06/219,725	11/09/82
4,358,456	06/257,829	11/09/82
4,358,469	06/238,648	11/09/82
4,358,471	06/238,213	11/09/82
4,358,474	06/280,552	11/09/82
4,358,475	06/242,458	11/09/82
4,358,480	06/266,254	11/09/82
4,358,481	06/266,832	11/09/82
4,358,486	06/266,256	11/09/82
4,358,487	06/255,135	11/09/82
4,358,489	06/239,222	11/09/82
4,358,493	06/229,407	11/09/82
4,358,499	06/217,738	11/09/82
4,358,501	06/239,944	11/09/82
4,358,514	06/248,093	11/09/82
4,358,528	06/271,334	11/09/82
4,358,547	06/309,963	11/09/82
4,358,550	06/283,243	11/09/82
4,358,557	06/355,659	11/09/82
4,358,559	06/322,970	11/09/82
4,358,562	06/286,694	11/09/82
4,358,575	06/331,166	11/09/82
4,358,576	06/254,243	11/09/82
4,358,579	06/286,696	11/09/82
4,358,582	06/294,347	11/09/82
4,358,585	06/313,972	11/09/82
4,358,587	06/313,351	11/09/82
4,358,594	06/316,610	11/09/82
4,358,599	06/272,806	11/09/82
4,358,601	06/280,172	11/09/82
4,358,604	06/318,026	11/09/82
4,358,608	06/276,297	11/09/82
4,358,626	06/290,491	11/09/82
4,358,631	06/356,586	11/09/82
4,358,635	06/226,238	11/09/82
4,358,650	06/227,888	11/09/82
4,358,669	06/293,156	11/09/82
4,358,693	06/273,921	11/09/82
4,358,712	06/221,095	11/09/82
4,358,720	06/235,655	11/09/82
4,358,730	06/275,557	11/09/82
4,358,734	06/246,946	11/09/82
4,358,746	06/219,091	11/09/82
4,358,768	06/223,163	11/09/82
4,358,769	06/233,387	11/09/82
4,358,771	06/249,237	11/09/82
4,358,773	06/236,770	11/09/82
4,358,778	06/351,115	11/09/82
4,358,780	06/282,178	11/09/82
4,358,788	06/238,838	11/09/82
4,358,792	06/235,059	11/09/82
4,358,820	06/220,540	11/09/82
4,358,835	06/218,827	11/09/82
4,620,328	06/750,238	11/04/86
4,620,329	06/745,498	11/04/86
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4,620,356	06/761,058	11/04/86
4,620,360	06/685,468	11/04/86
4,620,362	06/623,777	11/04/86
4,620,363	06/665,347	11/04/86
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4,620,383	06/589,687	11/04/86
4,620,385	06/725,896	11/04/86
4,620,386	06/352,035	11/04/86
4,620,393	06/452,070	11/04/86
4,620,394	06/729,595	11/04/86
4,620,396	06/729,752	11/04/86
4,620,405	06/535,174	11/04/86
4,620,407	06/766,138	11/04/86
4,620,408	06/614,194	11/04/86
4,620,411	06/718,150	11/04/86
4,620,414	06/701,363	11/04/86
4,620,425	06/764,311	11/04/86
4,620,426	06/778,627	11/04/86
4,620,429	06/796,773	11/04/86
4,620,432	06/740,296	11/04/86
4,620,433	06/743,961	11/04/86
4,620,434	06/657,224	11/04/86
4,620,435	06/664,243	11/04/86
4,620,442	06/620,441	11/04/86
4,620,445	06/663,010	11/04/86
4,620,447	06/726,469	11/04/86
4,620,448	06/715,247	11/04/86
4,620,460	06/750,452	11/04/86
4,620,462	06/757,245	11/04/86
4,620,464	06/641,014	11/04/86
4,620,470	06/726,510	11/04/86
4,620,477	06/726,199	11/04/86
4,620,482	06/657,193	11/04/86
4,620,490	06/539,042	11/04/86
4,620,493	06/770,907	11/04/86
4,620,494	06/791,996	11/04/86
4,620,500	06/764,304	11/04/86
4,620,503	06/802,301	11/04/86
4,620,504	06/755,940	11/04/86
4,620,506	06/700,523	11/04/86
4,620,511	06/743,249	11/04/86
4,620,512	06/775,873	11/04/86
4,620,513	06/810,227	11/04/86
4,620,520	06/733,425	11/04/86
4,620,521	06/631,945	11/04/86
4,620,524	06/729,243	11/04/86
4,620,527	06/688,878	11/04/86
4,620,530	06/708,738	11/04/86
4,620,532	06/536,083	11/04/86
4,620,534	06/667,132	11/04/86
4,620,536	06/735,177	11/04/86
4,620,545	06/666,770	11/04/86
4,620,547	06/687,195	11/04/86
4,620,554	06/634,427	11/04/86
4,620,555	06/540,680	11/04/86
4,620,556	06/484,266	11/04/86
4,620,560	06/730,887	11/04/86
4,620,563	06/402,150	11/04/86
4,620,564	06/692,492	11/04/86
4,620,566	06/445,517	11/04/86
4,620,568	06/785,753	11/04/86
4,620,571	06/633,845	11/04/86
4,620,573	06/718,480	11/04/86
4,620,575	06/700,472	11/04/86
4,620,582	06/624,017	11/04/86
4,620,583	06/706,321	11/04/86
4,620,585	06/617,920	11/04/86
4,620,589	06/695,972	11/04/86
4,620,591	06/722,506	11/04/86
4,620,592	06/619,470	11/04/86
4,620,594	06/638,925	11/04/86
4,620,597	06/657,749	11/04/86
4,620,599	06/554,354	11/04/86
4,620,605	06/776,143	11/04/86
4,620,609	06/702,385	11/04/86
4,620,610	06/810,487	11/04/86
4,620,611	06/807,366	11/04/86

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4,620,616	06/620,565	11/04/86
4,620,620	06/588,571	11/04/86
4,620,621	06/595,857	11/04/86
4,620,623	06/695,770	11/04/86
4,620,627	06/562,747	11/04/86
4,620,629	06/707,634	11/04/86
4,620,634	06/491,580	11/04/86
4,620,635	06/425,959	11/04/86
4,620,636	06/618,836	11/04/86
4,620,638	06/657,198	11/04/86
4,620,651	06/549,885	11/04/86
4,620,656	06/483,487	11/04/86
4,620,665	06/524,241	11/04/86
4,620,678	06/695,732	11/04/86
4,620,690	06/479,328	11/04/86
4,620,698	06/707,886	11/04/86
4,620,699	06/628,611	11/04/86
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4,968,220	07/236,901	11/06/90
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4,968,245	07/396,704	11/06/90
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4,968,265	07/374,622	11/06/90
4,968,266	07/314,723	11/06/90
4,968,271	07/420,861	11/06/90
4,968,273	07/411,690	11/06/90
4,968,274	07/379,103	11/06/90
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4,968,279	07/426,663	11/06/90
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4,968,282	07/349,208	11/06/90
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4,968,323	07/332,148	11/06/90
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4,968,392	07/259,361	11/06/90
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4,968,470	07/436,586	11/06/90
4,968,476	06/378,482	11/06/90
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4,968,498	07/206,730	11/06/90
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4,968,605	07/136,353	11/06/90
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4,968,618	07/282,500	11/06/90
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4,969,015	07/451,992	11/06/90
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4,969,174	07/403,680	11/06/90
4,969,176	07/496,059	11/06/90
4,969,180	07/353,707	11/06/90
4,969,183	07/399,242	11/06/90
4,969,186	07/459,008	11/06/90
4,969,191	07/115,475	11/06/90
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4,969,194	07/399,388	11/06/90
4,969,206	07/381,581	11/06/90
4,969,211	07/150,409	11/06/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,951,244, Re. S.N. 08/341,831, Nov. 17, 1994, Cl. 364, LINEAR INTERPOLATION OPERATOR, Jacques Meyer, Owner of Record: *SGS-Thomson Microelectronics SA, Gentilly, France,* Attorney or Agent: Kenneth C. Hill, Ex. Gp.: 2306

4,996,371, Re. S.N. 08/340,960, Nov. 16, 1994, Cl. 568/683, METHOD FOR FLUORODECARBOXYLATION, Donald F. Halpern, et. al., Owner of Record: *The Boc Group Inc., New Providence, N.J.,* Attorney or Agent: R. Hain Swope, Ex. Gp.: 1206

5,094,609, Re. S.N. 08/180,624, Jan. 13, 1994, Cl. 425/445, CHAMBER FOR HYDRATING CONTACT LENSES, Ture Kindt-Larsen, et. al., Owner of Record: *Johnson & Johnson Vision Products, Inc., New Brunswick, N.J.,* Attorney or Agent: Paul J. Esatto, Jr., Ex. Gp.: 1305

5,097,285, Re. S.N. 08/213,565, Mar. 16, 1994, Cl. 354/471, CAMERA WITH SELF-TIMER, Hiroshi Wakabayashi, et. al., Owner of Record: *Nikon Corp., Tokyo, Japan,* Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 2101

5,118,635, Re. S.N. 08/253,151, June 2, 1994, Cl. 502/242, INTEGRATED HIGH-VOLTAGE BIPOLAR POWER TRANSISTOR AND LOW VOLTAGE MOS POWER TRANSISTOR STRUCTURE IN THE EMITTER SWITCHING CONFIGURATION AND RELATIVE MANUFACTORS PROCESS, Ferruccio Frisina, et. al., Owner of Record: *Inventor,* Attorney or Agent: Robert Groover, Ex. Gp.: 1106

5,126,799, Re. S.N. 08/269,552, June 30, 1994, Cl. 355/298, IMAGE RECORDING APPARATUS HAVING A TONER SUPPLY TANK AND A TONER RECOVERY TANK CONFIGURED INTO A UNITARY DISPOSABLE MAGAZINE, Yozo Matsuura, et. al., Owner of Record: *Ricoh Co., Tokyo, Japan,* Attorney or Agent: Gregory J. Maier, Ex. Gp.: 2105

5,141,857, Re. S.N. 08/292,574, Aug. 18, 1994, Cl. 435/91, PURIFICATION OF Q BETA REPLICASE, Robert A. DiFrancesco, et. al., Owner of Record: *Amoco Corp., Chicago, Ill.,* Attorney or Agent: Kevin M. Farrell, Ex. Gp.: 1807

5,151,019, Re. S.N. 08/314,345, Sept. 28, 1994, Cl. 417/474, PUMPING DEVICE HAVING INLET AND OUTLET VALVES ADJACENT OPPOSED SIDES OF A TUBE DEFORMING DEVICE, Hal C. Danby, et. al., Owner of Record: *Danby Medical Engineering Ltd., Suffolk, England,* Attorney or Agent: John W. Chestnut, Ex. Gp.: 3403

5,152,623, Re. S.N. 08/316,469, Oct. 3, 1994, Cl. 400/605.0, PRINTER ACCOMMODATING TWO TYPES OF PRINTING SHEETS, Masahiko Yamada, et. al., Owner of Record: *Seiko Epson Corp, Tokyo, Japan,* Attorney or Agent: Steve M. Gruskin, Ex. Gp.: 3307

5,158,753, Re. S.N. 08/286,981, May 13, 1994, Cl. 422/173, INTERNAL COMBUSTION EXHAUST-GAS PURIFYING DEVICE, Shiqeo Take, et. al., Owner of Record: *Nichias Corp., Tokyo, Japan,* Attorney or Agent: W. Warren Taltavull, Ex. Gp.: 1801

5,163,335, Re. S.N. 08/341,673, Nov. 17, 1994, Cl. 74/6, UNIVERSAL STARTER MOTOR ASSEMBLY, Patrick D. Isom, Owner of Record: *Inventor,* Attorney or Agent: Edgar W. Averill, Jr., Ex. Gp.: 3502

5,165,235, Re. S.N. 08/344,228, Nov. 23, 1994, Cl. 60/641.2, SYSTEM FOR USING GEOPRESSURED-GEOTHERMAL RESERVOIRS, George S. Nitschke, Owner of Record: *Inventor,* Attorney or Agent: James R. Vance, Ex. Gp.: 3406

5,165,608, Re. S.N. 08/343,929, Nov. 22, 1994, Cl. 241/9, METHOD FOR THE PRODUCTION OF A STARCH RAW MATERIAL AND A STARCH MILLING SYSTEM, Owner of Record: *Werner Baltensperger, et. al., Owner of Record: Buhler AG, Uzwil, Switzerland,* Attorney or Agent: Bruce C. Zotter, Ex. Gp.: 3206

5,166,132, Re. S.N. 08/344,510, Nov. 23, 1994, Cl. 514/2, HEALING COMPOSITION EMPLOYING AN ENZYME-MODIFIED CASEIN, Arthur L. Gordon, Owner of Record: *Inventor,* Attorney or Agent: Kajane McManus, Ex. Gp.: 1806

5,167,444, Re. S.N. 08/347,493, Nov. 30, 1994, Cl. 385/15, APPARATUS AND METHOD FOR OPTICAL SIGNAL SOURCE STABILIZATION, David B. Hall, Owner of Record: *Litton Systems, Inc., Beverly Hills, Calif.,* Attorney or Agent: John H. Lynn, Ex. Gp.: 2501

5,170,151, Re. S.N. 08/347,494, Nov. 30, 1994, Cl. 340/636, MEHTOD AND ASSEMBLY FOR DISCONNECTING A BATTERY FROM ITS OPERATING SYSTEM, Peter A. Hochstein, Owner of Record: *Inventor,* Attorney or Agent: Harold W. Milton, Jr., Ex. Gp.: 2608

5,188,428, Re. S.N. 08/340,721, Nov. 16, 1994, DECORATIVE SIMULATED WHEEL COVER RETENTION SYSTEM, George A. Carter III, Owner of Record: *Durakon Industries Inc., Lapeer, Mich.,* Attorney or Agent: Laurie A. Ebling, Ex. Gp.: 3102

5,219,357, Re. S.N. 08/344,079, Nov. 23, 1994, Cl. 606/205, MICRO-INSTRUMENT, George P. Honkanen, Owner of Record: *TNCO, Inc., Whitman, Mass.,* Attorney or Agent: Stephen Y. Chow, Esq., Ex. Gp.: 3309

5,243,171, Re. S.N. 08/344,366, Nov. 23, 1994, Cl. 219/386, FOOD SERVICE SYSTEM UTILIZING REFLECTED INFRARED SIGNALS TO IDENTIFY TYPE OF DISH, Simon J. Wood, et. al., Owner of Record: *Nasram Investments Limited, Douglas, Great Britain,* Attorney or Agent: Brian P. Furrer, Ex. Gp.: 2106

5,295,479, Re. S.N. 08/343,930, Nov. 22, 1994, Cl. 128/203.15, DEVICE INTENDED FOR MEASURING A DOSE OF POWDERED MEDICAMENT FOR INHALATION, Tapio Lankinen, Owner of Record: *Leiras Oy, Turku, Finland,* Attorney or Agent: George R. Repper, Ex. Gp.: 3307

5,297,380, Re. S.N. 08/341,909, Nov. 15, 1994, Cl. 57/125, A RING TRAVELLER FOR A BEVELLED FLANGED RING, Franz Oberholzer, Owner of Record: *Bracker AG, Pfaffikon ZH, Switzerland,* Attorney or Agent: Michelle M. Lester, Ex. Gp.: 2405

5,347,304, Re. S.N. 08/340,733, Nov. 16, 1994, Cl. 348/12, REMOTE LINK ADAPTER FOR USE IN TV BROADCAST DATA TRANSMISSION, Eduardo J. Moura, et. al., Owner of Record: *Hybrid Networks, Inc., San Jose, Calif.,* Attorney or Agent: Albert C. Smith, Ex. Gp.: 2602

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,159,126, Reexam. No. 90/003,644, Nov. 25, 1994, Cl. 280/688, MODEL RACING CAR HAVING AN IMPROVED REAR WHEEL SUSPENSION, Roger W. Raleigh, Owner of Record: *Inventor,* Attorney or Agent: Julian Caplan, Flehr, Hohbach, Test, Albritton & Herbert, San Francisco, Calif. Ex. Gp.: 3106, Requester: A. James Isbester, Townsend and Townsend, Khourie & Crew, San Francisco, Calif.

4,421,574, Reexam. No. 90/003,645, Nov. 28, 1994, Cl. 148/111, METHOD FOR SUPPRESSING INTERNAL OXIDATION IN STEEL WITH ANTIMONY ADDITION, Grigory Lyudkovsky, Owner of Record: *Inland Steel Co., Chicago, Ill.,* Attorney or Agent: Alvin D. Shulman, Marshall, O'Toole, Gerstein, Murray & Borun, Chicago, Ill., Ex. Gp.: 1101, Requester: USX Corp., Pittsburgh, Pa.

4,634,913, Reexam. No. 90/003,650, Jan. 6, 1987, Cl. 310/313A, APPLICATION OF LITHIUM TETRABORATE TO ELECTRONIC DEVICES, Roger W. Whatmore, et. al., Owner of Record: *Plessy Co., Ltd., Ilford, England,* Attorney or Agent: Fleit, Jacobson, Cohn, Price, Holman & Stern, Washington, D.C., Ex. Gp.: 2102, Requester: William H. Anderson, U.S. Army Communications-Electronics Command, Ft. Monmouth, N.J.

5,016,501, Reexam. No. 90/003,651, Dec. 1, 1994, Cl. 081/057.11, AUTOMATIC SHAFT LOCK, Michael Holzer, Jr., Owner of Record: *S-B Power Tool Co., Chicago, Ill.,* Attorney or Agent: Jones, Day, Reavis & Pogue, Chicago, Ill., Ex. Gp.: 3203, Requester: William A. Van Santen, Wood, Phillips, Van Santen, Hoffman & Ertel, Chicago, Ill.

5,126,932, Reexam. No. 90/003,647, Nov. 30, 1994, Cl. 364/131, METHOD AND APPARATUS FOR EXECUTING A PROGRAM IN A HETEROGENEOUS MULTIPLE COMPUTER SYSTEM, C. Daniel Wolfson, et. al., Owner of Record: *Siemens Corporate Research, Princeton, N.J.,* Attorney or Agent: None, Ex. Gp.: 2306, Requester: Owner

5,199,098, Reexam. No. 90/003,648, Nov. 30, 1994, Cl. 385/128, MOISTURE RESISTANT OPTICAL FIBER COATINGS WITH IMPROVED STABILITY, Kelly J. Nolan, et. al., Owner of Record: *Corning, Inc., Corning, N.Y.,* Attorney or Agent: Kees Van Der Sterre, Corning Inc., Corning, N.Y., Ex. Gp.: 2501, Requester: Julie R. Keller, Roylance, Abrams, Berdo & Goodman, Washington, D.C.

5,209,606, Reexam. No. 90/003,649, Nov. 30, 1994, Cl. 405/303, SHORING SHIELD, Michael J. Plank, Owner of Record: *Speed Shore Corp., Houston, Tex.,* Attorney or Agent: Matthews & Associates, Houston, Tex., Ex. Gp.: 3501, Requester: Owner

5,328,184, Reexam. No. 90/003,646, Nov. 28, 1994, Cl. 273/169, IRON TYPE GOLF CLUB HEAD WITH IMPROVED WEIGHT CONFIGURATION, Anthony J. Antonious, Owner of Record: *Inventor,* Attorney or Agent: Nicholas J. Aquilino, Arlington, Va., Ex. Gp.: 3304, Requester: Spalding & Evenflo Companies, Inc., Tampa, Fla.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 05, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
42,179	70/042,179	03/01/1904
95,667	71/073,401	03/03/1914
310,401	71/342,780	02/27/1934
310,412	71/342,368	02/27/1934
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586,179	71/618,242	03/02/1954
586,181	71/620,618	03/02/1954
586,184	71/622,540	03/02/1954
586,186	71/623,043	03/02/1954
586,203	71/629,731	03/02/1954
586,204	71/630,574	03/02/1954
586,206	71/631,172	03/02/1954
586,218	71/635,526	03/02/1954
586,221	71/636,182	03/02/1954
586,229	71/636,994	03/02/1954
586,233	71/637,465	03/02/1954
586,245	71/639,401	03/02/1954
586,252	71/640,786	03/02/1954
586,259	71/641,808	03/02/1954
586,265	71/642,076	03/02/1954
586,267	71/642,121	03/02/1954
586,268	71/642,122	03/02/1954
586,270	71/642,223	03/02/1954
586,272	71/642,568	03/02/1954
586,278	71/643,202	03/02/1954
586,289	71/643,860	03/02/1954
586,290	71/643,862	03/02/1954
586,302	71/645,078	03/02/1954
586,307	71/645,659	03/02/1954
586,319	71/646,310	03/02/1954
586,332	71/647,316	03/02/1954
586,334	71/647,357	03/02/1954
586,340	71/647,610	03/02/1954
586,342	71/647,657	03/02/1954
586,345	71/647,726	03/02/1954
586,356	71/648,904	03/02/1954
586,370	71/641,260	03/02/1954
586,371	71/576,549	03/02/1954
586,378	71/619,474	03/02/1954
586,389	71/638,046	03/02/1954
586,398	71/641,988	03/02/1954
979,173	72/385,793	02/26/1974
979,176	72/420,999	02/26/1974

Reg. No.	Serial Number	Reg. Date
979,177	72/422,148	02/26/1974
979,197	72/455,860	02/26/1974
979,205	72/419,288	02/26/1974
979,206	72/432,413	02/26/1974
979,208	72/381,804	02/26/1974
979,210	72/397,320	02/26/1974
979,212	72/427,906	02/26/1974
979,213	72/431,589	02/26/1974
979,217	72/437,131	02/26/1974
979,225	72/447,861	02/26/1974
979,230	72/449,309	02/26/1974
979,234	72/452,016	02/26/1974
979,235	72/452,108	02/26/1974
979,238	72/461,265	02/26/1974
979,241	72/444,646	02/26/1974
979,242	72/452,764	02/26/1974
979,245	72/435,519	02/26/1974
979,248	72/410,240	02/26/1974
979,250	72/444,675	02/26/1974
979,252	72/447,332	02/26/1974
979,255	72/396,134	02/26/1974
979,256	72/404,432	02/26/1974
979,259	72/440,272	02/26/1974
979,260	72/440,778	02/26/1974
979,261	72/442,385	02/26/1974
979,274	72/419,830	02/26/1974
979,280	72/426,019	02/26/1974
979,285	72/373,225	02/26/1974
979,286	72/381,830	02/26/1974
979,289	72/421,946	02/26/1974
979,291	72/433,557	02/26/1974
979,293	72/444,600	02/26/1974
979,294	72/444,775	02/26/1974
979,299	72/447,365	02/26/1974
979,300	72/447,865	02/26/1974
979,303	72/448,553	02/26/1974
979,309	72/459,407	02/26/1974
979,311	72/464,691	02/26/1974
979,314	72/465,048	02/26/1974
979,321	72/347,345	02/26/1974
979,322	72/404,702	02/26/1974
979,326	72/433,653	02/26/1974
979,327	72/443,411	02/26/1974
979,331	72/446,299	02/26/1974
979,333	72/448,763	02/26/1974
979,339	72/409,917	02/26/1974
979,341	72/412,473	02/26/1974
979,345	72/440,089	02/26/1974
979,353	72/418,436	02/26/1974
979,355	72/439,844	02/26/1974
979,359	72/451,732	02/26/1974
979,365	72/452,718	02/26/1974
979,366	72/452,720	02/26/1974
979,367	72/257,622	02/26/1974
979,368	72/389,424	02/26/1974
979,369	72/404,038	02/26/1974
979,374	72/421,445	02/26/1974
979,375	72/430,600	02/26/1974
979,378	72/412,788	02/26/1974
979,381	72/415,155	02/26/1974
979,383	72/416,278	02/26/1974
979,384	72/420,719	02/26/1974
979,385	72/424,494	02/26/1974
979,386	72/424,708	02/26/1974
979,387	72/433,016	02/26/1974
979,388	72/463,111	02/26/1974
979,390	72/437,083	02/26/1974
979,391	72/440,011	02/26/1974
979,397	72/411,852	02/26/1974
979,401	72/423,456	02/26/1974
979,403	72/446,081	02/26/1974
979,404	72/446,311	02/26/1974
979,407	72/450,993	02/26/1974
979,408	72/433,359	02/26/1974
979,413	72/421,285	02/26/1974
979,417	72/420,014	02/26/1974
979,420	72/404,731	02/26/1974
979,421	72/423,903	02/26/1974
979,425	72/435,576	02/26/1974
979,428	72/449,547	02/26/1974
979,429	72/449,943	02/26/1974
979,431	72/390,646	02/26/1974
979,432	72/400,488	02/26/1974
979,433	72/403,641	02/26/1974
979,434	72/409,429	02/26/1974
979,435	72/420,709	02/26/1974
979,436	72/425,716	02/26/1974
979,438	72/442,689	02/26/1974
979,447	72/428,532	02/26/1974
979,448	72/430,716	02/26/1974
979,449	72/436,771	02/26/1974
979,452	72/438,452	02/26/1974
979,457	72/441,806	02/26/1974
979,458	72/444,397	02/26/1974
979,463	72/397,995	02/26/1974
979,465	72/400,610	02/26/1974
979,471	72/434,936	02/26/1974
979,478	72/448,779	02/26/1974
979,479	72/448,831	02/26/1974
979,482	72/451,098	02/26/1974
979,483	72/454,425	02/26/1974
979,487	72/442,190	02/26/1974
979,488	72/445,368	02/26/1974
979,495	72/442,732	02/26/1974
979,496	72/442,963	02/26/1974
979,497	72/448,602	02/26/1974
979,498	72/449,368	02/26/1974
979,500	72/450,941	02/26/1974
979,502	72/451,268	02/26/1974
979,503	72/451,269	02/26/1974
979,504	72/441,845	02/26/1974
979,505	72/450,035	02/26/1974
979,507	72/437,910	02/26/1974
979,510	72/413,222	02/26/1974
979,511	72/423,770	02/26/1974
979,515	72/429,204	02/26/1974
979,516	72/431,452	02/26/1974
979,525	72/441,572	02/26/1974
979,526	72/442,405	02/26/1974
979,529	72/446,599	02/26/1974
979,530	72/447,208	02/26/1974
979,535	72/450,531	02/26/1974
979,537	72/451,392	02/26/1974
979,539	72/451,614	02/26/1974
979,544	72/456,171	02/26/1974
979,549	72/463,907	02/26/1974
979,552	72/465,903	02/26/1974
979,555	72/456,325	02/26/1974
979,556	72/456,326	02/26/1974
979,557	72/456,328	02/26/1974
979,562	72/451,901	02/26/1974
979,563	72/273,558	02/26/1974
979,570	72/452,158	02/26/1974
979,572	72/430,399	02/26/1974
979,574	72/432,745	02/26/1974
979,575	72/434,054	02/26/1974
979,586	72/415,215	02/26/1974
979,587	72/416,026	02/26/1974
979,589	72/417,463	02/26/1974
979,591	72/422,376	02/26/1974
979,592	72/423,994	02/26/1974
979,599	72/436,826	02/26/1974
979,608	72/446,179	02/26/1974
979,612	72/447,406	02/26/1974
979,613	72/364,423	02/26/1974
979,617	72/425,244	02/26/1974
979,619	72/428,014	02/26/1974
979,622	72/436,863	02/26/1974
979,628	72/444,761	02/26/1974
979,629	72/444,762	02/26/1974
979,631	72/444,765	02/26/1974
979,636	72/419,641	02/26/1974
979,639	72/381,784	02/26/1974
979,640	72/417,336	02/26/1974
979,642	72/430,818	02/26/1974
979,648	72/422,323	02/26/1974

Reg. No.	Serial Number	Reg. Date
979,650	72/444,508	02/26/1974
979,651	72/393,694	02/26/1974
979,652	72/393,695	02/26/1974
979,656	72/412,522	02/26/1974
979,657	72/412,523	02/26/1974
979,660	72/423,386	02/26/1974
979,661	72/430,089	02/26/1974
979,663	72/440,919	02/26/1974
979,669	72/412,923	02/26/1974
979,676	72/438,156	02/26/1974
979,683	72/414,444	02/26/1974
979,685	72/438,704	02/26/1974
979,687	72/450,160	02/26/1974
979,692	72/415,558	02/26/1974

Erratum

"All reference to Patent No. 5,374,547 to Tairo Oshima, et. al., of Japan for THERMOSTABLE DNA POLYMERASE FROM THERMUS THERMOPHILUS appearing in the *Official Gazette* of December 20, 1994 should be deleted since no patent was granted."

Certificates of Correction For Week of January 17, 1995

D. 344,078	5,217,255	5,294,911	5,332,139
D. 344,108	5,218,675	5,294,996	5,332,367
D. 351,113	5,219,763	5,296,250	5,332,382
D. 351,939	5,220,736	5,296,790	5,332,735
D. 352,301	5,220,854	5,296,947	5,332,759
Re. 34,744	5,225,335	5,298,836	5,332,928
4,654,077	5,229,208	5,302,037	5,332,999
4,669,786	5,230,898	5,302,506	5,334,065
4,673,623	5,232,571	5,302,817	5,334,066
4,808,155	5,238,030	5,303,068	5,334,455
4,824,706	5,240,923	5,304,924	5,334,894
4,924,232	5,242,537	5,306,938	5,335,898
4,967,219	5,244,544	5,307,438	5,336,201
4,969,055	5,247,135	5,308,996	5,336,424
4,971,603	5,250,544	5,309,174	5,336,659
4,978,981	5,252,763	5,309,816	5,339,857
5,004,565	5,258,803	5,309,914	5,340,287
5,008,712	5,260,156	5,311,829	5,340,707
5,010,459	5,260,180	5,312,575	5,340,777
5,015,697	5,260,289	5,313,289	5,341,163
5,017,687	5,260,638	5,313,540	5,341,261
5,043,261	5,261,319	5,316,096	5,341,386
5,055,850	5,264,082	5,317,479	5,342,093
5,068,593	5,264,184	5,318,231	5,342,834
5,071,187	5,267,546	5,319,515	5,343,063
5,096,366	5,269,335	5,319,888	5,343,201
5,098,446	5,274,151	5,320,224	5,343,246
5,104,317	5,274,269	5,320,410	5,343,343
5,106,513	5,278,216	5,320,753	5,344,059
5,110,999	5,280,311	5,321,039	5,344,074
5,140,345	5,280,786	5,321,245	5,344,476
5,146,859	5,281,360	5,322,192	5,344,686
5,147,218	5,281,395	5,322,242	5,344,799
5,147,473	5,283,157	5,322,663	5,346,489
5,155,484	5,284,645	5,324,852	5,346,513
5,157,213	5,287,590	5,325,029	5,346,904
5,158,239	5,288,942	5,326,295	5,346,976
5,168,085	5,289,018	5,326,551	5,347,316
5,172,403	5,289,222	5,326,619	5,347,542
5,175,422	5,289,447	5,326,621	5,347,583
5,179,473	5,289,558	5,326,969	5,347,768
5,182,438	5,289,707	5,327,288	5,347,937
5,185,806	5,290,922	5,328,734	5,348,557
5,189,186	5,292,453	5,329,305	5,348,810
5,191,584	5,292,533	5,329,791	5,349,032
5,194,816	5,292,541	5,330,638	5,349,197
5,196,001	5,292,840	5,330,795	5,349,415
5,216,764	5,293,072	5,331,489	5,349,438
5,349,558	5,353,706	5,358,993	5,363,025
5,349,588	5,353,878	5,359,530	5,364,009
5,349,654	5,354,083	5,360,566	5,364,462
5,350,069	5,354,159	5,361,013	5,364,488
5,350,807	5,354,413	5,361,022	5,364,623
5,351,215	5,354,469	5,361,181	5,364,876
5,351,234	5,355,085	5,361,314	5,364,933
5,351,241	5,355,455	5,361,911	5,365,164
5,351,258	5,356,797	5,361,985	5,365,893
5,351,397	5,357,240	5,362,247	5,366,691
5,352,707	5,358,325	5,362,503	5,367,131
5,353,437	5,358,693	5,362,622	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
November 14-18, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
11-14	EX	74/214,756	National Wholesale Co., Inc.	whether the marks asserted for registration function as service marks for the services originally recited in the application; whether applicant's proposed amendments to its identifications of services (i.e., amendments from services to goods) are acceptable under Rule 2.71(b)	Refusal to register the marks as service marks affirmed; refusal to allow amendment reversed; marks will be published for opposition with amended identifications of goods		SUDDENLY SLENDER and SUDDENLY SLENDER PLUS [*original identification*: "mail order services featuring the sale of hosiery and pantyhose"; *amended identification*: "hosiery and pantyhose sold exclusively by mail and telephone order		No
11-14	EX	74/329,355	Machine Products Corp.	2(d) [with consent agreement of record]	Refusal Reversed	"SAKS FIFTH AVENUE" [retail clothing store services, etc.]	"RAGS 5th AVENUE" (and design) [retail store services in the sale of second hand quality wearing apparel and accessories]	"DYNALIFT" [high reach telescoping boom forklifts]	No
11-14	OPP	88,251	Saks & Co. v. Rags 5th Ave., Inc.	2(d)	Opposition Sustained				No
11-15	OPP	87,252	Omega Engineering, Inc.	2(d)	Opposition Dismissed	"OMEGA" et. al., [scientific and electrical apparatus]	Design consisting of the Greek letter "omega" and a lightning bolt [thermostats for machines]		No
11-16	EX	74/204,988	Raquette Sales Division, Inc.	whether the matter asserted for registration functions as a trademark for the goods recited in the registration	Refusal Affirmed		Design of a man with a sprayer, surrounded by designs of an automobile, a chest of drawers, a house, and the interior wall of a room [lacquer thinner]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

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	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
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Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
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	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
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Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
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	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
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Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/23/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	10/21/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	03/08/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	01/06/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/15/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/16/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/17/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	11/23/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	308-0771	11/29/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/13/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/06/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/02/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	12/06/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	11/16/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	12/23/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	07/02/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/23/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during December 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents ..... Numbers 4,060,852 to 4,065,811 inclusive
Plant Patents ..... 4,161 to 4,173

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Nov. 1, 1994

Law Office	Oldest Date: New*	Oldest Date: Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/06/94	10/12/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/94	08/08/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/09/94	07/01/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/01/94	07/11/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/12/94	08/17/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/94	08/24/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/19/94	07/27/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/94	08/09/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/15/94	08/08/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/25/94	08/23/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/31/94	08/08/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/16/94	09/09/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/26/94	07/27/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	05/24/94	—0—
Renewals (All Classes)	09/01/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

JANUARY 17, 1995

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,860,952 (2453rd)
VIDEO TIME BASE CORRECTOR

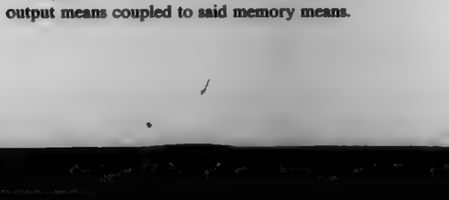
Michael W. Tallent, San Jose; Lee E. Scaggs, Mountain View; Allan L. Swain, Palo Alto; Ronnie M. Harrison, and William B. Hendershot, III, both of San Jose, all of Calif., assignors to Video Patents Limited, San Jose, Calif.

Reexamination Request Nos. 90/002,701, Apr. 20, 1992 and 90/002,802, Jul. 29, 1992 and 90/003,112, Jul. 1, 1993.

Reexamination Certificate for Patent No. 3,860,952, issued Jan. 14, 1975, Ser. No. 381,463, Jul. 23, 1973.

Int. Cl.[6] H04N *5/76, 5/95, 9/02*

U.S. Cl. 348—498



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–25, 27, 29–37** and **39–45** is confirmed.

Claims **26, 28** and **38** are cancelled.

1. A system for removing time base errors from video type information signals comprising:

input means adapted to be coupled to said information signals;

an input clock generator coupled to said input means for generating input clock reference signals having a variable rate dependent upon said time base errors in said information signals;

means for sampling said information signals at a rate determined by said input clock reference signals, said sampling means having a control input coupled to said input clock generator;

memory means coupled to said sampling means for temporarily storing said sampled signals at a rate determined by said input clock reference signals;

an output clock generator for generating output clock reference signals having a standard rate,

sequencer means for controlling the application of said input and said output clock reference signals to said memory means to sequentially store said sampled signals at said variable rate and fetch said store signals at said standard rate; and

output means coupled to said memory means.

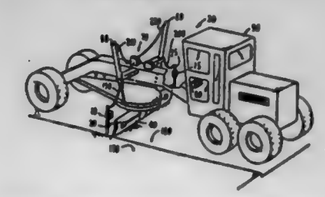
B1 4,914,593 (2454th)
METHOD FOR AUTOMATIC DEPTH CONTROL FOR EARTH MOVING AND GRADING

Christopher O. Middleton, Capitola, and Colin L. Robson, San Jose, both of Calif., assignors to Spectra Physics, San Jose, Calif.

Reexamination Request No. 90/002,041, Jun. 4, 1990.

Reexamination Certificate for Patent No. 4,914,593, issued Apr. 3, 1990, Ser. No. 204,386, Jun. 9, 1988

Int. Cl. A01B 63/114



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2, 6, 11, 13,** and **14** are determined to be patentable as amended.

Claims **3–5, 7–10** and **12** dependent on an amended claim, are determined to be patentable.

New claims **15–33** are added and determined to be patentable.

1. In a machine such as a paver or grader carrying a vertically adjustable blade at a chosen depth relative to a reference surface having a variable height, an apparatus for automatically adjusting the blade for maintaining the blade at the chosen depth, including:

a follower connected to the blade at a position above the reference surface;

means coupled to said follower for generating acoustic pulses toward the reference surface for reflection thereby;

a processor coupled to said generating means and including means for controlling said generation of said acoustic pulses;

a memory coupled to said processor and storing control words relating to instructions for vertically adjusting the blade;

means for detecting said acoustic pulses at said follower after reflection by the reference surface;

a counter means coupled to said processor for generating a count related to a length of time taken by said acoustic pulses to be reflected back to said detecting means;

means for using said count to retrieve a control word stored in said memory;

means for *automatically* calibrating said adjusting apparatus while said follower is at a selected height above said reference surface, such that, when the blade is at the chosen depth, said count [related to] *retrieves* a predetermined control word in said [control table] *memory* relating to a zero adjustment instruction for the blade;

means coupled to said processor for causing said generating means to repeatedly generate said acoustic pulses after said calibration for repeatedly generating further counts relating to lengths of time taken by said acoustic pulses to be reflected back to the follower, such that said further counts relate to control words stored at locations of said memory corresponding to variations in the height of the reference surface; and further including

means carried by the grader for vertically adjusting the blade; and

means for providing said control word as instructions to said adjusting means for automatically following said variations in the height of the reference surface.

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REISSUES

JANUARY 17, 1995

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,826

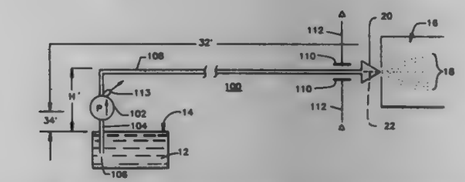
WASTE OIL DELIVERY SYSTEM

Werner O. Specht, Sharpsville, Pa., assignor to Thomas & Betts Corporation, Memphis, Tenn.

Original No. 5,058,512, dated Oct. 22, 1991, Ser. No. 495,478, Mar. 19, 1990. Application for reissue Oct. 22, 1993, Ser. No. 142,530

Int. Cl.[6] F23G *7/04*

U.S. Cl. 110—238 **15 Claims**



11. An improved oil delivery system of the type which delivers fuel oil from a reservoir thereof to a combustion zone into which atomized oil is introduced through an orifice in a nozzle, the orifice receiving the oil at a predetermined flow rate; wherein the improvement comprises:

a non-pressure-regulated, positive displacement, metering pump located physically close to the reservoir and remote from the nozzle for removing the oil from the reservoir and for pushing the oil towards the nozzle to deliver the oil to the orifice at a constant flow rate notwithstanding the pressure of the oil in the orifice or the size of the orifice, there being no pressure regulator located between the metering pump and the orifice, said metering pump comprising the exclusive means for controlling said oil flow rate through said nozzle.

Re. 34,827

METHOD OF AND APPARATUS FOR CUTTING SOD WHICH ROLLS IN A SEMI-FLACCID SHEET INTO SOD ROLL

Gary H. Dover, Bucyrus, and Larry D. Meyer, Louisburg, both of Kans., assignors to Bucyrus Equipment Co., Inc., Bucyrus, Kans.

Original No. 5,064,000, dated Nov. 12, 1991, Ser. No. 605,569, Oct. 30, 1990. Application for reissue Jun. 16, 1993, Ser. No. 79,068

Int. Cl.[6] A01B *45/04, 63/14*

U.S. Cl. 172—19 **27 Claims**

8. An apparatus for forming sod, comprising:

a main frame;

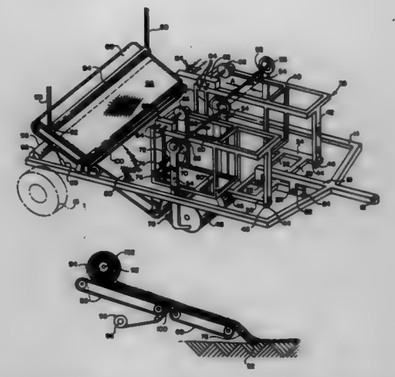
means allowing movement of said main frame with respect to the ground in a cutting direction;

means, connected to said main frame, for cutting at least one strip of sod from the ground, the strip of sod having top and bottom sides;

means, connected to said main frame, for placing at least one at least semi-flaccid sheet in contact with the bottom side of the at least one strip of sod;

a conveyor connected to the main frame behind the cutting means and adapted to receive the sheet and the sod strip thereon for conveyance substantially parallel to said direction;

means for guiding the sod strip from the cutting means onto the conveyor and therefore onto, and into contact with, the sheet, said means for guiding the sod strip being in front of said means for placing the sheet; and



means, connected to said main frame, for rolling the sod, with the sheet in contact therewith, into a spiral configuration with the sheet exterior.

Re. 34,828

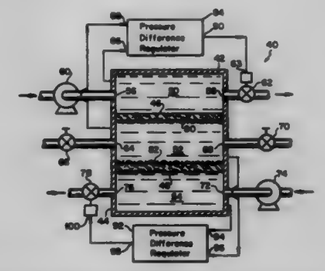
IMMOBILIZED-INTERFACE SOLUTE-TRANSFER APPARATUS

Kamalesh Sirkar, Berkeley Hts., N.J., assignor to The Trustees of the Stevens Institute of Technology, Hoboken, N.J.

Original No. 4,789,468, dated Dec. 6, 1988, Ser. No. 644,895, Aug. 28, 1984. Application for reissue Oct. 24, 1991, Ser. No. 781,864

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—137 **18 Claims**



20. An immobilized-interface solute-transfer unit for transferring a solute from a feed solution to an extractant liquid, the solute-transfer unit comprising:

(a) a fluid-tight housing;

(b) a porous membrane located in and connected to the housing, the porous membrane including pores having effective pore diameters in the range of from about 20 nm to about 10 μm, the porous membrane being preferentially wettable by one of the feed-solution and liquid extractant, the porous membrane dividing the housing into a feed solution chamber and an extractant chamber, the housing having a feed solution inlet port and a feed solution outlet port which communicate with the feed solution chamber and an extractant inlet port and an

extractant outlet port which communicate with the extractant chamber;

(c) pressure difference control means for maintaining a difference between a liquid pressure of a feed solution in the feed solution chamber and a liquid pressure of an extractant in the extractant chamber substantially within a predetermined pressure range so that an interface between the feed solution and the extractant is substantially immobilized at the membrane, to effectively prevent the formation of a dispersion of feed solution and extractant in either chamber on opposing sides of the membrane.

Re. 34,829

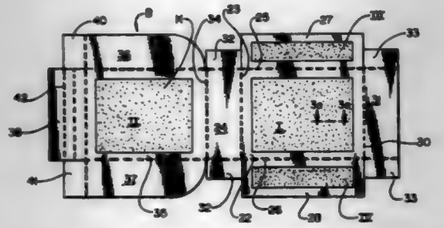
FOOD PACKAGE FOR USE IN A MICROWAVE OVEN

James L. Stone, Grand Rapids, Mich., assignor to Packaging Corporation of America, Evanston, Ill.

Original No. 4,866,232, dated Sep. 12, 1989, Ser. No. 178,243, Apr. 6, 1988. Division of Ser. No. 934,701, Aug. 24, 1992, abandoned. Application for reissue Sep. 14, 1992, Ser. No. 944,475

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—730 **11 Claims**



12. A food package for heating or cooking a food product accommodated therein in a microwave oven, the accommodated food product having at least a first predetermined portion thereof requiring enhanced heat during the heating or cooking of the product, and at least a second predetermined portion thereof requiring shielding from microwaves during the heating or cooking of the product, said package comprising a container for the food product formed of a heat resistant material which is capable of retaining its shape when subjected to heating or cooking temperatures and is pervious to the microwaves generated within the oven, said container having first and second surface areas of the material in proximity to the said first and second predetermined portions of the accommodated food product, respectively, said first area having printed directly on the material surface a metallized ink, the latter having a predetermined amount of metal particles suspended in an ink-like substance, whereby when said metallized ink is exposed to generated microwaves, the printed surface area retains its shape and produces the required enhanced heat for the said first predetermined portion of the accommodated food product, said second predetermined area having a metallized ink having a large amount or concentration of metal particles which will cause the microwaves to be reflected enabling the second predetermined portion to remain relatively cool instead of heating up when the microwaves are being generated within the oven.

Re. 34,830

LUBRICATING RUBBER COMPOSITION

Fuminori Satoji, Kuwana, Japan, assignor to NTN Corporation, Osaka, Japan

Original No. 4,978,463, dated Dec. 18, 1990, Ser. No. 304,290, Jan. 31, 1989. Application for reissue Feb. 22, 1994, Ser. No. 199,898

Claims priority, application Japan, Feb. 2, 1988, 63-23424

Int. Cl.[6] C10M *107/40, 107/54*

U.S. Cl. 252—12 **8 Claims**

1. A lubricating rubber composition comprising:

a diene rubber; and

a fluoropolymer having at least one group selected from the group consisting of isocyanate group and cyanate group wherein said fluoropolymer is present in 3–100 parts by weight per 100 parts by weight of diene rubber.

Re. 34,831

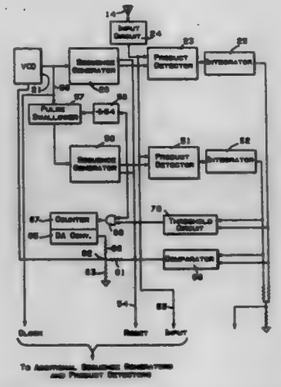
COMMUNICATION SYSTEM

Van Metre Lund, 2294 Elm Ridge Dr., Northbrook, Ill. 60062

Original No. 5,056,108, dated Oct. 8, 1991, Ser. No. 505,239, Apr. 4, 1990. Application for reissue Oct. 5, 1993, Ser. No. 132,158

Int. Cl.[6] H04L *27/30*

U.S. Cl. 375—1 **30 Claims**



29. A receiver for operation at a point remote from a transmitting point at which a plurality of wavetrains are simultaneously propagated each propagated wavetrain including a sequence of variations, each variation having one polarity during an initial phase of the variation of the sequence of variations of the wavetrain and an opposite polarity during a final phase of the variation of the sequence of variations of the wavetrain, said variations of each wavetrain having predetermined varying durations and being in a predetermined distinctive psuedo-random order but with the predetermined distinctive psuedo-random order of variations of each wavetrain being substantially different from that of each other wavetrain, said receiver comprising means for operating at said receiving point remote from said transmitting point and including means to develop a received signal from ambient wave energy at said receiving point, a plurality of sampling means each operative for sampling said received signal in a sampling sequence to produce samples therefrom, and a plurality of means for summing said samples produced by said plurality of sampling means to develop a plurality of output signals, said sampling sequences of said plurality of sampling means having said predetermined varying durations of said variations of said propagated wavetrains and having said substantially different predetermined distinctive psuedo-random orders of said variations of said propagated wavetrains.

Re. 34,832

HEAT PROTECTIVE COVER FOR HOT WATER PIPES

Gabriel V. Lechuga, 67365 Verona Rd., Cathedral City, Calif. 92234

Original No. 5,055,334, dated Oct. 8, 1991, Ser. No. 427,026, Oct. 26, 1989. Application for reissue Mar. 27, 1992, Ser. No. 859,060

Int. Cl.[6] F16L *59/16*; B32B *3/06*

U.S. Cl. 428—99 **27 Claims**

1. A heat protective cover for hot water pipes which can extend about and which can be releasably and also permanently secured to a hot water pipe, said protective cover comprising:

a) a jacket comprised of a pair of jacket sections which are capable of being disposed about and completely surround a section of a hot water line,

b) said jacket having a pair of marginal edges which are adapted to lie in marginal engagement when disposed about and enclosing a section of a hot water line,



c) a releasably self-gripping fastening means associated with the edges of said jacket in order to releasably fasten the edges of said jacket together about the enclosed section of the hot water line, and

d) a securement strip extending through openings in both sections of said jacket and adapted to be secured to itself to thereby [and] permanently secure the protective cover to the hot water line.

Re. 34,833

VEHICLE TRANSMISSION ASSEMBLY

Toshiyuki Hasegawa, Ashiya; Shigenori Sakigawa, Itami, and Ryota Ohashi, Sakai, all of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Original No. 5,046,994, dated Sep. 10, 1991, Ser. No. 607,864, Nov. 1, 1990. Application for reissue Sep. 9, 1993, Ser. No. 119,264

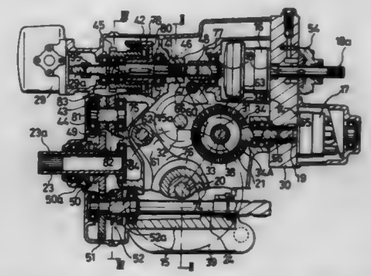
Claims priority, application Japan, Nov. 20, 1989, 1-301197

Int. Cl.[6] F16H *37/08*

U.S. Cl. 475—83 **19 Claims**

9. In a vehicle transmission assembly comprising: a power input shaft (18) to be connected drivenly to a prime mover (13); a hydrostatic transmission (14) having a hydraulic pump (16) driven by said power input shaft and a hydraulic motor (17) connected in closed fluid circuit to said hydraulic pump so as to be driven by said pump, said hydrostatic transmission including an output shaft (19); a transmission casing (15) supporting left and right wheel axles (20); a mechanical transmission mechanism (21) disposed within said transmission casing for transmitting vehicle-driving power from said output shaft to said left and right wheel/ axles; and a PTO-shaft (23) supported by said transmission casing so as to extend outwardly of said casing for taking-off auxiliary implement-driving power, said PTO-shaft being drivenly connected to said power input shaft through a PTO-clutch (42), the improvement characterized in:

that said hydrostatic transmission (14) includes a plate-shaped support member (30) which includes therein fluid passages and is attached to a front of said transmission casing (15);



that said transmission casing (15) includes a shaft-supporting internal partition wall 15a), a front end opening covered by said plate-shaped support member (30), and a rear end opening closed 44 a rear of said transmission casing; 34

that said hydraulic pump (16) is mounted on a rear surface of said plate-shaped support member (30), said pump and said mechanical transmission mechanism (21) being disposed within said transmission casing (15) at a location before said internal partition wall (15a); and

that said PTO-shaft (23) is disposed behind said internal partition wall (15a) and is connected to said PTO-clutch (15a) and is connected to said PTO-clutch (42) through a gear train (43; 243), said PTO-clutch and said gear train being disposed between said internal partition wall and said cover member (44; 244).

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PLANT PATENTS

GRANTED JANUARY 17, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,042

HYBRID TEA ROSE PLANT NAMED MEIPALEO

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Mar. 22, 1994, Ser. No. 215,528
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance on a continuous basis attractive fragrant long lasting intense yellow blossoms,
(b) exhibits an erect growth habit with decorative foliage,
(c) exhibits vigorous vegetation,
(d) is particularly suited for growing in the landscape, and
(e) exhibits good disease resistance;
substantially as herein shown and described.

9,043

HYBRID TEA ROSE PLANT NAMED KORCRISETTE

Wilhelm Kordes, Sparriesboop, Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed May 12, 1994, Ser. No. 241,500
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the excellent vase life of its cut flowers; high cut-flower production; bright orange flowers; thick, leathery petals, and attractive, high-centered flower form.

9,044

HYBRID TEA ROSE PLANT NAMED KORIGNALE

Wilhelm Kordes, Sparriesboop, Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed May 12, 1994, Ser. No. 241,493
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its attractive, porcelain pink, high-centered flowers; its long, straight stems; its long vase life, and its large flower size.

9,045

BROMELIAD PLANT 'GUZ 209'

Jeffrey C. Kent, Vista, Calif., assignor to Kent's Bromeliad Nursery, Inc., Vista, Calif.

Filed Nov. 15, 1993, Ser. No. 152,030
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.8 **1 Claim**

1. A new and distinct variety of Bromeliad plant as shown and described, characterized particularly as to novelty by the pink blush of the floral bracts, its value as a house plant distinct from other Bromeliads, and the long lastingness of the color in said bracts.

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GRANTED JAN. 17, 1995

ERRATA

For CLASS	See PATENT NO.
451–540	5,381,629
451–063	5,381,630
451–075	5,381,631
059–075	5,381,649
059–075	5,381,650
072–009	5,381,681
072–090	5,381,682
072–329	5,381,683
224–153	5,381,936
607–095	5,382,204
507–221	5,382,371
505–125	5,382,405
422–198	5,382,423
435–069	5,382,425
436–055	5,382,520
568–437	5,382,694
327–417	5,382,837
327–108	5,382,838
327–545	5,382,839
327–206	5,382,840
326–030	5,382,841
326–110	5,382,842
326–109	5,382,843
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326–068	5,382,847
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327–161	5,382,850
315–505	5,382,914
359–289	5,382,985
358–521	5,383,055
364–488	5,383,167
372–006	5,383,197
372–018	5,383,198
372–025	5,383,199
372–025	5,383,200

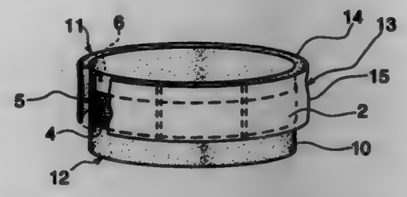
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PATENTS

GRANTED JANUARY 17, 1995

GENERAL AND MECHANICAL

5,381,557
TICK AND SMALL CRAWLING CREATURE BARRIER AND TRAP
Susan H. Luria, and Neil S. Luria, both of 348 Central Ave., Apt. C17, Scarsdale, N.Y. 10583
Filed Nov. 24, 1993, Ser. No. 157,603
Int. Cl.[6] A01M *1/14;* A41D *13/00*
U.S. Cl. 2—16 18 Claims



10. A body-worn barrier and trap device for protection against small crawling creatures, comprising:

band means, dimensioned to fit snugly about a limb of a user and having a limb-engaging inner surface with first and second ends axially spaced on said limb, for blocking passage of said crawling creatures between said limb and said inner surface;

adhesive means, disposed on an outer surface of said band means, for retaining crawling creatures coming in contact therewith;

shielding means, extending outwardly from one of said first and second axial ends and having a surrounding surface spaced from and surrounding said adhesive means, for shielding the surface of said adhesive means; and

spacer means, extending between said band means and said surrounding surface, for maintaining a radial space between said surrounding surface and said surface of said adhesive means, said spacer means being dimensioned to prevent said surfaces from adhering to each other and such that said radial space is dimensioned to freely admit said crawling creatures onto said adhesive means; and wherein

said band means and said shielding means are integrally formed of the same material; and

said spacer means comprises a rigid element attached to and supporting said same material and said rigid element comprises a curved portion for supporting said same material in extending substantially radially from said one of said first and second axial ends to form said shielding means, and a straight portion for supporting said surrounding surface.

5,381,558
GARMENT HAVING MASSAGING PROTUBERANCES
Hsin-Hsin Lo, 9, Alley 3, Lane 35, Weitao Rd., N. Dis., Taichung, Taiwan, Prov. of China
Filed Mar. 22, 1993, Ser. No. 35,066
Int. Cl.[6] A41B *1/00;* A61H *7/00*
U.S. Cl. 2—115 3 Claims

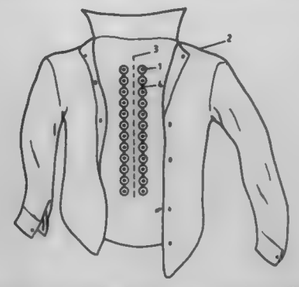
1. A device for massaging the anatomy of a body part, said device comprising:

a garment;

a plurality of massaging protuberances positioned inside said garment such that said protuberances are located between said garment and a selected body part of a person wearing said device to massage the body part when pressure is applied to said protuberances;

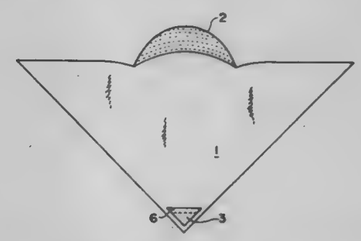
a soft material connecting adjacent protuberances to enable said protuberances to negotiate the anatomy of a body part; and

at least one strip of an elastic fabric attached to an inner side of said garment in a form of a closed loop, said elastic



fabric being extendable to allow said protuberances to pass through said loop for insertion or removal thereof and retractable for fitting over said soft material and holding said protuberances inside said garment.

5,381,559
BANDANA WITH FLEXIBLE BILL
Franklin W. Wakefield, III, P.O. Box 1044, Morro Bay, Calif. 93443
Filed Jul. 14, 1993, Ser. No. 91,208
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—207 7 Claims



1. A bandana comprising: a main portion of cloth material, a bill in connection with said main portion comprising an inner layer of flexible material and two outer layers of cloth material, said inner layer having a top surface and an under surface, one of said outer layers in connection with said top surface of said inner layer and the other of said outer layers in connection with said under surface of said inner layer, said bill joined to said main portion along a connecting line, said bill having at least three lines of stitching running across said bill and parallel to said connecting line, said stitching connecting said inner layer with said outer layers so that said bill may be folded in increments along said lines of stitching.

5,381,560
FITTING AND RETENTION SYSTEM FOR HEADGEAR
Peter D. Halstead, Seymour, Tenn., assignor to PDH Corporation, Knoxville, Tenn.
Filed Mar. 23, 1993, Ser. No. 36,046
Int. Cl.[6] A42B *3/08*
U.S. Cl. 2—421 4 Claims

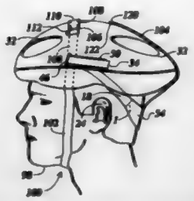
1. A helmet for wearing on a user's head having a chin and

a cranium having an occipital protuberance and a crown, said helmet comprising:

a liner having an inner surface corresponding substantially in size and shape to the crown of the cranium;

elongate fitting means for fitting the liner to the cranium, said fitting means having a middle portion and a pair of opposed ends;

attachment means for attaching the opposed ends of said fitting means closely adjacent to said liner to maintain said fitting means in a tensioned state so that said middle portion of said fitting means fittingly engages at least a portion of the cranium on or below the occipital protuberance of the cranium and the tension in said fitting means maintains the inner surface of said liner closely adjacent the cranium; and



retention means for maintaining the liner adjacent to the cranium, said retention means comprises a first elongate retention strap and releasable fastening means for releasably positioning the retention strap to surround the chin of the user's head and at least a portion of the liner, and

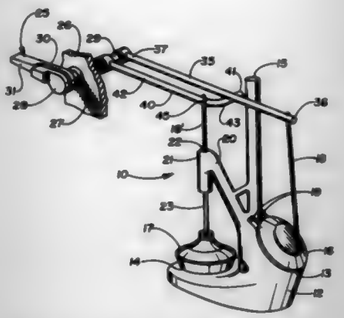
a second elongate retention strap connected to said fitting means.

5,381,561

BIFLUSH VALVE SYSTEM FOR CONSERVING WATER ESPECIALLY FOR TANK-TYPE TOILETS

James H. Carson, III, 7981 Tickneck Rd., Pasadena, Md. 21122-6312

Filed Jun. 16, 1993, Ser. No. 78,458
Int. Cl.[6] E03D *1/14*
U.S. Cl. 4—326 7 Claims



1. A flush valve system for use in a toilet having a water storage tank, the water tank having a bottom, an inside, an outside and a wall therebetween, the flush valve system comprising:

a hollow body mounted inside the tank on the bottom thereof, the body having an upper valve port, a lower valve port and an overflow vent therein;

an upper valve and a lower valve;

means for seating and unseating the upper valve on the upper valve port and means for seating and unseating the lower valve on the lower valve port;

a first connecting rod having a first end and an opposite second end, said first end being connected to the upper valve, a second connecting rod having a first end and an opposite second end, the lower valve being connected to the second connecting rod near the first end of said rod;

a first handle pivotally mounted on the outside of the storage tank, the first handle having a stem extending to the inside of the storage tank through the wall of the tank, the stem of the first handle being connected to the second end of the second connecting rod, whereby when the first handle is pivoted downwardly the first end of the second connecting rod is elevated and the lower value is unseated from the lower valve port such that the toilet is fully flushed using a larger regulated amount of water;

a second collocated handlepivotally mounted on the outside of the storage tank the second handle having a stem extending to the inside of the storage tank through the wall of the tank, said stem being coaxial with the stem of the first handle, the stem of the second handle being connected to the second end of the first connecting rod, whereby when the second handle is pivoted downwardly, the first end of the first connecting rod is elevated and the upper valve is unseated from the upper valve port such that the toilet is fully flushed using a smaller regulated amount of water,

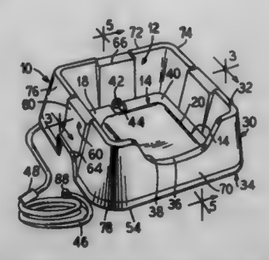
further comprising the first connecting rod being disposed in a first horizontal plane, the second connecting rod being disposed in a second and lower horizontal plane, the first end of the second connecting rod having a bend formed therein, the bend extending under the first connecting rod whereby, when the first handle is pivoted downwardly and the first end of the second rod is elevated, the bend on the second connecting rod engages the first connecting rod and elevates the first connecting rod, wherein the lower valve and the upper valve are both unseated and the toilet is fully flushed.

5,381,562

CONTOURED BASIN

Joan M. Holloway, Louisville, Ky., and Jeter L. Ridley, Moscow, Tenn., assignors to Vollrath Group, Inc., Gallaway, Tenn.

Filed Jan. 15, 1993, Ser. No. 3,965
Int. Cl.[6] A45D *19/06*
U.S. Cl. 4—516 37 Claims



1. A unitary contoured basin adapted to receive and support a selected body part of a person for isolated cleansing, treatment and the like comprising:

a generally open-top pan having a bottom and its interior surface and exterior surface defined by a substantially continuous sidewall;

the bottom comprising a lower base portion and an integral elevated platform portion, the elevated platform portion having a top surface which is dimensionally sized to receive and support the selected body part in direct contact thereon and above and away from contact with the lower base portion;

the sidewall comprising an inner sidewall portion, an outer sidewall portion and a top edge formed by joining the inner sidewall portion at its terminus to the outer sidewall portion, the inner sidewall portion extending from the bottom upwardly to a terminus at a height at least above that of the top surface of the elevated platform portion, the outer sidewall portion extending downwardly from the top edge and outwardly relative to the bottom, the outer sidewall portion terminating in a bottom edge and having a length sufficient to provide sideways stability to the basin;

the top edge having at least one seat defined by a notch in at least one portion thereof configured for receiving and supporting an associated member of the selected body part;

at least a section of the top edge is stepped downwardly to define at least one ledge, the inner sidewall portion extending downwardly from the ledge to the bottom is stepped inwardly and the opposing outer sidewall portion extending downwardly from the ledge to the bottom edge is stepped outwardly to define at least one stop means such that the basin can be nested within another like basin;

at least a section of the inner sidewall portion adjacent the lower base portion being in spaced relationship to the elevated platform portion such that the elevated platform portion, the section of the inner sidewall portion, and the lower base portion cooperatively define a channel adapted to receive and hold a liquid when liquid is introduced therein; and

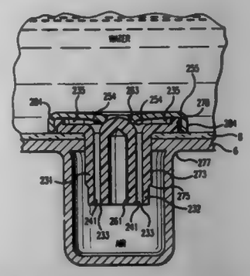
the height of each of the inner and outer sidewall portions relative to the interior depth of the basin determined from the top edge to the lower base portion being such that the selected body part can be supported within the interior of the basin by the elevated platform portion while its associated member is supported by the at least one seat without discomfort to the person.

5,381,563

CHECK VALVE, AND HYDROMASSAGING APPARATUS COMPRISING AT LEAST ONE OF SUCH A CHECK VALVE

Paul Isabelle, Québec, and Aldo Balatti, Saint-Augustin, both of Canada, assignors to Roger Carrier, Quebec, Canada

Filed Dec. 24, 1992, Ser. No. 996,569
Int. Cl.[6] A61H *33/02*
U.S. Cl. 4—541.5 17 Claims



1. In a check valve comprising a casing having opposite ends, and being provided with a longitudinal axis, at least one longitudinal, outer surface, an inlet at one end of said casing and an outlet at the opposite end of said casing defining a conduit extending from said inlet to said outlet, and pressure responsive means adapted to react to a differential of pressure existing between opposite faces of a membrane in order to either allow a fluid communication from the inlet to the outlet, or prevent any fluid communication from the outlet to the inlet, the improvement wherein said pressure responsive means comprising:

a flexible membrane made of elastomeric material, provided with an orifice, said membrane having an inner face and an outer face,

an element provided with a seat of sufficient size to completely cover the orifice,

means for connecting the element with the casing and positioning the seat in the vicinity of the outlet of the casing,

means for fastening the periphery of the membrane on the casing, to position the membrane across the outlet of the casing, to align the orifice with the seat and to position said orifice in such a way with respect to the seat that the elasticity of the membrane presses a portion thereof surrounding the orifice against the seat, and with the proviso that when the pressure applied by a first fluid on the outer face of the membrane plus the pressure resulting from the elasticity of the membrane that presses the portion of membrane surrounding the orifice against the seat, is higher than the pressure applied by a second fluid on the inner face of said membrane, then said portion of membrane surrounding the orifice is pressed against the seat closing the check valve to prevent any fluid communication from the outlet to the inlet: of the casing, and when the pressure applied by said second fluid on the inner face of the membrane is higher than the pressure applied by the first fluid against the outer face of the membrane plus the pressure resulting from the elasticity of the membrane that presses the portion of membrane surrounding the orifice against the seat, then the membrane is disformed and the portion thereof surrounding the orifice is moved away from the seat opening the check valve to allow a fluid communication from the inlet to the outlet of the casing; wherein the membrane is shaped to have, initially when no pressure is applied by the first and second fluids on the opposite faces of the membrane, a spherical radius of curvature, and the elasticity of the membrane presses the portion thereof surrounding the orifice, against the seat, and with the proviso that:

the portion of membrane surrounding the orifice is pressed against the seat by snap action to close the check valve; and

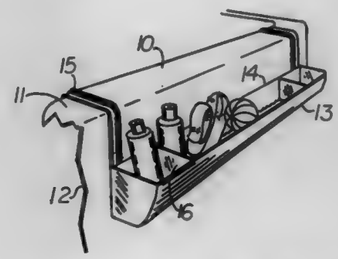
the portion of membrane surrounding the orifice is disformed and moved away from the seat until it is substantially co-planar with the periphery of the membrane, and because of the shape and elasticity of the membrane, the radius of curvature of the membrane is inverted by the pressure of the second fluid and the orifice is moved by snap action a substantial distance from the seat to open the check valve.

5,381,564

BATH AND SHOWER SPLASH GUARD

Gerard M. Carroll, 231 Gates Mill Dr., Lawrenceville, Ga. 30245

Filed Mar. 11, 1994, Ser. No. 212,033
Int. Cl.[6] A47K *3/00*
U.S. Cl. 4—559 6 Claims



1. A splash guard for collecting water spillage from a tub having a wall with an inside surface, an outside surface and a top edge, the device comprising:

(a) a flexible elongated mat having a top surface and a bottom surface;

(b) an elongated collection pan having a top opening the pan being attached to the top surface of the mat so that when the bottom surface of the mat is laid over the top edge of the wall, the top opening will be below the top edge of the tub wall on the outside surface such that the pan will collect splashing from the tub and drainage from the mat;
(c) means for directing water from the top surface to the top opening, the means being upstanding from the top surface and extending from the top opening a distance generally traversing the top edge, whereby water collected by the mat is prevented from flowing laterally and escaping the mat;
(d) an attachment means for attaching the device to the wall.

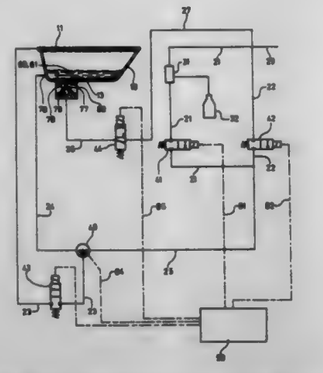
5,381,563
BACK REST FOR A LIFTING APPARATUS
Peter Schmidt, Argenbühl/Eisenharz, Germany, assignor to Schmidt & Leuhardt GmbH & Co. oHG, Pau, Germany
Filed Dec. 22, 1993, Ser. No. 173,647
Claims priority, application European Pat. Off., Dec. 29, 1992, 92122107
Int. Cl.[6] A47K *3/12*
U.S. Cl. 4—560.1 **5 Claims**



1. A back rest for mounting on a platform of a lifting apparatus insertable in a bathtub, comprising a foot part, a slab pivotably mounted on said foot part about a swivel axis, a chamber formed between the foot part and the slab, a piece of hose made of a flexible, substantially non-stretch material, clamp means for closing the ends of the hose, said piece of hose disposed horizontally in said chamber behind the slab and extending approximately parallel to the swivel axis, a projecting part extending from a rear end of said slab, at least a substantial portion of the length of the piece of hose having a bottom surface pressing against the foot part and a top surface pressing against said projecting part, the top surface pressing against said projecting part at a level above said swivel axis, and fitting means connected to the piece of hose for filling the piece of hose with pressurized water to adjust the inclination of the slab.

5,381,566
BATHTUBS
Leif Sonesson, Eslöv, and Jörgen Olsson, Malmö, both of Sweden, assignors to Arjo Hospital Equipment AB, Eslov, Sweden
PCT No. PCT/SE91/00713, § 371 Date Apr. 1, 1993, § 102(e) Date Apr. 1, 1993, PCT Pub. No. WO92/07497, PCT Pub. Date May 14, 1992,
PCT Filed Oct. 24, 1991, Ser. No. 30,500
Claims priority, application Sweden, Oct. 26, 1990, 9003430-7
Int. Cl.[6] A47K *3/02*; B08B *9/08*; E04H *4/16*
U.S. Cl. 4—591 **19 Claims**

1. Apparatus for cleaning a bathtub having an upper edge, an interior surface and a lower outlet opening, said apparatus comprising:
supply means for discharging liquid in proximity to the upper edge of the bathtub in the form of a thin sheet of liquid which flows along the interior surface of the bathtub towards the lower outlet opening of the bathtub,
a water tap for supply of water under pressure to the apparatus,
said bathtub having a passage separate from said lower outlet opening,
pump means for pumping liquid,
conduit means for conveying liquid from said water tap to said passage and to said supply means, said conduit means

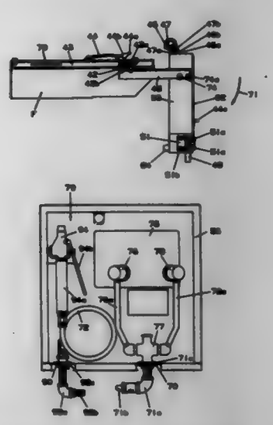


connecting said pump means to said supply means, said water tap and said passage in the bathtub,
valve means in said conduit means for controlling flow of liquid in said conduit means between said pump means, said supply means, said water tap and said passage in the bathtub,
means for introducing cleaning liquid to said conduit means for supply of cleaning liquid to said supply means and to said passage in the bathtub, and
control means connected to said valve means and to said pump means for selectively opening and closing said valve means and for selectively operating said pump means to achieve selective supply and extraction of water and cleaning liquid to and from said bathtub.

5,381,567
MOBILE EMERGENCY EYEWASH AND BODY SPLASH APPARATUS
Stephen F. Tanner, and Christopher J. Bollas, both of Houston, Tex., assignors to Encon Safety Products, Houston, Tex.
Filed Sep. 20, 1993, Ser. No. 123,288
Int. Cl.[6] B60R *15/02*
U.S. Cl. 4—620 **16 Claims**

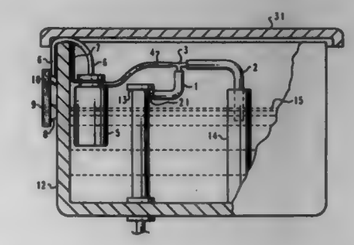
13. A mobile bodysplash apparatus transportable by a pickup truck having a bed, comprising:
(a) a first housing removably disposed on the bed of said pickup truck;
(b) a tank accessibly enclosed by the first housing;
(c) a second housing carried by a frame slidable and rotatably mounted to the first housing, said second housing being movable from a first traveling position at which the second housing is secured vertically above said first housing and a second operating position at which the second housing is horizontally spaced from said first housing;
(d) a means for locking the second housing in said second operating position;
(e) a drenching means in liquid communication with the tank for delivering water from the tank to the skin of a person,

wherein the drenching means is enclosable within the second housing, and



(f) a pump disposed in fluid communication with said tank and said drenching means.

5,381,568
INSTANT TISSUE MOISTENER
Herman S. Warkentin, 6021 Shelton St., Fort Worth, Tex. 76112
Filed Nov. 16, 1993, Ser. No. 152,419
Int. Cl.[6] E03D *9/00*
U.S. Cl. 4—661 **3 Claims**



1. An instant tissue moistening device for use with a toilet flush tank including an inlet valve having a toilet bowl refill outlet, said device comprising:
a reservoir adapted to be mounted in the flush tank, said reservoir including an inlet tube adapted to be connected to the toilet bowl refill outlet and an outlet tube, said outlet tube having a check valve positioned in the reservoir and permitting fluid flow from said reservoir through said outlet tube;
a dispenser adapted to be positioned external of the flush tank, said dispenser including a cavity having a fluid inlet connected to said outlet tube and a fluid outlet, said dispenser further including a diaphragm pump communicating with said fluid outlet, said pump having, in series, a diaphragm, a resilient member, and a check valve providing a pump outlet, such that movement of said resilient member to a first position causes fluid in said cavity to flow past said diaphragm and through said pump check valve, and return of said resilient member from said first position to the rest position causes said diaphragm and pump check valve to prevent fluid flow into said pump outlet thereby drawing fluid from said reservoir and into said cavity; and
an absorbent pad mounted over said pump check valve so as to absorb fluid exiting said pump for use in moistening tissue.

5,381,569
PATENT TURNING AND POSITIONING DEVICE AND METHOD
Bennett T. Church, 146 Dallas St., Nacogdoches, Tex. 75961
Filed Jan. 13, 1994, Ser. No. 181,391
Int. Cl.[6] A61G *7/053*
U.S. Cl. 5—81.1 **1 Claim**





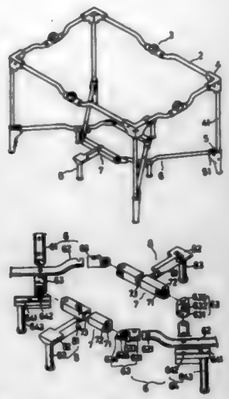
1. A method for moving a patient from a lying position on a bed to a sitting position on a bed comprising the steps of:
providing a base member and a support member, the support member being interconnected to the base member and being rotatable with respect to the base member;
providing a handle connected to the support member;
providing a low friction surface between the base member and the support member;
placing the support member under the hips of a patient with the base member supported by a bed while a patient is in a lying position on a bed; supporting a patient's upper body portion in an elevated position relative to bed, and
rotating the support member with respect to the base member using the handle, and moving a patient's legs off the surface of a bed, thereby moving a patient from a lying position to a sitting position on a bed.

5,381,570
COLLAPSIBLE BABY PLAYING BED
Ying-Hsiung Cheng, San Diego, Calif., assignor to Top Fortune Ltd., San Diego, Calif.
Filed Sep. 22, 1993, Ser. No. 124,467
Int. Cl.[6] A47D *7/00*
U.S. Cl. 5—99.1 **1 Claim**

1. A collapsible baby playing bed comprising:
an upper frame having four horizontal sides, each of said horizontal sides being formed of two rods connected with a bending joint and four corner joints, each of said corner joints pivotally connecting two neighboring horizontal sides and a vertical leg;
four bending joints, each bending joint including (1) a right half joint having a tubular portion for receiving a respective one of said two rods of a respective horizontal side of said upper frame, a round inner tooth portion and a central through hole formed in a side thereof, (2) a fitting block having a plurality of projecting teeth extending radially outward, said teeth engaging with inner teeth formed in said inner tooth portion of said right half joint, said fitting block having a central recess formed in a right side wall

thereof and two opposing sectorial recesses, (3) a spring disposed between said side of said right half joint and said fitting block, one end of said spring being disposed within said central recess, (4) a left half joint having a tubular portion for receiving a respective one of said two rods of said horizontal side of said upper frame, said left half joint having a round case portion for receiving a push cap in an open side thereof and two opposing sectorial projections formed on a right side wall thereof to engage said sectorial recesses of said fitting block, said left half joint further having a central hole formed through said right side wall and two through holes formed on opposing sides of said central hole for receiving two locking bolts extending from said push cap, said through holes each having a recessed step for matingly receiving a hook portion of each of said locking bolts to lockingly engage said push cap, (5) a bolt and a nut threadedly engaged to said bolt, said bolt passing through said central through hole of said right half joint and said central hole of said left half joint to couple each to the other, and (6) said push cap being provided to fit in an open side of said round case portion of said left half joint to thereby angularly adjust said left half joint relative to said right half joint;

said four corner joints being bent for 90 degrees and pivotally connected with two neighboring rods of said four



horizontal sides of said upper frame to form said upper frame into a rectangular shape, each of said corner joints being firmly connected with a respective one said four legs;

said four legs being vertically and firmly connected with said corner joints and supported by four leg bases on a base surface;

each of said four leg bases being connected to a bottom end of a respective one of said four leg bases to stand on the base surface;

a lower frame including two crossing rod units, two connecting rods, four middle joints, two locating bases and two movable bases;

each of said two crossing rod units including a straight rod and a curved rod crossingly and pivotally connected together, outer ends of said two straight rods and said two curved rods being pivotally connected with respective projecting plates of said four leg bases, inner ends of said straight rods and said curved rods being pivotally connected with said middle joints, said inner ends of each of said straight and curved rods being formed with slotted through openings for receiving bolts therein to couple said straight rods and said curved rods with said middle joints;

each of said four middle joints having a tubular portion for receipt within a respective one of said straight or curved rods and a lateral hole for receiving a bolt to couple said middle joint therewith, each of said middle joints having a linking portion provided with a front sloped locking surface and a lateral hole for a bolt to couple said middle joint with one said connecting rod;

said two locating bases being shaped as a T and having a curved-down surface in a horizontal portion for supporting said curved rod, each of said locating bases having a hole formed in said surface for receiving a bolt to couple said bases to said curved rods, each of said locating bases having a vertical portion defining its vertical portion;

said two connecting rods each having two horizontal grooves and a pivot hole formed in opposing ends thereof and an annular groove intermediate said opposing ends;

said two movable bases each having a C-shaped notch at one end and a flat plate portion formed on an opposing end of a horizontal portion thereof and a vertical portion defining a leg; and,

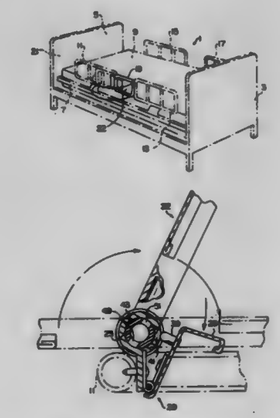
each said linking portion of each said middle joint fitting in said horizontal grooves of each said connecting rod and being pivotally connected together with a bolt, each said C-shaped notch of each said movable base movably engaging said annular groove of said connecting rod, a cloth pull slip provided to protrude through a bottom cloth of a bed cover and being bound on said two connecting rods, a bed mattress being laid on a bottom formed by said lower frame, and thereby forming a baby playing bed.

5,381,571

PIVOTABLE AND LOCKABLE HOSPITAL BED GUARD

Thomas S. Gabhart, P.O. Box 40, Hookerton, N.C. 28538

Filed Apr. 13, 1993, Ser. No. 46,224
Int. Cl.[6] A47C *21/08*; A61G *7/05*
U.S. Cl. 5—430 7 Claims



1. In a bed having at least one guard rail on a side of said bed and at least one gap adjacent to said guard rail, a gap closure apparatus comprising:

a closure having a first end, said first end further defining a rotation means, said rotation means being carried by said guard rail;

a first lock for securing said closure in a first locking position with the closure means adapted to be positioned adjacent to, generally parallel to, and coextensive with the guard rail, thereby maintaining said gap;

a second lock for securing said closure in a second locking position, closing said gap said first and said second locks being operated by a single handle. and

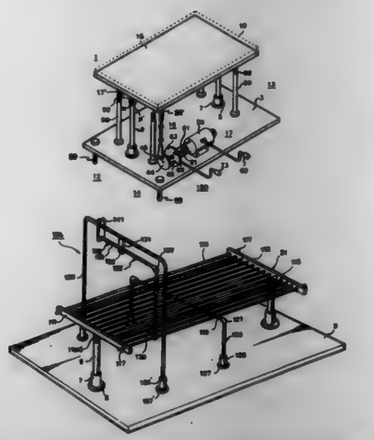
means for engaging said first and said second locking means.

5,381,572

TWIST ROLLING BED

Young-Go Park, Apt. #NA-305 Doug-A Apt.s No. 902 Daechi-Dong Kangnam-Ku, Seoul, Rep. of Korea 135-280

Filed Dec. 13, 1991, Ser. No. 806,214
Claims priority, application Rep. of Korea, Jan. 9, 1991, 180/91; Apr. 15, 1991, 5972/1991
Int. Cl.[6] A61G *7/057*; A47D *9/02*
U.S. Cl. 5—600 41 Claims



1. A rolling bed for use in home and hospital, especially for health care, comprising:

a bed frame made in a rectangular shape having an inclining device at one lateral side corner of said frame, spring housings perpendicularly attached to said bed frame and coil springs freely supported by said spring housings;

a support assembly having a support surface, two poststands attached at opposite central longitudinal ends of said bed frame, two posts inserted into corresponding ones of said poststands and extending perpendicularly to said bed frame, each of said posts having a distal end, each said distal end being rotatably connected to opposite ends of said support surface along a central longitudinal axis of said support surface;

said support assembly being disposed to support a mattress thereon with said energy saving device positioned underneath a plurality of corners of said support surface to engage corresponding ones of said corners as said support surface;

a vibrating system that reciprocates said support assembly and comprises a connecting rod assembly coupling said vibrating system to said support assembly, a motor crank assembly connected to drive said connecting rod assembly, and an electric control switch board;

said connecting rod assembly having a connecting rod flange connected to one of said corners of said support assembly and two side plates rotatably connecting said connecting rod flange to said support assembly, said side plates being firmly connected to a first rod bearing housing, said first rod bearing housing having a rod bearing perforated by a first rod bearing hole at one end positioned between two side plates, said connecting bolt having a second rod bearing housing perforated by a second rod bearing hole connected to said motor crank assembly;

said motor crank assembly comprising a circular crank plate with said crank arm connected thereto by a roller cam, and a motor shaft hole and crank flange, a motor shaft of a motor being inserted into said shaft hole and attached to said bed frame, said motor crank assembly having a motor power source plug coupled to said switch board, and a motor stop switch plate, said motor stop circular plate having a hole in its center for said motor shaft, said switch plate having a plurality of motor stop position switches, a plurality of stop position cam followers motivated by said roller cam, and a motor stop circular switch signal plug; and

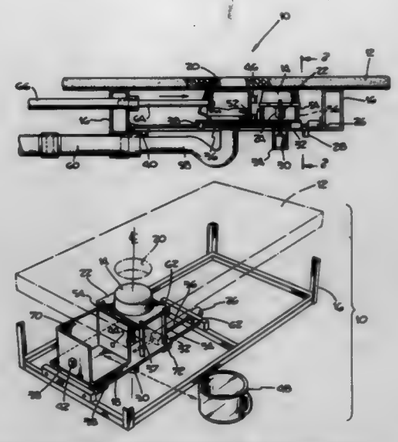
said electric control switch board having a power source plug, motor power source socket connectable to said motor power source plug, a switch board signal receiving socket connectable to said switch signal plug, a push-on push-off switch, a support stop position selector switch, a timer selector switch, an operation timer switch, stop timer switch, and a twenty-four hour timer switch comprising a plurality of time unit switches.

5,381,573

AUTOMATIC INVALID RELIEF FACILITY

Jossy MacSanz, 6815 ½ Fishburn Ave., Bell, Calif. 90201

PCT No. PCT/US91/09818, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993, PCT Pub. No. WO93/12751, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 27, 1991, Ser. No. 961,899
Int. Cl.[6] A61G *7/02*
U.S. Cl. 5—604 12 Claims



10. An automatic invalid relief facility comprising:

a mattress having a central annular aperture;

a removable waste receptacle registrable with said central annular aperture for receiving body waste deposits from a user;

a vertically movable plug of such dimensions as to be inserted and to fit snugly into said central annular aperture;

a horizontally movable carriage for moving said waste receptacle and said plug into and out of registry with said central annular aperture;

horizontal motive means for moving said horizontally movable carriage; and

vertical motive means for moving said vertically movable plug into and out of said central annular aperture when said vertically movable plug has been placed in registry therewith by said horizontal motive means.

5,381,574

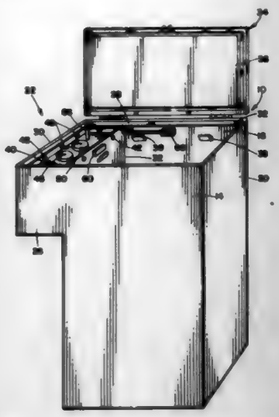
METHOD AND APPARATUS FOR PRE-TREATING SOILED FABRIC ARTICLES PRIOR TO LAUNDERING

Douglas J. VanPlew, 7948 Orion Path, Liverpool, N.Y. 13090

Filed Jul. 16, 1993, Ser. No. 92,472
Int. Cl.[6] D06B *1/02*, *17/00*
U.S. Cl. 8—149.2 13 Claims

1. A method of pre-treating soiled fabric articles to enhance

cleaning thereof upon subsequent laundering comprising, placing a quantity of soiled fabric articles in a static container having an airtight cover, introducing at least one of a vapor



and a liquid into said container to moisturize said fabric articles, closing said container with said cover, and holding said quantity of articles static in said container before laundering.

5,381,575

BRIDGE DOCKING STRUCTURE FOR AIRCRAFT

Cyril J. Silberman, 4048 Lakeland Ave., N., Minneapolis, Minn. 55422

Continuation-in-part of Ser. No. 640,982, Jan. 14, 1991. This application Nov. 1, 1991, Ser. No. 786,760
Int. Cl.[6] F01D *1/00*; E04G *1/00*
U.S. Cl. 14—69.5 12 Claims



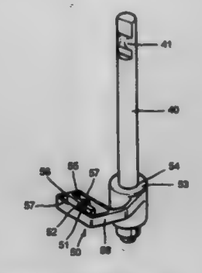
1. A docking facility for aircraft maintenance and repair, comprising:
a floor;
a guide rail that is fixed with respect to said floor;
a first column supported by said floor;
a second column supported by said floor; and
a walkway system supported at a first location by said first column and at a second location by said second column, said walkway being constructed and arranged so as to be positionable to extend lengthwise along the fuselage of an aircraft to provide access to the fuselage for maintenance and repair purposes;
wherein at least one of said first and second columns is movable for moving said walkway system to a retracted position away from an intended position of an aircraft while an aircraft is being moved into or out of docking position, said at least one movable column comprising means for movably mounting said one column for movement along said rail, said mounting means engaging said rail in a manner so as to prevent tipping of said movable column during movement, whereby docking of an aircraft of the facility can be accomplished safely and effectively.

5,381,576

ELECTRICAL TOOTHBRUSH

Dong W. Hwang, 3-109 Haemaji Apartment, 1-209 Songhyun-dong, Dalsu-ku, Daegu-shi, Rep. of Korea

Filed Mar. 17, 1994, Ser. No. 214,199
Int. Cl.[6] A61C *17/34*
U.S. Cl. 15—22.1 2 Claims



1. In an electrical toothbrush having,
a housing composed of an upper housing portion and a lower housing portion which are interconnected mutually,
an interior space defined by the housing,
an electric motor mounted in the housing for rotating an eccentric pin, the motor being connected from a battery, and switched on and off by an external switch,
a reciprocating vibratory toothbrush holding shaft mounted longitudinally in the upper housing being adapted for attachment of a toothbrush thereon, the holding shaft being drivable for oscillation about its longitudinal axis, the toothbrush having bristles affixed to the upper end thereof and being interchangeably connected to the upper end of the holding shaft,
means for transforming the rotary motion of the eccentric pin into a reciprocating vibratory motion of the holding shaft which carries the toothbrush,
characterized in that the motion transformer comprises:
a cylindrical member and an elastic deformable member connected by an integral lever member,
the motion transformer being formed from a plastic material having toughness and flexibility,
an intermediate portion having a central bore for receiving the eccentric pin and an extension to which a shorter transverse wall is connected, and
a deformable film wall portion having one end connected to the integral lever member and the other end connected so the shorter transverse wall.

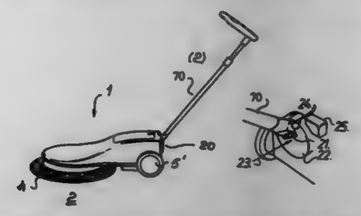
5,381,577

MEANS FOR CONNECTING A UNIT FOR TREATING FLOOR SURFACES WITH A ROD LIKE MEMBER INTENDED FOR GUIDING SAID UNIT

Bo V. Lilja, Loreasviksvägen 14, 183 63 Täby, Sweden

PCT No. PCT/SE91/00574, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO92/03962, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 3, 1991, Ser. No. 979,856
Claims priority, application Sweden, Sep. 6, 1990, 90 02842-4
Int. Cl.[6] A47L *11/40*
U.S. Cl. 15—49.1 5 Claims

1. In a floor-treating unit having a pair of wheels and a floor-treating element, a coupling device for coupling an elongated rod to the floor-treating unit for allowing the floor-treating unit to be guided, comprising a first coupling part connected to said elongated rod at a hinge axis and a second coupling part rotatably mounted on the floor-treating unit for rotatable movement about a generally horizontal rotational axis which extends between the wheels and over the floor-treating element, the first coupling pan being movably positioned in a slot in the second coupling part for movement



between a first positional setting in which said second coupling part is locked against rotational movement, a second positional setting in which the rod is movable about said hinge axis to unlock the second coupling part and permit rotational movement of the second coupling part about the rotational axis, and a third positional setting in which the rod is movable about said hinge axis for being lowered over the floor-treating unit in a stored position.

5,381,578

POLISHER WITH RECTANGULAR PAD AND HANDLE ASSEMBLY

Joseph M. Armbraster, 2700 NE. 47 St., Lighthouse Point, Fla. 33064

Filed Dec. 9, 1992, Ser. No. 987,699
Int. Cl.[6] A47L *11/284*
U.S. Cl. 15—98 15 Claims



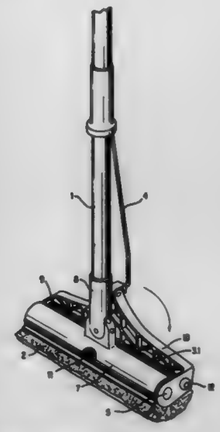
1. A polisher comprising a power head having an output, a pad assembly connected to said power head output for movement in a single plane, said pad assembly including a plate having straight, opposed, generally parallel, peripheral edge portions, and a pad mounted on said plate with the pad having peripheral edge portions generally aligned with the peripheral edge portions of said plate, means detachably connecting the pad to said plate, and handle means operatively associated with the power head to enable manipulation of the power head and pad assembly when the pad assembly is in contact with a worksurface, said power head including a power cord for supplying electrical energy to the power head, said handle means including an elongated member having hand grip means adjacent one end thereof and an offset U-shaped yoke at the other end, means pivotally connecting the yoke to said power head, said means connecting the yoke to the power head including retractable pivot pin means mounted on said yoke, said powerhead including a housing having opposed, aligned sockets therein for receiving said pivot pin means, said pivot pin means including a pair of aligned and opposed spring biased pins mounted on said yoke with the pins being biased into the sockets, and means on each of the pins forming a handle to enable the pins to be retracted for removal from the sockets thereby enabling the handle means including the hand grip means and yoke to be separated from the power head housing.

5,381,579

SURFACE-WIPING DEVICE

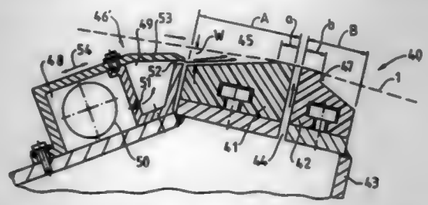
Francesco Sartori, Bologna, Italy, assignor to Firma Carl Freudenberg, Weinheim, Germany

Filed Mar. 1, 1993, Ser. No. 24,706
Claims priority, application Germany, Feb. 29, 1992, 4206376
Int. Cl.[6] A47L *13/144*
U.S. Cl. 15—119.2 16 Claims



1. A surface-wiping device, comprising:
a utensil handle;
a holder that is connected to the utensil handle;
a convex adhesively backed surface that is connected to the utensil handle via the holder;
a shaft located between said holder and said adheaively backed surface;
a compressible wiper member consisting of an absorbent material that is affixed to the convex adhesive surface; and
expressing means for removing fluid from the compressible wiper member, said expressing means being manipulable by a rod assembly secured to the utensil handle and further including an expression roller that is rotatable about an axis of rotation which spans the wiper member and said holder.

5,381,580
DEVICE FOR CLEANING A PAPER MACHINE WIRE WEB
Gerhard Kottschke, Heidenheim, and Otmar Kolb, Zang, both of Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany
Continuation of Ser. No. 920,327, filed as PCT/EP91/01129, Jun. 19, 1991, abandoned.
This application Mar. 2, 1994, Ser. No. 204,891
Claims priority, application Germany, Jun. 6, 1990, 4018074; Jan. 18, 1991, 4101350
Int. Cl.[6] F26B *13/28*
U.S. Cl. 15—302 **18 Claims**



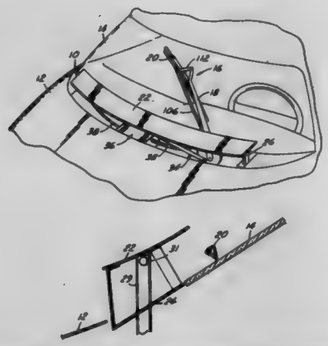
1. A device for cleaning a wire web, the wire web supporting a fiber material web and defining a running direction, said device comprising:
two elongated members disposed parallel to each other and extending cross-wise to the running direction of the wire web, said two elongated members comprising an elongated approach member and an elongated departure member, said elongated approach member and said elongated departure member each having a wire guide surface contacting the wire web;
a blowing slot disposed between said elongated approach member and said elongated departure member, said blowing slot adapted to be connected to an air supply;
a wedge-shaped space defined by and between said elongated approach member and the wire web, said wedge-shaped space tapering in the running direction of the wire web; and
a water spray system, said water spray system adapted to spray water into said wedge-shaped space.

5,381,581
SCRATCH PROOF SQUEEGEE CLEANING APPARATUS
Soren Samuelsson, P.O. Box 1312, Palm Desert, Calif. 92260
Filed Apr. 18, 1994, Ser. No. 229,017
Int. Cl.[6] A47L *1/06*
U.S. Cl. 15—245 **13 Claims**



1. A squeegee blade holder comprising;
an elongated channel shaped cross rail constructed of hard material terminating in opposite ends and formed with a central blade receiving channel extending along the length of said cross rail and including at each opposite ends, open ended retention sockets;
a handle fitting projecting laterally in one direction from said rail; and
a pair of cushioning end caps each formed with retention fingers retained in the respective sockets, said end caps each further including a relatively soft bumper covering a respective one of said ends of said cross rail to protect adjacent surfaces against direct contact with said opposite ends.

5,381,582
COWL AND WINDHSIELD WIPER ASSEMBLY
James E. Lee, Davisburg, and Douglas A. Street, Royal Oak, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Jan. 10, 1994, Ser. No. 179,283
Int. Cl.[6] B60S *1/04, 1/06*
U.S. Cl. 15—250.19 **6 Claims**

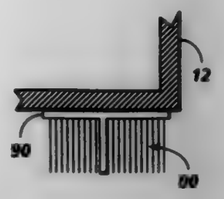


1. For use between a vehicle hood and windshield, a cowl and windshield wiper assembly comprising an enclosure having a top access door defining a surface adapted to be flush with a surface of the hood under one operative position of the enclosure, and a bottom panel adapted to effect an extension of a lower edge of the windshield in a second operative position of the enclosure, a windshield wiper assembly including on elongate wiper arm pivotally mounted in said enclosure and a wiper blade pivotally connected to one end of said wiper arm and seated on said bottom panel for vertical movement therewith, a plurality of vertically oriented elongated fixed brackets, and a plurality of slide members operatively connected to said enclosure and slidably mounted in respective fixed brackets for vertically moving and guiding of said enclosure, and actuator means for vertically raising and lowering said slide members, wherein said actuator means includes an electric motor, a plate member operatively connected to said electric motor and adapted to be moved thereby, a plurality of lift unit, each said unit supporting one of said brackets, and a plurality of cables coupled with and extending from said plate member to respective lift units and mechanically coupled thereat with said slide members to lift and lower said slide members.

5,381,583
HIGH VELOCITY AIR AND STATIONARY DISTURBER CLEANER
Bruce E. Thayer, Webster; Samuel P. Mordenga, Rochester, both of N.Y., and Billy D. Walcott, Ranchos de Taos, N. Mex., assignors to Xerox Corporation, Stamford, N.Y.
Division of Ser. No. 805,762, Dec. 12, 1991, Pat. No. 5,291,628.
This application Aug. 4, 1993, Ser. No. 102,015
Int. Cl.[6] A47L *5/34*
U.S. Cl. 15—308 **1 Claim**

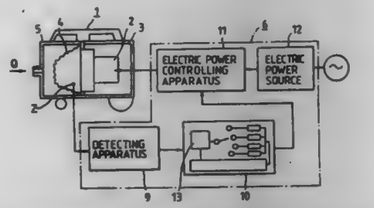
1. An apparatus for cleaning particles from a surface, comprising:
a housing, having a vacuum port;
vacuum means, connected to said housing, for generating air flow in a direction substantially tangential to the surface at a velocity sufficient to disturb a layer of particles at the boundary between the particles and the surface to remove particles, therefrom; and

a pair of disturber brushes, each of said pair of disturber brushes including a multiplicity of substantially flexible fibers, one of said pair of disturber brushes being located on one side of the vacuum port of said housing and the



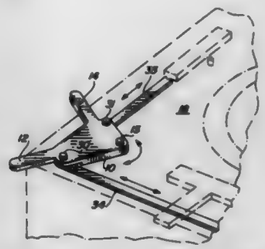
other of said pair of disturber brushes being located on the other side of the vacuum port of said housing, and a plastic film interposed in the fibers for reducing air flow therethrough.

5,381,584
VACUUM CLEANER
Fumio Jyoraku; Hisao Suka; Yoshitaro Ishii; Hisanori Toyoshima; Mitsuhisa Kawamata, all of Hitachi; Haruo Koharagi, Juuou; Kazuo Tahara, Hitachi; Tanehiro Endo, Hitachiohta; Kunio Miyashita, Hitachi; Toshiyuki Ajima, Hitachi; Takeshi Abe, Hitachi, and Atusi Hosokawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 885,682, May 19, 1992, abandoned, which is a continuation of Ser. No. 595,844, Oct. 11, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 145,729
Claims priority, application Japan, Oct. 18, 1989, 1-268948; Feb. 3, 1990, 2-24689; Mar. 2, 1990, 2-24688; Mar. 16, 1990, 2-66632
Int. Cl.[6] A47L *9/28*
U.S. Cl. 15—319 **18 Claims**



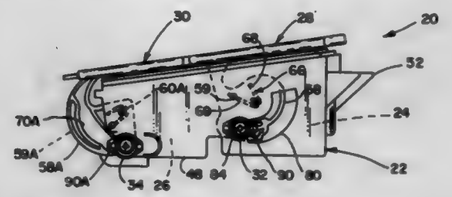
1. A vacuum cleaner useable with a suction nozzle selected from among various suction nozzles having different air flow characteristics, comprising a detecting apparatus for detecting the magnitude of fluctuations of at least one of vacuum static pressure in the cleaner created by the operation of an electric driver blower motor of the vacuum cleaner, an air flow rate in the cleaner as a result of operation of said blower motor and an electric current of said electric driven blower motor, which fluctuations are dependent upon the selected nozzle of said various suction nozzles utilized on the vacuum cleaner, and a controlling apparatus for controlling the operation of said electric driven blower motor in accordance with the magnitude of the fluctuations detected by said detecting apparatus so that said blower motor is operated with a suction performance characteristic in dependence upon the particular nozzle selected, and said controlling apparatus being adapted to selectively increase the suction performance characteristic when the nozzle is in use and decrease the suction performance characteristic when the nozzle is not applied to a surface being cleaned.

5,381,585
DOCKING HANDLE
David P. Olson, Tempe; Ed K. Tafoya, and Craig C. Staab, both of Mesa, all of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Jul. 23, 1993, Ser. No. 96,589
Int. Cl.[6] E05B *1/00, 7/00*
U.S. Cl. 16—112 **17 Claims**



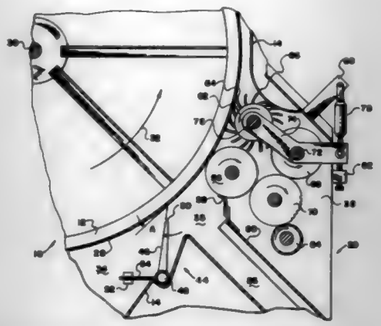
1. A docking handle apparatus for providing orthogonal movement of first and second levers including in combination:
a main body portion having three pivot points arranged thereon in a triangular pattern, with one of said pivot points adapted for pivotal attachment to a support surface and the others of said pivot points adapted for pivotal attachment to said first and second levers; and
a first handle integrally formed as a part of said main body portion and extend outwardly therefrom substantially parallel to a line between two of said pivot points.

5,381,586
LATCH
Michael D. Busscher, Holland, and Rick A. Anderson, Grand Haven, both of Mich., assignors to Prince Corporation, Holland, Mich.
Filed Jan. 22, 1993, Ser. No. 8,613
Int. Cl.[6] E05F *1/08*
U.S. Cl. 16—297 **27 Claims**



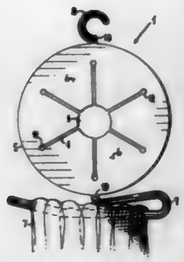
1. A vehicle component comprising:
a housing;
a cover mounted to said housing and movable between an open position and a closed position;
latch means for releasably latching said cover in the closed position, said latch means being adapted to unlatch said cover when said cover is depressed in a first direction; and
mounting means for mounting said latch means, said mounting means holding said latch means so that said latch means moves to a release position to release said cover in the event a predetermined opening force large enough to damage said latch means is applied to said cover in a second direction opposite said first direction without first depressing said cover, said mounting means including a shaft and said latch means including a latch member operably mounted on said shaft for rotational movement during normal operation of said latch means and also operably mounted on said shaft for axial movement in the event said predetermined opening force is applied in said second direction.

5,381,587
COTTON GIN CONDENSER WITH HUMIDIFICATION AND BATT COMPRESSION
Arvel L. Vandergriff, Visalia, Calif., assignor to Consolidated Cotton Gin Corporation, Lubbock, Tex.
Filed Nov. 15, 1993, Ser. No. 152,820
Int. Cl.[6] D01B *1/06*; B01D *46/04*
U.S. Cl. 19—48 R **19 Claims**



1. The procedure of operating a cotton gin having
a) a condenser drum in
b) a housing connected by
c) a lint slide to
d) a baling press, and
e) rotation means for rotating the drum in an operating direction;
wherein the improved method comprises the following steps:
f) dividing the housing into four segments, then by
g) rotating the drum
i) depositing a lint batt upon the drum in a lint input segment, then
ii) forcing humid air through the batt thereby adding moisture to the batt in a humid air segment,
iii) doffing the moisturized batt from the drum in a doffing segment, and thereafter
iv) drying the drum by warm dry air in a dry air segment; and
h) restricting air flow from one segment to another segment.

5,381,588
RETAINING AND DISPLAY DEVICE
Jeffrey A. Nelson, 480 S. 9th St., Apartment E205, Quakertown, Pa. 18951
Filed May 11, 1993, Ser. No. 59,551
Int. Cl.[6] B65D *77/00*
U.S. Cl. 24—30.5 S **7 Claims**



1. A device, for retaining items of clothing together during the washing or drying thereof, comprising:
a disc of sheet material having a central opening;
a plurality of slots extending radially outwardly from said opening towards the other periphery of said disc; and,
a means hook member to hang from a display rod, the hook member being formed of plastic integrally with the disc and scored with a groove close to said other periphery of the disc, wherein the hook member is easily detachable, which permits a retail purchaser of the device to permanently remove the hook member after purchase to use the disc for retaining items of clothing together during washing or drying.

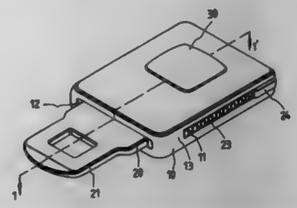
5,381,589
LOAD SECURING ARRANGEMENT
John G. Bailey, P.O. Box 192, Burnt Ranch, Calif. 95527
Filed Sep. 27, 1993, Ser. No. 127,436
Int. Cl.[6] F16G *11/00*
U.S. Cl. 24—129 R **13 Claims**



1. A load securing arrangement, comprising:
(a) an elongated flexible rope having a plurality of loops formed therein, each of said loop having generally U-shaped head portion and a pair of side-by-side tail portions extending from said head portion; and
(b) a plurality of couplers, each of said couplers including an eye portion having first and second opposite sides and defining an opening through said eye portion from said first side to said second side thereof, each of said couplers also having a hook portion rigidly attached to said eye portion and extending adjacent to and outwardly from said first side thereof;
(c) each of said loops of said rope being in the form of a cinched knot detachably attached to said eye portion of a separate one of said couplers, said cinched knot having a pair of half hitches extending completely around a segment of said eye portion of said coupler and through said opening thereof, said half hitches being formed by said tail portions of said loop extending through said opening of said eye portion and around said segment of said eye portion from said first side to and around said second opposite side thereof and by said U-shaped head portion of said loop overlying said tail portions thereof adjacent to said segment and said first side of said eye portion and extending therefrom around said segment of said eye portion to said second side thereof to where said head portion connects with said tail portions of said loop.

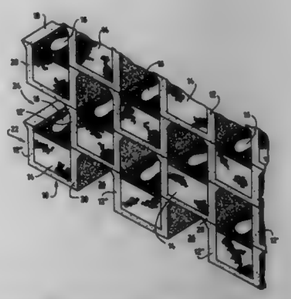
5,381,590
CUSHIONING DEVICE OF CAR SAFETY BELT
Huei-Yu Liou, No. 11, Gaann-Tour Lane, Nan-Gang Tsuen, Gwo-Shing Shiang, Nan-Tour Shiann, Taiwan, Prov. of China, and Haw-Yaw Shy, No. 762, Sec. 1, Jong-Hwa Rd., Taidon City, Taidon Shiann, Taiwan, Prov. of China
Filed May 5, 1993, Ser. No. 56,467
Int. Cl.[6] A44B *11/25*
U.S. Cl. 24—602 **5 Claims**

1. A cushioning device for attachment to the strap retainer of a car safety belt to absorb kinetic energy of a car occupant using the safety belt, the cushioning device comprising:
a) a female seat body including a receiving space therein, a front end and a rear end, an insertion slot at the front end and an arresting portion disposed at each of two interior sides of the receiving space;
b) an insertion plate including a front end and a rear end, the front end forming a coupling portion corresponding in configuration to a strap retainer of a car safety belt, a U-shaped insertion space at the rear end for receiving a strap retainer therein, and two serrated sides, each serrated side including a plurality of serrations extending between the front and rear ends of the plate;
c) means for securing the insertion plate and the strap retainer within the receiving space of the seat body, with the coupling portion of the insertion plate extending outwardly from the insertion slot and a first serration of each serrated side against an arresting portion; and



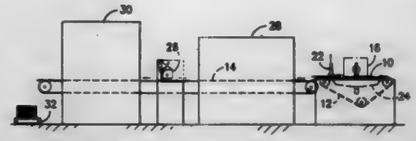
d) the serrations of each serrated side having a lower destruction strength than the arresting portions to permit the insertion plate to be pulled outwardly through the insertion slot of the female body upon application of a predetermined force on the car safety belt for sequentially rupturing the serrations and lengthening the safety belt, thereby absorbing the kinetic energy of the occupant.

5,381,591
MULTI-TIER BURIAL SYSTEM
Uri Ponger, 4 Tel-Hai St., Jerusalem, and Tuvia Sagiv, 23 Shtand St., Tel Aviv, both of Israel
Filed Oct. 13, 1992, Ser. No. 959,734
Claims priority, application Israel, Nov. 8, 1991, 100012; Jun. 30, 1992, 102373
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—35 **10 Claims**



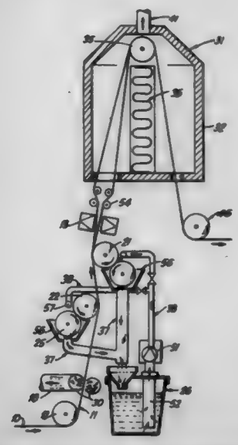
1. A multi-tier burial system comprising a plurality of pre-cast elements, each of said elements having a bottom, side walls, and front and back end walls, a first plurality of said elements being disposed to form a first tier defining a plurality of spaced-apart burial niches, and a second plurality of said elements being disposed to form a second tier supported by said first tier, also defining a plurality of spaced-apart burial niches, the elements in said second tier being horizontally staggered in relation to the elements in said first tier, and at least the front end walls of said elements in said first and second tiers being substantially in the same vertical plane with each other, said pre-cast elements being filled with earth to a predetermined depth.

5,381,592
METHOD TO REFURBISH CARPET TILES
Kenneth B. Higgins, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed Oct. 1, 1992, Ser. No. 955,325
Int. Cl.[6] D06B *1/02*; D06H *7/00*
U.S. Cl. 28—100 **4 Claims**



1. Method to refurbish cut or loop pile carpet products such as a carpet tile comprising the steps of: providing a source of a high pressure cleaning liquid, supplying a cut pile carpet tile product to be cleaned under the source of cleaning liquid, projecting a stream of cleaning liquid against the pile product at a pressure in the range of 200–2000 p.s.i.g. to untwist the yarn in the cut pile carpet tile product and to clean dirt therefrom, allowing the product to dry after cleaning thereof and shearing the untwisted yarn to provide a carpet tile with a uniform surface.

5,381,593
APPARATUS FOR SIZING WARPS MADE OF TEXTILE THREADS
Joachim Bloch, Schopfheim, Germany, assignor to Chimitex Cellchemie GmbH, Schopfheim, Germany
Division of Ser. No. 891,899, Jun. 1, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 144,414
Claims priority, application Germany, Jun. 1, 1991, 4118076; Feb. 24, 1992, 4205515
Int. Cl.[6] D06B *21/00, 1/14, 19/00, 15/08*
U.S. Cl. 28—178 **9 Claims**



1. An apparatus for sizing warps made of textile threads by application of a liquor size, said apparatus comprising:
means for sizing opposite sides of a warp and including first and second size application rollers, arranged on opposite sides of a warp path in a spaced relationship in a travel direction of the warp, for applying a size to the opposite sides of the warp;
drive means for moving the warp past said first and second size application rollers;
first guide means located upstream of said sizing means for advancing the warp tangentially to said first size applica-

tion roller, said second size application roller being so arranged relative to said first size application roller that the warp is also advanced tangentially to said second size application roller;

second guide means located downstream of said sizing means for advancing the warp to a take-up station;

means located downstream of said sizing means and upstream of said second guide means for drying the size on the opposite sides of the warp;

wherein said first guide means comprises an inlet guide roller, and said second guide means comprises an outlet guide roller; and

wherein said apparatus further comprises at least one device for cleaning the opposite sides of the warp and located downstream of said inlet guide roller and upstream of said sizing means.

5,381,594

MACHINE FOR THE AUTOMATIC DRAWING-IN OF WARP THREADS HAVING WARP BEAM TRUCK

Marcello Piccirillo, Sargans, and Paul Beutler, Chur, both of Switzerland, assignors to Zellweger Uster AG, Uster, Switzerland

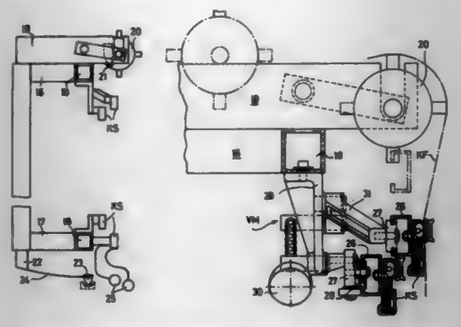
PCT No. PCT/CH91/00218, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/07127, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 22, 1991, Ser. No. 862,753

Claims priority, application Switzerland, Oct. 23, 1990, 3384/90-0

Int. Cl.[6] B65H *1/00*

U.S. Cl. 28—208 **19 Claims**



1. System for automatically drawing-in warp threads from a warp beam into a harness of a weaving machine, comprising a warp-beam truck that includes a warp beam, a drawing-in machine for drawing-in warp threads, a drawing-in frame for clamping a warp-thread layer, the drawing-in frame being detachably mounted on a lifting device, the drawing-in frame being threaded up with warp threads and thereafter transported together with the lifting device and the warp-beam truck to a mounting stand of the drawing-in machine for drawing-in of the warp threads, the drawing-in frame being transferrable from the lifting device to the mounting stand before drawing-in of the warp threads, and means for moving the drawing-in frame along the mounting stand separately from the lifting device and the warp-beam truck.

5,381,595

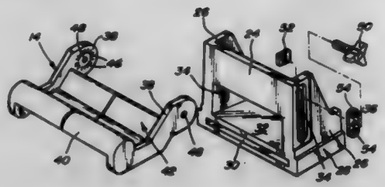
PLATE JOINER

James A. Keith, Jr., Pickens; William S. Bellew, Greer, and James R. Sistare, Sr., Pickens, all of S.C., assignors to Ryobi Motor Products, Corp, Easley, S.C.

Continuation-in-part of Ser. No. 54,640, Apr. 27, 1993, Pat. No. 5,291,928. This application Sep. 3, 1993, Ser. No. 116,285

Int. Cl.[6] B23Q *3/00*; B27M *1/00*

U.S. Cl. 29—467 **9 Claims**



1. An adjustable fence for orienting a plate joiner having a body and a rotating generally planar cutter to cut an arcuate slot in a workpiece, the fence comprising:

a base shiftably affixed to the plate joiner body, the base having a planar surface forming a first fence oriented generally perpendicular to the plane of the cutter and the base having a guideway parallel to the first fence;

a handle movably adjustably affixed to the base, the handle having a grip portion adapted to cooperate with a hand of an operator, and a planar surface forming a second fence forming an angle relative to the first fence, the handle cooperating with the base guideway enabling the second fence to be adjusted along a guideway axis parallel to the first fence relative to the planar cutter, said handle being pivotal about a transverse axis parallel to the first and second fences to vary the angle of the second fence relative to the first fence; and

fastening means for selectively fastening the handle to the base in a desired location;

said fastening means including first and second fastening members which are non-rotatably secured to the respective base and handle, said first fastening member being translatably movable within the guideway and the second fastening member being secured to the handle, said first and second fastening members having elements which are selectively and cooperably fastenable together to prevent relative rotation between the first and second fastening members thereby preventing relative rotational movement between the handle and the base.

5,381,596

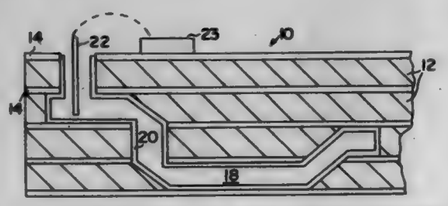
APPARATUS AND METHOD OF MANUFACTURING A 3-DIMENSIONAL WAVEGUIDE

John F. Ferro, Hyattsville, Md., assignor to E-Systems, Inc., Dallas, Tex.

Filed Feb. 23, 1993, Ser. No. 21,041

Int. Cl.[6] H01P *11/00*

U.S. Cl. 29—600 **12 Claims**



1. A method of making a waveguide inside a printed wiring board that has plural dielectric layers, each of the dielectric layers having an electrically conductive layer on a first surface thereof forming a portion of a circuit for the printed wiring board, the method comprising the steps of:

a. identifying a path for a waveguide cavity on a second surface of selected ones of the plural dielectric layers;

b. evacuating the waveguide cavity along the identified path;

c. joining said plural dielectric layers so that the evacuated waveguide cavity is covered on at least one side by an electrically conductive layer from an adjoining one of the dielectric layers;

d. injecting an electroless copper plating solution into the covered waveguide cavity so that the interior of the cavity is electroless copper plated;

e. electroplating over the electroless copper plating to form electrically conductive walls for the waveguide cavity; and

f. connecting the waveguide to the circuit for the printed wiring board.

5,381,597

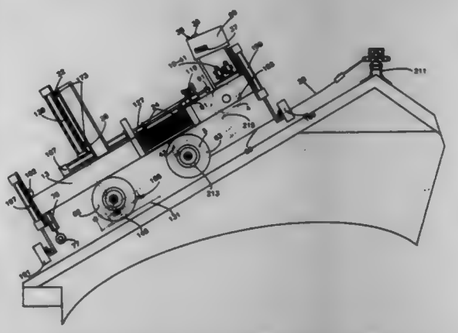
AUTOMATIC ROBOT ROOFER FOR INSTALLATION OF SHINGLES

Jesse F. Petrove, 43121 Donley, Sterling Hts., Mich. 48314

Filed May 4, 1993, Ser. No. 57,109

Int. Cl.[6] B23Q *15/00*

U.S. Cl. 29—714 **5 Claims**



1. An apparatus for automatically applying shingles to a roof, said apparatus comprising:

(a) a primary main frame comprising

a set of idler wheels and a first set of drive wheels mounted on said primary main frame for vertical rolling movement;

a second set of drive wheels mounted on said primary main frame for horizontal rolling movement;

means to engage said set of idler wheels and said first set of drive wheels with said roof to permit vertical movement of said primary main frame thereover;

means to engage said second set of drive wheels with said roof for horizontal movement of said primary main frame thereover;

a hopper for holding a stacked supply of shingles therein;

means for delivering the top shingle from said stacked supply of shingles from the hopper to the surface of the roof;

means for fastening said shingles to said roof, said means for fastening including a supply of fasteners;

means for sensing the supply of shingles in said hopper;

means for sensing the supply of fasteners in said fastening means;

means for sensing the distance traveled by said primary main frame as it moves vertically over said roof;

means for sensing the distance traveled by said primary main frame as it moves horizontally over said roof;

means for sensing the placement of said top shingle relative to said roof surface after delivery thereto by said delivering means; and

a microprocessing system for controlling each engaging means and all movements of said primary main frame over said roof based upon conditions sensed by each sensing means; and

(b) means detachably connected to said roof and fastened to said primary main frame for supporting said primary main frame as it moves over said roof;

wherein, during a cycle of operation of said apparatus, said microprocessing system responds to signals generated by each sensing means to control said primary main frame such that said primary main frame starts at the bottom of said roof, applies shingles one at a time to said roof as said primary main frame moves vertically upward towards the top of said roof, stops at the top of said roof, moves horizontally to the position at which the next vertical row of shingles is to be applied to said roof, moves vertically downward towards the bottom of said roof, and stops at the bottom of said roof in preparation for applying the next vertical row of shingles thereto.

5,381,598

METHOD OF PREPARING A LARGE-CURRENT PRINTED CIRCUIT BOARD

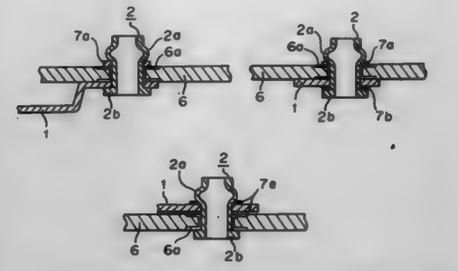
Einosuke Adachi; Yasumichi Hatanaka; Kiroyuki Nakajima, all of Amagasaki, and Satoru Hayashi, Nagoya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 924,142, Aug. 3, 1992, Pat. No. 5,263,247. This application Jun. 4, 1993, Ser. No. 72,154

Claims priority, application Japan, Oct. 23, 1991, 3-275146

Int. Cl.[6] H01R *9/09, 4/02*; H05K *3/34*

U.S. Cl. 29—845 **3 Claims**



1. A method of preparing a large-current printed circuit board and in a through-hole formed in a busbar which comprises the steps of:

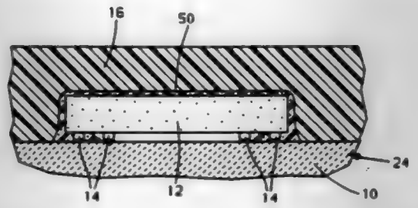
printing a cream solder on a land portion of the printed circuit board,

inserting a fastener with a bottom flange in a through-hole formed in the printed circuit board so that the bottom flange is on one side of the board and an end of the fastener is on the other side of the board and the busbar, the busbar being intermediate the printed circuit board and the bottom flange, wherein the land portion with the cream solder surrounds the through-hole and is on the other side of the board so that the cream solder is intermediate the board and the end of the fastener,

forming a curved radial extension on the end of the fastener by caulking, and

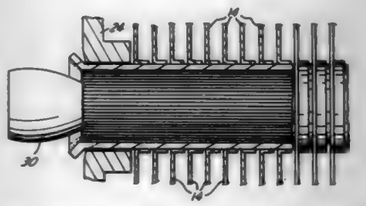
melting the cream solder so that the fastener, the board, and the busbar are integrally bonded.

5,381,599
LIQUID CRYSTAL POLYMER ENCAPSULATED ELECTRONIC DEVICES AND METHODS OF MAKING THE SAME
Gregory L. Hall, Azle, Tex., assignor to Delco Electronics Corp.
Filed Apr. 12, 1993, Ser. No. 46,809
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—856 **4 Claims**



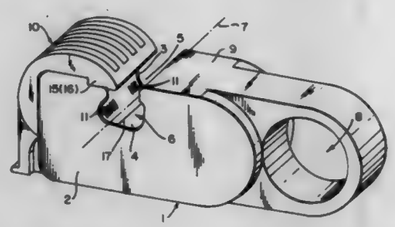
1. A process of encapsulating an electronic device comprising:
providing a device having ceramic substrate and a hybrid circuit formed thereon including a flip-chip secured to the hybrid circuit with solder bumps having a melting temperature of about 170° C. to 210° C.;
placing said device in the cavity of a mold;
injecting a liquid crystal polymer encapsulation material into the cavity at a temperature ranging from about 320° C. to about 377° C., and at a sufficiently high enough pressure to solidify the encapsulating material so that the solder bumps do not flow during the injecting step.

5,381,600
HEAT EXCHANGER AND METHOD OF MAKING THE SAME
Ramchandra L. Patel, Southgate, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 6, 1993, Ser. No. 132,337
Int. Cl.[6] B21D *53/02*
U.S. Cl. 29—890.044 **9 Claims**



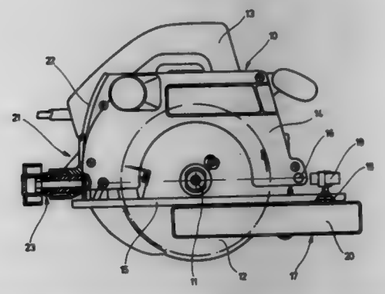
1. A method of making an automotive heat exchanger, comprising the steps of:
assembling a plurality of spaced, stacked fin members on a first support member, each of said fin members having a plurality of apertures extending longitudinally therethrough;
providing a plurality of tubes, each of said tubes having an integrally formed, corrugated internal surface comprising a plurality of alternating projections and recesses, said projections formed to a predetermined original height;
lacing each of said tubes through said apertures in said stacked fin members;
placing a second support member over the tube and fin member assembly and thereby forming a heat exchanger core;
fixing said heat exchanger core in a station so that said tubes are proximate an expander tool having a predetermined diameter;
expanding the diameter of said tubes a predetermined distance by forcing said tool therethrough and deforming said projections to a second height, so that said second height of said projections within said tubes remains within 75% of its original height;
removing said expander tool from said tubes and connecting said tubes to a fluid conduit assembly; and
welding said core at a predetermined temperature.

5,381,601
INSULATION STRIPPING APPARATUS
Laurence K. Danter, Newbury Park, Calif.; Armin Herzog, and Manfred Wilmes, both of Detmold, Germany, assignors to Weidmüller Interface GmbH & Co., Germany
Filed Oct. 20, 1993, Ser. No. 138,075
Claims priority, application Germany, Oct. 21, 1992, 4235536
Int. Cl.[6] H02G *1/12*
U.S. Cl. 30—90.1 **13 Claims**



1. An insulation stripping tool for stripping the insulation from an insulated electrical conductor, comprising:
(a) a tool housing (1) having a first side wall containing a stripping channel (4) for laterally receiving an insulated conductor (7);
(b) at least one knife cassette (33) having an insulation-stripping knife (45); and
(c) means supporting said knife cassette on said tool housing for displacement between a plurality of insulation-cutting positions longitudinally of said stripping channel, said supporting means including:
(1) a support member (10) connected with said tool housing and containing a cassette-receiving opening (26), said knife cassette being adapted for insertion within said cassette-receiving opening with an orientation normal to the axis (7) of said stripping channel, the thickness of said knife cassette being less than the length of said cassette-receiving opening; and
(2) a plurality of retaining means (29, 30) contained within said cassette-receiving opening for retaining said knife cassette at one of a plurality of insulation cutting positions longitudinally spaced of said cassette-receiving opening, said retaining means including lower and upper guide means (29, 30) contained on opposite walls of said opening, each of said guide means comprising a plurality of parallel spaced coplanar ribs (31) which define therebetween a plurality of grooves extending normal to the axis of said stripping channel; and further wherein said knife cassette includes at opposite ends guide tabs (40, 41; 42, 43) adapted for sliding insertion within said grooves in accordance with the longitudinal position of said cassette relative to said opening.

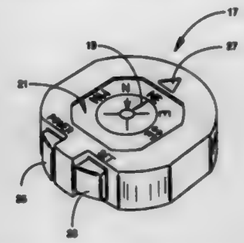
5,381,602
ELECTRIC MOTOR OPERATED HAND CIRCULAR SAW
David Matzo, Leinfelden-Echterdingen; Eduard Gansel, Dettenhausen, and Heribert Schramm, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 8, 1993, Ser. No. 134,176
Claims priority, application Germany, Nov. 19, 1992, 4238936
Int. Cl.[6] B27B *9/02*
U.S. Cl. 30—377 **13 Claims**



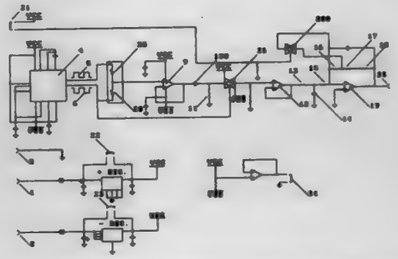
1. An electric motor operated hand circular saw, comprising a base plate; a motor housing turnable relative to said base plate; an electric motor accommodated in said motor housing and having a drive shaft; a circular saw blade arranged on said drive shaft of said electric motor; and a pre-slitting abutment for adjusting a pre-slitting position of said saw blade in which said saw blade penetrates into a surface of a workpiece to be sawed by a limited pre-slitting depth, said pre-slitting abutment having two fixed abutment positions in which two different turning positions of said motor housing relative to said base plate are adjusted, so that in a first of said abutment positions during guiding said base plate over a guiding rail on a workpiece surface and in a second of said abutment positions during guiding said base plate along a strip clamped on the workpiece surface or with a parallel abutment held on said base plate on the workpiece edge on the workpiece surface, said saw blade penetrates correspondingly into the workpiece surface with a pre-slitting depth, said pre-slitting abutment has a cutting depth ruler mounted on said base plate and provided with a guiding slot extending over a turning region of said motor housing, and a clamping element fixed on said motor housing so that said clamping element extends through said guiding slot and is clampable on said cutting depth ruler, said clamping element having two abutment projections formed so that a first one of said abutment projections in said first abutment position of said pre-slitting abutment and a second one of said abutment projections in said second abutment position of said pre-slitting abutment abuts correspondingly against an end of said guiding slot which faces away from said base plate, and said first abutment projection is liftable from said guiding slot.

5,381,603
REFERENCE POINTER FOR A COMPASS DISPLAY
John S. Lee, San Francisco, Calif., assignor to Precision Navigation, Inc., Mountain View, Calif.
Continuation of Ser. No. 790,678, Nov. 8, 1991, abandoned. This application Jul. 27, 1993, Ser. No. 99,046
Int. Cl.[6] G01C *17/10*
U.S. Cl. 33—355 R **18 Claims**

7. An electronic compass comprising:
display means for displaying heading information;
sensing means for determining the orientation of the compass relative to the Earth's magnetic field and for providing a signal related to said orientation;
input means for a user to supply input signals; and
control means coupled to said display means, to said sensing means, and to said input means for receiving said signal related to orientation and said input signals, and for causing said display means to display heading information in response to said signals;
wherein said control means is configured to store a currently sensed heading as a reference heading in response to a user input signal, to cause said display means to display said reference heading as a reference pointer pointing the direction of said reference heading, and to adjust the position of said reference pointer in said display means as the position and direction of said compass changes.



5,381,604
ANGLE MEASUREMENT DEVICE EMPLOYING ANGLE SENSOR AND ELECTRONICS INTEGRALLY FORMED ON A PRINTED CIRCUIT BOARD
Jeffrey C. Heidel; Bradley D. Carlson, both of Glendale, and Warren W. Stansberry, Peoria, all of Ariz., assignors to Cline Labs, Inc., Phoenix, Ariz.
Continuation of Ser. No. 45,046, Apr. 8, 1993, abandoned. This application May 23, 1994, Ser. No. 247,923
Int. Cl.[6] G01C *9/06*
U.S. Cl. 33—366 **2 Claims**



1. An integral resistive angle measurement device comprising:
a single printed circuit board having front and back surfaces;
a pair of sensor plates formed on the back surface of said printed circuit board;
a single cylindrically-shaped cap sealed to said back surface of said printed circuit board so as to cover said pair of sensor plates, said cap retaining a volume of resistive sensor fluid in contact with a portion of each one of said pair of sensor plates;
a metallic sealing ring surrounding said pair of sensor plates, said metallic sealing ring being electrically insulated from said pair of sensor plates, said single cylindrically-shaped cap being sealed to said metallic sealing ring by soldering; and
electronic circuitry mounted on said front surface of said printed circuit board, said electronic circuitry being responsive to incremental angular rotation of said angle measurement device for providing an output signal representative of an angle of rotation of said angle measurement device, said electronic circuitry including an output amplifier stage and gain selection circuitry for selecting one

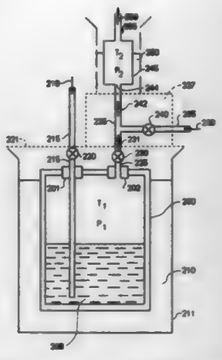
of a plurality of predetermined gain settings of said output amplifier stage, said gain selection circuitry including switching means for enabling a user to select a desired one of said plurality of predetermined gain settings of said output amplifier stage.

5,381,605

METHOD AND APPARATUS FOR DELIVERING GAS

Terry Krafft, Longmont, Colo., assignor to Photonics Research Incorporated, Broomfield, Colo.

Filed Jan. 8, 1993, Ser. No. 2,444
Int. Cl.[6] F26B 3/08
U.S. Cl. 34—408 **12 Claims**



1. A method for generating and delivering gas containing vapor produced by subliming a solid comprising the steps of:
introducing a first carrier gas into a first vessel containing the solid;
heating the first vessel to a first temperature so that the gas in the vessel is substantially saturated with vapor produced by subliming the solid;
discharging a first output gas from the first vessel, the first output gas being substantially saturated with the vapor; and
introducing a second carrier gas into the first output gas to produce a second output gas, the second output gas being non-saturated with the vapor.

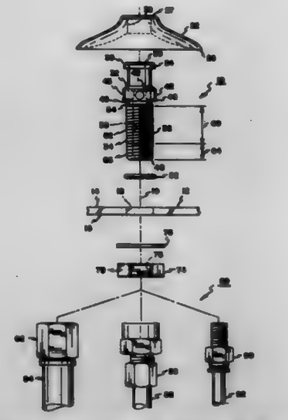
5,381,606

AERATION DEVICES AND METHODS

Keith F. Solimar, 1289 Brighton Sq., New Brighton, Minn. 55112

Filed Mar. 19, 1993, Ser. No. 33,853
Int. Cl.[6] F26B 17/00
U.S. Cl. 34—585 **24 Claims**

1. A stem of an aeration device mountable to a container wall, the stem comprising:
(a) a shaft including:
(i) an exterior surface, the exterior surface including a first portion having American National Standard straight pipe threads thereon, the exterior surface including a second portion having American National Standard taper pipe threads thereon; and
(ii) an interior surface, the interior surface defining a passageway extending from one location on the stem to another location on the stem, the interior surface including a portion having British Standard taper pipe threads thereon; and



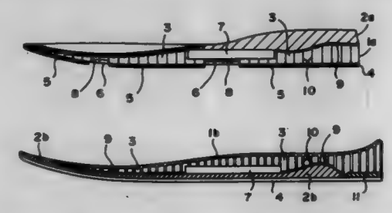
(b) valve means for controlling airflow through the inner passageway.

5,381,607

STABILIZED HONEYCOMB SHOE SOLE, PARTICULARLY FOR ATHLETIC SHOES

Reinhold Sussmann, Scheinfeld, Germany, assignor to Tretorn AB, Helsingborg, Sweden

Continuation of Ser. No. 904,667, Jun. 26, 1992, abandoned. This application Mar. 10, 1994, Ser. No. 209,983
Claims priority, application Germany, Jun. 26, 1991, 4121042
Int. Cl.[6] A43B 13/18
U.S. Cl. 36—28 **20 Claims**



8. Shoe sole comprising at least an outsole and a cushioning midsole, being formed of a first midsole element made of a compact thermoplastic material and of a second midsole element that is made of a foamed material, wherein a honeycomb-like array of recesses are distributed at least predominantly over the entire first midsole element, said recesses extending vertically through the first midsole element and being closed at a side of the first midsole element that faces away from the second midsole element; wherein said second midsole element is connected to the first midsole element by having been molded thereon; and wherein the first midsole element has at least two stabilizers of a solid or tubular rod shape disposed therein, said stabilizers being made of a hard plastic material.

5,381,608

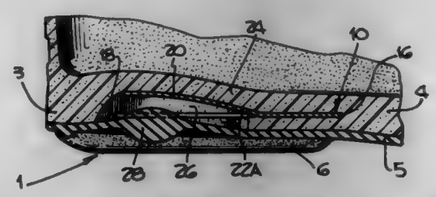
SHOE HEEL SPRING AND STABILIZER

R. Y. Claveria, Loma Linda, Calif., assignor to L.A. Gear, Inc., Santa Monica, Calif.

Filed Jul. 5, 1990, Ser. No. 549,493
Int. Cl.[6] A43B 21/26
U.S. Cl. 36—35 R **17 Claims**

1. In an athletic shoe of the type which includes an upper

portion and a sole portion, the sole portion including a heel part and a resilient midsole and outsole, an improved mechanism for absorbing foot shock, storing and returning running energy to the foot of the wearer, and stabilizing the wearer's foot during running, the improvement comprising:
a thin, substantially planar, heel-sized plate formed of a strong, stiff, yet resiliently-flexible material fixed by its encapsulation within the midsole of the heel part of the sole in a generally horizontal position above the outsole,



the plate having a pair of lateral edges, front and rear ends, and at least one slot cut through it such that a generally planar, rearwardly-extending spring member that is resiliently deflectable and independently moveable with respect to the plate is defined therein,
the spring member being permanently formed relative to the plane of the plate to incline upwardly and rearwardly from it and having a rear portion positioned below the calcaneus of the wearer's foot, and
the midsole being relieved in an area below the spring member to permit it to bend freely downward.

5,381,609

SHOE WITH CENTRAL CLOSURE

Rudolf Hieblinger, Munich, Germany, assignor to Tretorn AB, Helsingborg, Sweden

Filed Nov. 2, 1993, Ser. No. 144,443
Claims priority, application Germany, Nov. 2, 1992, 9214848
Int. Cl.[6] A43B 11/00, 5/04
U.S. Cl. 36—50.1 **20 Claims**



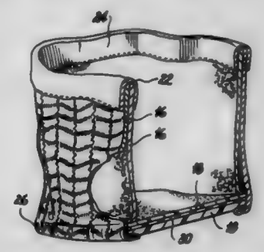
1. A shoe of the type having a sole and an upper formed of nonrigid materials attached to the sole at a feather edge, and with a central closure mechanism that is coupled with at least one elongated flexible tightening element by which a vamp of the upper can be tightened and loosened via increasing and decreasing an effective length of the at least one tightening element as measured from the central closure mechanism, the at least one tightening element being guided from the central closure mechanism along sides of the shoe so as to pass from the upper to an instep cover that at least partially overlaps an instep area of the shoe and back to the upper, wherein:
A) said upper has a closed vamp that, at least in the instep area, is made of a volume-elastic compressible material;
B) the instep cover is made of an elastically bendable material at least approximately matched to a surface contour of the instep area;
C) said central closure mechanism is provided externally on a rear end of the upper above a heel of the shoe; and
D) at least a section of the at least one tightening element runs at each side of the shoe, without crossing over the instep area, from the central closure mechanism to a guide element provided, at the feather edge on a heel curve to a higher guide element provided on the instep cover and then to a respective point, lying at the insole height, which is located in a small toe area at a lateral side of the shoe and which point is located in an area between a wearer's metatarsophalangeal joint of the big toe and approximately the center of an arch at a medial side of the shoe in a manner enabling the instep cover to be pulled toward the sole of the shoe by the central closure mechanism.

5,381,610

CONVERTIBLE FOOTWEAR

Violet M. Hanson, 14 Fairway Dr., Old Bethpage, N.Y. 11804

Continuation of Ser. No. 45,894, Apr. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 739,680, Aug. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 589,638, Sep. 28, 1990, abandoned, and a continuation-in-part of Ser. No. 664,770, Mar. 5, 1991, abandoned. This application May 27, 1994, Ser. No. 250,642
Int. Cl.[6] A43B 3/24, 1/10, 1/02
U.S. Cl. 36—100 **7 Claims**



1. A convertible footwear comprising two structurally congruent members, each having a foot covering portion with an upper edge and a lower edge, and a sole with inner and outer surfaces, the lower edge of the covering portion being attached to the inner surface of its sole about its peripheral edge;
first means for securing said two congruent members together at the peripheral edges of the soles with the outer surfaces of the soles in facing relationship and with the foot covering portion of one of said two congruent members extending over said secured peripheral edge to enclose said peripheral edge between the two foot covering portions of said congruent members; and
second means for securing said two foot covering portions together at their upper edges so that the peripheral edge of the two soles and one of the outer sole surfaces is contained within the confines of its respective foot covering portion while the other outer sole surface is exposed for contact with a walking surface depending upon which respective foot covering portion is inverted and turned into covering relationship abutting with the other foot covering portion.

5,381,611

FOOTGEAR WITH REPLACEABLE FLAP ELEMENTS

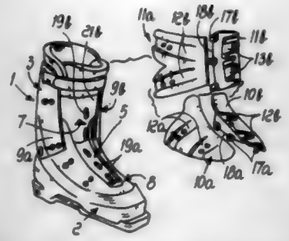
Valerio Tonel, Bladene, and Claudio Sartor, Zero Branco, both of Italy, assignors to Nordica S.p.A., Trevignano, Italy

Filed Jan. 11, 1993, Ser. No. 3,053

Claims priority, application Italy, Jan. 16, 1992, TV92 A 000003

Int. Cl.[6] A43B *5/04, 11/00*

U.S. Cl. 36—117 **6 Claims**



1. Footgear comprising at least one quarter associated with a shell, wherein at least one flap is removably associated with either one of said shell and said at least one quarter at a recess thereof, the footgear further comprising connection means for removably connecting said at least one flap with either one of said shell and said at least one quarter, said connection means comprising a plurality of rivets associated with said shell or said at least one quarter for engaging in respective holes formed on said flap, each of said rivets comprising a stem having a split end adapted to engage a ring, each rivet also having a head provided with an annular groove, each of said holes comprising a substantially circular portion connected to a slot portion for engagement with said annular groove.

5,381,612

DEVICE FOR BLOCKING AN UPPER OF A SKI BOOT

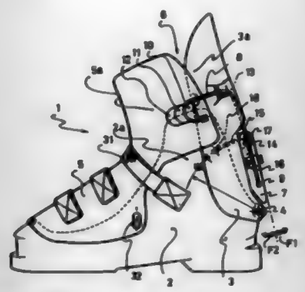
Jean Paris, Sevrier, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Jun. 21, 1993, Ser. No. 79,138

Claims priority, application France, Jun. 22, 1992, 92 07762

Int. Cl.[6] A43B *5/04*

U.S. Cl. 36—117 **21 Claims**



1. An alpine ski boot comprising:

a shell base on which is journalled at least partially an upper constituted by at least one rear spoiler and a front cuff, the rear spoiler being journalled with respect to the shell base about a transverse axis and comprises a tensioning lever for applying a traction force on at least one flexible and inextensible link inserted between a front mobile portion of the boot to be controlled during tightening on a lower part of the leg and said lever, such lever also acting on an element for restoring rear support of the upper on the shell base, wherein the element for restoring rear support is constituted by at least one second flexible and inextensible link, distinct from the first inserted between the same tensioning lever and a fixed portion of the shell base such that application of said traction force by the tensioning lever causes, by simultaneous traction on the two links, both the tightening control of the front mobile portion of the boot for a first function, and restoring rear support of the upper on the shell base without an intermediate element for providing said rear support, to fulfill a second function.

5,381,613

SKI BOOT

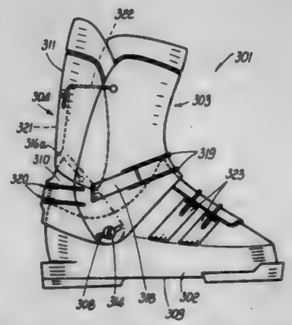
Alessandro Pozzobon, Paderno Di Ponzano Veneto; Giancarlo Foscaro, Treviso; Gianpaola Marongiu, Rome; Maurizio Tacchetto, Noventa Padovana, and Luca Bugliesi, Piombino, all of Italy, assignors to Nordica S.p.A., Trevignano, Italy

Continuation of Ser. No. 903,204, Jun. 23, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 169,957

Claims priority, application Italy, Jul. 5, 1991, TV91 A 00071; Nov. 6, 1991, TV91 A 000120

Int. Cl.[6] A43B *5/04*

U.S. Cl. 36—117 **8 Claims**



1. Ski boot comprising a shell, a front quarter, and a rear quarter, said rear quarter comprising at least a first half-quarter arranged at a calf region of the ski boot and a second half-quarter arranged at a heel region of the ski boot, the ski boot further comprising connection means for connecting the front quarter to the shell, the ski boot further comprising first means for articulating said second half-quarter to said shell about a first axis and second means for articulating said first half-quarter to said second half-quarter about a second axis, the ski boot further comprising adjusting means for adjusting the releasable mutual relative position of said first and second half-quarters in a closed skiing position and for adjusting the releasable mutual relative position of said rear quarter with respect to said front quarter in the closed skiing position, said adjusting means allowing for unblocked rotation of said second half-quarter with respect to said shell in the closed skiing position said adjusting means comprising a first lever pivoted to said front quarter and a first cable element which is connected to said first lever, said first cable element slidably engaging said front quarter at a foot instep region of the boot and extending laterally around the ski boot and rearwardly around said second half-quarter at the heel region, the first cable element having an end connected laterally to said front quarter.

5,381,614

AIM IMPROVING SELF-ALIGNING GOLF SHOES

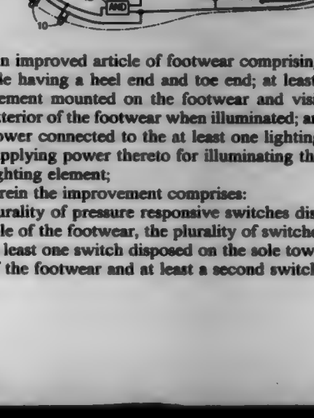
Marc Goldstein, 407 E. 91st St., Apt. 5F, New York, N.Y. 10128

Filed Dec. 15, 1993, Ser. No. 167,339

Int. Cl.[6] A43B *5/00, 5/18*

U.S. Cl. 36—127 **12 Claims**

1. A pair of golf shoes comprising an upper portion and a sole portion, said upper portions of each of said pair of golf shoes including a central longitudinal axis extending lengthwise through the center thereof and alignment means arranged on said upper portion of at least one of said golf shoes for aiding a golfer in establishing relative positioning of the golfer's feet with respect to a target, the ball and to each other so that an optimal stance may be obtained to improve a golfer's aim during driving and iron shots, said alignment means including indicia having a orientation offset from a corresponding one of said central longitudinal axes, and at least one first straight line arranged on said upper portion of a right one of said pair of golf shoes and at least one second straight line arranged on said upper portion of a left one of said pair of golf shoes, said at least one first straight line and said at least one second straight line defining corresponding first and second axes, said first and second axes being disposed to intersect each other when said right and left golf shoes are placed parallel to each other, and are arranged parallel to each other to indicate when the golfer's feet are placed in the optimal stance.



5,381,615

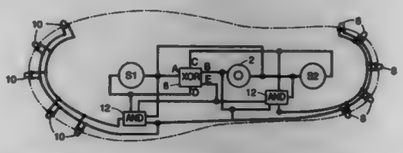
FOOTWEAR INCORPORATING A MULTIPLE-SWITCH LIGHTING CIRCUIT

M. Sean MacMillan, Los Angeles, Calif., assignor to Angel-Etts f California, Inc., Los Angeles, Calif.

Filed Dec. 29, 1993, Ser. No. 175,132

Int. Cl.[6] A43B *23/00;* **F21C** *15/08*

U.S. Cl. 36—137 **8 Claims**



1. An improved article of footwear comprising:

a sole having a heel end and toe end; at least one lighting element mounted on the footwear and visible from the exterior of the footwear when illuminated; and a source of power connected to the at least one lighting element for supplying power thereto for illuminating the at least one lighting element;

wherein the improvement comprises:

a plurality of pressure responsive switches disposed on the sole of the footwear, the plurality of switches comprising at least one switch disposed on the sole toward a toe end of the footwear and at least a second switch disposed on the sole toward a heel end of the footwear, each switch having an on condition and an off condition, the switches being positioned on the footwear for attaining the on or off condition in response to pressure applied to the footwear by the wearer; and

a condition responsive logic circuit operatively connected between the plurality of switches, the source of power, and the at least one lighting element, the plurality of switches providing a plurality of different sets of input conditions to the logic circuit dependent on the condition of each of the switches, the login circuit having a different output condition dependent on the input condition, the logic circuit providing a first output condition for illuminating the at least one lighting element in response to a first input condition of the switches when at least the first and second switches are not in the same condition, the logic circuit providing a second output condition for preventing the illumination of the at least one lighting element when at least the first and second switches are in the same condition; wherein the logic circuit prevents illumination of the at least one lighting element at least when the footwear is at rest and the footwear is illuminated when the motion of the wearer of the at least one lighting element is moving between heel and toe.

5,381,616

ROTARY ROCKWHEEL ASSEMBLIES

Robin E. L. Disney, Malvern, United Kingdom, assignor to R. & R. Trench Equipment Limited, Malvern, England

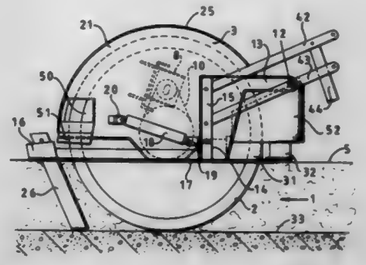
PCT No. PCT/GB91/00435, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO91/14836, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 927,395

Claims priority, application United Kingdom, Mar. 27, 1990, 9006781

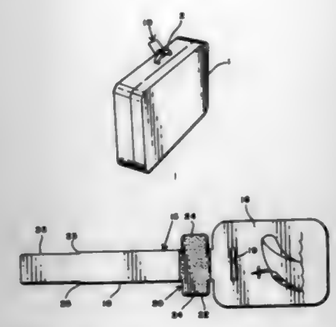
Int. Cl.[6] E02F *5/08, 5/14*

U.S. Cl. 37—94 **10 Claims**



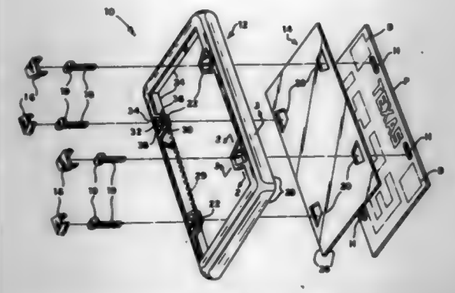
1. A rotary rockwheel assembly for cutting a narrow trench in the ground when driven along the ground by a vehicle having a chassis, the assembly comprising a support frame connected to said chassis, ground-engaging means rigidly secured to the support frame permitting the support frame to be moved in the direction in which the trench is to be cut, a rotary cutting wheel carried by the support frame, drive means for rotating the cutting wheel about a substantially horizontal axis, and lowering means on the support frame for lowering the cutting wheel relative to the support frame and the ground-engaging means from a raised position in which substantially the whole of the cutting wheel is above the ground to a lowered position in which the cutting wheel cuts into the ground while being rotated by the drive means, wherein the support frame is supported on the ground by the ground-engaging means as the cutting wheel is simultaneously rotated by the drive means and lowered by the lowering means so as to cut into the ground, so that the reaction forces generated by the cutting action are transmitted by way of the ground-engaging means into the ground.

5,381,617
LUGGAGE TAG AND METHOD
Robert Schwartztol, 12700 SW. 27th Ct., Miami, Fla. 33156, and SecsaDino Ferreiro, 4300 NE. 17th Ter., Oakland Park, Fla. 33334
Filed Sep. 28, 1993, Ser. No. 127,768
Int. Cl.[6] G09F *3/14*
U.S. Cl. 40—6 5 Claims



1. A luggage tag comprising, in combination,
a plate portion formed from a blank of material having two sides,
a strap receiving means at one end of the plate portion,
a strap extending from the plate to a remote end a distance of at least the length of the plate,
said strap having a locking assembly adjacent the plate portion to which adhesive has been applied, and including a pair of opposed folding tabs to which adhesive is applied which may be reversely folded,
and a tab end portion on the remote end of the strap for reversely looping the strap passing through the strap receiving means and thereafter being secured to the adhesive on the locking assembly between the opposed folding tabs and the folding tabs reversely folded to secure the tab end portion thereby defining a loop of the strap which encircles a member to which the tag is to be secured.

5,381,618
SECURITY FRAME FOR VEHICLE LICENSE PLATES
Richard L. Singleton, 542 Pompano Dr., Hitchcock, Tex. 77563
Filed Jun. 3, 1993, Ser. No. 70,756
Int. Cl.[6] G09F *7/00*
U.S. Cl. 40—202 17 Claims



10. An assembly kit providing for the secure installation of a license plate upon a vehicle, with the license plate including a plurality of attachment holes therein, at least one dated registration decal displayed thereon and the vehicle including a corresponding number of cooperating license plate attachment points, said assembly kit comprising:
a plurality of fasteners for securing said license plate, a license plate frame, a transparent cover installable therein; and a plurality of fastener caps installable in said license plate frame for the concealment of said fasteners therein;
each of said fasteners having a relatively small diameter shank and relatively large diameter head;
said license plate frame being generally rectangular and having an outer surface, an outer perimeter, an inner perimeter, and four sides, with two opposite said sides each including at least two attachment lugs extending inwardly from said inner perimeter;
each of said attachment lugs having an opening therein for the capture of one said fastener head therein, a passage extending therethrough for the insertion of one said fastener therethrough, and fastener cap capture means;
said transparent cover including an outer perimeter adjacent said inner perimeter of said license plate frame and a plurality of passages therethrough, with said passages adjacent said attachment lug openings; and
said fastener caps each including retaining means cooperating with said capture means of said attachment lug, whereby;
said transparent cover is installed within said inner perimeter of said license plate frame and securely retained therein, said license plate frame with said transparent cover is placed over a license plate on a vehicle, one of said fasteners is inserted within each of said attachment lugs with one said fastener shank passing through each said attachment lug passage, a corresponding one of said passages in said transparent cover, and a corresponding one of the license plate attachment holes to secure said license plate frame and said cover over the license plate and to the cooperating license plate attachment points of the vehicle with a corresponding one said fastener head captured within each said attachment lug opening, and one of said fastener caps is installed in each of said attachment lug openings to conceal a corresponding one said fastener head therein, thereby preventing the ready removal of the dated registration decal from the license plate and the license plate from the vehicle.

5,381,619
HOLLOW FISHING ROD
Ty Watkins, 220 Lakewood Dr., Waterboro, S.C. 29488
Filed Aug. 6, 1993, Ser. No. 103,331
Int. Cl.[6] A01K *87/00*
U.S. Cl. 43—18.1 20 Claims



1. A fishing rod, said fishing rod for use with a handle mounted thereon and a fishing reel having fishing line, said rod comprising:
a flexible shaft, said shaft having an interior surface and an exterior surface;
a first coating applied to said interior surface, said first coating made of a material that facilitates movement of said fishing line along said interior surface; and
a second coating applied to a portion of said first coating, said second coating overlaying said portion so that when said fishing rod is oriented for use, said fishing line is positioned on and moves across said second coating, said second coating made of a material that resists wear of said fishing line along said interior surface.

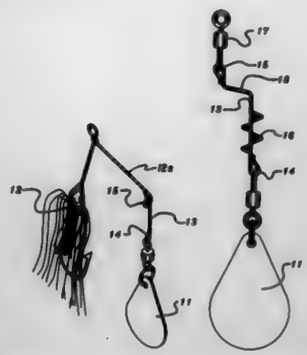
5,381,620
LURE UTILIZING EASILY CHANGED AFT PORTION OF SOFT, FLEXIBLE TEXTURE
Louie W. Gibbs, Clermont, Fla., assignor to Classic Fishing Products, Inc., Clermont, Fla.
Filed Jul. 14, 1993, Ser. No. 91,992
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.09 22 Claims



1. A fishing lure utilizing an easily changed tail portion, said lure having a head member of rigid construction, to which any one of a variety of generally similar tail members may be removably attached, said head member having at least two attachment points thereon, to which a fishing line as well as a fishhook may be respectively attached, said head member having a rear portion upon which rearwardly directed attachment means are mounted, said attachment means involving at least one rearwardly extending component having an enlarged portion, each tail member to be used with said head member being made of soft, resilient material, having a forwardmost portion in which least one cavity is disposed, such cavity being smaller than said enlarged portion and positioned so as to be able to be brought into alignment with said at least one rearwardly extending component on said head member, and to be tightly yet removably received thereon, said rearwardly directed attachment means being mounted in a shallow recess located on said rear portion of said head member, the forwardmost portion of the tail member being configured to fit tightly in said shallow recess when said rearwardly directed attachment means has entered the respective cavity of the tail member, thus to prevent the entry of water between said head and tail members when said lure is in use.

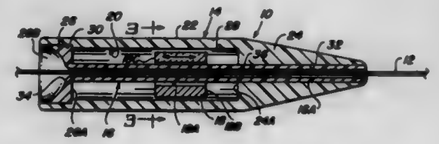
5,381,621
JOINTED SPINNER BAIT
James W. Fuller, 110 N. Prospect St. Apt. 2, Merrill, Wis. 54452
Filed Nov. 9, 1993, Ser. No. 149,516
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.13 3 Claims

1. A new jointed spinner bait comprising:
a streamer jig and hook having a laterally extending arm projecting at an oblique angle relative to said streamer jig and hook, said laterally extending arm having an outer distal end;
a wire having a first eye loop and a second eye loop, with said wire being pivotally coupled to said outer distal end of said laterally extending arm at said first eye loop thereof;
a first swivel having first and second ends with said first end of said swivel being pivotally coupled to said second eye loop of said wire; and,
a spinner pivotally coupled to said second end of said first swivel, wherein said wire is pivotal relative to said laterally extending arm, said swivel is pivotal relative to said wire, and said spinner is pivotal relative to said swivel;
wherein said wire has a length axis, and further comprising a rotation vane fixedly secured to said wire end extending along said length axis thereof;



and further wherein said wire has an offset, substantially right angle bend in said wire between said vane and said first eye loop thereof.

5,381,622
NOISE-MAKING SLIP WEIGHT DEVICE FOR FISHING
Euclid L. Tregre, 128 St. John St., Luling, La. 70070
Filed Aug. 9, 1993, Ser. No. 104,192
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.31 9 Claims



1. A noise-making slip weight device, comprising:
(a) an elongated housing having a main body and a forward tapered nose extending along a longitudinal centerline of said housing, said main body defining a substantially cylindrical water-tight internal cavity and said tapered nose defining an axial bore extending from said internal cavity to the exterior of said housing at a front end of said forward tapered nose, said axial bore being smaller in diameter than said internal cavity, said housing defining an interior surface on a rear end of said forward tapered nose forming a forward end of said cylindrical internal cavity extending substantially transverse to said longitudinal centerline of said housing;
(b) a plug spaced axially rearwardly from said forward tapered nose and disposed in said housing and sealing said cylindrical internal cavity of said housing from entry by water, said plug having a forward surface forming a rearward end of said cylindrical internal cavity extending substantially transverse to said longitudinal centerline of said housing and substantially parallel to said forward end of said cylindrical internal cavity, said plug also having a rearward surface spaced from said forward surface and an axial orifice defined in said plug and extending between and interconnecting said forward and rearward surfaces thereof, said plug having an axial length extending between said forward and rearward surfaces thereof being substantially less than the axial depth of said internal cavity extending between said forward and rearward ends thereof;
(c) a tubular sleeve disposed substantially along said longitudinal centerline of said housing and extending through

said internal cavity of said main body thereof and through said axial bore of said forward tapered nose thereof, said sleeve being connected to said plug and having a passageway extending longitudinally therethrough from said axial orifice of said plug to the exterior of said forward tapered nose for receiving a fishing line therethrough; and

(d) at least one annular rattle element carried over and around said tubular sleeve and being sized to move freely along said sleeve and within said internal water-tight cavity, said annular rattle element having a cylindrical shape and a pair of opposite forward and rearward ends defining surfaces extending substantially transverse to said longitudinal centerline of said housing and substantially parallel to said forward and rearward ends of said internal cavity in said housing so as to create impacts therewith and thereby generate noise upon movement of said annular rattle element along said sleeve.

5,381,623
FISH LURE
James J. Crisp, Rte. 2, Box 89, Mooresburg, Tenn. 37811
Filed Jun. 24, 1993, Ser. No. 80,305
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.43 18 Claims



1. A fish crank lure including

(a) a body member (12) including a longitudinal axis (80) passing through said body member, a top, a pair of opposed sides, a bottom, a front portion, and a rear portion and shaped, contoured and dimensioned to simulate the body of a fish such that water flowing over said body member from said front portion to said rear portion generates lift forces (H) on said body member;

(b) a head attached to said front portion of said body member and including a top, a bottom, and a planar surface (25) sloped with respect to said longitudinal axis such that water flowing against said planar surface generates downward forces (I) opposed to said lift forces;

(c) an eyelet (22) attached to said top of said head for securing a fishing line to said lure;

(d) a tail

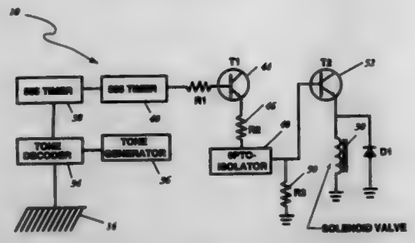
(i) attached to said rear portion of said body member, normal to the longitudinal axis of said body member, outwardly projecting in a direction away from said eyelet, from said top of said body member, and from said bottom of said body member,

(ii) including sloped surfaces (50,60), and

(iii) shaped and dimensioned such that when said lure is on a tensioned fishing line, the flow of water over and around said tail causes said lure to wobble from side-to-side and generates downward forces (I) acting against said surface (50,60) and opposed to said lift forces (H); and,

(e) at least one hook fixedly attached to said top of said body member.

5,381,624
AGRICULTURAL CHEMICAL APPLICATOR
D. Darryl Davis, 1721 E. 7th St., and Marlin H. Anderson, Jr., 306 Marietta Dr., both of Hopkinsville, Ky. 42240
Continuation of Ser. No. 174,424, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 861,311, Mar. 31, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,571
Int. Cl.[6] A01G *13/00*
U.S. Cl. 47—1.7 19 Claims



1. An agricultural chemical applicator for applying herbicides attached to a vehicle having a front side and a rear side, said device comprising:

a. an unwetted sensor bar attached to said vehicle;

b. at least one sensor extending axially along said sensor bar;

c. means to provide electric charge to said sensor;

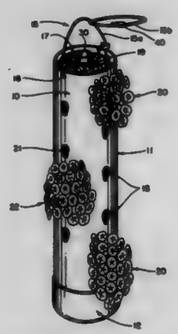
d. means to detect a current flow from said sensor;

e. means to spray said plant extending above said crops for a duration;

f. means to send a delayed message having a length of delay from said sensor means to said spray means; and

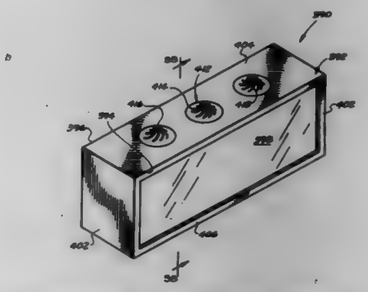
g. means for adjusting said length of said delayed message to adjust said duration of said spray.

5,381,625
FLOWERING PLANTER
Robert H. Weate, 2378 Barrington Woods Rd., Palatine, Ill. 60074
Filed Apr. 5, 1994, Ser. No. 222,879
Int. Cl.[6] A01G *9/02*
U.S. Cl. 47—83 6 Claims



1. A flowering planter comprising an axially elongated upright cylindrically shaped hollow sleeve, the sleeve being comprised of an opaque synthetic plastic material, a cup shaped bottom disposed at a bottom end of the sleeve, adhesive means securing the axially elongated upright cylindrically shaped hollow sleeve in water tight assembly with said cup shaped bottom, a hanger structure, attachment means connecting the hanger structure to an upper open end of said axially elongated upright cylindrically shaped hollow sleeve for hanging the planter to an above ground support, vertically extending circumferentially spaced keyhole shaped slots in said axially elongated upright cylindrically shaped hollow sleeve for plants to extend through the vertically extending circumferentially spaced keyhole shaped slots, a cylindrically shaped watering tube mounted internally of said axially elongated upright cylindrically shaped hollow sleeve in coaxial relation therewith, the watering tube having an upper open end for receiving water and a lower closed end, means positioned internally of said axially elongated upright cylindrically shaped hollow sleeve engaged with a closed lower end of said cylindrically shaped watering tube holding said cylindrically shaped watering tube in an upright position in uniformly radially spaced relation along its length to an interior surface of said axially elongated upright cylindrically shaped hollow sleeve, said cylindrically shaped watering tube having axially spaced water discharge orifices circumferentially positioned in radially confronting relation and axially above said vertically extending circumferentially spaced keyhole shaped slots enabling water to be conveyed from the watering tube through the orifices to plant root structure positioned in radial adjacency to each of said circumferentially spaced keyhole shaped slots.

5,381,626
HYDROPONIC CULTIVATION APPARATUS AND METHOD
Charles O. Sherfield, 815 W. Marshall, Phoenix, Ariz. 85013
Continuation-in-part of Ser. No. 625,078, Dec. 10, 1990, Pat. No. 5,224,291. This application Jul. 2, 1993, Ser. No. 87,506
Int. Cl.[6] A01G *31/00*
U.S. Cl. 47—84 13 Claims



1. An apparatus for hydroponically cultivating a plant having roots and a stem and for retarding evaporation while protecting said plant roots, said apparatus comprising:

a container adapted to retain a nutrient solution, said container having an opening therein;

a seal substantially hermetically coupled to a section of said container which immediately surrounds said opening, said seal having a hole located centrally therein and being formed from a membrane of resilient material having expandable pleats extending outward from said hole, said hole being dimensioned for physical contact between said seal and said plant stem and said pleats expandable to permit said hole to expand without tightly gripping said plant stem; and

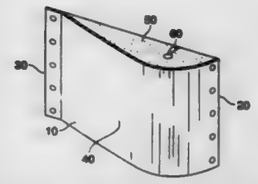
a porous support medium into which said plant roots grow, located within said container proximate said opening.

5,381,627
PANIC GUARD
Martin S. Simon, and Ira J. Simon, both of Long Beach, Calif., assignors to Triangle Brass Manufacturing Company, Los Angeles, Calif.
Filed May 10, 1993, Ser. No. 59,408
Int. Cl.[6] E06B *7/00*
U.S. Cl. 49—70 14 Claims

1. A panic guard for a door having a front surface and a free edge and equipped with an external vertical rod exit device including an external vertical rod, said panic guard comprising:

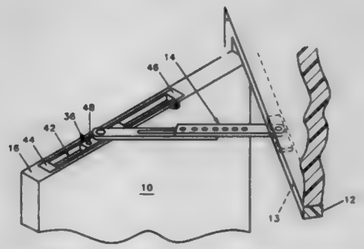
a continuously curved projecting surface having a pair of mounting flanges for mounting the panic guard to the door,

a foam rubber insert having a top and a bottom, said insert



adapted to fit between said curved protecting surface and the front surface of the door, said insert including an orifice connecting said top with said bottom and a slit connecting said orifice with a side wall of said insert, said orifice adapted to receive the external vertical rod and said slit adapted to provide a means for installing the external vertical rod in said orifice.

5,381,628
DOOR HOLDER/DOOR STOP
Richard D'Hooge, Wood Dale, Ill., assignor to Architectural Builders Hardware Mfg. Inc., Elk Grove Village, Ill.
Filed Jan. 13, 1994, Ser. No. 181,216
Int. Cl.[6] E05C *17/00*
U.S. Cl. 49—394 5 Claims



1. A door check assembly for attachment between a door frame and a door comprising in combination:

a first elongate arm member having a first end and a second end;

first attachment means for pivotally attaching said first end of said first arm to one of a door and a door frame;

a second elongate arm member having a first end and a second end;

second attachment means for slideable and pivotal attachment of said first end of said second arm to the other of a door and a door frame;

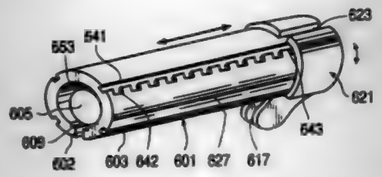
said second end of one of said first arm and said second arm having a plurality of threaded holes spaced along the length thereof;

said second end of the other of said first arm and said second arm having a transverse hole therethrough;

said other of said first arm and said second arm further having an elongate slot extending through a portion of the length thereof between said transverse hole and said first end thereof; and

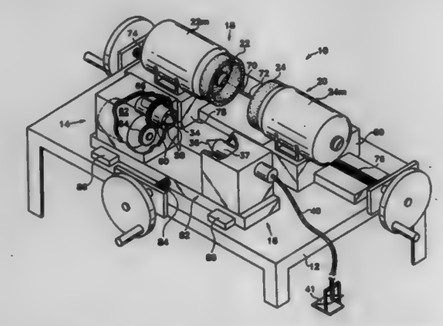
said second ends of said arms attached to each other by a first screw through said transverse hole and into one of said plurality of threaded holes and a second screw through said elongate slot and into another of said plurality of threaded holes.

5,381,629
PORTABLE SHARPENER
Roger Salvail, 187 Des Ormes, Drummondville, QC, Canada J2C 1T2
Filed Sep. 25, 1992, Ser. No. 950,851
Int. Cl.[6] B21F *17/00*
U.S. Cl. 451—340 **22 Claims**



1. A portable sharpener for a blade of the type comprising a main portion provided with at least one cutting edge and one end portion provided with at least one cutting edge, the main portion having parallel lateral faces and at least one cutting edge substantially straight or slightly curved and when more than one cutting edge is provided, the cutting edges being substantially parallel, the end portion extending one corresponding end of the main portion and having lateral faces parallel and coplanar with those of the main portion and having at least one cutting edge substantially curved, the sharpener comprising a body having a main longitudinal axis, a housing and including:
a file having a longitudinal axis and at least one abrasive surface parallel to the longitudinal axis and to the main longitudinal axis of the body;
means for fastening the file in the housing;
first guiding means for a portion of the cutting edges of the blade to be moved against the abrasive surface of the file along the longitudinal axis of the file;
means for recovering the filings obtained during the sharpening of the blade, said means being located between the first guiding means and the abrasive surface of the file; and
means for the selective positioning of the abrasive surface with respect to the at least one cutting edge of the main portion of the blade, between at least two distinct positions, a first of the distinct positions being defined when the cutting edge of the main portion of the blade may be substantially parallel or tangent with the abrasive surface, another of the distinct positions being defined when the cutting edge of the main portion of the blade may form an angle with respect to the abrasive surface and the cutting edge of the end portion may be substantially tangent with at least one portion of the abrasive surface, said means comprising:
a removable crutch mounted on the body and provided with second guiding means intended to contact a portion of the cutting edge, the crutch being mounted in a removable way on the body between two distinct positions, that is at least one distinct position where the second guiding means are not intended to be in contact with the cutting edge to allow the abrasive surface to be contacted by the cutting edge in a way substantially parallel or tangent, and at least one other distinct position where the second guiding means are intended to be in contact with the cutting edge while being positioned between the file and the cutting edge of the main portion of the blade to thus allow lifting of one end of the file with respect to the cutting edge of the main portion of the blade and thus form an angle, between them;
means for moving the crutch between one distinct position toward one another distinct position;
wherein when the crutch is positioned in such a way as to have its second guiding means between the file and the cutting edge of the main portion of the blade, the second guiding means cooperate with the first guiding means to guide at least a portion of the cutting edge of a corresponding end portion of the blade along the abrasive surface of the file and thus allow sharpening of the cutting edge.

5,381,630
BRAKE ROTOR GRINDING METHOD AND APPARATUS
James Kinner, 1620 16th Ave., San Francisco, Calif. 94122
Filed Sep. 28, 1992, Ser. No. 951,861
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—63 F **10 Claims**

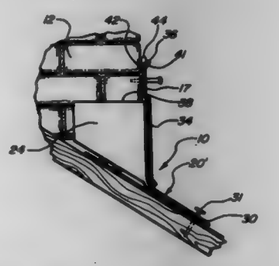


1. A method for producing a finished surface on a brake disk or flywheel, comprising the steps of:
mounting the disk or flywheel securely and fixedly on an arbor,
mounting the arbor for rotation between a pair of tapered dead centers, the arbor having end means for rotational engagement with the two dead centers, including applying appropriate lubricant between the arbor end means and the dead centers and engaging the arbor between the two dead. centers, so that the arbor can be rotated between the dead centers with substantially no runout,
rotating the arbor with the disk or flywheel, and
advancing against at least one surface of the disk or flywheel, a motor driven abrading wheel capable of grinding the surface of the disk or flywheel,
whereby the dead center mounting of the arbor supports the rotation of the disk or flywheel without use of conventional bearings, and high spots or disk thickness variation is nearly eliminated.

5,381,631
METHOD AND APPARATUS FOR CUTTING METAL CASINGS WITH AN ULTRAHIGH-PRESSURE ABRASIVE FLUID JET
Chidambaram Raghavan, Kent; John Olsen, Vashon; Curtis L. Anderson, Puyallup, all of Wash., and Alton J. LaLande, Lafayette, La., assignors to Flow International Corporation, Kent, Wash.
Filed Apr. 15, 1993, Ser. No. 48,659
Int. Cl.[6] B24C *3/00*
U.S. Cl. 451—75 **23 Claims**

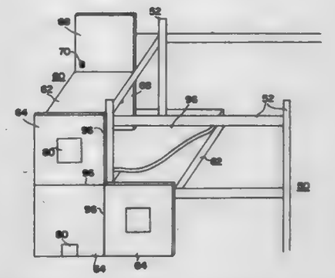
1. Apparatus for cutting a metal casing below the sea bed comprising:
means for lowering the apparatus having a maximum width that is less than an inner diameter of the casing inside the casing to a desired depth;
a first feed line for conveying an ultrahigh-pressure fluid stream through a nozzle to generate an ultrahigh-pressure fluid jet, the ultrahigh-pressure fluid jet passing into a mixing chamber provided in the apparatus;
a second feed line for conveying a volume of abrasives to the mixing chamber such that the ultrahigh-pressure fluid jet and the abrasives combine to form an abrasive fluid jet that exits the apparatus through a mixing tube;
a first adapter provided with means for allowing the first and second feed lines to pass through it, sealingly engaged to a first end of a pneumatic packer, the packer engaging an inner surface of the casing when inflated to secure the apparatus to the casing and having a hollow central region to allow the first and second feed lines to pass through it;
a second adapter coupled at a first end to a second end of the packer and coupled at a second end to a first end of a cylinder, the second adapter provided with means for allowing the first and second feed lines to pass from an inner region of the adapter to an outer surface of the cylinder such that the cables may extend along a length of the cylinder to be coupled to the nozzle that is mounted in a nozzle block coupled to a second end of the cylinder; and
a drive assembly provided within the cylinder to rotate the abrasive fluid jet in a substantially horizontal plane and to move the abrasive fluid jet in a vertical plane whereby the abrasive fluid jet is positioned and moved relative to the inner surface of the casing to cut the casing in a substantially horizontal plane.

5,381,632
CHIMNEY FLASHING SYSTEM
Matthew Damron, 533 S. Bayside, Detroit, Mich. 48217
Filed May 3, 1993, Ser. No. 55,299
Int. Cl.[6] E04D *1/36*
U.S. Cl. 52—58 **4 Claims**



1. A flashing system for a chimney having a plurality of sides, said chimney extending upwardly from a roof, said flashing system comprising:
an elongated base flashing, said base flashing being generally L-shaped in cross section thus having two generally planar legs which intersect each other along a midline of said flashing,
means for attaching one leg of said base flashing to the roof so that the other leg of said base flashing extends upwardly from the roof along one side of the chimney, said one leg adapted to be covered by shingles on the roof,
an elongated and generally planar counter flashing,
means for attaching said counter flashing to the chimney above a top edge of said other leg of said base flashing so that said counter flashing overlaps said other leg of said base flashing,
a sealing strip extending along the top side said one leg of said base flashing, said sealing strip adapted to engage a bottom side of the shingles,
wherein said sealing strip comprises a foam strip,
an adhesive on an upper side of said foam strip, and
wherein said means for attaching said base flashing to said roof comprises a plurality of nails extending through said one leg of said base flashing through said sealing strip and into the roof, said nails forming a sole means for attaching said base flashing to the roof so that said other leg of said base flashing is free floating.

5,381,633
ASSEMBLY AND METHOD FOR CONSTRUCTING A BUILDING
John H. Hendrich, 318 S. Fairfax St., Alexandria, Va. 22314
Continuation of Ser. No. 589,527, Sep. 28, 1990, abandoned. This application Apr. 7, 1993, Ser. No. 43,981
Int. Cl.[6] E04B *2/00*
U.S. Cl. 52—71 **22 Claims**



1. An assembly for constructing a building, comprising:
a multi-story support frame;
a plurality of building assembly units, each unit including a first generally rectangular first planar member having opposite surfaces and opposite edges, installable upon the support frame to define a floor member, and a generally rectangular second planar member having opposite surfaces and opposite edges, pivotably attached to said first planar member at a position proximate one edge of said first planar member, and on one said surface intermediate two opposite edges of said second planar member, said second planar member disposed to pivot away from said first planar member to a generally vertical position to define a non-load bearing wall member; and
means for connecting said building assembly units to the multi-story support frame.

5,381,634

COVERING STRUCTURE PARTICULARLY FOR SURFACES HAVING A MARKED LONGITUDINAL EXTENSION

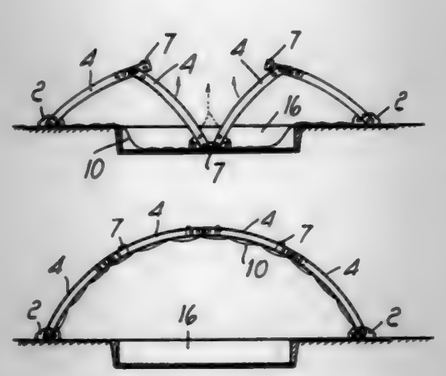
Stefano Pietrogrande, deceased, late of Rome by Daniela Pietrogrande née Formenti, heir ; Marco Attanasio, Bari; Paolo Bisogni, and Sandro Lomoro, both of Rome, all of Italy, assignors to I.C.P.-Industria Componenti Prefabbricati S.r.l., Bari, Italy

Filed Dec. 14, 1992, Ser. No. 989,668

Claims priority, application Italy, Dec. 17, 1991, MI91 A 003371

Int. Cl.[6] E04B *1/32*

U.S. Cl. 52—86 16 Claims



6. Covering structure comprising a plurality of arched frames (1, 4), and a covering membrane (10) connected to said arched frames (1, 4), wherein each of said arched frames comprises;

a pair of stationary retention plates (1), said pair of plates (1) being fixable to the ground at a perimeter of an area to be covered (16);

at least three pivotally interconnected frame segments (4), at least two of said frame segments (4) being pivotally connected to said pair of stationary ground resting retention plates (1);

first locking means (8, 9*a*) for selectively preventing relative pivotal movement between mutually adjacent frame segments (4);

second locking means (3, 9*b*) for selectively preventing relative pivotal movement between said frame segments (4) and said stationary ground-resting retention plates (1);

suspension members (11) connected to said covering membrane (10), and;

engagement members (12) connecting said suspension members (11) to said frame segments (4),

wherein each of said at least three frame segments (4) comprises a pair of members (4*a*), and a plurality of cross-members (5) interconnecting said pair of members (4*a*), and

wherein said frame segments (4) are mutually interconnected by hinge members (7), said hinge members (7) being interposed between said mutually adjacent frame segments (4).

5,381,635

CONSTRUCTION WALL PANEL AND PANEL STRUCTURE

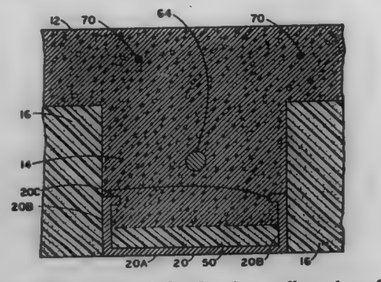
Wallace D. Sauger, West Palm Beach, Fla., assignor to Royal Wall Systems, Inc., Royal Palm Bch., Fla.

Continuation-in-part of Ser. No. 20,303, Feb. 19, 1993, Pat. No. 5,313,753, which is a continuation-in-part of Ser. No. 3,396, Jan. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 874,414, Apr. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 750,511, Aug. 27, 1991, abandoned. This application Mar. 4, 1994, Ser. No. 206,465

The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.

Int. Cl.[6] E04B *1/00*

U.S. Cl. 52—251 24 Claims



1. A prefabricated panel for forming walls and roofs of buildings, comprising:

a concrete planar portion having a first face and a second face,

at least one concrete rib projecting from said first face and having a rib outer face,

at least one block of insulating material fitted adjacent to said first face and said at least one rib,

a plastic stud member adapted to receive drywall anchoring fasteners comprising a plastic sheet secured substantially parallel to and spaced apart from said rib outer face with rib connecting and spacing means,

anchoring means for securing said panel to a foundation.

5,381,636

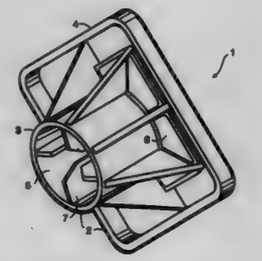
PROTECTIVE COVER FOR CONCRETE REINFORCING BARS

Vasken Kassardjian, Newport Beach, and Patrick J. Wilson, Dove Canyon, both of Calif., assignors to Don De Cristo Concrete Accessories, Inc., Irvine, Calif.

Filed May 18, 1994, Ser. No. 245,018

Int. Cl.[6] E04H *12/00*; E05B *1/00*

U.S. Cl. 52—301 8 Claims



1. A protective cover for covering an exposed end of a bar, comprising:

an elongated cylindrical collar for securing the protective cover to the exposed end of the bar;

a cap which is perpendicularly attached to the collar by reinforcing ribs; and

a seat for seating against the exposed end of the bar, wherein the seat is arranged between the collar and the cap and includes slots for permitting direct attachment of the reinforcing ribs from the collar to the cap.

5,381,637

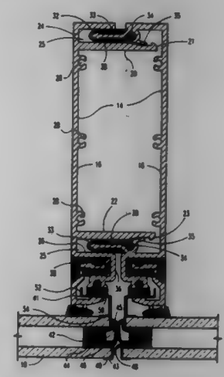
STOPLESS BUTT-JOINT CURTAINWALL SYSTEM

F. Aziz Farag, 43 N. Juliet St., Iselin, N.J. 08830

Continuation of Ser. No. 869,765, Apr. 16, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 170,971

Int. Cl.[6] E04B *2/96*; E04G *23/00*

U.S. Cl. 52—204.595 32 Claims



1. A curtainwall system that secures at least one panel on a building comprising:

at least one elongate mullion having a panel securing portion extending longitudinally along the mullion and a channel extending longitudinally along the mullion adjacent the panel securing portion, said channel having a first sidewall adjacent the panel securing portion and a second sidewall opposed to and spaced from the first sidewall;

a panel engaging member having a first portion that engages the panel and a second portion, spaced from the first portion, that engages the panel securing portion;

a retaining member that holds the second portion of the panel engaging member on the panel securing portion, the retaining member having a first leg received in the channel, a second leg overlying the second portion of the panel engaging member and urging said second portion of the panel engaging member into engagement with said panel securing portion, and an intermediate portion extending between the first leg and the second leg; and

a wedge inserted in a direction substantially parallel to said panel between said retaining member and said mullion, insertion of the wedge between the retaining member and the mullion causing said retaining member to move in a direction substantially perpendicular to the panel to apply compressive force on the second portion of the panel engaging member between the retaining member and the mullion.

5,381,638

BUILDING STRUCTURE FORMED OF LIGHTWEIGHT INTERFITTING PANELS

Arne Andersson, Rastorp, Sweden, assignor to Arnes Plat AB, Orebro, Sweden

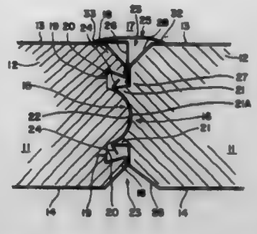
PCT No. PCT/SE92/00019, § 371 Date Jul. 20, 1993, § 102(e) Date Jul. 20, 1993, PCT Pub. No. WO92/13151, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 15, 1992, Ser. No. 90,035

Claims priority, application Sweden, Jan. 22, 1991, 9100188-3; Jun. 28, 1991, 9102004-0

Int. Cl.[6] E04B *2/32*

U.S. Cl. 52—592.1 11 Claims



1. An elongated building panel (11) formed of first (13) and second (14) spaced hard layers forming first and second walls, respectively, an insulating plastic material (12) filling the space between said first and second layers and bonded thereto to form said elongated building panel, said elongated building panel having elongated coextensive male (15) and female (16) side edges, said female side edge comprising a rounded groove (21*a*) flanked by a pair of pointed projections (21) formed in said plastic material, said first and second hard layers extending into said elongated female side edge to cover said pointed projections and terminate at free end lip portions (24), and said male elongated side edge comprising a rounded tongue (22) flanked by a pair of extensions (18) spaced from said tongue thereby forming recesses (20), said extensions being angled in the direction of the center of the elongated building panel, said first and second hard layers extending into said elongated male side edge to cover said angled extensions and to terminate in end portions (19) in said plastic core.

5,381,639

MACHINE FOR LOADING OPEN TOP STYLE CARTONS AT HIGH SPEEDS

Rodney K. Calvert, Dunwoody, and Alton J. Fishback, Austell, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 16, 1993, Ser. No. 153,208

Int. Cl.[6] B65B *21/06, 21/12*

U.S. Cl. 53—48.1 6 Claims

1. A machine for drop loading bottles into open top cartons having upstanding side and end walls and a bottom wall provided with at least one aperture, the machine comprising

a loading station,

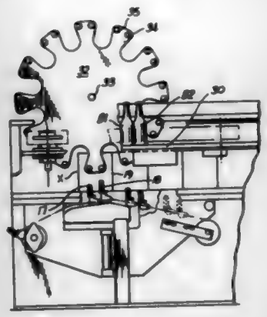
conveyor means for supplying a series of said cartons in end to end abutting relationship to said loading station,

conveyor means including spaced apart parallel belts having a series of bottle engaging lugs for supplying two rows of bottles to said loading station,

an endless chain disposed in a vertical plane and generally below said loading station, a plurality of upright studs mounted on said chain and arranged to enter through said aperture in said bottom wall of each carton,

said bottle engaging lugs and said studs being synchronized and effective to register said cartons at said loading station and to guide said bottles as they drop into said cartons a rotatable vertically disposed disc provided above said loading station and arranged for partial entry into each

carton from above and between the bottles of each pair of bottles, said disc having radial projections formed along the periphery thereof and a plurality of knobs formed on each of said projections on opposite sides of said disc, a plurality of pairs of knobs formed on said disc near the



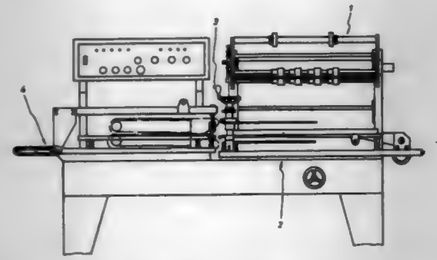
periphery of said disc with the knobs of each pair of knobs on opposite surfaces of said disc, radial projections formed about the periphery of said disc and wherein at least one pair of knobs is disposed on each side of each of said radial projections.

5,381,640

AUTOMATIC PACKING AND SEALING APPARATUS

Shao-Yi Chiu, No. 191, Yen Ping Road Sec. 3, Tou Nan Chen, Yun Lin Hsien, Taiwan, Prov. of China

Filed Oct. 29, 1993, Ser. No. 142,912
Int. Cl.[6] B65B *9/06, 9/20, 41/16, 51/28*
U.S. Cl. 53—77 **1 Claim**

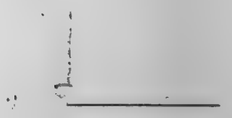


1. An antomatic packing and sealing apparatus comprising a plastic film-feeding system, a packing system, a sealing system and a transferring system, wherein:

said plastic film-feeding system includes a first roller shaft and a second roller shaft which are disposed between two lateral walls and a supporting shaft is extended through each of said roller shafts and two bearings are fitted with two ends of said supporting shaft, permitting each of said roller shafts to freely rotate, two adjusting sleeve members being symmetrically freely slidably fitted on said second roller shaft, on an edge of each of said adjusting sleeve members being formed thread holes, whereby screws are screwed into said thread holes to secure said adjusting sleeve member on said second roller shaft, one end of a tension-adjusting shaft penetrating one of said lateral walls and being formed with a thread section which is cut with a fissure, a coil spring having a central abutting plate being fitted with said thread section with the central abutting plate inserted in said fissure, an outer surface of said coil spring contacting an inner surface of a cover member, said cover member having a central through hole and a peripheral portion formed with multiple U-shaped recesses, whereby nuts are screwed with said tension-adjusting shaft to associate said cover member with a flange plate of said lateral wall, a fixing means being disposed above said flange plate and composed of a C-shaped seat member, a spring and a fixing rod, said spring being disposed between an upper side of said C-shaped seat and an annular projection of said fixing rod, whereby said spring is able to force said fixing rod into said U-shaped recess of said cover member, a stretching lever being disposed between said lateral walls and having a thread end portion secured on said lateral wall by nuts and a ball end portion;

said packing system includes two slide rails which are disposed on a support body, multiple linear bearings being fixed on a frame body of a front conveying belt corresponding to said slide rails, a thread sleeve being fixed on a rear portion of said frame body and one end of a thread rod being screwed in said thread rod, the other end of said thread rod being connected with a wheel, whereby when rotating said wheel, the whole conveying belt structure can be moved forward and backward, a lower triangular turning guiding board being disposed on a transverse seat located on said frame body, an upper triangular turning guiding board being disposed on an upper transverse rod and a substantially U-shaped stretching lever being disposed on one side of said upper turning guiding board, a blowing tube being diagonally fixed on said frame body under said front conveying belt assembly, said blowing tube being formed with multiple blowing holes, whereby an operator is able to blow diagonally inwardly through said blowing holes in the direction parallel to a diagonal side of said lower triangular turning guiding board; and

said-sealing system and transferring system include an upper and a lower substantially U-shaped swinging arms which are disposed on two sides of said rear end of said support body, said upper and lower swinging arms being pivotally connected, two pairs of opposite sensing switch seats being disposed at a front end of said upper swinging arm and on two sides thereof and sensing switches being respectively disposed on said sensing switch seats, said transverse and longitudinal sealing blades being fixed under said upper swinging arm by screws, on two sides of each of said sealing blades being disposed activating plates which are connected by a substantially U-shaped connecting seat, a pair of opposite sensing plates being fixed above said left and right connecting seats and said left and right connecting seats being formed with through holes through which a guiding rod of said upper swinging arm is extended, a spring being fitted on said guiding rod and two nuts being secured at an upper end of said guiding rod so as to buffer vertical reciprocating movement of said activating plates, whereby during the sealing process, said blowing tube disposed under said front conveying belt assembly is used to blow air into the plastic film to expand said plastic film on said upper turning guiding board and permit the article on said front conveying belt assembly to be packed closer to said transverse sealing blade for saving material and making the package more impacted, and whereby during the conveying process, if the article does not completely pass through said transverse sealing blade or is too close to said longitudinal sealing blade or an unnecessary article or the operator incautiously extends his hand into a position under said sealing blade, when said upper swinging arm is moved downward, before said sealing blades touch the article, said activating plates beside said blades will first touch the article and be moved upward, so that said sensing plates connected with said connecting seats of said activating plates will ascend along therewith and get close to said sensing switches, making the same sense and emit a signal so as to emergently stop said sealing system for ensuring the safety of the operator, reducing loss of the article and protect said packing and sealing apparatus.

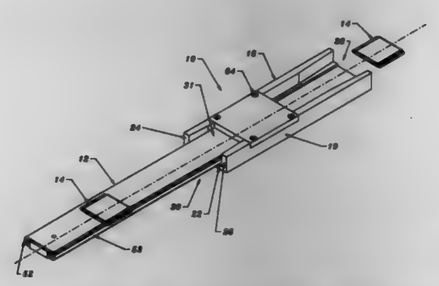


5,381,641

BGA FUNNEL

Ronilo V. Boja, and Mohsen Hosseinmardi, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 26, 1993, Ser. No. 157,542
Int. Cl.[6] B65B *39/06, 5/10*
U.S. Cl. 53—255 **20 Claims**



1. A BGA funnel adapted for facilitating the loading of BGA packages into a BGA tube, said funnel comprising:

a rectangularly-shaped housing member **(16)** having a loading end **(28)**, an intermediate portion **(19)**, and an unloading end **(30)**;

said intermediate portion of said housing member having a central bore **(20)** of a substantially U-shaped cross-section extending therethrough;

said housing member including a flat bottom portion **(22)** and a pair of short vertically extending side walls **(24, 26)** disposed integrally on each side of said bottom portion;

an inwardly tapered channel **(38)** formed between said side walls and extending between said loading end and said intermediate portion for receiving the BGA packages to be inserted into the BGA tube;

narrow step portions **(40, 42)** associated with said inwardly tapered channel for supporting only two side edges of the BGA package so that the bottom surface thereof is suspended freely above the top surface of said inwardly tapered channel;

an outwardly tapered channel **(50)** formed between said side walls and extending between said intermediate portion and said unloading end and being adapted for receiving a loading end of the BGA tube; and

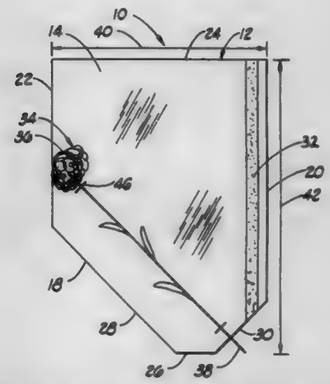
a roofing plate **(18)** securely fixed to the intermediate portion of said housing member so as to prevent the BGA package from being displaced out of said bore.

5,381,642

METHOD OF WRAPPING A FLORAL GROUPING USING A MATERIAL HAVING POSTIONING MARKS

Donald E. Weder, and John W. Bergstrand, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 968,798, Oct. 30, 1992, and a continuation-in-part of Ser. No. 965,585, Oct. 23, 1992, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, said Ser. No. 968,798, is a continuation of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, which is a continuation-in-part of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Jan. 29, 1993, Ser. No. 10,899
Int. Cl.[6] B65B *11/04, 11/48, 25/02*
U.S. Cl. 53—399 **31 Claims**



1. A method for wrapping a wrapping material about a floral arrangement, comprising the steps of:

providing a wrapping material for wrapping a floral arrangement, comprising:

a sheet of material having an upper surface, a lower surface and an outer periphery, the outer periphery of the sheet of material further comprising an angle cut, the sheet of material having a tick mark, wherein the placement of a floral arrangement on the sheet of material is designated by the tick mark, the sheet of material further having a bonding material disposed thereupon, the sheet of material sized to wrap about and substantially surround and encompass a floral arrangement;

providing a floral arrangement having an upper end consisting of a flower end and a lower end consisting of a stem end;

disposing the floral arrangement on the sheet of material, the floral arrangement being disposed on or adjacent the tick mark; and

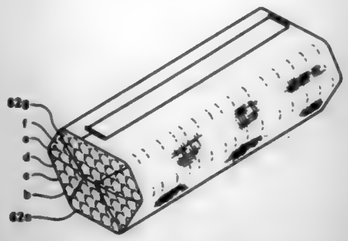
wrapping the sheet of material about the floral arrangement by overlapping at least one portion of the sheet of material with at least one other portion of the sheet of material, one portion of the sheet of material thereby bondingly contacting and bondingly engaging to at least one other portion of the sheet of material, the sheet of material thereby substantially encompassing and surrounding a substantial portion of the floral arrangement, wherein disposing the floral arrangement on or adjacent the tick mark results in a substantial portion of the flower end of the floral arrangement being surrounded by the wrapped sheet of material, the stem end of the floral arrangement extending from the wrapped sheet of material.

5,381,643

PACKAGE OF SHIRRED FOOD CASING AND METHOD

Michael P. Kazaitis, Palos Park; Robert P. Graves, Jr., Downers Grove, and Joseph L. Monti, Cicero, all of Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed Mar. 12, 1993, Ser. No. 30,923
Int. Cl.[6] B65B *53/02*
U.S. Cl. 53—415 **9 Claims**



1. A method of forming a package including a bundle of tubular shirred sticks of food casing encased in an insitu formed container comprising the steps of:

a) arranging the shirred sticks in a plurality of rows stacked one on another to form a bundle with the longitudinal axes of the sticks being parallel and with the stick ends being coplanar, the coplanar stick ends defining the ends of said bundle;

b) wrapping a heat shrinkable film around said bundle in a direction transverse the longitudinal axes of said sticks, said film having a length defined between opposite ends of the film sufficient to extend about the perimeter of said bundle and a width defined between longitudinal side margins of the film greater than the bundle length;

c) bringing the opposite ends of said film together at a top of said bundle, and folding each side margin of said film over an end of said bundle;

d) applying an adhesive tape to hold said film opposite ends together;

e) heating said film to induce shrinking and stiffening of said film thereby forming a container insitu about said bundle which container has a shape determined by the shape of the bundle, and causing, by said heating, the stiffening of said folded over side margins; and

f) insulating said film opposite ends during said heating to at least partly avoid shrinking said film opposite ends and prevent the welding of one of the film opposite ends to another whereby said film opposite ends remain unsealed and releasable one from the other and define flaps which open to provide a recloseable access to said sticks within the insitu formed container.

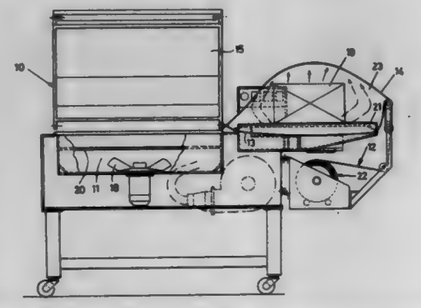
5,381,644

MACHINE FOR PACKAGING WITH SINGLE-FOLDED HEAT-SHRINKABLE FILM, PROVIDED WITH A DEVICE FOR AUTOMATICALLY OPENING THE FILM

Pietro Di Bernardo, Milan, Italy, assignor to Interdibipack S.p.A., Milan, Italy

Filed Sep. 30, 1992, Ser. No. 954,028
Claims priority, application Italy, Oct. 3, 1991, MI91A002637
Int. Cl.[6] B65B *53/02*
U.S. Cl. 53—557 **3 Claims**

1. A machine for packaging articles in a single-folded heat-shrinkable film (12) defined by a fold and two opposing faces (13, 14), means for supporting the film as a roll (22) for rotation about a predetermined axis and effecting film feed in a predetermined direction between an article loading station and a film heat shrinking and sealing station, said article loading station including a work table (21) having opposite spaced edges, means (31) adjacent a first of said work table edges for directing air between free edges of the two opposing film faces (13, 14) disposed adjacent said work table first edge in a direction generally transverse to said predetermined direction and toward a second of said work table edges adjacent which the film fold is adapted to be disposed thereby inflating the film (12) by opening said opposing faces (13, 14) to facilitate the introduction of an article therebetween, first blower means (24) for generating air, first duct means (28, 30) for conducting air from said first blower means (24) to said air directing means (31), said film heat-shrinking and sealing station including means for defining a chamber (11) having a movable hood (15), a support (20) in said chamber means (11) upon which the folded film and an article therein are supported during the heat sealing of the film (12), exhaust means (25) for exhausting air from said chamber means (11) and the interior of the folded film (12) from between the film faces (13, 14) incident to the heat shrinking thereof, means for heat shrinking the folded film (12) into intimate relationship to an article packaged therein, means for heat sealing at least the film face free edges, said



heat-shrinking means including second blower means (18) for blowing hot air relative to said support (20) and circulating the hot air in said chamber (11), said first blower means (24) and said exhaust means (25) being disposed generally at said article loading station, second duct means (27, 32) for conducting air from the inflated film (12)to said exhaust means (25), damper means (29) associated with said first duct means (28, 30) for controlling the flow of air therethrough, said first duct means (28, 30) being located beneath said work table (21) and being of a generally transverse configuration defined by a first duct portion (28) disposed generally transverse to a second duct portion (30), said second duct means (27, 32) having first and second duct portions disposed generally adjacent said respective first duct means first (28) and second (30) duct portions, said second duct means (27, 32) having a duct portion (27) disposed generally transverse to said first duct means second duct portion (30), and said damper means (29) being located in said first duct means first duct portion (28).

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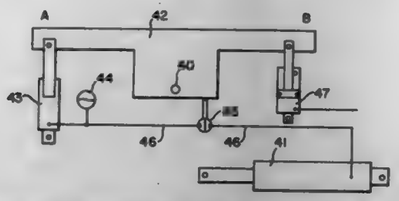
CONTROL FOR A STRUCTURAL ASSEMBLY SELF-ALIGNINGLY SUPPORTED ON AN AGRICULTURAL MACHINE

Gustav Schumacher, Gartenstrasse 8, and Guenter Schumacher, Raiffeisenstrasse 10, both of, D-5231 Eichelhardt, Germany

Filed May 3, 1993, Ser. No. 56,507
Claims priority, application Germany, May 6, 1992, 4214466
Int. Cl.[6] A01D *47/00*
U.S. Cl. 56—10.2 E **3 Claims**

1. Control for a structural assembly oscillatingly supported around a swivel axis on a base unit in a harvesting machine, said structural assembly including a cutter table inclinably provided around a longitudinal axis of a harvester thresher, an hydraulic operation cylinder, said cutter table being inclinable relative to a conveyor channel about a point of rotation when load is applied to one side of said cutter table, inclination of said cutter table relative to the conveyor channel being effected by said hydraulic operation cylinder pivoted at one end

to said conveyor channel and at the other end to said cutter table, a pressure reservoir (44), an hydraulically loaded relief cylinder (43), the pressure medium of which is cushioned by said pressure reservoir (44) which is installed with one end to



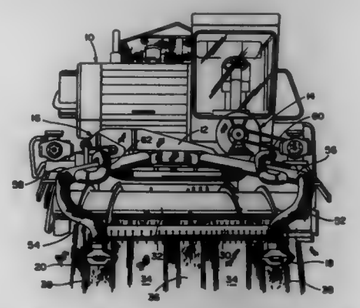
said conveyor channel (42) and with the other end to the cutter table so as to balance a [disequilibrium]position of said cutter table (2) relative to said point of rotation (40) by the force of said relief cylinder to return said cutter table from an inclined position to a horizontal position.

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SEED ROW CROP HARVESTER WITH VACUUM SCATTERED SEED SAVER

Omer L. Casey; Gordon G. Casey, both of Rte. 1 Box 55M 15th St. & Ave. C., Somerton, Ariz. 85350-9749, and Larry L. Casey, 2843 11th Pl., Yuma, Ariz. 85364

Filed Jan. 13, 1994, Ser. No. 181,223
Int. Cl.[6] A01D *45/30, 41/06, 41/10*
U.S. Cl. 56—13.1 **9 Claims**



1. In combination with a grain combine for harvesting cut, dried and windrowed seed crops and wherein the seed crop to be harvested has been centrally windrowed between the remote marginal portions of the outer furrows of at least a three row furrow swath, said combine including forward opposite side support wheels for tracking in said outer furrows and a forward adjustable height harvesting head for picking up the windrowed seed crop and feeding the picked up crop to the interior of said combine, a vacuum pick up assembly for random seeds and seed pods remaining in said outer furrows, said assembly including a pair of opposite side, downwardly opening vacuum heads mounted from said harvesting head and disposed forward of said support wheels in front-to-rear alignment therewith, and combined vacuum producing duct means operative to produce a vacuum at said vacuum heads and convey random seeds vacuumed from said outer furrows into said vacuum heads from the latter into the interior of said combine.

8. A method of preventing loss of loose seeds or seed pods in a crop windrow between the remote marginal portions of the outer furrows of at least a three furrow swath, said method comprising:

a) providing a crop windrow pickup mechanism attached to a harvesting machine, the pickup machine including a rotary tined pickup drum for lifting a windrow and an auger assembly for receiving lifted windrow material as the harvesting machine moves forward against a windrow;

b) rotating the pickup drum so that its tines lift the windrow upward and over the pickup drum and into the auger assembly while the harvesting machine moves forward;

c) supporting downwardly opening vacuum heads from opposite sides of the crop pickup mechanism with the heads registered with and disposed in the outer furrows of at least a three row furrow swath along which the harvesting machine is being moved forwardly;

d) applying a vacuum to said heads to thereby vacuum seeds within said furrows up into said heads; and

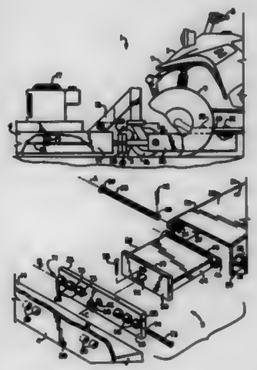
e) conveying the vacuumed up seeds into the interior of the harvesting machine.

5,381,647

ATV MOWER ARTICULATING HITCH

Ronald D. Eberle, Grainfield, Kans., assignor to Trail-Buster Dozer, Inc., Grainfield, Kans.

Filed Oct. 28, 1993, Ser. No. 142,867
Int. Cl.[6] A01D *34/64, 34/86;* **A01B** *59/048*
U.S. Cl. 56—15.8 **15 Claims**



1. A mower apparatus comprising:

(a) a driver supporting and self propelled all terrain vehicle for motivating the apparatus, vehicle ground engaging wheels, and a steering mechanism;

(b) a mobile non-self propelled mower deck comprising a self contained motor, ground engaging wheels and a cutter blade driven by said motor; and

(c) an articulating hitch apparatus joining said mower deck to said all terrain vehicle, such that said mower deck is positioned in front of and motivated by said all terrain vehicle; said hitch apparatus comprising:

1) first mounting means for connecting said hitch apparatus to said all terrain vehicle;

2) second mounting means for connecting said hitch apparatus to said mower deck;

3) a hitch body having first and second sections and structurally connecting said first and second mounting means;

4) first pivotal means providing pivotal rotation of said first mounting means relative to said body along a first axis that is generally perpendicular to a normal direction of travel of the apparatus;

5) second pivotal means providing pivotal rotation of said second mounting means relative to said body along a second axis that is spaced from and parallel to said first axis;

6) third pivotal means pivotally joining said hatch body first and second segments and allowing said first and

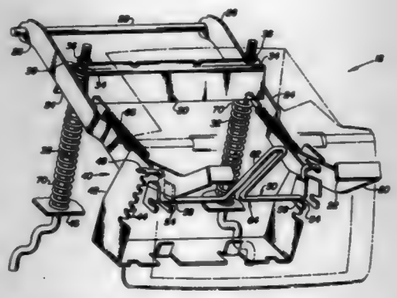
second mounting means to rotate relative to each other about a third axis that is generally parallel to the direction of normal travel of said mower apparatus, such that said mower deck and said all terrain vehicle each independently follow the contour of the land being traversed thereby; said third pivotal means including a journal pivot pin extending from said first segment and being aligned with said third axis; said second segment having a bore pivotally receiving said pin and including locking means to secure said pin in said bore while allowing said pin to rotate in said bore.

5,381,648

MOWER DECK HEIGHT ADJUSTMENT MECHANISM

Brian D. Seegert, Hartford; Daniel A. Sebben, West Bend, and Richard D. Teal, Horicon, all of Wis., assignors to Deere & Company, Moline, Ill.

Filed May 28, 1993, Ser. No. 68,829
Int. Cl.[6] A01D *34/74*
U.S. Cl. 56—17.1 **18 Claims**



1. A mechanism adapted for releasably latching a lever means in a selected position, comprising:
- a lever means having first and second slots, said first slot extending in an arc circumscribing a first slot center, said first slot center being located at a first position within the second slot, said second slot extending in an arc circumscribing a second slot center, said second slot center being located at a first position within the first slot, said second slot also having an open end portion,
- a pivot member having first and second portions radially offset from one another, said first and second position being received within the respective first and second slots, said pivot member having an offset portion engagable by an operator for pivoting the pivot member about its second portion, said offset portion being radially offset from the second portion of the pivot member,
- a locking member engagable by the first portion of the pivot member for securing the lever means in a selected position, and
- a blocking member coupled with the lever means and abuttable with the pivot member preventing the first portion of the pivot member from pivoting to the first position within the first slot during operation.

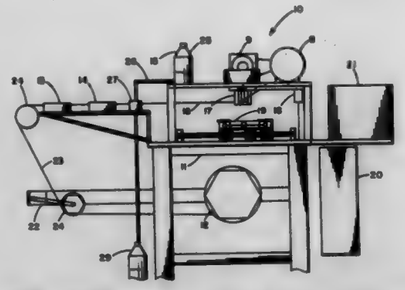
5,381,649

MEDICAL STAPLE FORMING DIE AND PUNCH

Stephen A. Webb, Blooki Rd., Middlebury, Conn. 06762

Filed Jun. 4, 1993, Ser. No. 71,100
Int. Cl.[6] B21D *53/46*; B21G *7/02*
U.S. Cl. 59—75 **13 Claims**

1. A forming punch having particular utility to facilitate the forming of a new and improved medical staple having a pair of spaced apart projecting leg portions (92, 93) each with a relatively gradual bend portion (97) defining a desired radius of bend curvature (77) with a base member (91), comprising:
- a body portion (72); and
- a head member (73) integrally formed with said body portion, and having tapered wall portions (78) defining a relief angle (79) of taper, and a tip portion (74) with a pair of transverse side wall members (76) and an upper transverse channel wall member (80) defining a transverse staple wire receiving groove (75), said upper transverse channel wall member (80) having upwardly curved end portions (77) each defining a predetermined radius of bend curvature substantially similar to the desired bend curvature of the medical staple bend portions (97).

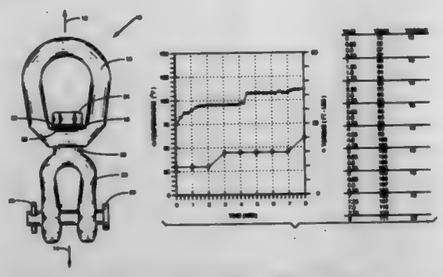


5,381,650

SWIVEL HARDWARE ASSEMBLY

Charles R. Garrett, Ramona, Okla., assignor to The Crosby Group, Inc., Tulsa, Okla.

Filed Nov. 22, 1993, Ser. No. 155,489
Int. Cl.[6] F16G *15/08*
U.S. Cl. 59—95 **7 Claims**



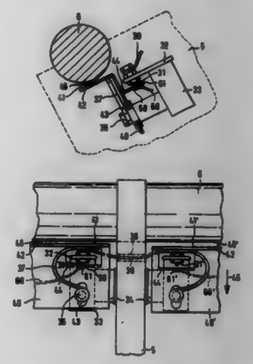
1. A swivel hardware assembly which comprises:
- a first load fitting having a base and a circular bore opening therethrough;
- a second load fitting having a shank passing through said base terminating in a head to form a pivotal connection between said first and said second fitting; and
- two thrust washers juxtaposed between said base and said head, said thrust washers having opposed self lubricating surfaces forming a single bearing surface.

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ARRANGEMENT FOR MONITORING THE LAP FORMATION ON DRAFTING UNITS OF A SPINNING MACHINE

Gerd Stahlecker, Eislingen/Fils, Germany, assignor to Fritz Stahlecker, Bad Ueberkingen and Hans Stahlecker, Soessen, both of Germany

Filed Aug. 21, 1992, Ser. No. 933,098
Claims priority, application Germany, Sep. 20, 1991, 4131418
Int. Cl.[6] D01H *13/04, 13/26*
U.S. Cl. 57—264 **19 Claims**



1. An arrangement for monitoring the lap formation on delivery rollers of drafting units of a spinning machine, comprising:
- sensing elements assigned to respective delivery rollers and being movable away from the delivery rollers when fibers accumulate on the delivery rollers, and
- a common electric circuit for generating a signal in response to the sensing elements,
- wherein groups of the sensing elements are connected to the common electric circuit, which common electric circuit is interrupted by the moving away of a sensing element to thereby trigger a signal for stopping the drive of drafting unit delivery rollers of a group of drafting units corresponding to the group of sensing elements connected to the common electric circuit.

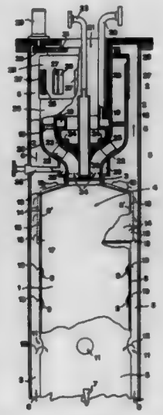
5,381,652

COMBUSTION SYSTEM WITH LOW POLLUTANT EMISSION FOR GAS TURBINES

Vasco Mezzedimi, Poggibonsi; Luciano Bonciani, Florence; Gianni Ceccherini, Sesto Fiorentino, and Roberto Modi, Borgo San Lorenzo, all of Italy, assignors to Nuovopignone, Florence and Enitricerche S.p.A., Milan, both of Italy

Filed Sep. 16, 1993, Ser. No. 122,381
Claims priority, application Italy, Sep. 24, 1992, MI 92/A/002189
Int. Cl.[6] F02C *9/00*; F23R *3/26*
U.S. Cl. 60—39.23 **5 Claims**

1. A combustion system for gas turbines, comprising:
1) a premixing chamber for mixing fuel, said premixing chamber having inner and outer walls that form an annular premixing zone therebetween, said annular premixing zone having a linearly extending portion of substantially uniform cross-section and a gradually tapered portion that terminates into a constricted outlet opening, adjustable flow means located in said annular premixing zone at said tapered portion to provide rotary movement to gases flowing through said annular premixing zone, and a plurality of apertures located in an upper portion of said outer wall;
2) an apertured rotatable drum circumscribing said upper portion of said outer wall, apertures in said rotatable drum and in said upper portion of said outer wall cooperating with one another whereby aperture flow area for feeding air into said premixing chamber may be adjusted in response to a pinion of an actuator associated with a gear sector fixedly mounted on said rotatable drum;
3) a combustion chamber having an upper wall section with a constricted inlet end and a downstream mid wall section containing deflector openings for air, said downstream mid wall section being coterminous with a bottom wall section having an outlet end for emitting combustion product, said bottom wall section containing dilution air



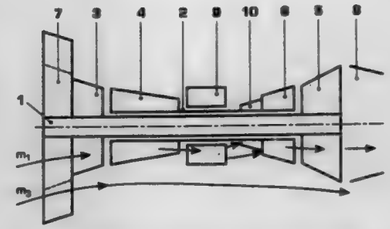
openings to permit dilution air to enter said bottom section upstream of said outlet end of said combustion chamber to reduce the temperature of the combustion products leaving the combustion chamber;
4) an outer housing wall circumscribing and spaced from said outer wall of premixing chamber and said combustion chamber to form an interspace, said interspace extending above an uppermost end of said premixing chamber; and
5) means for feeding pressurized air along said interspace in a direction countercurrent to combustion products emanating from said premixing and combustion chambers.

5,381,653

AIRCRAFT ENGINE WITH PRESSURE EXCHANGER

Rolf Althaus, Flawil, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Dec. 8, 1993, Ser. No. 162,871
Claims priority, application Germany, Dec. 10, 1992, 4241613
Int. Cl.[6] F02C *3/02*
U.S. Cl. 60—39.161 **4 Claims**



1. An aircraft engine with a fan drive, comprising:
- a first rotatable shaft supporting at least a low pressure compressor and a low pressure turbine;
- a second rotatable shaft, disposed coaxially with the first

shaft and rotatable independently of the first shaft, the second shaft supporting a medium pressure compressor, a high pressure turbine and a medium pressure turbine;

a constant volume combustion dynamic pressure machine disposed downstream of the medium pressure compressor and connected to receive compressed air from the medium pressure compressor and upstream of the high pressure turbine, the dynamic pressure machine acting as a high pressure compression stage and having a rotatable cellular wheel disposed between an air side part and a gas side part, both side parts having inlet and outlet openings, the cellular wheel having a plurality of cells and means for performing a continuous ignition and combustion process in the cells; and

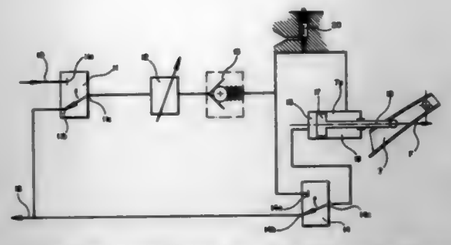
means for directing combusted gas from the dynamic pressure machine to the high pressure turbine.

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THRUST REVERSER SAFETY SYSTEM

Yves R. Halin, St. Germain Les Corbeil, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A), Paris, France

Filed Jul. 23, 1992, Ser. No. 917,421
Claims priority, application France, Jul. 24, 1991, 91 09370
Int. Cl.[6] F02K *3/02*
U.S. Cl. 60—226.2 **9 Claims**



1. A thrust reverser safety system for a turbofan engine thrust reverser having at least one hydraulically actuated thrust reversing element movable between a closed, forward thrust position and a deployed, reverse thrust position, and a hydraulic circuit for controlling the movement of the element including a pressurized hydraulic fluid intake, comprising:

a) a hydraulic actuator operatively associated with the movable element and the presurized hydraulic fluid intake of the hydraulic circuit so as to move the element between its closed and deployed positions, the actuator defining a closing chamber such that the pressurized hydraulic fluid supplied to the closing chamber moves the element to its closed position; and,

b) valve means operatively associated with the hydraulic circuit and the closing chamber so as to selectively prevent communication between the closing chamber and the pressurized hydraulic fluid intake and to prevent hydraulic fluid from leaving the closing chamber, thereby preventing the element from moving toward its deployed position.

5,381,655

ADMISSION MIXING DUCT ASSEMBLY

Robert J. Orlando, West Chester, and Lawrence W. Dunbar, Loveland, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 10, 1993, Ser. No. 58,181
Int. Cl.[6] F02K *3/02*
U.S. Cl. 60—226.3 **9 Claims**

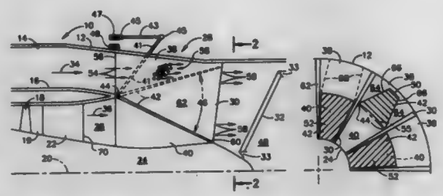
1. An apparatus for mixing bypass air and exhaust gas within a jet engine, comprising:

annular bypass duct means for channeling bypass air through said engine;

annular exhaust gas duct means located radially inwardly of said annular bypass duct means for channeling core engine exhaust gas through said engine;

a plurality of circumferentially spaced flow guides for receiving said bypass air from said bypass duct and for receiving said exhaust gas from said exhaust gas duct; and

a plurality of movable doors mounted between and cooperating with said flow guides so as to define a circumferen-



tially extending series of radially outer bypass air mixing ducts and a circumferentially extending series of radially inner exhaust gas mixing ducts;

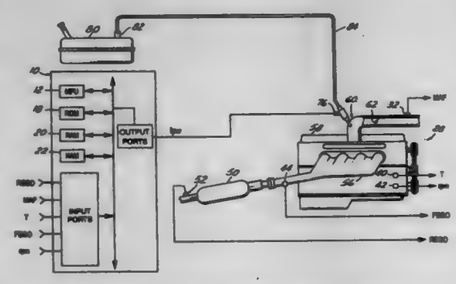
wherein said plurality of movable doors comprises a plurality of generally sector-shaped doors which each pivot about a chord line connecting an adjacent pair of said flow guides, said doors being pivotable into said bypass air mixing ducts and into said exhaust gas mixing ducts so as to control the respective flows of said bypass air and said exhaust gas therethrough.

5,381,656

ENGINE AIR/FUEL CONTROL SYSTEM WITH CATALYTIC CONVERTER MONITORING

Daniel V. Orzel, Westland; Glenn A. Zimlich, Dearborn Heights, and Tri T. Truong, Inkster, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 27, 1993, Ser. No. 127,153
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 **11 Claims**



10. A control system for controlling engine air/fuel ratio and concurrently monitoring efficiency of a catalytic converter positioned in the engine exhaust, comprising: control means for generating a feedback variable by integrating an output of an upstream exhaust gas oxygen sensor positioned upstream of the catalytic converter and trimming said integration by a signal derived from an output of a downstream exhaust gas oxygen sensor positioned downstream of the catalytic converter, said feedback variable cycling above and below a nominal value, said control means adjusting fuel delivered to the engine by said feedback variable;

test means for generating a first test signal related to peak amplitude of said feedback variable over a plurality of cycles of said feedback variable and generating a second test signal related to peak amplitude of said downstream sensor output over said plurality of cycles of said feedback variable; and

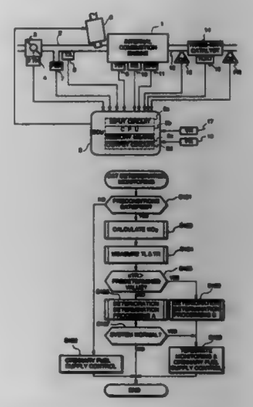
indicating means for indicating degraded converter efficiency when a ratio of said second test signal to said first test signal exceeds a predetermined ratio, said indicating means indicates converter efficiency upon completion of a test cycle generated when the engine has operated during a plurality of inducted airflow ranges each for a predetermined duration.

5,381,657

CATALYST DETERIORATION-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tsuyoshi Takizawa; Yasunari Seki; Yoichi Iwata; Toshihiko Sato, all of Wako, and Takayoshi Nakayama, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 183,751
Claims priority, application Japan, Jan. 22, 1993, 5-027292
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—276 **16 Claims**



1. A catalyst deterioration-detecting system for an internal combustion engine having an exhaust system, catalyst means arranged in said exhaust system, oxygen concentration-detecting means arranged in said exhaust system downstream of said catalyst means, for detecting concentration of oxygen in exhaust gases emitted from said engine, and air-fuel ratio control means responsive to an output from said oxygen concentration-detecting means, for controlling an air-fuel ratio of a mixture supplied to said engine, comprising:

catalyst deterioration parameter-detecting means for detecting a value of a catalyst deterioration parameter indicative of a degree of deterioration of said catalyst means;

operating parameter-detecting means for detecting a value of at least one operating parameter of said engine related to a flow rate of said exhaust gases in said exhaust system; and

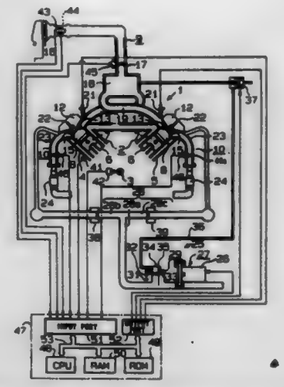
catalyst deterioration-determining means for determining whether said catalyst means is deteriorated, based on the value of said catalyst deterioration parameter detected by said catalyst deterioration parameter-detecting means and the value of said at least one operating parameter detected by said operating parameter-detecting means.

5,381,658

DIAGNOSTIC APPARATUS FOR USE IN AN EXHAUST SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Taiichi Meguro, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 2, 1993, Ser. No. 146,551
Claims priority, application Japan, Nov. 13, 1992, 4-304197
Int. Cl.[6] F01N *3/22*
U.S. Cl. 60—276 **21 Claims**



1. A diagnostic apparatus for use in an exhaust system of an internal combustion engine, the exhaust system having an exhaust gas passage, a catalyst for purifying the exhaust gas in the exhaust gas passage and an oxygen sensor for detecting an air-fuel ratio in a combustion chamber, wherein a fuel injection volume is controlled for equalizing a primary air-fuel ratio with a predetermined theoretical air-fuel ratio when the engine is operated under normal conditions, and wherein secondary air is supplied to the exhaust gas passage from a secondary air supply mechanism for forcibly adjusting the air-fuel ratio when the engine is operating under extreme conditions, wherein the secondary supply mechanism is composed of a plurality of members, said apparatus comprising:

means for computing an actual volume flow rate of the secondary air supplied to the exhaust gas passage from the secondary air supply mechanism;

means for storing data indicative of the malfunctioning of the secondary air supply mechanism members corresponding to the computed volume flow rate supplied to the exhaust gas passage;

means for determining which member of the secondary air supply mechanism is malfunctioning based on the value detected by the oxygen sensor and the stored data.

5,381,659

ENGINE EXHAUST REBURNER SYSTEM AND METHOD

Ronald E. Loving, Simi Valley, and Gary D. James, Acton, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 6, 1993, Ser. No. 45,334
Int. Cl.[6] F01N *3/26*; F02B *37/00*
U.S. Cl. 60—280 **1 Claim**

1. An engine exhaust reburner system for reburning exhaust gases from an engine, comprising:

a smoothing tank for receiving the exhaust gases and for providing smoothed exhaust gases;

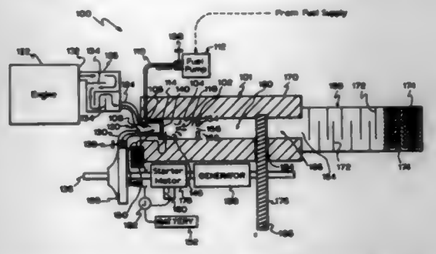
a cylindrical combustion chamber having a first end and a second end opposite said first end;

manifold means for mixing a volume of air with said smoothed exhaust gases and for delivering an exhaust

gas-air mixture to said first end of said combustion chamber;

igniting means for igniting said exhaust gas-air mixture;

a turbulator located at said second end of said cylindrical combustion chamber, said turbulator comprised of a flat disk having a central opening;



a cylindrical decomposition chamber extending from said end of said cylindrical combustion chamber, said cylindrical decomposition chamber having a length that is 2 to 10 times the length of said cylindrical combustion chamber;

insulating means surrounding said cylindrical combustion chamber and said cylindrical decomposition chamber; and

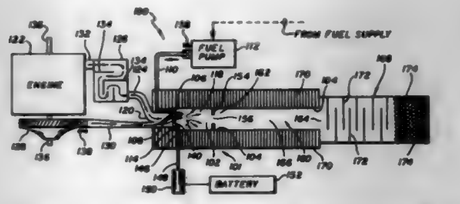
turbine means extending into said cylindrical decomposition chamber for performing useful work.

5,381,660

ENGINE EXHAUST REBURNER SYSTEM AND METHOD

Ronald E. Loving, Simi Valley, and Gary D. James, Acton, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 6, 1993, Ser. No. 43,233
Int. Cl.[6] F01N *3/26*
U.S. Cl. 60—303 **1 Claim**



1. An engine exhaust reburner system for reburning exhaust gases from an engine, comprising:

a smoothing tank for receiving the exhaust gases and for providing smoothed exhaust gases;

a cylindrical wall forming a cylindrical combustion chamber having a first end and a second end opposite said first end;

manifold means for mixing a volume of air with said smoothed exhaust gases and for delivering an exhaust gas-air mixture to said first end of said combustion chamber;

igniting means for igniting said exhaust gas-air mixture;

a turbulator located at said second end of said cylindrical combustion chamber, said turbulator comprised of a flat disk having a central opening;

a cylindrical wall forming a cylindrical decomposition chamber extending from said end of said cylindrical combustion chamber, said cylindrical decomposition chamber having a length that is 2 to 10 times the length of said cylindrical combustion chamber;

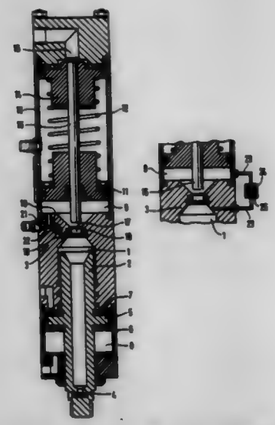
insulating means surrounding said cylindrical wall forming said cylindrical combustion chamber and said cylindrical wall forming said cylindrical decomposition chamber.

5,381,661

HYDRAULIC PRESSURE TRANSFORMER

Viktor Malina, Kisslegg, Germany, assignor to TOX-Pressotechnik GmbH, Weingarten, Germany

Filed Jul. 2, 1993, Ser. No. 84,976
Claims priority, application Germany, Jul. 2, 1992, 4221638
Int. Cl.[6] F15B *7/00*
U.S. Cl. 60—560 **20 Claims**



1. A hydraulic pressure transformer including a housing (3),

a work chamber (1) in said housing, which is filled with a hydraulic fluid during operation,

a work piston (2) operates in said housing in conjunction with said work chamber,

a piston rod (4) is connected with said work piston and extends outside of the housing (3),

a storage chamber (9) which is filled with a hydraulic fluid during operation, a bore (17) of a defined cross section provides a connection which hydraulically connects said storage chamber (9) with said work chamber (1),

a casing (13) which is secured to said housing (3),

a drive piston (14) operable in said casing,

a plunger piston (15) secured to said drive piston,

said plunger piston (15) is of a smaller diameter than that of the work piston (2), said plunger piston is forced under low pressure in a radially sealing manner into the bore (17), while a flow of hydraulic fluid out of the storage chamber (9) into the work chamber (1) takes place, and said plunger piston returns out of the bore (17), generating a corresponding high pressure, so that the hydraulic fluid can flow from the work chamber (1) back into the storage chamber,

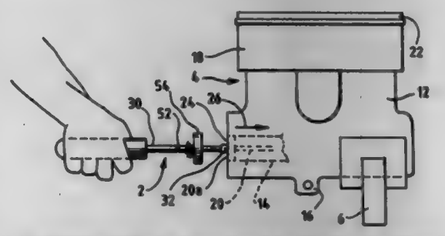
a connecting conduit (19, 23) is disposed between the work chamber (1) and storage chamber (9) in addition to the connection containing the bore (17), said connecting conduit is blocked against fluid flow back to said storage chamber when high pressure begins in said work chamber and is opened at low pressure in a direction of fluid flow towards the work chamber (1).

5,381,662

HAND-HELD BLEEDER STROKE TOOL

Richard M. Ethen, Litchfield, and Timothy P. Connelly, Glenarm, both of Ill., assignors to Echlin Inc., Branford, Conn.

Filed Oct. 29, 1993, Ser. No. 145,783
Int. Cl.[6] B60T *11/30*; F15B *7/10*
U.S. Cl. 60—584 **6 Claims**



1. A hand-held bleeder stroke tool for bleeding gas from a cylinder/piston assembly, said assembly having a cylinder and a primary piston disposed within said cylinder, said cylinder having an axial opening at one end, said piston having a first end portion exposed through said axial opening of said cylinder and a second end portion disposed within said cylinder, a fluid reservoir in communication with said cylinder, said bleeder stroke tool comprising:

a rod having a first end and a second end;

a push member positioned at said first end of said rod for engaging said first end portion of said primary piston;

a handle secured to said second end of said push rod; and

a stroke indicator assembly comprising a plurality of markings along a length of said push rod to visually indicate a plurality of stroke length settings, each of said markings corresponding to a different one of said plurality of stroke length settings, said stroke indicator assembly further comprising a slider that is movably mounted on said push rod, said slider being positionable at any one of said plurality of stroke length settings to provide a tactile and visual indication of a stroke length corresponding to said any one of said stroke length settings to a user of said hand-held bleeder stroke tool during the bleeding of said cylinder/-piston assembly.

5,381,663

LIQUID FUEL POWER PLANT

Ronald E. Loving, Simi Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 961,584, Oct. 15, 1992, abandoned. This application Jan. 25, 1994, Ser. No. 186,216
Int. Cl.[6] F02C *3/14*
U.S. Cl. 60—722 **15 Claims**

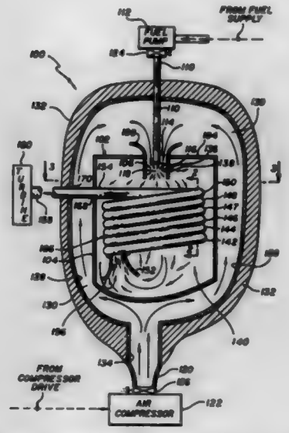
1. A liquid fuel power plant comprising:

a combustion chamber having an ignition region for receiving combustible liquid fuel and an oxidizer, and having means for igniting said fuel in said ignition region, the combustible fuel being ignited in said ignition region to produce hot pressurized gases in said combustion chamber;

means for delivering said combustible liquid fuel to said ignition region;

means for delivering said oxidizer to said ignition region;

a coiled tubular means located within said combustion chamber for extending the length of said combustion chamber, said coiled tubular means having a first end and a second end, said coiled tubular means being disposed to receive said hot pressurized gases from said combustion chamber at said first end, said coiled tubular means providing a reaction region for further combustion of said hot pressurized gases received from said combustion chamber; said further combusted hot pressurized gases being exhausted at the second end of said tubular means; and



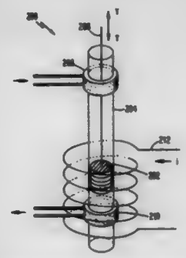
means for using said further combusted hot pressurized gases being exhausted at the second end of said tubular means to perform useful work.

5,381,664

NANOCOMPOSITE MATERIAL FOR MAGNETIC REFRIGERATION AND SUPERPARAMAGNETIC SYSTEMS USING THE SAME

Lawrence H. Bennett, Bethesda, and Robert D. Shull, Boyds, both of Md., assignors to The United States of America, as represented by the Secretary of Commerce, Washington, D.C.

Division of Ser. No. 589,750, Sep. 28, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 10,310
Int. Cl.[6] F25B *21/00*
U.S. Cl. 62—3.1 **29 Claims**



1. A magnetic refrigeration system, comprising:

a first heat exchanger;

a second heat exchanger;

a tubular element disposed with respect to said first and second heat exchangers to be able to perform heat transfer with each, said tubular element containing a heat exchange medium to facilitate said heat transfers;

a nanocomposite superparamagnetic element supported within said heat exchange medium so as to be controllably moveable longitudinally within said tubular element between said first and second heat exchangers; and

means for providing a controlled magnetic field extending into a region of said tubular element to which said nanocomposite superparamagnetic element is moveable to participate in heat transfer between said heat exchange

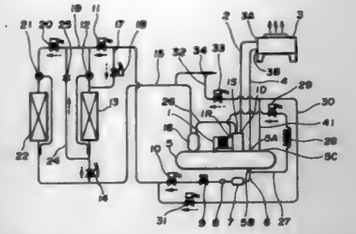
medium within said tubular element and said second heat exchanger.

5,381,665

REFRIGERATING SYSTEM WITH COMPRESSOR COOLED BY LIQUID REFRIGERANT

Tsutomu Tanaka, Ohta, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 918,284, Jul. 22, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 164,633
Claims priority, application Japan, Aug. 30, 1991, 3-220355
Int. Cl.[6] F25D *21/00*
U.S. Cl. 62—197 **8 Claims**



1. A refrigerating system containing:
a compressor having a refrigerant discharge side and a refrigerant suction side;
a condenser connected to the discharge side of said compressor;
a receiver connected to a refrigerant outlet side of said condenser to receive and temporarily store refrigerant discharged from the compressor and separate received refrigerant into gas and liquid phases;
an evaporator connected between the refrigerant outlet side of said receiver and the suction side of said compressor;
a gaseous circuit which during defrosting supplies a gaseous refrigerant from said receiver obtained by the gas-liquid separation to both said evaporator to defrost the evaporator and to the compressor refrigerant suction side to prevent an excessive drop of pressure during defrosting; and
a liquid injection circuit which during defrosting supplies a liquid refrigerant from said receiver obtained by the gas-liquid separation to a low pressure side in the interior of said compressor to cool said compressor and the compressor refrigerant.

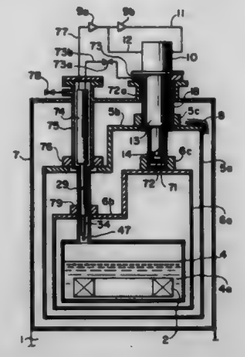
5,381,666

CRYOSTAT WITH LIQUEFACTION REFRIGERATOR

Norihide Saho, Tsuchiura; Takeo Nemoto, Ibaraki, and Mitsuru Saeki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 710,123
Claims priority, application Japan, Jun. 8, 1990, 2-148719
Int. Cl.[6] F17C *5/02*; F25D *19/00*; F25B *19/00*
U.S. Cl. 62—47.1 **3 Claims**

1. A cryostat for containing an object to be cooled, said cryostat including a thermally insulated vessel and a liquefaction refrigeration means having a low temperature end for cooling said object to be cooled,
wherein said liquefaction refrigeration means comprises a cooler and a refrigerator, said cooler and said refrigerator being thermally connected to each other by detachable thermal connection means and being respectively inserted into a cooler accommodating portion and a refrigerator accommodating portion of the cryostat,
said refrigerator being adapted to cool said cooler, wherein said cooler thereby generates, at said low temperature end, a temperature lower than a cooling temperature of said refrigerator,
and wherein said detachable thermal connection means allows said cooler and said refrigerator to be independently attached to and detached from respective accommodating portions of the cryostat.

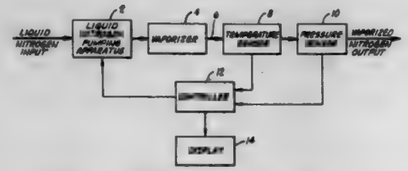


5,381,667

SYSTEM AND METHOD FOR MONITORING AND CONTROLLING NITROGEN PUMPING AT AN OIL OR GAS WELL

Thomas J. Worley; Charles E. Neal, and Vincent P. Rivera, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 25, 1993, Ser. No. 83,961
Int. Cl.[6] F17C *9/02*
U.S. Cl. 62—50.2 **20 Claims**



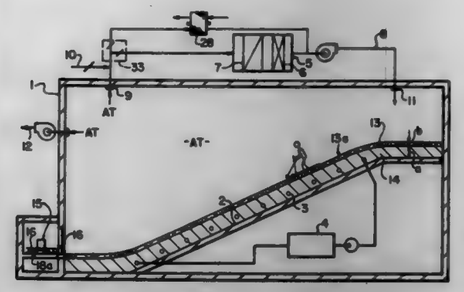
1. A system for monitoring and controlling nitrogen pumping at an oil or gas well, comprising:
a liquid nitrogen vaporizer;
pumping means for pumping liquid nitrogen from a source of liquid nitrogen to said vaporizer;
a conduit connected to said vaporizer so that vaporized nitrogen enters said conduit;
temperature sensing means for sensing temperature of vaporized nitrogen in said conduit;
pressure sensing means for sensing pressure of vaporized nitrogen in said conduit; and
control means, responsive to said temperature sensing means and said pressure sensing means and connected to said pumping means, for automatically controlling said pumping means, said control means including:
means for determining when a temperature of vaporized nitrogen in said conduit sensed by said temperature sensing means is outside a predetermined temperature range;
means for determining when a pressure of vaporized nitrogen in said conduit sensed by said pressure sensing means is outside a predetermined pressure range; and
means, responsive to both said means for determining, for providing a control signal for stopping said pumping means from pumping liquid nitrogen from said source to said vaporizer when the sensed temperature is determined to be outside the predetermined temperature range or the sensed pressure is determined to be outside the predetermined pressure range.

5,381,668

METHOD OF MAINTAINING ARTIFICIAL SNOW SURFACE

Koji Morioka, Amagasaki, Japan, assignor to Taikisha, Ltd., Tokyo, Japan

Filed Nov. 20, 1991, Ser. No. 796,081
Int. Cl.[6] F25B *25/02*
U.S. Cl. 62—94 **4 Claims**



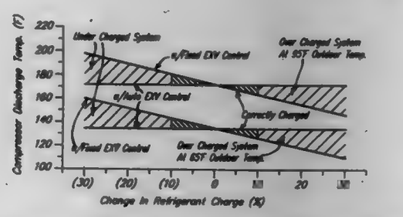
1. A method of maintaining a snow surface in a housing having indoor air therein, with said housing surrounded by outdoor air, said method comprising the steps of:
dehumidifying said indoor air above said snow surface by means of a dehumidifying means, said dehumidifying means including a cooling type dehumidifying unit and an adsorption type dehumidifying unit;
selecting for said dehumidifying step said cooling type dehumidifying unit when the temperature of said outdoor air is relatively high and said adsorption type dehumidifying unit when the temperature of said outdoor air is relatively low; and
adjusting said dehumidifying means to maintain a water vapor pressure of said indoor air at a value substantially equal to a water vapor pressure at said snow surface to restrict frosting of water content present in said indoor air on said snow surface thereby to maintain said snow surface in a good skiing condition.

5,381,669

OVERCHARGE-UNDERCHARGE DIAGNOSTIC SYSTEM FOR AIR CONDITIONER CONTROLLER

Vijay Babel, Sidney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton, and Gregory P. Herroon, Piqua, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Jul. 21, 1993, Ser. No. 95,897
Int. Cl.[6] F25B *49/02*
U.S. Cl. 62—129 **11 Claims**



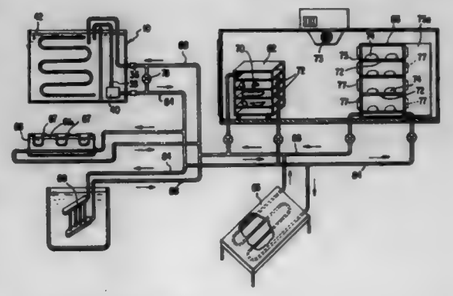
1. A method of diagnosing an undesired refrigerant charge condition in a refrigeration system of the type having a variably settable expansion valve for metering refrigerant flow, comprising:
storing at least one temperature reference value and at least one valve setpoint value;
measuring a quantity indicative of environment temperature to determine a first measured temperature value;
causing said expansion valve to attain a predetermined setting based on said valve setpoint value;
while said valve is at said predetermined setting, measuring a quantity indicative of refrigeration system temperature to determine a second measured temperature value;
using said first measured temperature value to access said temperature reference value and comparing the accessed temperature reference value with said second measured temperature value; and
declaring an undesired refrigerant charge condition to exist when said accessed temperature reference value and said second measured temperature value are not within a predefined numerical proximity to one another.

5,381,670

APPARATUS FOR COOLING FOOD BY CONDUCTION

Joseph R. Tippmann, HRC-33, Box 8419, Rapid City, S. Dak. 57701, and Vincent P. Tippmann, 8605 N. River Rd., New Haven, Ind. 46774

Filed Oct. 21, 1993, Ser. No. 138,961
Int. Cl.[6] F25D *17/02*
U.S. Cl. 62—330 **8 Claims**



1. An ice bank comprising:
a) an enclosure having four upstanding side walls and a bottom, one of said side walls being shorter in height than the other three and extending between two of said other side walls intermediate the ends thereof to thereby form first and second compartments, said first compartment being watertight for storing quantity of fluid,
b) a plurality of parallel spaced-apart refrigerant coils mounted in said first compartment,
c) means in said second compartment for circulating said water in said first compartment over said refrigerant coils, and
d) means in said second compartment for supplying refrigerant to said coils for cooling said circulating water and forming a quantity of ice on said coils, said means being connected to said refrigerant coils by piping extending over said shorter side wall to thereby preserve the watertight integrity of said shorter side wall.

5,381,671

AIR CONDITIONING APPARATUS WITH IMPROVED ICE STORAGE THEREIN

Kazuo Saito, and Tsutomu Sakuma, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 14, 1993, Ser. No. 91,029
Claims priority, application Japan, Jul. 14, 1992, 4-186955
Int. Cl.[6] F25D *11/00*
U.S. Cl. 62—430 **4 Claims**

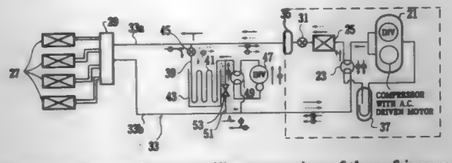
3. An air conditioning apparatus equipped with a cooling

cycle, using a refrigerant, connected to a compressor, an outdoor heat exchanger and an indoor heat exchanger by way of a refrigerant pipe therethrough, the air conditioning apparatus comprising:

a heat regenerative tank for storing heat of refrigerant circulating in the cooling cycle;

a heat regenerative refrigerant pipe disposed in parallel to the indoor heat exchanger, the heat regenerative refrigerant pipe being provided such that the refrigerant, which is heat-exchanged between a member placed in the heat regenerative tank, flows therethrough;

an auxiliary compressing means provided in the heat regenerative refrigerant pipe disposed between the heat regenerative tank and a gas line of the refrigerant pipe;



expansion means for controlling expansion of the refrigerant and which is disposed in the heat regenerative refrigerant pipe between the heat regenerative tank and a liquid line of the refrigerant pipe;

switching means for changing the direction of a flow of the refrigerant discharged from the auxiliary compressing means, the switching means being disposed between the heat regenerative tank and the gas line of the refrigerant pipe; and

bypass means for bypassing the auxiliary compressing means and the switching means, the bypass means including an open-close means therein.

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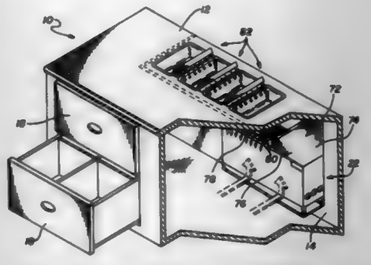
CABINET REFRIGERATION SYSTEM WITH COLD AIR DISTRIBUTOR

Hans Haasis, Goleta, Calif., assignor to Omninet Industries, Inc., Downey, Calif.

Continuation-in-part of Ser. No. 790,333, Nov. 12, 1991, Pat. No. 5,277,039. This application Jan. 7, 1994, Ser. No. 178,883

Int. Cl.[6] F25B *5/00*

U.S. Cl. 62—458 **19 Claims**



1. A cabinet refrigeration system comprising:

a cabinet having top, bottom, and side portions defining a substantially closed space, the top portion of the cabinet including a substantially flat work surface and at least one open storage bin at the top surface of said cabinet for receiving food;

a refrigeration unit disposed in the cabinet;

a fan for causing air to flow upwardly through the cabinet toward said bins;

air diverting deflectors for diverting the upwardly flowing air to flow downwardly onto said bins;

said air diverting deflectors located above said top portion and external to the said cabinet;

said diverters secured to a support member.

5,381,673

ABSORPTION COOLING DEVICE

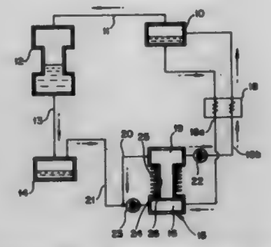
Seung-Gap Lee, Suwon; Sung-Ho Gil, Gwacheon; Suk-Hyun Eun, and Hong-Won Lee, both of Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 3, 1993, Ser. No. 145,222

Claims priority, application Rep. of Korea, Nov. 3, 1992, 1992-20549

Int. Cl.[6] F25B *15/00*

U.S. Cl. 62—483 **9 Claims**



1. An absorption cooling apparatus comprising:

a fluid-conducting circuit;

generating means mounted in said circuit for separating a dilute solution into a refrigerant gas and a concentrated solution of refrigerant-absorbing liquid;

condensing means mounted in said circuit for receiving refrigerant gas from the generating means and condensing the refrigerant gas into a condensate;

evaporating means mounted in said circuit for receiving condensate from the condensing means and transforming the condensate into a refrigerant gas to produce a cooling effect;

absorbing means mounted in said circuit and comprising an inlet section, and an outlet section disposed above the inlet section, the inlet section arranged to receive refrigerant gas from the evaporating means, and concentrated refrigerant-absorbing solution from the generating means; and

a pump member mounted in said circuit for inducing an upward flow of a mixture of the refrigerant gas and the concentrated refrigerant-absorbing solution from the inlet section to the outlet section so that the refrigerant gas is absorbed by the concentrated refrigerant absorbing solution to form a dilute solution, said inlet section including converting means through which the pumped mixture is forced for converting the refrigerant gas into smaller bubbles to facilitate absorption thereof into the refrigerant-absorbing solution.

5,381,674

GENERATOR FOR ABSORPTION REFRIGERATING MACHINE

Toshiaki Omori, Chiba; Noriyuki Nishiyama, and Naoyuki Inoue, both of Kanagawa, all of Japan, assignors to Ebara Corporation and Tokyo Gas Co., Ltd., both of Tokyo, Japan

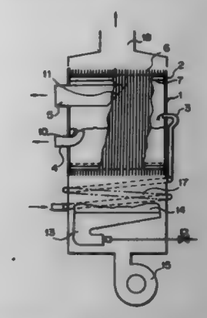
Filed Jun. 10, 1993, Ser. No. 74,662

Claims priority, application Japan, Jun. 30, 1992, 4-194708

Int. Cl.[6] F25B *35/02*

U.S. Cl. 62—497 **13 Claims**

1. A generator for an absorption refrigerating machine which uses combustion gas as a heat source, said generator comprising; a drum shell (2) having an interior containing a body of solution defining a liquid space and a vapor space within said drum shell; a dilute solution inlet communicating with said drum shell interior; a solution outlet means communicating with said liquid space in said drum shell having an overflow weir **10** for controlling the flow of solution from said drum shell; a vapor outlet communicating with said drum shell vapor space; a multiplicity of heat transfer fins provided on an outer periphery of said drum shell for transfer of heat from said combustion gas to said drum shell so as to heat said solution contained in said drum shell; and a circulation guide (7) spaced from an inner periphery of said drum shell to define a flow conducting passage thereabout, said circulation guide having openings (8, 9) respectively provided in a bottom and top



thereof to communicate with said drum shell liquid and vapor spaces, respectively, so that said solution in said drum shell is heated and flows upwardly in the area between said inner periphery of said drum shell and said circulation guide, flows from said opening in the top of said circulation guide to return to said drum shell interior and recirculates through said bottom opening of said circulation guide, whereby vapor is generated in said drum shell and separated from liquid in the liquid space of said solution therein and flows from said vapor outlet, and said solution is concentrated and flows from said generator out through said overflow weir.

5,381,675

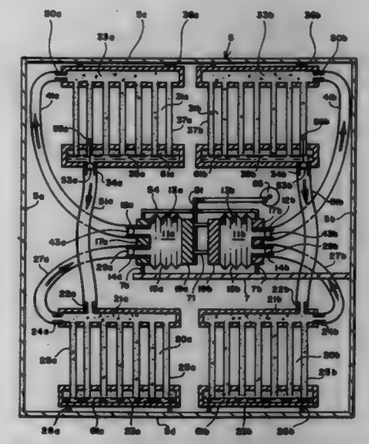
FORCE-SPARING BALANCED BELLOWS REFRIGERATION DEVICE

Israel Siegel, 2980 Point E. Dr., Apt. D-612, N. Miami Beach, Fla. 33160

Filed Sep. 7, 1993, Ser. No. 116,579

Int. Cl.[6] F25B *1/00*

U.S. Cl. 62—498 **9 Claims**



1. A force sparing temperature changing system, said temperature changing system includes at least two bellows chambers,

a movable wall in each of said bellows chamber, wherein said movable walls move in response to expansions and compressions of the bellows of said bellows chamber,

a refrigerant consisting of a low boiling point liquid communicating with said bellows chambers,

a total pressure inside of said chambers which is different from the pressure outside of said bellows chambers,

relative positions of said bellows chambers which cause said movable walls to move in opposite directions,

a linkage between said movable walls wherein said linkage transmits movement from one of said movable to the other,

a predetermined distance between said bellows chambers, said distance being of a dimension which forces each of said movable wall to rest in an operational energy-independent position which is between the potential limits of travel of said walls, and wherein said position is determined by the balance of opposing forces upon said movable walls,

means to transmit an outside vector force to at least one of aid movable walls to tip said balance of opposing forces, wherein said vector force acts in a direction which forces the expansion of one of said bellows chambers and the compression of the other of said bellows chambers,

and means to separate the cooling effects which occur during said expansion of said bellows chamber from the heating effects which occur during said compression of said bellows chamber.

5,381,676

FABRIC TAKE-UP MECHANISM FOR CIRCULAR KNITTING MACHINES

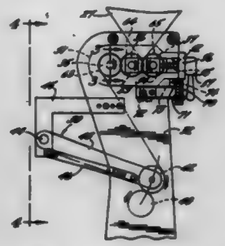
Takao Shibata, Takatsuki; Kozo Taniguchi; Toshio Noguchi, both of Kobe, and Koji Tsuchiya, Nishinomiya, all of Japan, assignors to Precision Fukuhara Works, Ltd., Japan

Filed Sep. 29, 1993, Ser. No. 128,807

Claims priority, application Japan, Oct. 9, 1992, 4-297978; Dec. 7, 1992, 4-351754

Int. Cl.[6] D04B *15/88*

U.S. Cl. 66—149 R **9 Claims**



1. In a circular knitting machine including a needle cylinder and knitting instrumentalities for forming a tubular knit fabric and a fabric take-up mechanism for flattening the fabric and winding the flattened fabric into a roll, said take-up mechanism including fabric delivery rolls mounted beneath said needle cylinder and frictionally gripping the fabric formed in the needle cylinder for flattening and feeding the fabric downwardly from the needle cylinder and a fabric take-up means beneath said fabric delivery rolls for winding the flattened fabric delivered by said fabric delivery rolls into a roll, the combination therewith of

sensing means for sensing the tension in the fabric between the needle cylinder and said fabric take-up means, said sensing means comprising a pair of swing arms mounting at least some of said delivery rolls for movement responsive to fluctuations in the tension in the fabric, said swing

arms being fixedly mounted at one end thereof and having at least a portion thereof sufficiently flexible to permit limited movement of the other ends of the swing arms, said sensing means further comprising means carried by the flexible portion of each swing arm and responsive to flexure thereof for generating a signal indicative of the amount of flexure caused by the change in tension in the fabric,

drive means for driving said fabric delivery rolls, said drive means including a variable speed drive motor, and

control means operatively connected to said sensing means and said variable speed motor for varying the rotational speed of said fabric delivery rolls responsive to signals from said sensing means upon variations in tension in the fabric to maintain a substantially uniform tension in the fabric.

5,381,677

AUTOMATIC WASHING MACHINE

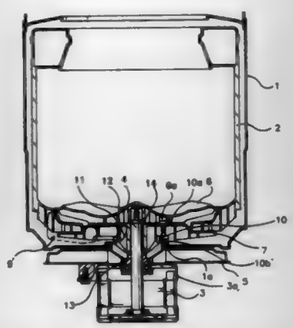
Gwan R. Park, Seoul, and Jae C. Lyu, Kyungki, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 14, 1993, Ser. No. 165,883

Claims priority, application Rep. of Korea, Mar. 31, 1993, 5290/1993

Int. Cl.[6] D06F *13/02*

U.S. Cl. 68—23.7 **17 Claims**



1. An automatic washing machine comprising:

an outer tub for containing washing water therein, said outer tub having first teeth on its inner bottom;

an inner tub for washing and dehydration placed in said outer tub, said inner tub having a plurality of perforations on its side wall and a through hole on its bottom at a position corresponding to said first teeth of the outer tub;

a motor mounted on an outer bottom center of said outer tub, said motor having an output shaft rotatably penetrating bottom centers of said outer and inner tubs;

means for generating a water current using the rotational force of said motor, said water current generating means being mounted on a top end of said output shaft and having second teeth on its lower surface at a position corresponding to said through hole of the inner tub; and

means for selectively engaging said inner tub with said water current generating means or with said outer tub, said selective engaging means being mounted between bottoms of said inner and outer tubs and having a floating member, the selective engagement of said inner tub with said water current generating means or with said outer tub being achieved in accordance with a fluctuating movement of said floating member caused by buoyancy of said washing water in the outer tub.

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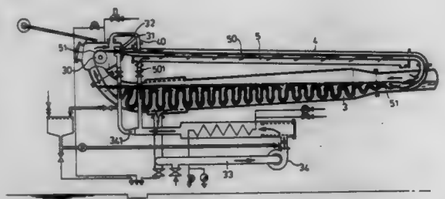
FLUID FLOW TYPE DYEING APPARATUS

Chao-Cheng Chiang, 5F-2, No. 455, Chung Cheng Road, Yung-ho City, Taipei Hsien, Taiwan, Prov. of China

Filed Mar. 9, 1994, Ser. No. 209,034

Int. Cl.[6] D06B *3/28*

U.S. Cl. 68—177 **2 Claims**



1. A fluid flow type dyeing apparatus comprising:

a dyeing bath, a fluid flow tube, and a circulation pump;

said fluid flow tube having a front end to which a jet nozzle is mounted;

said dyeing bath being connected to said fluid flow tube so as to form a closed fluid loop to which said circulation pump is connected via a piping system to draw dye fluid from the fluid loop, pressurizing and transmitting the dye fluid to said jet nozzle to have the dye fluid sprayed therefrom;

said fluid flow tube being disposed in an inclined manner to allow the dye fluid that is sprayed from the jet nozzle onto an object to be dyed to move said object along the inclined path of said fluid flow tube toward said dyeing bath, the dye fluid being drawn and pumped back to said Jet nozzle to be recycled;

the apparatus being characterized in that said fluid flow tube has secured to one side thereof a dye tube which extends along an axially-oriented tube wall thereof, said dye tube defining a passage for the pressurized dye fluid provided by the circulation pump, a plurality of secondary nozzles arranged on the tube wall between said fluid flow tube and said dye tube to spray the dye fluid of the dye tube into the fluid flow tube so as to form a high speed flow inside said fluid flow tube to provide said object and dye fluid inside said fluid flow tube with an additional driving force created by the high speed fluid flow to increase speed and enhance dyeing effectiveness;

the apparatus further comprising jet control means which comprises pivoting lever means, a driving link, and a control unit,

the pivoting lever means being mounted to each of said secondary nozzles with the driving link which is movably disposed inside of and substantially parallel to said dye tube and is secured to one side thereof,

said driving link having an end connected to said control unit so that by adjusting said control unit, said driving link is moved axially along the dye tube to rotate said pivoting lever means to control the opening size of the secondary nozzles.

5,381,679

VEHICLE STEERING WHEEL ANTI-THEFT DEVICES

Ian G. Cummins, 16 Statice Avenue, Hollywell Old 4216, Australia

PCT No. PCT/AU92/00068, § 371 Date Jun. 30, 1993, § 102(e) Date Jun. 30, 1993, PCT Pub. No. WO93/05988, PCT Pub. Date Apr. 1, 1993

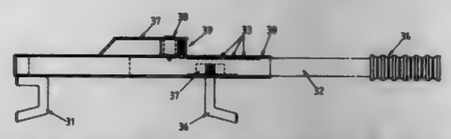
PCT Filed Feb. 24, 1992, Ser. No. 81,366

Claims priority, application Australia, Sep. 19, 1991, PK8448; Sep. 30, 1991, PK8612; Oct. 11, 1991, PK8826; Oct. 21, 1991, PK9004; Nov. 15, 1991, PK9519

Int. Cl.[6] B60R *25/02*

U.S. Cl. 70—209 **23 Claims**

1. An anti-theft device for a vehicle adapted to be associated with the rim of a steering wheel of said vehicle so as to prevent or limit rotation of said steering wheel, said device including a first elongated hollow member, said member having a length of at least the diameter of said steering wheel so that said first hollow member may extend diametrically between opposite sides of said steering wheel rim, a second elongated member telescopically received within said first member and slidably movable longitudinally relative to said first member and outwardly from one end of said first member, said first member having first steering wheel engagement means at its end opposite said one end for engaging the rim of said steering wheel from the inside thereof, second steering wheel engagement means supported for movement with said second member and



adapted to engage said wheel rim from the inside thereof at a position opposite said first engagement means when said second member is extended from said first member, one of said members having a series of longitudinally spaced apart apertures therein, and selectively actuable locking means supported by the other said member, said locking means having a locking member adapted when actuated to extend into a selected said aperture so as to lock said first member relative to said second member to hold said first and second steering wheel engagement means in a position in engagement with said steering wheel rim, said second member in said position extending beyond the rim of said steering wheel so as to prevent or limit rotation of said steering wheel.

5,381,680

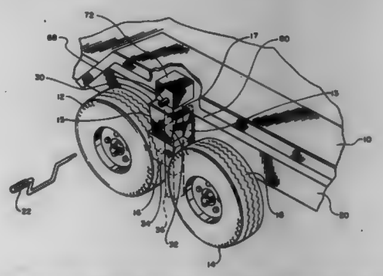
RETRACTABLE WHEEL LOCK ASSEMBLY

Joseph J. Rauch, Jr., 22095 County Rd. 117, Rogers, Minn. 55473

Filed Sep. 23, 1993, Ser. No. 125,936

Int. Cl.[6] B62H *5/16*

U.S. Cl. 70—226 **20 Claims**



1. A retractable wheel lock assembly for permanent mounting to a vehicle having a pair of proximately spaced tandem wheels, said wheels having fore-and-aft aligned tread surfaces, comprising:

a. a telescoping security tube having an axial center line, said telescoping security tube including a first tubular member with a first end and a second end, and a second tubular member with a first end and a second end, said first end of said second tubular member being slidably disposed for telescoping movement relative to said first tubular member proximate said second end of said first tubular member;

b. means for moving said second tubular member from a first, retracted position to a second, extended position;

c. a brake member having two angularly spaced surfaces, said brake member secured to said second tubular member for movement therewith from said first, retracted position to said second, extended position; and

d. means for mounting said wheel lock assembly to a frame member of said vehicle, wherein, when mounted, said axial center line of said telescoping security tube is generally vertical and said brake

member is disposed between the tandem wheels, and said angularly spaced surfaces engage a portion of the tread surface of each wheel when said second tubular member is moved to said second, extended position.

5,381,681

MACHINE WITH AN ADJUSTING DEVICE LOCATED IN A MOVABLE MACHINE PART

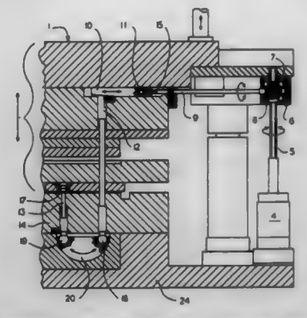
Helmuth Frisch, Schönberg; Norbert Geissler, Pöcking, and Herbert Weiss, Oberhaching, all of Germany, assignors to O & K Geissler GmbH, Ganting and S & S Electronic GmbH & Co. KG, Schonberg, both of Germany

Continuation of Ser. No. 741,544, Aug. 7, 1991, abandoned. This application Oct. 28, 1993, Ser. No. 144,730

Claims priority, application Germany, Aug. 7, 1990, 9011492[U]

Int. Cl.[6] B21D *28/02*

U.S. Cl. 72—9 **20 Claims**



1. An improved cutting and forming machine having a stationary machine part and a movable machine part, such cutting and forming machine having a tool which is attached to such movable machine part and is movable to form pieces from a sheet in repetitive machine cycles, such movable machine part being movable in a direction of movement toward such stationary machine part during such repetitive machine cycles, such movable machine part having an adjusting device for adjusting such tool, such adjusting device being located in such movable machine part that is moved during such machine cycles, such cutting and forming machine having a measuring device located at a position following an operation of such tool for measuring the results of such operation of such tool, such forming and cutting machine having an actuator attached to such stationary machine part for actuating such adjusting device, such measuring device connected to such actuator and generating measuring signals, which are used for setting such actuator, which actuates such adjusting device wherein the improvement comprises:

such actuator having a servo-motor fixed with respect to such stationary machine part;

said servo-motor having an output shaft, said output shaft of said servo-motor being coupled to a transmission, said transmission having an input side part coupled to said output shaft of said servo-motor, said transmission having an output side part coupled to said adjusting device, and said transmission arranged on such movable machine part; and

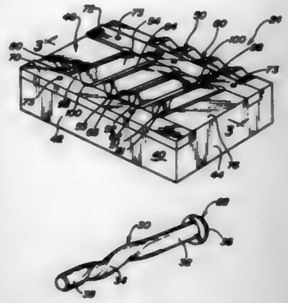
said transmission having an input side part arranged on said output shaft of said servo-motor to be displaceable in such direction of movement of such movable machine part and

rotatable together with said output shaft of said servomotor.

5,381,682
APPARATUS AND METHOD OF MANUFACTURING MASONRY FASTENERS

Herman W. Marquardt, Whitmore Lake, and Herman K. Marquardt, Pinckney, both of Mich., assignors to Great Lakes Tool and Machine Co., Milford, Mich.

Filed Dec. 17, 1993, Ser. No. 169,685
Int. Cl.[6] B21H *3/12*
U.S. Cl. 72—90 **20 Claims**



1. A method for manufacturing masonry fasteners, said method comprising the steps of:

providing a first die tool having a planar first tool face with a plurality of raised and recessed portions defined relative to said first tool face, said raised and recessed portions extending generally diagonally and substantially parallel to one another across said first tool face, said raised and recessed portions being formed by planar surfaces and respectively terminating in an upper apex and a lower apex, said upper apex defined by a planar surface, said lower apex defined by an intersection of two converging planar surfaces, said first tool also including clamping portions defining a planar clamping surface, said clamping portions being planar with said first tool face;

providing a second tool having a planar second tool face with a plurality of raised and recessed portions defined relative to said second tool face, said raised and recessed portions of said second tool extending generally diagonally and substantially parallel to one another across said second tool face, said raised and recessed portions being formed by planar surfaces and respectively terminating in an upper apex and a lower apex, said upper apex defined by a planar surface said lower apex defined by an intersection of two converging planar surfaces, said second tool also including clamping portions defining a planar clamping surface, said clamping portions being planar with said second tool face;

positioning said first tool and said second tool relative to one another such that said first tool face generally opposes said second tool face;

providing a workpiece having a substantially cylindrical body and a pair of ends;

positioning said workpiece between said first tool and said second tool;

clamping said workpiece between said clamping portions of said first tool and said clamping portions of said second tool;

inducing relative longitudinal movement between said first tool and said second tool while said workpiece is clamped therebetween, said relative longitudinal movement causing said workpiece to rotate and move across said first tool face and said second tool face while being clamped therebetween;

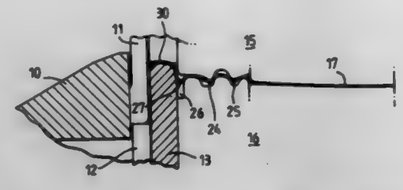
deforming said body into a substantially helical shape over at least a portion of said body's length and forming said masonry fastener as a result of the interaction of said raised and recessed portions of said first tool with said raised and recessed portions of said second tool; and

ejecting said masonry fastener from between said first tool and said second tool.

5,381,683
CAN ENDS

Gregory J. Cowling, Highworth, United Kingdom, assignor to CarnaudMetalBox plc, United Kingdom

Continuation of Ser. No. 897,112, Jun. 11, 1992, abandoned.
This application May 9, 1994, Ser. No. 239,927
Claims priority, application United Kingdom, Jun. 13, 1991, 9112783
Int. Cl.[6] B21D *51/44*
U.S. Cl. 72—329 **8 Claims**



1. A method of forming a can end having a seaming panel, a chuck wall, and a central panel; the central panel being connected to the chuck wall by an outer anti-peaking bead and the can end having at least one flexible bead located concentrically within the outer bead, the method comprising the steps of:

a) first drawing a preliminary cup having a seaming panel, a chuck wall and a central panel, and forming the at least one flexible bead by pressing the central panel between upper and lower profiled tools; and

b) after the drawing operation, clamping the seaming panel between a pressure ring and a die face, clamping the central panel between the upper and lower profile tools and moving the clamped seaming panel and the clamped central panel axially toward one another by axially moving the profile tools relative to the pressure ring and die face to form the outer bead by deformation of material from the chuck wall in an unconstrained rolling action without disturbing the at least one flexible bead.

5,381,684
DETACHABLE APPARATUS FOR AUTOMOTIVE AUDIO EQUIPMENT

Masatoru Kawamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,677
Claims priority, application Japan, Feb. 27, 1992, 4-076374; Mar. 9, 1992, 4-086033
Int. Cl.[6] E05B *73/00*; H04B *1/00*
U.S. Cl. 70—58 **4 Claims**

1. A detachable apparatus for automotive equipment comprising:

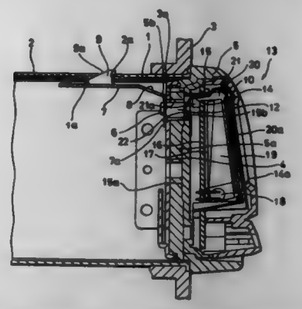
an equipment body having a frame body and a front surface panel frame;

an accommodation portion in which said equipment body is accommodated with a substantially precise positioning;

a lock member formed of an operation portion attached to an inside of said frame body, said operation portion being deformable with resiliency, and an engagement portion projecting to an outside of said frame body and being engaged with an engaged portion formed on an inner wall portion of said accommodation portion;

a lock releasing aperture bored through said front surface panel frame in association with said operation portion;

a lock releasing key removably inserted into said lock releasing aperture and urged against said operation portion for moving said lock member in a downward direction and thereby disengaging said engagement portion of said lock



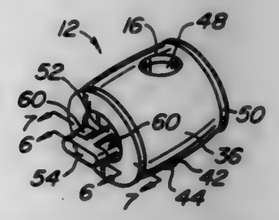
member from said engaged portion of said accommodation portion; and

a front panel removably attached to a front surface of said front surface panel frame, wherein said lock releasing aperture is closed by said front panel under a condition that said front panel is attached to said front surface panel frame.

5,381,685
COMPUTER PHYSICAL SECURITY DEVICE

Stewart R. Carl, Palo Alto; Arthur H. Zarnowitz, Burlingame, both of Calif., and Gary L. Myers, River Grove, Ill., assignors to Kensington Microware Limited, San Mateo, Calif.

Continuation of Ser. No. 824,964, Jan. 24, 1992, abandoned. This application Apr. 5, 1993, Ser. No. 42,851
The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.
Int. Cl.[6] E05B *65/00*
U.S. Cl. 70—78 **19 Claims**



1. Apparatus for inhibiting theft of equipment having an external wall with a thickness,, the wall provided with a specially designed generally rectangular slot having preselected internal dimensions, comprising:

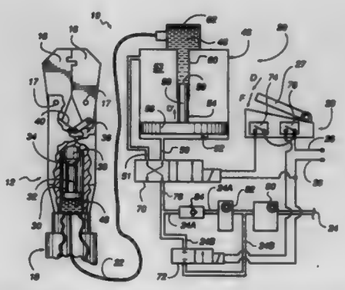
an attachment mechanism including a housing, a spindle including a first portion rotatably mounted within the housing, a shaft fixed to the first portion and extending outwardly from the housing, and a crossmember at the distal end of the shaft, the peripheral dimensions of the crossmember conforming closely to the preselected internal dimensions of the slot and the length of the shaft external to the housing being approximately equal to the thickness of the external wall, and abutment means emanating from the housing and located on opposite sides of the shaft intermediate the housing and the crossmember wherein the abutment means includes a pin late circumscribing the shaft and attached to the housing, and pin members integral to and projecting from the pin plate on opposite sides of the shaft and the crossmember and having cross-sectional dimensions, the cross-sectional dimensions of the abutment means and the shaft in combination closely conforming to the dimensions of the slot so that the crossmember, the shaft and the abutment means are insertable into the slot with the crossmember aligned with the abutment means to a position in which the crossmember is inside the external wall and the abutment means and the shaft occupy the slot, and the spindle is then rotatable 90 degrees to misalign the crossmember with the slot to attach the attachment mechanism rigidly to the external wall; and

a cable including means for connecting to an immovable object and adapted to be secured to the housing to inhibit theft of the equipment.

5,381,686
DUAL-ACTION PNEUMO-HYDRAULIC CRIMPING APPARATUS

James A. Thorup, Meadow Vista, Calif., assignor to Coherent Inc., Santa Clara, Calif.

Filed Mar. 3, 1994, Ser. No. 206,445
Int. Cl.[6] B21D *9/08*
U.S. Cl. 72—453.06 **6 Claims**



1. Apparatus for attaching a terminal to a wire, the terminal including a crimpable portion and attachable to the wire by inserting the wire into the crimpable portion and crimping the crimpable portion onto the wire, the apparatus comprising:

a hydraulic cylinder including a hydraulic ram, two normally open crimper jaws closeable by the hydraulic ram, the crimper jaws for closing onto, holding, and crimping the crimpable portion of the terminal after it is positioned between the crimper jaws, and a hydraulic pressure supply for delivering hydraulic pressure to said hydraulic cylinder via a hydraulic fluid to operate said hydraulic ram and cause said crimper jaws to close;

said hydraulic pressure supply including converter means for applying pneumatic pressure to said hydraulic fluid to deliver said hydraulic pressure to said hydraulic cylinder, and means for sequentially delivering a first pneumatic pressure to said converter means for delivering said hydraulic pressure to said hydraulic cylinder at a first level and a second pneumatic pressure to said converter means for delivering said hydraulic pressure to said hydraulic cylinder at a second level;

said sequential pneumatic pressure delivery means including means for accepting compressed air, means for delivering said compressed air to said converter means via a first pneumatic circuit to provide said first pneumatic pressure and via a second pneumatic circuit to provide said second pneumatic pressure, valve means for switching said compressed air between said first and second pneumatic circuits;

said first pneumatic circuit including first regulator means for adjusting said first pneumatic pressure and said second

pneumatic circuit including second regulator means for adjusting said second pneumatic pressure; and

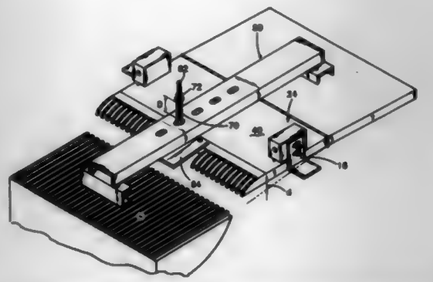
said first hydraulic pressure level sufficient to cause said crimper jaws to close on and grip the crimpable portion of the terminal but less than sufficient to cause said crimper jaws to crimp the crimpable portion of the terminal, and said second hydraulic pressure level sufficient to crimp the crimpable portion of the terminal.

5,381,687

ESCALATOR COMBPLATE STOP SWITCH LOAD CALIBRATING ASSEMBLY

Dat Nguyen, New Britain, and James A. Rivera, Bristol, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 19, 1992, Ser. No. 963,344
Int. Cl.[6] G01L *25/00*
U.S. Cl. 73—1 B **6 Claims**



1. A method for setting an escalator safety switch assembly at a power-interruption position defined by a known upward force imparted to a vertically deflectable exit combplate on the escalator, said method comprising the steps of:

a) applying said known upward lifting force to said combplate to elevate said combplate above its normal rest position;

b) positioning said safety switch assembly to engage the elevated combplate end so as to set the switch in a power-interrupted state; and

c) returning said combplate to its normal rest position so as to disengage said switch from said combplate.

5,381,688

APPARATUS AND METHOD FOR DETECTING A ROAD SURFACE CONDITION OF A CAR POWERED BY A COMBUSTION ENGINE

Hiroshi Ikeda, Kariya; Taro Tabata, Kuwana, and Yasuhito Takasu, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 4, 1993, Ser. No. 56,202
Claims priority, application Japan, May 7, 1992, 4-115021
Int. Cl.[6] G01B *5/28*
U.S. Cl. 73—105 **11 Claims**

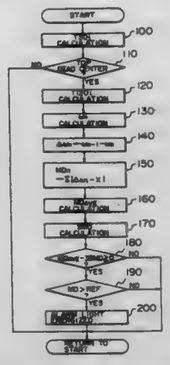
1. An apparatus for detecting a road surface condition of a car powered by a combustion engine, comprising:

means for calculating change values of a rotational speed of the engine;

means for calculating a deviation (MD) of the calculated change values;

means for calculating successively a new central value (MED) from the deviation and a previous central value;

means for calculating successively a new standard deviation (SMD) from the deviation, the new central value and a previous standard deviation of frequency distribution of the deviation; and



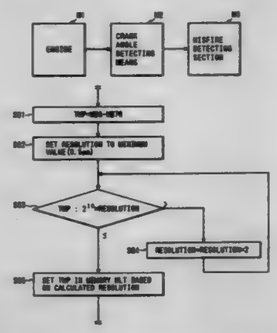
means for judging the car to be running on a rough road when the calculated standard deviation (SMD) is more than a predetermined amount.

5,381,689

MISFIRE DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yasuhiko Ishida, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,610
Claims priority, application Japan, Jun. 2, 1992, 4-141244
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 **4 Claims**



1. A misfire detecting system for an internal combustion engine, comprising:

means for outputting a reference period signal representive of a crank angle position corresponding to the timing of ignition of said internal combustion engine;

time ratio detecting means for detecting the ratio of periods of time corresponding to predetermined angular intervals which are provided before and after a particular reference angle of said reference period signal output from outputting means;

misfire deciding means for comparing said ratio of periods of time with a predetermined value, and for determining that a misfire has occured when said ratio of period of time is larger than said predetermined value, and that no misfire has occurs when said ratio of period of time is not larger than said predetermined value; and

means for changing the resolution of detecting the time corresponding to said predetermined angular intervals,

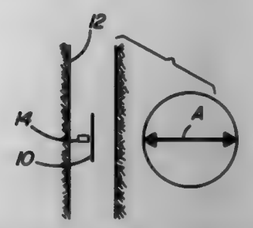
according to the number of revolutions per minute of said engine.

5,381,690

METHOD AND APPARATUS FOR MEASURING THREE DIMENSIONAL STRESS IN ROCK SURROUNDING A BOREHOLE

Harald H. Kanduth, Saint-Lazare, and Marty Hudyma, Bathurst, both of Canada, assignors to Noranda Inc., Ontario, Canada

Filed Mar. 8, 1993, Ser. No. 28,913
Claims priority, application Canada, Mar. 9, 1992, 2062543
Int. Cl.[6] E21B *47/00*; G01N *19/06*; G01B *5/00*
U.S. Cl. 73—151 **4 Claims**



1. A method for measuring the three dimensional stress in rock surrounding a borehole comprising the steps of:

a) cutting at least three slots into the wall of a borehole at different angles relative to a borehole axis to effect stress relaxation and strain deformations which are representative of the stresses normal to respective slots; and

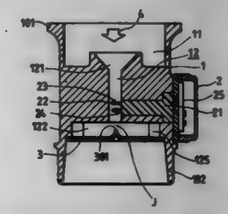
b) measuring respective strain deformations adjacent to the at least three slots that are being cut into the borehole wall with stress sensors so as to determine the three dimensional stress field surrounding the borehole from measurements in a single borehole.

5,381,691

AIR FLOW METER

Atsushi Miyazaki; Chihiro Kobayashi; Shinya Igarashi; Tetsuo Matsukura; Haruhiko Maeda, all of Katsuta; Nobukatsu Arai, Ushiku, and Yoshihito Sekine, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ibaraki, both of Japan

Continuation of Ser. No. 779,402, Oct. 18, 1991, abandoned.
This application Sep. 27, 1993, Ser. No. 126,759
Claims priority, application Japan, Oct. 19, 1990, 2-279050
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—202.5 **4 Claims**



1. The air flow meter, comprising:

a main passage through which an air flow is supported to an internal combustion engine;

a first subpassage for air flow, disposed in and coaxially with said main passage so that part of said air flow in said main passage enters said first subpassage at an upstream side of said first subpassage and flows in a same direction as said air flow in said main passage;

a second subpassage for air flow, intersecting said first subpassage at a downstream end of said first subpassage so that air from said first subpassage flows into said second subpassage and is divided therein into two radial air flows flowing in opposite radial directions and air passing through said second subpassage joins with said air flow in said main passage;

air flow sensing means disposed in said first subpassage for sensing a flow rate of air flowing therein; and

a projection disposed at said intersection of said first and second subpassages so as to project from a downstream side wall of said second subpassage toward said air flow sensing means, for guiding air flowing from said first subpassage into said second subpassage so that a ratio between said two radial air flows is substantially constant, said projection having a height less than a height of said second subpassage,

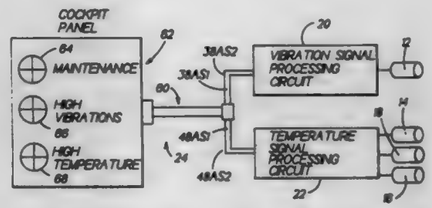
wherein said projection is formed into a hemisphere.

5,381,692

BEARING ASSEMBLY MONITORING SYSTEM

Christopher L. Winslow, Trumbull; John A. Roncallo, Yalesville; William C. Boyce, Huntington; Robert T. Bonitz, Cheshire; Bruce E. Zepke, Glastonbury, and Michael W. Hawman, New Britain, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 9, 1992, Ser. No. 987,871
Int. Cl.[6] G05G *1/00, 3/00*; G08B *21/00*
U.S. Cl. 73—593 **13 Claims**



1. In combination with a support bearing assembly for a rotating shaft, the support bearing assembly having at least one bearing, a bearing assembly monitoring system, comprising:

vibration sensing means for continuously monitoring complex vibrations emanating from the support bearing assembly and providing complex vibration signals corresponding thereto;

vibration signal processing circuit means operative in response to said complex vibration signals for providing at least one vibration alarm signal;

first temperature sensing means for continuously monitoring the operating temperature of each bearing of the support bearing assembly and providing bearing operating temperature signals corresponding thereto;

second temperature sensing means for continuously monitoring the ambient temperature adjacent the support bearing assembly and providing ambient temperature signals corresponding thereto;

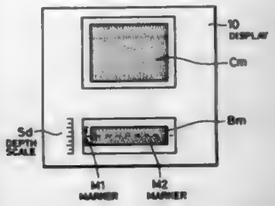
temperature signal processing circuit means operative in response to said bearing operating and ambient temperature signals for providing a temperature alarm signal; and

alarm subsystem means operative in response to said at least one vibration alarm signal and said temperature alarm signal for providing real time early warning of degradation of the support bearing assembly as a result of fatigue wear thereof due to excessive vibration levels and impending catastrophic failure of the support bearing assembly due to excessive operating temperature therein, respectively.

5,381,693
ULTRASONIC IMAGING APPARATUS WITH SYNTHESIZED FOCUS AND SETTING RANGE MARKINGS

Masaki Kobayashi, Utsunomiya; Toshiaki Takahashi, Tachikawa; Masato Nagura, and Kazuhiko Hara, both of Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1992, Ser. No. 863,731
Claims priority, application Japan, Apr. 26, 1991, 3-124702
Int. Cl.[6] G01N *29/06, 29/22*
U.S. Cl. 73—614 8 Claims

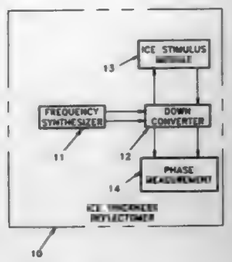


1. An ultrasonic imaging apparatus, comprising:
means for generating an ultrasonic beam;
scanning means for scanning an object to be inspected while irradiating the ultrasonic beam;
means for receiving echo signals from the object;
display means for displaying a plane image and a cross-sectional image formed based on said received echo signals; and
synthesizing means for synthesizing a marker indicating a focus position of the ultrasonic beam and a marker indicating a setting range of a detection gate on said displayed cross-sectional image.

5,381,694
ICE THICKNESS MEASUREMENT REFLECTOMETER

Dennis P. Glynn, Chester; John C. Joseph, Merrimack, and Thomas O. Perkins, Bedford, all of N.H., assignors to Dedicated Electronics, Chester, N.H.

Filed Sep. 29, 1992, Ser. No. 953,510
Int. Cl.[6] G01B *17/02*
U.S. Cl. 73—627 6 Claims

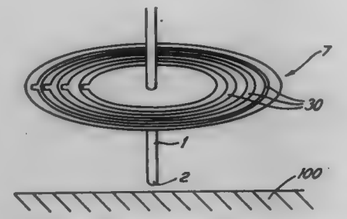


1. Apparatus for measuring the thickness of a material comprising:
oscillator means alternately generating a first signal having a first frequency and a second signal having a second frequency; antenna means coupled to said oscillator means for transmitting into said material, the thickness of which is being measured, said first signal and then said second signal, and said antenna means receiving a portion of said first signal that is reflected from said material and then a portion of said second signal that is reflected from said material;
phase detecting means coupled to said antenna means for detecting a first phase difference between the portion of said first signal reflected from said material and said first signal from said oscillator means and providing a first indication of said first phase difference, and then detecting a second phase-difference between the portion of said second signal reflected from said material and said second signal from said oscillator means and providing a second indication of said second phase difference;
processor means receiving said first indication of said first phase difference from said phase detecting means and determining a first indication of material thickness therefrom, said processor means adding a first plurality of integers of wavelength of said first frequency to said first indication of material thickness to derive a first set of numbers, and said processor means receiving said second indication of said second phase difference from said phase detecting means and determining a second indication of material thickness therefrom, said processor means adding a second plurality of integers of wavelength of said second frequency to said second indication of material thickness to derive a second set of numbers;
memory means coupled to said processor means for storing said first and said second set of numbers, said processor means comparing said first set and said second set of numbers to locate a matching number in said first set of numbers that is also in said second set of numbers, said matching number representing the actual physical distance that said first signal travels in said material and also represents the actual physical distance that said second signal travels in said material; and
display means receiving said matching number from said memory means and using same to display the actual thickness of said material.

5,381,695
APPARATUS FOR INVESTIGATING A SAMPLE WITH ULTRASOUND

Peter A. Payne, and Richard J. Dewhurst, both of Manchester, England, assignors to British Technology Group Ltd., London, England

Continuation of Ser. No. 63,363, May 18, 1993, abandoned, which is a continuation of Ser. No. 797,316, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 597,092, Oct. 15, 1990, Pat. No. 5,099,693, which is a continuation of Ser. No. 456,588, Jan. 2, 1990, abandoned. This application Jan. 14, 1994, Ser. No. 182,670
Claims priority, application United Kingdom, Nov. 27, 1987, 8727825
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—643 7 Claims

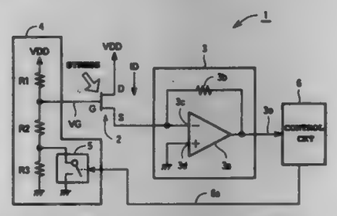


1. An apparatus for investigating a sample with ultrasound, comprising:
an optical radiation source for producing a high frequency pulse of said optical radiation;
optical fibre means for transmitting said optical radiation from said source to said sample with said transmitted radiation emanating from a first end of said optical fibre means;
a transducer element of piezoelectric plastics material for detecting ultrasound generated by said pulse in the sample, said transducer element being arranged for causing it to have a focus at a point related to the point of incidence of the radiation on the sample from said first end of said optical fibre means, said transducer element being an electronically focussed array;
a casing containing said transducer element and said first end; and
an acoustic coupling medium for coupling said transducer element to said sample.

5,381,696
SEMICONDUCTOR STRESS SENSOR

Katsuki Ichinose, Saitama, and Katuhiko Takebe, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,752
Claims priority, application Japan, May 17, 1991, 3-142360
Int. Cl.[6] G01B *7/16*
U.S. Cl. 73—771 7 Claims

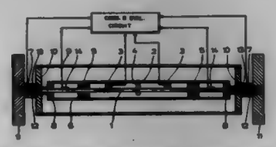


1. A semiconductor stress sensor comprising:
a field-effect transistor for producing a drain output commensurate with a stress applied thereto,
biasing means for applying a gate bias voltage to said field-effect transistor, said biasing means comprising a gate bias voltage generator comprising a plurality of series-connected resistors for applying a divided voltage to a gate of said field-effect transistor,
converting means for converting the drain output from said field-effect transistor into a detected output signal, and
control means for varying a gate-to-source voltage of said field-effect transistor to reduce said drain output in a standby mode when no stress is to be detected, said control means comprising a switch for selectively shunting one of said resistors to ground, whereby said gate-to-source voltage of said field-effect transistor can be varied when said one of the resistors is shunted to ground by said switch.

5,381,697
MASS FLOW METER

Ronald van der Pol, Venlo, Netherlands, assignor to Krohne Messtechnik GmbH & Co., KG, Germany

Filed Jul. 6, 1993, Ser. No. 87,455
Claims priority, application Germany, Jul. 6, 1992, 4222095
Int. Cl.[6] G01F *1/84*
U.S. Cl. 73—861.37 68 Claims

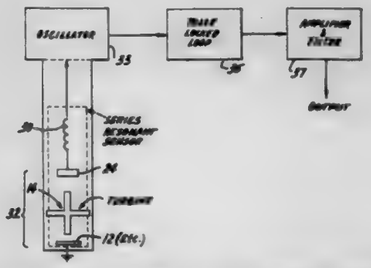


1. A mass flow meter for flowing media that works on the Coriolis Principle, with a substantially straight measuring pipe carrying the flowing medium, at least one oscillator acting on the measuring pipe, means including at least one transducer detecting either one or both Coriolis forces and Coriolis oscillations based on Coriolis forces and producing a measured value of the mass flow, a carrier pipe that holds said measuring pipe, said oscillator and said transducer and at least one temperature sensor that detects the temperature of the measuring pipe to correct the measured value depending on the temperature of the measuring pipe, wherein the measuring pipe and the carrier pipe are connected to one another in a way that excludes relative axial movements, and the axial distance between the points connecting the measuring pipe and the carrier pipe corresponds to the oscillation length of the measuring pipe, characterized by the fact that a length-change sensor that detects changes in the oscillation length of the measuring pipe is provided for correcting the measured value depending on said oscillation length of and the stress on the measuring pipe.

5,381,698
FLOW-RESPONSIVE APPARATUS

Paris H. Wiley, Tampa, Fla., assignor to Onicon Inc., Clearwater, Fla.

Filed Apr. 6, 1992, Ser. No. 863,859
Int. Cl.[6] G01F *1/06, 1/28*
U.S. Cl. 73—861.77 27 Claims



1. Apparatus for monitoring the flow of fluid, including an oscillator having frequency-modulating means including an inductive impedance and a capacitive impedance connected to each other as a series circuit having opposite-end connections and a common junction that only connects said impedances to each other, said oscillator including an amplifier and a frequency-determining feedback network, said series circuit constituting a component part of said feedback network and connected in said network at said opposite-end connections, said capacitive impedance including a flow sensor having a sensing capacitive electrode and flow-activated means coacting with said sensing capacitive electrode for modifying the capacitance of said capacitive impedance, said apparatus having significant stray as a shunt capacitance between said opposite-end connections of said series circuit, said series circuit thus comprising a series/parallel resonant circuit having a series-resonant frequency Fs and a parallel-resonant frequency Fp, the network being proportioned for causing oscillation at a frequency between Fs and Fp for at least part of the range of movement of the flow-responsive device.

5,381,699
RADON COLLECTOR AND BUBBLER

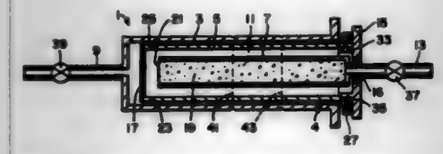
Robert E. Dansereau, Albany, N.Y., and Joseph A. Hutchinson, Henderson, Nev., assignors to Health Research, Inc., Albany, N.Y.

Filed Oct. 6, 1992, Ser. No. 958,047
Int. Cl.[6] G01N *1/02, 33/18;* B01L *3/02*
U.S. Cl. 73—864.01 12 Claims

1. A radon collector and bubbler comprising:
a syringe defining a hollow barrel with an outlet means at an end thereof;
a hollow plunger defining a chamber therein, said hollow plunger being insertable within the hollow barrel and being axially slidable therein, said hollow plunger having a means for dispersing air into the hollow barrel;
a hollow tube located within the hollow plunger;

means for sealing an area between the syringe and the hollow plunger;

means for retaining charcoal within the tube and for allowing air to pass through the tube;



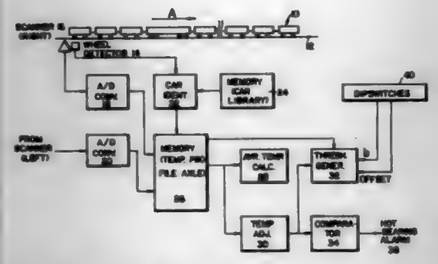
an inlet means for placing the hollow tube in air flow relationship with an area outside the hollow plunger and syringe.

5,381,700

TRAIN ANALYSIS SYSTEM ENHANCEMENT HAVING THRESHOLD ADJUSTMENT MEANS FOR UNIDENTIFIED WHEELS

George Grosskopf, Jr., Coram, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Oct. 15, 1992, Ser. No. 961,477
Int. Cl.[6] G01K *1/02*; G08B *21/00*; B61K *9/04*
U.S. Cl. 73—865.9 10 Claims



1. A train analysis system comprising:

detector means disposed adjacent to a railroad track for detecting a condition of a wheel as a train passes the detector means;

wheel identifying means for identifying said wheel;

threshold generating means for generating a first threshold level related to an absolute threshold when said wheel is identified as being part of a particular car, and for generating a second threshold level different from said absolute threshold when said wheel is not identified as being part of a particular car; and

comparing said condition to one of said first and second threshold level.

5,381,701

DUST PARTICLE EXPOSURE CHAMBER

Robert P. Frankenthal, Summit; David J. Siconolfi, New Providence, and James D. Sinclair, Summit, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Mar. 26, 1993, Ser. No. 37,902
Int. Cl.[6] G01N *17/00*
U.S. Cl. 73—865.6 12 Claims

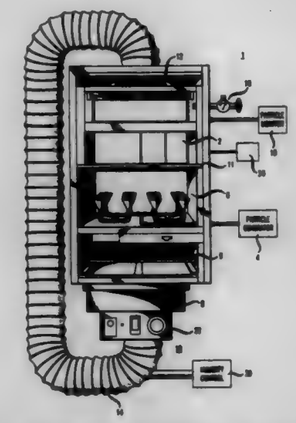
1. A particle exposure apparatus comprising:

a chamber having a member for holding at least one test specimen;

a particle generator for generating particles, the particle generator including an atomizer for generating substantially uniform aerosol droplets;

a gas flow generator having associated therewith a gas flow direction;

output ports communicating with the particle generator through a particle distribution system comprising a plurality of paths, the output ports being substantially uniformly distributed in a plane normal to the gas flow direction and each of the plurality of particle distribution system paths



being of similar length such that the particle concentration is substantially uniform over a chamber cross-section that is approximately normal to the gas flow direction: and

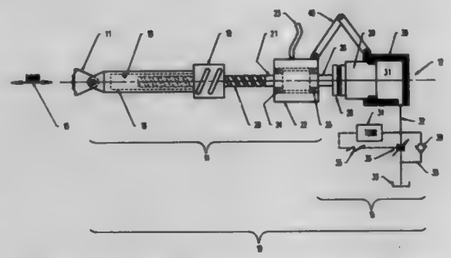
a recirculation system including a duct through which exiting particle-laden gas passes, a filter for removing particles from the particle-laden air, and a reintroduction member for reintroducing gas into the chamber after passage through the filter.

5,381,702

HYBRID ELECTRO-MECHANICAL-HYDRAULIC DRIVE SYSTEM, AND METHOD OF OPERATING SAME

Mitsumasa Ohno, Isehara, Japan, assignor to Moog Inc., East Aurora, N.Y.

Filed Sep. 10, 1993, Ser. No. 119,868
Claims priority, application Japan, Sep. 11, 1992, 4-243079
Int. Cl.[6] F16H *25/20*; B29C *45/77*
U.S. Cl. 74—89.15 8 Claims



1. A drive mechanism arranged to move a load relative to a support, comprising:

an electric motor-driven element;

a hydraulic reaction element arranged mechanically in series with said electric motor-driven element between said load and support;

said electric motor-driven element being operated independently of said hydraulic reaction element to move said load relative to said support when said hydraulic reaction element is held at a fixed displacement;

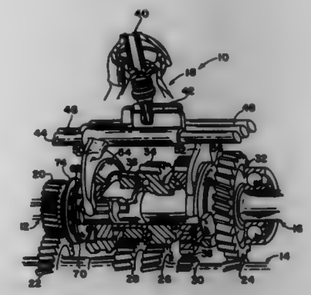
said electric motor-driven element and said hydraulic reaction element being operated cooperatively with one another to move said load when said motor-driven element is operated at a controlled velocity to pressurize said hydraulic reaction element and said hydraulic reaction element is operated by controlling its pressure.

5,381,703

GEARBOX COUNTERSHAFT DECOUPLER

Charles G. Rankin, 708 NW. 88th St., Kansas City, Mo. 64155

Filed Apr. 15, 1993, Ser. No. 48,106
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—329 16 Claims



1. An automotive gearbox for receiving power input from an automobile engine and for transferring power output to a rotatable output shaft of the gearbox and for enabling selection between a direct drive mode and at least one change-speed mode, said gearbox comprising:

a rotatably mounted input shaft for receiving power input from the engine;

a rotatably mounted countershaft;

an input gear mounted on said input shaft;

a plurality of output gears mounted on said output shaft for selective positive rotational engagement therewith;

a countershaft input gear in constant meshing engagement with said input gear;

a plurality of change-speed gears mounted on said countershaft in operatively driving constant meshing engagement with respective ones of said plurality of output gears;

means for selectively transferring power from said input shaft either directly to said output shaft in a direct drive mode or alternatively through said countershaft by positively engaging one of said output gears with the output shaft in a change-speed mode and said means for selectively transferring power from said input shaft includes a synchromesh hub shiftably movable between a position for operatively rotatably coupling one of said output gears to said output shaft and a position for operatively rotatably coupling said input shaft to said output shaft; and

means for selectively decoupling said countershaft and said change-speed gears from operative driven engagement by said input shaft when said output shaft is driven directly by said input shaft,

wherein said means for selectively decoupling includes means for selectively operatively decoupling said input gear from rotatably driven engagement by said input shaft, whereby said input shaft is freely rotatable within said input gear, and said means for selectively decoupling said input gear is actuated by said means for selectively transferring power from said input shaft when said input shaft is operably coupled to said output shaft in a direct drive mode,

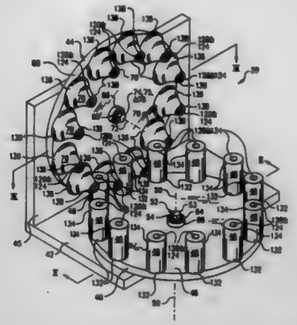
said means for selectively decoupling said input gear further including a drive member rotatably fixed to said input shaft, and a longitudinally shiftable slider element operatively rotatably fixed relative to said input gear and selectively couplable with said drive member, said slider element being shiftable between a first position rotatably coupled to said drive member when said means for selectively transferring power is in other than said position for operatively rotatably coupling said input shaft to said output shaft and a second position wherein said slider element is disengaged from said drive member when said means for selectively transferring power is in said position for operatively rotatably coupling said output shaft.

5,381,704

BEARING TOOTH GEAR

Stephen E. Knotts, 14601 NE. 50th Place, #E-1, Bellevue, Wash. 98004

Filed Jun. 10, 1993, Ser. No. 75,147
Int. Cl.[6] F16H *1/12*
U.S. Cl. 74—416 23 Claims



1. A gear assembly for transmitting rotative forces through a gear train, said assembly being operatively mounted to a support frame, said assembly comprising:

(a) a first gear having

(i) a first gear plate operatively secured to the support frame, said first gear plate being capable of rotating about a first axis,

(ii) a first set of teeth operatively secured to said first gear plate, each tooth within said first set of teeth being positioned radially outward from said first axis; and

(b) a second gear having

(i) a second gear plate operatively secured to the support frame, said second gear plate being capable of rotating about a second axis,

(ii) a second set of teeth operatively secured to said second gear plate, each tooth within said second set of teeth being positioned radially outward from said second axis, at least one tooth within said second set of teeth being rotatively secured to said second gear plate, at least one tooth within said second set of teeth defining a removable, rotatable bearing capable of intermeshing, contacting, and engaging corresponding teeth of said first set of teeth to transmit the rotative forces through the gear train, at least one tooth within said second set of teeth having a generally bell-shaped configuration with a wider base portion positioned nearer to said second gear plate and an opposed narrower end portion positioned away from said second gear plate, wherein at least one tooth within said first set of teeth is rotatively secured to said first gear plate, wherein at least one tooth within said first set of teeth defines a removable, rotatable bearing capable of intermeshing, contacting, and engaging corresponding teeth of said second set of teeth to transmit the rotative forces through the gear train, wherein at least one tooth of said first set of teeth has a generally bell-shaped configuration with a wider

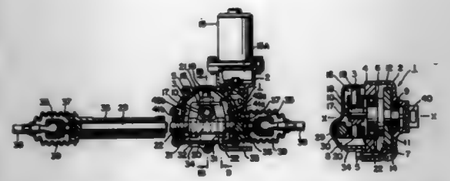
base portion positioned nearer to said first gear plate and an opposed narrower end portion positioned away from said first gear plate, wherein at least one tooth within said second set of teeth has a generally cylindrically-shaped configuration.

5,381,705

REAR WHEEL STEERING APPARATUS FOR FOUR-WHEEL STEERING VEHICLE

Akira Takahashi, Oota, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 111,789
Claims priority, application Japan, Sep. 4, 1992, 4-068535[U]
Int. Cl.[6] B62D *5/04, 3/04*
U.S. Cl. 74—498 **7 Claims**



1. A rear wheel steering apparatus for a four-wheel steering vehicle, comprising:
a casing;
a crank spindle rotatably supported in said casing and formed with an eccentric pin on one end thereof;
a driving mechanism for driving said crank spindle;
a cross pin member pivotally fitted to the eccentric pin of said crank spindle and formed with upper and lower axles extending radially in two opposite directions;
an upper holder fitted to the upper axle of said cross pin member;
a lower holder fitted to the lower axle of said cross pin member; and
a steering bar fastened to said lower holder.

5,381,706

CONNECTOR FOR REMOTE VALVE ACTUATING ASSEMBLIES

David P. Yanusko, Pottstown, Pa., and Frank J. Rocchino, Jr., Camarillo, Calif., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Sep. 22, 1993, Ser. No. 125,484
Int. Cl.[6] F16G *11/09*
U.S. Cl. 74—505 **16 Claims**



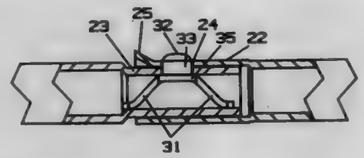
1. A motion transmitting remote control cable assembly (10) for transmitting motion in a curved path comprising:
a drive wheel housing (27) for enclosing a geared drive wheel (12) having a plurality of gear teeth (14);
a driven wheel housing (28) spaced apart from said drive wheel housing (27) for enclosing a geared driven wheel (16) having a plurality of gear teeth (14);
a flexible motion transmitting core element (18) comprising a flexible cable (34) having end portions (20,22) and a wire (36) helically wrapped around said flexible cable (34) and spaced and pitched about the entire length of said cable (34) for meshing with said gear teeth (14) to entrain said core element (18) around said drive and said driven wheels (12,16) so that said core element (18) translates rotational motion from said drive wheel (12) to said driven wheel (16) in a closed all tension system;
first and second rigid end members (24,26) attached to said respective end portions (20,22) of said core element (18); and characterized by
connector means (38) for interconnecting said rigid end members (24,26) and for defining a first plurality of parallel pivot axes (42) and a second plurality of parallel pivot axes (45) perpendicular to said first plurality of parallel pivot axes (42) about which said end members (24,26) pivot so that said connector means (38) and said end members (24,26) and said core element (18) remain entrained around said drive and driven wheels (12,16) regardless of the orientation of said core element (18) to allow said connector means (38) and said end members (24,26) and said core element (18) to pass through said drive and driven housings (27,28).

5,381,707

EXTENSION ARM FOR AN AUTOMOBILE JACK

Bryan D. Gill, Newmarket, Canada, assignor to Seeburn Metal Products Limited, Ontario, Canada

Continuation of Ser. No. 847,598, Mar. 4, 1992, Pat. No. 5,237,890. This application May 6, 1993, Ser. No. 57,499
Int. Cl.[6] G05G *1/00*; F16B *7/10*
U.S. Cl. 74—546 **8 Claims**



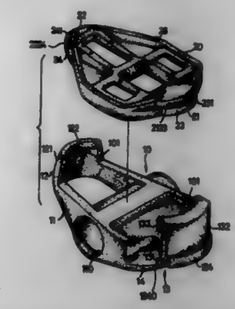
1. A jack arm comprising:
a plurality of interconnected hollow tubular sections, comprising: a first end of at least a first said section and a second end of at least a second said section each having at least one straight side, said first end adapted to fit within said second end and to be keyed to said second end by said straight sides to resist torque applied thereto, and said first end having an inner wall; said second section also having a said first end; a first hole in said first end of said first section and a second hole in said second end of said second section, located in alignment with each other; and a fastener having a stop and two resilient legs splayed apart and extending from said stop, and a lug having side walls extending from said stop, said fastener snap fit within said first end of said first section with said resilient legs resiliently pressing against said inner wall to bias said lug out through and beyond said first hole with said stop abutting against an inner wall of said first section adjacent said first hole to limit the projection of said lug through and beyond said first hole, said lug projecting into said second hole of said second section and said side walls of said lug extending into and abutting the walls defining said second hole to lock said first and second sections together until said lug is depressed to release said second end for disassembly.

5,381,708

PEDAL ASSEMBLY FOR A BICYCLE

Wan M. Liao, No. 200, Heng Chun Rd., Ta Chia Chen, Taichung Hsien,

Filed Sep. 10, 1993, Ser. No. 119,500
Int. Cl.[6] G05G *1/14*
U.S. Cl. 74—594.6 **1 Claim**



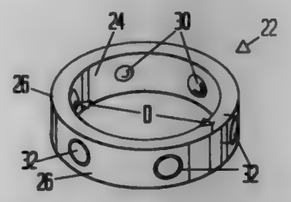
1. A pedal assembly for a bicycle comprising:
a pedal including first and second ends, said second end of said pedal including a resilient element extending from said pedal and forming a free end on a distal end of said pedal with said free end being spaced apart from a bottom of said pedal;
a fixing means being formed on each of said first and second ends of said pedal, and comprising a wall extending upward from said first end of said pedal and from said free end of said resilient element, respectively, said walls each having a flange with an arciform inner side, the flanges extending horizontally from said inner side thereof; and
an adapter plate including an attaching means formed on an upper side thereof so as to be attached to a sole of a footwear of a cyclist, and said adapter plate being releasably mounted into said pedal assembly and being retained between said fixing means wherein said adapter plate includes first and second end, each end having an edge extending horizontally therefrom, a shoulder surface being formed on an abutment area between said end and said edge of each of said ends.

5,381,709

APPLICATION TOOL FOR TORQUE-CONTROLLED FASTENING SYSTEM

John A. Louw, 27930 Ridgebluff Ct., Rancho Palos Verdes, Calif. 90274

Filed Jun. 14, 1993, Ser. No. 75,791
Int. Cl.[6] B25B *13/06*
U.S. Cl. 81—59.1 **19 Claims**



11. An assembly of driver elements and retainer ring for fixed mounting in a rotational drive tool to permit its use to secure threaded collars having axial lobes at equal angular increments on its external surface onto threaded pins, which comprises:
a. a retainer ring having an annular wall surrounding a central cavity and having a plurality of radial recesses extending through said annular wall and located at spaced-apart angular increments corresponding to said equal angular increments;
b. a like plurality of driver elements, one each, fixedly secured within each of said radial recesses and having radially inward faces protruding into said central cavity and radially outward faces coincident with the external wall of said ring.

5,381,710

WRENCH WITH INCLINED DRIVE FACES

David R. Baker, 7454 Laurie Dr., Fort Worth, Tex. 76112

Division of Ser. No. 791,024, Nov. 12, 1991, Pat. No. 5,239,899, which is a continuation-in-part of Ser. No. 657,139, Feb. 15, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,672
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[6] B25B *13/00*
U.S. Cl. 81—186 **6 Claims**



1. A wrench for driving a nut having a plurality of flat sides, comprising in combination:
a jaw joined to a shank and having jaw portions rigidly formed together and separated from each other by a center line of the jaw, each of the jaw portions having a free end;
a nose drive face located on the free end of each jaw portion for engaging flats of a nut when in a nose drive position, the distance between the nose drive faces being slightly greater than the distance between opposite flat sides of the nut;
a main drive face on each of the jaw portions, each of the main drive faces being a convex curve protruding toward the center line, each of the main drive faces having a forward end that joins a rearward end of one of the nose drive faces, defining a notch between the nose drive face and the main drive face, one of the notches adapted to engage a corner of the nut if the wrench is pulled away when in a main drive position to retain the wrench on the nut; and
each of the main drive faces having a midpoint located equidistant between the forward end and a rearward end of each main drive face, the distance between midpoints of each main drive face being substantially the same as the distance between the nose drive faces of the each jaw portion, so that the wrench may be placed on a nut for the main drive position by sliding the wrench forward with the nut passing between the nose drive faces and locating between the main drive faces, and so that when the wrench is in an intermediate drive position between the main drive position and the nose drive position, the nose drive face on one of the jaw portions contacts a forward portion of one of the flat sides of the nut, and the main drive face on another of the jaw portions contacts a rearward portion of another of the flat sides of the nut.

5,381,711

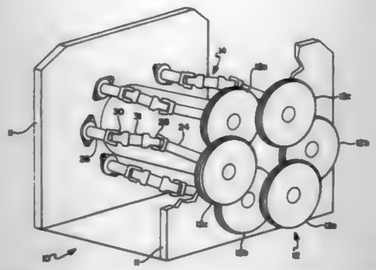
APPARATUS FOR PERFORATING CORRUGATED TUBING

Dale Truesnner, 1390 S. Brown Rd., Pigeon, Mich. 48753, and Richard Booms, 2581 Sand Beach Rd., Bad Axe, Mich. 48413

Continuation-in-part of Ser. No. 831,690, Feb. 5, 1992, which is a continuation-in-part of Ser. No. 19,026, Feb. 18, 1993. This application Jun. 1, 1993, Ser. No. 70,073

Int. Cl.[6] B26D *3/14*

U.S. Cl. 83—318 **5 Claims**



3. An apparatus for perforating tubing having corrugations and an axial path, the apparatus comprising:

(a) a first mounting plate;

(b) a second mounting plate;

(c) at least one pair of feeder-cutter wheels, each wheel comprising a worm, a threading disposed upon the worm, and a plurality of cutters disposed within the threading, each wheel being adapted to continuously intersect the corrugations of the tubing;

(d) at least one pair of drive shafts, each drive shaft having one feeder-cutter wheel axially disposed thereon, each drive shaft being supported by the first mounting plate and a second mounting plate, the drive shafts being deployed at an angle relative to the axial path of the tubing to apply pressure to the tubing as it is moved past the wheels;

(e) means for rotating the drive shafts; and

(f) means for translating the feeder-cutter wheels and drive shafts along a path parallel to the axial path of the tubing, the means for translating confining the movement of the feeder-cutter wheels and drive shafts to a path parallel to the axial path of the tubing.

5,381,712

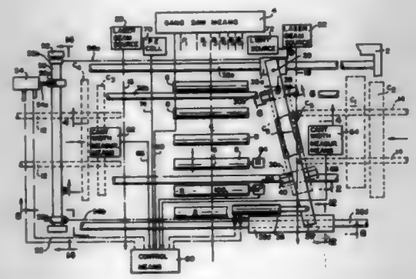
INFEED SYSTEM FOR A GANG SAW

George W. Head, Jr., Snellville; Reginald R. Landers, Monroe, and James L. Smith, Moultrie, all of Ga., assignors to Forest Products Machinery, Inc., Monroe, Ga.

Filed Jan. 12, 1993, Ser. No. 3,317

Int. Cl.[6] B27B *29/06*

U.S. Cl. 83—418 **16 Claims**



1. Infeed apparatus adapted for use with wood cant sawing means (4) having a horizontal central longitudinal infeed axis (6), comprising:

(a) longitudinal transport means (8) having a transport axis generally colinear with the sawing means infeed axis, said transport means defining a cant feeding station;

(b) skewing means (26) operable at a first loading station (B) arranged in horizontal parallel laterally-spaced relation relative to said longitudinal transport means for pivoting a first cant (C_5) in a horizontal plane about a vertical axis normal to its longitudinal axis toward a given angular orientation relative to a first reference line (18) parallel with and spaced from said transport axis; and

(c) lateral transport means (50) for laterally displacing said skewing means and said first cant, while in said given angular orientation, from said first loading station toward said cant feeding station;

said first cant, while in said given angular orientation, from said infeed station longitudinally toward said saw means, thereby to obtain maximum yield from

(d) said skewing means being operable independently of said transport means to pivot a second cant toward a desired angular orientation relative to a reference line parallel with said transport axis simultaneously with the transport of said first cant to the sawing means.

5,381,713

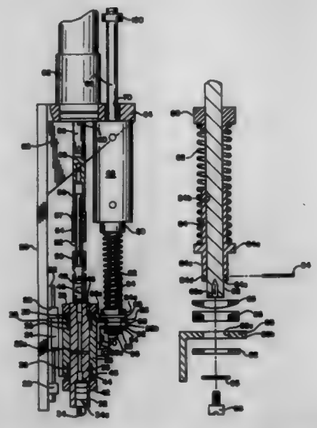
GLASS SCORING MECHANISM

Quinn C. Smith, Scotland, Canada, assignor to The Lockformer Company, Lisle, Ill.

Continuation of Ser. No. 885,275, May 18, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 147,459

Int. Cl.[6] B26D *3/08;* **C03B** *33/10*

U.S. Cl. 83—881 **17 Claims**



1. In a glass scoring apparatus of the type including a table for supporting a sheet of glass to be scored, a carriage and means mounting the carriage in predetermined spaced relationship with the table and for movement along X and Y axes, the improvement comprising:

(a) a pillar post assembly mounting a glass scoring wheel;

(b) guide means supported by the carriage and mounting the pillar post assembly for relative linear movement toward and away from the glass to be scored;

(c) spring means acting on said pillar post assembly for yieldably urging the glass scoring wheel into engagement with a sheet of glass supported by the table, said spring means serving as the sole biasing means engaged with the pillar post assembly for urging the same against the glass;

(d) powered variable adjustment means supported only by the carriage and engaged with said spring means for adjusting a cutting force on said scoring wheel after engagement of the scoring wheel with the glass such that the cutting force is increased by compressing the spring means, to estalbish a selected one of a number of force values when said variable adjustment means is operated in a first direction; and

(e) said powered variable adjustment means further including lifting means arranged for acting on said pillar post assembly, such that operation of said adjustment means in a second direction opposite said first direction lifts the scoring wheel away from and out of engagement with the sheet of glass.

5,381,714

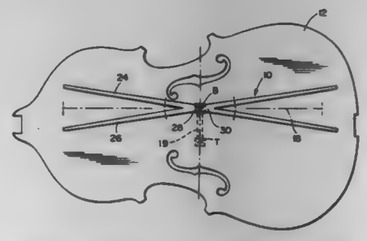
FAN-BRACING AND X-BRACING FOR CELLO AND DOUBLE BASS

Michael Kasha, 3260 Longleaf Rd., Tallahassee, Fla. 32310

Continuation of Ser. No. 875,040, Apr. 28, 1992, abandoned. This application Jun. 30, 1994, Ser. No. 268,717

Int. Cl.[6] G10D *1/02*

U.S. Cl. 84—276 **5 Claims**



1. A bass-bar structure in a bow string instrument, either cello or double-bass, said instrument having a top plate, a bridge having a bass foot and treble foot engaging an upper side of said top plate, said bass-bar structure comprising a bracing means secured firmly to an underside of said top plate, said bracing means including a bracing system, said bracing system having a center positioned in directly underlying aligned relation to said bass foot on said bridge and bracing bars radiating from said center to distribute string tension and vibrational load of the bridge acting on the top plate over a large area of said top plate.

5,381,715

TUNING DEVICE

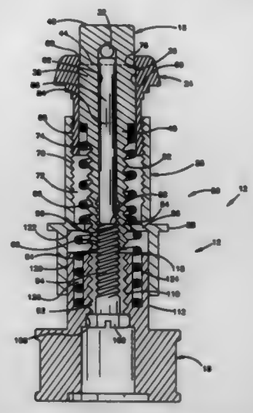
Robert J. Spercel, Marine Tower-East, Unit 1503, 12520 Edgewater Dr., Lakewood, Ohio 44107

Filed Apr. 6, 1993, Ser. No. 43,186

Int. Cl.[6] G10D *3/14*

U.S. Cl. 84—304 **10 Claims**

1. A device for tuning a string of a musical instrument, said device comprising a housing, a string post at least partially disposed in said housing and having a string passage to receive a portion of the string, gripper means connected with the string post for gripping the string, drive means for moving said string post axially relative to said housing to tension the string while the string is gripped by said gripper means, and actuator means for operating said gripper means to grip the string and for operating said drive means to move said string post axially relative to said housing while the string is gripped by said gripper means, said actuator means includes a single manually engageable member which is movable relative to said housing



to operate said gripper means and is movable relative to said housing to operate said drive means.

5,381,716

TREMOLO SYSTEM FOR STRINGED INSTRUMENTS

Christopher May, Low Herdley, Cosawood, Nr Haltwhistle, Northumberland, NE49 0QT, and John Wakefield, Mapledean, Longwick Road, Princes Risborough, Buckinghamshire, HP17 9HN, both of Great Britain

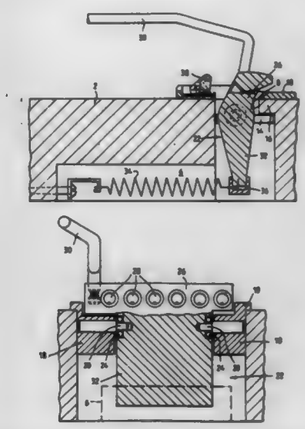
PCT No. PCT/GB92/01194, § 371 Date Jan. 4, 1994, § 102(e) Date Jan. 4, 1994, PCT Pub. No. WO93/01586, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 2, 1992, Ser. No. 170,284

Claims priority, application United Kingdom, Jul. 4, 1991, 9114467

Int. Cl.[6] G10D *3/00*

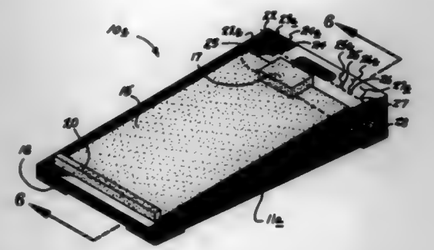
U.S. Cl. 84—313 **5 Claims**



1. A tremolo system for a stringed instrument having a body in an upper surface of which is formed a transverse slot feeding into a hollow volume within said body, the system being characterised by a base plate secured to the body of the instrument to surround and extend into said slot, the base plate carrying laterally opposed first bearing portions comprising a pair of

opposed stub shafts mounted on the base plate located within the body of the instrument one below each end of said transverse slot, and a block member carrying second bearing portions comprising opposed annular bearing rings mounted one in each side of the block member to receive therein said stub shafts whereby the block member is pivotal about an axis extending transversely of the body of the instrument below the upper surface thereof, the block member including an upper extent projecting from the slot and to which are secured the ends of the strings and a tremolo lever, and a lower extent within said volume in the body, resilient means reacting between said lower extent of the block member and the body to maintain said block member in a rest position of equilibrium against the tension in the strings, the arrangement being such that movement of the lever pivots the block member from the rest position to a displaced position and alters the tension of the strings.

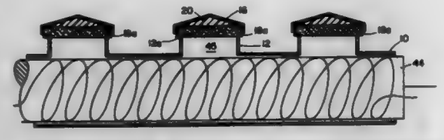
5,381,717
STRING INSTRUMENT WORK TABLE
Gary L. Brokaw, 456 Croton Ave., Cortlandt Manor, N.Y. 10566
Filed Oct. 20, 1993, Ser. No. 138,728
Int. Cl.[6] G10D *3/00*; A47G *1/24*; A47B *23/00*
U.S. Cl. 84—327 4 Claims



1. A string instrument work table, comprising,
a rigid platform, having a top wall spaced from a bottom wall, and a first end spaced from a second end, with a first side spaced from a second side, and
the top wall including a foam cushion insert mounted to the top wall extending from the first end in a spaced relationship relative to the second end, with a handle opening directed through the top wall between the foam cushion insert and the second end, and
a foam cushion block mounted onto the foam cushion insert extending from the foam cushion insert in a spaced relationship relative to the handle opening, with the handle opening and the foam cushion block oriented medially between the first side and the second side.

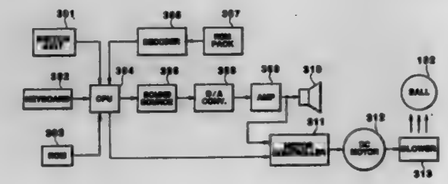
5,381,718
PROCESS FOR MAGNETICALLY SEATING A TONE HOLE PAD
Steven A. Wasser, Wellesley, Mass., assignor to Verne Q. Powell Flutes, Inc., Waltham, Mass.
Continuation-in-part of Ser. No. 936,358, Aug. 25, 1992, Pat. No. 5,297,466, which is a continuation-in-part of Ser. No. 877,906, May 1, 1992, Pat. No. 5,339,719. This application Oct. 26, 1993, Ser. No. 143,355
Int. Cl.[6] G10D *7/08*
U.S. Cl. 84—385 P 23 Claims

1. A process for magnetically, evenly seating a woodwind instrument tone hole sealing pad in a pad cup, comprising:
placing a pad on a tone hole rim;
placing an at least partially magnetic element between said pad and cup;
placing a solidifiable substance between said element and cup; and



applying a magnetic force to said element to move said pad to seat on the tone hole rim.

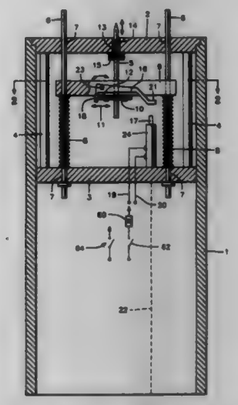
5,381,719
MUSIC REPRESENTING APPARATUS FOR FLOATING AN OBJECT ON THE BASIS OF A PERFORMANCE OF MUSIC
Toshihiko Otsuka, Oume, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1992, Ser. No. 994,143
Claims priority, application Japan, Dec. 27, 1991, 3-345976; Aug. 21, 1992, 4-222978
Int. Cl.[6] G10H *7/00*
U.S. Cl. 84—600 22 Claims



1. A music representing apparatus comprising:
input means for inputting performance data;
tone generating means for generating a tone signal on the basis of the performance data;
an object;
object driving means for applying a force to said object to float said object over the object driving means; and
control means for controlling said object driving means to vary the force applied to said object on the basis of at least one of the performance data and the tone signal generated by said tone generating means.

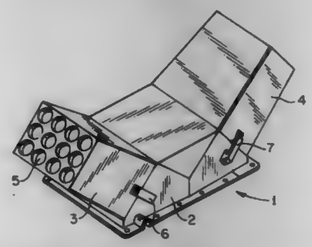
5,381,720
DEVICE FOR MORTARS
Karl-Axel Robelm, Nynäshamn, Sweden, assignor to AB Food Mark Production, Haninge, Sweden
PCT No. PCT/SE92/00012, § 371 Date Jul. 12, 1993, § 102(e) Date Jul. 12, 1993, PCT Pub. No. WO92/12394, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 10, 1992, Ser. No. 87,745
Claims priority, application Sweden, Jan. 11, 1991, 9100101
Int. Cl.[6] F41A *33/00*; F41F *1/00*
U.S. Cl. 89—1.35 8 Claims

1. An apparatus for mortars for simulating loading and firing with live ammunition by using a dummy shell which is muzzle loaded into the barrel of an ordinary mortar, the apparatus comprising a spacer piece removably insertable in said barrel, said spacer piece having a top plate at one end and a lower end, said lower end resting adjacent the barrel bottom, said spacer piece having a length less than the length of said barrel and wherein the combined length of said spacer piece and said dummy shell is greater than the length of said barrel so that the top of said dummy shell projects past the muzzle of said barrel when the dummy shell is inserted in said barrel and rests upon the top plate of said spacer piece, said spacer piece comprising a firing pin mechanism including a firing pin extending through



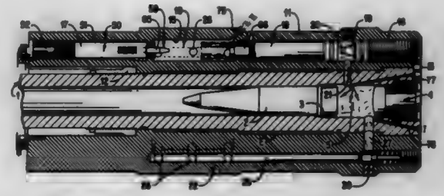
the top plate and which has a projected position and a retracted position, said firing pin mechanism including a triggering means for triggering the firing pin to hit an ignition cap in the end of said dummy shell.

5,381,721
RELEASE UNIT, AND RELEASE SYSTEM COMPRISING AT LEAST ONE SUCH RELEASE UNIT
Peter Holmström, Lidingö, and Sven Pettersson, Vällingby, both of Sweden, assignors to NobelTech Electronics, Jarfalla, Sweden
Continuation of Ser. No. 953,964, Sep. 30, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 181,960
Claims priority, application Sweden, Oct. 2, 1991, 9102845
Int. Cl.[6] F41A *1/00*; F42B *4/26*
U.S. Cl. 89—1.51 18 Claims



10. A release system, comprising:
at least one release unit, said release unit comprising: a first module in the form of a central body fixedly mounted on a vehicle, said first module including at least three openings, a first opening facing said vehicle when said first module is mounted on said vehicle and second and third openings being directed obliquely with respect to the first opening in substantially opposite directions from each other, the directions the second and third openings face being separated by 60°–120°; a second module and a third module in the form of release cassettes received respectively by the second and third openings of the first module, the second and third modules being received by said first module in the directions of the second and third openings respectively; locking means for removably fixing said second and third modules to said first module; a plurality of countermeasures to be launched from said at least one release unit; each of said release cassettes includes a plurality of countermeasure openings for receiving said countermeasures, said countermeasure openings in each cassette being aimed substantially in the same direction, said counter measures in said second and third modules being launched in directions being separated by 60°–120°; and wherein a plurality of said countermeasures are launched to delimited spaces from each said cassette creating separate decoys without any movement of the release unit relative to the vehicle on which it is mounted, the countermeasures launched from said release cassettes of said second module are launched away from the vehicle in substantially a first direction creating a first decoy and the countermeasures launched from said release cassette of said third module are launched away from the vehicle in substantially a second direction separated from said first direction by 60°–120° creating a second decoy, said first and second decoys being non-overlapping and spatially separated from each other by a distance corresponding to the angle between the cassettes; and
a control unit coupled to an electronic means of the release units, said control unit including means for controlling the release process of the respective release unit.

5,381,722
LIQUID PROPELLANT WEAPON
Michel Begneu, Bourges, France, assignor to Giat Industries, Versailles, France
Filed Nov. 2, 1993, Ser. No. 144,522
Claims priority, application France, Nov. 2, 1992, 92 13098
Int. Cl.[6] F41A *1/04*
U.S. Cl. 89—7 17 Claims



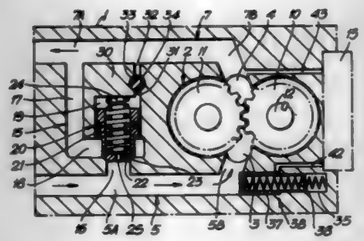
1. A liquid-propellant weapon having a system for injecting a liquid propellant agent into a combustion chamber delimited between a projectile loaded in a barrel of the weapon and a breechblock that closes off a rear end of the barrel, wherein the injection system comprises:
a plurality of reservoirs each communicating with the chamber and storing the propellant agent;
a corresponding plurality of pistons each movable inside a respective one of the plurality of reservoirs, said plurality of reservoirs being formed in an annular body mounted around said barrel and each communicating with said chamber by an inlet channel to allow the pressure of said combustion gases to cause displacement of said pistons;
a device that initiates combustion of a small quantity of propellant agent injected directly into the chamber;
at least one outlet channel communicating with said chamber to inject the propellant agent under pressure into said chamber as a result of displacement of said pistons; and
at least one pressure-controlled valve accommodated inside said outlet channel to allow passage of the propellant agent when the pressure in at least one of said plurality of reservoirs becomes higher than the pressure in said combustion chamber.

5,381,723

HYDRAULIC MOTOR

Dan Nilsson, Sjuntorp, and Ove Donnerdal, Partille, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Aug. 5, 1993, Ser. No. 102,377
Claims priority, application Sweden, Aug. 21, 1992, 9202399-3
Int. Cl.[6] F15B *11/08*
U.S. Cl. 91—437 **17 Claims**



1. A hydraulic motor having a motor body, said motor body containing a hydraulic medium under pressure, said motor body comprising a first and a second part, said first and second parts being joined to each other at a parting plane, a motor chamber comprising borings which extend from the parting plane into at least one of said first and second parts, said motor chamber having an inlet side and an outlet side, a driving mechanism provided in the motor chamber in order to rotate an axle under pressure from the hydraulic medium, said axle extending through an axle passage through one of said first and second parts, an inlet hydraulic conduit which extends to the inlet side of the motor chamber, an outlet conduit which extends from the outlet side of the motor chamber, a by-pass conduit which is provided between the inlet and outlet conduits, and in the by-pass conduit a main valve which is provided to close and to open the by-pass conduit for stopping and for starting the hydraulic motor, respectively, said by-pass conduit comprising portions of a first and of a second connection between the parting plane and the inlet conduit, and between the parting plane and the outlet conduit, respectively, and by a cross link between said first and second connections, the main valve being provided in one of said first and second connections, and the main valve being actuated by a pilot valve provided in the motor body, Wherein said pilot valve is provided in a region at one of said first and second parts or in regions of both of said parts in connection to said parting plane between them, and said main valve includes a rear side; further comprising a pilot valve operating mechanism provided in a pilot valve boring extending through one of said first and second parts to at least the parting plane, and a plurality of conduits to and from said pilot valve provided between the by-pass conduit on the rear side of said main valve and the pilot valve, and between the pilot valve and the outlet hydraulic conduit, respectively.

5,381,724

SWASH-PLATE, PLUNGER-TYPE HYDRAUL PRESSURE APPARATUS

Eiichiro Kawahara, Tokorozawa; Takashi Nakamura, Utsunomiya; Mitsumasa Furumoto, Utsunomiya, and Kazuaki Sakai, Utsunomiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 827,054, Jan. 28, 1992, abandoned. This application May 12, 1993, Ser. No. 52,819
Claims priority, application Japan, Jan. 28, 1991, 3-026939
Int. Cl.[6] F01B *3/00, 13/04*
U.S. Cl. 92—12.2 **5 Claims**

1. A swash-plate, plunger-type hydraulic pressure apparatus comprising:

a cylinder block rotatable about an axis;

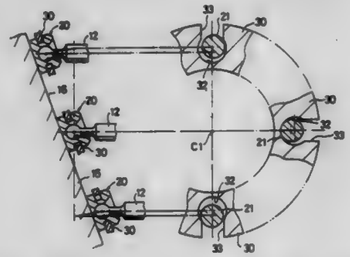
an annular array of plungers slidably held in said cylinder block in surrounding relationship to said axis and each said plunger having a spherical end;

a swash plate having a sliding surface confronting spherical ends of said plungers;

a plurality of shoes engaging said sliding surface and each said shoe having a spherical recess receiving said plunger spherical end for forming a ball joint and angularly movably coupling said shoes to said plungers; and

a single retainer plate, with substantially flat and parallel sides, mounted on said swash plate and holding said shoes in slidable contact with said sliding surface;

said shoes each having a cylindrical body portion adjacent said sliding surface with an annular groove formed in an outer cylindrical peripheral surface of the cylindrical body portion separate from a portion forming the coupling of said shoe to a said plunger end thereof;



said shoes each having a center of gravity substantially coinciding with a center of said spherical recess;

said annular grooves each having a pair of substantially parallel and radially outwardly extending surfaces; and

said retainer plate having a plurality of shoe holding holes defined therein and a like plurality of cutout openings extending from the shoe holding holes, said shoe holding holes communicating with one of outer and inner circumferential edges of said retainer plate through said cutout openings, each said cutout opening having a width slightly larger than the outside diameter of said annular groove, whereby said annular groove of each shoe be is inserted into the shoe holding holes, respectively, through said cutout openings and said shoes are held by said single retainer plate so as to be kept in contact with said sliding surface with said retainer plate sides slidably engaging portions of said pair of annular groove surfaces.

5,381,725

PRESS FOR MOLDING MEAT PRODUCTS DURING COOKING

Timothy A. Breunig, Hutchinson; James L. Bogner, Burrton, and Richard B. Benson, Hutchinson, all of Kans., assignors to Mega Manufacturing, Inc., Hutchinson, Kans.

Filed Dec. 10, 1992, Ser. No. 988,751
Int. Cl.[6] A22C *7/00*; B30B *7/02*
U.S. Cl. 99—349 **9 Claims**

8. A press for compressing meat products during cooking thereof, said press comprising:

a first frame comprising a pair of spaced apart vertically extending members;

a second frame vertically movable in relation to said first frame and comprising a pair of spaced apart vertically extending members;

a plurality of support plates positioned on said first frame;

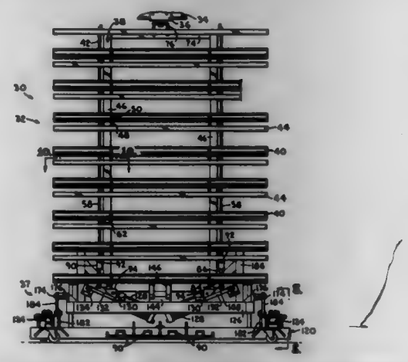
a plurality of press plates carried on said second frame, each of said press plates being movable with said second frame between a first position spaced above an immediately underlying support plate and a second position spaced more closely to the immediately underlying support plate to cause compression of a meat product when positioned on said support plate;

a first linkage connecting said first and second frames and operable to cause vertical movement of said second frame in relation to said first frame;

a first cylinder mounted on a vertically extendable subframe and including an extensible and retractable rod;

a first connection mounted on said rod of the first cylinder and engagable with said first linkage to cause said vertical movement of said second frame when the rod of the first cylinder is extended and retracted;

a second linkage connecting said first and second frame and spaced from said first linkage;



a second cylinder mounted on said subframe and including an extensible and retractable rod; and

a second connection mounted on said rod of the second cylinder and engagable with said second linkage to cause said vertical movement of said second frame when the rod of the second cylinder is extended and retracted;

a base frame connected by a folding linkage to the subframe; and

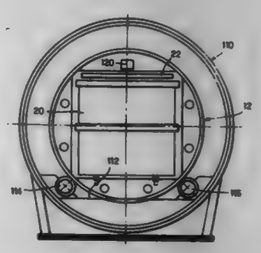
an extensible and retractable lifting cylinder mounted on said base frame and coupled with said folding linkage to cause said vertical movement of the subframe as the lifting cylinder is extended and retracted.

5,381,726

HOLDER FOR OBJECTS INSIDE A ROTATING DRUM

Jean-Patrick Roumagnac, Le Coteau, and Francisco Naveros, Roanne, both of France, assignors to Barriquand Steriflow, Roanne, France

PCT No. PCT/FR91/00848, § 371 Date May 7, 1993, § 102(e) Date May 7, 1993, PCT Pub. No. WO92/08498, PCT Pub. Date May 29, 1992
PCT Filed Oct. 28, 1991, Ser. No. 50,287
Claims priority, application France, Nov. 8, 1990, 90 13883
Int. Cl.[6] A23L *3/10*
U.S. Cl. 99—371 **25 Claims**



1. A device for holding objects inside a rotating drum, the objects having a first face resting on a support fixed relative to the drum and a second face which is substantially planar and the drum having a rotation axis, said device comprising:

a pressure plate having a substantially planar bearing face; and

displacement means inside the drum for displacing said plate between a rest position and a hold position wherein said bearing face is applied against the second face of the objects;

wherein said displacement means comprises:

(a) a rod mounted to rotate about a longitudinal axis thereof parallel to the drum rotation axis, said rod including a plurality of threaded portions, at least one threaded portion having a direction of threading opposite that of another said threaded portion;

(b) a plurality of tapped sleeves, each cooperating with one of said threaded portions;

(c) a plurality of link arm systems, each cooperating with one said sleeve and each having one end thereof articulated on said plate, wherein the number of said plurality of systems is equal to the number of said plurality of threaded portions;

(d) a fluid motor coupled to said rod to provoke rotation thereof in alternative first and second directions of rotation when said motor is supplied with fluid pressure; and

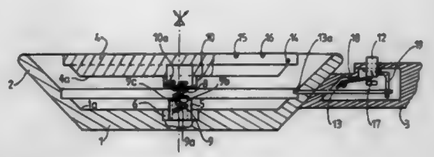
(e) supply means for supplying said motor with fluid under pressure, said supply means traversing a wall of the drum substantially along the drum rotation axis, such that in a first direction of rotation, said systems bring said plate to the rest position and in a second direction of rotation, said systems bring said plate to the hold position.

5,381,727

SAUCEPAN, IN PARTICULAR A TYPE OF FRYING PAN

Marc Jean-Marie Recton, 178, Rue Jeanne d'Arc, 75013 Paris, France

Filed Oct. 12, 1993, Ser. No. 134,997
Claims priority, application France, Oct. 13, 1992, 92 12228
Int. Cl.[6] A47J *37/10*
U.S. Cl. 99—423 **14 Claims**



1. A saucepan comprising:

(a) a base including an inner face which is delimited at its periphery by a rim,

(b) a plate arranged adjacent the base's inner face, and

(c) means for moving the plate away from the base, said means being provided between the plate and the base, said means being actuated by a control member, and said means comprising:

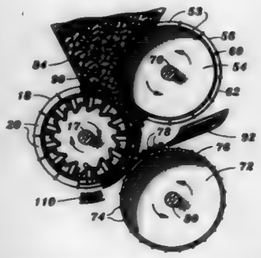
i. a spring located between the plate and the base for moving the plate away from the base,

ii. a cam ramp, and

iii. a finger,

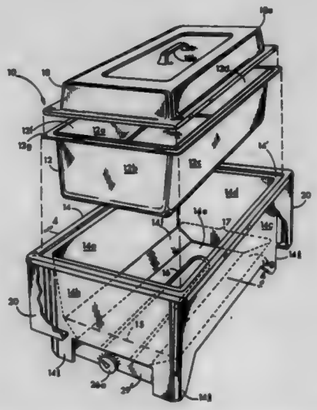
wherein one of the ramp and the finger is positioned on the base and the other of said ramp and the finger is positioned on the plate, wherein the finger is adapted to fit into and move along the ramp, and wherein the spring, ramp and finger enable the plate to be simultaneously lifted and rotated by the actuation of the control member.

5,381,728
APPARATUS FOR THE PREPARATION OF SUSHI PRODUCTS
Chikara R. Tateno, 1815 Katrina Ct., Santa Cruz, Calif. 95062
Filed Aug. 16, 1994, Ser. No. 291,405
Int. Cl.[6] A23P *1/00*
U.S. Cl. 99—450.1 10 Claims



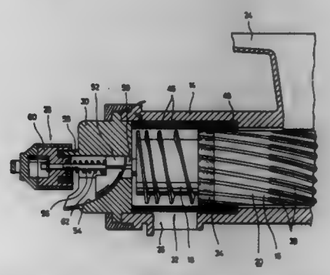
1. An apparatus for the preparation of sushi products, comprising:
a housing member;
first pair of contiguous cylindrical rotatable drums adapted to turn and form sushi products between interfacing surfaces of said drums; said first pair of contiguous rotatable drums being operably mounted to said housing; said first pair of contiguous rotatable drums comprising a forming drum and a transfer drum; said forming drum including a plurality of wells on the surface thereof, each of said wells including a plurality of teeth on an upper perimeter wall thereof; each of said wells including a floor plate secured to a piston element operably extending through an aperture in the well; a second plate is angularly mounted at an opposing end of said piston element; said second plate including a plurality of bearings mounted to a lower surface thereof; a spring is operably secured to said floor plate and to a mounting plate on said piston element; said transfer drum having a plurality of spaced blades operably mounted on the surface thereof;
trigger means for controlled engagement of said piston element with said second plate for operable control of said piston element;
a second pair of contiguous cylindrical rotatable drums operably engaged to said first pair of contiguous cylindrical drums; said second pair of drums including a forming drum having a plurality of wells on the surface thereof for receiving and securing rice therein; each of said plurality of wells having a plurality of teeth on an upper perimeter wall thereof adapted to mate with said plurality of teeth on said upper perimeter wall of said forming drum of said first pair of drums; and a transfer drum including a plurality of spaced blades operably mounted on the surface thereof;
a sheet forming drum operably engaged to said first and said second pair of contiguous cylindrical rotatable drums; said sheet forming drum including a plurality of teeth spaced on the surface thereof and adapted to hold and transfer individual nori sheets thereon;
a plurality of rollers positioned transversely to said sheet forming drum and in operable contact with said sheet forming drum;
a plurality of flanges projecting adjacent to said sheet forming drum and operably secured to said housing member, allowing for removal and transfer of nori and rice from said sheet forming drum;
a first hopper operably positioned in said housing member and in proximity to said first and said second pair of contiguous cylindrical rotatable drums; said first hopper including a receiving opening for receiving food particles, said receiving opening including a cover operably mounted thereon; the first hopper further including a dispensing aperture for dispensing food particles to said first and said second pair of contiguous cylindrical rotatable drums;
a second hopper operably positioned in said housing member and in proximity to said sheet forming drum; said second hopper including a receiving opening for receiving food articles and a dispensing opening for dispensing food articles to said sheet forming drum; said second hopper including a toothed appendage proximate to said dispensing opening for positioning and dispensing individual food articles against said sheet forming drum; and
means for controlling the rotation of said first and said second pair of contiguous rotatable drums and for controlling the rotation of said sheet forming drum.

5,381,729
FOOD WARMING VESSEL FOR CAFETERIAS AND RESTAURANTS
Joseph J. Heanessy, Maple Plain; John V. Drube, St. Louis Park, and Eugine W. Goad, Dayton, all of Minn., assignors to Industrial Design & Engineering Associates, Rogers, Minn.
Continuation-in-part of Ser. No. 992,837, Dec. 18, 1992, Pat. No. 5,269,217, which is a continuation-in-part of Ser. No. 693,459, Apr. 29, 1991, Pat. No. 5,203,257. This application Sep. 9, 1993, Ser. No. 119,290
Int. Cl.[6] F24B *9/00*
U.S. Cl. 99—483 12 Claims



1. A food warming apparatus suited for use in restaurants and cafeterias comprising,
a food pan having side and bottom walls and an upwardly opening wide mouth, said pan being formed from metal so as to promote the conduction of heat to food contained within the pan,
a sump vessel for receiving the food pan, said sump vessel comprising a unitary container body having side and bottom walls and an upper open mouth,
the food pan being located within the sump vessel with a bottom portion of the food pan spaced from the sump vessel to form a chamber for containing water and steam between the sump vessel and the food pan,
the sump vessel is molded from a thermosetting plastic resin containing inert mineral filler particles to provide a rigid monolithic body,
the inert mineral filler particles are distributed through the rigid monolithic body of the sump vessel, and said sump vessel has heat insulating qualities for reducing heat loss from the warming apparatus and for enhancing the transmission of heat therewithin to the food pan,
a metal heat dissipator member is connected to a wall of the sump vessel, said dissipator member has a surface exposed interiorally on the inside of the sump vessel in a position adapted to contact water when the water is placed in the sump vessel for transferring heat thereto,
an electrical resistance heating element connected in heat conductive relationship with the heat dissipator member and positioned between the sump vessel and the exposed surface of the heat dissipator member,
whereby heat produced by the heating element is transferred to the inside of the sump vessel through the heat dissipator member for heating food contained in the food pan within the sump vessel.

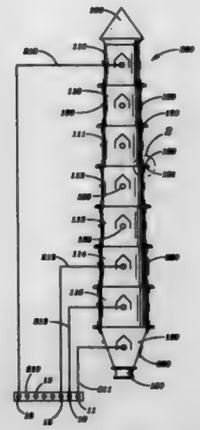
5,381,730
JUICE EXTRACTOR
Jong Gill Kim, Hyundai Villa 301, 810-14 Banghae-dong, Seocho-ku, Seoul, Rep. of Korea
Filed Jun. 30, 1993, Ser. No. 83,477
Int. Cl.[6] A23N *1/00, 1/02;* A23L *1/212, 2/06*
U.S. Cl. 99—510 9 Claims



1. A juice extractor comprising:
a housing having a first end portion and a second end portion;
a pair of mutually engaging squeeze rollers rotatably mounted in said housing, each of said squeeze rollers having a first end portion positioned in said first end portion of said housing and a second end portion positioned in said second end portion of said housing, and each of said squeeze rollers comprising a helical gear portion at said first end portion thereof and a screw portion at said second end portion thereof;
a filter surrounding said second end portions of said squeeze rollers;
a discharge section plate mounted to said second end portion of said housing and having a discharge opening; and
a discharge pressure adjusting device mounted to said discharge section plate.

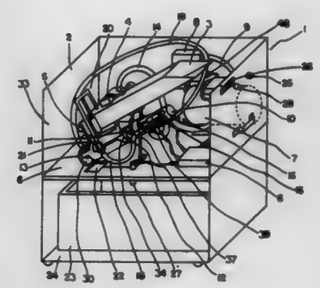
5,381,731
ROUND EXPANDING MODULAR STEAM CHAMBER
Kelsey C. Thom, Jr., Cedar Falls, Iowa, assignor to Roskamp Champion, Waterloo, Iowa
Filed May 13, 1993, Ser. No. 62,357
Int. Cl.[6] A23N *17/00*
U.S. Cl. 99—516 6 Claims

4. A vertical steam conditioning chamber, for feed grains and other steam conditioned particles, which resists plugging and bridging due to expansion and softening of said particles, said chamber having a steam supply, a vertical columnar housing, a top-fed inlet chamber for receiving said particles, and a bottom discharge chamber for discharging conditioned particles for further processing, comprising:
a plurality of stacked hollow cylindrical modules, each module having a diameter larger than that of the module stacked above and smaller than that of the module upon which it is stacked;
means for preventing telescoping of upper modules into lower modules of said plurality of modules, for joining said modules in a pressure tight stack, and for joining said



inlet chamber and said discharge chamber to said stack; and
means for introducing steam into at least one module.

5,381,732
CAN CRUSHER WITH METAL-PLASTIC SEPARATION CAPABILITY
Robert E. Trout, 2310 Walden Pl., Plant City, Fla. 33566
Filed Jul. 14, 1993, Ser. No. 72,906
Int. Cl.[6] B30B *15/30, 9/32*
U.S. Cl. 100—49 3 Claims



1. A can crusher, comprising:
a substantially rectangular cabinet, having at least two hinged access panels, and at least two separate, but attached portions, said two portions being:
(b) a top portion, and,
(c) a bottom portion, said bottom portion including a removeable crushed can storage container, and said bottom portion having gravity fed crushed can accepting means to said container, said accepting means being an opening in the top surface of said bottom portion,
said top portion providing mounting and enclosing means for said can crusher, comprising:
(d) a substantially rectangular can insertion chute, of a size to accept cans, said chute attached to the top surface of said top portion at the upper end of the chute, and being mounted at a downward angle from said top surface, said chute having can entrance means to a crushing chamber at the bottom lower end of the chute, and said chute having

spring loaded cover means at the extreme upper end of the chute,

(e) a push-pull type hydraulic cylinder and piston, having crushing means for said cans, said cylinder fitting into, and operating within said can crushing chamber, said can crushing chamber being of a size to accept a can, and having an open top, surrounding cylindrical sides, one open top end, and a closed bottom end, two spring loaded trap doors for the bottom of the chamber, said chamber being affixed directly below said chute, and said chamber being attached to said top portion of said can crusher, mating with the bottom of said chute, said chamber enclosing:

(f) said crushing cylinder and piston providing crushing means for cans within said crushing chamber,

(g) a separate gas filled cylinder and piston, said gas filled cylinder being inversely connected to said crushing cylinder, thereby acting to extend the piston of said gas filled cylinder when said piston of said crushing cylinder is retracted, and, with the associated inverse reaction, thereby acting to retract said piston of said gas filled cylinder when said piston of said crushing cylinder is extended, thereby providing can ejection means for said crushed cans from said can crushing chamber to said can storage container, said ejection means being:

(h) a flexible rod attached to said piston of said gas filled cylinder at one end of the flexible rod, and said flexible rod being connected at its other end to a push pull gallows apparatus, said flexible rod being extended, or retracted by the action of the piston of said gas filled cylinder, and said push pull gallows apparatus forcing said crushed can from said crushing chamber through said spring loaded trap doors in the bottom of said crushing chamber, and down into said storage container, during the retracting cycle of said crushing cylinder,

said push pull gallows apparatus also de-activating a cycle control switch at the end of its travel during the extension cycle of said crushing cylinder, thereby providing turn off means for said can crusher,

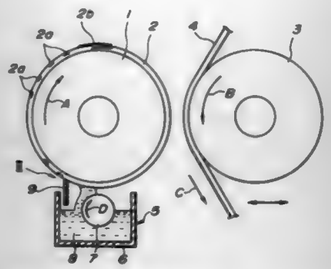
(j) a motor, said motor driving a hydraulic pump, said pump providing hydraulic pressure for said hydraulic crushing cylinder.

5,381,733

GRAVURE PRINTER WITH DOCTOR BLADE GRINDING ABRASIVE EDGED SHEET

Shigeyoshi Hirashima, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Sep. 24, 1993, Ser. No. 125,687
Claims priority, application Japan, Sep. 28, 1992, 4-257677
Int. Cl.[6] B41F *9/10*
U.S. Cl. 101—157 **17 Claims**



1. A printing apparatus comprising:

a mounting cylinder on which an engraved printing sheet is wound;

an impression cylinder for pressing a print material against a surface of said engraved printing sheet;

ink supply means for supplying the surface of said engraved printing sheet with ink; and

a doctor blade for scraping the surface of said engraved printing sheet to remove excess ink therefrom,

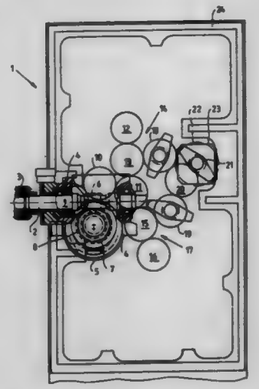
wherein said engraved printing sheet is provided with an abrasive part to which a leading edge of said doctor blade contacts to be ground during rotation of said mounting cylinder.

5,381,734

WEB-FED ROTARY PRINTING PRESS WITH IMPRINTING UNIT FOR FLYING PRINTING-FORM EXCHANGE

Ludwig Becker, Reilingen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Feb. 22, 1994, Ser. No. 199,856
Claims priority, application Germany, Feb. 22, 1993, 4305393
Int. Cl.[6] B41F *13/24*
U.S. Cl. 101—247 **6 Claims**



1. In a web-fed rotary printing press having a main drive, in combination, a plurality of consecutively arranged printing units and a printing unit for flying printing-form exchange having an auxiliary drive and a plurality of printing-unit cylinders, at least one of which has a shaft, the plurality of printing-unit cylinders including two printing-form cylinder-transfer cylinder pairs for the printing-form exchange, and a common, rotating impression cylinder driven via the main drive, one of the cylinder pairs being inactivatable and the other being bringable into engagement with the common, rotating impression cylinder so as to be driven by the main drive, two gearwheels positioned on the shaft of the one cylinder of the printing unit for the flying printing-form exchange, including a drive for the respective printing-form cylinder-transfer cylinder pair which is decouplable from the main drive, during an imprinting operation, and connectable via coupling means with the auxiliary drive, comprising an arrangement of the printing-form cylinders, the transfer cylinders and the impression cylinder in a substantially vertically extending installed position, a respective upper cylinder pair formed of one of the printing-form cylinders and one of the transfer cylinders, and a respective lower cylinder pair formed of the other of the printing-form cylinders and the other of the transfer cylinders being disengageable in common from the impression cylinder.

5,381,735

PROCESS FOR PRINTING USING A PHOTOPOLYMERIC MOLD MADE FROM PHOTOPOLYMERIZABLE COMPOSITIONS WITH IMPROVED RELEASE PROPERTIES

Charles C. Fifield, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 26, 1992, Ser. No. 965,197
Claims priority, application United Kingdom, Oct. 24, 1991, 9122577
Int. Cl.[6] B29C *33/40*; C08K *5/10*
U.S. Cl. 101—483 **40 Claims**

1. A process for printing an image on a substrate, comprising:

A) providing a photopolymerizable composition comprising photopolymerizable prepolymers, ethylenically unsaturated addition monomers and a release agent prepared by esterification of a 8 to 24 carbon atom unsaturated fatty acid with a C_{1-6} alcohol;

B) forming the photopolymerizable composition into a photopolymerizable layer;

C) exposing desired portions of the photopolymerizable layer to actinic radiation effective to polymerize the exposed portions;

D) removing the unpolymerized portions of the photopolymerizable layer to produce a photopolymeric mold;

E) filling the photopolymeric mold with a powdered resin adapted to be fused by heat and pressure to form a resin-filled mold;

F) subjecting the resin-filled mold to heat and pressure effective to fuse the resin and produce a resin mold suitable for making printing plates;

G) filling the resin mold with powdered rubber;

H) subjecting the powdered rubber filled resin mold to sufficient heat and pressure to fuse the rubber powder, and produce a rubber printing plate;

I) providing a substrate to be printed;

J) applying ink to the printing plate; and

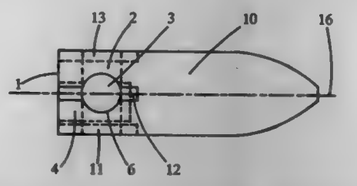
K) pressing the printing plate against the substrate to form an inked image thereon.

5,381,736

RECOIL REDUCING BULLET

Frank Kalcic, 7 Eagle Dr., Merrimack, N.H. 03054

Filed Jan. 24, 1994, Ser. No. 185,476
Int. Cl.[6] F42B *10/00, 5/05*
U.S. Cl. 102—501 **4 Claims**



1. A projectile for reducing the recoil of a firearm comprising:

a substantially cylindrical portion defining a central longitudinal axis and a rear surface normal to said longitudinal axis;

a single axially extending blind passage extending from the rear surface along said cylindrical portion;

a plurality of radially extending symmetrically arranged passages in the cylindrical portion, said radially extending passages extending from a circumferential surface of the cylindrical portion and intersecting at the longitudinal axis; wherein

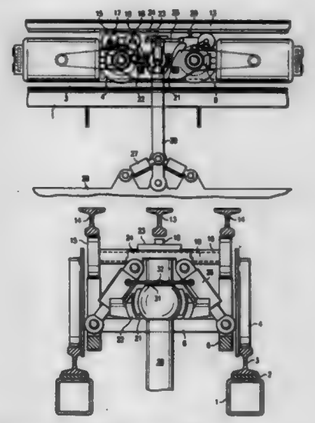
said axially extending passage is offset from said longitudinal axis and interconnects with the radially extending passages to form passageways through said projectile, which are closed when the projectile is fully within a barrel of the firearm.

5,381,737

RAIL TRUCK SUSPENDED CAR TRANSIT VEHICLES

Bryant Treasry, 3310 Fairmount 9E, Dallas, Tex. 75201-1232

Filed May 25, 1993, Ser. No. 66,497
Int. Cl.[6] B61C *13/00*
U.S. Cl. 105—34.1 **1 Claim**



1. A rail truck assembly, comprising:

(a) a first running rail and a second running rail running parallel to each other above ground and spaced apart side to side;

(b) a power rail running at a generally constant distance above the first and the second running rails, the power rail conductive to electricity;

(c) a first wheel disposed on the first running rail for rolling along the top of the first running rail, the first wheel having a hub, a circumferential surface for rolling contact along the first running rail, and a circumferential flange extending in the radial direction beyond the circumferential surface and alongside the first running rail;

(d) a second wheel disposed on the second running rail for rolling along the top of the second running rail, the second wheel having a hub, a circumferential surface for rolling contact along the second running rail, and a circumferential flange extending in the radial direction beyond the circumferential surface and alongside the second running rail;

(e) a first axle with a first end connected at the hub of the first wheel and a second end connected at the hub of the second wheel;

(f) a truck frame mounted on the axle such that the axle rotates independently of the truck frame;

(g) a driving gear rotatively connected to the axle such that rotation of the driving gear rotates the axle and the first and second wheels to roll along the first and second running rails;

(h) an electrical motor mounted to the truck frame and operatively connected to the driving gear for rotating the driving gear;

(i) a current collection shoe with one end in sliding contact with the power rail and another end electrically connected to the motor so that electricity can be conducted through the power rail to the shoe to the motor;

(j) a safety wheel rotatably mounted to the truck frame at a fixed point relative to the first and second wheels and beneath the power rail such that the distance between the

top of the safety wheel and the power rail is less than the distance that the circumferential flanges extend beyond the circumferential surfaces of the first and second wheels such that the safety wheel will contact the power rail before the circumferential flanges can clear the first and second running rails;

(k) a car support shaft with an upper end mounted to the truck frame and a lower end opposite thereto; and

(l) a car body connected to the lower end of the car support shaft;

(m) a first climbing rail running at a generally constant distance above the first running rail and fixed relative to the first running rail;

(n) a second climbing rail running at a generally constant distance above the second running rail and fixed relative to the second running rail;

(o) an actuator with a first end connected to the truck frame and a second end opposite thereto;

(p) a climbing wheel axle extending perpendicular to the first and second climbing rails and being rotatably connected to the second end of the actuator such that the axle can rotate relative to the actuator;

(q) a first climbing wheel with a hub mounted to one end of the climbing wheel axle and having a circumferential surface disposed underneath the first climbing rail;

(r) a second climbing wheel with a hub mounted to the other end of the climbing wheel axle and having a circumferential surface disposed underneath the second climbing rail; and

(s) the actuator oriented to be able to force the first and the second climbing wheels upwards in rolling contact against the first and second climbing rails to increase the normal force between the first and second wheels and the first and second running rails, respectively.

5,381,738

ADJUSTABLE WORK TABLE ASSEMBLY

Klaus Meyer, 228 Crossett St., Syracuse, N.Y. 13207

Filed Jul. 19, 1993, Ser. No. 92,909
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—42 **13 Claims**



1. An adjustable table assembly comprising:

a) first and second, elongated support members each having first and second channels including respective first and second channel openings extending inwardly toward each other along opposite sides of substantially the entire longitudinal lengths of said first and second support members, and further including means for fixing said first and second support members in vertical and laterally spaced, parallel relationship to each other;

b) first and second upper linkage bars each having respective forward and rear ends;

c) first and second lower linkage bars each having respective forward and rear ends;

d) a substantially planar work surface of predetermined outline having top and bottom, opposite planar surfaces and parallel and spaced forward and rear edges, said first and second upper linkage bars attached to said bottom planar surface in laterally spaced, parallel relationship to each other and perpendicular to said forward and rear edges, said rear ends of said first and second upper linkage bars extending beyond said rear edge of said planar work surface;

e) first and second upper brackets each having first and second portions, said rear ends of said first and second upper linkage bars pivotally attached to said first portions of said first and second upper brackets, respectively, said second portions of said first and second upper brackets positioned in sliding, mating engagement with said first and second channels of said first and second support members, respectively;

f) first and second lower brackets each having first and second portions, said rear ends of said first and second lower linkage bars pivotally attached to said first portions of said first and second lower brackets, respectively, said second portions of said first and second lower brackets positioned in sliding, mating engagement with said first and second channels of said first and second support members, respectively, at positions below said first and second upper brackets on said first and second support members, respectively;

g) first and second forward brackets each having first and second portions, respectively, said forward ends of said first and second lower linkage bars being pivotally attached to said first portions of said first and second forward brackets, respectively; and

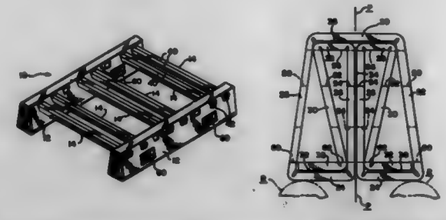
h) means removably attaching said second portions of said first and second forward brackets to said first and second upper linkage bars in longitudinally sliding engagement therewith.

5,381,739

PAPERBOARD PALLET WITH DECKING MEMBERS ADJACENT TO INNER PANELS OF STRINGERS

Ted D. Kilpatrick, Ponte Vedra Beach, Fla., and Arthur M. Wagner, Geneva, Ill., assignors to Gate Pallet Systems, Inc., Crown Point, Ind.

Continuation-in-part of Ser. No. 179,111, Jan. 10, 1994, which is a continuation-in-part of Ser. No. 38,001, Mar. 29, 1993, Pat. No. 5,365,857. This application Mar. 15, 1994, Ser. No. 213,233
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 **8 Claims**



1. A pallet comprising stringers extending longitudinally and decking members extending transversely through aligned apertures in the respective stringers, each stringer being folded from a single piece of paperboard material so as to have at least nine panels including a generally horizontally extending upper panel and including at least four panels on each side of a generally vertical plane intersecting the generally horizontally extending upper panel, which extends to each side of the generally vertical plane, wherein the panels of each stringer, on each side of the generally vertical plane, include

(a) an outer panel attached at a fold in the sheet to and extending downwardly from the generally horizontally extending upper panel,

(b) an outer panel attached at a fold in the sheet to and extending generally horizontally and inwardly from the downwardly extending outer panel,

(c) an inner panel attached at a fold in the sheet to and extending upwardly from the inwardly extending outer panel, approximately to the upper panel, and

(d) an inner panel attached at a fold in the sheet to and extending generally horizontally and outwardly from the upwardly extending inner panel and being adjacent to and secured adhesively to the upper panel,

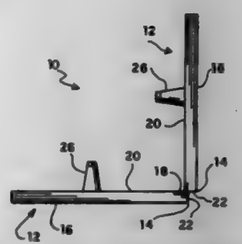
wherein each decking member has a generally planar upper edge, wherein the aligned apertures include aligned apertures in the downwardly extending outer panels of the respective stringers and in the upwardly extending inner panels of the respective stringers, and wherein the aligned apertures are located so that the generally planar upper edges of the decking members extending through the aligned apertures are adjacent to the outwardly extending inner panels of the respective stringers.

5,381,740

PORTABLE SNACK TABLE

Ruby J. Johnston, 3387 Edsel, Detroit, Mich. 48217

Filed Nov. 22, 1993, Ser. No. 155,554
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—167 **2 Claims**



1. A snack table for use by children, said table comprising:

first and second platform members, each of said platform members having an upper surface and an adjoining edge, said platform members collectively providing a horizontal table surface to define a deployed condition;

hinge means pivotally attaching said first platform member to said second platform member along said adjoining edges;

said hinge means allowing downward rotation of said platform members to define a stored condition;

said hinge means including means for limiting downward rotation of said platform members while in the stored condition, whereby said table is foldable to said stored condition, such that said platform members form substantially an L configuration;

said hinge means further including means for limiting upward rotation of said platform members to prevent said table from collapse while in the deployed condition;

a plurality of legs fixedly attached to and depending downwardly from said platform members, each of said legs having a substantially similar, predetermined length;

said table surface including a substantially horizontal width, wherein said width is within the range of five to fifteen times greater than said leg length; and

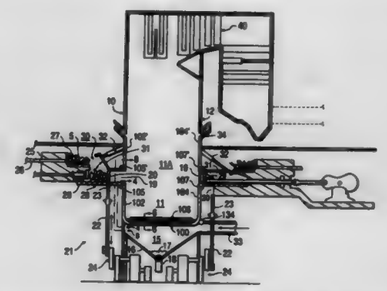
indica demarcating individual places on said platform member upper surface, said indicia comprising representations of animate objects having faces, whereby a child's attention is drawn to said individual places and a child is amused thereby.

5,381,741

STACKED COOLING GRATE AND SYSTEM FOR PROVIDING THERMAL POWER FOR A POWER PLANT

L. David Ottlie, 19540 Patrick Pl., Corcoran, Minn. 55340

Continuation of Ser. No. 16,826, Feb. 12, 1993, abandoned. This application May 2, 1994, Ser. No. 236,808
Int. Cl.[6] F23B *7/00*
U.S. Cl. 110—234 **19 Claims**



1. A device for suspending fuel in a furnace of an electrical generating plant comprising:

a plurality of tubes defining a first tube bank;

a plurality of tubes defining a second tube bank;

a support means between said first and second tube banks for supporting said fuel, wherein each of said tubes in said first tube bank in fluid communication with a corresponding tube in said second tube bank, said support means bridging the fluid communication between corresponding tubes in said first tube bank and said second tube bank;

said support means comprising a plurality of water cooled beams, at least some of said beams being formed by stacking an upper tube and at least one lower tube vertically beneath said upper tube, wherein said upper tube is one of said tubes of said first tube bank, and said lower tube is one of said tubes of said second tube bank; and

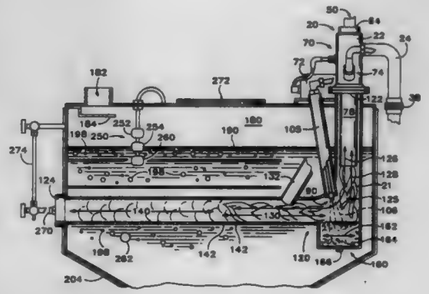
means for supplying water to said first tube bank, said second tube bank and said water cooled beams of said support means such that said tubes of said tube banks and said water cooled beams are cooled by the circulation of water therethrough.

5,381,742

WASTE LIQUID EVAPORATOR

Paul Linton; Richard C. Shepherd, both of Vancouver, Wash.; Brian K. Fisk, Portland, and Billy G. Eppersos, Jr., Hillsboro, both of Oreg., assignors to Landa, Inc., Portland, Oreg.

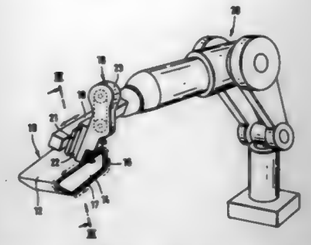
Filed Sep. 17, 1993, Ser. No. 123,189
Int. Cl.[6] F23G *7/04*
U.S. Cl. 110—238 **18 Claims**



1. A waste liquid evaporator comprising:

a tank constructed to hold a liquid;
a tube within the tank having a combustion section and a sparger section;
a burner positioned to produce a flame within the combustion section;
a waste liquid injector positioned to inject waste liquid into the flame within the combustion section to burn at least a part of any combustible pollutants in the waste liquid and to produce vapor from at least a part of the waste liquid;
at least one hole in the sparger section to allow waste liquid from the injector and vapor to leave the tube; and
a vent in the tank to allow vapor to leave the tank.

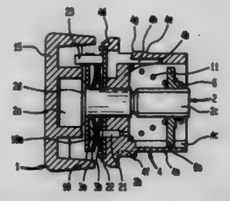
5,381,743
DEVICE FOR MAKING SEAMS ON THREE-DIMENSIONAL OBJECTS
Philipp Moll, Aachen, Germany, assignor to Moll Automatische Nachsysteme GmbH i.g., Germany
PCT No. PCT/EP91/02508, § 371 Date Jul. 2, 1993, § 102(e) Date Jul. 2, 1993, PCT Pub. No. WO92/13986, PCT Pub. Date Aug. 20, 1992
PCT Filed Dec. 24, 1991, Ser. No. 84,203
Claims priority, application Germany, Jan. 31, 1991, 4102840
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—121.14 **9 Claims**



1. A device for making seams on objects comprising a holding device (10) for holding material (12, 14) to be sewn together, and a manipulator (20) carrying a sewing machine (18) which causes relative movement between the sewing machine (18) and said holding device (10) along an intended seam line by means of a manipulator arm (19) of said manipulator (20), characterized in that said sewing machine (18) includes a sewing head (26) with a needle plate (30) defining an abutment for the material (12, 14), a presser (31) of said sewing machine (18) for pressing the material (12, 14) against said needleplate (30), a needle (29) of said sewing machine head (26) being movable transversely with respect to the material (12, 14), and means for controlling the operation of said sewing head (26) such that said sewing head (26) is at a standstill relative to said holding device (10) during the penetration of said needle (29) into the material (12, 14).

5,381,744
STITCH BALANCING THREAD TENSION DEVICE FOR SEWING MACHINE
Makoto Kanewada, and Shinji Kojima, both of Tochigi, Japan, assignors to The Singer Company N.V., Curacao, Netherlands
Filed May 7, 1993, Ser. No. 57,927
Claims priority, application Japan, Nov. 18, 1992, 4-85268[U]
Int. Cl.[6] D05B *47/02*
U.S. Cl. 112—254 **1 Claim**

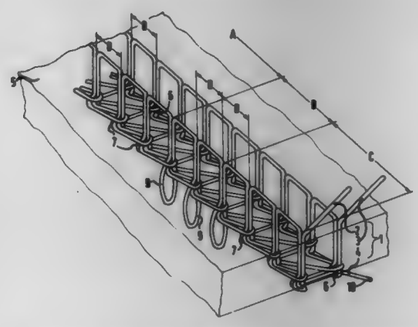
1. In combination with a sewing machine body having an opening in which a thread tension device is mounted, said opening having two opposite sides and having spaced apart slots disposed in its periphery, said device comprising:
a circular dial;
a retaining first plate secured to the dial;
a stem secured at one end to said plate and extending outwardly from the center of the plate at right angles thereto and extending through the opening;
a second plate parallel to the first plate and disposed adjacent thereto, the second plate having an opening through which the stem extends and an offset opening;
first and second interconnected tension discs having aligned central openings through which the stem extends, the discs being disposed with the first disc adjacent the second plate, the discs having aligned offset openings;
a horizontal conically shaped projection prong having a base secured at right angles to the second plate, the prong having an apex engaging the first disc;
a third plate parallel to the second plate and having an opening through which the stem extends, said dial, securing plate, second plate, prong, discs and third plate being



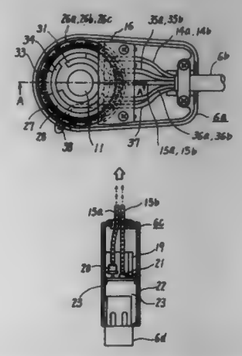
disposed on one side of the opening, the third plate having projections which engage said one side of the opening, portions of said projections engaging the peripheral slots to prevent rotation of the device in the machine body opening;
a horizontal member secured at one end to the third plate offset from its central opening and extending through the offset openings of the discs and first and second plates to prevent rotation thereof; and
thread tension device body disposed on the other side of the opening, said body including a hollow cylindrical portion surrounding the stem and means securing the portion to the stem, said portion having an open end adjacent the opening, said open end having spaced apart pawls which engage the other side of the opening, the pawls and projections clamping the machine body therebeween.

5,381,745
METHOD OF SEWING A SEAM AND A SEWING UNIT THEREFOR
Wolfgang Nolle, Albstadt, Germany, assignor to Union Special GmbH, Stuttgart, Germany
Filed Oct. 23, 1992, Ser. No. 965,889
Claims priority, application Germany, Oct. 28, 1991, 4135456
Int. Cl.[6] D05B *1/00*
U.S. Cl. 112—262.1 **12 Claims**

1. A method of producing a sewing seam that is secure against unravelling, the method comprising the steps of:
providing a chain-stitch sewing machine for forming a succession of chain-stitch sewing stitches from at least two needle threads and a looper thread in a workpiece having an upperside and an underside;
forming at least one stitch with the chain-stitch sewing machine in a beginning region of the seam, wherein corresponding needle thread loops are formed on the underside of the workpiece;
forming a plurality of successive stitches with the chain-stitch sewing machine in an intermediate region of the seam, wherein corresponding successive needle thread loops are formed on the underside of the workpiece, the successive needle thread loops in the intermediate region of the seam being longer than the needle thread loops in the beginning region of the seam; and
forming at least one stitch with the chain-stitch sewing machine in an end region of the seam, wherein corresponding needle thread loops are formed on the underside of the workpiece, the needle thread loops in the end region of the seam being shorter than the needle thread loops in the intermediate region of the seam.

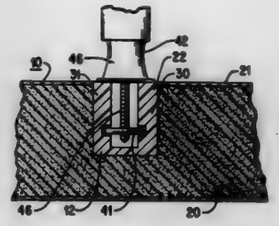


5,381,746
FIBER OPTIC DETECTOR AND POWER INDICATOR FOR A SEWING MACHINE
Takashi Nakamura; Satomi Yamauchi, both of Aichi, and Hiroshi Honda, Nagano, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1992, Ser. No. 951,738
Claims priority, application Japan, Sep. 26, 1991, 3-247683
Int. Cl.[6] D05B *69/24*; G01D *5/34*
U.S. Cl. 112—275 **11 Claims**



1. A detector for a sewing machine, said detector comprising:
a photoelectric translation processing module section including a power indicating light emitting device and a power/signal connector;
a detecting section optically connected with said photoelectric translation processing module section via a cable section and including a power indicating window; and
a power indicating optical fiber disposed within said cable section, optically connecting said photoelectric translation processing module section and said detecting section, one end of said power indicating optical fiber being disposed within said power indicating window, an opposite end of said power indicating optical fiber being optically connected to said power indicating light emitting device.

5,381,747
MAST BOX FOR A SAILBOARD
Brian Hinde, Hood River, Oreg., assignor to Michael G. Stavros, San Pedro and Larry W. Allison, Lakewood, both of Calif.
Filed Mar. 29, 1993, Ser. No. 38,366
Int. Cl.[6] B63B *35/79*
U.S. Cl. 114—39.2 **24 Claims**



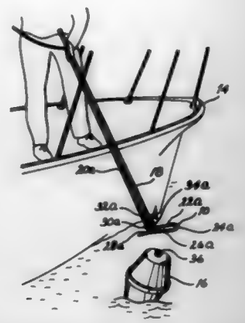
1. A mast box for a sailboard, comprising means for adjustably clamping a mast foot thereto, means for receiving a leash rope and means for venting pressure in the sailboard, said venting means being in a portion of said mast box accessible to a user.

5,381,748
WATER SPORT EQUIPMENT
David Lekhtman, Morin Heights, Canada, assignor to Windsaucer Corporation, Montreal, Canada
Filed Oct. 1, 1993, Ser. No. 130,654
Int. Cl.[6] B63B *35/79*
U.S. Cl. 114—39.2 **6 Claims**



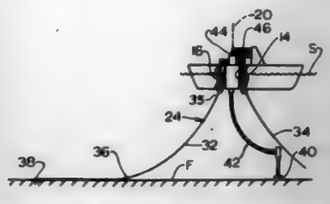
1. Water sport equipment to be employed by a user, and comprising:
a board member having a bottom surface and a top surface, said user being carried on said board member at the top surface thereof; and
a glider member held by said user;
wherein, said board member comprises a steering arrangement, said steering arrangement comprising at least one pivoting rudder underlying the bottom surface of the board member, and control means, on the upper surface of said board member, for controlling the pivoting of said rudders;
whereby by controlling the pivoting of said rudders, said user is aided in steering said arrangement;
wherein said control means comprises a guide arm fixedly connected to said rudder, and means for pivoting said guide arm;
whereby, said rudder pivots with said guide arm;
and wherein said board has a closed peripheral
sail support means extending parallel to at least a portion of said periphery on said top surface thereof;
and wherein said support means comprises a groove.

5,381,749
BOAT MOORING HOOK
Virgil A. Larson, 971 W. Rockaway La., Camano Island, Wash. 98292
Filed Sep. 7, 1993, Ser. No. 116,881
Int. Cl.[6] B63B *21/54*
U.S. Cl. 114—221 R **22 Claims**



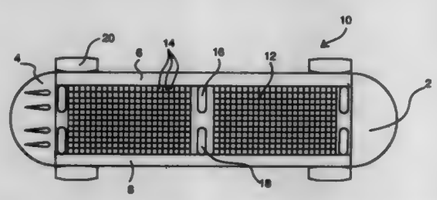
1. An apparatus for mooring a boat to a mooring structure with the aid of a rod and a mooring line, the apparatus comprising:
(a) a one-piece U-shaped securing member arranged and configured for at least partially surrounding a portion of the mooring structure to provide moorage thereto, said securing member having a top portion with a first end and a bottom portion with a second end and an open side between the first and second ends, the distance between the first and second ends providing close-fitting engagement with the mooring structure;
(b) an attachment structure extending from the first end of said securing member, the mooring line being attached to said attachment structure; and
(c) a rod-receiving structure having a longitudinal axis generally transverse to the longitudinal axis of said top portion of said U-shaped securing member, said rod-receiving structure being attached to said securing member adjacent said attachment structure for receiving the end of the rod and properly aligning said U-shaped securing member such that the open side faces the mooring structure.

5,381,750
VESSEL TURRET MOORING SYSTEM
Jack Pollack, Camarillo, Calif., assignor to Imodco, Inc., Calabasas Hill, Calif.
Filed Dec. 2, 1993, Ser. No. 162,338
Int. Cl.[6] B63B *21/52*
U.S. Cl. 114—230 **12 Claims**



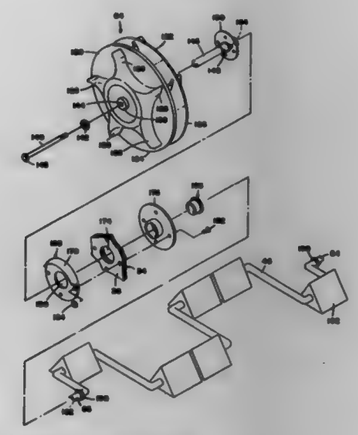
1. A combination of a mooring system and a vessel, wherein said vessel has a hull with walls forming a primarily vertically-extending turret cavity, a turret lying at least adjacent to said cavity and having upper and lower portions, and a turret bearing that couples said turret to said hull to rotatably support said turret in rotation about a turret axis on said hull, wherein said combination includes a mooring structure for mooring said vessel and a fluid conduit that extends from near the sea floor and through said turret, and wherein said turret bearing supports a weight greater than the weight of that portion of the fluid conduit which lies above the bottom of said hull, wherein said mooring structure has a lower portion coupled to the seafloor and an upper portion, characterized by:
a connecting apparatus having a connecting portion coupled to the upper portion of said mooring structure to receive mooring loads transmitted through said mooring structure;
a vessel lower bearing device mounted on said vessel about said axis and lying below said turret upper portion, said connecting apparatus bearing against said vessel lower bearing device to transmit a majority of horizontal components of mooring loads from said mooring structure to said vessel bearing device, said connecting portion of said connecting apparatus being shiftable horizontally substantially independently of said turret.

5,381,751
TRANSPORTATION AND DISCHARGE OF WASTE TO ABYSSAL DEPTHS
William R. Richards, Springfield, Va.; John A. Wilkes, Crofton, Md.; Brian K. Schwatka, College Park, Md.; Andrew M. Resnick, Bethesda, Md., and Lawrence A. Mackey, Waldorf, Md., assignors to Oceaneering Technologies, Inc., Upper Marlboro, Md.
Filed Nov. 17, 1993, Ser. No. 153,158
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—264 **24 Claims**



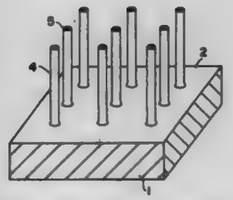
1. An seamersible vehicle of large bulk cargo capacity for transporting waste, comprising:
a free floodable, positively buoyant submersible space-frame matrix including a plurality of storage cells for storing waste;
side fairing and ballast tanks secured on opposing sides of said space-frame matrix;
forward and aft trim tanks secured on port and starboard sides, respectively, of said space-frame matrix;
forward and aft fairings fixed to forward and aft ends of said space-frame matrix;
at least one rudder operably mounted to said aft fairing for changing yaw direction of the vehicle;
horizontal stabilizers mounted to said side fairings for changing pitch and roll attitudes of said vehicle;
a control system operably connected with said trim tanks, said at least one rudder and said stabilizers for controlling yaw, pitch and roll attitudes through a combination of changing the volume of said trim tanks and angles of control surfaces of said at least one rudder and said stabilizers for controlling speed, direction and depth of travel of said vehicle in sea water; and
said space-frame matrix being capable of withstanding pressures existing at abyssal depths and being positively buoyant in sea water when the storage cells are empty.

5,381,752
PADDLE BOAT
Donald Eerdmans, 8181 Ash Dr., Jenison, Mich. 49428
Filed Apr. 22, 1993, Ser. No. 51,132
Int. Cl.[6] B63H *16/20*
U.S. Cl. 114—270 **9 Claims**



1. A paddle boat, comprising:
a hull, said hull having a longitudinal axis extending from the bow to the stem of the paddle boat, said hull having a deck and a bottom;
a cockpit defined by said deck;
an axle extending through said hull such that it extends into said cockpit;
pedals carried on said axle, said pedals positioned in said cockpit;
a sealing assembly extending through said hull and said deck, said axle extending through said sealing assembly, said sealing assembly including a sealing member and a drip plate assembled to said hull;
pedaling positions in said cockpit including at least one seat spaced from said axle such that a person sitting in said seat can use said pedals to move said axle, said pedaling seat positions including a first seat positioned in front of said axle and a second seat positioned behind said axle, both of said first and second seats facing said axle such that people sitting in said first and second seats may use said pedals to move said axle to propel said wheels;
said pedals including a front face and a back face, said front and back faces angled toward one another such that the front and back faces are angled upwardly for use by people sitting in either of said seats;
paddle wheels coupled to opposite ends of said axle, each of said paddle wheels including vanes extending from a hub of said paddle wheel for propelling the paddle boat in the water, said vanes extending laterally from opposite sides of a planar portion of each said wheel, and an outer rim which circumscribes said vanes and provides a surface for contacting the ground, each said wheel including two halves which are interconnected to form each said wheel, and each of said halves including said vanes, and at least one of said halves including said rim integrally formed with said associated vanes, whereby said paddle wheels provide a propeller for the paddle boat in the water and a wheel for the paddle boat on land, said paddle wheels positioned on opposite sides of said longitudinal axis;
a rudder, said rudder being round to provide a third wheel for the stern of the paddle boat to facilitate transportation of the paddle boat on land and steering the boat in the water;
a storage compartment adjacent said cockpit, said compartment having sides and a bottom; and
a rigid member movably supported on said hull such that it moves between a lowered position enclosing said compartment and a lifted position at least partially covering a person sitting in said cockpit.

5,381,753
FABRICATION METHOD OF FINE STRUCTURES
Michio Okajima, Neyagawa; Osamu Kusumoto, Saksi; Takao Tohda, Ikoma; Kazuo Yokoyama, Hirakata, and Motoshi Shibata, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Apr. 30, 1993, Ser. No. 55,728
Claims priority, application Japan, Apr. 30, 1992, 4-111125
Int. Cl.[6] C30B *23/00*
U.S. Cl. 117—12 **39 Claims**

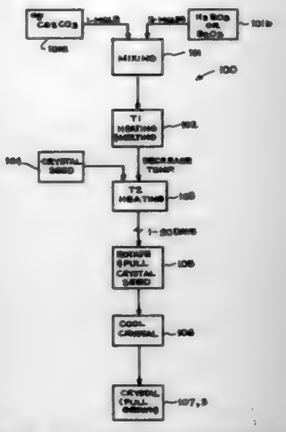


1. A method for fabricating fine structures, comprising the steps of:
(a) providing a substrate formed from a substrate material and a sharp electro-conducting tip positioned close to a surface of the substrate, the tip containing a metal that is capable of being in eutectic phase equilibrium with the substrate material;
(b) applying a specified electric field between the tip and the substrate, to evaporate the metal from the tip and deposit the metal as a micro mound or micro ridge in a region on the surface of the substrate;
(c) heating the surface of the substrate to a temperature that is above a eutectic temperature of the metal and the substrate, the temperature of the surface being below the respective melting points of the metal and the substrate, so that the metal and substrate material in the region on the surface of the substrate where the micro mound or micro ridge of metal is deposited combine to form an alloy liquid drop; and
(d) initiating a vapor phase-liquid phase-solid phase reaction to form a separate crystal from the alloy at the site of said liquid drop in the region on the surface of the substrate.

5,381,754
CSB_3O_5 CRYSTAL AND ITS NONLINEAR OPTICAL DEVICES
Yicheng Wu, Anhui, China, and Takatomo Sasaki, Suita, Japan, assignors to University of Science and Technology of China, Anhui, China
Filed Apr. 23, 1993, Ser. No. 51,445
Claims priority, application China, Apr. 23, 1992, 92102773.7
Int. Cl.[6] H01S *3/109*; G02F *1/37*; B01J *17/04*
U.S. Cl. 117—13 **2 Claims**

1. A process for growing a NLO CsB_3O_5 crystal, said process comprising the steps of:
(a) mixing a cesium salt with B_2O_3 or H_3BO_3 in such an amount to make the mole ratio of Cs_2O to B_2O_3 be 1:3;
(b) heating and melting said mixture in a furnace to obtain a melt of CsB_3O_5 maintaining a first temperature of said melt 50°–200° C. higher than a melting point of CsB_3O_5 for about 5–20 hours in a Pt. crucible;
(c) decreasing said first temperature of said melt to a second temperature 0°–2.0° C. higher than said melting point of

CsB_3O_5 and inserting a seed of CsB_3O_5 crystal into said Pt. crucible from a top of said furnace, keeping said seed in contact with said melt, rotating said seed at a speed less than 45 rpm and pulling said seed upward at a speed in the range of 0–5 mm/hour to initiate growing a CsB_3O_5 crystal;



(d) maintaining said growing of said CsB_3O_5 crystal as described in said step (c) for about 1–20 days to effect a grown CsB_3O_5 crystal; and

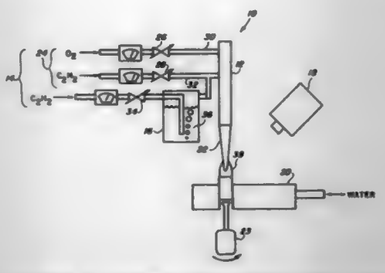
(e) cooling said grown CsB_3O_5 crystal to a room temperature at a rate of 30°–100° C. per hour.

5,381,755

METHOD OF SYNTHESIZING HIGH QUALITY, DOPED DIAMOND AND DIAMONDS AND DEVICES OBTAINED THEREFROM

John W. Giesener, Temple Hills; Arthur A. Merrish, La Plata, and Keith A. Snail, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1991, Ser. No. 747,321
Int. Cl.[6] C30B *29/04*
U.S. Cl. 117—88 **20 Claims**



1. A method of growing a doped diamond film comprising the steps of:

flowing together a gaseous carbon source, oxygen and a gaseous hydrogen source to form a mixture;

combusting the mixture to form a deposition species;

including a dopant in said deposition species;

directing a flow of said deposition species, including said dopant, to a surface of a substrate for deposition of diamond; and

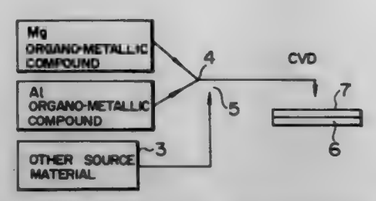
maintaining the substrate at a temperature for the deposition of diamond while said flow of said deposition species is directed thereto, thereby inducing deposition of a doped diamond film on the substrate.

5,381,756

MAGNESIUM DOPING IN III-V COMPOUND SEMICONDUCTOR

Makoto Kondo, and Chikashi Anayama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 4, 1993, Ser. No. 26,065
Claims priority, application Japan, Mar. 4, 1992, 4-047326
Int. Cl.[6] H01L *21/223*
U.S. Cl. 117—104 **7 Claims**



1. A method of manufacturing a semiconductor device having a step of growing a group III-V compound semiconductor layer by organo-metallic vapor phase epitaxy, comprising the step of:

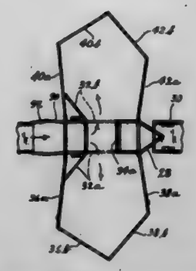
growing a p-type group III-V compound semiconductor layer by organo-metallic vapor phase epitaxy, using as a p-type impurity a mixture gas of a Mg organo-metallic compound and an Al organo-metallic compound, to form a p-type layer doped with Mg and containing Al of the composition from 1 mol % to 10 mol % with respect to the total molar content of group III elements at the interfacing layer at the initial stage of crystal growth.

5,381,757

PORTABLE LIVESTOCK CORRAL

Lloyd P. Putney, 1921 - 80th Ave., New Virginia, Iowa 50210

Filed Aug. 9, 1993, Ser. No. 103,530
Int. Cl.[6] A01K *3/00*
U.S. Cl. 119—20 **6 Claims**



1. A portable livestock corral, comprising:

a base frame having a forward end a rearward end, a right side and a left side,

said rearward end having wheels elevating the rearward end above the ground, and said forward end having goose neck towing means elevating the forward end above the ground; wherein said base frame defines both a longitudinal passageway and intersecting transverse passageway for livestock;

enclosure means for controlling said transverse passageway and containing livestock comprising a first panel and a second panel pivotally connected to said first panel above both a horizontal axis and a vertical axis; and

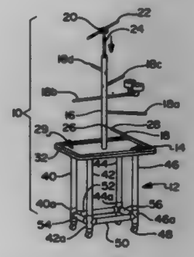
means for attaching the first panel to said base frame which permits relative motion about both a vertical and a horizontal axis.

5,381,758

PARROT TOWER

David F. Simon, P.O. Box 92136, Warren, Mich. 48090

Continuation-in-part of Ser. No. 637,693, Jan. 7, 1991, abandoned. This application Nov. 30, 1993, Ser. No. 160,715
Int. Cl.[6] A01K *31/12*
U.S. Cl. 119—26 **7 Claims**



1. An avian tower comprising:

(a) a plastic tray formed by injection molding, the tray having:

(1) a substantially planar member having an upper surface and a lower surface, the planar member being defined by a perimeter;

(2) an edge formed around the perimeter of the planar member;

(3) a cup centrally formed in the planar member;

(4) a plurality of ribs formed to the lower surface of the planar member to reinforce the cup, at least a portion of the ribs contacting the cup;

(b) a center column releasably mounted on the tray, the column being partially deployed into the cup formed in the tray;

(c) at least one perch releasably attached to the center column; and

(d) means for securing the at least one perch to the center column.

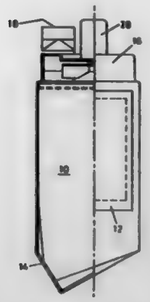
5,381,759

FEEDING DEVICES FOR STOCK

John Thorne, Beacon Cottage Farm, Deans Lane, Woodhouse Eaves, Loughborough, Leicestershire, LE12 8TE, United Kingdom

PCT No. PCT/GB91/02330, § 371 Date Jul. 26, 1993, § 102(e) Date Jul. 26, 1993, PCT Pub. No. WO92/12626, PCT Pub. Date Aug. 6, 1992
PCT Filed Dec. 31, 1991, Ser. No. 94,005
Claims priority, application United Kingdom, Jan. 24, 1991, 9101521
Int. Cl.[6] A01K *1/10*
U.S. Cl. 119—60 **8 Claims**

1. A feeding device for stock comprising a bin (10) having a door (12), a slot (14) for the withdrawal of forage as it is consumed, a fan (16) for drawing air in through the slot (14) and



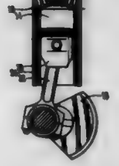
out of the bin (10), and a duct (18) for discharging the air at a remote location.

5,381,760

AIR INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES DURING COMBUSTION CYCLE OF OPERATION

Edward L. Simonds, Adel, Iowa, assignor to Thermal Dynamics, Inc., Adel, Iowa

Filed Jul. 9, 1993, Ser. No. 89,766
Int. Cl.[6] F02B *41/00*
U.S. Cl. 123—26 **10 Claims**



1. A method of increasing horsepower and torque of an internal combustion engine comprising the steps of,

providing a high pressure air source in communication through a check valve with the engine combustion chamber,

providing means for opening said valve upon combustion occurring in said combustion chamber whereby air is injected into said combustion chamber during the combustion cycle of the engine operation, and

providing means for closing said check valve when pressure in said combustion chamber drops to a predetermined level.

5,381,761

FAN COUPLING FOR AN ENGINE OF A VEHICLE

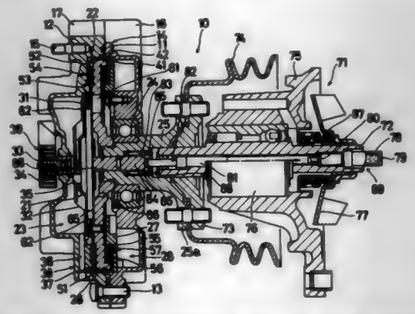
Seiya Tanaka, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 13, 1993, Ser. No. 106,721
Claims priority, application Japan, Aug. 20, 1992, 4-221262
Int. Cl.[6] F07P *7/02*
U.S. Cl. 123—41.12 **20 Claims**

1. A fan coupling for an engine of a vehicle, comprising:

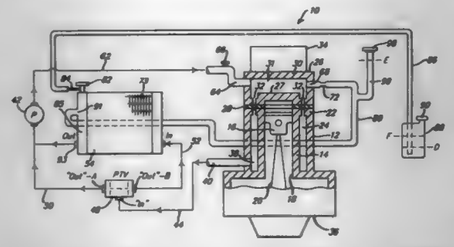
a housing for mounting a cooling fan which includes a storing chamber;

a rotor disposed in the housing and including a torque transmitting portion at one side surface thereof;
a passage communicating the storing chamber with the torque transmitting portion;
a restraint member fixed on the rotor;



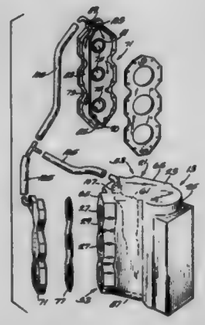
a valve member inserted between the rotor and the restraint member so as to be held at at least one end thereof by the restraint member; and
forcing means for forcing the valve member to open the passage in proportion to the temperature of the cooling water.

5,381,762
ENGINE COOLING SYSTEM AND RADIATOR THEREFOR
John W. Evans, 253 Rte. 41 N., Sharon, Conn. 06069
Continuation-in-part of Ser. No. 946,909, Sep. 18, 1992. This application Feb. 25, 1994, Ser. No. 201,897
Int. Cl.[6] F01P *3/22*
U.S. Cl. 123—41.54 2 Claims



1. In a reverse flow aqueous cooling system for an internal combustion engine comprising a coolant pump, cylinder head coolant chamber and a cylinder block coolant chamber, the improvement comprising;
a radiator having a coolant inlet tank and a coolant outlet tank.
a conduit connecting a low point in said cylinder block coolant chamber to said coolant inlet tank;
a conduit connecting an outlet side of said pump to said cylinder head coolant chamber;
a flow restricted gas vent conduit connecting a high point in said cylinder head coolant chamber to a gas inlet in said coolant outlet tank; and
a conduit connecting a coolant outlet in said coolant outlet tank to the inlet side of said pump and spaced downwardly from the gas inlet in said coolant outlet tank to preclude the flow of gases from the high point within said cylinder head coolant chamber to said pump.

5,381,763
DRY HEAD COOLING SYSTEM
Robert L. Niemchick, Lake Villa, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Sep. 28, 1993, Ser. No. 127,792
Int. Cl.[6] F01L *1/12*
U.S. Cl. 123—41.82 R 15 Claims

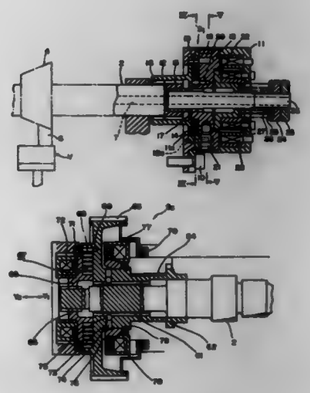


1. A cylinder head assembly comprising a cylinder head including a planar surface adapted for engagement with a cylinder block and having therein a combustion chamber recess, a coolant jacket located adjacent to said recess, and a coolant passage extending in said cylinder head remotely from said recess, pressure responsive valve means communicating with said coolant jacket and with a source of coolant and operative to supply coolant to said coolant jacket when said coolant is above a predetermined pressure, and temperature response valve means communicating with said coolant passage and with a supply of coolant and operative to supply coolant to said coolant passage when said coolant is above a predetermined temperature.

5,381,764
VALVE TIMING CONTROLLER FOR USE WITH INTERNAL COMBUSTION ENGINE
Masaki Fukuma; Hiroaki Deguchi; Masami Nishida; Akira Asai, and Hiroshi Aino, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed May 3, 1994, Ser. No. 237,107
Claims priority, application Japan, May 10, 1993, 5-107946; Apr. 18, 1994, 6-078500
Int. Cl.[6] F01L *1/34*
U.S. Cl. 123—90.17 13 Claims

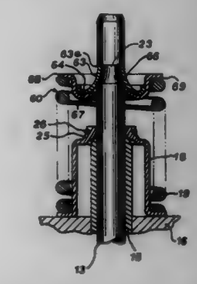
1. A valve timing controller for use with an internal combustion engine, said valve timing controller comprising:
a rotary drive member;
a rotary driven member supported for rotation relative to said rotary drive member and driven by said rotary drive member for selectively opening and closing a valve mounted on said internal combustion engine;
a phase-difference varying means for applying a braking resistance to rotation of said rotary driven member to vary at least one of a phase of rotation of said rotary driven member relative to said rotary drive member and an axial position of said rotary driven member when a difference in phase of rotation between said rotary drive member and said rotary driven member is to be varied;
a phase-difference holding means coupled rigidly with at least one of said rotary drive member and said rotary driven member for holding the difference in phase of rotation between said rotary drive member and said rotary driven member; and
a hold releasing means for releasing said phase-difference holding means from holding the difference in phase of rotation,

whereby a change of the difference in phase of rotation between said rotary drive and driven members causes a



change of at least one of a valve timing and a valve lift of said valve.

5,381,765
VALVE SPRING RETAINER
Myron G. Rhodes, Hartland, Wis., assignor to Charter Manufacturing Company, Inc., Milwaukee, Wis.
Continuation-in-part of Ser. No. 986,218, Dec. 7, 1992, Pat. No. 5,343,835. This application Jun. 14, 1994, Ser. No. 259,646
Int. Cl.[6] F01L *3/10*
U.S. Cl. 123—90.67 4 Claims



3. A valve spring retainer means of a valve stem in an internal combustion engine comprising:
a continuous peripheral base wall and an integrally formed curved arm portion, said curved arm portion extending between a spring retaining portion and a connecting portion to said valve stem, said connecting portion being derived only from said curved arm portion and said connecting portion is aligned substantially parallel with the axis of said valve stem, and a support plate providing said spring retaining portion extending within an inner radial periphery of a valve spring.

5,381,766
ROTARY PISTON ENGINE
Masami Sakita, 1259 El Camino Real #121, Menlo Park, Calif. 94025
Filed Nov. 5, 1993, Ser. No. 147,578
Int. Cl.[6] F02B *53/00*
U.S. Cl. 123—245 17 Claims



1. An internal combustion engine comprising,
a housing forming a cylindrical working chamber having inlet and exhaust ports,
first and second piston assemblies each of which assemblies includes at least one pair of diametrically opposed pistons within the working chamber rotatable about the cylinder axis and dividing the chambers into a plurality of pairs of diametrically opposed sub-chambers,
means for interconnecting said first and second piston assemblies for intermittent rotation of the first and second piston assemblies in the same direction during recurrent periods of rotation such that at least one pair of diametrically opposed sub-chambers decrease in volume while at least one other pair of diametrically opposed sub-chambers increases in volume, each said first and second piston assemblies being stopped between periods of intermittent rotation,
for each complete revolution of the first and second piston assemblies a plurality of operating cycles being completed, each operating cycle including successive power, exhausts, intake and compression phases,
pistons of the stopped piston assembly comprising trailing pistons during at least portions of the power and intake phases,
said interconnecting means including,
first and second gear sets each of which gear sets comprises intermeshing generally tear-drop and heart shaped gears,
means for connecting the heart shaped gears of said first and second gear sets to each other for simultaneous rotation thereof in out-of-phase relationship, and
means for rotatably coupling the tear-drop shaped gears of the first and second gear sets to the respective first and second piston assemblies.

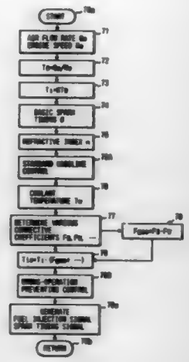
5,381,767
ELECTRONIC CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Toshiaki Kikuchi, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Apr. 16, 1993, Ser. No. 47,443
Claims priority, application Japan, Apr. 17, 1992, 4-097581; Mar. 8, 1993, 5-046778
Int. Cl.[6] F02M *3/00*
U.S. Cl. 123—339 19 Claims

1. An electronic control system for an internal combustion engine which is supplied with gasoline from a fuel supply source, said system comprising:
gasoline-property detecting means for detecting a property of said gasoline;
operating-condition detecting means for detecting an operating condition of said engine;
control-amount determining means for determining a gasoline-property-responsive control amount of said engine in

accordance with said gasoline property detected by said gasoline-property detecting means and said engine operating condition detected by said operating-condition detecting means, said control-amount determining means including:

fuel injection rate determining means for determining a rate of fuel injection into said engine in accordance with said gasoline property detected by said gasoline-property detecting means;

control means for controlling said engine in accordance with said gasoline-property-responsive control amount determined by said control-amount determining means; and



improper-operation preventing means for detecting an improper controlled state of said engine, and for suppressing a gasoline-property-responsive control, which is controlled via said control-amount determining means, when said improper controlled state of said engine is detected, said improper-operation preventing means including:

first suppressing means for suppressing said gasoline-property-responsive control when:

said fuel rate injection determining means determines said fuel injection rate is enriching an air-fuel mixture supplied to said engine; and

said air-fuel mixture becomes richer than a predetermined air-fuel ratio.

5,381,768

AIR-FUEL RATIO CONTROL APPARATUS OF AN INTERNAL COMBUSTION ENGINE

Kazuhide Togai, Osaka, and Katsunori Ueda, Kyoto, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 987,284, filed as PCT/JP92/00918, Jul. 17, 1992, abandoned.

This PCT application Mar. 14, 1994, Ser. No. 209,490

Claims priority, application Japan, Jul. 18, 1991, 3-178461

Int. Cl.[6] F02D *41/16*; F02M *23/06*

U.S. Cl. 123—339 **11 Claims**

1. In an air-fuel ratio control apparatus of an internal combustion engine, which controls the air-fuel ratio of an air-fuel mixture to be supplied to an engine so that the air-fuel ratio is adjusted to a first air-fuel ratio approximate to a theoretical air-fuel ratio when said engine is in a specific operating state, and that the air-fuel ratio is adjusted to a second air-fuel ratio on the fuel-lean side of said first air-fuel ratio when said engine is in any other operating state than said specific operating state, an air-fuel ratio control apparatus of an internal combustion engine, comprising:

a main bypass line bypassing a throttle valve in the middle of a suction passage of said engine and having both ends thereof communicated with said suction passage;

a sub-bypass line bypassing said throttle valve and having both ends thereof communicated with said suction passage;

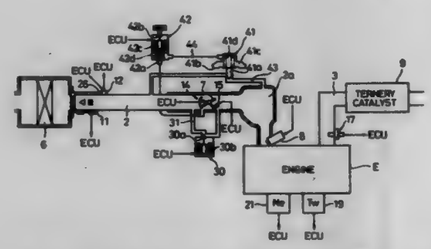
main valve means for adjusting the amount of air sucked in through said main bypass line;

sub-valve means for adjusting the amount of air sucked in through said sub-bypass line;

fuel supply means for adjusting the amount of a fuel to be supplied to said engine; and

control means adapted to control the drive of said main valve means, said sub-valve means and said fuel supply means;

wherein said control means controls the drive of said main valve means so that the suction air supply through said main bypass line is prevented when said engine is in said specific operating state, and controls the amount of the fuel supplied from said fuel supply means in dependence on the amount of the suction air supplied through said suction passage not including at least said main bypass



line, so that said first air-fuel ratio is attained, when said engine is in said specific operating state;

wherein said control means controls the drive of said main valve means and said sub-valve means such that said main bypass line and said sub-bypass line are open when said engine is in any other operating state than said specific operating state, and controls the amount of the fuel supplied from said fuel supply means in dependence on the amount of the suction air supplied through said suction passage including said main and sub-bypass lines, so that said second air-fuel ratio is attained, when said engine is in any other operating state than said specific operating state; and

wherein the drive of said main valve means and said sub-valve means is controlled by said control means while the operation mode is switched from operation with said first air-fuel ratio to operation with said second air-fuel ratio such that said suction air amount is changed so as to reduce a difference between outputs capable of being practically fetched from said engine before and after the operation mode switching.

5,381,769

THROTTLE VALVE DRIVE APPARATUS

Kazuhiro Nishigaki, Gifu, and Hitoshi Tasaka, Chiryu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 29, 1993, Ser. No. 52,540

Claims priority, application Japan, Apr. 30, 1992, 4-111687; Apr. 16, 1993, 5-089780

Int. Cl.[6] F02D *9/02*

U.S. Cl. 123—399 **16 Claims**

12. A throttle valve controlling apparatus for controlling an internal combustion engine, comprising:

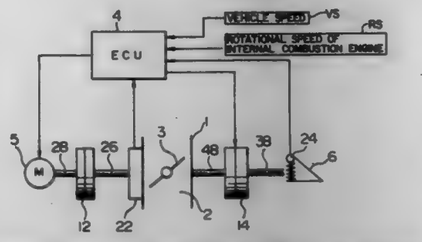
a throttle valve disposed in an intake passage of said internal combustion engine to regulate a flow of intake air;

an accelerator lever having an operation amount controlled by an operator of said internal combustion engine for controlling an output of said internal combustion engine;

an actuator having an operation amount which controls said output of said internal combustion engine;

an electric control which controls said operation amount of said actuator;

a first clutch of friction and constant contact type disposed between said accelerator lever and said throttle valve and transmitting said operation amount of said accelerator lever to said throttle valve and permitting said accelerator lever and said throttle valve to move relatively when a



torque difference of not smaller than a predetermined value is caused between said accelerator lever and said throttle valve; and

a controllable second clutch disposed between said actuator and said throttle valve, switchable between connected and disconnected states, and transmitting said operation amount of said actuator to said throttle valve when in said connected state and permitting said actuator and said throttle valve to move relatively when in said disconnected state.

5,381,770

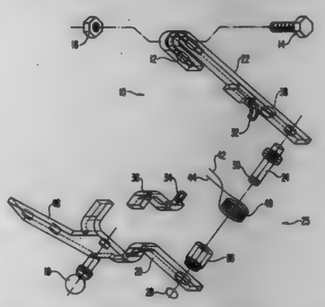
BREAKOVER THROTTLE LEVER

Michael J. Marthaler, Nashville, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 22, 1993, Ser. No. 124,585

Int. Cl.[6] F02D *7/00*

U.S. Cl. 123—400 **11 Claims**



1. A throttle lever assembly for operating a throttle shaft adapted to control the flow of fuel to an internal combustion engine as the throttle shaft is moved between an idle position and a full throttle position in response to a throttle control, comprising:

(a) a throttle lever means adapted to be connected with the throttle shaft for moving the throttle shaft between the idle and full throttle positions in response to movement of the throttle control;

(b) throttle link means connected to said throttle lever and to the throttle control for limiting the degree of force which may be applied to said throttle lever means when the throttle shaft reaches at least one of said idle and full throttle positions;

(c) pivotal connector means located at a point on said throttle lever means a maximum distance from said throttle shaft for pivotally connecting said throttle lever means and said throttle link means; and

(d) throttle control connector means located on said throttle link means substantially centrally between said pivotal connector means and said throttle shaft for engaging a linkage element in said throttle control.

5,381,771

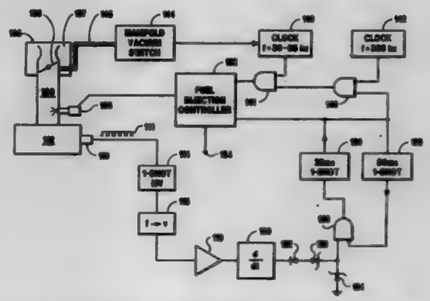
LEAN BURN MIXTURE CONTROL SYSTEM

Michael D. Leshner, Columbia, Md., assignor to Lean Power Corporation, Silver Spring, Md.

Continuation-in-part of Ser. No. 920,855, Jul. 28, 1992, Pat. No. 5,251,601. This application Oct. 8, 1993, Ser. No. 133,374

Int. Cl.[6] F02M *7/00*

U.S. Cl. 123—436 **26 Claims**



1. An engine having a control system for controlling a ratio of a fuel/air mixture applied to said engine, comprising:

means for adjusting the ratio of fuel-to-air in said engine;

first controlling means for controlling said ratio adjusting means;

second controlling means for controlling said ratio adjusting means, said second controlling means including an adjustable clock means to generate input timing signals at a preselected frequency wherein the frequency of said input timing signals may be varied;

measuring means for measuring the power requirements of said engine, said measuring means further including means for generating a signal of said power requirements and sending said signal to said second controlling means;

said frequency of said adjustable clock means being controlled by the signal from said measuring means to decrease the frequency of said timing signals as the power requirement decreases;

wherein said first controlling means operates said ratio adjusting means to provide a rich ratio to said engine upon receipt of a signal from said measuring means indicative of a power requirement above a first predetermined value, corresponding generally to said engine being operated at full throttle; and

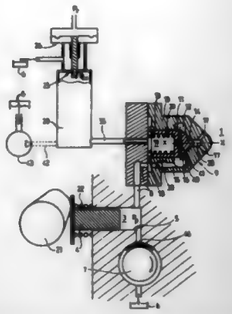
further wherein said second controlling means, upon receipt of a signal from said measuring means indicative of a power requirement below said first predetermined value, operates said ratio adjusting means to provide a lean ratio to said engine which is enriched as said power requirement, and hence, the frequency of said timing signals, decreases.

5,381,772

LIQUID FUEL INJECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE, AND ENGINE EQUIPPED WITH SUCH A DEVICE

Jean F. Melchior, 126 Boulevard du Montparnasse, 75 014 Paris, and Thierry Andre, Paris, both of France, assignors to Jean-Frederic Melchior, Paris, France

Filed Aug. 27, 1993, Ser. No. 112,372
Claims priority, application France, Aug. 27, 1992, 92 10322
Int. Cl.[6] F02M *7/00*
U.S. Cl. 123—447 **15 Claims**



1. A device for injecting liquid fuel into at least one pressurized combustion chamber forming part of an internal combustion engine having a low pressure liquid fuel reserve comprising:

a pressurizing member for pressurizing the liquid fuel to be injected, said pressurizing member including a cylinder and a first piston movable reciprocally in said cylinder such that a first variable-volume cavity is provided;

a pressurized accumulator for a portion of the fuel, said accumulator including a pressurizing means for pressurizing the fuel in said accumulator to a substantially constant pressure selected for various operating ranges of the engine;

a control member which cyclically establishes a communication of said first cavity with the fuel reserve in synchronism with a periodic operation of the engine;

an injector for injecting fuel into the combustion chamber, said injector communicating with said pressurizing member via a passage and including a nozzle and a needle movable along an axis in said nozzle,

said nozzle including (a) a second cavity connected with said passage, said second cavity being bounded laterally by a circularly cylindrical wall and axially by a partially conical wall coaxial with said cylindrical wall and forming a seat, (b) at least one injection orifice opening into the combustion chamber, and (c) a low volume space located between said seat and said at least one injection orifice,

said needle including a cylindrical second piston provided for close sliding movement along said cylindrical wall, said second piston having a free face at one axial end and a conical part at the other axial end movable into cooperating abutment with said seat whereby a projection on a plane perpendicular to the axis of a portion of said conical part which abuts said conical wall is less than a transverse cross section of said cylindrical part, and

said injector further including a return means for holding said needle at rest with said conical part bearing against said seat whereby communication between said second cavity and said at least one orifice is prevented, said return means including a third variable-volume cavity bordered by said free face of said second piston which said third cavity communicates with said pressurized accumulator; and

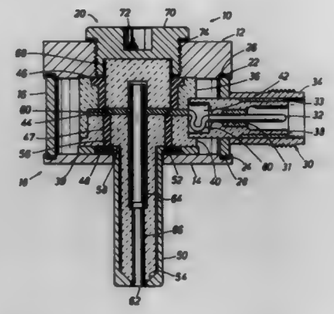
a one-way valve which allows fuel to flow only from said first cavity to said second cavity such that closure of said one-way valve is brought about due to the communication of said first cavity with the fuel reserve by said control member does not result in a substantial drop in a pressure prevailing in said second cavity.

5,381,773

MODULAR IGNITION SYSTEM

Stephen W. Straub, Easley, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 12, 1993, Ser. No. 31,009
Int. Cl.[6] F02P *3/12*
U.S. Cl. 123—603 **11 Claims**



1. A modular ignition system, comprising:

an engine igniter;

an exciter module;

a hollow container, said hollow container including: means for mechanically mounting said engine igniter; electrical contact means for providing electrical power to said engine igniter;

said hollow container and said exciter module constructed and arranged for the direct mechanical attachment and electrical connection of said exciter module to said engine igniter;

said hollow container constructed and arranged to surround said engine igniter when said hollow container is mounted to an engine.

5,381,774

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yuki Nakajima, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 16, 1993, Ser. No. 107,430
Claims priority, application Japan, Aug. 17, 1992, 4-217878
Int. Cl.[6] F02D *41/14, 41/32*
U.S. Cl. 123—674 **7 Claims**

1. An air-fuel ratio control system for an internal combustion engine, comprising:

an oxygen sensor disposed in an exhaust gas passageway of the engine;

first decision means for deciding whether an air-fuel ratio of air-fuel mixture supplied to the engine is in a rich side or a lean side relative to a stoichiometric value;

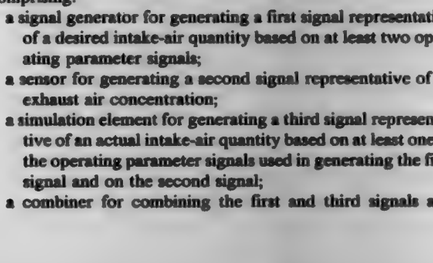
second decision means for deciding whether the air-fuel ratio makes its first inversion from the rich side to the lean side or its second inversion from the lean side to the rich side upon taking account of a decision result of said first decision means;

means for measuring a lapsed parameter which has been lapsed between the adjacent first and second inversions of the air-fuel ratio in accordance with decision results of said first and second decision means;

means for comparing a measured value of the lapsed parameter with a decision standard;

means for increasing an integrated amount after the lapsed parameter measured value exceeds the decision standard, relative to that during a time in which the measured value is smaller than the decision standard;

means for calculating an air-fuel ratio feedback correction amount in accordance with the integrated amount;



means for effecting a control of fuel to be supplied to the engine in accordance with the air-fuel ratio feedback correction amount;

a memory for memorizing the lapsed parameter required between the adjacent inversions of the air-fuel ratio;

means for renewing an average value of the lapsed parameter in accordance with the value of lapsed parameter in said memory; and

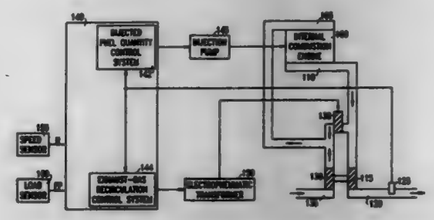
means for setting a value relating to the average value as the decision standard.

5,381,775

SYSTEM FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

Manfred Birk, Oberriexingen; Gerhard Engel, Stuttgart; Peter Rupp, Remseck, and Wolf Wessel, deceased, late of Oberriexingen, all of Germany by Christa Wessel, Wilfried Wessel Heirs , assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 10, 1993, Ser. No. 29,215
Claims priority, application Germany, Mar. 10, 1992, 4207541
Int. Cl.[6] F02B *75/08*
U.S. Cl. 123—679 **30 Claims**



1. A system for controlling an internal combustion engine, comprising:

a signal generator for generating a first signal representative of a desired intake-air quantity based on at least two operating parameter signals;

a sensor for generating a second signal representative of an exhaust air concentration;

a simulation element for generating a third signal representative of an actual intake-air quantity based on at least one of the operating parameter signals used in generating the first signal and on the second signal;

a combiner for combining the first and third signals and generating a fourth signal based on the difference between the first and third signals; and

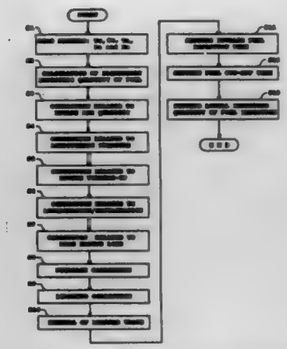
a control element for controlling an air-fuel mixture of the engine in accordance with the fourth signal.

5,381,776

AIR-FUEL RATIO CONTROL SYSTEM FOR ENGINE

Toshio Matsubara; Haruyuki Kato; Yuji Ota, and Hideki Tominaga, all of Higashihiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 6, 1993, Ser. No. 102,781
Claims priority, application Japan, Aug. 6, 1992, 4-210469; Jul. 12, 1993, 5-171575
Int. Cl.[6] F02M *51/00, 7/00*
U.S. Cl. 123—681 **6 Claims**



1. In an air-fuel ratio control system for an internal combustion engine to which evaporated fuel from a canister is supplied and an air-fuel ratio feedback control value is calculated based upon a quantity of evaporated fuel supplied to said engine, an improvement comprising:

a control means for calculating, within a first predetermined range of engine operating conditions, a difference between a first control value calculated during a supplying of said quantity of evaporated fuel to said engine, and another first control value calculated when said quantity of evaporated fuel is not being supplied to said engine,

said control means then calculating, within a second predetermined range of engine operating conditions, a second air-fuel ratio control value for controlling said engine, based upon: said first feedback control value used in said first predetermined range of engine operating conditions, a ratio of a quantity of intake air taken into the engine between said first and second ranges of engine operating conditions and a ratio of supplied quantities of said evaporated fuel provided to said engine between said first and second predetermined ranges,

said control means then controlling said air-fuel ratio with said second control value operating within said second range.

5,381,777

COMPOUND BOW AND YOKE ADJUSTER

J. Patrick Mitchell, and Terry Ploot, both of Hastings, Mich., assignors to Pro Line Company, Hastings, Mich.

Continuation-in-part of Ser. No. 106,031, Aug. 12, 1993. This application Sep. 30, 1993, Ser. No. 129,670
Int. Cl.[6] F41B *5/00*
U.S. Cl. 124—25.6 **15 Claims**

12. In a compound bow having a center handle portion; first and second limbs having inner ends connected to the center handle portion and free outer ends, each of the first and second

limbs having an axle mounted on its respective free outer end, the axle passing laterally through a pulley to rotatively mount the pulley; a cable, under tension, extending between the pulley on one free outer end and the other free outer end; and a yoke assembly, the cable having at least one end mounted to a free outer end by the yoke assembly, an improvement wherein the yoke assembly comprises:



a body;

two cable segments, each cable segment having a first end and a second end, the first ends being mounted to the outer free end on opposite lateral sides of the pulley; and

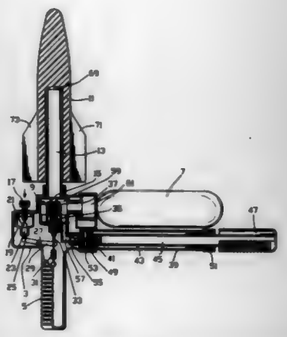
a tension distribution means for adjusting the load carried by each cable segment.

5,381,778

PRESSURIZED TOY ROCKET WITH RAPID ACTION RELEASE MECHANISM

Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889, and Loanie G. Johnson, 4030 Ridgehurst Dr., Smyrna, Ga. 30080

Filed Jul. 2, 1993, Ser. No. 87,480
Int. Cl.[6] F41B *11/26, 11/28, 11/32*
U.S. Cl. 124—69 **19 Claims**



1. A pressurized air propelled rocket launcher and rocket toy device, which comprises:

(a) a launcher having a housing which includes a vessel for holding pressurized air therein, an inlet to said vessel and an outlet from said vessel, and said housing having a launch tube extending from said outlet and adapted to connect with a launchable rocket assembly;

(b) a pump connected to said vessel inlet of said housing, said pump being connected for and capable of pumping air into said vessel at a pressure sufficient to launch said rocket;

(c) a one-way valve connected to said pump and permitting flow of air only from said pump to said vessel;

(d) a rocket which includes a rocket reservoir adapted to slidably attach to said launch tube for subsequently receiving air under pressure from said vessel by way of said launcher housing; and,

(e) a mechanism to release pressurized air from said vessel through said vessel outlet to said launch tube, comprising:

(1) a well within said vessel, having a well outlet;

(2) a second pressure release valve slidable within said well to isolate the well from the vessel, the well containing a quantity of air;

(3) bias means within the well to bias the second valve into sealing engagement with the vessel outlet, said second valve having a surface with a greater area than a cross sectional area of said vessel outlet;

(4) a first pressure release valve arranged to seal said well outlet, said first valve openable by a manually activated release actuator,

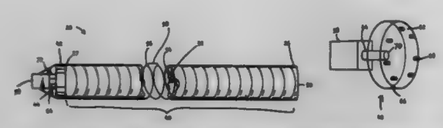
whereby, upon activation of said release actuator, said first valve will open, allowing air to exit said well and causing a pressure decrease within said well, said pressure decrease being sufficient to permit said pressurized air within said vessel to press against said surface of said second valve to overcome the force of said bias means to move the second valve away from said vessel outlet to permit said pressurized air to enter the launch tube to launch the rocket.

5,381,779

BALLOON THRUSTER

Allen E. Shelton, 1408 Maenpah Way, Las Vegas, Nev. 89106

Filed Sep. 16, 1993, Ser. No. 123,631
Int. Cl.[6] A63H *33/30, 37/00*
U.S. Cl. 124—77 **17 Claims**



1. A balloon distribution system for mounting to a location above an area over which balloons are to be selectively distributed, comprising:

an elongate container having a balloon discharge end and a closed proximal end, together forming a cavity suitable for receiving and retaining a plurality of inflated balloons; and

a source of forced air; and

a plurality of spaced apart nozzles each having a first end in communication with said forced air source and a second end substantially aligned with said elongate container at said proximal end thereof;

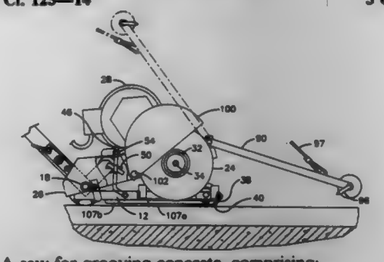
whereby said forced air, when in communication with said container through said plurality of nozzles, passes through said cavity and transports any balloons retained therein out through said balloon discharge end.

5,381,780

GREEN AND CURED CONCRETE

Darrell A. Yelton, Lee's Summit, and Kevin R. Wilson, Blue Springs, both of Mo., assignors to Diamant Boart, Inc., Kansas City, Mo.

Continuation of Ser. No. 869,167, Apr. 16, 1992, Pat. No. 5,241,946. This application Jun. 14, 1993, Ser. No. 76,209
Int. Cl.[6] E21C *47/00*
U.S. Cl. 125—14 **5 Claims**



1. A saw for grooving concrete, comprising:

a base;

a plurality of wheels rotatably mounted on said base for supporting said base and allowing movement of said base with respect to the surface of the concrete in a direction, at least a portion of said wheels being mounted on said base by an axle:

a frame mounted on said base for pivotal movement with respect to said base about a pivot axis defined by said axle and in a substantially vertical plane containing said direction, said frame including an abutment surface;

motor means mounted on said frame for counter-rotating a blade within said plane, said blade being spaced from said pivot axis, whereby pivotal movement of said frame with respect to said base will cause said blade to be lowered into contact with, and raised out of contact with, the concrete; and

a handle assembly mounted to said base for pivotal motion about said axle in said plane, and including an abutment portion for selective contact with said abutment surface, whereby pivotal motion of said handle assembly in said plane with said abutment portion and abutment surface in contact will cause pivotal movement of said frame with respect to said base, and thus said raising and lowering of said blade.

5,381,781

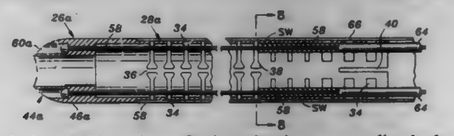
Patent Not Issued For This Number

5,381,782

BI-DIRECTIONAL AND MULTI-DIRECTIONAL MINISCOPES

Alan DeLaRama, Cerritos; Larry A. Dial, Chino Hills; Richard J. Harp, Carlsbad; Thomas L. Hursman, Diamond Bar; Alfred S. Soria, Corona Del Mar; R. J. Serra, Irvine, and Steve Tarpening, Oceanside, all of Calif., assignors to Spectrum Medsystems Corporation, Diamond Bar, Calif.

Continuation-in-part of Ser. No. 818,670, Jan. 9, 1992, abandoned. This application Feb. 23, 1993, Ser. No. 21,955
Int. Cl.[6] A61B *1/00*
U.S. Cl. 128—4 **12 Claims**



1. A guidable catheter for insertion in a mammalian body, said device comprising:

(a) a flexible catheter sheath having a distal end, a proximal end and at least one lumen extending longitudinally therethrough;

(b) a bending assembly positioned on the distal end of said catheter sheath, said bending assembly comprising:

i. a tubular spring frame having a longitudinal axis, proximal and distal ends, and a hollow bore extending longitudinally therethrough;

ii. at least one first series of substantially parallel relief slots cut partway through said tubular spring frame perpendicular to the longitudinal axis thereof, each of said relief slots being of a first width having end cutout regions on either end thereof, said end cut out regions being of a second width which is greater than said first width;

iii. said relief slots being sized and located relative to one another so as to render said tubular spring frame bendable in at least one lateral direction;

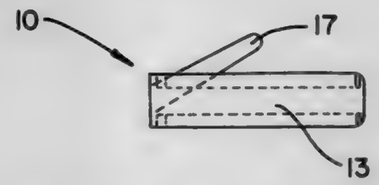
(c) at least one tension wire extending longitudinally through said catheter sheath and through the bore of said tubular spring frame, said tension wire being connected to said tubular spring frame near the distal end thereof, said tension wire being controllable from the proximal end of said catheter sheath such that retraction of said tension wire in the proximal direction will cause said tubular spring frame to bend in a lateral direction and subsequent relaxation of said tension wire will allow said tubular spring frame to return to a straight non-bent configuration.

5,381,783

MOUTHPIECE WITH A BREATHING CHANNEL

Roger L. Hintz, P.O. Box 51, Eldorado, Wis. 54932

Filed Dec. 29, 1993, Ser. No. 175,248
Int. Cl.[6] A62B *18/08*
U.S. Cl. 128—206.29 **2 Claims**



1. A new and improved mouthpiece apparatus which includes a breathing channel, said apparatus comprising:

a first wedge portion for wedging between top teeth and bottom teeth of a first side of a wearer's mouth, wherein said first wedge portion includes a proximal end and a distal end,

a second wedge portion for wedging between top teeth and bottom teeth of a second side of a wearer's mouth, wherein said second wedge portion includes a proximal end and a distal end, and

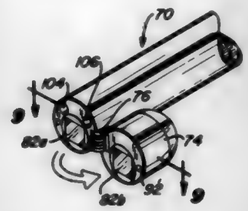
a bridge member connecting said first wedge portion to said second wedge portion, wherein said bridge member is an inverted U-shaped rod structure that has two ends, wherein a first end of said U-shaped bridge member structure is connected to said proximal end of said first wedge portion, and wherein a second end of said U-shaped bridge member structure is connected to said proximal end of said second wedge portion,

wherein said first wedge portion and said second wedge portion lie in a common plane, and

wherein said bridge member projects outward from said common plane toward said respective distal ends of said first wedge portion and said second wedge portion, such

that a wearer's tongue can be located under said bridge member.

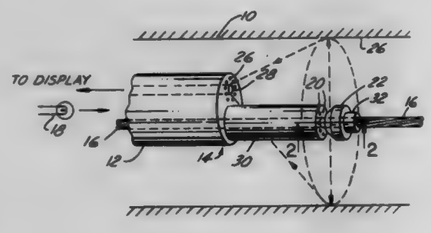
5,381,784
STEREOSCOPIC ENDOSCOPE
Edwin L. Adair, 317 Paragon Way, Castle Pines Village, Colo. 80104
Filed Sep. 30, 1992, Ser. No. 954,578
Int. Cl.[6] A61B *1/06*; H04N *7/18*
U.S. Cl. 128—6 **2 Claims**



1. A stereoscopic endoscope comprising:
an elongated thin cylindrical barrel having a distal end and a proximal end;
an end cap hinged to said distal end of said barrel so that it is movable between a closed position covering said distal end of said barrel, having an axis lying along the longitudinal axis of said barrel, and an open position wherein it lies along side said barrel with said axis thereof generally parallel to said barrel axis, said end cap hinged by means of a hinge element having a coil spring attached to said hinge normally urging said end cap toward said open position;
first objective optics mounted with said barrel at said distal end thereof;
a first CCD mounted within said barrel adjacent said first objective optics and positioned to receive an image focused on it by said first objective optics;
first image signal transmitting wires connected to said first CCD and extending longitudinally through said barrel and out said proximal end thereof for transmitting a first image signal to a remote location;
light transmitting fibers positioned around said first objective optics and said first CCD and having distal ends coterminous with said distal ends of said barrel;
second objective optics mounted within said end cap in face-to-face relationship with said first objective lens and said end cap is in said closed position;
a second CCD mounted within said end cap adjacent said objective optics and positioned to receive an image focused on it by said second objective optics;
second image signal transmitting wires connected to said second CCD extending from said end cap and longitudinally through said barrel and out said proximate end thereof for transmitting a second image signal to a remote location when said end cap is in said open position with said first and second objective optics in side-by-side relationship to provide stereoscopic images
a channel extending longitudinally through said barrel;
a sleeve in said end cap aligned with said channel when said end cap is in said closed position; and
a locking rod extendable through said channel and having a distal end receivable in frictional engagement with said sleeve to hold said end cap in said closed position against the force of said spring, when said endoscope is inserted into a patient's body.

5,381,785
Patent Not Issued For This Number

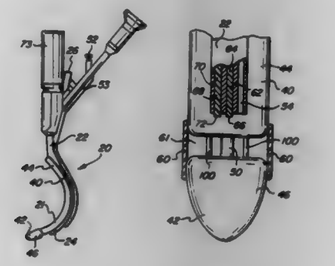
5,381,786
METHOD AND APPARATUS FOR MEASUREMENT OF LUMINAL DIMENSIONS
James R. Spears, Bloomfield Hills, Mich., assignor to Wayne State University, Detroit, Mich.
Filed Feb. 11, 1993, Ser. No. 16,611
Int. Cl.[6] A61B *1/06*; G01C *5/00*
U.S. Cl. 128—6 **14 Claims**



1. A method for measuring dimensions of a lumen utilizing a fiberscope having a distal end positioned within the lumen during fiberoscopy, the fiberscope also having means for delivering electromagnetic energy so as to irradiate an interior luminal surface, which means extends beyond the distal end of the fiberscope, the method comprising the steps of:
emitting a radially propagating ring of electromagnetic radiation without substantial axial propagation from the means for delivering electromagnetic energy at a known distance from the distal end of the fiberscope, the ring of electromagnetic radiation impinging upon a discrete interior surface of the lumen so as to form a ring of reflected electromagnetic radiation;
visualizing the ring of reflected electromagnetic radiation;
measuring a dimension of the ring of reflected electromagnetic radiation; and
applying a magnification factor to the measured dimension so as to determine an actual luminal dimension, the magnification factor being derived from said known distance from the distal end of the fiberscope.

10. Apparatus for measuring luminal dimensions of an interior wall through visualization of a lumen during fiberoscopy, the apparatus comprising:
a fiberscope having a distal end adapted to be disposed within the lumen and a means for visualizing beyond the distal end;
means for delivering electromagnetic energy disposed within the fiberscope and having a distal end extending beyond the distal end of the fiberscope;
means for supporting said means for delivering electromagnetic energy, the supporting means also disposed within the fiberscope and extending beyond the distal end of said means for delivering; and
means for forming a radially propagating ring of electromagnetic radiation without substantial axial propagation which impinges upon the interior wall of the lumen at a known distance from the distal end of the fiberscope, said radially propagating ring being reflected so as to form a reflected ring of electromagnetic radiation, the reflected ring being visualized and measured to determine an actual luminal dimension utilizing said known distance.

5,381,787
EXTENDABLE AND RETRACTABLE LARYNGOSCOPE
James R. Bullard, P.O. Box 14727, Augusta, Ga. 30919-0727
Continuation-in-part of Ser. No. 862,062, Apr. 2, 1992, and Ser. No. 780,445, Oct. 17, 1991, which is a continuation of Ser. No. 519,440, May 4, 1990. This application Mar. 29, 1993, Ser. No. 38,146
Int. Cl.[6] A61B *1/26*
U.S. Cl. 128—11 **14 Claims**



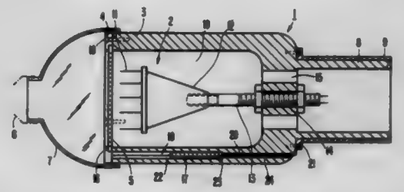
1. A laryngoscope comprising:
a body having a working channel, and means for viewing and means for illuminating contained within said body;
a rigid elongate curved blade for fitting into human oral and pharyngeal passageways, said curved blade being affixed to said body, said blade having a blade distal end having a blunt profile;
said blade distal end being controllably extendable and retractable from said blade, said blade distal end including a blade tip section; alignment guides to maintain a consistent orientation of said blade tip section with said blade; retainers holding said blade tip section to said blade; and an actuator operably connected to said blade tip section for extending and retracting said blade tip section upon actuation thereof; said blade tip section having a proximal end having a cross-sectional shape which is generally similar to a cross-sectional shape of a distal end of said blade immediately adjacent said blade tip section proximal end, whereby said blade tip section when retracted joins with said blade to form a substantially consistent shape along the combined length of said blade and said blade tip section; and an elastic jacket having ends affixed to said blade and tip section, whereby a gap created upon extension of said tip section from said blade is covered by said jacket.

5,381,788
SURGICAL RETRACTOR
Paul A. Matula, Brookfield, Conn., and Stanley H. Remiszewski, Bolton, Mass., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 740,443, Aug. 5, 1991, Pat. No. 5,199,419. This application Apr. 27, 1992, Ser. No. 874,743
Int. Cl.[6] A61B *17/02*
U.S. Cl. 128—20 **29 Claims**



1. A surgical retractor comprising:
actuation means;
an endoscopic tubular portion extending from said actuation means;
a retractor assembly associated with a distal end portion of said tubular portion and including a plurality of interleaved retractor blades pivotally connected to one another, each of said retractor blades having an elongated planar body section and an atraumatic head section depending arcuately from the plane of said body section, each head section having a curved lateral profile and a curved leading edge; and
means associated with said actuation means for manipulating said plurality of retractor blades between a closed position and an opened position.

5,381,789
IONIZER FOR THE IONIZATION OF OXYGEN IN OXYGEN THERAPY
Klaus Marquardt, 7522 Philippsburg 2, Am Sandrain 10, Germany
Filed Jul. 10, 1991, Ser. No. 728,191
Claims priority, application Germany, Jul. 13, 1990, 4022393
Int. Cl.[6] A61M *15/02*
U.S. Cl. 128—202.25 **25 Claims**



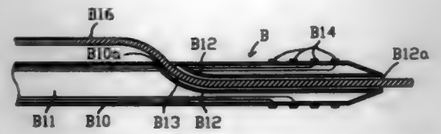
24. An ionizer for the ionization of oxygen during oxygen therapies, comprising:
a face mask;
a glass flask coupled to said face mask;
a housing, coupled to said glass flask, having first and second ends a hollow interior, and a floor having a bore hole therein;
a conducting metal ring coupled to the first end of said housing;
a contact safety screen located over the first end of said housing and held in place by said conducting metal ring;
an ionization unit inside said housing, comprising:
a socket mounting having first and second ends;
ionization needles connected to the first end of said socket mounting and adjacent said contact safety screen;
a mounting bushing having a first end mounting the second end of said socket mounting and having a second end connected to said housing floor; and
a screw inserted into said mounting bushing;
a projecting socket coupled to the second end of said housing and having said screw extending therethrough; and
a conducting metal cylinder enclosing said projecting socket.

5,381,790
ELECTROPHYSIOLOGY APPARATUS
Nozomu Kanesaka, 36 Cathy Rd., Hillsdale, N.J. 07642
Filed Jun. 23, 1993, Ser. No. 80,009
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—642 **7 Claims**

1. An electrophysiology apparatus comprising,
an electrophysiology catheter adapted to be inserted into a blood vessel, said catheter including a flexible tube having an outer surface, a front area and a first passage extending throughout an entire length of the tube; a plurality of electrodes with wires, said electrodes being attached to the outer surface of the front area and the wires extending

from the electrodes through the first passage; and a second passage formed at least inside the front area of the tube without contacting the wires and being formed of a flexible tubular member extending only at the front area of the catheter, and

a guide wire extending through the second passage of the



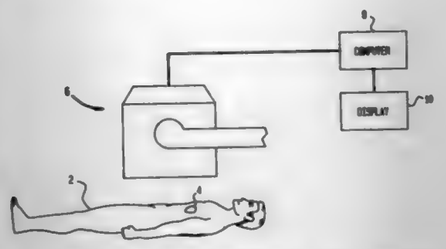
flexible tube so that the catheter is inserted into the blood vessel through use of the guide wire, said guide wire having a front portion and means for manipulating the front portion of the guide wire so that the electrodes formed at the outer surface of the tube are securely contacted to an inner surface of the blood vessel by bending the front portion of the guide wire.

5,381,791

AUTOMATIC INDENTIFICATION OF ANATOMICAL FEATURES OF INTEREST FROM DATA ACQUIRED IN NUCLEAR MEDICINE STUDIES AND AUTOMATIC POSITIONING OF SCINTILLATION CAMERAS TO CARRY OUT SUCH STUDIES AT OPTIMAL POSITIONS

Jianzhong Qian, Hoffman Estates, Ill., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Mar. 10, 1992, Ser. No. 848,769
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—659 **19 Claims**



1. A method of identifying, from image data acquired in a nuclear medicine study of a patient's body, an anatomical feature of interest, comprising:

conducting a nuclear medicine study and thereby acquiring an image of the feature, said image including, for each image pixel, an intensity representing a number of detected scintillation events which corresponds to the location of that pixel in the patient's body;

establishing, on the basis of the feature to be identified, a scan curve and a scan direction;

scanning the image with the scan curve along the scan direction and registering, for each location of the scan curve, the pixels with local intensity maxima and minima;

grouping together, in accordance with their connectedness, some of such registered pixels, to form maxima line segments composed exclusively of pixels with local intensity maxima and minima line segments composed exclusively of pixels with local intensity minima; and

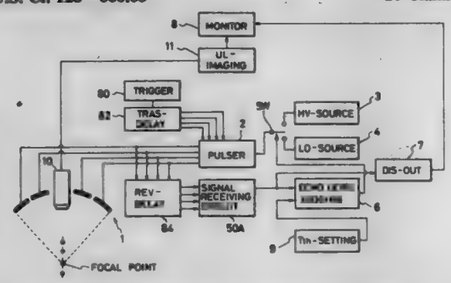
determining which of said line segments correspond with the feature by identifying whether said line segments satisfy constraints which have been empirically determined to relate to the feature.

5,381,792

SHOCK WAVE CURING APPARATUS CAPABLE OF CORRECTING PHASE SHIFTS CONTAINED IN ECHO SIGNALS

Yuji Yanagida; Nobuyuki Iwama, and Kiyoshi Okazaki, all of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 2, 1993, Ser. No. 41,977
Claims priority, application Japan, Apr. 2, 1992, 4-080597
Int. Cl.[6] A61B *17/22*
U.S. Cl. 128—660.03 **20 Claims**



16. A shock wave generating apparatus comprising:

a shock wave pulse applicator constructed of at least two transducer elements, said shock wave pulse applicator producing shock wave pulses used to disintegrate an object located near a focal point of said shock wave pulse applicator within a biological body under medical examination upon receipt of first drive pulses having first energy levels, and also producing ultrasonic pulses used to obtain echo pulses reflected from said object near the focal point, as analog echo signals, upon receipt of second drive pulses having second energy levels lower than said first energy levels of said first drive pulses;

a phase-shift correcting circuit, said phase-shift correcting circuit correcting phase shifts contained in said analog echo signals reflected from the object near the focal point by making respective phases of said echo signals coincident with each other as to a time domain of said analog echo signals, thereby obtaining a phase-corrected echo signal;

a peak detector, said peak detector detecting a peak value of said phase-corrected echo signal; and

a controller, said controller controlling said shock wave pulse applicator based on said peak value of the phase-corrected echo signal.

5,381,793

Patent Not Issued For This Number

5,381,794

ULTRASONIC PROBE APPARATUS

Chuwa Tei, 25-3, Sakuragaoka 8-chome, Kagoshima-shi, Kagoshima-ken 890; Takashi Hosokawa, Mitaka; Tomoyuki Kato, Mitaka; Wataru Takekawa, Mitaka; Hisao Ito, Mitaka, and Yoshihiro Yoshikawa, Mitaka, all of Japan, assignors to Aloka Co., Ltd. and Chuwa Tei, Japan

Filed Jan. 21, 1993, Ser. No. 7,346
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.03 **25 Claims**

1. An ultrasonic probe apparatus comprising:

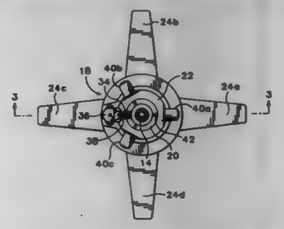
an ultrasonic probe provided with a phased array transducer for transmitting and receiving ultrasonic waves;

means for supporting said ultrasonic probe rotatably and pivotally; and

means for holding said supporting means which supports said ultrasonic probe on a body surface of an object to be examined in such a manner that ultrasonic beams transmitted from the transducer of the probe are directed to a region in the body to be diagnosed,

said holding means including a plurality of elongated holding legs coupled to said supporting means so as to extend therefrom radially and outwardly with respect to a rotation axis of the probe and adapted to maintain direct contact with the body surface,

said holding legs being adapted to be freely deformable according to a profile of the object to be examined and further retainable in the deformed state, and said holding



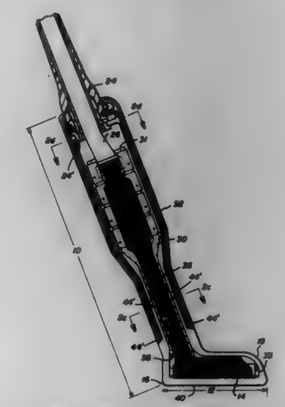
legs adapted to be attached to the body surface with fixing means such as an adhesive tape so that said probe is held onto the body surface irrespective of the profile of the object to be examined, the ultrasonic beams from said probe directed to the region to be diagnosed by appropriately deforming the holding legs to meet with the profile of the object to be examined.

5,381,795

INTRAOPERATIVE ULTRASOUND PROBE

Timothy F. Nordgren, Bothell; Deborah K. Imling, Bellevue; Joseph L. Ungari, Everett; Donald G. Killam, and Ronald E. McKeighen, both of Woodinville, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Nov. 19, 1993, Ser. No. 155,447
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—663.01 **8 Claims**



1. An intraoperative ultrasonic transducer probe comprising:

a patient-contacting section containing a multielement ultrasonic transducer opposing a patient-contacting surface of the probe, said patient-contacting section having a longitudinal axis aligned with the longitudinal axis of said ultrasonic transducer; and

a handle section suitable for being held by a physician during use of the probe, said handle section having a longitudinal axis and including means for connecting said probe to an ultrasonic diagnostic system, said handle section being attached to said patient-contacting section at one end of said handle section and at a point on said patient-contacting section which is offset from the center of said patient contacting section, wherein the angle between said longitudinal axis of said patient-contacting section and said longitudinal axis of said handle section is an obtuse angle; and

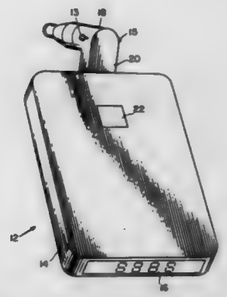
an insulating material, located between said multielement ultrasonic transducer and said patient-contacting surface of the probe, and comprising means for producing a spatial offset between the surface of said multielement transducer and the patient-contacting surface of said probe for focusing said multielement transducer at the surface of tissue material in contact with said patient-contacting surface.

5,381,796

EAR THERMOMETER RADIATION DETECTOR

Francesco Pompei, Boston, Mass., assignor to Exergen Corporation, Newton, Mass.

Filed May 22, 1992, Ser. No. 889,052
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—664 **33 Claims**



1. A temperature detector comprising:

an extension increasing non-linearly in diameter along a portion of its length from a distal end of the extension to form a rounded distal tip, the extension being adapted to be inserted into an outer ear such that the rounded distal tip is disposed adjacent to an ear canal opening, the rounded tip having a substantially spherical shape with a radius within the range of 5–10 mm to a diameter adjacent a distal end of the extension such that the extension is substantially incapable of being inserted into an ear canal;

an infrared radiation sensor positioned in the detector for receiving radiation from the ear canal which passes through the distal end of the extension; and

an electronics unit for converting radiation received by the sensor to temperature.

5,381,797

PULSE DIAGNOSTIC DEVICE AND METHOD OF MEASURING A PULSE WAVE USING THIS DEVICE

Song C. Pak, Snegovaya st., 125-724; Vladimir V. Goltcov, Internationalnaya st., 63-9, both of Vladivostok, 690000; Alexander Y. Kryssov, Plescheeva st., 1-63, Moscow, 127560; Igor I. Emelianov; Igor P. Emelianov, both of Kirova st., 7/3-79, Yakutsk, 677007, and Evgeny E. Kotekin, Melaikayte st., 135-486, Tyumen, 625045, all of Russian Federation

Filed Apr. 26, 1993, Ser. No. 53,609
Claims priority, application U.S.S.R., Mar. 26, 1993, 5029329
Int. Cl.[6] A61B *5/0245*
U.S. Cl. 128—687 **9 Claims**

1. A pulse diagnostic device, comprising:

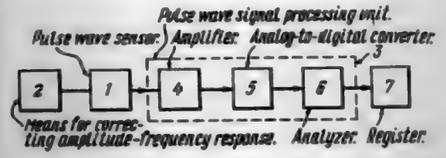
at least one pulse wave sensor, said at least one pulse wave sensor having an amplitude-frequency response and adapted to be mounted on the inside of the wrist in the Cyn, Gyan and Chi points on an arterial artery for generating a pulse wave signal;

means for correcting the amplitude-frequency response of said pulse wave sensor to obtain a pulse wave signal of a prescribed shape containing a set of characteristic half-waves;

a pulse wave signal processing unit coupled to the pulse wave sensor, said pulse wave signal processing unit processing the set of characteristic half-waves, said pulse wave signal processing unit incorporating:

an amplifier, having an input serving as said input of said pulse wave signal processing unit, and an output;

an analog-to-digital converter, connected to said output of said amplifier;



an analyzer of the pulse wave signal shape, said analyzer comparing amplitudinal and temporal relationships between the characteristic half-waves, said analyzer having an input, connected to said output of said analog-to-digital converter, and having an output serving as said output of said pulse wave signal processing unit; and

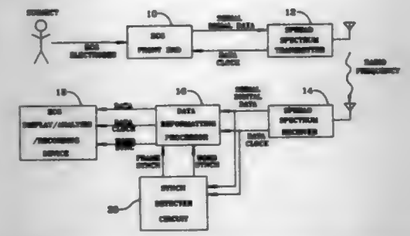
a register, having a first input connected to said output of said pulse wave signal processing unit, said register registering the set of characteristic half-waves.

5,381,798

SPREAD SPECTRUM TELEMETRY OF PHYSIOLOGICAL SIGNALS

Fremont W. Barrows, Woodinville, Wash., assignor to Quinton Instrument Company, Bothell, Wash.

Filed Nov. 2, 1993, Ser. No. 146,260
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—696 **20 Claims**



1. A system for the transmission of physiological signals from a patient to a data receiving device comprising;

a physiological data acquisition system for the detection of the desired physiological data from the patient and for processing an analog signal corresponding thereto;

an analog to digital conversion device operatively associated with said acquisition system for converting said analog signals corresponding to said physiological data to a serial digital data stream;

a spread spectrum signal transmission device which combines said serial digital data stream with a digital code sequence to form a combined transmission signal which is transmitted over a wide frequency bandwidth;

a spread spectrum signal receiving device which receives said combined transmission signal;

a data signal demodulation device for separating said serial digital data stream from said digital code sequence;

a data reformatting processor for the receipt and processing of said serial digital data stream from said demodulation device; and

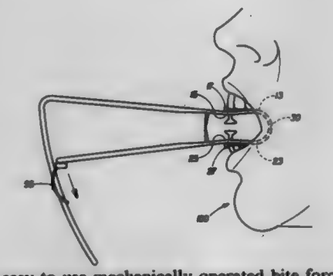
a physiological data display, recording and/or analysis device for the receipt of the output from said reformatting processor.

5,381,799

INEXPENSIVE AND EASY TO USE MECHANICALLY OPERATED BITE FORCE GAUGE

Peter W. Hamilton, Cincinnati, Ohio, and Gabriele B. Norado, Brookville, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 14, 1994, Ser. No. 181,941
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—777 **7 Claims**



1. An easy to use mechanically operated bite force gauge, said bite force gauge comprising:

(a) first and second opposing beams, each of said beams extending along a longitudinal axis between back and front ends, said beams being joined together by a back support column, adjacent their back ends, and by a bending support column located between back support column and said front ends;

(b) said bending support column thereby defining on each beam a yielding member located between said two support columns, and an extension member located between said bending support column and said front end, whereby when opposing forces are applied to said yielding members by a patient's teeth so that said two yielding members move toward each other, said extension members will move away from each other; and

(c) a force detector to measure the amount of said force being applied to said yielding members by measuring the distance said extension members move away from each other when said opposing forces are applied.

5,381,800

METHOD FOR TESTING FOR ESOPHAGITIS

Jean P. Angelchik, 522 W. Northview, Phoenix, Ariz. 85021

Filed Mar. 12, 1992, Ser. No. 850,985
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—780 **7 Claims**

1. A method of administering a test to a patient to detect the condition of esophagitis in the patient, including the steps of:

(a) providing a tube having

(i) at least one pliable wall,

(ii) first and second sealed ends,

(iii) a reservoir circumscribed by said wall and extending from said first to said second end, and

(iv) an acidic aqueous solution stored in said reservoir,

said tube being shaped and dimensioned such that

said first end can be inserted through an anatomical opening in the face of a patient and into the end of the esophagus adjacent the stomach,

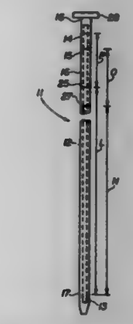
after said first end is unsealed and inserted in the esophagus and said second end is unsealed, the peristaltic action of the esophagus generates forces which act to draw fluid through said unsealed first end, and

after said first end is inserted into the end of the esophagus adjacent the stomach, said second end extends outwardly from the patient's face and can be grasped;

said first end being shaped and dimensioned such that

when said first end is unsealed and inserted in the esophagus and said second end is unsealed, said solution flows from said reservoir out through said unsealed first end under atmospheric pressure and the force of gravity, and

when said first end is unsealed and inserted in the esophagus and said second end remains sealed, said solution



remains in said tube and does not flow from said reservoir out through unsealed first end;

(b) unsealing said first end and inserting said first end of said tube through an anatomical opening in the patient's face and into the lower end of the patient's esophagus adjacent the stomach;

(c) unsealing said second end to permit atmospheric pressure, the force of gravity and peristaltic action to cause said solution to flow through said unsealed first end into the lower end of the patient's esophagus adjacent the stomach; and,

(d) monitoring the patient to determine if the patient experiences chest pain or other symptoms associated with esophagitis.

5,381,801

ELECTROMECHANICAL TACTILE STIMULATION DEVICE WORN ON A BELT FOR THE PREVENTION OF SNORING

Jerry M. McShane, 2313 Killarney, Deer Park, Tex. 77536, and David W. Spinks, 6842 Cedar Lawn Cir., Pasadena, Tex. 77505

Filed Aug. 17, 1993, Ser. No. 107,305
Int. Cl.[6] A61F *5/56, 5/37*; A41F *9/00*; G08B *23/00*
U.S. Cl. 128—848 **3 Claims**

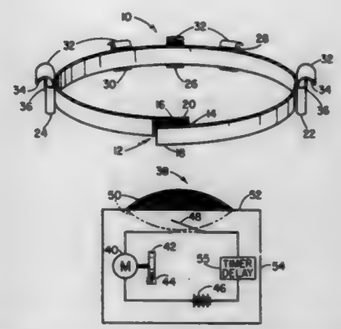
1. An apparatus for the prevention of snoring by a user of said apparatus, comprising:

a belt having first and second ends with cooperating frontal closure means thereon, a left dorsal portion, a right dorsal portion, a medial dorsal portion, a left lateral portion and a right lateral portion, and plural pockets installed along said belt, wherein said left dorsal portion, said right dorsal portion, said medial dorsal portion, said left lateral portion and said right lateral portion each includes at least one of said pockets, whereby said belt is worn about a torso of a user;

at least one tactile stimulation device, wherein said at least one tactile stimulation device is installed in at least one of said dorsal pockets, and in at least one of said lateral pockets;

said tactile stimulation device includes a battery powered electromechanical device having a motor driving an eccentrically balanced wheel and activated by a pressure sensitive switch when said pressure sensitive switch is located between the underlying surface and the torso of the user, whereby

said eccentrically balanced wheel produces a vibration when said motor is activated by means of said pressure sensitive switch;



whereby when said tactile stimulation device is between the user and an underlying surface, said tactile stimulation device provides tactile stimulation to the user, whereby the user changes sleeping positions in response to the tactile stimulation.

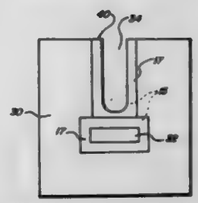
5,381,802

SHIELD FOR PREVENTING CAUTERY BURNS

Ted H. Schwartzenfeld, 4855 Rolling Ridge Rd., West Bloomfield, Mich. 48323

Filed Jun. 7, 1993, Ser. No. 73,134
Int. Cl.[6] A61F *11/00*; A61B *19/00, 19/08*
U.S. Cl. 128—857 **7 Claims**





1. A drapery shield for preventing cautery burns to that area of a patient, said shield comprising:

a first layer of a fire-retardant material;

an underdrape comprising a non-porous material;

a first opening is provided in the shield to enable a patient to breath therethrough when placed on the face of a user;

said first opening being in the form of a slot extending from a periphery of said shield sized to receive a nose of a patient;

a second opening spaced axially aligned with and laterally spaced below said first opening opposite the periphery and positioned to provide access through a mouth of said patient;

an adhesive positioned about said first and second openings

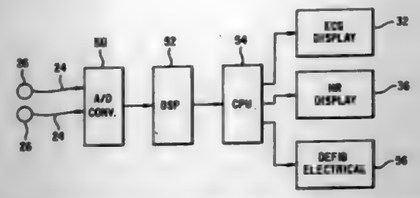
for removably adhering the shield to said patient about his nose and mouth.

5,381,803

QRS DETECTOR FOR DEFIBRILLATOR/MONITOR

Earl C. Herleikson, Groton, Mass., and James M. Lindauer, San Francisco, Calif., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Mar. 12, 1993, Ser. No. 31,732
Int. Cl.[6] A61B *5/0156*
U.S. Cl. 128—708 **5 Claims**



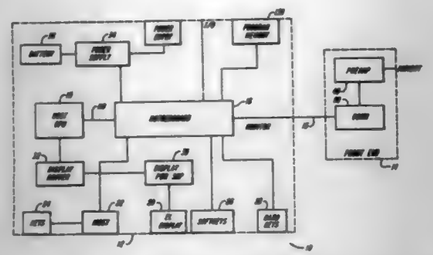
1. A method for detecting QRS complexes in an ECG waveform, comprising the steps of:
acquiring the ECG waveform;
detecting activity from the ECG waveform;
detecting a noise level from the ECG waveform;
detecting a peak in activity when the activity is greater than the noise level;
waiting a length of time shorter than an average R to R interval of the ECG waveform; and
confirming said peak signifies a QRS complex if no other peaks having an amplitude greater than said noise level are detected during said length of time.

5,381,804

MONITOR AND METHOD FOR ACQUIRING AND PROCESSING ELECTRICAL SIGNALS RELATING TO BODILY FUNCTIONS

John R. Shambroom, Arlington, Mass., assignor to Aspect Medical Systems, Inc., Framingham, Mass.

Division of Ser. No. 961,525, Oct. 15, 1992. This application Oct. 14, 1993, Ser. No. 135,801
Int. Cl.[6] A61B *5/0476*
U.S. Cl. 128—731 **5 Claims**



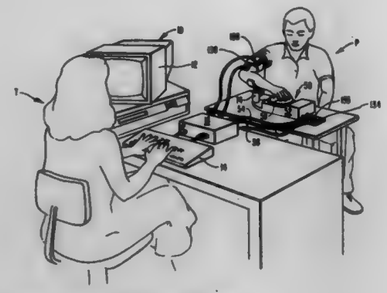
1. A monitor for receiving electrical signals from a living body and processing such signals to obtain information relating to a bodily function or organ, said monitor comprising
a power supply located in a housing of said monitor;
means for acquiring electrical signals through one or more electrodes connected to the body;
means for transmitting both data and power over said same means for transmitting between said housing for said power supply and said means for acquiring electrical signals.

5,381,805

CUTANEOUS TESTING DEVICE FOR DETERMINING NERVOUS SYSTEM FUNCTION

Robert P. Tuckett; Kenneth W. Horch; John H. Fisher, all of Salt Lake City, and Barry L. Evans, Murray, all of Utah, assignors to Topical Testing, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 713,397, Jun. 10, 1991, which is a continuation-in-part of Ser. No. 469,280, Jan. 24, 1990, Pat. No. 5,022,407. This application Sep. 9, 1992, Ser. No. 943,438
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—739 **22 Claims**



1. A testing module comprising:
a patient cutaneous testing apparatus for performing a cutaneous test;
a hemispherical dome having an exterior and an interior, said dome configured such that said testing apparatus can substantially reside within the interior of said dome and such that a part of a patient's anatomy to be tested can rest over the exterior of the dome during a cutaneous testing procedure, allowing the patient to maintain a relatively relaxed posture during the testing procedure; and
means for rotating said dome,
wherein said testing apparatus is positioned during operation to administer a predetermined patient stimulus at or beyond the exterior of said dome, and wherein said testing apparatus is capable of being accurately and reproducibly positioned with respect to the part of the patient's anatomy to be tested.

5,381,806

METHOD OF DELIVERING PRESSURE-INDUCED SENSATIONS

Sidney Weinstein, Lewisboro, N.Y.; Curt Weinstein, Danbury, and Ronald Drozdenko, Woodbury, both of Conn., assignors to Neurocommunication Research Laboratories, Inc., Danbury, Conn.

Division of Ser. No. 978,109, Nov. 18, 1992, Pat. No. 5,316,011, which is a continuation-in-part of Ser. No. 860,900, Mar. 31, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 166,206
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—744 **5 Claims**

1. A method of measuring an itch sensitivity of a skin surface of a subject patient, comprising:
contacting a unitarily formed elongated stimulating monofilament having a curved, textured stimulating tip at a free end thereof with said skin surface of said subject patient such that said stimulating tip contacts said skin surface; and
wherein each of a plurality of stimulating monofilaments of varying diameters is attached to one of a plurality of heads of a stimulating device, each of said plurality of heads being individually rotatable relative to one another into an operative position, and wherein said step of contacting a stimulating monofilament comprises:
rotating one of said plurality of heads into said operative position such that said stimulating monofilament attached thereto is individually operable; and

contacting said individually operable stimulating monofilament to said skin surface of said subject patient with increasing force until said individually operable stimulating monofilament bends at an acute angle to said skin surface;



dragging said individually operable stimulating monofilament across said skin surface over at least a given distance while said stimulating tip is in contact with said skin surface; and
recording a degree of itch rating of said subject patient responsive to a patient reaction to said step of dragging of said stimulating tip across said skin surface.

5,381,807

METHOD OF STRIPPING RESISTS FROM SUBSTRATES USING HYDROXYLAMINE AND ALKANOLAMINE

Wai M. Lee, Milpitas, Calif., assignor to EKC Technology, Inc., Hayward, Calif.

Division of Ser. No. 610,044, Nov. 5, 1990, Pat. No. 5,279,771. This application Oct. 28, 1993, Ser. No. 142,127
Int. Cl.[6] C23G *5/036*; B08B *7/00*; G03C *11/12*
U.S. Cl. 134—2 **14 Claims**

1. A method of removing a resist from a substrate comprising contacting a substrate having a resist coating present thereon with a composition consisting essentially of hydroxylamine and at least one alkanolamine which is miscible with said hydroxylamine in an amount sufficient and at a temperature and for a time sufficient to remove said resist from said substrate.

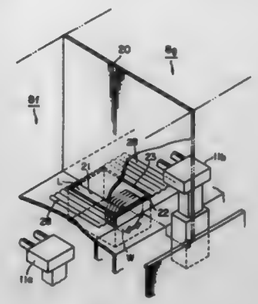
5,381,808

CLEANING TREATMENT APPARATUS

Yuji Kamikawa, Uto, Japan, assignor to Tokyo Electron Kabushiki Kaisha, Tokyo and Tokyo Electron Saga Kabushiki Kaisha, Saga, both of Japan

Filed Mar. 10, 1993, Ser. No. 28,807
Claims priority, application Japan, Mar. 12, 1992, 4-087516
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—61 **12 Claims**

1. A cleaning treatment apparatus having a plurality of treatment chambers and a plurality of treatment tanks containing a treatment liquid, wherein an object to be treated undergoes cleaning treatment by being immersed into treatment liquids in said treatment tanks, said apparatus comprising:
a separating wall provided between two neighboring treatment chambers so as to mutually separate said two treatment chambers, a communicating opening being provided at a lower edge of said separating wall in such a manner that said two treatment chambers communicate with one another therethrough; and
a movable treatment tank provided to move through said communicating opening between said two treatment chambers for housing an object to be treated, said movable treatment tank having an opening at a top portion thereof;
said movable treatment tank and said separating wall being formed such that, when said movable treatment tank is filled with a treatment liquid and moved through said



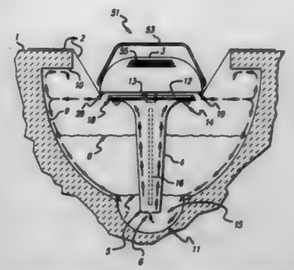
communicating opening, a lower edge of said separating wall contacts said treatment liquid contained in said movable treatment tank over an entire width of said opening, so that atmospheres in said treatment chambers are mutually isolated.

5,381,809

TOILET BOWL CLEANING APPARATUS

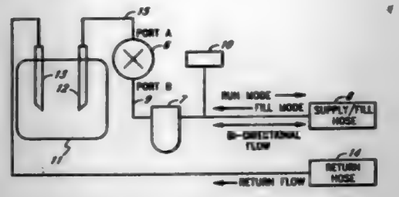
Kenneth B. Parker, Jr., 23516 Bell Bluff Truck Trail, Alpine, Calif. 91901

Filed May 26, 1993, Ser. No. 67,347
Int. Cl.[6] B08B *3/02, 9/08*
U.S. Cl. 134—113 **20 Claims**



1. A powered cleaning apparatus for cleaning an interior surface of a toilet bowl, said toilet bowl having a rim portion defining an upper opening of the bowl, and the bowl containing a cleaning fluid, the apparatus comprising: a recirculating pump having an inlet and an outlet, removably positioned in relation to the toilet bowl so that the inlet is disposed in the cleaning fluid, the pump operable to convey the cleaning fluid from its inlet and apply the cleaning fluid to the interior surface of the bowl through its outlet above a fluid surface defined by the cleaning fluid in the bowl; a cover enclosing the upper opening of the bowl; said cover being supported by said rim and said recirculating pump being carried by said cover.

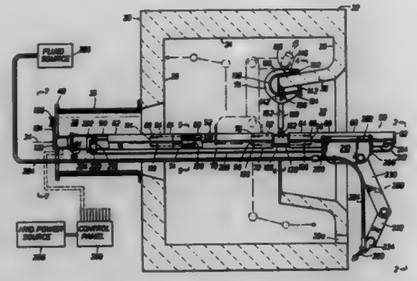
5,381,810
ELECTRONICALLY CONTROLLED CARBON-CLEANING SYSTEM FOR INTERNAL COMBUSTION ENGINES
Frederick A. Mosher, 3449 Summerset Cir., Costa Mesa, Calif. 92626
Filed Oct. 22, 1992, Ser. No. 965,151
Int. Cl.[6] B08B *9/02*
U.S. Cl. 134—56 R **15 Claims**



7. An electronically controlled carbon-cleaning system for internal combustion engines, comprising
- a pump for siphoning fuel from a container and for pumping fuel and cleaning solution to an internal combustion engine and through a filter,
- a motor coupled to said pump for driving said pump at various pumping speeds,
- a solution tank for holding fuel and cleaning solution,
- a solution tank level monitor in communication with said solution tank for monitoring the level of fluid in said solution tank,
- a feed tube in communication with said solution tank and coupled to said pump via a transfer hose for providing fluid to and from said solution tank,
- a supply/fill hose coupled to said pump for siphoning fuel from the container into said solution tank and for supplying fuel and cleaning solution to said internal combustion engine,
- an inlet tube in communication with said solution tank,
- a return hose coupled to said inlet tube for returning fuel and cleaning solution from said internal combustion engine to said solution tank,
- a power cable connectable to a power source and adaptable for supplying power to said engine cleaning system,
- an electronic control system for controlling the operation of said engine cleaning system comprising a processor for controlling the operation of said electronic control system and for storing a desired system pressure set point,
- said electronic control system further comprising a keypad and a display screen for selecting said desired system pressure set point,
- a pressure transducer in communication with said supply/fill hose for monitoring a fluid pressure in said supply/fill hose and for sending a pressure signal indicative of said fluid pressure to said processor, and
- a solid state motor control coupled between said processor and said motor for the processor-controlled modification of the power being supplied to said motor for modifying the pumping speed of said pump in a manner which will modify said supply/fill hose fluid pressure in said engine cleaning system to conform with said desired system pressure set point.

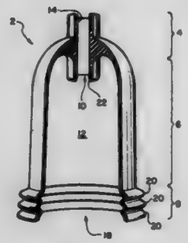
5,381,811
FURNACE CLEANING APPARATUS
Thomas B. Bolsture, Baytown, Tex., assignor to C.H. Holst Corp., New York, N.Y.
Filed Mar. 2, 1994, Ser. No. 204,583
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—167 R **17 Claims**

1. An apparatus for cleaning a cyclone furnace with a fluid from a fluid source, the cyclone furnace including a sidewall, a first end wall having an inlet opening, a second end wall having an outlet opening with the outlet opening defined by an outlet wall extending inwardly from the second end wall, the apparatus comprising:
- a beam assembly capable of being pivotably mounted to the cyclone furnace;
- means for oscillating said beam assembly;
- a trolley movably mounted to said beam assembly;
- means for moving said trolley relative to said beam assembly;



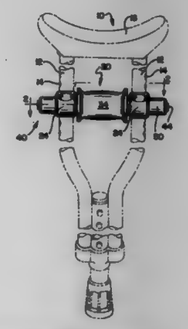
- an articulated arm assembly mounted to said trolley;
- means for pivoting said articulated arm assembly relative to said trolley;
- nozzle means connected to said articulated arm assembly; and
- fluid conduit means for conducting flujd from the fluid source to the cyclone furnace, said fluid conduit means is connected to said nozzle means.

5,381,812
RAIN WATER COLLECTING DEVICE FOR UMBRELLAS
Jun Lee, 58-27 146th St., Flushing, N.Y. 11355
Filed May 21, 1993, Ser. No. 65,433
Int. Cl.[6] A45B *25/28*
U.S. Cl. 135—48 **16 Claims**



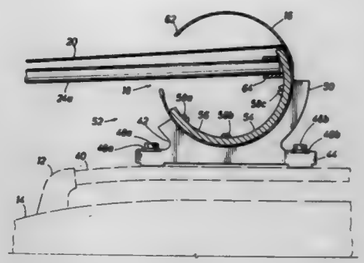
1. A water collecting device for use with an umbrella having an umbrella tip, said rain water collecting device comprising:
- a reservoir having a first open end and a second open end, the first open end has an opening with an inner perimeter which is substantially equal to an outer perimeter of the umbrella tip, and the second open end has an opening with a perimeter which is greater than the inner perimeter of the opening of the first open end, said reservoir including a rain water collection region for collecting rain water and a rain water retention region for retaining the rain water within the rain water collection region when the umbrella is other than opened and upright;
- a ferrule formed about the opening of the first open end, said ferrule including an outer portion which extends out away from said reservoir and an inner portion which extends into said reservoir, and where an inner most portion of the inner portion is flared out so as to facilitate insertion of the umbrella tip into said ferrule; and
- a plurality of flow barriers within the rain water retention region and about the second open end of said reservoir.

5,381,813
ADJUSTABLE HADN GRIP FOR ORTHOPEDIC CRUTCH
Zivko Miric, Northridge; Cuong Bui, Yorba Linda, and Stephen J. Eynon, Moorpark, all of Calif., assignors to Guardian Products, Inc., Arleta, Calif.
Continuation-in-part of Ser. No. 1,830, Jan. 8, 1993, Pat. No. 5,291,910, which is a continuation-in-part of Ser. No. 881,531, May 12, 1992, Pat. No. 5,299,589. This application Oct. 27, 1993, Ser. No. 144,183
Int. Cl.[6] A61H *3/02*
U.S. Cl. 135—72 **7 Claims**



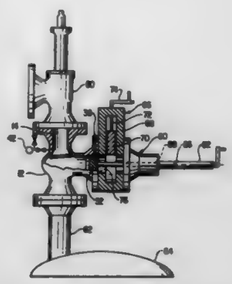
4. An orthopedic crutch comprising:
- a. a pair of generally parallel, vertical tubular supports rigidly attached to one another, each of the tubular supports having a plurality of spaced apertures along a longitudinal surface;
- b. an arm support attached to the upper ends of the vertical supports;
- c. a hand grip comprising a tubular sleeve surrounding each vertical support and slidable thereover and a bracket extending between the vertical supports rigidly connecting said sleeves, each sleeve having an aperture alignable with apertures in a vertical support;
- d. an end portion extending from the sleeve;
- e. an end cap surrounding the end portion and retaining the pin; and,
- f. a locking member comprising a pin biased inwardly by a spring through the aligned apertures in the sleeve and the vertical support, the pin being movable into and out of the vertical support, the locking member firmly fixing the hand grip to the vertical supports when the pin is extended through the aligned apertures in the sleeve and the vertical support with the hand grip being vertically adjustable by moving the pin out of said vertical support and sliding the sleeves along the vertical supports to enable the hand grip to be placed in position at an adjustable distance from the arm support and thereafter releasing the pin into the closest pair of aligned apertures in the sleeves and vertical supports to fix the hand grip in the adjusted position.

5,381,814
CANOPY FOR MOUNTING ON A VEHICLE LUGGAGE RACK
Steven L. Brandon, 15530 Ella Blvd., Apt. 1422, Houston, Tex. 77090
Filed Dec. 1, 1992, Ser. No. 983,639
Int. Cl.[6] E04H *15/06*
U.S. Cl. 135—88.07 **5 Claims**



1. An extendable shelter to be mounted on a luggage rack of a vehicle, comprising:
- a mounting bracket, including:
  - a base, and
  - a cradle positioned above said base, wherein said cradle includes a mounting surface;
- fastening means for fastening said base to the luggage rack;
- a carriage mounted on said mounting surface of said cradle, said carriage including a half-cylinder having an outer surface and an inner surface, wherein said outer surface abuts said mounting surface;
- an enclosure enclosing said carriage and connected to said carriage, wherein said enclosure includes access means for accessing the inside of said enclosure; and
- an extendable canopy having an edge secured within said enclosure, said canopy is extendable through said access means of said enclosure so that said edge of said canopy is retained within said enclosure when said canopy is extended.

5,381,815
METHOD FOR ISOLATING A RELIEF VALVE
Leslie J. Okonek, Bellingham, Wash., and John W. Wegner, Montebello, Calif., assignors to Atlantic Richfield Company, Los Angeles and Koppl Company Incorporated, Montebello, both of Calif.
Filed Apr. 15, 1993, Ser. No. 48,089
Int. Cl.[6] F16K *43/00*
U.S. Cl. 137—15 **8 Claims**



1. A method for isolating a relief valve, said relief valve being positioned in fluid communication with a pressurized vessel to open when a pre-set pressure condition in said pres-

surized vessel is exceeded to release said pressure within said pressurized vessel, said method consisting essentially of:

a) positioning a gate valve body between and in fluid communication with said relief valve and said pressurized vessel, said gate valve body including a plug and a cap positioned to sealingly close an opening in said gate valve body generally covered by a gate valve bonnet cover and yoke;

b) removing said cap;

c) sealingly positioning a pass-through valve over said opening in said gate valve so that when said pass-through valve is opened, a passageway through said pass-through valve is generally co-axial with said opening in said gate valve;

d) sealingly positioning a removable yoke over said passageway through said pass-through valve, said removable yoke including a stem and being adapted to movement of said stem through said removable yoke;

e) opening said pass-through valve;

f) moving said stem into engagement with said plug and removing said plug from said opening in said gate valve body; and

g) positioning a valve gate on said stem and moving said valve gate into closing engagement with valve seats positioned in said gate valve body to isolate said relief valve to thereby permit access to said relief valve when said relief valve is not in service.

5,381,816

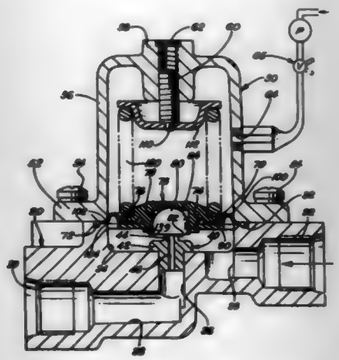
PRESSURE REGULATOR

Daniel E. Alsobrooks; Steven P. Flakbeiner, both of Bay City, and Daryl O. Codling, Cass City, all of Mich., assignors to Orbital Walbro Corporation, Cass City, Mich.

Division of Ser. No. 938,383, Aug. 31, 1992, Pat. No. 5,279,327. This application Oct. 29, 1993, Ser. No. 145,970

Int. Cl.[6] F16K *27/02, 1/36*

U.S. Cl. 137—15 **5 Claims**



4. A method of making a sub-assembly for a spring-regulated pressure regulator, said sub-assembly including a diaphragm, a top plate on one side of the diaphragm, a valve ball in a recess in said top plate, and a bottom plate on the other side of said diaphragm, said top plate having a neck portion surrounding said recess and projecting through a central hole in said bottom plate, said neck portion having an outer rim with separated concentric skirts, which comprises a one-step assembly including:

(a) providing a fixture to support said upper plate in inverted position,

(b) placing the valve ball in said recess,

(c) placing the diaphragm on the upper plate,

(d) placing said bottom plate on said diaphragm and said upper plate around said neck portion, and

(e) moving a forming die into the annular recess between said skirts to move the inner skirt around the periphery of the ball to retain the ball in the recess, and to move the outer skirt over the margin of the central hole in the bottom plate to affix the bottom plate to the diaphragm and the upper plate.

5,381,817

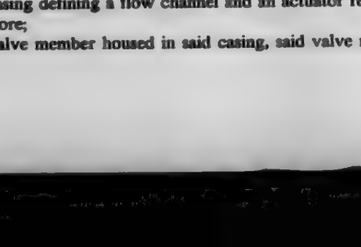
MECHANICAL FLEXURE FOR MOTION AMPLIFICATION AND TRANSDUCER WITH SAME

George W. Gassman; Warren G. Buchwald, both of Marshalltown; Douglas P. Gethmann, Gladbrook, all of Iowa, and Nate F. Scarpelli, Glen Ellyn, Ill., assignors to Fisher Controls Incorporated, Inc., Clayton, Mo.

Division of Ser. No. 885,534, May 19, 1992, Pat. No. 5,265,637, which is a division of Ser. No. 723,698, Jun. 26, 1991, Pat. No. 5,163,461, which is a continuation of Ser. No. 554,339, Jul. 19, 1990, abandoned. This application Sep. 27, 1993, Ser. No. 127,196

Int. Cl.[6] G05D *16/20*

U.S. Cl. 137—82 **2 Claims**



1. An electromechanical transducer providing a fluid output pressure proportional to an electrical input signal comprising:

respective fluid pressure input and output ports and an interconnecting chamber;

nozzle means including a nozzle with (1) a control nozzle end, and (2) an opposite nozzle inlet communicating with said interconnecting chamber between said respective fluid pressure input and output ports;

a U-shaped flexure element having a closed end and two legs extending therefrom with the closed end immediately above the control nozzle end;

movable means coupled to one of the U-shaped flexure element legs for moving said one leg with respect to the other leg and enabling the U-shaped flexure element to selectively bend towards or away from said control nozzle end, said movable means including electrical drive means for responding to said electrical input signal and actuating said movable means;

said movable means including a magnetostrictive element and a magnetic core connected intermediate the flexure element and the magnetostrictive element;

said bending of the U-shaped flexure element towards or away from said control nozzle end changes the fluid output pressure from said fluid output port responsive to changes in said electrical input signal.

5,381,818

SHUT-OFF VALVE AND SEALING RING

Gerhard Neudzig, Gaaden, and Alfred Taus, Guntramsdorf, both of Austria, assignors to Klinger AG, Zug, Switzerland

Filed Dec. 10, 1993, Ser. No. 165,111

Claims priority, application Germany, Dec. 12, 1992, 4241963; Aug. 23, 1993, 9312956[U]

Int. Cl.[6] F16K *3/24*

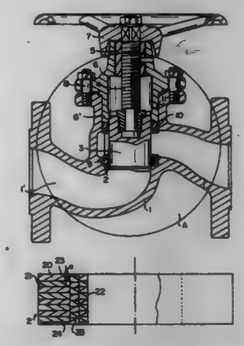
U.S. Cl. 137—242 **9 Claims**

1. A shut-off valve comprising:

a casing defining a flow channel and an actuator receiving bore;

a valve member housed in said casing, said valve member being axially displaceable relative to said bore for closing said flow channel; and

first and second seal rings disposed within said casing, said first seal ring cooperating with said valve member to seal said flow channel, said second seal ring cooperating with said valve member to seal said bore, said first and second seal rings each having top, bottom, inside and outside surfaces, said first and second seal rings each comprising



radially extending metal lamellae arranged between soft material lamellae, each of said lamellae having a top and bottom surface and a thickness, said soft material lamellae having a non-homogenous structure, said metal lamellae having, at least in the region adjacent said inner surface, axial deformations which establish a positive mechanical connection with soft material lamellae, whereby soft material sliding layers in said lamellae are restricted to at most one third of said soft material lamellae thickness.

5,381,819

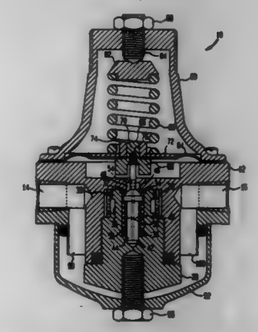
PRESSURE-REDUCING REGULATOR FOR COMPRESSED NATURAL GAS

Jeffrey B. Gotthelf, Charleston, S.C., assignor to ITT Corporation, New York, N.Y.

Division of Ser. No. 16,376, Feb. 11, 1993, Pat. No. 5,285,810. This application Oct. 26, 1993, Ser. No. 143,010

Int. Cl.[6] G05D *16/02*

U.S. Cl. 137—340 **4 Claims**



1. A pressure-reducing regulator for compressed natural gas, comprising in combination:

a regulator body;

said body having (a) an inner chamber for receiving high-pressure gas therein, and (b) an outer chamber circular recess formed therein; and

a diaphragm fixed in said body; wherein

said diaphragm with said recess comprises an outer chamber;

porting means for admitting gas into said body;

porting means for discharging gas from said body;

valving means, movably disposed in said body, for controlling fluid flow between said porting means;

said valving means includes a valving element having a stem portion, a tapered-nose head portion and a shank portion with a bore formed through said element connecting said inner and outer chambers;

said stem being coupled to said diaphragm and said body have a channel and a cylindrical recess formed therein for accommodating respectively, said stem and shank portions;

said body further including a valve seat having an orifice formed therein for passage of said stem portion and sealing closure with said tapered-nose head portion of said element;

means formed in said body for inhibiting unwarranted oscillation of said diaphragm;

said body further has means for inhibiting an icing of said regulator;

said icing inhibiting means comprising means for enveloping at least said inner chamber and said valving means with a heating medium; and

said enveloping means comprises means for containing a heating medium therein, and means for admitting and discharging such heating medium thereto and therefrom.

5,381,820

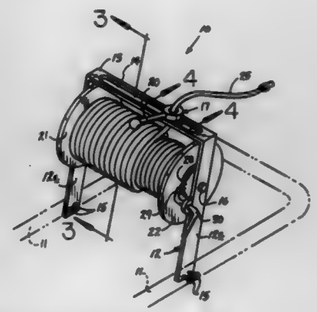
HOSE REEL APPARATUS

William R. Chandler, Rt. 2, Box 167-B, Baldwyn, Miss. 38824

Filed Apr. 4, 1994, Ser. No. 222,417

Int. Cl.[6] B65H *75/34*

U.S. Cl. 137—355.23 **4 Claims**



1. A hose reel apparatus, comprising,

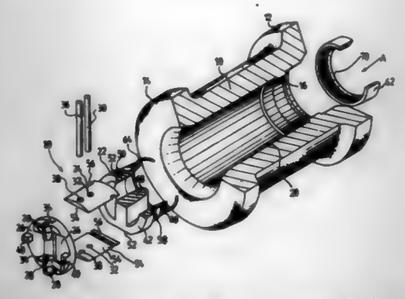
a U-shaped mounting bracket having spaced bracket legs, and

a connecting plate extending fixedly between the bracket legs, and

an elongate slot directed through the connecting plate, with a guide sleeve slidably mounted along the slot, with the guide sleeve having an annular groove receiving the connecting plate coextensively of the slot, with a handle mounted to the guide sleeve to direct the guide sleeve along the slot, and

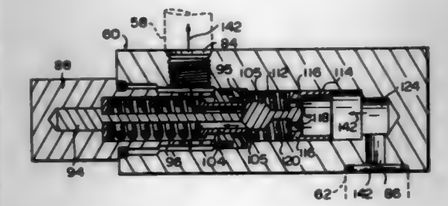
a reel housing mounted between the bracket legs, the reel housing having a first reel plate adjacent one of said bracket legs, and a second reel plate adjacent a further of said bracket legs, with the reel housing extending coextensively between the first reel plate and the second reel plate, and a pneumatic air hose wound about the reel housing, with the guide sleeve having a guide bore, with the pneumatic air hose directed through the guide bore.

5,381,821
FLUID CHECK VALVE WITH REPLACEABLE FLAPPER ASSEMBLY
Robert W. Muddiman, 487 Speers Road, Oakville, Ontario, Canada L6K 2G4
Continuation-in-part of Ser. No. 891,199, Jun. 1, 1992, Pat. No. 5,246,032, and Ser. No. 19,832, Feb. 19, 1993, Pat. No. 5,318,063. This application Sep. 16, 1993, Ser. No. 121,432
Claims priority, application Canada, Feb. 10, 1992, 2060816
Int. Cl.[6] F16K *15/03*
U.S. Cl. 137—454.2 **6 Claims**



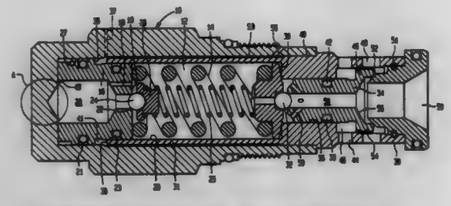
1. A replaceable flapper and keeper assembly for insertion into and removal from a fluid check valve comprising:
a pair of substantially semi-circular flappers having hinge brackets thereon;
a pair of keepers positioned at opposite ends of said hinge brackets and having aligned holes therein, and including means to enable mounting adjacent to a valve seat; and
a hinge pin passing through the keepers and the flapper hinge brackets securing the flappers in hinged relationship;
the holes in the flapper hinge brackets being elongated in a direction normal to the plane of the flappers when in closed position; the assembled flappers and keepers slidable into a bore of a valve.

5,381,822
RELIEF VALVE WITH HYDRAULIC FUSE
Norman B. Christensen, Sarasota, Fla., assignor to Dana Corporation, Toledo, Ohio
Filed Nov. 26, 1993, Ser. No. 157,550
Int. Cl.[6] F16K *17/30*
U.S. Cl. 137—460 **13 Claims**



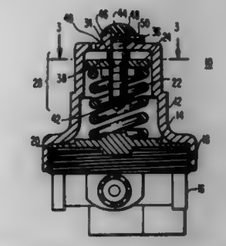
1. A relief valve useful in a hydraulic system, the relief valve comprising:
a valve seat having a:
a first spring having a first spring force for urging the valve seat in a first direction;
means for urging the valve seat in a second direction opposite the first direction upon the application of a first fluid pressure having a force greater than the first spring force;
a second spring having a second spring force less than the first spring force;
a fuse engaged by the second spring and being urged by the second spring force away from the valve seat;
means associated with the fuse for urging the fuse toward the valve seat upon application of a second fluid pressure having a force greater than the second spring force; and
means for disengaging the valve seat and fuse to allow passage of hydraulic fluid through the valve upon application of fluid pressure greater than the first pressure to the valve seat.

5,381,823
HYDRAULIC PRESSURE CONTROL VALVE
Ernest A. DiBartolo, Sarasota, Fla., assignor to Sun Hydraulics, Sarasota, Fla.
Filed Feb. 14, 1994, Ser. No. 194,937
Int. Cl.[6] F16K *17/06*
U.S. Cl. 137—494 **11 Claims**



1. A differential piston relief valve comprising:
a body having a longitudinally extending bore therein;
said bore having first and second ends, said first end being closed and first and second piston cylinders adjacent one another, said first piston cylinder being larger in diameter than said second piston cylinder to define a first net area, said first piston cylinder being positioned adjacent said closed first end;
a biasing piston slidably supported in said bore for movement between said first end of said bore and a stop means in said bore;
said biasing piston having a first outside diameter forming an interface with said first piston cylinder and a second outside diameter forming an interface with said second piston cylinder;
a body extension secured to said body at said second end of said bore;
a valve seat secured to said body extension;
said valve seat defining a valve inlet port;
a radially extending passage through said body extension adjacent to said valve seat defining a valve outlet port;
a spring chamber in said body defined by said bore, said first end of said bore and said body extension;
said body extension having a longitudinal bore therethrough forming a third piston cylinder;
a relief piston slidably supported in said third piston cylinder forming an interface therewith;
said relief piston having a head extending radially outwardly from said relief piston, whereby said relief piston has a smaller outside diameter than said piston head to define a second net area;
said piston head having a longitudinally extending annular extension thereon;
an inner edge on said piston head annular extension;
said inner edge forming a seal with said valve seat when said inner edge abuts said valve seat;
a spring guide in said spring chamber abutting said relief piston;
a coil spring axially supported in said spring chamber for transmitting spring force against spring guide and said biasing piston, whereby said spring tends to close said valve;
a passage extending through said relief piston between said spring chamber and said inlet port;
said biasing piston having an orifice therethrough extending from said spring chamber to said first end of said bore, said first net area being greater than said second net area, whereby said differential piston moves toward said stop means as inlet pressure increases.

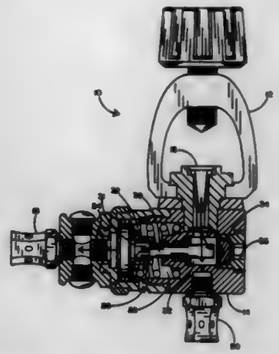
5,381,824
REGULATOR
Yushan Wang, Howell, and Wilson Orozco, Freehold, both of N.J., assignors to Standard Keil Industries, Inc., Allenwood, N.J.
Filed Sep. 2, 1993, Ser. No. 116,004
Int. Cl.[6] G05D *16/02*
U.S. Cl. 137—505 **1 Claim**



1. A gas regulator, comprising: a housing including a top wall having a bore extending therethrough, said top wall including an upwardly-extending collar portion surrounding said bore, said collar portion having a transverse threaded bore; a gas pressure control diaphragm located within said housing; a shaft within said housing and having an intermediate ring portion dividing said shaft into an upper non-threaded portion and a lower, threaded portion, the upper portion of said shaft extending into said bore and terminating below a top surface of said collar portion; a setscrew mounted in said transverse threaded bore of said collar portion for engagement with said shaft upper portion; a plug having a cap portion dimensioned to cover said top wall bore and a depending portion dimensioned to frictionally engage said top wall bore; a threaded bushing mounted upon said threaded shaft portion for travel therealong; and a spring having a first end in contact with said diaphragm and a second end in contact with said bushing for providing operational bias for said diaphragm against the flow of a gas to be regulated through said regulator, the travel of said bushing varying the compression of said spring and the operational bias for said diaphragm, said ring of said shaft being biased by said spring into contact with a lower surface of said top wall to journal said shaft for rotation, the lower threaded portion of said shaft having a stop at a lower end thereof to prevent said bushing from becoming unthreaded from said shaft.

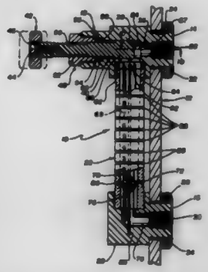
5,381,825
FIRST STAGE SCUBA REGULATOR
Dean R. Garraffa, Hungtington Beach, Calif., assignor to Under Sea Industries, Inc., Rancho Dominguez, Calif.
Continuation of Ser. No. 35,681, Mar. 23, 1993, abandoned. This application Dec. 20, 1993, Ser. No. 171,222
Int. Cl.[6] G05D *16/02*
U.S. Cl. 137—505.18 **3 Claims**

1. An improved first stage scuba regulator, the regulator of the type having a body having a high pressure chamber and an intermediate pressure chamber separated by a hollow piston having a large diameter end and a small diameter seating end interconnected by an elongated stem; and a plastic conical seat in the high pressure chamber, the piston separation from the seat allowing flow of air from the high pressure chamber to the intermediate pressure chamber through the piston and reseating of the piston in the seat stopping such flow of air;
the improvement comprising:
said stem having a smaller diameter within said high pressure chamber toward said large diameter end than the diameter at said seating end, creating a force imbalance on said stem



within said high pressure chamber, said force imbalance being proportional to the pressure in said high pressure chamber; and
wherein said seating end of said piston comprises a rounded seating surface and wherein said stem smaller diameter is smaller than the diameter of said seating end at said rounded seating surface.

5,381,826
FLUID FLOW CONTROLLER AND METER
Jeffrey S. Franz, Chanhassen, Minn., assignor to The Futurestar Corporation, Edina, Minn.
Filed Nov. 29, 1993, Ser. No. 159,038
Int. Cl.[6] F16K *37/00*
U.S. Cl. 137—557 **20 Claims**



1. A fluid flow controller and meter, comprising:
(a) a metering tube having a passage formed axially therethrough, and a slit-like orifice, having a length axially disposed, intersecting said passage along the length thereof, a portion of said passage on one side of said orifice defining a flow duct, and a portion of said passage on a second side of said orifice defining a valve-receiving duct;
(b) a conduit having a bore formed axially therethrough, said conduit bore being in fluid communication with said metering tube passage flow duct through said orifice when said orifice is unobstructed, said conduit including means for measuring a volumetric flow of a fluid through said fluid flow controller and meter; and
(c) a valve member having a generally planar forward end,

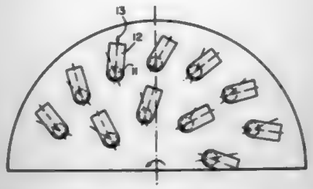
substantially orthogonal to an axis of said passage, disposed in said passage for selective positioning axially therealong and retraction across said orifice in a direction away from said flow duct to regulate fluid flow through said bore, wherein as said valve member is retracted increased fluid flow is permitted through said conduit bore as a greater proportion of said orifice is opened to said flow duct.

5,381,827

GAS DISTRIBUTOR FOR USE IN GAS PHASE POLYMERIZATION APPARATUS

Hiroyuki Koura; Yoshizumi Sasaki, both of Ichihara; Kazuki Wakamatsu, Sodegaura, and Kazuyuki Takemura, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 26, 1993, Ser. No. 157,294
Claims priority, application Japan, Nov. 30, 1992, 4-319698
Int. Cl.[6] B01J *8/20*; C08F *2/34*
U.S. Cl. 137—561 A **6 Claims**



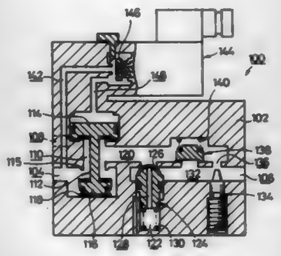
1. A gas distributor for use in a gas phase polymerization apparatus having an agitator in a fluidized bed polymerization reactor, the gas distributor being characterized in that the distributor has holes each covered with a cap from above, the cap having an opening oriented in a substantially horizontal direction at an angle of about 90 to about 135 deg with, and outwardly of, a tangent to a circle centered about the center of the reactor.

5,381,828

SLOW STARTING VALVE

Yasuhisa Kimura, and Takehiko Miyaguchi, both of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1992, Ser. No. 861,381
Claims priority, application Japan, Apr. 9, 1991, 3-76582
Int. Cl.[6] F15B *13/043*
U.S. Cl. 137—596 **5 Claims**



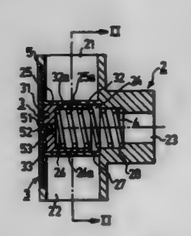
1. A slow starting valve comprising:
a block;
said block having an inlet port defined therein for introducing a fluid under pressure, an outlet port defined therein for discharging a fluid under pressure, and a passage providing communication between said inlet and outlet ports;
a first valve body disposed in said passage for selectively opening and closing said passage;
a second valve body disposed downstream of said first valve body with respect to said passage for selectively opening and closing said passage;
a needle valve disposed parallel to said second valve body between said passage and said outlet port for restricting the fluid under pressure discharged from said outlet port;
said second valve body having a passage defined therein and communicating from one end to the other end thereof, and first and second pressure-bearing surfaces on said one and other ends, respectively, said first pressure-bearing surface is wider than said second pressure-bearing surface; and
a check valve disposed parallel to said needle valve between said passage and said outlet port, said check valve being closeable to supply the fluid under pressure from said inlet port to said needle valve when the slow starting valve starts to operate;
wherein said first valve body, said second valve body, said needle valve and said check valve are provided in parallel and are all movable in the same direction.

5,381,829

FLUID MIXING DEVICE AND DEMAND VALVE USEFUL THEREWITH

Carmeli Adahan, Netivei Am 11, Ramot Gimmel, 97552 Jerusalem, Israel

Continuation of Ser. No. 926,623, Aug. 10, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 116,173
Int. Cl.[6] F16K *11/02*
U.S. Cl. 137—625.17 **16 Claims**



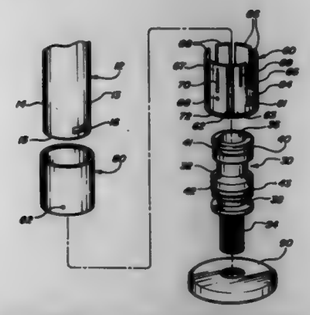
1. A fluid mixing device, comprising:
a housing having a plurality of inlets for a plurality of fluids to be mixed, an outlet for the mixed fluids, and a cylindrical chamber connecting said inlets to said outlet;
an opening from each of said inlets to said cylindrical chamber;
a valve member axially and rotatably displaceable within said cylindrical chamber;
said valve member including a cylindrical wall having one end open and communicating with said outlet, and an opposite end closed by an end wall facing a portion of said housing;
said cylindrical wall of the valve member being formed with slot means alignable with said plurality of inlets for presetting the ratio of inletted fluids to be outletted according to the rotated position of the valve member;
a spring disposed between said valve end wall and said housing and biasing said valve member to a closed position wherein said end wall is moved towards said portion of the housing which it faces, and said slot means is moved out of alignment with said plurality of inlets;
and a vent opening through said portion of the housing to a constant reference pressure;
said valve member being movable axially within said cylinder chamber automatically in response to the difference between said reference pressure and said outlet pressure whereby the valve member is effective to open and close all said inlets the same amount according to the pressure at said outlet alone and independently of the pressure at any of said inlets.

5,381,830

SPOUT MOUNTING SYSTEM

James E. Niemann, Noblesville, and Anthony G. Spangler, Greensburg, both of Ind., assignors to Masco Corporation of Indiana, Taylor, Mich.

Filed Jan. 18, 1994, Ser. No. 182,888
Int. Cl.[6] F16K *21/00*
U.S. Cl. 137—801 **10 Claims**



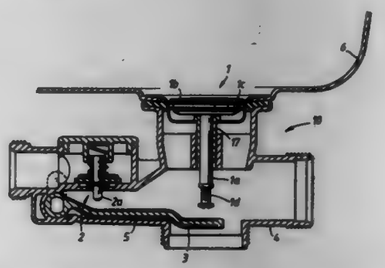
1. Spout assembly for mounting a spout comprising:
centerbody having an annular groove therein;
spout having at least one slot extending through the side wall thereof adjacent the bottom edge thereof, said spout being rotatably mounted over said centerbody with said slot aligned with said groove;
retaining member comprised of a split annular body portion having at least one radially inwardly extending lug mounted over said spout, said lug extending through said slot and into said annular groove to prevent axial movement of said spout relative to said centerbody; and
bonnet slidably mounted on said spout disposed over said retaining member to secure said retaining member in place.

5,381,831

DRAIN VALVE

Anders Versland, Storekvina, Norway, assignor to Vico Products Mfg. Co. A/S, Storekvinea, Norway

PCT No. PCT/NO92/00066, § 371 Date Oct. 6, 1993, § 102(e) Date Oct. 6, 1993, PCT Pub. No. WO92/18712, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 9, 1992, Ser. No. 129,158
Claims priority, application Norway, Apr. 9, 1991, 911370
Int. Cl.[6] F16K *1/00*
U.S. Cl. 137—868 **14 Claims**



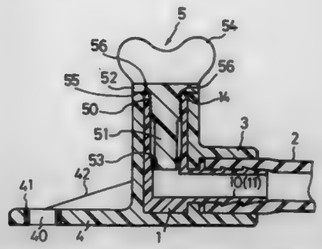
2. A combined valve device for draining of tubs and pipe systems, consisting of pipes for liquid and air comprising a housing, a first valve for the liquid pipe and a second valve for the air pipe, and means for operating the respective first and second valves including one and the same rigid operating means for opening and closing the first valve for the liquid pipe and for opening and closing the second valve for the air pipe, said first and second valves being spaced side by side from each other such that movement of one said valve does not influence movement of the other said valve.

5,381,832

BRANCHED HOSE CONNECTOR

Kenichi Mitsui, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Sep. 30, 1993, Ser. No. 129,401
Claims priority, application Japan, Oct. 6, 1992, 4-267144; Oct. 6, 1992, 4-267146
Int. Cl.[6] F16K *1/02*
U.S. Cl. 137—886 **7 Claims**



1. A branched hose connector including a plurality of hoses, comprising:
a branched inner pipe which includes:
a primary pipe having a fluid outlet port and an open end which is provided with a screw thread;
a plurality of secondary pipes extending from and in fluid communication with said primary pipe, said hoses having respective ends connected onto said secondary pipes;
a cover covering at least a portion of said branched inner pipe and said ends of said hoses; and
a valve member having a shaft with a sealing ring at a first end thereof, and a screw thread and a valve head formed at a second end thereof, said valve head having a diameter greater than said shaft, said valve head having an end surface which faces opposite said open end of said primary pipe, said screw threads of said primary pipe and said valve member being rotatably engageable;
wherein at least one of said open end of said primary pipe and said end surface of said valve head has at least one convexity and the at least the other of said open end of said primary pipe and said end surface of said valve head has at least one concavity; said at least one convexity and said at least one concavity being engageable with one another as said valve member and said primary pipe are rotated with respect to one another.

5,381,833

INSULATED PIPE ASSEMBLY AND PIPE SUPPORT THEREFOR

Richard Cummings, 626 Marshall Rd., Coldwater, Mich. 49036; Lee J. Gee, 1178 Carter Rd., and John Warren, 610 Hampden, both of Midland, Mich. 48640

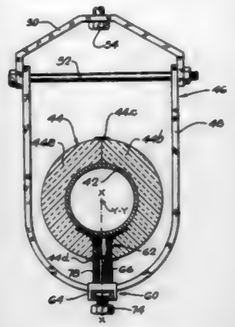
Continuation of Ser. No. 843,448, Mar. 18, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 152,909
Int. Cl.[6] F16L *3/00*
U.S. Cl. 138—107 **6 Claims**

1. In an insulated pipe assembly including a cylindrical pipe extending along a generally horizontal pipe axis with a cylindrical bat of insulation encasing the outside of the pipe and a pipe hanger comprising a clevis member suspended from an overhead support and extending beneath the insulated pipe assembly, an improved pipe support comprising:
an rigid saddle member laterally and axially embracing and

engaging the underside of the pipe between the latter and the insulation so that the pipe is laterally restrained by, but axially moveable relative to said saddle member;

elongated rigid connecting means for transferring weight load directly from the pipe to the clevis member whereby to isolate said load from the insulation;

said connecting means extending downwardly through the insulation from the saddle member along an axis that radially intersects said horizontal pipe axis and having opposite upper and lower radial ends which are located,



respectively, radially inwardly and outwardly of said bat of insulation;

means for fixedly securing the upper radial end of the connector means to the saddle member to prevent displacement of the connecting means relative to the saddle member in any direction; and

means for positively securing the lower radial end of the connecting means to the clevis member to prevent displacement of the connecting means relative to the clevis member in any direction.

5,381,834

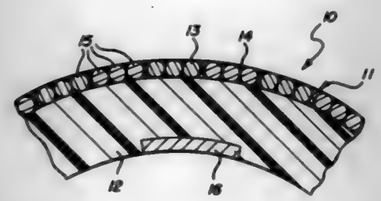
HOSE ASSEMBLY INCLUDING REINFORCED LAYER HAVING WEAR REDUCING FIBERS

Michael G. King, Napoleon, Mich., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed Sep. 14, 1993, Ser. No. 120,862

Int. Cl.[6] F16L *11/04*

U.S. Cl. 138—125 **4 Claims**



1. A hose assembly (10) consisting of:

an inner fluorocarbon polymeric tubular liner (12) having two ends (40) and a longitudinal hollow body (42) extending therebetween;

an outer reinforcing layer (13) surrounding said inner fluorocarbon polymeric tubular liner (12), said outer reinforcing layer (13) including a plurality of yarns (15) fabricated from a plurality of fibers (17) tightly braided together and surrounding said inner fluorocarbon polymeric tubular liner (12) and an organic polymeric material (14) consisting essentially of a fluorocarbon polymer which is resistant to thermal and chemical degradation dispersed in said plurality of yarns (15) for lubrication and strengthening of said plurality of yarns (15) said hose assembly characterized by

said plurality of yarns (15) including wear reducing means (19) for reducing wear on said hose assembly (10) from friction produced by each of said plurality of yarns (15) moving against surfaces exterior said outer reinforcing layer (13) due to impulses of fluids under high pressure passing through said hose assembly (10).

5,381,835

WRAP THREAD FEEDING MAGAZINE IN A WEAVING MACHINE

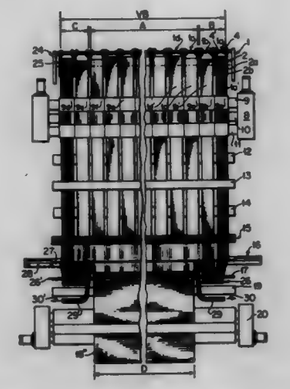
Göran Norlin, Fjällgatan, Sweden, assignor to Texo AB, Almhult, Sweden

Filed Oct. 7, 1993, Ser. No. 132,889

Claims priority, application Sweden, Oct. 8, 1992, 9202955

Int. Cl.[6] D03D *49/06*

U.S. Cl. 139—97 **17 Claims**



1. A weaving machine for weaving fabric, felts and wires, having different widths, the weaving machine comprising a warp thread magazine, first members for feeding warp threads into the weaving machine, and second members for executing weaving functions in the weaving machine, the warp thread magazine including a plurality of warp thread-bearing bobbins which are mounted individually alongside one another and selectable so as to form warp thread widths which substantially correspond to the widths of the various fabrics which can be woven in the weaving machine, the first members for feeding the warp threads including feed-in rollers, each feed-in roller including means for being individually rotatable, each feed-in roller including sections which are arranged alongside one another to cooperate with associated warp thread-bearing bobbins, and wherein the feeding-in of the warp threads from selected bobbins is effected by rotating only those sections of the feed-in rollers which cooperate with the selected bobbins.

5,381,836

FLUID DELIVERY SYSTEM

Robert E. Braatz, Sun Prairie, Wis.; Raymond S. Gregory, Bingley, Great Britain; Robert A. Heaton, Skipton, Great Britain; Keith Whitaker, Keighley, Great Britain, and David C. Sampson, Cowling, Great Britain, assignors to The BOC Group plc, Windlesham, England

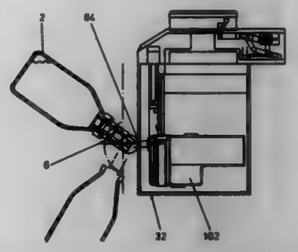
PCT No. PCT/GB92/00140, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO92/12753, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 24, 1992, Ser. No. 90,216

Claims priority, application United Kingdom, Jan. 24, 1991, 9101560

Int. Cl.[6] B65B *1/04, 3/04*

U.S. Cl. 141—21 **9 Claims**



1. A delivery system for delivery of an anaesthetic agent to an anaesthetic vaporiser, comprising an anaesthetic vaporiser which comprises a sump which has a sump valve for controlling the flow of fluid into and out of said sump, an inlet conduit through which fluid supplied from a supply container can enter said sump, means for engaging the supply container, provided at or towards the end of the inlet conduit remote from said sump, said conduit being rotatably moveable to operate said sump valve between a first position in which said sump valve is closed, and a second position in which said sump valve is open, and means for guiding the supply container engaging means during the rotational movement of said inlet conduit.

5,381,837

MIXING APPARATUS FOR POWDER MATERIALS

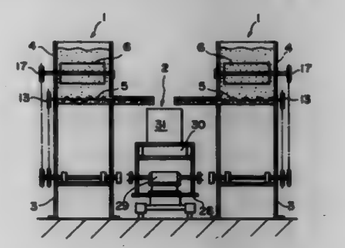
Hidetsugu Kurosu, and Mitso Hosono, both of Tokyo, Japan, assignors to Tsukishima Kikai Co., Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,539

Claims priority, application Japan, Dec. 24, 1992, 4-357289

Int. Cl.[6] B01F *3/18*; B01J *4/00*

U.S. Cl. 141—103 **7 Claims**



1. A powder mixing apparatus, comprising:

(a) a plurality of container devices, comprising a first set of container devices arranged in a first row extending along a first direction and a second set of container devices extending in a second row and along the first direction, the first and second rows being parallel to one another and opposing one another, each container device comprising:

a base,

a container vessel disposed on said base for containing therein powder material to be mixed,

a means for conveying powder material in the container vessel, said means for conveying disposed at a lower portion of said container vessel,

a means for agitating powder material in said container vessel, said means for agitating disposed at an upper portion of said container vessel, and

a driving mechanism for operating said means for conveying and means for agitating,

(b) a movement device, which is movable along the first direction and is located between the two parallel rows of container devices, said movement device comprising a driving device and means for releasably connecting the driving device to the driving mechanism to thereby drive the driving mechanism, a mixing vessel for receiving powder materials from the means for conveying, and a weighing device for weighing the powder materials supplied from the means for conveying to the mixing vessel; and

wherein said driving device comprises a carriage, a guide body in the carriage, at least one motor that is mounted on the guide body, first and second rotational driving shafts that are mounted on the guide body and that are driven by said at least one motor, respectively, and means for reciprocally moving the guide body in a direction that is perpendicular to said first direction; and

wherein both ends of each of the first and second rotational shafts include joints for engaging the driving mechanisms of said container devices in both of said first and second rows of container devices.

5,381,838

FUEL INLET DEVICE FOR A FUEL TANK

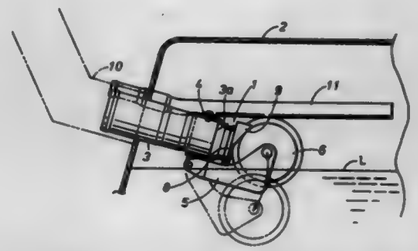
Hideo Watanabe; Shoji Takahashi; Takeshi Suzuki, all of Saitama, and Masatoshi Oikawa, Kanagawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Nifco, Inc., Japan

Filed Jan. 5, 1994, Ser. No. 177,875

Claims priority, application Japan, Jan. 11, 1993, 5-019353

Int. Cl.[6] B65B *1/30, 3/28*

U.S. Cl. 141—198 **3 Claims**



1. A fuel inlet device for a fuel tank equipped with a fuel filler tube and a breather tube, comprising:

a float adapted to rise with a rise in a surface level of fuel accommodated in the fuel tank;

a valve adapted to extend from an end of an opening in the fuel filler tube into the fuel tank;

linking means for linking the movement of the float and the valve with each other;

wherein said valve is adapted to close by an ascending movement of said float when the surface level of fuel in the fuel tank has reached a prescribed level; and

wherein said valve comprises a flap valve which is normally closed by biasing means, a biasing force of said biasing

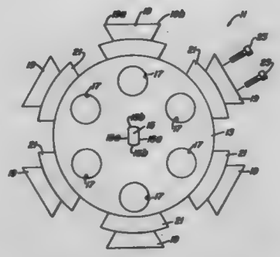
means being weak enough for allowing said flap valve to be opened by an incoming flow of fluid fuel through the fuel filler tube.

5,381,839
LIQUID DISBURSER DEVICE
Tracy J. Dowd, 64 North St., Georgetown, Mass. 01833
Filed Jul. 22, 1992, Ser. No. 918,547
Int. Cl.[6] B65B *39/00*
U.S. Cl. 141—242 10 Claims



1. A liquid disburser device for simultaneously equally filling a plurality of liquid containers from a source of liquid comprising:
a top member having an upper funnel chamber section for receiving liquid;
a first discharge column section extending downwardly from the upper funnel chamber section;
a second discharge column section extending upwardly from the tubular members, said second discharge column section having an enlarged inner diameter portion at the upper end section to receive a portion of the first discharge column section and an inner annular shoulder section forming the end of the inner enlarged diameter portion to support the first discharge column section;
said first discharge column having an inner diameter of sufficiently reduced size whereby liquid enters said first discharge column from said funnel chamber section in a filling equal amount;
said second discharge column having a plurality of equally angularly spaced tubular members spaced in equal distance about the bottom portion of said second discharge column;
said tubular members extending downwardly and having respective end portions adapted to be inserted into the inlet of a liquid container from conducting equal amounts of liquid from said funnel chamber section into respective containers to be filled therefrom; and
the first discharge column having a valve means attached adjacent the upper funnel chamber, said valve means being responsive to permit or prevent the flow of liquid from the upper funnel chamber section.

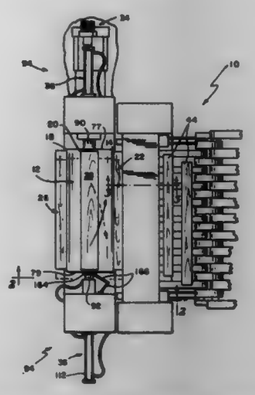
5,381,840
STUMP-GRINDING APPARATUS
Randal G. Bowen, 1503 Caddo School Rd., Joshua, Tex. 76058
Continuation-in-part of Ser. No. 941,516, Sep. 8, 1992, Pat. No. 5,269,355. This application Aug. 20, 1993, Ser. No. 110,640
Int. Cl.[6] A01G *23/06*; B27C *9/00*
U.S. Cl. 144—2 N 10 Claims



1. An apparatus for disintegration of tree stumps and the like, the apparatus comprising:
a prime mover;
a cutting wheel coupled to the prime mover for rotation, the cutting wheel including:
a generally disk-shaped element having an axis of rotation;
a plurality of cutting teeth secured to a periphery of the disk-shaped element, each cutting tooth having a leading cutting edge and a trailing cutting edge, the tooth being secured to the disk-shaped element to define a selected angle between a line parallel to the rotational axis and the cutting edge, wherein the cutting wheel is provided with a combination chipping and slicing cutting action during rotation thereof, each cutting tooth being reversible relative to the disk-shaped element, wherein the leading and trailing cutting edges are transposed to extend the operational life of the cutting wheel.

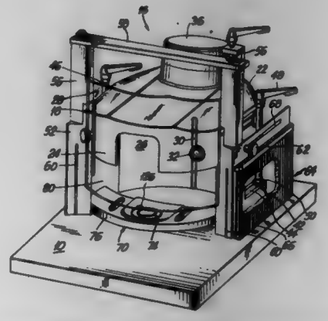
5,381,841
TANGENTIAL ROTARY SLICER
George Weil, Mississauga, Canada, assignor to David R. Webb Co., Inc., Edinburgh, Ind.
Continuation-in-part of Ser. No. 927,153, Aug. 7, 1992, abandoned, which is a continuation of Ser. No. 800,642, Nov. 27, 1991, Pat. No. 5,150,746, which is a continuation-in-part of Ser. No. 702,774, May 17, 1991, Pat. No. 5,101,874. This application Mar. 1, 1993, Ser. No. 25,156
Int. Cl.[6] B27L *5/02*
U.S. Cl. 144—209 B 13 Claims

1. In a veneer slicer comprising a mandrel for holding multiple flitches, the mandrel having a first axis of rotation, means for rotating the mandrel, a knife and pressure bar assembly, a carriage and means for reciprocating the carriage toward the first axis of rotation as the flitches are carried around the first axis of rotation on the mandrel for reciprocating the knife and pressure bar assembly toward the first axis of rotation of the mandrel, rotation of the mandrel by the means for rotating the mandrel, coupled with reciprocation of the carriage toward the first axis of rotation as the flitches are carried around the first axis of rotation causing veneer to be sliced sequentially from said multiple flitches, means for movably mounting the knife and pressure bar assembly on the carriage and a linear fluid motor for moving the knife and pressure bar assembly with respect to the carriage, the fluid motor having two ends,



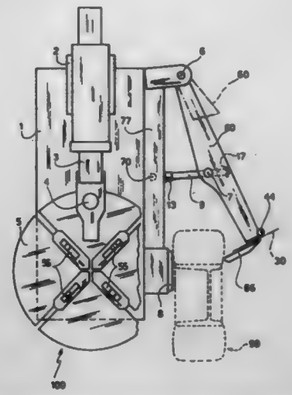
the fluid motor fixed at a first of its ends to the carriage and at a second of its ends to the knife and pressure bar assembly.

5,381,842
PROTECTIVE AND GUIDING DEVICE FOR WOOD SHAPING MACHINES
Georg Aigner, Thannenmais, D-8386 Reisbach, Germany
Filed Jun. 16, 1993, Ser. No. 64,110
Claims priority, application Germany, Sep. 25, 1991, 4131943
Int. Cl.[6] B27G *21/00*
U.S. Cl. 144—251 A 16 Claims



1. A protective device for use in a wood-shaping machine having a machine table defining a planar support surface and having a wood-shaping tool disposed on a rotatable spindle, said device comprising;
a hood securable to the machine table for covering said wood-shaping tool, said hood including a top cover portion defining an opening for receiving a suction device and having a downwardly depending rim,
a front shield vertically adjustable relative to said rim, first and second parallel side walls, each of said side walls having a planar, inwardly facing surface, and a rear wall interconnecting said side walls; and
a work piece guide member disposed between said side walls.

5,381,843
BEAD RELEASE DEVICE FOR TIRE REMOVAL MACHINES
Remo Corghi, Correggio, Italy, assignor to Corghi - S.P.A., Correggio, Italy
Filed Feb. 24, 1993, Ser. No. 21,870
Claims priority, application Italy, Feb. 22, 1992, RE92 A 000009
Int. Cl.[6] B60C *25/00*
U.S. Cl. 157—1.28 5 Claims



1. A bead release device for tire removal machines, comprising:
an arm which at one end is hinged on a vertical axis to a base of a tire removal machine, while at another end said arm supports a positionable bead release tool, said arm being coupled with unilateral engagement to a rod of a pneumatic cylinder-piston unit which is associated with said base to urge said bead release tool against a rim-tire assembly, in which said unilateral engagement is achieved by a plurality of aligned equidistant identical notches including a saw-tooth rack provided on an end longitudinal portion of said rod and by a coupling member which is provided on said arm, said coupling member is biased by an elastic means to occupy a rest position in which it allows said arm and said rod to slide freely relative to each other, and said coupling member also includes an operating means for placing said coupling member in a working position in which said coupling member maintains said arm and said rod coupled together.

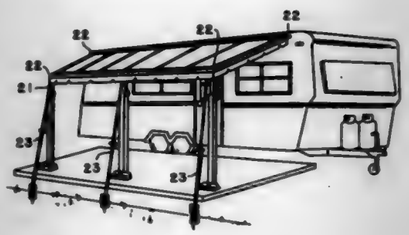
5,381,844
PORTABLE TWO-WAY ALUMINUM AWNING FOR RECREATIONAL VEHICLES
Francis L. Struben, 3854 Jarrettsville Pike, Jarrettsville, Md. 21084
Filed Mar. 31, 1993, Ser. No. 40,612
Int. Cl.[6] E04F *10/00*
U.S. Cl. 160—46 21 Claims

1. A portable two-way awning for trailer vehicles and the like, comprising:
an adapter rail means, said adapter rail means slidingly engageable with an awning attachment rail attached to a trailer, said adapter rail means having an upwardly turned curved ledge extending therefrom;
a left end roof panel;
a right end roof panel;
one or more intermediate roof panels;
hanger means joined to said left end, right end, and intermediate roof panels, said hanger means having a flange extending therefrom beginning in a flat portion and ending in a curved portion, the external curvature of said curved

portion of said flange corresponding to the internal curvature of said turned curved ledge when said hanger means suspends said left end, right end, and intermediate roof panels from said turned curved ledge in an essentially vertical position, said flange slidingly engageable with said upwardly turned curved ledge of said adapter rail means, said flange only allowing said left end, right end, and intermediate roof panels to move in an outwardly and upwardly pivoting motion once said hanger means is slidingly attached to said upwardly turned curved ledge of said adapter rail means;

a number of male interlocking members, one of said male interlocking members bonded to one side of each of said intermediate roof panels, one of said male interlocking members bonded to one side of either said right end roof panel or said left end roof panel;

a number of female interlocking members, one of said female



interlocking members bonded to one side of each of said intermediate roof panels, one of said female interlocking members bonded to one side of either said right end roof panel or said left end roof panel, said male and female interlocking members mating together to join said left end, right end, and intermediate roof panels into a rigid roof assembly;

a number of side extrusion members, at least one of said side extrusion members bonded to the outer left side of said left end roof panel, at least one of said side extrusion members bonded to the outer right side of said right end roof panel;

a number of frontal extrusion members, said frontal extrusion members attachable to the front sides of said left end, right end, and intermediate roof panels; and

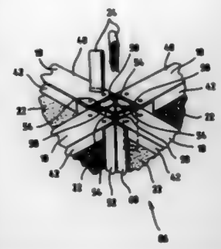
a number of pole supports, said pole supports connected to said frontal extrusion members and supporting a portion of the weight of said rigid roof assembly, said pole supports adjustable in height.

5,381,845

PARTITION WALL PANEL SYSTEM

Mark A. Ruggie, Geneva, and William J. Schultz, St. Charles, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed May 27, 1993, Ser. No. 68,993
Int. Cl.[6] A47G *5/00*
U.S. Cl. 160—135 **14 Claims**



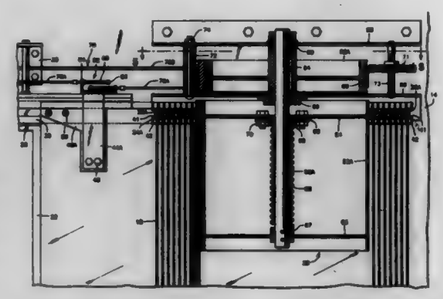
1. A partition wall panel system comprising:

5,381,846

SIDE COILING FABRIC DOOR

Dale M. Lichy, 214 Royal Daulton Ct., Gibsonia, Pa. 15044

Filed May 13, 1993, Ser. No. 60,064
Int. Cl.[6] E06B *9/56*
U.S. Cl. 160—273.1 **20 Claims**



1. A side coiling door for an opening comprising a vertically disposed flexible curtain having two opposed faces, means at one edge of the opening for coiling the flexible curtain into a generally vertical coil, track means extending across the opening at an upper edge portion thereof and first means attached to the upper edge portion of one face of the flexible curtain in sliding interlocking connection with the track means, said first means including a recess, second means attached to the upper edge portion of the opposite face of the curtain for supporting the coiled flexible curtain coils with adjacent coils and with the coiling means, said second means comprising a projection sized so as to be accommodated within the recess of the first means when the flexible curtain is coiled.

5,381,847

VERTICAL CASTING PROCESS

Sankaranarayanan Ashok, Bethany; Derek E. Tyler; William G. Watson, both of Cheshire; Harvey P. Cheskis, North Haven, and George A. List, Milford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 10, 1993, Ser. No. 74,189
Int. Cl.[6] B22D *23/00*
U.S. Cl. 164—46 **5 Claims**

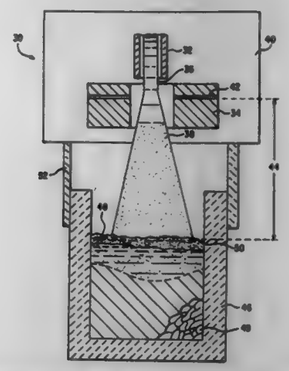
1. A method for casting a metallic article, comprising:

(a) disrupting a molten stream of metal into a plurality of molten metal droplets;

(b) partially solidifying said molten metal droplets such that from about 5% to about 40% by volume of each average droplet is solid and the remainder is molten; and

(c) collecting and completely solidifying said partially solidified droplets in a mold of a desired configuration thereby

forming a metallic casting wherein a turbulent zone is generated by said droplets at the upper surface of said



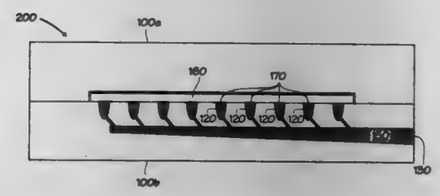
casting and, within said turbulent zone, on average, less than about 50% by volume of the average droplet is solid.

5,381,848

CASTING OF RAISED BUMP CONTACTS ON A SUBSTRATE

Robert T. Trabucco, Los Altos, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Sep. 15, 1993, Ser. No. 121,676
Int. Cl.[6] B23K *3/00*
U.S. Cl. 164—102 **20 Claims**



1. A method of forming raised solder contacts on a surface of a substrate, comprising:

providing a substrate having a surface;

providing conductive contact pads arranged in a pattern on the surface of the substrate;

providing a mold for receiving the substrate;

providing a plurality of recesses in the mold, said recesses shaped and fixed to form contacts of a predetermined shape and size and arranged in a pattern corresponding to the pattern of the contact pads, said mold including integral means for introducing molten solder into the recesses, said solder introducing means having openings into said recesses smaller than said recesses;

inserting the substrate into the mold such that the contact pads align with corresponding recesses;

introducing molten solder into the recesses;

allowing the molten solder to solidify; and

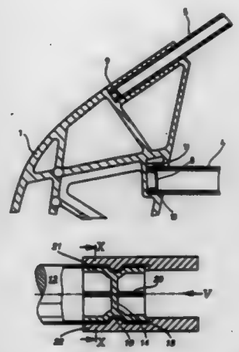
removing the substrate from the mold.

5,381,849

CASTING METHOD FOR CASTING A PART ONTO A HOLLOW SECTION

Wolfgang Fussnegger, Rohrau, and Werner Heiss, Sindelfingen, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 20, 1993, Ser. No. 169,126
Claims priority, application Germany, Dec. 18, 1992, 4242896
Int. Cl.[6] B22D *19/00*
U.S. Cl. 164—102 **7 Claims**



1. A method for casting a cast part onto the end of a hollow section, comprising the steps of placing an end of the hollow section in a defined position in a die, closing the die, sealingly closing an end opening in the hollow section against the penetration of cast material, at least during casting, and introducing the molten cast material into a remaining free space in the die and casting the hollow section around in a positive-locking manner, at least at the end thereof, wherein the hollow section is cooled during the casting, the material at the end of the hollow section to be embedded is deformed by the cast material during casting and the deformed material of the hollow section is pressed into positive engagement with a groove on the closure.

5,381,850

COMPOSITE CASTING PROCESS

Bernd Otte, Zirndorf, and Rudolf Schwarz, Nürnberg, both of Germany, assignors to Alcan Deutschland GmbH, Germany

PCT No. PCT/EP91/00668, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO91/16159, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 9, 1992, Ser. No. 941,055
Claims priority, application Germany, Apr. 12, 1990, 4011948
Int. Cl.[6] B22D *19/14*
U.S. Cl. 164—104 **11 Claims**

1. In a composite casting process for making light metal castings reinforced by inserts of fiber-shaped or open-pored materials comprising pistons, cylinders, cylinder heads and motor blocks of internal combustion engines, said process including firstly, making a preform reinforced by at least one insert of fiber-shaped or open-pored materials by embedding the insert in a first matrix metal while molten and subsequently solidifying said first matrix metal and then immersing the preform in a second molten metal bath and subsequently inserting the preform into a casting mould for integrally casting or casting around the final casting of a third metal,

wherein the improvement comprises said second molten metal bath being of the same or a similar metal as said first matrix metal of the preform or said third metal used for the final casting and heating said second molten metal bath to a temperature which is higher than the melting point of said first matrix metal.

5,381,851

LOW PRESSURE CHILL CASTING METHOD FOR CASTING METAL CAST COMPONENTS

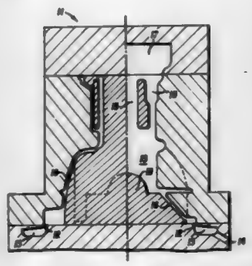
Georg Bilz, Nürnberg; Hans Lämmermann, Schwabach; Alfred Dobner, Roastal; Klaus Sterner, and Klaus Riess, both of Nüernberg, all of Germany, assignors to Alcan Deutschland GmbH, Germany

PCT No. PCT/EP90/01222, § 371 Date Oct. 18, 1991, § 102(e) Date Oct. 18, 1991, PCT Pub. No. WO91/01832, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 25, 1990, Ser. No. 768,748

Int. Cl.[6] B22D *18/04*

U.S. Cl. 164—119 **5 Claims**



1. A method for low pressure chill casting a metal cylinder block which has wall portions which are locally predominately thinner than remaining portions of said cylinder block, said method comprising:

positioning a non-disposable mold so that thinner wall portions thereof for the formation of a crankcase chamber are directed downwardly;

arranging said non-disposable mold so that locally predominately thicker wall portions of the cylinder block are cast remote from a gating and the locally predominately thinner wall portions are cast near said gating;

pressing liquid metal, by means of gas pressure, through said mold from a melt container through a riser tube into said mold

approximate to a region of said mold lying in the vicinity of said gating and through said mold into a feeder mounted on said mold,

whereby the liquid metal flowing through the thinner wall portions solidifies before the remote regions of the casting which are the predominately thicker wall portions, any shrinkage in said predominantly thicker wall portions being compensated by the liquid metal in said feeder.

5,381,852

PROCESS FOR CASTING A MOTOR VEHICLE WHEEL FROM METAL, AND A MOTOR VEHICLE WHEEL PRODUCED BY SUCH PROCESS

Herbert Schilling, Erftstadt, Germany, assignor to EB Bruhl Aluminiumtechnik GmbH, Bruhl, Germany

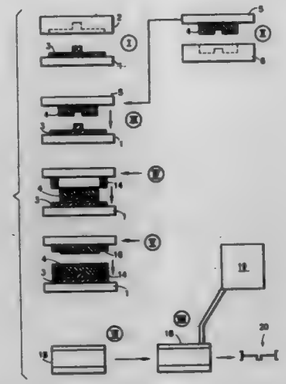
Filed Mar. 30, 1993, Ser. No. 39,968

Claims priority, application Germany, Apr. 3, 1992, 4211130

Int. Cl.[6] B22C *9/10, 9/28*

U.S. Cl. 164—137 **3 Claims**

1. Process for casting a one-piece motor vehicle wheel from molten metal, said wheel comprising a rim ring portion and a hub portion connected thereto by means of a supporting radial portion, said process comprising the steps of individually molding a plurality of non-metallic mold core parts including bottom, central and top disk shaped mold core parts and a peripheral ring-shaped mold core part, each on its own mold section, sequentially and axially assembling and centering said central, top and peripheral mold core parts to said bottom mold core part while each of said parts is still attached to its mold section, the centering of each of said mold core parts being accomplished by adjusting the relative positions of the mold section to which the bottom mold core part is attached and the mold sections attached to the mold core parts being assembled thereto, so that the parting planes between contacting areas of said mold core parts run generally perpendicular to the wheel axis, to form a mold consisting of said non-metallic



mold core parts and enclosing a mold cavity for casting an integral motor vehicle wheel; filling said mold cavity with molten casting metal, such as aluminum alloy, cooling, and removing the cast one-piece motor vehicle wheel.

5,381,853

APPARATUS FOR INTENSIFYING COOLING IN THE CASTING OF METAL OBJECTS

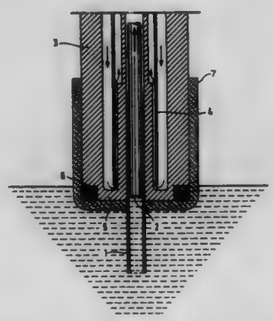
Markku H. Koivisto, and Seppo I. Pietilä, both of Pori, Finland, assignors to Outokumpu Castform Oy, Espoo, Finland

Continuation of Ser. No. 972,111, Oct. 30, 1992, abandoned. This application Jun. 21, 1994, Ser. No. 264,173

Claims priority, application Finland, Nov. 14, 1991, 915374

Int. Cl.[6] B22D *11/124*

U.S. Cl. 164—443 **12 Claims**



1. An apparatus for continuous casting of a metal object, comprising a nozzle having an inlet part and an outlet part, and a cooler surrounding the outlet part of the nozzle, the cooler having an inner periphery that is in confronting relationship with the nozzle and also having an outer periphery, and the apparatus also comprising a squeeze ring surrounding the cooler and in contact with the outer periphery thereof, the squeeze ring being of a longitudinal extent that is less than that of the cooler and being in a state of circumferential tension, whereby the cooler is pressed against the nozzle, an insulating protective cover is provided to surround the cooler and the squeeze ring.

5,381,854

PNEUMATIC FLOW CONTROL OF LIQUID METALS

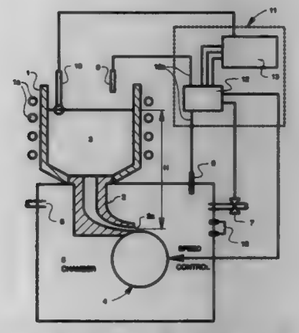
Robert Thomson, Ontario; Fihachmi Esnadiqi, Aylmer, and James Barry, Nepean, all of Canada, assignors to Her Majesty in right of Canada as represented by the Minister of Energy, Mines and Resources, Canada

Filed Mar. 24, 1993, Ser. No. 36,283

Claims priority, application Canada, Jan. 29, 1993, 2088401

Int. Cl.[6] B22D *11/06, 11/18*

U.S. Cl. 164—453 **14 Claims**



12. A method of controlling the velocity of flow of liquid metal from a tundish into a continuous casting machine through a nozzle, said method comprising the steps of:

sensing a gas pressure acting on liquid metal in the tundish;

sensing the level of liquid metal in the tundish;

sensing a gas pressure acting on the liquid metal at an outlet of the nozzle; and

controlling the gas pressure acting on the liquid metal at the outlet of the nozzle in response to the measured height of liquid metal in the tundish with respect to the outlet of the nozzle, and the gas pressure acting on the metal in the tundish, whereby the velocity of flow of liquid metal from said tundish into said continuous casting machine through said nozzle is controlled by varying the gas pressure acting on the liquid metal at the outlet of the nozzle.

5,381,855

METHOD OF AND APPARATUS FOR CONTROLLING THE MOTION OF A POURING LADLE

Fritz Mezger, Muntelier, Switzerland, assignor to Maschinenfabrik & Eisengiesserei Ed. Mezger AG, Kallnach, Switzerland

Filed Oct. 4, 1993, Ser. No. 131,764

Claims priority, application Switzerland, Oct. 7, 1992, 03135/92

Int. Cl.[6] B22D *37/00, 41/06*

U.S. Cl. 164—457 **12 Claims**

1. An apparatus for pouring molten metal with a pouring ladle which comprises:

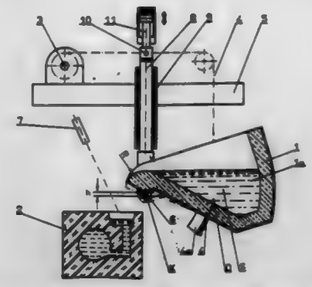
two lifting devices, one of which engages the pouring ladle at an outlet opening and the other one of which engages the pouring ladle at a side of the pouring ladle away from the outlet opening; and,

a common control system for controlling simultaneously the two lifting devices, wherein motions of each of the two lifting devices are controlled such that the pouring ladle at a start and a termination of pouring is tilted around a tiltings axis at least approximately in a center of gravity of the molten metal contained within the ladle.

5. A method for controlling the motion of a tiltable pouring ladle, the method comprising the steps of:

a) starting a pouring operation by tilting the ladle around a first tilting axis which substantially coincides with an axis through a center of gravity of the pouring ladle contents;

b) continuing the pouring operation by tilting the ladle around a second tilting axis located at a center of a radius of a ladle spout; and



c) terminating the pouring operation by tilting the ladle around the first tilting axis.

5,381,856

PROCESS FOR PRODUCING VERY THIN AMORPHOUS ALLOY STRIP

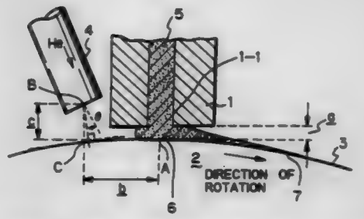
Masahiro Fujikura; Takashi Sato; Toshio Yamada; Fumio Hasebe, and Hiromi Chida, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 6, 1993, Ser. No. 132,546

Claims priority, application Japan, Oct. 9, 1992, 4-271974

Int. Cl.[6] B22D *11/06*

U.S. Cl. 164—463 **1 Claim**



1. A process for producing a very thin amorphous alloy strip, comprising the steps of:

blowing a He gas at room temperature through a He gas blow nozzle onto the surface of a cooling roll being rotated in one direction, at a flow rate of 0.1 to 5 liters/-min-cm^2 per unit sectional area of an opening of said He gas blow nozzle, a molten alloy ejection nozzle being provided immediately above said cooling roll with said He gas blow nozzle being provided on the upstream side of rotation of said cooling roll at a position of from 2 to 40 mm to the upstream side of said cooling roll in the direction of rotation thereof from a position on the surface of said cooling roll corresponding to the center of an opening of said molten alloy ejection nozzle and at a distance of from 0.1 to 30 mm above the surface of said cooling roll and at an angle of inclination in the range of from −10° to 45° to the downstream side of rotation of said cooling roll;

ejecting a molten alloy through said molten alloy ejection nozzle onto the surface of said cooling roll to form a puddle and surrounding said puddle with said He gas to form a He gas atmosphere around said puddle; and

dragging said molten alloy from the puddle within said He atmosphere onto said cooling roll on the downstream side of rotation thereof to continuously produce a thin strip.

5,381,857

APPARATUS AND METHOD FOR CONTINUOUS CASTING

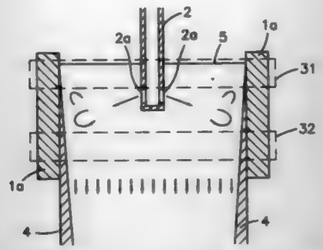
Hirokazu Tozawa; Shuji Takeuchi; Kenichi Sorimachi; Tetsuya Fujii; Noboru Yasukawa; Saburo Moriwaki; Mitsuru Sakurai; Makoto Aratani; Yoshiro Tomiyama, all of Chiba, and Takeshi Shiraishi, Tokyo, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 991,478, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 742,094, Aug. 2, 1991, abandoned, which is a continuation of Ser. No. 512,756, Apr. 20, 1990, abandoned. This application Mar. 3, 1994, Ser. No. 205,349

Claims priority, application Japan, Apr. 27, 1989, 1-105817; Oct. 30, 1989, 1-279958

Int. Cl.[6] B22D *27/02*

U.S. Cl. 164—466 **16 Claims**



1. In a continuous casting method wherein a stream of molten metal is poured into a casting mold having end walls and side walls that are longer than said end walls, said mold including a nozzle having a discharge opening directed toward at least one of said end walls, the steps which comprise:

(a) applying to said molten metal magnetic fields which cover substantially the entire lengths of said side walls,

(b) said fields being effective upon both of said side walls and being spaced above and below said discharge opening, said fields extending continuously along the lengths of said side walls, at locations spaced apart from said nozzle openings.

7. In a continuous casting machine wherein a stream of molten metal is poured into a casting mold through an immersion nozzle having an opening, said mold having end walls and side walls that are longer than said end walls, said stream being directed from said immersion nozzle toward an end wall of said mold, the combination which comprises:

(a) a plurality of magnets positioned to apply a static magnetic field to modify molten metal stream flow in said mold,

(b) said magnets being positioned to apply magnetic fields which are as long as or longer than the lengths of said mold side walls, said magnets being located above and below said discharge nozzle opening, and

(c) said magnets being arranged in relation to said casting mold to provide substantially uniform magnetic fluxes along the lengths of said side walls.

5,381,858

HEAT EXCHANGER AND METHOD OF MANUFACTURE

Carl Fredrich, 244 Colonial Ave., Union, N.J. 07083

Filed Jun. 15, 1993, Ser. No. 77,569

Int. Cl.[6] F28F *9/04*

U.S. Cl. 165—79 **17 Claims**

1. A heat exchanger comprising a plurality of tubes for carrying a heat exchange fluid and a mounting plate assembly for providing communication between pairs of said tubes, said mounting plate assembly comprising:

an inner fitting plate having a plurality of apertures mounted respectively to the tubes;

an outer fitting plate disposed in substantially face-to-face relationship with the inner fitting plate and being formed to define a plurality of channels, each said channel being dimensioned and disposed to register with a pair of said apertures in the inner fitting plate, such that said channels provide communication between the tubes engaged with the apertures registered with each said channel;

a seal plate disposed in opposed relationship to said inner fitting plate and being formed to include a plurality of apertures engaged respectively over the tubes, said seal plate further being formed to define at least one shell substantially surrounding the respective tubes engaged in the apertures of said seal plate and said inner fitting plate, said shell defining at least one sealant chamber surrounding portions of the tubes between the seal plate and the inner fitting plate; and

a sealing material disposed in the chamber defined by the seal plate and in sealing engagement with portions of said tubes intermediate the seal plate and the inner fitting plate.

10. A method for manufacturing a heat exchanger, said method comprising:

forming an inner seal plate to include a plurality of apertures dimensioned for tightly engaging said tubes;

forming an outer fitting plate with a plurality of channels, each said channel being disposed and dimensioned for registration with a pair of said apertures formed in said inner fitting plate;

forming a seal plate to include chambers dimensioned and disposed to surround the respective apertures in the inner fitting plate, said seal plate further being formed to include apertures dimensioned to engage the tubes and disposed to register with the respective apertures in the inner fitting plate;

securing the outer fitting plate and the seal plate on opposed respective sides of said inner fitting plate, such that each said channel in the outer fitting plate registers with a pair of apertures in the inner fitting plate, and such that each said chamber and each said aperture in the seal plate registered with a corresponding aperture in the inner fitting plate;

urging the respective tubes through the apertures of the seal plate and the inner fitting plate, such that each said tube communicates with one said channel of said outer fitting plate;

injecting a sealing material into the chambers for surrounding and sealing portions of said tubes engaged between said seal plate and said inner fitting plate.

5,381,859

HEAT SINK AND THE PRODUCING METHOD THEREOF

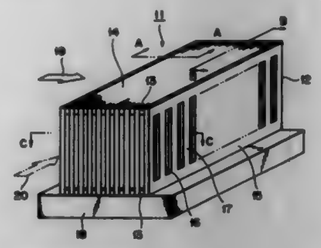
Ko Minakami, Kawasaki; Toshinori Terashima; Toshio Maeda, both of Yokohama; Tomiya Sasaki, Kawasaki; Katsumi Hisano, Yokohama; Hideo Iwasaki, Kawasaki, and Koichiro Kawano, Yokohama, all of Japan, assignors to Kabushiki kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 788,435, Nov. 6, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 72,220

Claims priority, application Japan, Nov. 9, 1990, 2-302730; Aug. 9, 1991, 3-200859

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—80.3 **23 Claims**



1. A heat sink comprising:

a plurality of heat sink elements each including a thin thermally conductive plate, each of said plurality of heat sink elements having a plurality of openings arranged in one direction to thereby form an array of fins, and said plurality of openings constituting a first group of openings through which a coolant is allowed to flow;

separating means for separating adjacent heat sink elements by a predetermined distance in order to separate adjacent arrays of fins formed in each of said heat sink elements, said separating means extending in said one direction and being arranged along lateral edges of said plurality of heat sink elements, predetermined distances between said plurality of heat sink elements separated by said separating means constituting a second group of openings through which the coolant is allowed to flow from a direction other than through said first group of openings; and

a connecting region formed of said lateral edges of said plurality of heat sink elements and said separating means, said connecting region being thermally connected to an electric component;

whereby said electric component generates heat therefrom, and transfers the heat to said array of fins through said connecting region and then to the coolant flowing through at least one of said first and second groups of openings.

5,381,860

THERMAL ENERGY STORAGE SYSTEM FOR A COOL WATER AIR CONDITIONING SYSTEM

Anthony Mather, St. Petersburg Beach, Fla., assignor to Dirrecktor TES Systems, Inc., St. Petersburg Beach, Fla.

Filed Sep. 28, 1993, Ser. No. 128,635

Int. Cl.[6] F25D *17/02*

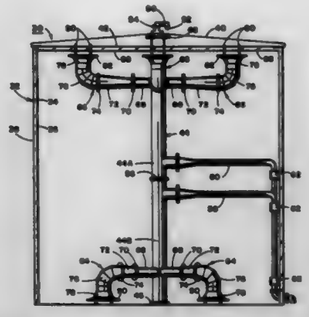
U.S. Cl. 165—104.19 **9 Claims**

1. A thermal energy storage system for a cool water air conditioning system comprising:

a water storage tank;

a water distribution system including a generally centrally positioned, vertically oriented pipe extending from a bottom of said tank to about a top of said tank, a flange positioned about midway of said pipe for separating an upper section of said pipe from a lower section thereof, a water return line coupled to said pipe above said flange and a water extraction line connected to said pipe below said flange;

a plurality of circumferentially spaced water intake conduits connected to said pipe generally adjacent the bottom of said tank, each of said conduits comprising a first section radially extending from said pipe, a downwardly turned elbow coupled to said first section and a bell-shaped inlet coupled to said elbow, said inlet being positioned for receiving water from immediately adjacent said tank bottom;



a plurality of circumferentially spaced water return conduits connected to said pipe generally adjacent the top of said tank, each of said return conduits comprising a first segment radially extending from said pipe, an upwardly turned elbow connected to said first segment and a bell-shaped outlet coupled to said upwardly turned elbow; and

means for supporting each of said upwardly turned outlets in a common horizontal plane, said support means positioning each of said outlets in a level plane such that water exiting said outlets flows uniformly from all edges of each outlet.

5,381,861

DRIVE HEAD FOR FLEXIBLE CONVEYOR FLUID LIFTING SYSTEM

James W. Crafton, Evergreen; Ronald J. Stene, Littleton; Thomas Shilling, and William J. Roper, both of Englewood, all of Colo., assignors to SOCO Technologies, Inc., Fort Worth, Tex.

Filed Feb. 7, 1994, Ser. No. 192,879

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—77 **47 Claims**

1. A drive head for use in transporting fluids using a conveyor, comprising:

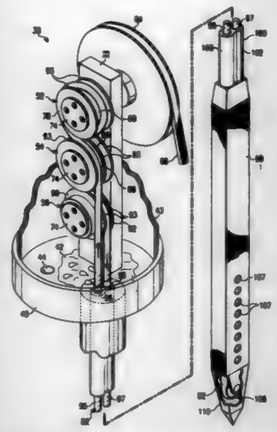
a frame for mounting near a tubing orifice;

a drive wheel and a second wheel rotatably mounted on said frame and each adaptable to receive a fluid-entraining conveyor;

a first conveyor track of said drive wheel with a first radius and adaptable to contact said conveyor through at least the majority of the circumference of said conveyor track;

a second conveyor track formed on said second wheel and having a second radius larger than said first radius, portions of said first and second conveyor tracks defining respective portions of a conveyor path extending from said tubing orifice through said drive head and back into said tubing orifice, said second conveyor track being

nearer to said orifice on said conveyor path than said first conveyor track; and



a prime mover coupled to said drive wheel for imparting a rotational force thereto.

5,381,862

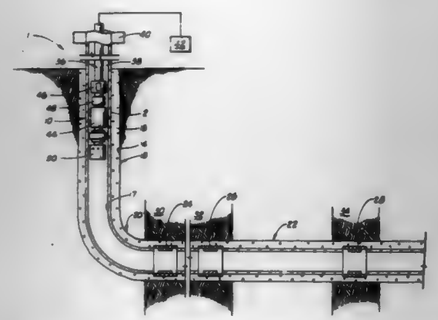
COILED TUBING OPERATED FULL OPENING COMPLETION TOOL SYSTEM

David D. Szarka, Duncan, and Lee W. Stepp, Comanche, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 27, 1993, Ser. No. 113,141

Int. Cl.[6] E21B *23/00*

U.S. Cl. 166—212 **40 Claims**



1. An apparatus for actuating a sliding member of a well tool, said apparatus comprising:

an inner mandrel;

operating means for selectively operably engaging the sliding member of the well tool in response to longitudinally reciprocating motion of said inner mandrel, said operating means comprising radially outwardly biased engagement means for automatically engaging the sliding member of the well tool when aligned therewith and for longitudinally actuating said sliding member in response to further longitudinally reciprocating motion of said inner mandrel; and

hydraulic actuating means for providing said reciprocating motion of said inner mandrel in response to a fluid pressure in said inner mandrel.

5,381,863

CYCLIC HUFF-N-PUFF WITH IMMISCIBLE INJECTION AND MISCIBLE PRODUCTION STEPS

Scott C. Wehner, Midland, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 13, 1994, Ser. No. 182,256

Int. Cl.[6] E21B *43/18, 43/22, 43/25*

U.S. Cl. 166—263 **5 Claims**

1. A method of recovering hydrocarbons from an underground reservoir under an active waterflood or water drive with a cyclic injection/production process which comprises:

injecting a recovery fluid comprising carbon dioxide or nitrogen into a formation under an active waterflood or water drive through a well, said injection occurring under pressure and temperature conditions wherein the recovery fluid is immiscible with underground hydrocarbons;

ceasing injection of the fluid and allowing the fluid to soak in the formation for a period of about 2 to about 50 days until the pressure rises in the wellbore area to create conditionally miscible or miscible conditions; and

producing the conditionally miscible or miscible recovery fluid, hydrocarbons and other fluids through said well.

5,381,864

WELL TREATING METHODS USING PARTICULATE BLENDS

Philip D. Nguyen; Joe R. Murphey, both of Duncan, and David L. Brown, Temple, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 12, 1993, Ser. No. 151,337

Int. Cl.[6] E21B *43/267*

U.S. Cl. 166—280 **19 Claims**

1. A method of stimulating a subterranean formation comprising the step of injecting a fracturing composition into said subterranean formation, wherein: said fracturing composition comprises a carrier fluid and a proppant blend; said proppant blend consists essentially of a large proppant material and a small proppant material; said large proppant material consists essentially of particles smaller than about 4 mesh but not smaller than about 40 mesh; said small proppant material consists essentially of particles smaller than about 16 mesh but not smaller than about 100 mesh; substantially all of the particles of said small proppant material are smaller than substantially all of the particles of said large proppant material; said small proppant material is present in said proppant blend in an amount in the range of from about 5% to about 60% by weight based on the amount of said large proppant material present in said proppant blend; said proppant blend has been formed by admixing one of said proppant materials with the other of the said proppant materials; and said fracturing fluid is injected into said subterranean formation in said step of injecting such that said fracturing fluid forms a fracture in said subterranean formation and said proppant blend is deposited in said fracture to thus provide a fluid permeable region within said subterranean formation.

5,381,865

METHOD AND APPARATUS FOR PRODUCTION OF SUBSEA HYDROCARBON FORMATIONS

Joseph W. Blandford, 15 Mott La., Houston, Tex. 77024

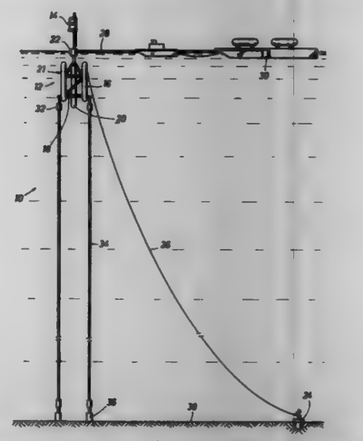
Continuation-in-part of Ser. No. 891,953, Jun. 1, 1992, which is a continuation of Ser. No. 626,994, Dec. 13, 1990, Pat. No. 5,117,914. This application Jan. 8, 1993, Ser. No. 2,473

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[6] B63B *35/44*

U.S. Cl. 166—344 **16 Claims**

1. A subsea well tender system comprising a surface-piercing surface buoy, wherein said surface-piercing surface buoy supports one or more decks above the water surface for accommodating equipment to process oil, gas, and water, and further



including anchoring means securing said surface buoy to the seabed.

5,381,866

MULTI-SHARE PLOUGH

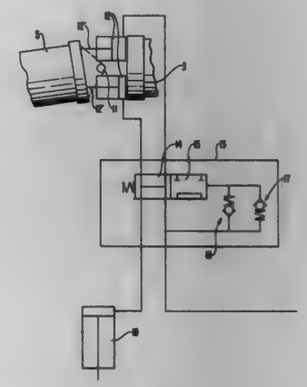
Oyvind Mong, Kleppe, Norway, assignor to Kverneland Klepp AS, Kvernaland, Norway

Filed Feb. 12, 1993, Ser. No. 16,828

Claims priority, application United Kingdom, Feb. 15, 1992, 9203279

Int. Cl.[6] A01B *3/46, 15/14*

U.S. Cl. 172—219 **13 Claims**



6. A gang plow comprising:

(a) a front plow-frame part;

(b) a rear plow-frame part connected at a front end thereof to a rear end of the front plow-frame part, said front and rear plow-frame parts defining a plow frame;

(c) a locking device movable between a first working position and a second working position, the locking device including:

(1) an actuating device actuated by pressure medium, the actuating device including two piston/cylinder units, and

(2) a control valve movable between the first and second working positions, the control valve having two oppositely directed non-return valves connected to the piston /cylinder units;

so that the first working position permits a restricted pivoting movement of the rear plow-frame part, and the second working position prevents the restricted pivoting movement; and

(d) a horizontal pivot pin about which the rear plow-frame part is pivotable.

5,381,867

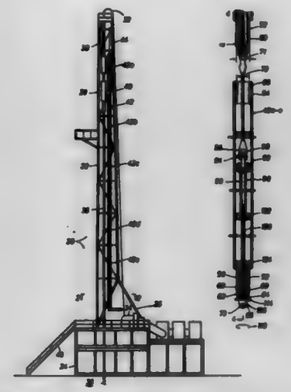
TOP DRIVE TORQUE TRACK AND METHOD OF INSTALLING SAME

Joe R. Berry, The Woodlands, Tex., assignor to Bowen Tools, Inc., Houston, Tex.

Filed Mar. 24, 1994, Ser. No. 217,609

Int. Cl.[6] E21B *19/00*

U.S. Cl. 175—85 **7 Claims**



1. In a drilling rig system having a mast and a top drive drilling unit, an improved track system comprising:

a plurality of elongated hollow housings, each having a male pin at one end and a female box at the other end;

means for drawing up and securing the male pin of one housing into the female box of an adjacent housing; and

means for guiding said top drive drilling unit along the exterior of said housings.

5,381,868

SEALED BEARING ROLLER REAMER

William H. Schock, Lafayette, La., assignor to Triumph*LOR Inc, Lafayette, La.

Continuation of Ser. No. 134,268, Oct. 8, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 252,387

Int. Cl.[6] E21B *10/20, 10/22, 10/30*

U.S. Cl. 175—346 **7 Claims**

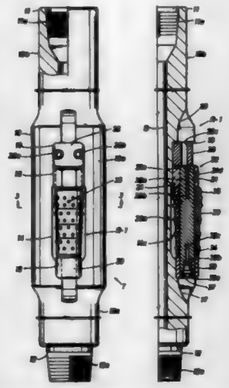
1. A roller reamer drilling tool for enlarging a bore hole in an oil or gas well or other bore holes, comprising:

an elongated body having a fluid circulation bore therethrough and having threaded end sections to connect the body to adjoining tubular members of a drill string or other assembly of tubular members;

said elongated body having a plurality of roller reamer units mounted therewith, said roller reamer units being positioned circumferentially about said elongated body;

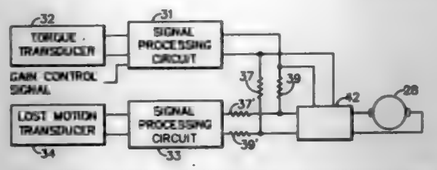
for each roller reamer unit, said body having an axially directed recess, said recess including an axially directed central reamer pocket terminating in upper and lower ends, upper and lower bearing block pockets located adjacent to said upper and lower ends, respectively, of said central reamer pocket, and a lock block pocket positioned adjacently to said upper bearing block pocket;

a lower bearing block mounted in said lower bearing block pocket, said lower bearing block having an axially extending opening therein;
each of said roller reamer units including a shaft, a substantially cylindrical roller mounted over said shaft, rotatable bearing means mounting said roller for rotation with respect to said shaft, and an upper bearing block, said upper bearing block having an axially extending opening therein;
said shaft including a lower end which extends downwardly



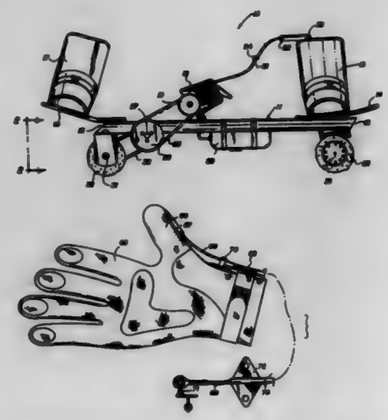
into said lower bearing block opening and an upper end which is fixedly mounted in said axially extending opening of said upper bearing block; and
said upper bearing block pocket being substantially cubic in configuration, said upper pocket having width greater than the outer diameter of said roller whereby said roller reamer unit is insertable through said upper bearing block pocket into an installed position wherein said lower end of said shaft is inserted into said opening in said lower bearing block and said upper bearing block is positioned in said upper bearing block pocket.

5,381,869
SERVO STEERING SYSTEM WITH STEPPING MOTOR
Peter Norton, 2730 Narragansett, Lansing, Mich. 48910
Continuation of Ser. No. 961,064, Oct. 14, 1992, abandoned, which is a continuation of Ser. No. 793,217, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 439,019, Nov. 20, 1989, abandoned, which is a continuation of Ser. No. 300,723, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 233,939, Aug. 17, 1988, abandoned, which is a continuation of Ser. No. 843,113, Mar. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 623,203, Jun. 21, 1984, Pat. No. 4,577,716. This application Aug. 30, 1993, Ser. No. 114,298
Int. Cl.[6] B62D *5/04*
U.S. Cl. 180—79.1 **15 Claims**



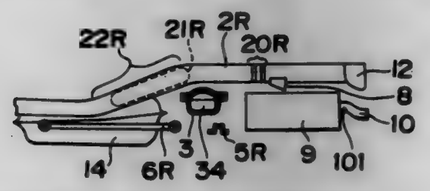
1. In a vehicle power steering system of the type comprising a manual input means, a motor, a steering gear, means for generating a torque signal related to the torque transmitted by said manual input means, and control means adapted to control the energization of said motor in accordance with said torque signal, the improvement wherein:
said motor is a stepping motor having an output shaft,
lost motion means allowing lost motion between said output shaft and said steering gear,
sensing means for generating a lost motion signal indicative of said lost motion,
and control means for controlling said stepping motor to step when said torque signal is zero and said lost motion signal exceeds predetermined limits.

5,381,870
MOTORIZED SKATEBOARD APPARATUS
Russell D. Kaufman, 990 W. 10th, Junction City, Oreg. 97448
Filed May 3, 1993, Ser. No. 55,330
Int. Cl.[6] A63C *17/12*
U.S. Cl. 180—181 **4 Claims**



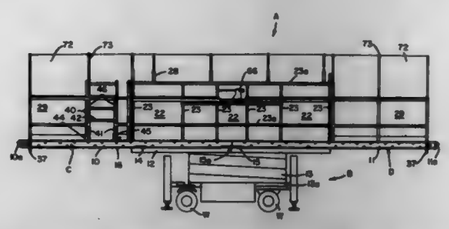
1. A motorized skateboard apparatus, comprising,
a frame having a first end spaced from a second end, with the first end including a first boot fixedly mounted to the first end projecting thereabove,
and
a second boot mounted to the frame adjacent the second end extending upwardly from the frame,
and
a drive motor secured to the frame and positioned between the first boot and the second boot,
and
a first axle mounted below the frame adjacent the first end, and a second axle mounted below the frame adjacent the second end,
and
first wheel members mounted to the first axle and second wheel members mounted to the second axle,
and
drive means in operative communication between the drive motor and the second axle for effecting rotation of the second axle and the second wheel members, and
a driving glove, the glove having a thumb socket, the thumb socket having a thumb socket flange secured thereto, and a cable sheath, the cable sheath having a cable sheath first end, the cable sheath first end having a cable sheath first mount secured to the glove spaced from the thumb socket flange, and a cable slidably directed through the cable sheath, with the cable having a first end secured to the thumb socket flange, the cable sheath having a cable sheath second end, the cable sheath second end mounted to the drive motor, and the cable having a cable second end, with the cable second end arranged for securement to a throttle control linkage in operative association with the drive motor.

5,381,871
AUTOMOTIVE REAR BODY STRUCTURE
Michitaka Ohta, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Continuation of Ser. No. 849,341, Mar. 11, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 134,877
Claims priority, application Japan, Mar. 30, 1991, 3-090978
Int. Cl.[6] B62D *21/15*
U.S. Cl. 180—296 **11 Claims**



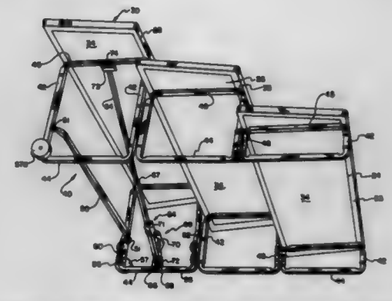
1. An automotive rear body structure comprising:
a pair of rear frames extending generally longitudinally of a vehicle body on respective sides thereof and having respective rearwardly upwardly extending kick-up portions;
a rear suspension cross member extending generally transversely of the vehicle body at a location rearwardly of said kick-up portions;
means for lowering the rigidity of that portion of at least one of said rear frames that is positioned rearwardly of said rear suspension cross member;
a silencer disposed longitudinally of the vehicle body at a location in the proximity of one of said rear frames and rearwardly of said rear suspension cross member;
a fuel tank disposed forwardly of said rear suspension cross member; and
means for enhancing the rigidity of at least one of said kick-up portions, disposed forwardly of said rear suspension cross member,
whereby an impact load caused by a rear-end collision is effectively absorbed by said means for lowering the rigidity so that said fuel tank is protected against said impact load.

5,381,872
SCAFFOLD SYSTEM
Victor M. Peruzzi, 12136 Palisades Dr., and Joseph G. Peruzzi, 3512 King Dr., both of Dunkirk, Md. 20754
Filed Apr. 4, 1994, Ser. No. 222,525
Int. Cl.[6] E04G *1/18*
U.S. Cl. 182—63 **16 Claims**



1. A scaffold structure including a support base, a first scaffold section, means mounting the first scaffold section for inward and outward movement with respect to the base, a second scaffold section superposed over said first scaffold section, means mounting the second scaffold section for inward and outward movement with respect to the base, and means on said base for securing said first and second sections in abutting relation when each of said sections are in an extended position.

5,381,873
PORTABLE RISER UNIT WITH A TELESCOPIC BRACE
John H. Kniefel; David R. Boeddeker, both of Owatonna, and Glenn G. Kanengieter, deceased, late of Owatonna, all of Minn. by Dorette E. Kanengieter, executrix , assignors to Wenger Corporation, Owatonna, Minn.
Continuation of Ser. No. 818,184, Jan. 8, 1992, abandoned. This application Sep. 30, 1993, Ser. No. 129,798
Int. Cl.[6] E04H *3/12*
U.S. Cl. 182—152 **28 Claims**



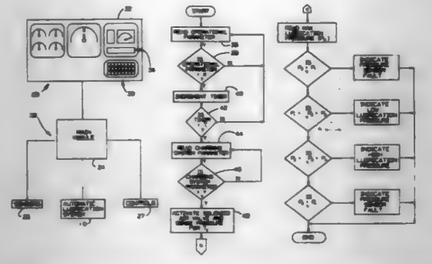
1. A foot actuated locking brace assembly for a collapsible riser unit having a support frame shiftable through manipulation by the hands and feet of an assembler between a collapsed position and an erected position, comprising:
a telescoping assembly having a first member and a second member selectively, slidably carried by said first member along an extensible path of travel relative to said first member;
foot actuated locking means for selectively locking said second member in position relative to said first member at a predetermined position along said extensible path of travel, including
detent means operably carried by said first member for selectively engaging said second member, said detent means including a detent element shiftable between a second member engaging position wherein said detent element operably engages said second member such that said first and second members are locked in position along said extensible path of travel, and a second member clearing position wherein said detent element clears said second member such that said first and second members are shiftable with respect to each other; and
a foot engageable actuating member operably coupled to said detent means adapted for shifting said detent element from said second member engaging position to said second member clearing position in response to the engagement of the foot of the assembler with the foot engageable actuating member; and
actuating member engaging means for selectively obstructing shifting of said foot engageable actuating member thereby selectively holding said detent element in said second member engaging position.

5,381,874

AUTOMATIC LUBRICATION CONTROL

John M. Hadank, Dunlap; Kenneth J. McGuire, Peoria; David R. Meinhold, Metamora, and Ron J. Penick, Henry, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 15, 1993, Ser. No. 137,867
Int. Cl.[6] F01M *1/18, 11/10*
U.S. Cl. 184—6.4 **4 Claims**



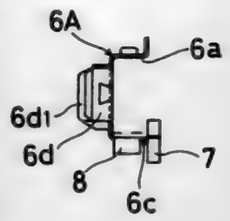
1. An apparatus for lubricating a work machine, comprising:
a timer;
a lubricant distribution system;
a charging system adapted to drive said lubricant distribution system;
means for sensing a charging system parameter indicative of the operative state of said charging system;
means for causing said timer to calculate a time interval, said time interval being dependent on a previous lubricating event;
means for producing a lubrication signal in response to said time interval being greater than or equal to a predetermined interval constant and said charging system parameter being greater than or equal to a predetermined level; and
means for activating said lubricant distribution system in response to said lubrication signal.

5,381,875

DISC BRAKE ASSEMBLY

Matsuhisa Tsuruta; Ryuichi Sakakibara, and Masayoshi Katagiri, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 31, 1993, Ser. No. 41,442
Claims priority, application Japan, Mar. 31, 1992, 4-077774
Int. Cl.[6] F16D *55/04*
U.S. Cl. 188—73.38 **5 Claims**



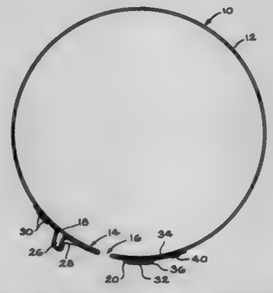
1. A disc brake assembly comprising;
a disc rotor rotated together with a vehicle wheel in a rotational direction,
a mounting member fixed to a stationary member of a vehicle having the vehicle wheel, the mounting member having arm portions including a pair of grooves, the grooves extending toward the axial direction of the disc rotor,
a pair of brake pads disposed at both sides of the disc rotor,
at least one of the brake pads having a pair of ear portions which are outwardly projected at the outer sides of both ends thereof in the rotational direction of the disc rotor and which are fitted into the grooves of the arm portions of the mounting member so as to be able to slide in a parallel direction with respect to a rotational shaft of the disc rotor,
a caliper member slidably supported on the mounting member so as to be movable in an axial direction of the disc rotor and pressing each of the brake pads against faces of the disc rotor, respectively, and
pad clips engaged with the arm portions of the mounting member so as to cover faces of the grooves and being provided with a first elastic member which is formed on each said pad clip and which always outwardly urges the brake pad with a first force in a direction generally parallel to a diametrical direction of the disc rotor through the ear portion and a second elastic member which is formed on the pad clip and which is adjacent to the first elastic member so as to be able to engage the ear portion of the brake pad with a second force, respectively, said second force being higher than said first force.

5,381,876

ANCHOR IN AUTOMATIC TRANSMISSION BANDS

Anthony J. Grzesiak, Sauk Village; Robert J. Fenoglio, Joliet, and Douglas J. Slager, Oak Park, all of Ill., assignors to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

Continuation-in-part of Ser. No. 962,766, Oct. 19, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 164,106
Int. Cl.[6] F16D *65/06*
U.S. Cl. 188—250 H **18 Claims**



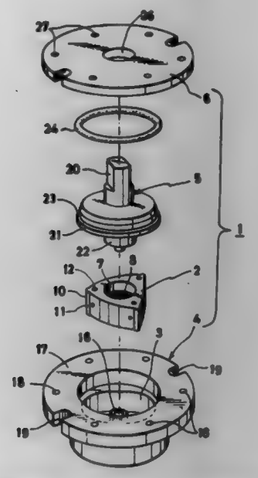
1. A transmission brake band for use in automatic transmissions wherein an apply piston and a reaction member operatively engage the brake band with a clutch drum located within the automatic transmission comprising, in combination: an elongated strap member (12) defining a generally annular interior circumference (34) and having an apply bracket (18) located at and integrally formed from one end (14) of said strap member (12) and a reaction bracket (20) located at and integrally formed from the opposed end (16) of said strap member (12); and a friction lining (24) adhered to the interior circumference (34) of said strap member (12); whereby said reaction bracket (20) has a generally domed configuration (36) formed from said strap member (12) material to define a pocket in such annular interior circumference (34), said domed configuration (36) and said pocket being closed about its periphery flush with said strap member (12), said dome (36) having a reaction opening (32) extending therethrough into said pocket to define a longitudinal axis wherein the portion off said strap material forming said domed configuration (36) immediately surrounding said reaction opening (32) extends in a generally perpendicular direction away from the longitudinal axis of said reaction opening (32).

5,381,877

ROTATING-PISTON TYPE ROTARY DAMPER

Yasutomo Kobayashi, Chigasaki, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Dec. 7, 1993, Ser. No. 162,701
Int. Cl.[6] F16D *57/02*
U.S. Cl. 188—290 **10 Claims**



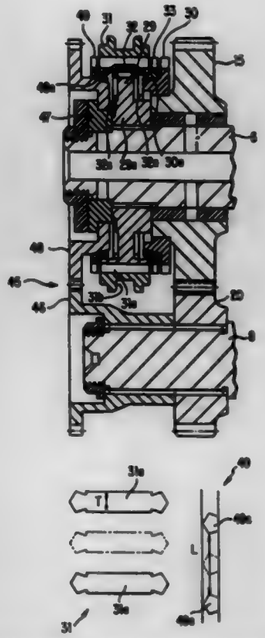
1. A rotating-piston type rotary damper comprising:
a rotor formed in the shape of a substantially triangular prism having apex portions provided with apex seals, said rotor having a central circular through hole formed normal to its end faces so that one open side of said rotor serves as a fitting hole and the other open side of said rotor comprises a gear with internal teeth;
a rotor housing having an operation chamber open on one side for accommodating said rotor therein and closed on the other side which is provided with a central bearing and a coaxial stationary gear with external teeth;
a main shaft having an operation shaft portion at one end thereof and an eccentric near the other end thereof; and
a lid having a through hole for permitting passage therethrough of said operation shaft portion of said main shaft;
said rotor being accommodated in said operation chamber, with said internal teeth engaged with said external teeth and said apex seals in contact with an inner surface of said operation chamber, to define volume-variable compartments between the inner surface of said operation chamber and an outer surface of said rotor;
said main shaft being inserted into said central circular through hole of said rotor, with said eccentric fitted in said fitting hole and the other end thereof supported on said central bearing;
said volume-variable compartments containing viscous liquid;
said lid covering the open side of said operation shaft portion of said rotor passing through said through hole of said lid;
said operation chamber having an inside configuration on which said apex seals of said rotor slide when said rotor rotates, and said rotor having an outside configuration not interfering with the inner surface of said operation chamber but making said volume-variable compartments variable in volume when said rotor rotates;
said rotor having communication holes for transferring said viscous liquid in a volume-variable compartment of decreasing volume into adjacent volume-variable compartments.

5,381,878

STRUCTURE OF REVERSE BRAKE FOR AUTOMOBILE TRANSMISSION

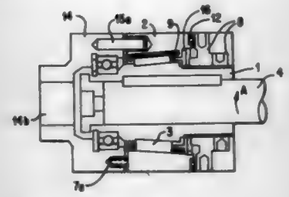
Katsutoshi Ohshima; Norihide Urabayashi, and Satoshi Fujikawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 13, 1993, Ser. No. 3,701
Claims priority, application Japan, Jan. 13, 1992, 4-003710
Int. Cl.[6] F16D *23/02*
U.S. Cl. 192—4 A **12 Claims**



1. In combination, an automobile transmission and a reverse brake mechanism for the automobile transmission comprising:
a primary shaft through which engine torque is transmitted to the automobile transmission;
a secondary shaft through which engine torque is transmitted from the automobile transmission;
a clutch sleeve mounted for sliding movement on the primary shaft and having peripheral clutch teeth with chamfers arranged at regular separations, said clutch sleeve being fixed for rotation with the primary shaft;
a synchronizing ring mounted for rotation on the primary shaft and having peripheral synchronizing teeth with chamfers arranged at regular separations, each of which is larger than a circumferential width of each of said peripheral clutch teeth; and
brake means for braking the primary shaft, said brake means being operationally coupled to said primary shaft through said synchronizing ring while said clutch sleeve is brought into engagement with said synchronizing ring through the chamfers of said peripheral clutch teeth and said peripheral synchronizing teeth when shifting the automobile transmission to a reverse gear;
said clutch sleeve, said synchronizing ring and said brake means together forming a synchronizing mechanism for synchronizing, in rotation, said primary shaft and said secondary shaft.

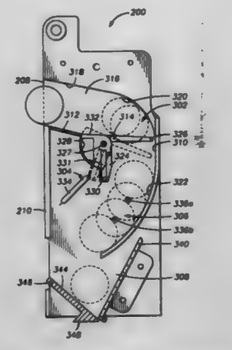
5,381,879
TORQUE ABSORBER
Nobuo Takata, Yao, Japan, assignor to THK MENT Research Co., Ltd., Osaka, Japan
PCT No. PCT/JP92/00092, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO92/16766, PCT Pub. Date Oct. 1, 1992
PCT Filed Jan. 30, 1992, Ser. No. 938,035
Claims priority, application Japan, Mar. 18, 1991, 3-052558
Int. Cl.[6] F16D *43/20, 41/06*
U.S. Cl. 192—45 3 Claims



1. A torque absorber comprising:
an inner rotation body, an outer rotation body, a plurality of intermediate rotation bodies, an energizing means, a power transmission rotation body and a movement stop member; and
said inner rotation body being provided with an inner raceway track of mono-hyperboloid of revolution about a common axis;
said outer rotation body being provided with an outer raceway track of mono-hyperboloid of revolution about said common axis;
said inner raceway track and said outer raceway track facing each other to form a set of combined raceways;
said intermediate rotation bodies having cylindrical rolling surfaces and being arranged with their center axis at an angle to a cross section including said common axis, and the surface of said intermediate rotation bodies being arranged so as to come into linear contact with said inner raceway and said outer raceway;
said power transmission rotation body being arranged on one end side of said outer rotation body and around one side of said inner rotation body through a bearing, so as to be rotatable relative to said inner rotation body while keeping a constant axial position relative to said inner rotation body, and being connected with said outer rotation body by a torque transmission means which transmits a torque between said power transmission rotation body and said outer rotation body;
said energizing means being arranged between said power transmission rotation body and said outer rotation body, to energize said outer rotation body in said axial direction and in such a direction as to narrow the raceway gap; and
said movement stop member being provided to bring the movement of said outer rotation body in the direction to narrow said raceway gap to a stop at a given position through a guide bearing.

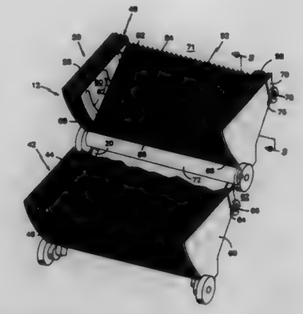
5,381,880
ELECTRONIC COIN MECHANISM
Rune S. Pearson, 2919 Avenue D, Katy, Tex. 77493
Filed Nov. 9, 1992, Ser. No. 973,825
Int. Cl.[6] G07F *11/04*
U.S. Cl. 194—217 21 Claims

18. A device for determining a dimensional characteristic of a disc-like object, said device comprising:
means defining an arcuate shoulder which the object traverses in response to the force due to gravity;
means for conducting said object against said arcuate shoulder, said conducting means comprising
a body rotatable about a shaft, said body having a projection with an upper surface for engaging the object and conducting the object against said arcuate shoulder, and
said projection being downwardly rotatable about said shaft in response to contact with the object to permit passage of the object between said projection and said arcuate shoulder;



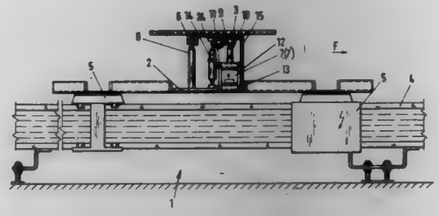
means, adjacent said shoulder and positioned to be proximate the object at least part of a time interval over which the object traverses said shoulder, for sensing passage of the object and for producing a signal indicative of a timing of said passage; and
means responsive to said sensing means for determining said dimensional characteristic on the basis of said signal.

5,381,881
STEP PLATFORM FOR AN ESCALATOR
Helmut J. W. Meyer, Bueckeburg; Hermann W. Ahls, Obernkirchen OT Vehlen; Klaus Blaseck, Burgdorf-Ehlershausen, and Udo Schmitting, Schwafoerden, all of Germany, assignors to Otis Elevator Company, Farmington, Conn.
Filed Nov. 12, 1993, Ser. No. 151,440
Int. Cl.[6] B66B *23/12*
U.S. Cl. 198—333 20 Claims



1. A step platform for an escalator having a step chain, with a plurality of axles, traveling a circuitous path between a lower landing and an upper landing, passing through an inclined midsection extending therebetween, comprising:
a lower step, attached to an axle of the step chain;
a higher step, attached to an axle of the step chain, having a middle section which includes a top and a riser; and
means for selectively raising or lowering said middle section within said higher step, wherein said selective raising or lowering means is operated by the rotation of the step chain axles in the transition zones between the landings and the inclined midsection.

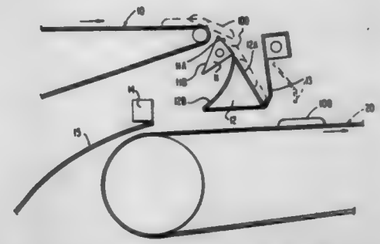
5,381,882
TILTABLE TRAY OF A SORTING CONVEYOR INSTALLATION
Rudiger Ostholt, Wetter, Germany, assignor to Maanesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Sep. 30, 1993, Ser. No. 129,418
Claims priority, application Germany, Sep. 30, 1992, 4233553
Int. Cl.[6] B65G *37/00*
U.S. Cl. 198—365 14 Claims



1. A tiltable tray apparatus of a sorting conveyor installation for depositing unit loads by means of a swiveling movement from a horizontal transporting position into a tilting position, comprising:
a conveyor device;
a tray;
a supporting member connecting the tray to tire conveyor device, the supporting member extending in a vertical direction in the transporting position;
a ball joint provided at the supporting member for swiveling movement of the tray; and,
two knee levers arranged between the tray and the conveyor device adjacent to the supporting member at both sides thereof as seen in the conveying direction and connected with the conveyor device and the tray by a joint in each instance, the joints at the knee levers having one end constructed as ball joints and another end as hinge joints, each hinge joint having a swivel axis which is aligned parallel to an opposite tilting axis extending through an articulation point of the ball joint of the supporting member and an articulation point of the other knee lever, each of the ball joints being located on a commonly directed ends of its respective supporting member or knee lever so that the articulation points of the ball joints form corners of an imaginary triangle, and center points of the hinge joints situated at the opposite ends of the knee levers and a fastening point of the supporting member forming corners of another imaginary triangle.

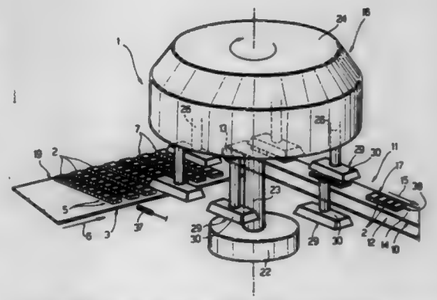
5,381,883
FLIP-SLIDE APPARATUS
Herman D. Mims, Ellenboro, N.C., assignor to Machine Builders & Design, Inc., Shelby, N.C.
Continuation of Ser. No. 837,946, Feb. 20, 1992, Pat. No. 5,287,953. This application Jul. 30, 1993, Ser. No. 99,429
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—374 5 Claims

1. An article flipping apparatus for use witch an article conveyor unit that conveys articles to a transport mechanism, the article flipping apparatus comprising:
a flip-slide means for alternatively flipping or sliding an article conveyed by said article conveyor unit; and
a registering means for alternatively receiving the article having been flipped or slid by said flip-slide means, and for positioning the article in a registered position for deposit on said transport mechanism, wherein said registering means is further operative to deposit said article on said transport mechanism at a position corresponding to said



registered position so as to allow both the flipped and slid articles to be deposited on said transport mechanism at constant intervals relative to each other.

5,381,884
METHOD AND DEVICE FOR ALIGNING FLAT PRODUCTS
Mario Spatafora, and Giulio Strazzari, both of Bologna, Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy
Continuation of Ser. No. 964,309, Oct. 21, 1992, abandoned.
This application Jun. 20, 1994, Ser. No. 262,351
Claims priority, application Italy, Oct. 21, 1991, BO91A 000384
Int. Cl.[6] B65G *47/26*
U.S. Cl. 198—433 5 Claims



1. A method of aligning flat products, said method comprising:
arranging the products, on a first conveyor, in a plurality of columns parallel to a first direction of travel of the first conveyor and arranged side by side so as to define a succession of product rows perpendicular to the first direction of travel;
feeding the columns axially along a first path at a first speed, said first speed being a continuous speed;
advancing at least one suction head along a second path which is circular, which extends partially over the first path, wherein the suction head, when moving along the second path, is oriented, at a pickup station along the first path, transversely to said first path to overlap at least a portion of at least one of said rows at said pickup station;
activating the suction head at said pickup station, so as to suck the products in said portion of said row upward on to said suction head;
transferring the aspirated products, by means of the suction head, along a portion of the second path extending between the pickup station and an unloading station; and
releasing the aspirated products at said unloading station on to a second conveyor which moves at a second continuous

speed along a third path parallel to the position assumed by the suction head at the unloading station, wherein the suction head is advanced along the second path at a speed substantially equal to the second speed and greater than the first speed.

5,381,885

TROLLEY APPARATUS WITH IMPROVED UNLOADER

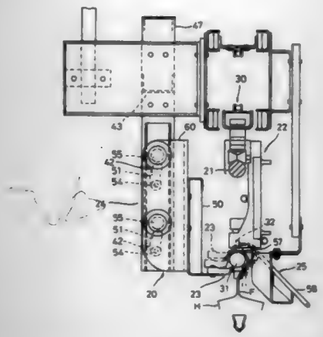
Toru Hirao, and Hideki Sato, both of Haano, Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Mar. 7, 1994, Ser. No. 207,362

Claims priority, application Japan, Mar. 10, 1993, 5-015973[U]

Int. Cl.[6] B65G *47/34*

U.S. Cl. 198—465.4 **1 Claim**



1. In an apparatus for transporting articles on hangers, said apparatus comprising a trolley having a horizontally extending, elongated bar engageable by hooks of said hangers whereby a plurality of articles on hangers can be suspended from said bar, means for moving said bar in a path extending along the direction of elongation of the bar, and at least one upright stop means on said bar for pushing hooks of hangers as said bar moves in said path, an unloading apparatus comprising:

hanger receiving means engageable with hooks of hangers suspended from said bar, said hanger receiving means extending alongside said bar;

means for moving said hanger receiving means upward whereby hooks engaged by said hanger receiving means are raised from said bar; and

an unloading chute provided adjacent to the path of said bar for receiving the hooks of hangers raised from said bar by said hanger receiving means, and transporting hangers away from said bar as the hooks are raised from said bar and pushed by said upright stop means, whereby articles on said hangers are smoothly unloaded from said bar onto said chute.

5,381,886

APPARATUS AND METHOD WITH IMPROVED DRIVE FORCE CAPABILITY FOR TRANSPORTING AND METERING PARTICULATE MATERIAL

Andrew G. Hay, 17244 South Main Street, Gardena, Calif. 90248-3130

Continuation-in-part of Ser. No. 76,314, Jun. 11, 1993. This application Aug. 31, 1993, Ser. No. 115,177

Int. Cl.[6] B65G *31/04*

U.S. Cl. 198—642 **36 Claims**

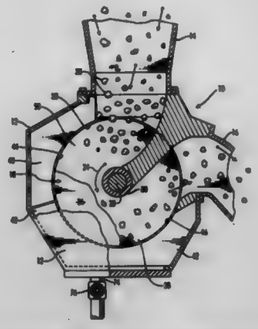
1. A method of making an apparatus having a pair of rotary disk members spaced from each other by a distance W and connected to a hub of diameter D for imparting a drive force for driving a particulate material, the method comprising the steps of:

determining a total pump operating pressure P;

determining a drive force value F so that F≧P;

calculating at least one value for each of D and W from the relationship: F=f(D/W);

forming said hub having a diameter D;



arranging the pair of rotatable disk members coaxially and spaced from each other by the distance W;

forming a peripheral wall adjacent the space between the pair of rotatable disk members so as to define a duct of width W in the space between the disk members and adjacent the peripheral wall; and

forming a duct inlet and a duct outlet in material flow communication with the duct.

5,381,887

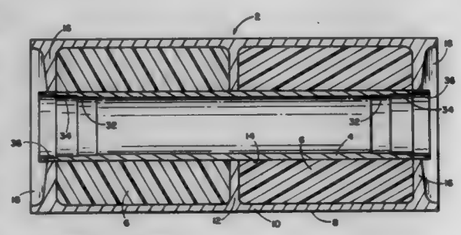
CONVEYOR SYSTEMS AND HIGH DURABILITY ROLLERS THEREFOR

Orlin W. Emmons, Wagner, Okla., assignor to Elastomer Specialties, Inc., Broken Arrow, Okla.

Filed Jan. 12, 1994, Ser. No. 180,875

Int. Cl.[6] B65G *15/68*

U.S. Cl. 198—830 **20 Claims**



1. A roller comprising:

an elongate central member having a first end, a second end, a passageway extending therethrough from said first end to said second end, and an exterior surface;

a first polymer foam segment positioned around said elongate central member, said first foam segment having a first end, a second end, an interior surface which extends between said first and said second ends of said first foam segment, and an exterior surface which extends from said first end of said first foam segment to said second end of said first foam segment; and

a polymer coating covering substantially all of said first foam segment except for said interior surface, said polymer coating having an outside portion covering said exterior surface of said first foam segment and said polymer coating having a first end portion covering said first end of said first foam segment, said first end portion of said polymer coating extending from said outside portion to said exterior surface of said elongate central member;

wherein said interior surface of said first foam segment directly contacts said exterior surface of said elongate central member.

5,381,888

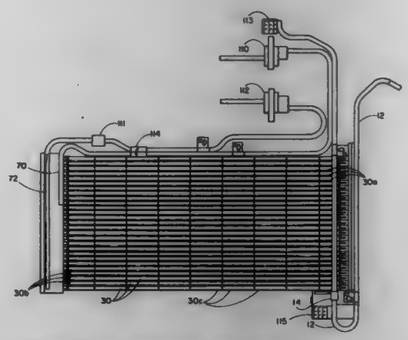
RATCHET OPERATED CONTINUOUS CHAIN CONVEYOR STORAGE AND RETRIEVAL SYSTEM UTILIZING PLURALITY THEREOF

R. Brian Benson; David W. Kittel, both of Stillwater, and Adrian A. Poynter, Forest Lake, all of Minn., assignors to Cannon Equipment Company, Cannon Falls, Minn.

Continuation of Ser. No. 867,727, Apr. 10, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 210,657

Int. Cl.[6] B65G *23/00*

U.S. Cl. 198—832.1 **12 Claims**



1. A ratchet chain conveyor, comprising:

a frame, at least one chain means extending around sprockets rotatively connected to opposite ends of the frame, cylinder drive means secured to the frame, the cylinder dive means having gravity dog means pivotally secured to an end of a piston thereof, the gravity dog means for engaging with the chain means during an extension of the piston and for disengaging with the chain means during a retraction of the piston for providing a ratcheting movement of the chain means for moving objects resting on the chain means from one end of the conveyor to the other, and further including lift means for lifting objects carried on the conveyor out of substantial contact with the chain means thereof, the lift means including a pair of parallel lift bars extending along either side of a portion of the chain means, and a lift drive means secured to the lift bars for operating the bars so that they provide for the lifting of the objects out of substantial contact with the chain means.

5,381,889

CONTAINER FOR CONTACT LENSES AND A RESERVOIR FOR CONTACT LENS FLUID

Udo Amend, Märchenring 49, D-76199 Karlsruhe, Germany

Filed Jun. 23, 1994, Ser. No. 264,321

Claims priority, application European Pat. Off., Jun. 24, 1993, 93110064

Int. Cl.[6] A45C *11/04*; B08B *3/00*

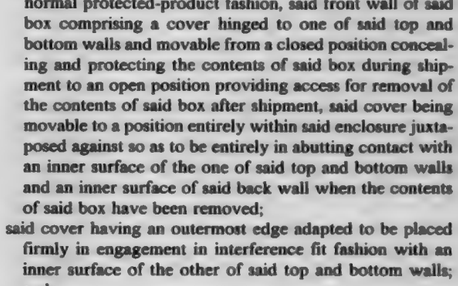
U.S. Cl. 206—5.1 **3 Claims**

1. A container for contact lenses and a supply of contact lens fluid, comprising

a base body in the shape of a rectangular cuboid with a flat front face;

a rectangular receptacle accessible from the front face for accommodating a removable contact lens etui;

a cross-sectionally L-shaped fluid chamber partly surrounding the receptacle such that the two legs of the L enclose the receptacle;



a metering connector disposed on the front face and connected with the fluid chamber; and

a covering for the front face.

5,381,890

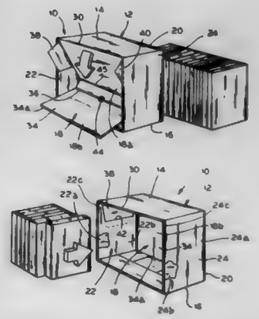
CONVERTIBLE PACKAGE/SHELF ORGANIZER

Gavin Scobbie, Homewood, Ill., assignor to R. R. Donnelley & Sons Co., Lisle, Ill.

Filed Oct. 12, 1993, Ser. No. 134,743

Int. Cl.[6] B65D *5/52*

U.S. Cl. 206—45.23 **16 Claims**



1. A convertible package/shelf organizer, comprising:

a generally rectangular box having a top wall, a bottom wall, a front wall, a back wall, and a pair of side walls defining an enclosure for shipping the contents of said box in a normal protected-product fashion, said front wall of said box comprising a cover hinged to one of said top and bottom walls and movable from a closed position concealing and protecting the contents of said box during shipment to an open position providing access for removal of the contents of said box after shipment, said cover being movable to a position entirely within said enclosure juxtaposed against so as to be entirely in abutting contact with an inner surface of the one of said top and bottom walls and an inner surface of said back wall when the contents of said box have been removed;

said cover having an outermost edge adapted to be placed firmly in engagement in interference fit fashion with an inner surface of the other of said top and bottom walls; and

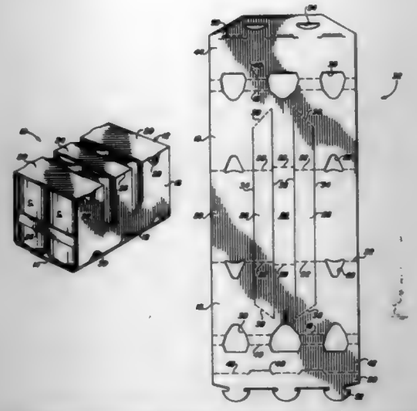
means for locking said cover in said juxtaposed position to accommodate replacement of the contents of said box into said box such that the contents are visibly displayed in shelf organizer fashion therewithin.

5,381,891

WRAP-AROUND CARRIER WITH END STRAPS

Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Feb. 10, 1994, Ser. No. 194,763
Int. Cl.[6] B65D 75/00
U.S. Cl. 206—197 7 Claims



1. A package comprised of a wrap-around carrier containing a plurality of articles, comprising:
opposite side panels connected to a bottom panel;
a top panel having end portions and a central portion, the end portions and the central portion having side edges;
the side edges of the end portions of the top panel and the side edges of the central portion of the top panel being connected by fold lines to the side panels, the end portions and central portion of the top panel extending at substantially right angles to the side panels;
the central portion of the top panel being separated from each end portion thereof by a cutout extending across the width of the top panel and into the side panels for a substantial distance, each cutout terminating in opposite side panels at fold lines connecting opposite ends of an end strap to the side panels;
the fold lines connecting the end straps to the side panels extending outwardly and upwardly at an angle to the top and bottom panels;
the end straps having a central portion corresponding in shape and size to the top panel cutouts and being unconnected to and spaced from the associated end portion of the top panel, the central portion of the end straps extending between the side panels and being adjacent at least some of the articles in the carrier;
the end straps including end portions lying between said adjacent articles and the associated side panels; and
the central portion of the top panel comprising a handle strap to be grasped by the hand of a user in order to lift the package.

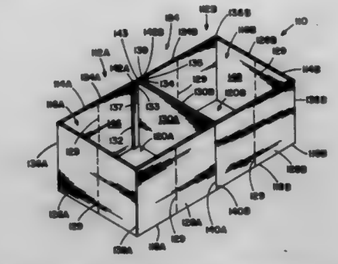
5,381,892

SUPPORT STRUCTURE FOR RETAINING ITEMS IN POSITION

William M. Allen, 204 Cayuga Rd., Louisville, Ky. 40207

Filed Jun. 26, 1992, Ser. No. 904,964
Int. Cl.[6] B65D 25/04
U.S. Cl. 206—216 10 Claims

1. A support structure for supporting bags of groceries in position comprising:
a. a first grocery bag receiving compartment defined by a first rectangular peripheral side wall structure with a flapless open top and a flapless open bottom;
b. a second grocery bag receiving compartment defined by a second rectangular peripheral side wall structure having a flapless open top and a flapless open bottom; said compartments being hingably joined to each other only along a single axis about which said compartments can be rotationally displaced relative to one another, each of the



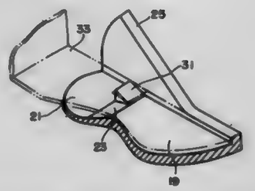
corners of said compartments being hingable such that said compartments are collapsible against each other to form a flattened package for storage purposes, said wall structures being formed of a single and unitary sheet of material.

5,381,893

HOUSING CASE FOR TAPE CASSETTE WITH INDEX CARD

Kenji Hashizume, and Masatoshi Okamura, both of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jan. 31, 1994, Ser. No. 189,368
Claims priority, application Japan, Feb. 5, 1993, 5-008087[U]
Int. Cl.[6] B65D 85/672
U.S. Cl. 206—232 2 Claims



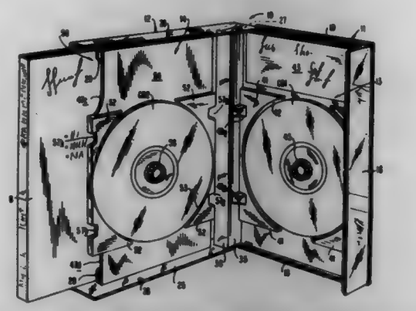
1. A housing case for a tape cassette, including a main body, a lid pivoted to the main body at one edge and an index card for indicating various items on the tape cassette, said index card being inserted along the inner surface of the lid, said lid including a flat portion 19, a step portion 23 and a recess portion 21 for receiving a thick portion of the tape cassette in this order as seen in the direction of the insertion of the tape cassette, characterized in that the step portion 23 is provided with at least one retainer lug 31 consisting of a slanted surface extending from, and away from the plane of, the inner surface of the flat portion in the direction of the insertion and a surface extending from the distal end of the slanted surface in the direction substantially normal to said flat portion 19, and said index card is provided with at least one opening for receiving the retainer lug 31.

5,381,894

STORAGE CASE FOR MULTIPLE COMPACT DISCS AND RELATED PRINTED MATERIAL

Joseph J. Misterka, Terre Haute, Ind., and John W. Carroll, III, Pepperal, Mass., assignors to Digital Audio Disc Corporation, Terre Haute, Ind.

Continuation-in-part of Ser. No. 61,009, May 14, 1993, Pat. No. 5,285,893. This application Feb. 10, 1994, Ser. No. 195,349
Int. Cl.[6] B65D 85/57
U.S. Cl. 206—310 4 Claims



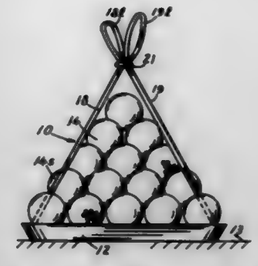
1. A storage case for accommodating a plurality of compact discs comprising:
a bottom member including a panel of rectangular configuration, and a pair of opposed peripheral walls extending along relatively long sides of said panel;
a lid member including a panel of substantially the same rectangular configuration as said panel of the bottom member, and a pair of opposed peripheral walls extending along relatively short sides of said panel of the lid member;
means pivotally connecting said lid and bottom members for movements relative to each other about an axis parallel to adjacent long sides of said panels of the lid and bottom members, respectively, between a closed position in which said panels are in parallel spaced relation with said peripheral walls of the lid member extending between adjacent ends of said peripheral walls of the bottom member for enclosing a space between said panels, and an opened position in which said panels of the lid and bottom members are angularly spread apart;
first and second trays each having disc supporting means for removably supporting a respective compact disc thereon;
means for mounting said first and second trays on said lid and bottom members, respectively, so as to be disposed at interiors of said panels in said closed position with said disc supporting means of said first and second trays in confronting relation to each other, said means for mounting one of said trays including means for spacing said one tray from the panel of the respective one of said lid and bottom members and thereby defining a compartment for receiving a printed booklet and to which, in said opened position, access is had between ends of said peripheral walls of said one member;
said one tray having cutouts located adjacent both of the opposed long sides of said panel of the respective one of said lid and bottom members, said cutouts being substantially spaced from the relatively short sides of said panel of the respective one of the lid and bottom members; and
the other of said trays having tapered protuberances located to extend into said cutouts and being dimensioned for bearing support against a printed booklet in said compartment when said lid and bottom members are in said closed position thereof, whereby to deter bowing toward each other of the panels of said lid and bottom members.

5,381,895

GOLF BALL STACKING AND CARRYING DEVICE

John E. Thomsen, 1621 116th St., Kenosha, Wis. 53140

Filed Dec. 28, 1993, Ser. No. 175,056
Int. Cl.[6] B65D 85/00, 1/34; A47F 7/00
U.S. Cl. 206—315.9 5 Claims



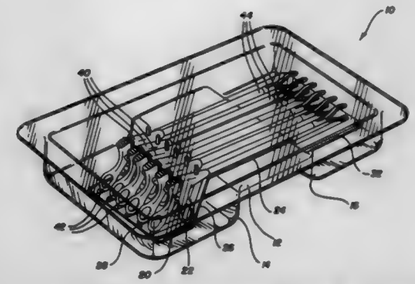
1. A stacking and carrying device for golf balls comprising:
a single substantially planar tray member having sides and opposing surfaces with a plurality of adjacent apertures formed in one of said opposing surfaces and aligned in rows and in a square orientation, each aperture constructed in the form of a partial sphere to receive a portion of a golf ball;
a plurality of golf balls, the plurality comprising one golf ball; filling each of the apertures and a multilayered pyramidal arrangement on top of those golf balls positioned in all of the apertures, with each golf ball of each layer supported by surfaces of four golf balls; and
strap members connected to opposite sides of the tray member and extending over the pyramidal arrangement of the golf balls for carrying purposes.

5,381,896

PRESENTATION TRAY FOR SURGICAL INSTRUMENTS

Teresa M. Simons, Piscataway, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Oct. 6, 1993, Ser. No. 133,414
Int. Cl.[6] B65D 85/20
U.S. Cl. 206—370 2 Claims



1. A tray for holding and displaying a plurality of surgical instruments, said instruments having a handle and an elongated shaft extending from said handle, comprising:
a base defining a first plane for supporting the shafts of said instruments;
a handle holding portion extending from said base, said handle holding portion having a first side wall, and a bottom for holding said handle extending from said side wall, said bottom defining a second plane;
wherein said first and second planes are not parallel; and
further containing a second side wall extending from said base, and said second side wall terminating at a surface

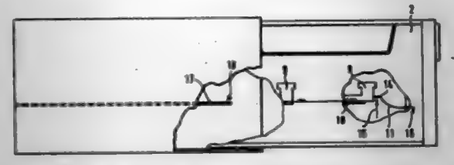
co-planar with said bottom, said tray contained in a package having a bottom, said package bottom having a first surface having a surface area at least that of said base and a second surface spaced apart from said first surface and having a surface area at least that of said handle holding portion bottom.

5,381,897

DEVICE FOR STORING MAGNETIC TAPE CASSETTES

Torsten Bieck, Dornstetten/Hallwangen, and Wolfgang Nehl, Tumlingen/Waldachtal, both of Germany, assignors to fischerwerke, Artur Fischer GmbH & Co. KG, Waldachtal/-Tumlingen, Germany

Filed Jun. 11, 1993, Ser. No. 75,955
Claims priority, application Germany, Jun. 12, 1992, 4219233
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—387.1 **6 Claims**



1. A device for storing magnetic tape cassettes, comprising a housing provided with a control edge; a slider member insertable into said housing to a storage position; provided with locking members for engaging with tape reel hubs of a compact cassette when the compact cassette is stored in the device and lies on a supporting surface of said slider member; a common shaft connecting said locking members with one another and turnably supported with said locking members in said slider; a pressure spring arranged to move said slider outwardly of said housing to a removal position; and a spring wire acting on said locking members and holding the latter below said supporting surface when said slider member is located outside said housing in a removal position, while when said slider member is located in said housing in the storage position said control edge presses against said spring wire to apply a torque to said locking members and to thereby press said locking members upwards away from said supporting surface and, when a compact cassette is inserted, to move said locking members for inserting into the tape reel hubs of the cassette, said locking members being mounted pivotally on said slider member for pivoting said locking members into the tape reel hubs when the compact cassette is inserted, said spring wire having one end which is bent in the shape of a segment of a circle and acts on said locking members with respect to a pivot axis of said locking members, said one end of said spring wire acting directly on said common shaft on which said locking members are mounted, so as to thereby act on said locking members, said spring wire having another end which is fixed to a base of said slider member and is mounted on said slider member so as to be laterally displaceable.

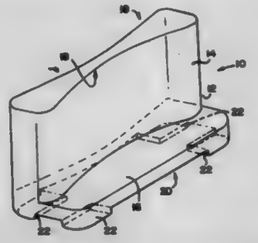
5,381,898

PROTECTOR DEVICE FOR PROTECTING PAPER ROLLS

Richard A. Jones, 11 Pastoll Road, Pinetown, Natal Province, South Africa

Filed Jun. 1, 1993, Ser. No. 71,466
Claims priority, application South Africa, Jun. 5, 1992, 92/4122; Nov. 24, 1992, 92/9096
Int. Cl.[6] B65D *85/66, 85/20*; A47F *7/00*
U.S. Cl. 206—391 **10 Claims**

1. A protector device for protecting paper rolls against damage during transport, which comprises a body having a spacer column formed to be locatable between two adjacent paper rolls when positioned on a transport vehicle for holding the paper rolls in a spaced configuration with respect to one another and a support formation extending from one end of the spacer column in a configuration in which the formation can rest on the end of at least one of two adjacent paper rolls held in a spaced configuration with respect to one another by the



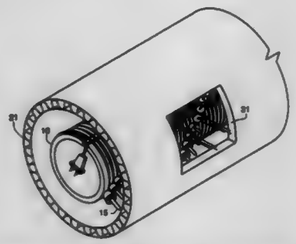
spacer column, in the operative configuration of the protector device, and wherein the support formation defines an outer face facing away from the support column, which outer face defines locating formations that project therefrom and that are at least one tying strap whereby paper rolls on a transport vehicle can be tied onto the vehicle.

5,381,899

PACKAGE ASSEMBLY FOR DECORATIVE LIGHTS

Mary M. Rabbitt, 634 Via Lido Nord, Newport Beach, Calif. 92663

Filed Mar. 2, 1994, Ser. No. 204,484
Int. Cl.[6] B65D *85/42*
U.S. Cl. 206—397 **2 Claims**



1. A package assembly for shipping, displaying and storing a string of decorative lights, said decorative light string including an electrical conductor-pair cord having terminal ends, plug means on said terminal ends for electrically connecting said conductor-pair to an electrical convenience outlet or to another such string, and a plurality of electrical lights connected to said conductor-pair, spaced along the length thereof, said package assembly comprising:

a) an inner elongate, hollow, generally cylindrical core, having opposed ends and notches, formed in the wall thereof at said opposed ends and extending longitudinally toward the center thereof;

b) said decorative light string wound around arid upon the exterior surface of said cylindrical core, the terminal ends of said string extending through said notches to secure said string upon and around said core and to locate said terminal ends and plug means within said core; and

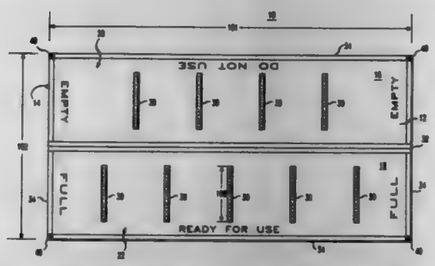
c) an outer protective cover, enclosing said core with said light string wound thereon.

5,381,900

PRESSURIZED AIR-BOTTLE STAGING MAT

Robert T. Marra, 38 Riverdale Ave., Monmouth Beach, N.J. 07750

Filed Oct. 27, 1993, Ser. No. 141,517
Int. Cl.[6] B65D *85/20*; E04B *1/00*; A62C *13/76*; B32B *7/00*
U.S. Cl. 206—446 **15 Claims**



1. Apparatus for organizing pressurized air-pak bottles for emergency firematic use, comprising:

a mat having a front surface, a back surface, an upper horizontally extending section in each of said front and back surfaces, and a lower horizontally extending section in each of said front and back surfaces;

a first row of a plurality of spaced-apart dividers in said horizontally extending upper section of said front surface;

a second row of a plurality of spaced-apart dividers in said horizontally extending lower section of said front surface;

with individual dividers of said first row being horizontally offset with respect to individual dividers of said second row;

with each of said individual dividers extending above said front surface of said mat a distance to separate air-pak bottles placed between adjacent dividers; and

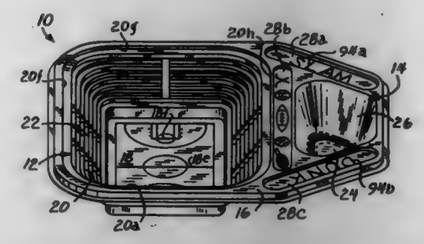
with said mat being of a water-resistant, foldable composition.

5,381,901

DUAL COMPARTMENT FOOD TRAY

Bobby V. Hundley, 9520 Stacy La., Union, Ill. 60180

Continuation of Ser. No. 996,161, Dec. 23, 1992. This application Feb. 3, 1994, Ser. No. 191,067
Int. Cl.[6] B65D *1/24, 1/36*
U.S. Cl. 206—457 **3 Claims**



1. A food tray of unitary construction having top and bottom portions, said food tray comprising:

a first recessed compartment for receiving a first portion of food and including a first continuous tiered side wall and a first generally flat lower panel forming a first portion of the bottom of the tray, said flat lower panel including a plurality of lines defining limits and features of a baseball diamond including first and second straight lines oriented at 90° to one another so as to form first and second foul lines of said baseball diamond and a first inner curvilinear line and a second outer curvilinear line respectively forming outer peripheries of an infield and an outfield of said baseball diamond, said side wall including a first plurality of connected inner lower lines and a second plurality of outer upper lines respectively forming inner and outer peripheries of a spectator seating area of a baseball stadium, wherein said first recessed compartment is tapered inwardly in proceeding from top to bottom and wherein said first side wall is continuously tiered between said first plurality of connected inner lower lines and said second plurality of connected outer upper lines so as to form seating rows of said spectator seating area, said first side wall further including a plurality of generally flat, spaced linear sections oriented at 90° to said tiered seating rows so as to form aisles in said spectator seating area;

a second recessed compartment in spaced relation from said first recessed compartment for receiving a second portion of food, said second recessed compartment including a second continuous smooth side wall and a second generally flat lower panel forming a second portion of the bottom of the tray, wherein said first and second lower panels are aligned and in a common plane;

a generally flat upper panel forming a portion of the top of the tray and disposed generally intermediate and formed integrally with said first and second recessed compartments, wherein said upper panel is generally linear and extends intermediate opposed lateral portions of said food tray, said upper panel including an upraised peripheral upper lip and at least one recessed area for supporting and retaining an article such as a condiment or an eating utensil, said at least one recessed area including indicia thereon, wherein said tray is adapted to nest with another similarly configured food tray with said first and second recessed compartments of the tray positioned respectively in the first and second recessed compartments of another such food tray; and

a linear slot disposed on a bottom portion of said food tray below said generally flat upper panel, and wherein said slot extends intermediate said opposed lateral portions of said food tray and is sized to receive a user's fingers engaging a lower surface of said generally flat upper panel for supporting and stabilizing said tray and the contents of said first and second compartments.

5,381,902

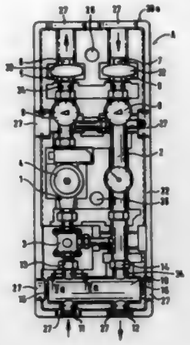
DEVICE FOR SUPPLYING A CIRCUIT OF A HEATING OR COOLING SUPPLY SYSTEM

Josef Dumser, Landau, and Karl H. Kolaska, Löwenstein, both of Germany, assignors to Dumser Metallbau GmbH, Landau and Storopack Hans Reichenecker GmbH & Co., Metzingen, both of Germany

Filed Mar. 19, 1993, Ser. No. 34,356
Claims priority, application Germany, Mar. 19, 1992, 9203601[U]; European Pat. Off., Sep. 18, 1992, 92116004
Int. Cl.[6] B65D *81/02*; F16L *59/16*; H02G *3/08*
U.S. Cl. 206—523 **12 Claims**

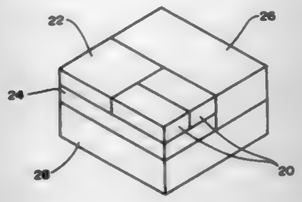
1. A device for supplying a circuit of a heating or cooling supply system, comprising: a structural component group made up of units for conveying a medium and for regulating and monitoring the medium, including fittings and connecting parts, that are combined in parallel pipelines for forward and return flow; a housing in which the structural component group is arranged so as to be ready for installation, the housing being made of a thermal insulating plastic material and divided into a lower shell and an upper shell by a seam that extends approximately in a central plane formed by the parallel pipelines; lock-seam connection means for connecting together the lower shell and the upper shell, the connection means including lock-seams that form a positive-locking connection along an outer edge of the upper and lower shells, the upper shell being provided with openings so as to permit selected components of the units to pass through the upper shell; and means for directly fastening the lower shell to a wall, the material of the

lower shell and upper shell having a strength and thickness so that the housing is usable as a protective transportation pack-



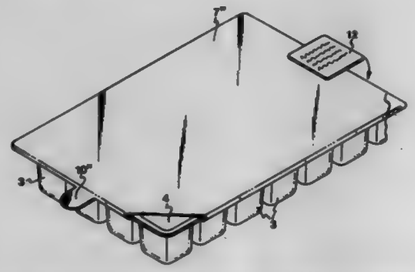
age for the structural component group and as thermal insulating sheathing after installation.

5,381,903
PACKAGING SYSTEM
Anthony Hardenne, 718 - 2nd Avenue N., Saskatoon, Saskatchewan, Canada S7K 2E1
Filed Jul. 1, 1993, Ser. No. 84,153
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—526 **16 Claims**



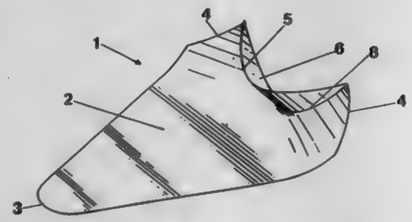
1. A packaging system comprising an outer container and a plurality of inner containers smaller than the outer container, wherein:
the outer container has a rectangular interior volume with internal outer container dimensions including an outer container length and an outer container width, and an outer container height;
the plurality of inner containers includes at least three inner container sets, each set comprising at least one rectangular inner container having dimensions including an inner container length, an inner container width and an inner container height, with
i) each of the containers of each inner container set having the same length, width and height dimensions,
ii) the containers of each inner container set differing in at least one of the length, width and height dimensions from the containers of each other of the inner container sets,
iii) the length and width dimensions of each inner container being related to one another by an integral factor,
iv) the length and width dimensions of each inner container of each inner container set being related to the length and width dimensions of each inner container of each other inner container set by integral factors,
v) the length and width dimensions of each inner container being related to the length and width dimensions of the outer container by integral factors,
vi) the height dimension of each inner container of each inner container set, being related to the height dimension of each inner container of each other of the inner container sets by an integral factor, and
vii) the height dimension of each inner container of each inner container set being related to the height dimension of the outer container by an integral factor.

5,381,904
DISPENSER FOR MEDICAL PREPARATIONS AND INSERT THEREFOR
Peter Thurell, Stocksund, Sweden, assignor to Item Development AB, Stocksund, Sweden
PCT No. PCT/SE93/00891, § 371 Date Dec. 23, 1993, § 102(e) Date Dec. 23, 1993, PCT Pub. No. WO94/09742, PCT Pub. Date May 11, 1994
PCT Filed Oct. 28, 1993, Ser. No. 170,168
Claims priority, application Sweden, Oct. 28, 1992, 9203168
Int. Cl.[6] B65D *83/04*
U.S. Cl. 206—538 **9 Claims**



5. An insert for use in a dispenser for medical preparations, comprising:
an insert (3) having a rectangular shape with outwardly extending upper edge portions and containing a plurality of countersunk compartments (4) for receiving medical preparations; and
a lid having inwardly-folded edge portions along at least two opposite sides positioned on a top of the insert with said inwardly-folded edge portions gripping the upper, corresponding edge portions of the insert, the lid being displaceable from the insert by relative sliding along the inwardly-folded edge portions, and
a seal in the form of an adhesive strip is attached to the insert and at least one of the edge portions having no inward fold.

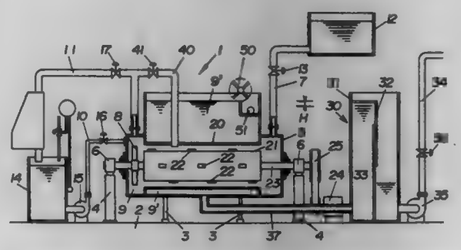
5,381,905
DISPOSABLE SUPPORT FOR PIZZA
Breno S. Mallmann, and Fábio Irigoite, both of Porto Alegre, Brazil, assignors to Grupoutil De. De Prod. De. Util. Ltda., Port Alegre, Brazil
Filed May 4, 1993, Ser. No. 57,256
Claims priority, application Italy, Sep. 22, 1992, PI9104128
Int. Cl.[6] A45G *11/20*
U.S. Cl. 206—551 **3 Claims**



1. A support for food, the support comprising:

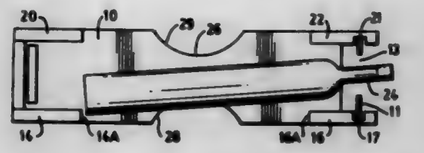
a base portion having a shape substantially similar to the food to be supported, said base portion including first and second side edges and an inside portion;
a rear portion attached to said base portion between said first and second side edges;
folding means for movably attaching said rear portion to said base portion between a first position and a second position, said folding means causing said base portion and said rear portion to lie substantially flat in said first position, and said folding means causing movement of said rear portion into said second position to cause said base portion to curve with said first and second side edges rising and turning toward said inside portion of said base portion, said fold means includes a fold line positioned between said base portion and said rear portion, said fold line extending from said first side edge toward said second side edge and being curved with a middle part of said fold line extending toward said inside portion of said base portion.

5,381,906
PAPER STOCK CLEANING AND COLLECTING APPARATUS
Hitoshi Satomi, Shizuoka, Japan, assignor to Satomi Seisakusho Co., Ltd., Shizuoka, Japan
Filed Dec. 7, 1993, Ser. No. 163,744
Claims priority, application Japan, Mar. 22, 1993, 5-060811
Int. Cl.[6] B03B *7/00*
U.S. Cl. 209—17 **7 Claims**



1. A paper stock cleaning and collecting apparatus comprising:
a tank with an open top for receiving and storing a paper stock;
a cylindrical screen situated in the tank for dividing the tank into a first chamber and a second chamber;
a cylinder-type rotational element coaxially provided in said cylindrical screen in the first chamber;
a stock supply pipe attached to the first chamber of the tank at one side thereof, said stock supply pipe supplying the paper stock to the tank,
a discharge pipe attached to the first chamber of the tank at a side opposite to the stock supply pipe, said discharge pipe discharging a foreign material contained in the paper stock; and
paper stock adjusting means communicating with the second chamber and adjusting the paper stock in said tank to a predetermined level so that foreign materials passing through said screen and floating to an upper surface of the paper stock in the tank are removed from the paper stock at the second chamber without overflowing of the paper stock.

5,381,907
BOTTLE DISPLAY AND SECURE STORAGE RACK
Alfred Stukuls, 1127 Commonwealth Ave., Apartment 32, Allston, Mass. 02134
Filed May 11, 1993, Ser. No. 60,407
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—74 **14 Claims**

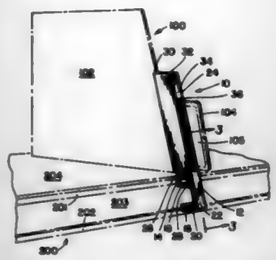


1. A container for storing and displaying a bottle comprising:
a base shelf for holding a bottle to be displayed, the bottle having neck end and a base end and the base shelf having a length in the range of 10–20% greater than said bottle;
an end piece fastened vertically to one end of the base shelf to restrain the base end of the bottle from movement on the base shelf in the direction of the end piece;
a first and second side fastened vertically to the end piece of the base shelf for restraining the base end of the bottle from movement on the base shelf in the in the direction of the first and second sides said first side having a first side end and said second side having a second side end;
a third and fourth side fastened vertically to the end of the base shelf opposite from the end piece, each said third and fourth side having symmetrically located vertical grooves on the inside side of said third and fourth sides and each third and fourth side end being a distance respectively equal to between 50 and 80% of the length of the bottle to be stored from the side ends of the first and second sides;
a movable aperture slide positioned in the vertical grooves of the third and fourth side said movable aperture slide having an aperture 10–20% larger than the neck of the bottle to be stored for projecting the bottle neck through said aperture in order to allow the base of the bottle to clear the first and second side ends so that the bottle may be placed in or removed from the interior of the container; and
a top shelf secured to the first side and the third side to restrain the bottle from removal from the container in the direction of the top shelf.

5,381,908
ORGANIZER FOR GROCERY SHELVES
James Hepp, Glen Cove, N.Y., assignor to All Stock Displays Inc., Glen Head, N.Y.
Filed Sep. 20, 1993, Ser. No. 123,782
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—184 **7 Claims**

1. A shelf organizer comprising:
clip means for slidably engaging an edge of a shelf;
post means extending substantially vertically from said clip means, said post means further including means for engaging a planar dividing means generally perpendicular to the edge of the shelf, said post means having a U-shaped cross section with a first inwardly extending post leg and a second inwardly directed post leg, said first and second post legs being resiliently engaged with respect to each other and spaced to engage the shelf divider therebetween

and including a vertical slot through which a tongue portion of the shelf divider passes; and



living hinge means attaching said clip means to said post means.

5,381,909

WINCH FOR TOWING SUBMERGED OBJECTS

Francois Warnan, Rambouillet, France, assignor to Thomson-CSF, Paris, France

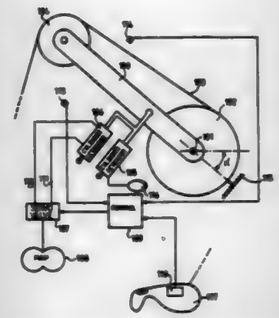
PCT No. PCT/FR92/00389, § 371 Date Nov. 22, 1993, § 102(e) Date Nov. 22, 1993, PCT Pub. No. WO92/20607, PCT Pub. Date Nov. 26, 1992

PCT Filed Apr. 30, 1992, Ser. No. 150,064

Claims priority, application France, May 21, 1991, 91 06110

Int. Cl.[6] B63B *21/66*

U.S. Cl. 212—191 14 Claims



8. A winch for towing submerged objects with a towing cable, which comprises:

a jib having a drum, a substantially horizontal pin about which the drum rotates and an idling pulley connected to the jib to support the towing cable,

a main mechanism for keeping said jib raised in relation to horizontal at an angle of inclination α which is variable about an average value α_0 for allowing towing operation, and

a mechanism for causing the inclination of the jib to vary about average value α_0 so as to limit the variations in the tensile stress in the cable, wherein the mechanism for causing the inclination of the jib to vary comprises a mechanism for measuring the attitude of a submerged object towed by the winch, and a control mechanism for relieving and counteracting stresses developed by the main mechanism for keeping the jib substantially at the angle α in order to keep this attitude at a substantially constant value.

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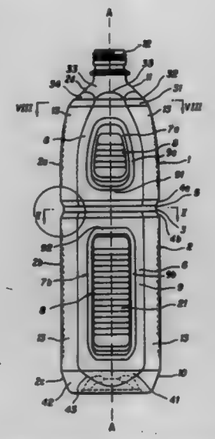
SYNTHETIC RESIN BOTTLE-SHAPED CONTAINER

Hiroaki Sugiura, Tokyo, and Toshio Yaka, Shiga, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/00883, § 371 Date Jul. 10, 1990, § 102(e) Date Jul. 10, 1990, PCT Pub. No. WO91/00829, PCT Pub. Date Jan. 24, 1991

Int. Cl.[6] B65D *1/02*

U.S. Cl. 215—1 C 23 Claims



7. A biaxially oriented blow-molded bottle-shaped container made of synthetic resin, comprising:

a body including flat walls, each of the flat walls having a central recessed portion having a bottom wall comprising a shaped panel wall for compensating deformation due to reduced pressure in the container, and a shaped peripheral groove curved around the shaped panel wall, wherein

the shaped panel wall has ribs each with a curved crest and a curved root traversing the shaped panel wall in parallel to each other, the crest of each of the ribs having larger radius of curvature than that of the root.

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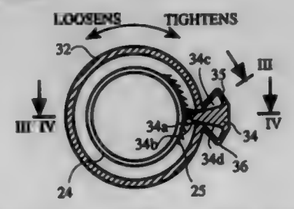
CHILD-RESISTANT CONTAINER CLOSURE

Mordechai Teicher, Kfar Saba, and Itzhak Bar-Yona, Neve Monoson, both of Israel, assignors to Log-Plastic Products, Ashdod, Israel

Filed Jun. 8, 1993, Ser. No. 73,192

Int. Cl.[6] B65D *55/02*

U.S. Cl. 215—216 5 Claims



1. A child-resistant closure for a container including a neck formed with external threads, comprising a cap formed with internal threads such that rotating the cap in one direction tightens the cad on the container neck, and rotating the cap in the opposite direction loosens the cap to permit it to be removed from the container neck; said cap having an outer circumferential portion to be enclosed and gripped by a finger and the thumb of a person to open the container; characterized in that:

said outer circumferential portion of the cap includes a pair of finger-engaging elements which are spaced apart in one circumferential direction a distance of 105–115 mm, this being less than the distance between the tips of said finger and thumb of an adult but more than that of a child, such that said finger-engaging elements can be pressed toward each other in the opposite circumferential direction when so enclosed and gripped by an adult but not by a child; said cap requiring, for its removal from the container, the pressing of said finger-engaging elements toward each other in said opposite circumferential direction when enclosed and gripped by said finger and thumb of the person attempting to open the container;

said cap including an inner cap part threadedly applied to the neck of the container, and an outer cap part including a coupling element which is normally decoupled from said inner cap part but is coupled thereto sufficient to effect loosening of the cap only when the pair of finger-engaging elements are pressed toward each other;

said inner cap part including teeth, and said coupling element of the outer cap part being a projection engageable with said teeth sufficient to effect loosening of the cap only when said pair of said finger-engaging elements are pressed toward each other.

5,381,912

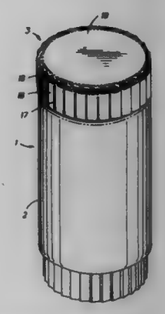
PACKAGE HAVING A PRESS-AND-TURN TYPE CAP AND BOTTLE WITH RAMPED GRIPPING PORTIONS

Linda A. Walker, Hawthorne, and Evan M. Hirsch, Emerson, both of N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 28, 1994, Ser. No. 234,893

Int. Cl.[6] B65D *55/02, 41/00*

U.S. Cl. 215—220 5 Claims



1. An improved package comprising:

a bottle having a neck defining an opening at one end thereof and a body having a recessed portion at the end opposite the opening, said recessed portion having a plurality of ramps disposed about the perimeter thereof said bottle having thread means disposed on said neck;

a press-and-turn type cap having an inner shell engageable with said thread means and an outer shell engaging with said inner shell by press-and-turn means, said outer shell having a plurality of ramps disposed about the perimeter of the side thereof, the ramps disposed on said cap facing opposite to the ramps disposed on said bottle.

5,381,913

CAP WITH AN INDUCTION SEAL CLOSURE

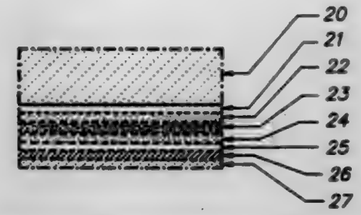
Dirk Peeters, Mortsel, Belgium, assignor to Agfa-Gevaert N. V., Mortsel, Belgium

Filed Mar. 8, 1993, Ser. No. 28,083

Claims priority, application European Pat. Off., Mar. 25, 1992, 92200853.7

Int. Cl.[6] B65D *55/02*

U.S. Cl. 215—232 10 Claims



1. A cap having a skirt and a top wall with an interior induction seal closure for sealing the pouring mouth of a container closed by the cap, wherein the induction seal closure comprises a heat-sealable polymer sealing layer capable of being heat-sealed to the top edge of the mouth, an aluminum foil layer for heat-sealing said sealing layer by inductive heating of the aluminum, a first releasing layer between said aluminum foil layer and said sealing layer and a second releasing layer separating said aluminum foil layer from the top wall of the cap, the releasing power of said second releasing layer being greater than that of said first layer so that upon removal of the cap from a sealed container, the aluminum foil layer remains adhered to the sealed container instead of to the cap while yet being easily peelable from the container as a consequence of the presence of said first releasing layer.

5,381,914

CONTAINER CLOSURE WITH LINER

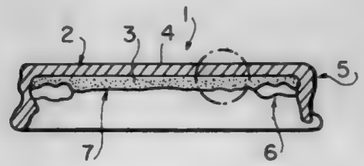
Masayasu Koyama, Zushi; Yasuhiro Oda, Yokohama; Hiroaki Kikuchi, Hiratsuka, and Muneki Yamada, Fujisawa, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed May 7, 1992, Ser. No. 879,351

Claims priority, application Japan, May 9, 1991, 3-104536

Int. Cl.[6] B65D *53/04*

U.S. Cl. 215—341 3 Claims

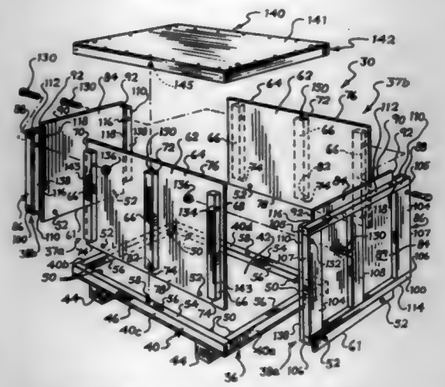


1. A container closure capable of quickly absorbing oxygen comprising a container closure shell and a liner of a resin applied to an inner surface of said shell, wherein the liner of resin includes a layer of an oxygen absorbing resin composition comprising a thermoplastic resin blended with an oxygen absorbing agent on an inner surface of the liner, and a rough surface with a maximum roughness height of greater than 0.1 mm is formed on the oxygen absorbing resin composition layer inside a hermetically sealing portion, and when the surface area of the rough surface is S and the projected area of the rough surface is S_0, the ratio S/S_0 is greater than 1.1.

5,381,915
COLLAPSIBLE, REUSABLE CONTAINER

William C. Yardley, Chicago, Ill., assignor to Yardley Box Company, Morrionette Park, Ill.

Filed Apr. 16, 1993, Ser. No. 48,746
Int. Cl.[6] B65D 6/24
U.S. Cl. 220—4.33 25 Claims



1. A collapsible, reusable container, comprising:

a rectangular base having an upwardly extending peripheral skirt defining a pair of opposite end portions and a pair of opposite side portions, with each of said skirt portions having a respective upper and inner surface;

said pair of opposite side portions both having one or more integral pins extending inwardly from their respective inner surfaces;

said pair of opposite end portions both having one or more integral pins extending inwardly from their respective inner surfaces;

a pair of end panels both having respective sides and respective lower ends, with one or more holes in said end panels in proximity with said lower ends, the holes corresponding in number and location to the pins extending inwardly from the end skirt portions, whereby each of the pins extending from the side skirt portions is receivable in a respective hole in the end panels to detachably engage the end panels to respective end portions of the skirt,

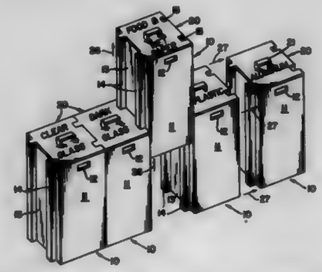
a pair of side panels both having respective sides and respective lower ends, with one or more holes in said side panels in proximity with said lower ends, the holes corresponding in number and location to the pins extending inwardly from the side skirt portions, whereby each of the pins extending from the side skirt portions is receivable in a respective hole in the side panels to detachably engage the side panels to respective side portions of the skirt, with the side panels being positioned between the pair of end panels; and

said end panels having integral side panel engaging means adjacent the sides of the end panels for detachably engaging the sides of the side panels when each of said side and end panels are engaged to said respective skirt portions with the side panel engaging means having means for preventing said side panels from moving inwardly of their respective side skirt portions, and with the positioning of the side panels between the end panels preventing inward movement of the end panels from their respective end skirt portions, whereby each of the side and end panels are manually detachably engageable with one another and to said base to form a container, with the side and end panels being manually detachable from the base to allow collapsing of said container.

5,381,916
MODULAR RECEPTACLES

Glenn G. Strawder, 9200 Edwards Way, #1116, Adelphi, Md. 20783

Continuation-in-part of Ser. No. 757,186, Sep. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 501,950, Mar. 28, 1990, Pat. No. 5,050,755. This application Sep. 21, 1992, Ser. No. 947,844
Int. Cl.[6] B65D 21/02
U.S. Cl. 220—23.4 14 Claims



1. A receptacle that will mate with a similar receptacle, comprising:

a hollow body forming said receptacle, said body having a bottom that may rest on a surface such as a floor thus permitting said body to stand upright, said body having a side wall extending upward from said bottom,

said side wall having a continuous wall from said bottom to the top of the receptacle as well as around the periphery of the receptacle, said continuous wall including a tongue extending outward from the remainder of said wall and also including, a groove extending inwardly into the receptacle,

said tongue and groove being so positioned that the tongue of the receptacle will mate with the groove of another similar receptacle,

a lid which has a tongue and groove positioned so that when the lid is on the receptacle the tongue of the lid is aligned with the tongue of the receptacle and the groove in the lid is aligned with the groove of the receptacle.

5,381,917
PLASTIC SAFETY CAP

Evans Santagiuliana, Vicenza, Italy, assignor to Taplast SRL, Italy

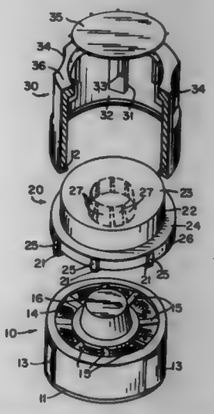
PCT No. PCT/EP92/01067, § 371 Date Oct. 7, 1993, § 102(e) Date Oct. 7, 1993, PCT Pub. No. WO92/21584, PCT Pub. Date Dec. 10, 1992
PCT Filed May 11, 1992, Ser. No. 129,174
Claims priority, application Italy, May 29, 1991, VI91A000093
Int. Cl.[6] B65D 55/02
U.S. Cl. 220—219 7 Claims

1. A cap with a safety opening for engaging the threaded neck of a bottle comprising:

an inner element having a cylindrical shape, including a threaded inner wall suited to be screwed onto the threaded neck of the bottle and an outer wall being formed with a plurality first axial cogs on said outer wall, each having a surface operable for engagement in a direction of screwing the cap, said inner element having an upper wall including a central portion having a shape in the form of an upstanding partially truncated cone said upper wall being formed with a plurality of first radial cogs facing outwardly each having a slanted surface;

an outer element having a cylindrical shape including an inner wall formed with a plurality of second and third axial elongated cogs, the second axial cogs being adjacent to the inner wall and cooperating with the first cogs on the outer wall of the inner element in the direction of screwing on the cap and being longer than the third axial cogs;

a push-button having a cylindrical shape and being located between the outer element and the inner element and arranged co-axially in relation to said inner element, and including a top portion formed with an inner surface including elastic tabs arranged on the generating lines of a cylinder for engaging the upwardly facing central portion of the inner element, said push-button having a radially extending annular rim formed with a plurality of second radial cogs and a row of fourth axial cogs, said fourth axial cogs being arranged for engaging in any direction the first



axial cogs on the cylindrical inner wall of the outer element, the second radial cogs each having a slanted surface for engaging the corresponding slanted surface on the outwardly facing first radial cogs on the upper wall of the inner element when said push-button is pushed downwards and rotated in the direction for untightening the cap, said second radial cogs on the push-button and the outwardly facing first radial cogs on the inner member cooperating for maintaining the push-button and the inner element connected with each other as long as the outer element of said cap rotates in the untightening direction and the outer member is engaged towards the inner member against the elastic tabs.

5,381,918
DEVICE FOR SECURING THE LID OF A CAN, IN PARTICULAR, A CAN OF PAINT

Jürgen Dahl, Wuppertal, Germany, assignor to Herberts Gesellschaft mit beschrankter Haftung, Germany

Continuation of Ser. No. 931,116, Aug. 17, 1992, abandoned, which is a continuation of Ser. No. 595,385, Oct. 10, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 166,162
Claims priority, application Germany, Oct. 18, 1989, 8912367[U]
Int. Cl.[6] B65D 51/18
U.S. Cl. 220—256 6 Claims

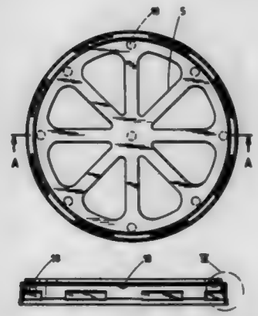
1. A securing device of unitary one piece construction formed of semi-rigid plastic for securing and protecting the lid of a can against opening or damage thereto comprising:

a) a flat planar ring having an inner and outer diameter and having an upper and lower surface and having a plurality of lug-shaped projections on said lower surface;

(b) a plurality of flat tie-webs extending inwardly from the inner diameter of said planar ring to a central connection point coplanar with the upper surface of said ring;

(c) a peripheral wall extending downwardly from the lower surface of said ring at the outer diameter thereof, said peripheral wall including a lower section extending outwardly from the peripheral surface of the wall section at the lower end thereof, said peripheral wall having an inner and outer surface defining a cavity adapted for encompassing the top bead of a can to be protected and secured;

(d) at least one securing projection formed on and affixed to the inner, lower surface of said peripheral wall, said projection extending upwardly and angularly inwardly from a point proximate to the interior top portion of said lower peripheral wall section and terminating in a flat upper



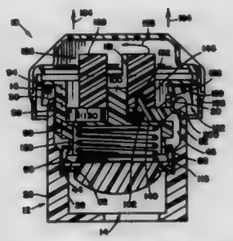
surface parallel to the lower surface of said planar ring to form at least one discontinuous arcuate sector adapted to secure a peripheral bead on the top of a can to be protected and secured by the device; and

(e) a ring-like cylindrical section affixed to and extending upwardly for a predetermined distance from the upper surface of said planar ring, said cylindrical section being coaxial with the center of said planar ring.

5,381,919
PUSH-ON FUEL CAP

Jeffery Griffin, and Robert S. Harris, both of Connersville, Ind., assignors to Stant Manufacturing Inc., Connersville, Ind.

Filed Oct. 18, 1993, Ser. No. 138,399
Int. Cl.[6] B65D 55/00
U.S. Cl. 220—307 43 Claims

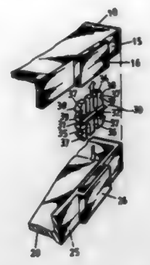


1. A cap engageable with a filler neck having a mouth and a seal seat disposed axially inwardly from said mouth internally in said filler neck, the cap comprising

means for closing the mouth of the filler neck, the closing means including a housing and an end closure member coupled to the housing, the end closure member being axially movable relative to the housing and having a sealing ring configured to engage the seal seat upon slidable insertion of the housing into the filler neck in an axially inward cap-installation direction, and

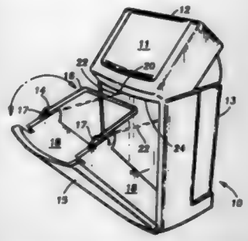
means for gripping the filler neck in response to sliding axially inward movement of the housing in the filler neck, the gripping means being mounted in the housing for movement between a filler neck-engaging position and a filler neck-disengaging position.

5,381,920
TOOL BOX HINGE STRUCTURE
Arlo H. T. Lin, No. 5, Lane 25, TaTung Rd., Wu Fong Hsiang, Taichung Hsien, Taiwan, Prov. of China
Filed Dec. 21, 1993, Ser. No. 173,747
Int. Cl.[6] B65D *51/04*; E05D *7/10*
U.S. Cl. 220—342 2 Claims



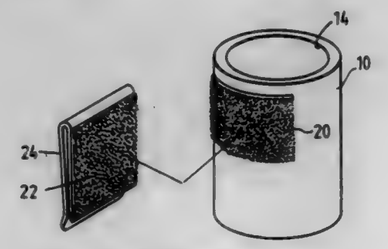
1. A tool box comprising a cover shell having a rectangular socket on a back wall thereof, a bottom shell having a rectangular socket an a back wall thereof, and a hinge connected between the rectangular socket of said cover shell and the rectangular socket of said bottom shell permitting said cover and said bottom shells to be turned on said hinge relative to each other, wherein the rectangular socket of each shell includes two projecting portions situated on inner surfaces of opposing side walls of said rectangular socket; the hinge is integrally molded from a resilient plastic material comprised of two symmetrical parts linked by a horizontal connecting portion, each symmetrical part of said hinge comprising two parallel openings perpendicularly extended from said horizontal connecting portion, and two hooks perpendicularly and bilaterally extended from said horizontal connecting portion, said hooks engaging with the two projecting portions of the rectangular socket of each shell.

5,381,921
REFUSE CONTAINERS
David A. Bray, Lytham St. Annes, and Robert Dixon, Preston, both of United Kingdom, assignors to Glasdon Group Limited, Liverpool, United Kingdom
PCT No. PCT/GB91/00934, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992, PCT Pub. No. WO91/19656, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 11, 1991, Ser. No. 952,521
Claims priority, application United Kingdom, Jun. 12, 1990, 9013050
Int. Cl.[6] B65D *25/00*
U.S. Cl. 220—404 5 Claims



1. A refuse container comprising a hollow body with an upper access opening closed by a displaceable cover, and a bag suspension frame carried by a body wall movable between a closed position in which the frame is positioned below the access opening and an open position in which the frame is exposed for bag replacement, said frame having a movable frame element projecting away from the wall and the body having internal surfaces for deflecting said frame element upwardly during closing movement and downwardly during opening movement of the wall.

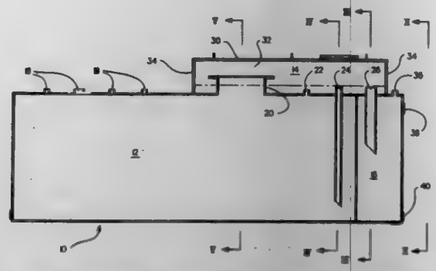
5,381,922
ARTICLE HOLDER
Neil R. Gladman, 288 Somerville Road, West Footscray Victoria 3012, and Peter A. Lovel, 97 Fenton Street, Ascot Vale Victoria 3032, both of Australia
Filed Mar. 30, 1993, Ser. No. 40,254
Claims priority, application Australia, Mar. 30, 1992, PL1568
Int. Cl.[6] B62J *11/00*
U.S. Cl. 220—481 5 Claims



1. A carrier for holding an article comprising:
an article holder having an opening therein for receiving at least one article, said article holder including a curved outer surface;
a mounting member separate from said article holder, said mounting member including a substantially flat surface; and
fastening means for releasably fastening said article holder to said mounting member, said fastening means being arranged such that fastening between said mounting member and said article holder being progressively reduced by rotation of said article holder relative to said flat surface, said fastening means including first and second fastener parts, said first fastener part mounted upon said outer curved surface of said article holder and said second fastener part mounted upon said substantially flat surface of said mounting member.

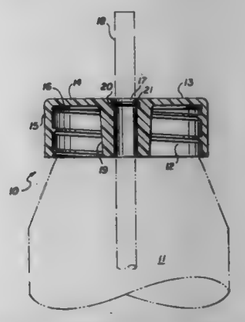
5,381,923
OVERFLOW CONTROL FOR LIQUID STORAGE TANKS
Richard W. O'Dea, Kirkwood, N.Y., assignor to Highland Tank & Manufacturing Company, Stoystown, Pa.
Filed Jul. 12, 1993, Ser. No. 90,802
Int. Cl.[6] B65D *51/00*
U.S. Cl. 220—565 19 Claims

1. Apparatus for liquid overflow control of a liquid storage vessel having an inlet port and a vent port comprising:
a spill collection chamber overlying said storage vessel inlet port and said storage vessel vent port and sealing affixed to said storage vessel whereby liquid overflowing from said inlet port or said vent port is contained within said spill collection chamber and may be cleaned therefrom if confined thereto;
a spill storage chamber in fluid communication with said spill collection chamber by means of a spill storage chamber inlet port that extends above the upper wall of said spill storage chamber whereby liquid is accumulated in said spill collection chamber until the liquid level rises above the level of said spill storage chamber inlet port and subsequently enters said spill storage chamber through



said spill storage chamber inlet port for storage until removed therefrom.

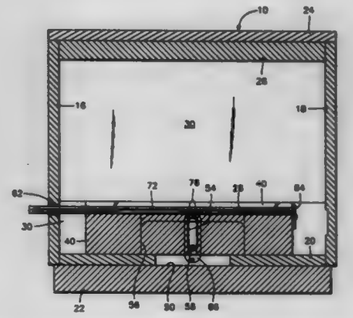
5,381,924
NON-SPILL DRINKING VESSEL
Stanley A. Kiefel, Fairfield, Ohio, assignor to Carol A. Kiefel, Fairfield, Ohio
Filed Mar. 18, 1994, Ser. No. 214,695
Int. Cl.[6] B65D *53/00*; A47G *19/22*
U.S. Cl. 220—709 10 Claims



1. A non-spill reuseable drinking vessel for holding liquid and which is capable of being drunk from by use of a straw, said drinking vessel comprising:
(a) an open-top container for holding the liquid; and
(b) a removable lid configured to fit over the container's open-top to effectively contain the liquid therein, wherein the lid has an orifice for readily receiving a straw and further wherein the orifice is defined by an internal annular wall which extends downwardly from the lid with a groove extending circumferentially thereinaround with an O-ring in the groove so as to be capable of sealingly encompassing the straw in a liquid-tight manner such that the drinking vessel retains liquid therein in a non-spill manner.

5,381,925
STIRRER/STRAW DISPENSER
Pat Cervantes, Rte. 2, Box 687, San Antonio, Tex. 78249, and Moses Cervantes, 8010 Pebble Dr., New Orleans, La. 70128
Continuation-in-part of Ser. No. 94,897, Jul. 22, 1993, Pat. No. 5,318,196. This application Oct. 26, 1993, Ser. No. 141,049
Int. Cl.[6] B65G *59/06*
U.S. Cl. 221—184 5 Claims

1. A dispenser for elongated articles, said dispenser including a housing defining an internal hopper portion for receiving therein a plurality of said articles in parallel relation, said hopper including an inclined wall against and downwardly along which said articles rest and move by gravity, said housing including opposite side walls, one of said side walls having a dispensing opening formed therein, a dispensing block having an upper surface and mounted in said housing and movable toward and away from said one wall and including an upwardly opening groove for receiving one of said articles therein, the end of said groove remote from said one side wall being closed, said block being operative, when having an article received in said groove and moved toward said one wall, to partially lengthwise dispense said article through said dispensing opening, said inclined wall having a lower end



portion, said groove being generally horizontally registered with said lower end portion of said incline wall, said housing including a front wall closing a front of said housing between said side walls and having a bore formed therethrough, a shaft oscillatably secured through said bore and mounting a knob thereon forward of said front wall, said front wall including a slot formed therethrough below said bore, the lower periphery of said knob including a rearwardly projecting pin supported therefrom slidably received through said slot, said dispensing block including a narrow downwardly opening notch formed therein in which said pin, rearwardly of said front wall, is slidably received, whereby oscillation of said knob relative to said front wall will cause rectilinear oscillation of said dispensing block within said housing.

5,381,926
BEVERAGE DISPENSING VALUE AND METHOD
William S. Credle, Jr., Stone Mountain, and Robert D. Hughes, IV, Atlanta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 893,639, Jun. 5, 1992, abandoned. This application May 12, 1993, Ser. No. 60,898
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—1 52 Claims

1. An apparatus for supplying metered volumes of concentrate and diluent in controlled proportions to a mixing station in a beverage dispenser to produce a post-mix beverage comprising:
a first conduit for accommodating a flow of diluent to the dispenser;
a second conduit for accommodating a flow of concentrate to the dispenser;
flow meter means for measuring a flow rate of diluent in the first conduit and determining a quantity of diluent flowing over a given time interval;
pump means in liquid communication with said second conduit for injecting metered quantities of concentrate into said diluent at said mixing station, said pump means including,
a chamber defined by a sleeve of ceramic material, said chamber having first and second distal ends, and

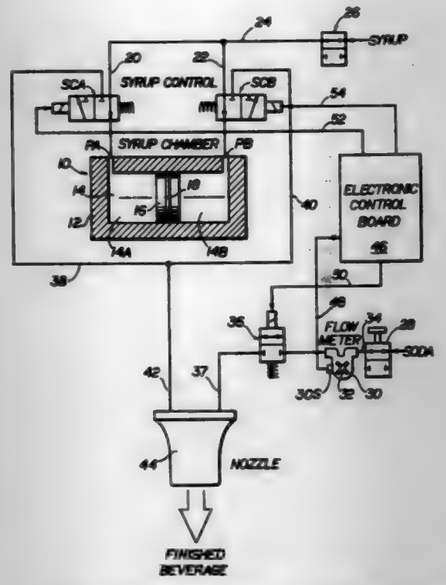
a double acting piston formed of ceramic material mounted for reciprocating sliding movement within said sleeve between the distal ends, said sleeve and piston being in close contact and being devoid of any sealing gaskets therebetween;

a pair of inlet passages connecting the second conduit to said chamber on both sides of said piston to apply fluid pressure from said concentrate to opposite sides of said piston;

a pair of outlet passages connecting said chamber to said mixing station;

first valve means operatively connected in one of said pair of inlet passages for permitting the flow of concentrate to said chamber on one side of said piston when in a first position and stopping the flow thereto when in a second position, said second valve means when in said second position also connecting the chamber on said one side of said piston to said mixing station through one of said outlet passages;

second valve means in the other one of said pair of inlet



passages for permitting the flow of concentrate to the chamber on the other side of said piston when in a first position and stopping the flow thereto when in a second position, said second valve means when in said second position also connecting the chamber on said other side of said piston to said mixing station through one of said outlet passages; and

control means operatively connected to said flow meter means and said first and second valve means for alternately activating said first and second valve means to opposite ones of said first and second positions in response to the measurement of a quantity of diluent flow of a predetermined value, to thereby alternately direct said concentrate to opposite sides of said piston to thereby slide said piston in said chamber from one distal end to the other each time the flow meter measures said predetermined value of the quantity of said diluent;

whereby a fixed volume of concentrate from said chamber is injected into the mixing station and mixed with each quantity of diluent of said predetermined value.

5,381,927

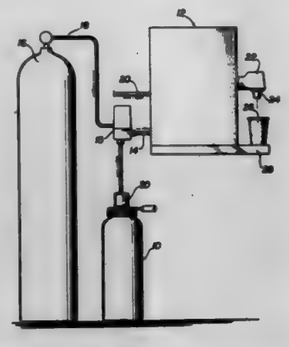
METHOD OF DISPENSING FROM A LIQUID CONTAINER SYSTEM

Simon J. Richter, Marietta, and Gary V. Paisley, Lilburn, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 4,327, Jan. 14, 1993, abandoned, which is a division of Ser. No. 803,241, Dec. 5, 1992, Pat. No. 5,242,085, which is a continuation-in-part of Ser. No. 628,819, Dec. 17, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 116,162

Int. Cl.[6] B67B *7/00*

U.S. Cl. 222—1 **4 Claims**



1. A method for supplying syrup to a post-mix beverage dispenser, comprising the steps of:

(a) providing a blow molded, plastic, multi-layer syrup container including a wall, a container opening for filling and evacuating said container surrounded by a container neck, and an air vent extending partway through said wall; said wall including a main plastic layer, and a collapsible inner plastic layer, said air vent extending completely through said main layer and said air vent being permanently open to atmosphere, such that air flows in through said air vent and in between said main layer and said collapsible layer, causing said collapsible layer to collapse as syrup is withdrawn from said container;

(b) filling said syrup container with post-mix beverage syrup;

(c) connecting said container opening to a post-mix beverage dispenser through a syrup line having a syrup pump therein;

(d) pumping syrup from said syrup container to said beverage dispenser through said pump; and

(e) collapsing said collapsible layer simultaneously with said pumping step as air enters through said air vent and as syrup is withdrawn from said collapsible layer.

5,381,928

ACTION TOY WATER WEAPONS

James S. W. Lee, Long Island, N.Y., and Chiu K. Kwan, Kowloon, Hong Kong, assignors to C.J. Associates, Ltd., Hunghom, Hong Kong

Continuation-in-part of Ser. No. 815,959, Jan. 2, 1992, Pat. No. 5,284,274. This application Oct. 6, 1992, Ser. No. 957,424

Int. Cl.[6] A63H *3/18*

U.S. Cl. 222—79 **27 Claims**

1. An action toy comprising:

a plurality of capsules for containing a liquid, each of said capsules having an orifice;

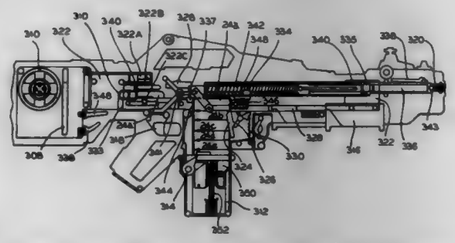
means for driving liquid from each of said capsules through said orifice;

means in said toy for ejecting successive capsules after said liquid is driven therefrom;

a housing for supporting each of said capsules for successively driving liquid therefrom;

spring means for storing energy;

means for successively subjecting each of said capsules to the stored energy of said spring means; and



trigger means for releasing the stored energy of said spring means to said driving means.

5,381,929

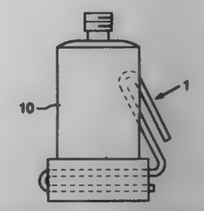
LEVERAGED TUBE-WINDER WITH PASSIVE UNWINDING RESTRAINT

Robert B. Salz, 1646 Stanford Ave., Menlo Park, Calif. 94025

Filed Aug. 3, 1993, Ser. No. 101,583

Int. Cl.[6] B65D *35/32*

U.S. Cl. 222—99 **7 Claims**



1. A device for progressively advancing the contents of a collapsible tube from a closed bottom toward a user openable dispenser top to dispense the contents of said tube and for winding the spent portion of said tube, said device comprising:

(a) a one-piece angled rod, having an upright portion and a base portion, the interior angle between said upright portion and said base portion being less than 90 degrees;

(b) said upright portion configured to form a first clasp and said base portion configured to form a second clasp, both clasps consisting of a pair of parallel members spaced apart a distance sufficient to permit the insertion of the closed end of a collapsible tube;

(c) each pair of parallel members formed in a U-shape being connected to each other distal to the other pair of parallel members, and having an unconnected free leg proximate to said other pair of parallel members to define an opening proximate to said other pair of parallel members,

whereby either of said pairs of parallel members may function as a base portion as the other pair functions as an upright portion and the closed bottom of a collapsible tube may be inserted between the parallel members of said base portion and said upright portion rotated to wind the spent portion of said tube upon the parallel members of said base portion and to force the tube contents toward the dispenser portion of said tube and whereby the angle between said upright portion and said base portion permits said upright portion to pass behind said collapsible tube and passively restrain it from unwinding.

5,381,930

DISPENSING DEVICE FOR A MEASURED VOLUME OF LIQUID

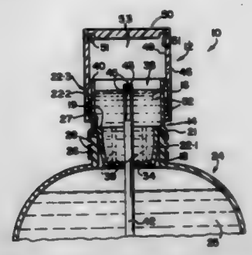
Peter Kalabakas, AP House, 43 Derby Road, Bertrams, South Africa

Continuation-in-part of Ser. No. 4,577, Jan. 14, 1993, abandoned. This application Dec. 7, 1993, Ser. No. 163,994

Claims priority, application South Africa, Jan. 15, 1992, ZA92/0281; May 26, 1992, ZA92/3843

Int. Cl.[6] B65D *47/20*

U.S. Cl. 222—205 **7 Claims**



1. A dispensing device for dispensing a measured volume of liquid from a body of liquid contained in a container in bottle form having a bottom and a neck provided with a rim defining an outlet, the dispensing device including

a receptacle for receiving an unmeasured excess volume of liquid from the body of liquid, the receptacle having a stopper part for insertion into the neck of the container in sealing relationship, and a cup part to extend outside the neck beyond the rim of the neck;

a conduit to extend between the container and the receptacle to permit liquid to flow from the body of liquid into the receptacle;

a cap-type lid removably associated with the receptacle and the neck to fit over and around the cup part of the receptacle and the neck and engageable with the outside of the neck; and

volume adjustment means to adjust a said unmeasured excess volume of liquid in the receptacle to a measured volume; and in which

the cup part of the receptacle has an upstanding side wall presenting an outer face and an open upper end and is provided on the outer face with an outwardly extending circumferential sealing lip; and

the cap-type lid has a transverse top wall and a depending side wall presenting an inner face which is located in sealing relationship with the sealing lip of the cup part when the lid is in position on the receptacle; and

the lid is displaceable relative to the receptacle among a closed position in which the lid is engaged with the outside of the neck of the container, a dispensing position in which the lid is located over the cup part of the receptacle but spaced from the neck of the container, and an open position in which the lid is removed from the receptacle to expose the open upper end of the cup part, the sealing lip of the cup part and the said inner face of the lid being located in sliding sealing relationship during displacement between the closed position and the dispensing position; and in which

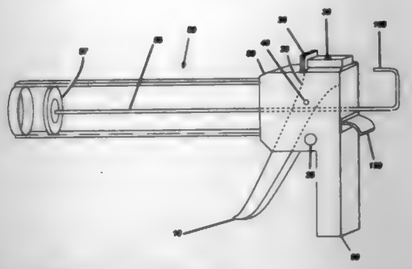
the receptacle and the lid define between them a closed chamber when the lid is fitted over the receptacle, and displacement of the lid from the closed position to the dispensing position causes a pressure reduction within the chamber to cause a said unmeasured excess volume of liquid to flow from the body of liquid through the conduit into the receptacle, the said excess volume being adjusted to a said measured volume of liquid by the volume adjustment means.

5,381,931

CAULK DISPENSING DEVICE WITH MULTI-POSITION THRUST SELECTION DIAL

Peter J. Y. Chang, 11001 Petersborough Dr., Rockville, Md. 20852

Filed Mar. 4, 1994, Ser. No. 205,655
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—309 **6 Claims**



1. A caulking gun, comprising:
a frame for carrying a caulking composition;
a plunger shaft having a piston at one end for urging said caulking composition out of said frame;
a plunger driving assembly for driving said plunger shaft, said plunger driving assembly further comprising,
a housing having a downwardly extending handle,
a trigger extending upwardly within the housing, said trigger being pivoted to said housing above said plunger shaft for hand contracting against said handle,
a first gripping member enclosed within said housing, said first gripping member encircling the plunger shaft and protruding upwardly beyond the plunger shaft within said housing,
a first compression spring oppositely biasing said first gripping member toward said trigger;
a selection dial pivotally mounted for axial rotation about an upward tip of said trigger for varying a thrust output of said caulking gun, said selection dial being selectively rotatable into a first position for engagement with the upward protrusion of said first gripping member when said trigger is contracted, and into a second non-engaging position when said trigger is contracted;
whereby said first gripping member may be driven by said selection dial when in the first position to increase the incremental displacement of said plunger shaft when said trigger is contracted.

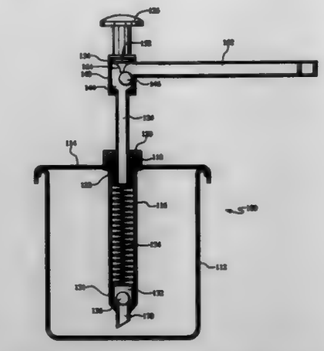
5,381,932

CONDIMENT PUMP

James E. Humphrey, Cheyenne, Wyo., assignor to American Wyott Corporation, Cheyenne, Wyo.

Continuation of Ser. No. 868,205, Apr. 14, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 156,970
Int. Cl.[6] G01F *11/04*
U.S. Cl. 222—321 **11 Claims**

8. A condiment pump, comprising:
a container;
a cylinder, extending downwardly into the container;
a piston, within the cylinder;
a hollow piston rod, connected to the piston and extending above a top of the container;
bias means for biasing the piston upward;
a lower ball valve. near a bottom of the cylinder, having a lower ball moveable in a lower ball valve chamber;
an upper ball valve, at the upper end of the piston rod, having an upper ball moveable in an upper ball valve chamber;
a spout, connected at one end to the upper ball valve chamber and extending outwardly therefrom;
a plug, disposed internally in the upper ball valve chamber in an upper end; and
a plug extension, extending downwardly from the plug into



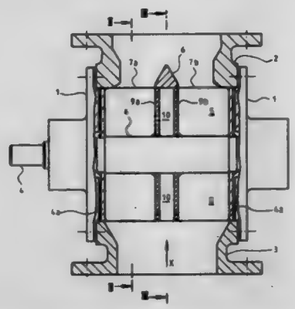
the upper ball valve chamber to maintain said upper ball a predetermined distance from the end of the spout, to permit passage of condiment chunks through the end of the spout.

5,381,933

ROTARY FEEDER FOR GRANULATED BULK MATERIAL

Walter Beirle, Ravensburg, and Ewald König, Ostrach-Burgweiler, both of Germany, assignors to Waeschle Maschinenfabrik GmbH, Germany

Filed Jul. 1, 1993, Ser. No. 86,153
Claims priority, application Germany, Aug. 24, 1992, 4228014
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—368 **9 Claims**



1. A rotary feeder for granulated bulk material, comprising:
a housing having a cylindrical bore and provided with a feed inlet and a discharge outlet, with said feed inlet being defined by a cross section;
a rotor accommodated in said housing and including a plurality of radially extending blades mounted on a rotor shaft and defining compartments for transporting bulk material in a running direction from said feed inlet to said discharge outlet; and
a baffle extending at a right angle to said rotor shaft for dividing said feed inlet cross section in two equal sections, said baffle having parallel sides which expand in an area traversed last by said blades to act as stripping edges which end in symmetric stripping edge sections of said feed inlet which resemble V-shaped legs of an arrow pointing in a running direction of said rotor, each of said stripping edge sections communicating with a groove

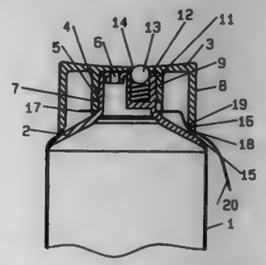
extending in an inner wall surface of said bore of said housing beneath said baffle and having a width and a depth about 1.5 times the greatest grain diameter of the granular bulk material, said grooves converging in an apex lying in a main symmetry plane through the center of said housing at right angle to said rotor shaft;
said rotor being provided in each compartment with two partitions extending beneath said baffle between successive blades and spaced from each other by the width of said baffle, said partitions having a peripheral edge lying in the surface of said housing defined by the generatrix of said rotor means, wherein each of said partitions includes an opening in the peripheral area next to its joint to a trailing blade.

5,381,934

TUBE CLOSURE

Heinrich Ueberegger, Baretswil, Switzerland, assignor to Combitool AG, Baretswil, Switzerland

PCT No. PCT/CH93/00104, § 371 Date Mar. 7, 1994, § 102(e) Date Mar. 7, 1994, PCT Pub. No. WO93/22213, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 20, 1993, Ser. No. 170,216
Claims priority, application Switzerland, Apr. 28, 1992, 01356/92
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—536 **12 Claims**



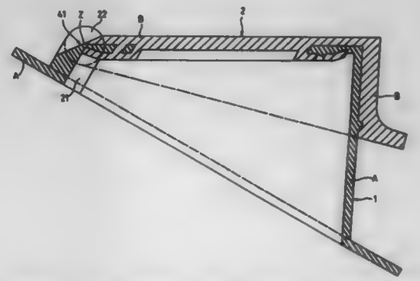
1. A device for the closure of a tube having a shoulder connected to a tube neck, said tube neck having an opening disposed at a select eccentric distance from the center of the tube neck, said device comprising:
a cam attached to said shoulder of said tube;
an exterior collar disposed around the outside of said tube neck;
a closure cap including:
an inner cylindrical part having an annular groove, said inner cylindrical part rotatably engaging said tube neck and said annular groove of said inner cylindrical part rotatably engaging said exterior collar, wherein said tube neck, said collar, said inner cylindrical part, and the annular groove of said inner cylindrical part are shaped such that the inner cylindrical part can be pressed over the tube neck until said collar engages the annular groove of said inner cylindrical part but said inner cylindrical part cannot be retracted from said tube neck and said collar without destroying said inner cylindrical part;
an upper closure plate attached to said inner cylindrical part and having an opening located at the same eccentric distance from the center of said tube neck as the opening in said tube neck; and
an outer cylindrical part attached to said upper closure plate, said outer cylindrical part having a recess disposed over said cam, wherein said outer cylindrical part engages said cam when the opening in said upper closure plate aligns with the opening in said tube neck and when the opening in said upper closure plate is at a select rotation angle from the opening in said tube neck; and
means for engaging the opening in said upper closure plate of said closure cap, said means for engaging being located on said tube neck to engage said opening in said closure cap when said opening in said closure cap is positioned at the select rotated angle from the opening in said tube neck.

5,381,935

CLOSURE UNIT FOR A CONTAINER HAVING A HINGED CONSTRUCTION, MADE OF DIFFERENT MATERIALS AND HAVING A FILM WHICH TEARS ON FIRST OPENING

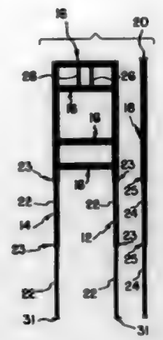
Elmar Mock, Biel/Bienne, Switzerland, assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Dec. 8, 1992, Ser. No. 986,911
Claims priority, application Switzerland, Dec. 12, 1991, 03681/91; Dec. 12, 1991, 03682/91; Dec. 12, 1991, 03683/91; Dec. 12, 1991, 03685/91
Int. Cl.[6] B65D *47/10*
U.S. Cl. 222—541 **16 Claims**



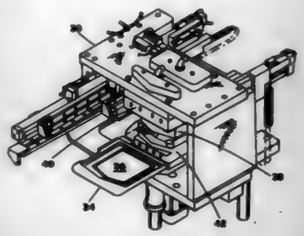
9. Closure unit, made from thermoplastic synthetic material, for a container for handling and storing flowable products, comprising:
a substantially tubular pouring part (1) having:
a lower opening for fitting to an opening of a container; and
an upper opening for use in pouring; and
a closure part (2) closing said upper opening of said pouring part (1);
said closure unit having at least two areas, each area being made from respective different single material, wherein the single materials of one area differs from the single material of another area in at least one characteristic;
a hinge (4) pivotally connecting the closure part (2) to the pouring part (1), the hinge (4) having:
two bearing parts (11, 21) formed on the pouring part (1); and
two pivot parts (12, 22) formed on the closure part (2), each pivot part (12, 22) being pivotally coupled to a corresponding bearing part (11, 21) to form respective pairs of bearing and pivot parts;
said respective pairs of bearing and pivot parts being spaced apart from each other;
the bearing parts (11, 21) being made from one of said single materials, and the pivot parts (12, 22) being made from another of said single materials; and
a film zone (41) pivotally interconnecting said closure part (2) with said pouring part (1), and said film zone being provided in a space between said spaced apart pairs of bearing and pivot parts; and
wherein the pivot parts of said respective pairs of bearing and pivot parts are pivotable around a common pivot axis (Z) passing through said film zone (41).

5,381,936
BACKPACK SUPPORT APPARATUS
Nicholas N. Beery, Box 314, Seeley Lake, Mont. 59868, and David J. Piersak, 928 Lydia Rd., Helena, Mont. 59601
Filed Aug. 23, 1993, Ser. No. 110,014
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—153 8 Claims



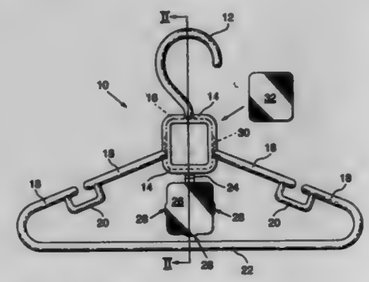
1. A new and improved backpack support apparatus, comprising:
a first extensible leg assembly,
a second extensible leg assembly, and
a plurality of transverse strut assemblies connected between said first extensible leg assembly and said second extensible leg assembly, said transverse strut assemblies capable of supporting a backpack and capable of resting on a wearer's back,
wherein each of said first and said second extensible leg assemblies is capable of extending a sufficient distance such that respective lower ends of said first and said second extensible leg assemblies are capable of partially supporting said backpack and contacting a ground portion at the same level as a surrounding ground portion supporting a wearer of said backpack when said wearer is in a vertically, upright standing position.

5,381,937
POCKET-FOLDING DEVICE
Kenneth J. Thompson, Rte. 3, Box 2575, Lexington, N.C. 27292; John R. Everhart, 5012 Meadow Hill Ct., Winston-Salem, N.C. 27106; Joel C. Rosenquist, 9430 Morton Dr., Kernersville, N.C. 27284, and Wayne G. Foster, 3184 Turkey Hill Rd., Winston-Salem, N.C. 27106
Continuation-in-part of Ser. No. 959,081, Oct. 9, 1992, abandoned. This application Jan. 4, 1994, Ser. No. 177,238
Int. Cl.[6] A41H *33/00*; D06C *15/00*
U.S. Cl. 223—37 12 Claims



1. A pocket folder comprising: a frame; means carried by the frame to receive an unfolded pocket; die means associated with the frame having a top and a bottom; a pocket form supported by the frame movable into and out of engagement with the pocket and die means; a vacuum hand supported by the frame and movable to pick up the pocket, drape the pocket over the pocket form and move to a remote location as the draped pocket, pocket form and die means move together, the die means having an air supply directed against the draped edges to fold the edges against the pocket form; heating means to crease the folded edges, the vacuum hand moving from the remote location to secure the folded pocket as the pocket form is removed and move the folded pocket to a remote location.

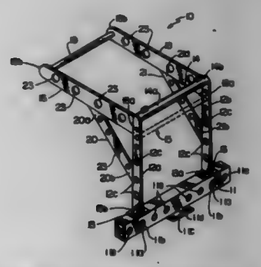
5,381,938
CLOTHES HANGER WITH IDENTIFICATION COMPARTMENT
Kailash C. Vasudeva, Waterloo, Canada, assignor to Shivtech Plastics Inc., Waterloo, Canada
Filed Feb. 15, 1994, Ser. No. 196,498
Int. Cl.[6] A47G *25/14*
U.S. Cl. 223—85 11 Claims



1. A plastic clothes hanger comprising:
(a) a hook section;
(b) an identification tag frame integrally connected to the hook section;
(c) a pair of support arms, each having a first end integrally connected to the tag frame at an equal distance from where the hook section is connected to the tag frame;
(d) a cross-member having a pair of ends, each end being integrally connected to a second end of a respective one of the pair of support arms; and,
(e) an identification tag frame cover connected by an integral hinge to the tag frame and having the same general outer shape as the tag frame, the cover extending in a first position intermediate the tag frame and the cross-member, the cover having one or more projections each adapted to fit into a complementary slot on one side of the tag frame for holding the cover in a second position against the one side of the tag frame, an identification tag being adapted to be retained between the cover and the tag frame when the cover is in the second position.

5,381,939
VEHICLE CARGO CARRIER
Clyde A. Tippets, 3046 Lampman Dr., Billings, Mont. 59102
Filed Jul. 30, 1993, Ser. No. 99,447
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—42.07 13 Claims

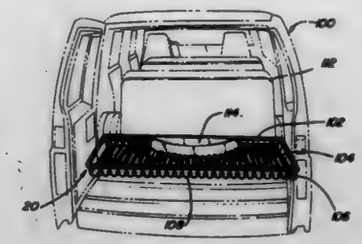
1. A vehicle cargo carrier structure for use with a vehicle, comprising:
(a) a replacement supporting bumper having a predetermined size and shape adapted to be attached to a rear support of said vehicle, and a pair of upright members, said replacement supporting bumper adapted for attaching said pair of upright members in a substantially vertical position and being sufficiently rigid to hold said upright members in said substantially vertical position when said cargo carrier is loaded thereto and being sufficiently rigid to hold said upright members in said substantially vertical position when said cargo carrier is loaded;
(b) said pair of upright members having a predetermined size and shape, means for holding said pair of upright members stationary with respect to said supporting bumper at a predetermined spaced apart relationship with respect to each other and extending to a predetermined height above said supporting bumper;
(c) a connecting member having a predetermined size and shape attached at each end thereof to an end of each of said pair of upright members that is opposite to where said pair of upright members are attached to said supporting bumper;
(d) a pair of upper support members, each of said pair of upper support members having a predetermined size and shape and having a first end and a second end and having said first end attached to an end of each of said pair of upright members that is opposite to where said pair of upright members are attached to said supporting bumper and extending longitudinally toward the front of said



vehicle and substantially perpendicular to said pair of upright members, means for holding said pair of upper support members stationary with respect to said pair of upright members such that said second ends of said pair of upper support members remain free of attachment to said vehicle; and
(e) a front connecting member having a predetermined size and shape, and having two ends and being attached at each of said two ends to said pair of upper support members at said second end thereof and said front connecting members being disposed substantially perpendicular with respect to each of said upper support members and being disposed substantially parallel with respect to said connecting member;
whereby said pair of upper support members, said connecting member, and said front connecting member define an area that is cantilevered with respect to said pair of upright members, said area being disposed so as to extend above a portion of a roof of said vehicle, said area being supported over said roof by said pair of upright members, and said area being adapted to receive and to support a cargo placed thereon.

5,381,940
TRAY COMBINATIONS
David W. Wright, Grand Blanc, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.
Continuation of Ser. No. 792,704, Nov. 15, 1991, abandoned, which is a division of Ser. No. 513,379, Apr. 23, 1990, Pat. No. 5,094,375. This application Mar. 19, 1993, Ser. No. 33,968
Int. Cl.[6] B60R *7/02*
U.S. Cl. 224—42.42 1 Claim

1. A vehicular cargo area organizer comprising: a vehicle having an enclosed cargo storage area including a cargo floor bordered by generally vertically extending peripheral cargo area boundaries; a tray disposed in said enclosed cargo storage area and fabricated from an inorganic polymeric material; said tray including a bottom portion supported upon said cargo floor and a plurality of vertical side walls surrounding a rising above the perimeter of said bottom portion to form an opening into said tray; each of said side walls being disposed directly adjacent one of said cargo storage area boundaries and having a shape closely conforming to the adjacent said cargo storage area boundaries such that the lateral distance between each of said side walls and the respective adjacent said cargo area boundaries are substantially equal thereby form-fitting said



tray in said enclosed cargo storage area; a peripheral flange extending outwardly from said side walls; said bottom portion of said tray including a plurality of ribs; and divider means selectively engageable with said ribs for forming storage compartments within said tray, said divider means extending substantially vertically above said side walls to oppose any tendency of a storage container to tip during transportation.

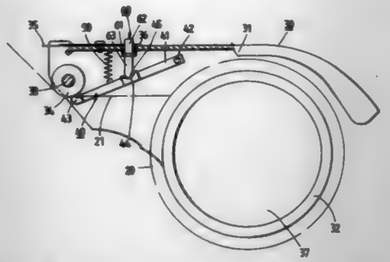
5,381,941
PIVOTABLE SEAT MEMBER FOR BACKPACK FRAME
Paul W. Brune, Rte. 1 Box 185K, New Haven, Mo. 63068
Filed Oct. 27, 1993, Ser. No. 144,130
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—155 12 Claims



1. A seat member comprising a U-shaped framework and a fabric member, said fabric member having means for being connected to said framework to form a seat capable of removable attachment to a backpack frame having a front and rear side, said seat member having means for being pivotally connected to said backpack frame at a bottom end thereof such that said seat member is pivotable over a range between a first position substantially parallel to the front side of said backpack frame and a second position substantially parallel to the rear side of said backpack frame, said seat member having means for being supported from a vertical support member of said backpack frame, said seat member being of a sufficient dimension to support a person, whereby an effective seat is formed

with said backpack frame, suspension straps adapted to be connected to said backpack frame having supporting means for supporting said seat member from said backpack frame, said suspension straps being adjustable whereby the angular orientation of said seat member to said backpack frame is adjustable to provide variation in the pitch of said effective seat.

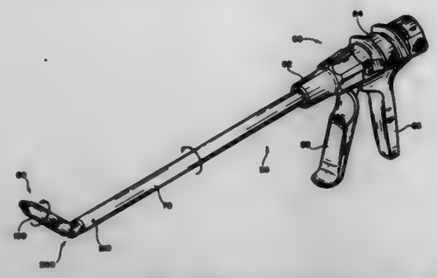
5,381,942
ADHESIVE TAPE DISPENSER
Ju-Chen Lin, No. 195, Wen-Shin Rd., Sec. 3, Taichung, Taiwan, Prov. of China
Filed Jan. 31, 1994, Ser. No. 188,757
Int. Cl.[6] B26F *3/02*; B32B *31/00*
U.S. Cl. 225—56 **2 Claims**



1. An adhesive tape dispenser comprising a housing provided with a reel on which an adhesive tape roll is wound, said housing being further provided at a front end thereof with a rolling wheel mounted on pivot and with a cutter for cutting said adhesive tape; wherein said housing is further provided therein with a movable member fastened to said housing at one end thereof by a pin such that said movable member can rotate on said pin, said movable member having another end that is provided with a holding piece, a spring pressing said holding piece against said rolling wheel, said housing being still further provided with a pressing member having a top end extending upwards beyond a top surface of said housing and a bottom end engaged to said movable member, wherein normally said holding piece causes said spring to hold said adhesive tape securely against said rolling wheel, wherein when pressing said top end of said pressing member said holding piece rotates downwards moving said holding piece away from said rolling wheel to release said adhesive tape.

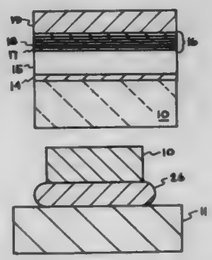
5,381,943
ENDOSCOPIC SURGICAL STAPLING INSTRUMENT WITH PIVOTABLE AND ROTATABLE STAPLE CARTRIDGE
Eugene D. Allen, Okeana; James J. Bedi, Cincinnati; Gregory D. Bishop, Hamilton; Mark A. Burdorff, Loveland; Sean P. Conlon, Cincinnati; John A. Hibner, Mainville; J. David Hughett, Hamilton; Mark S. Ortiz, Milford; Joseph Parsechae, Cincinnati; Narinderjit Sambi; Thomas J. Sierocuk, both of Mason, and Jack E. Smith, Dayton, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.
Filed Oct. 9, 1992, Ser. No. 959,184
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—177 **13 Claims**

1. A surgical stapling instrument for applying one or more surgical staples to tissue, said instrument comprising:
a handle including a staple actuator mechanism;
an elongated tubular support shaft having a longitudinal axis and extending from said handle, said support shaft being mounted to said handle and having a rotating mechanism controlling rotation about said longitudinal axis relative to said handle;
a staple cartridge mounted at the distal end of said support shaft for holding a plurality of staples and including a staple forming mechanism connected to said staple actuator mechanism for applying the staples to the tissue;
pivot means at the distal end of said support shaft for mounting said staple cartridge for pivotal movement about an axis transverse to said longitudinal axis of said support shaft and which includes actuator means on said handle for pivoting said staple cartridge about said transverse axis to adjust the angular position of said staple cartridge relative to said support shaft; and



an articulation driver slidably mounted for longitudinal movement in said support shaft for connecting said actuator means to said pivot means to pivot said staple cartridge relative to said support shaft, said articulation driver including a guide pin at its distal end received in an arcuate groove in said pivot means for converting the longitudinal movement of said articulation driver into pivotal movement of said staple cartridge relative to said support shaft.

5,381,944
LOW TEMPERATURE REACTIVE BONDING
Daniel M. Makowiecki, and Richard M. Bionta, both of Livermore, Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Nov. 4, 1993, Ser. No. 145,568
Int. Cl.[6] B23K *31/02*
U.S. Cl. 228—124.5 **22 Claims**

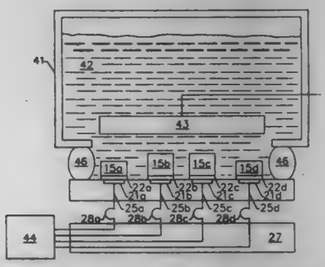


1. A low temperature reactive bonding process, comprising:
forming a multilayer of thin alternating films of reactive materials;
forming at least one layer of fusible material;
positioning the thus formed multilayer and fusible material between members to be joined; and
causing a reaction of the multilayer and consequent melting of the fusible material, thereby producing a bond between the members to be joined.

5,381,945
PROCESS FOR SOLDERING MATERIALS LIKE PRINTED CIRCUIT BOARDS OR SETS OF COMPONENTS IN ELECTRONICS OR METALS IN ENGINEERING WORK
Helmut W. Leicht, Messerschmittring 61, 86343 Königsbrunn, Germany
PCT No. PCT/EP92/00213, § 371 Date Jul. 27, 1993, § 102(e) Date Jul. 27, 1993, PCT Pub. No. WO92/14347, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 31, 1992, Ser. No. 94,081
Claims priority, application Germany, Feb. 1, 1991, 4103098
Int. Cl.[6] B23K *1/00*
U.S. Cl. 228—180.21 **9 Claims**

1. In a process for flow soldering of electronic components or metal mechanical parts utilizing a solder flow in liquid form, wherein the improvement comprising transferring a part of the heat necessary for the soldering process to a soldering area by means of an additional heated sprayed liquid which heats up the parts, and wherein at least one of the two following controls is employed: (1) the temperature of the heated sprayed liquid is controlled according to a predetermined temperature profile and, (2) the amount of the sprayed liquid is controlled time dependently.

5,381,946
METHOD OF FORMING DIFFERING VOLUME SOLDER BUMPS
Nicholas G. Koopman, Raleigh; Glenn A. Rinne, Cary; Iwona Turlik, Raleigh, and Edward K. Yung, Carrboro, all of N.C., assignors to MCNC, Research Triangle Park, N.C.
Division of Ser. No. 845,996, Mar. 4, 1992, Pat. No. 5,289,631. This application Sep. 27, 1993, Ser. No. 127,785
Int. Cl.[6] H01L *21/60*
U.S. Cl. 228—254 **8 Claims**



1. A method of forming different volume solder bumps on a temporary substrate having a plurality of temporary pads at one face thereof, comprising the steps of:
placing said temporary substrate in a solder plating solution; and
applying a first current to a first temporary substrate pad and a second current to a second temporary substrate pad, to thereby form a first volume solder bump in said first temporary substrate pad and a second volume solder bump on said second temporary substrate pad

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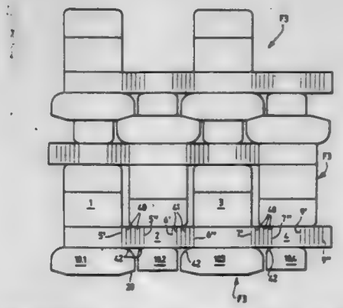
5,381,947
WINDOW-EQUIPPED MAILER AND METHOD
Donald J. Steidinger, Barrington, Ill., assignor to Tamarack Products, Inc., Wauconda, Ill.
Filed Jul. 2, 1993, Ser. No. 87,204
Int. Cl.[6] B65D *27/04*
U.S. Cl. 229—71 **1 Claim**

1. A mailer form having separate mailer front and back generally rectangular outer plies and at least one inside ply, each of said plies having a pair of longitudinally extending edges defined by the direction of movement during mailer collation and a pair of transverse edges perpendicular to said longitudinal edges, said outer plies each having inner and outer surfaces and being adhesively united about the perimeter thereof, an outer ply being provided with a window opening, said window opening ply being covered on its inner surface with a covering material at least translucent and having a



length up to that of said inside ply and having one transverse edge generally aligned with the transverse edge of said inside ply, said covering material having inner and outer surfaces, adhesive being interposed between said inner surface of said covering material and said back outer ply along one longitudinally extending edge of said covering material.

5,381,948
PACKAGING OF POLYGONAL SECTION MADE OF A SHEET-TYPE MATERIAL AND BLANK FOR PRODUCING SUCH A PACKAGING
Guy Collier, Noce, and Jean-Yves Bacques, Paris, both of France, assignors to Otor, Paris, France
Filed Apr. 23, 1993, Ser. No. 51,399
Claims priority, application France, Apr. 24, 1992, 92 05069
Int. Cl.[6] B65D *5/02*, *5/42*
U.S. Cl. 229—109 **17 Claims**



1. Packaging which is approximately parallelepipedal shaped and which is formed from a flat sheet-type material, comprising:
two first and two second lateral faces which are substantially rectangular, formed as identical opposite pairs, and connected together via first parallel folding lines,
the first faces having a height parallel to the first folding lines which is greater than a height of the second faces, and
the first faces having protruding parts which protrude relative to the second faces in a height direction parallel to the first folding lines, the protruding parts having a width perpendicular to the first folding lines which is less than a peripheral distance of the package separating the protruding parts;
a bottom which is formed by two first and two second tabs connected to respective ones of the first and second lateral faces by second folding lines orthogonal to the first folding lines,
the first tabs being respectively attached to a respective first face along an entire length of the respective second folding line, with each first tab having a respective first free edge located opposite to the associated second folding line

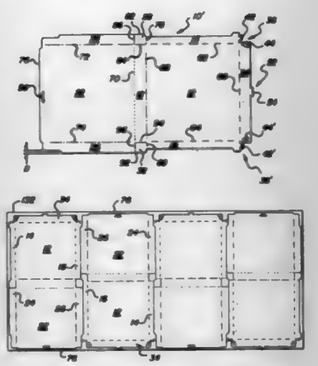
and opposed first lateral edges between the associated first free edge and the associated second folding line,

the two second tabs respectively attached to a respective second face along an entire length of the respective second folding line, with each second tab having a respective second free edge located opposite to the associated second folding line and opposed second lateral edges between the associated second free edge and the associated second folding line, and

the two first tabs being contiguous along the first free edges so that the two first tabs form substantially an entire exterior surface of the bottom, with the second tabs located internally and adjacent the first tabs; and

a lid which is formed by third tabs connected to respective protruding parts of the first faces by third folding lines which third folding lines are orthogonal to the first folding lines.

5,381,949
BOX
John D. Correll, 8459 Holly Dr., Canton, Mich. 48187
Filed Jun. 1, 1993, Ser. No. 69,830
Int. Cl.[6] B65D *5/30*
U.S. Cl. 229—198.2 20 Claims



1. A box folded from a flat board and comprising:

a bottom having front and rear edges,

first and second side walls hingedly attached along respective hinge lines to opposite side edges of the bottom, each of said side walls having front and rear ends,

front and rear walls hingedly attached along respective hinge lines to the front and rear edges, respectively, of the bottom,

each of said walls being flat and defining a plane,

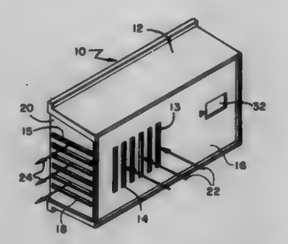
first and second tabs extending forwardly from the front end of the first and second side walls, respectively, each tab having a hook portion and being coplanar with its respective side wall,

the front wall having first and second openings aligned, respectively, with the first and second tabs, the first opening having inner and outer edges and a first opening portion at a location which allows the first tab to pass through the front wall with the first tab substantially perpendicular to the front wall when the first side wall is in a first folded position and when the front wall is folded toward the front end of the first side wall to a predetermined position in which the plane of the front wall is between the hook portion of the first tab and the front end of the first side wall, said first opening having a second opening portion which allows the first side wall to be moved from the first folded position to a second folded position in which a portion of the front wall is disposed between the hook portion of the first tab and the front end of the first side wall when the front wall is in said predetermined position,

the second opening having inner and outer edges and a first opening portion at a location which allows the second tab to pass through the front wall with the second tab substantially perpendicular to the front wall when the second side wall is in a first folded position and when the front wall is folded toward the front end of the second side wall to a predetermined position in which the plane of the front wall is between the hook portion of the second tab and the front end of the second side wall, said second opening having a second opening portion which allows the second side wall to be moved from the first folded position to a second folded position in which a portion of the front wall is disposed between the hook portion of the second tab and the front end of the second side wall when the front wall is in said predetermined position,

whereby said side walls may be interlocked with said front wall by said tabs.

5,381,950
ZONE SENSOR OR THERMOSTAT WITH FORCED AIR
Richard L. Aldridge, Indianapolis, Ind., assignor to American Standard Inc., N.J.
Filed Oct. 20, 1993, Ser. No. 139,345
Int. Cl.[6] F04B *17/00*; G01K *1/00*
U.S. Cl. 236—1 R 14 Claims



1. A sensor adapted to sense an ambient condition in a zone and to control an air conditioning system to affect the temperature or airflow in the zone as a function of the sensed ambient condition, the zone including at least one planar location comprising:

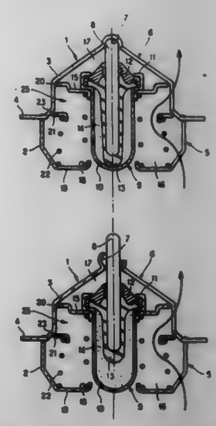
a cover adapted for operable mounting to the planar location, said cover including a cover face projecting into said zone and at least one side faces extending between said cover face and the planar location;

an ambient condition sensor mounted within said cover; and

fan means positioned within said cover proximate the ambient condition sensor for delivering a flow of air to the ambient condition sensor;

said cover including structure defining an air intake oriented to divert air to said fan means along an intake path of travel through said cover face, said fan means being oriented to divert air across said sensor along an exhaust path of travel in a direction transverse to said intake path of travel; said intake path of travel being oriented generally perpendicular to said planar location, and said exhaust path of travel being oriented generally parallel to said planar location; wherein the cover face includes structure defining first louvers adapted for directing ambient air to the intake port to the fan means in a path generally perpendicular to the face of the wall and wherein at least one of said side faces includes structure defining second louvers adapted for exhausting the outlet air from the exhaust port of the fan means in a direction generally parallel to the face of the wall; whereby said sensor is provided with a continuous flow of ambient air taken from within said zone.

5,381,951
THERMOSTATIC SAFETY VALVE FOR A HYDRAULIC COOLING CIRCUIT
Félix Michel, Paris, France, assignor to Nicolas Pinilla, Buenos Aires, Argentina, a part interest
Filed Jun. 24, 1993, Ser. No. 80,527
Int. Cl.[6] F01P *7/16*
U.S. Cl. 236—34.5 3 Claims



3. A thermostatic safety valve for a cooling circuit of an internal combustion engine comprising:

a cage insertable in said cooling circuit;

an upstream chamber in said cage;

a downstream chamber in said cage;

a coolant flow opening in said cage communicating with said downstream chamber;

a coolant flow opening in said cage communicating with said upstream chamber;

a fixed valve seat on said cage at a position between said upstream and downstream chambers;

a thermostatic capsule movably mounted in said cage for movement between an open position for said valve and a closed position for said valve;

thrust means between said thermostatic capsule and said cage, said thrust means comprising a fixed rod having one end engaging said cage at a position thereon within said downstream chamber and the other end extending into said thermostatic capsule, and a deformable sheath mounted in said capsule and having one end through which said fixed rod extends in relatively movable and sealing engagement therewith;

a cavity between said deformable sheath and said thermostatic capsule for containing said thermally expandable material so that when said coolant temperature reaches said predetermined temperature said thermally expandable material moves said capsule relative to said fixed rod and said deformable sheath to said open position of said valve;

a valve member mounted on said thermostatic capsule for movement therewith and engageable with said fixed valve seat in said closed position for preventing coolant flow between said chambers and disengageable from said fixed valve seat in said open position to facilitate coolant flow between said chambers;

spring means between said cage and said valve member for resiliently urging said valve member toward said closed position into engagement with said fixed valve seat; and

thermally expandable material within said thermostatic capsule in cooperating relationship with said thrust member for moving said capsule and said valve member from said closed position at a coolant temperature below a predetermined temperature to said open position at a coolant temperature above said predetermined temperature against the force of said spring means;

said valve member comprising a double-acting valve member disengageable from said fixed valve seat by movement in one direction toward said open position due to expansion of said thermally expandable material at said predetermined temperature and by movement in the opposite direction due to said spring means in the event of leaking of said thermally expandable material from said capsule and/or breaking of said thrust means;

said double-acting valve member being disposed in normal operating conditions in said upstream chamber and lifting off said valve seat and moving in an upstream direction in said upstream chamber when said coolant temperature reaches said predetermined temperature, and moving in a downstream direction in said downstream chamber upon said leaking of said thermally expandable material from said capsule, and/or breaking of said cage in a portion thereof in said downstream chamber to maintain coolant flow through said valve to prevent overheating of the engine;

said double-acting valve member comprising;

a first peripheral valve element disposed in said upstream chamber,

a downstream face on said first peripheral valve element, and;

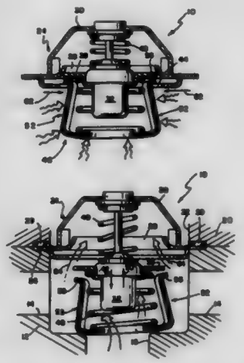
a second valve element integral with said capsule and engageable in normal operating conditions against said downstream face of said first peripheral valve element under normal operating conditions by said thermostatic capsule; and

said spring means comprising

a first spring between said cage and said first peripheral valve element urging said first peripheral valve element into engagement with said fixed valve seat, and

a second spring between said cage and said second valve element for urging said second valve element away from said engagement with said downstream face of said first peripheral valve element.

5,381,952
FAIL-SAFE THERMOSTAT
Wayne R. Duprez, Waltham, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.
Filed Oct. 15, 1993, Ser. No. 137,849
Int. Cl.[6] F01P *7/16*
U.S. Cl. 236—34.5 22 Claims

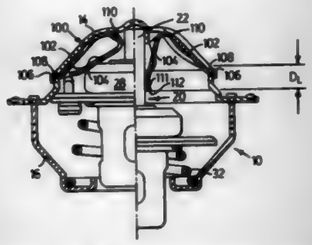


1. A fail-safe thermostat apparatus for controlling fluid flow through an engine cooling system in response to changes of an ambient temperature surrounding the apparatus, the apparatus comprising:

a stationary valve member configured to be positioned be-

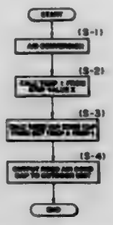
tween conduit components of the engine cooling system, the stationary valve member being formed to include a valve seat configured to define an opening into a conduit;
a movable valve member for engaging the valve seat to block fluid flow into the conduit through the opening;
an operating spring for biasing the movable valve member to a closed position against the valve seat of the stationary valve member;
a thermally responsive actuator coupled to the stationary valve member and to the movable valve member to move the movable valve member to an open position away from the valve seat when the ambient temperature exceeds a first predetermined temperature to permit fluid flow through the conduit; and
a bimetallic frame member for engaging the stationary valve member to compress and hold the operating spring in engagement with the movable valve member, the frame member being configured to disengage itself from the stationary valve member when the ambient temperature exceeds a second predetermined temperature greater than the first predetermined temperature to release the operating spring and permit the movable valve member to move away from the valve seat, the movable valve member being configured to prevent disengagement of the frame member from the stationary valve member when the movable valve member is in the open position.

5,381,953
FAIL-OPEN LOCKING ELEMENT AND THERMOSTAT INCORPORATING SAME
Joseph Fishman, 102 Teefy Ave., Richmond Hill, Ontario, Canada M1R 3A6
Continuation-in-part of Ser. No. 23,821, Feb. 23, 1993, Pat. No. 5,294,046. This application Mar. 14, 1994, Ser. No. 209,860
Int. Cl.[6] F01P *7/16*
U.S. Cl. 236—34.5 **16 Claims**



9. A thermostat for liquid cooling systems, comprising:
a flange having an opening;
a valve for sealing said opening, said valve being displaceable from said opening for allowing the passage of liquid through said opening;
an upper bridge and a lower bridge spanning said opening on opposing sides of said flange for supporting said valve and said openings;
means for displacing said valve from said opening in response to a temperature variation, said displacing means including a pin contacting the underside of one of said bridges, at one end, and being extendably housed within a body at the other end, said body containing a temperature sensitive means for extending said pin, and said body being rigidly attached to said valve for sealing said opening in said flange when said pin is retracted relative to said body;
a spring located between said valve and the other of said bridges for urging said valve into sealing engagement with said opening; and
at least one locking element having
(i) an end portion for abutting against said upper bridge; and
(ii) a body portion for abutting against said displaceable valve, said body portion being resiliently connected to said end portion so that said body portion is biased against said displaceable valve,
wherein said locking element is positioned to become wedged between said upper bridge and said displaceable valve to lock said displaceable valve in an open position when said displaceable valve has been displaced a predetermined amount, said pre-determined amount being located in the range that said displaceable valve is displaced when subjected to temperatures between the maximum normal working temperature of said thermostat and the failure temperature of said thermostat.

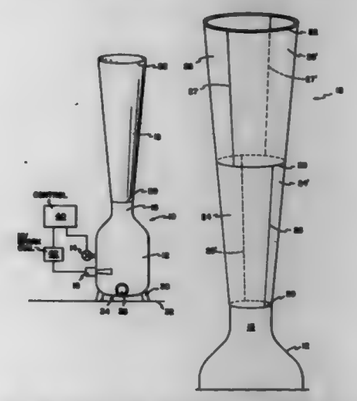
5,381,954
TEMPERATURE CONTROL APPARATUS
Hisashi Tokizaki, Ora, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Sep. 16, 1993, Ser. No. 122,644
Claims priority, application Japan, Sep. 18, 1992, 4-275419
Int. Cl.[6] G01K *7/00*
U.S. Cl. 236—78 D **10 Claims**



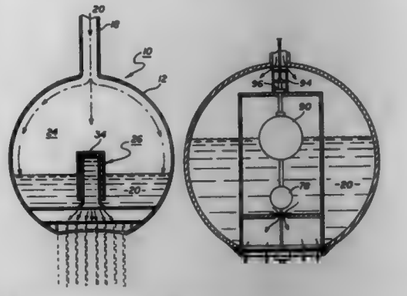
1. A temperature control apparatus for executing control of operation of a unit on the basis of a detected temperature comprising:
a temperature detection circuit including a temperature detection device whose resistance value varies with a detected temperature for outputting a DC voltage corresponding to the resistance value of said temperature detection device; and
processing means for A/D (analog-to-digital) converting said outputted voltage into a digital step value corresponding to one of a plurality of step values of an output voltage range of said temperature detection circuit corresponding to a range of resistance values of said detection device, and then converting said digital step value to a mathematically expressed temperature value using a predetermined mathematical relationship and executing temperature control of the unit using said temperature value obtained by the conversion.

5,381,955
ANTI-HAIL SHOCK WAVE GENERATOR
Gérald Ollivier, 1625 Lincoln Avenue, #1901, Montreal, Quebec, Canada H3H 2T5
Filed Oct. 18, 1993, Ser. No. 138,592
Int. Cl.[6] E01H *13/00*
U.S. Cl. 239—14.1 **8 Claims**

1. An anti-hail shock wave generator comprising:
a combustion chamber having an upper orifice;
fuel injection means for injecting fuel into said chamber;
ignition means for igniting said fuel in said chamber;
a conical barrel having a small diameter lower end connected to said upper orifice and a large diameter upper end, said barrel comprising two lower shell members connected together along two opposed lower vertical seam lines and two upper shell members connected together along two opposed upper vertical seam lines, said lower shell members being connected to said upper shell members with said lower seam lines abutting a middle of a bottom of said upper shell members respectively and with said upper seam lines abutting a middle of a top of said lower shell members respectively.

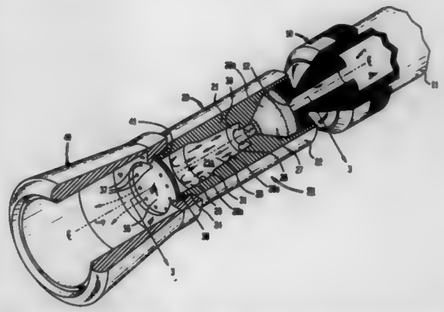


5,381,956
SELF ACTIVATING FALLING WATER DISPLAY
Alan S. Robinson, El Monte, and Joseph W. Starr, Burbank, both of Calif., assignors to Wet Design, Universal City, Calif.
Filed Aug. 26, 1993, Ser. No. 112,429
Int. Cl.[6] B05B *17/08*
U.S. Cl. 239—22 **35 Claims**



1. A liquid ornamental display, comprising:
a container that is suspended from a Structure and has a floor that defines an inner cavity, said container having a top opening adapted to allow a fluid to flow into said inner cavity at a first predetermined flowrate, said floor being constructed to contain said fluid when said fluid flows into said inner cavity such that said fluid reaches a first predetermined level from said floor, said floor further having a floor opening adapted to allow said fluid to flow out of said inner cavity;
valve means operatively connected to said floor opening for allowing said fluid to flow out of said inner cavity at a second predetermined flowrate when said fluid reaches said first predetermined level, said second flowrate being greater than said first flowrate such that when said valve means allows said fluid to flow out of said inner cavity said fluid level in said inner cavity decreases, said valve means being constructed to allow fluid flow out of said inner cavity until said fluid level reaches a second predetermined level, wherein said fluid no longer flows out of said container and said fluid level in said inner cavity increases; and,
a pool located below said suspended container to collect the fluid.

5,381,957
WATER/AIR MIXING AND DISPENSING DEVICES
Eric L. Bianco, 41 Lakeview Ave., Watchung, N.J. 07060
Filed Jan. 13, 1994, Ser. No. 181,613
Int. Cl.[6] B05B *1/08, 7/00*
U.S. Cl. 239—99 **5 Claims**

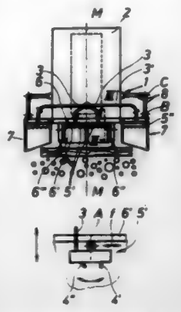


1. A water/air mixing and dispensing device connected to a source of water comprising:
a. housing means having an elongated passage means extending end to end therethrough defining a mixing chamber and an operatively associated expansion chamber in communication with said mixing chamber,
b. said mixing chamber having a predetermined size and shape,
c. said housing means having a sized inlet orifice at one end of said elongated passage means for continuously delivering a predetermined volume of entering water travelling along the longitudinal axis of said mixing chamber and said expansion chamber, and partition means on said housing means at the end of said elongated passage means remote from said inlet orifice against which said entering water impinges,
d. said partition means including a plurality of spaced openings to enable impinging water to draw ambient air into said expansion chamber for mixing with said entering water and for discharging the water/air mixture from said housing means,
e. said housing means including, inner wall means for said mixing chamber having a diameter which increases at a generally constant rate with increasing axial distance from said inlet orifice end of said housing means,
f. said housing means having flared shoulder means disposed between said mixing chamber and said expansion chamber, and
g. said flared shoulder means having a diameter which increases at a generally constant rate from said mixing chamber to said expansion chamber to define a predetermined constant angle with respect to the longitudinal axis of the housing means.

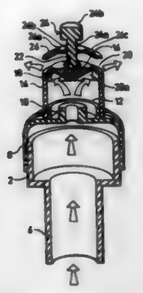
5,381,958
APPARATUS FOR DESTROYING UNWANTED VEGETATION IN THE REGION OF TRAVEL WAYS
Günther Koblmüller, Breitenfurt, and Michael Martin, Mödling, both of Austria, assignors to P.C. Wagner Elektrothermit-Schweissgesellschaft, Vienna, Austria
Filed Nov. 15, 1993, Ser. No. 153,233
Int. Cl.[6] E01H *11/00*
U.S. Cl. 239—136 **6 Claims**

1. An apparatus for destroying unwanted vegetation in a region of railway track beds and mountable on a railway vehicle having a bogie, said apparatus comprising:

a steam generating unit having a steam output and mountable on the vehicle;
a plurality of steam nozzles connectable to said steam output and forming at least one nozzle bar, said at least one nozzle bar being mountable beneath the vehicle bogie to extend transversely to a travel direction of the vehicle substantially across a width of a track bed, and said at least one nozzle bar comprising at least two rows of nozzles inclined at different angles to the travel direction; and
support means for mounting said at least one nozzle bar to the vehicle bogie, said support means comprising:
a central support having an adjustable height and including a top, side walls and end walls, which together form an open-bottom hood, and a first pivot shaft extendable transverse to the travel direction, said at least one nozzle bar being mounted on said top for displacement in the travel direction and for pivotal movement about said pivot shaft; and
first and second lateral supports arranged on opposite sides of said central support, respectively, for supporting first and second nozzle bar sections, respectively, which are co-extensive with said at least one nozzle bar, each of said lateral supports having an open-bottomed hood shape and including a second pivot shaft for pivotally supporting said first and second nozzle bar sections, respectively, and said second pivot shaft extending in the travel direction, each said second pivot shaft being displaceable vertically and in a direction transverse to the travel direction.

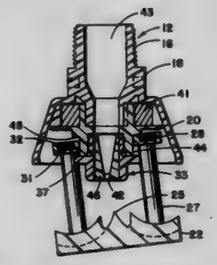


5,381,959
STATIC SPRAYER INCLUDING PROTECTIVE COVER
Valish Malkin, Doar Gvat, Israel, assignor to Plastro Gust, Doar Gvat, Israel
Filed Jul. 30, 1993, Ser. No. 99,505
Claims priority, application Israel, Jul. 31, 1992, 102693
Int. Cl.[6] B05B *1/26, 1/34*
U.S. Cl. 239—201 **19 Claims**



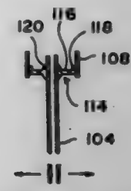
1. A static sprayer, comprising: a housing mountable in a vertical position and including a water inlet at the lower end of the housing, a water discharge outlet at the upper end of the housing, a vertically-extending passageway within the housing connecting the water inlet to the water discharge outlet, and a static diverter fixed to the housing for receiving the water from the vertically-extending passageway and for diverting the water laterally through the water discharge outlet and laterally of the housing said diverter defining said discharge outlet in a fixed annular configuration; characterized in that said static sprayer further comprises: a cover mounted at the upper end of the housing over said diverter and movable vertically through a linear path towards and away from said diverter to cover and uncover said water discharge outlet; and a constraining device permitting the cover to move away from the water discharge outlet a limited amount when water is discharged therefrom, and permitting the cover to move by gravity towards said water discharge outlet to cover it when water is not discharged therefrom to thereby inhibit the entry of insects or other foreign objects into the sprayer.

5,381,960
WOBBLING IRRIGATION SPRINKLER HEAD INCLUDING A MAGNET FOR INITIAL TILT
Harry D. Sullivan, Monument, Colo.; James R. Claybrooke, Orlando, and William McFadden, Clermont, both of Fla., assignors to Senninger Irrigation, Inc., Orlando, Fla.
Filed Aug. 23, 1993, Ser. No. 110,703
Int. Cl.[6] B05B *3/04, 15/10*
U.S. Cl. 239—222.21 **15 Claims**



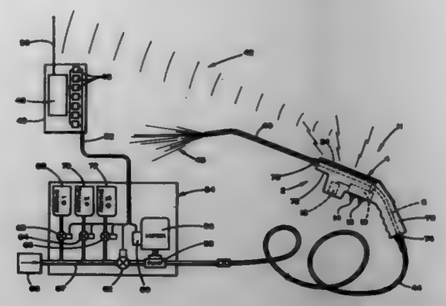
1. A wobbling irrigation sprinkler head comprising:
a base having an attachment portion for attaching to a water supply;
a nozzle mounted to said base for directing water from said water supply therethrough;
a wobbling water deflecting head movably attached to said base and having a deflector pad thereon and having a deflection surface of predetermined shape positioned to deflect water being emitted from said nozzle and to rotate said wobbling water deflecting head;
said wobbling water deflecting head having a loose fitting sleeve portion surrounding a support arm on said base and held thereon with a base flange portion whereby said wobbling water deflecting head has a rotating wobbling motion for dispersion of water from said sprinkler head; and
a magnet being attached to one portion of said sprinkler head for magnetically attracting a magnetically attractable member attached to another portion of said sprinkler head whereby said wobbling water deflector head is cocked to a tilted position relative to said base by said magnet's attraction for said magnetically attractable member.

5,381,961
LIQUID DISPENSING DEVICES
Robert M. Evans, 2821 31st St., SE. Apt. A501, Washington, D.C. 20020, and William L. Klima, 26 Settler's Way, Stafford, Va. 22554
Continuation-in-part of Ser. No. 974,106, Nov. 10, 1992, and a continuation-in-part of Ser. No. 978,381, Nov. 18, 1992, and a continuation-in-part of Ser. No. 987,147, Dec. 8, 1992. This application Jan. 7, 1993, Ser. No. 1,763
Int. Cl.[6] B05B *9/043*
U.S. Cl. 239—333 **9 Claims**



1. A liquid dispensing device, comprising:
a liquid container having an opening and a bottom;
a dispensing unit connected to said container at said opening;
a pickup tube in the range of stiffness from semi-rigid to rigid connected to said dispensing unit and extending through said opening in said container, said pickup tube having a distal end and arranged so that said distal end moves in close proximity to said bottom of said liquid container to accommodate sway of the device during operation and enable substantially or complete evacuation of liquid stored in said liquid container; and
a flexible connection, said pickup tube is connected to said dispensing unit by a flexible connection to provide tilting of said pickup tube relative to said dispensing unit to accommodate sway of the device during operation, said flexible connection is defined by a flexible membrane connector sealing a suction chamber of said dispensing unit, said flexible membrane connector provided with an opening for accommodating and sealing with said proximal end of said pickup tube.

5,381,962
REMOTE CONTROLLED SPRAYING DEVICE
Jim C. Teague, Grand Rapids, Mich., assignor to Hydro-Chem Systems, Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 988,749, Dec. 10, 1992. This application Dec. 17, 1993, Ser. No. 169,328
Int. Cl.[6] B05B *7/02, 9/01, 12/00*
U.S. Cl. 239—526 **14 Claims**

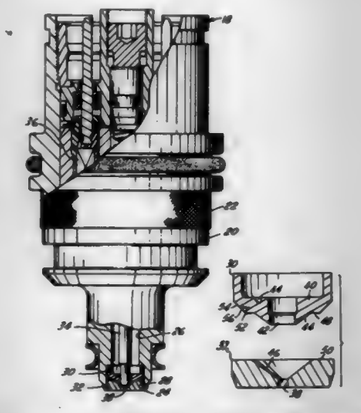


1. A radio operated control mechanism for operating a pressure sprayer, wherein the pressure sprayer comprises a motor driven pressure pump mechanism that receives liquid from a liquid source and pumps the liquid under pressure through a hose to a hand held nozzle, the control mechanism including:
a nozzle housing for the nozzle formed in the shape of a handle with a barrel portion and a hand grip portion;
a liquid conduit mounted in the nozzle housing and having an inlet and an outlet, the outlet facing outwardly from an outer end of the barrel portion;
a plurality of manually actuatable electronic switches mounted in the nozzle housing in position for manual actuation by a user while the user holds the nozzle housing by the hand grip, the switches including:
a deadman's switch that is actuated only when a user is holding the nozzle housing by the hand grip, the deadman's switch automatically becoming deactuated when the hand grip is released; and
a liquid on/off switch;
a radio transmitter and power supply therefor mounted in the nozzle housing in electrical contact with the switches, the radio transmitter generating continuing output signals comprising a carrier wave encoded with control information representative of the state or change of state of each of the switches;
an antenna mounted to the nozzle housing and being connected with the transmitter to transmit the output signals from the antenna as airborne electromagnetic signals;
a radio receiver in electrical communication with the pressure pump mechanism, the radio receiver receiving the airborne electromagnetic signals transmitted from the antenna and converting the signals into electrical control signals that control the operation of the pump mechanism;
electrical controls connected to the pump mechanism in communication with the radio receiver, the electrical controls including a switch that controls the actuation of the pump, the electrical controls receiving the control signals from the receiver and operating the pump mechanism in response thereto;
the control mechanism being such that it deactuates the pump when the deadman's switch is released or the on/off switch is deactuated or when the receiver fails for a predetermined period of time to detect a continuing signal indicating that the deadman's switch continues to be actuated, the control mechanism causing the pump to be actuated only while the receiver continues to receive a signal indicating that both the deadman's switch and the liquid on/off switch are actuated.

5,381,963
PROJECTION WELDED NEEDLE GUIDE
John S. Bright; Gyula A. Huszar, both of Newport News, and Dean L. Spiers, Hampton, all of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.
Filed Jun. 21, 1993, Ser. No. 80,277
Int. Cl.[6] B23K *13/00*
U.S. Cl. 239—533.2 **20 Claims**

9. The combination of a seat member and a guide member for a fuel injector wherein one of said members has weld projections for engaging the other of said member preparatory to joining the two members together by conducting welding current through them to turn the projections into welds that

join the two members, in which said one member comprises a corresponding depression immediately adjacent each weld projection, and in which each said depression comprises a pointed hole.

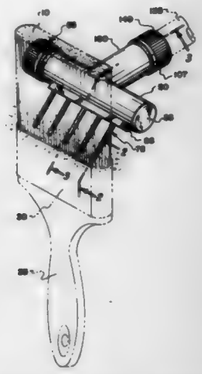


5,381,964

WATER JET SPRAY NOZZLE FOR CLEANING A PAINTBRUSH

John M. Reyna, P.O. Box 1186, Cape Coral, Fla. 33910-1186

Filed Feb. 12, 1993, Ser. No. 18,074
Int. Cl.[6] B05B *1/14*
U.S. Cl. 239—566 14 Claims



1. Paintbrush cleaning apparatus comprising: hollow housing;

connecting means on said hollow housing for connecting a conduit means for delivering pressurized water to said hollow housing;

water jet means extending from said hollow housing for allowing pressurized water to flow out of said water jet means to clean a paint laden paintbrush; and

said water jet means comprises a plurality of water jet needles spaced about one-half inch apart and aligned in a row and extending from said hollow housing each said water jet needle comprises:

a stem having a bore running therethrough for connecting to the hollow housing;

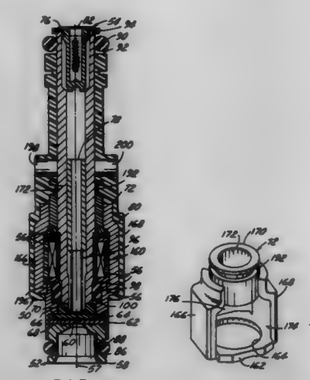
said stem is rigid and one inch to two inches in length and less than 0.25 inches in diameter; and said bore of said stem has a small diameter to cause a thin stream of water to exit said needle under high pressure.

5,381,965

FUEL INJECTOR

Michael W. Chabon, Northville; Bruce J. Harvey, Shelby Township, Macomb County; Thomas A. Lahnala, Farmington Hills; Hans J. Sailer, Lake Orion; Bac Ta, Farmington Hills, and Christopher J. Treusch, St. Clair Shores, all of Mich., assignors to Siemens Automotive L.P., Auburn Hills and Ford Motor Company, Dearborn, both of Mich.

Division of Ser. No. 17,719, Feb. 16, 1993, abandoned. This application Jan. 3, 1994, Ser. No. 176,743
Int. Cl.[6] F02M *51/00*
U.S. Cl. 239—585.1 8 Claims



1. A fuel injector having a fuel inlet for fluid communication to a supply of pressurized liquid fuel and a fuel outlet from which fuel is injected out of the fuel injector and comprising a solenoid actuator portion and a valve portion sharing a longitudinal axis, said solenoid actuator portion comprising a solenoid actuator, said valve portion comprising a valve body within which is contained means that is selectively operable by said solenoid actuator to open and closed positions to open and close the fuel injector to fuel flow between said fuel inlet and said fuel outlet, said solenoid actuator comprising a coil that is co-axially disposed on a non-metallic bobbin, and stator means comprising a magnetically permeable tube that passes axially through said bobbin and said coil and via which magnetic force is delivered to said valve portion for operating said means to open and close the fuel injector to flow, and a conical disk spring washer that encircles said tube, that has an inside diameter resiliently bearing against a shoulder on an outside diameter of said tube, and that has an outside diameter resiliently bearing against said bobbin to resiliently urge the latter axially against said valve body.

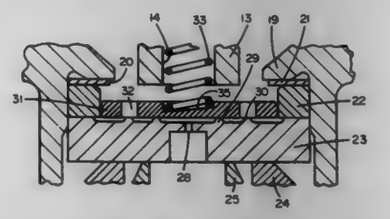
3. A method of making an electromagnetic fuel injector having an actuator portion and a valve portion including the steps of disposing a bobbin-mounted electromagnetic coil within a frame member by passing said bobbin-mounted electromagnetic coil through an opening in a lateral side of said frame member, aligning a central through-hole in said bobbin-mounted electromagnetic coil with axially aligned through-holes in said frame member, and passing a tube through said aligned through-holes in said bobbin-mounted electromagnetic coil and said frame member.

5,381,966

FUEL INJECTOR

George G. Gernert, II, Taylors, S.C., assignor to Lucas Industries Public Limited Company, Solihull, England

Filed Aug. 10, 1993, Ser. No. 103,773
Claims priority, application United Kingdom, Aug. 14, 1992, 9217201
Int. Cl.[6] F02M *51/06*
U.S. Cl. 239—585.3 20 Claims



1. A fuel injector for supplying liquid fuel to an air inlet duct of a spark ignition engine comprising:

a valve seat member having a discharge orifice therethrough;

an annular seating element on said valve seat member;

a circular plate-like valve member having a first face engageable with said annular seating element, a second face, a centrally disposed recess in said second face, a base wall in said recess, and a radially outer rim;

an annular spacer member surrounding said valve member and having an internal surface slidably engageable with said rim of said valve member;

spring means engaging said base wall of said recess for resiliently urging said first face of said valve member into sealing engagement with said annular seating element to prevent flow of fuel through said discharge orifice in a closed position;

electromagnetic means for attracting when energized said valve member away from said annular seating element against the force of said spring means to facilitate fuel flow through said orifice in an open position; and

said base wall of said recess being inclined with respect to said first face of said valve member so that said inclination produces a lateral force applied to said valve member by said spring means for urging said rim of said valve member into engagement with said internal surface of said spacer member.

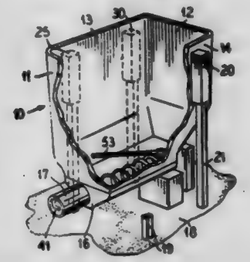
5,381,967

HOPPER WHICH IS VIBRATED SO AS TO DISPENSE PRODUCT

Alan M. King, Westmount, Canada, assignor to VKI Technologies Corporation, Westmount, Canada

Filed Aug. 11, 1993, Ser. No. 104,557
Int. Cl.[6] B65D *83/06;* B05B *17/04*
U.S. Cl. 239—659 1 Claim

1. A hopper for dispensing product comprising: a hopper having upper side walls and a lower tapered portion, wherein said entire hopper, including said upper side walls and said lower tapered portion, is made of a flexible plastic material to allow it to freely move; an auger rotatably mounted in said lower portion of said hopper which has a discharge opening; support means attached to said upper side walls of said hopper to support said hopper; driving means coupled to said auger to rotate it so as to move product in the longitudinal direction of said hopper, wherein said driving means is eccentrically mounted relative to said auger on a base and an eccentric coupling is mounted between said driving means and said auger so that as said driving means rotates, said auger and said lower tapered portion of said hopper in which the auger is mounted and said upper side walls of said hopper are vibrated; wherein said support means comprise a plurality of posts with first ends mounted on said base and second ends attached to the upper portions of said upper side walls of said hopper thereby providing said support for said hopper with the lower portion positioned above said base for allowing free movement of the lower tapered portion in response to vibration; and including a plurality of flexible fingers attached to said auger so as to rotate therewith, said flexible fingers extending for a substantial distance in the longitudinal direction of said auger such that product in said hopper is readily discharged and falls free into said auger due to the free movement of said lower portion of said hopper and the vibration of said upper side walls of said hopper and the rotation of said plurality of flexible fingers so as to prevent packing of product in said hopper.

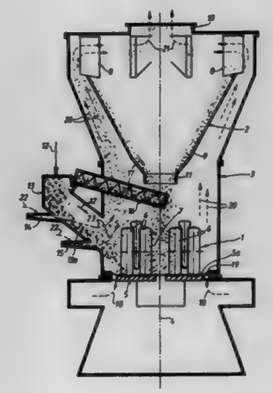


5,381,968

APPARATUS AND METHOD FOR THE CRUSHING OF MATERIAL FOR GRINDING OF DIFFERING GRAIN SIZE

Ludger Lohnherr, Am Kirchplatz 4, 4740 Oelde; Ludger Kimmeyer, Im Werl 40; Walter Holz, Im Vinkendahl 2, both of 4720 Beckum 2; Bernhard Zigan, Papenbrede 16, 4724 Diestedde, and Werner Schoneich, Gustav-Moll-Str. 35, 4720 Beckum, all of Germany

Filed Jul. 13, 1992, Ser. No. 51,607
Claims priority, application Germany, Jul. 23, 1991, 4124416
Int. Cl.[6] B02C *23/30, 9/04*
U.S. Cl. 241—19 16 Claims



1. A method of crushing material comprising:

a) delivering fresh raw material along a path leading to a crushing zone;

b) separating fines from said raw material upstream of said crushing zone and delivering the remainder of the raw material to enter the crushing zone;

c) crushing the raw material in said crushing zone to produce relatively finer particles and relatively coarser parti-

cles; entraining particles resulting from the crushing of the material and conveying them along a first path away from the crushing zone;

d) delivering the entrained particles to a primary separator and removing at least some of the relatively finer particles and returning relatively coarser particles back to the crushing zone along a second path that is different from the first path; capturing at least a portion of the relatively coarser particles upstream of the crushing zone and subjecting them to a secondary separation treatment to remove additional relatively finer particles from the captured particles; and

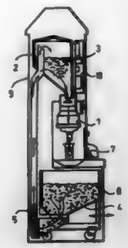
e) delivering the remainder of the captured particles to the crushing zone for further crushing.

5,381,969

ARRANGEMENT AND METHOD IN CONNECTION WITH THE RETAIL SALES OF BREWABLE PRODUCTS

Robert Paulig, Helsinki, Finland, assignor to Oy Gilvaria AB/-Robert's Coffee Co., Helsinki, Finland

Filed May 21, 1993, Ser. No. 65,271
Claims priority, application Finland, May 27, 1992, 922445
Int. Cl.[6] A47J *42/00*
U.S. Cl. 241—36 **17 Claims**



1. A device for grinding and dispensing brewable products, comprising:

a grinder for grinding the brewable products;

a supply chamber for supplying the brewable products to the grinder;

a first storage chamber located below the supply chamber;

means for conveying the brewable products from the first storage chamber up to the supply chamber; and

control means for controlling the grinder to grind a predetermined quantity of brewable products.

5,381,970

COMBINATION CHIPPER/SHREDDER AND VACUUM APPARATUS FOR LAWNS AND GARDENS

Alfred J. Bold, Waterford; Steven E. Kodesch, Schenectady, and William F. Sheehan, Troy, all of N.Y., assignors to Garden Way Incorporated, Troy, N.Y.

Continuation of Ser. No. 757,662, Sep. 10, 1991, abandoned. This application Aug. 3, 1993, Ser. No. 101,778
Int. Cl.[6] B02C *18/08*
U.S. Cl. 241—55 **3 Claims**

1. Apparatus for chipping, shredding and vacuuming lawn and garden debris comprising:

a housing including a frame and support wheels permitting movement of the apparatus over a support surface;

a motor mounted on said frame;

a flat disc substantially enclosed within said housing and supported for rotation about a horizontal axis generally perpendicular to a nominal direction of apparatus movement when said apparatus is moved on said support wheels;

said disc having a driving connection to said motor for disc rotation within said housing;

a chipper blade mounted on a side of said disc facing said motor, said disc having an aperture extending therethrough adjacent said blade;

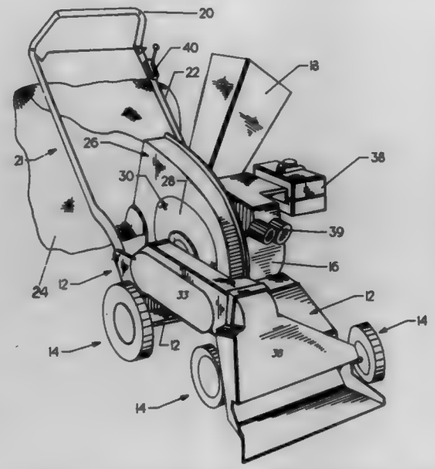
a chipper inlet passageway forming a part of said housing in communication with said chipper blade at least once each disc revolution;

an anvil supported on said housing in a position adjacent to said blade for cooperation with said blade upon each revolution of the disc to effect chipping of materials entering through said chipper inlet passageway to exit through the disc aperture;

a plurality of generally radially extending blades mounted on and fixed relative to the other side of said disc opposite said side of said disc facing said motor for rotation with said disc within said housing to thereby cause air movement within said housing;

said housing having a central area on one side adjacent to said blades provided with an opening in a housing sidewall substantially coaxial with the disc rotational axis;

a generally cylindrical screen supported on said housing in the opening and in a position coaxial with said disc, the diameter of said cylindrical screen being greater than a diametrical distance between radially outer ends of said



blades so as to overlie the ends of said generally radially extending blades, said screen being interposed between the ends of said generally radially extending blades in said housing and said housing, said screen being further comprised of a pair of generally circular rims joined by a plurality of spaced bar members, one of the rims having an enlarged lip which is engageable with said housing adjacent the central area opening on one side thereof;

a cover for said housing opening partially defining an air passageway having an upstream air entrance end, said cover being removably fastened to said housing and having an aperture in the cover connected to said air passageway, said air passageway extending from said cover to said entrance end in a direction generally parallel to a major plane of said housing and a plane containing said disc to permit air to be drawn through said air passageway into said housing;

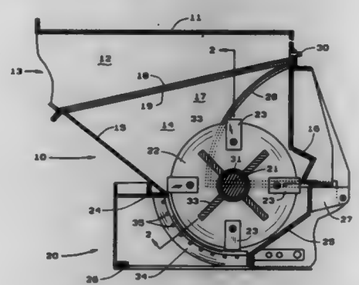
said housing having a peripheral wall and a top rear outlet, said wall forming a generally volute curve cooperating with the ends of said generally radially extending blades to cause air from said entrance end of said air passageway to be propelled by said blades axially into said housing and through said top rear outlet of said housing.

5,381,971

GRINDING APPARATUS

Carl A. Rehmer, Red Bud, Ill., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Jul. 9, 1993, Ser. No. 88,684
Int. Cl.[6] B02C *13/08, 13/288*
U.S. Cl. 241—55 **1 Claim**



1. Material reducing apparatus comprising:

a) an elongated rotary shaft having a horizontal axis of rotation;

b) discs carried on said shaft and arranged in spaced relation axially along said shaft to define slot spaces surrounding said rotary shaft;

c) material impact hammers pivotally mounted between said discs to occupy said slot spaces, said impact hammers being free to rotate relative to said rotary shaft and within said slot spaces;

d) fan elements placed in said slot spaces between said discs to occupy positions in said slot spaces between said impact hammers out of the path of rotation of said impact hammers;

e) housing means enclosing said rotary shaft, said discs and impact hammers and fan elements, said housing having a material inlet opening and a reduced material outlet, whereby said fan elements in rotation with said shaft simultaneously entrain material from said inlet and impel reduced material in a direction radially of said rotary shaft for flow directly through said outlet; and

f) grate bars mounted in said reduced material outlet and being formed with leading edges offering minimum obstruction in the path of material impelled through said outlet.

5,381,972

DOWNDRAFT SHREDDER

David N. Chon, Baltimore, Md., and Andrew V. Maynard, West Palm Beach, Fla., assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 74,511, Jun. 11, 1993, abandoned. This application Aug. 24, 1994, Ser. No. 293,333
Int. Cl.[6] B02C *13/284*
U.S. Cl. 241—73 **4 Claims**

1. A downdraft shredder comprising:

a lower housing;

a semicircular lower grate in the lower housing having a leading edge and a trailing edge;

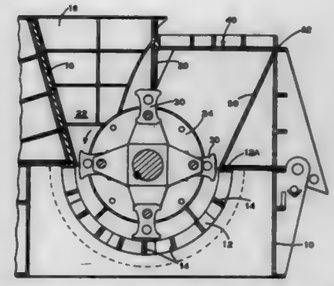
a chute for receiving material to be shred, the chute being connected to the lower housing and having an inlet opening and a feed chamber;

a hood located over a portion of the lower housing and adjacent the chute, the hood having a back corner spaced away from the chute and cooperating with the chute and the lower grate to define a cylindrical rotor cavity having a first quadrant at which the chute is positioned, the chute occupying the entire first quadrant, lower second and third quadrants covered by the lower grate, and a fourth quadrant covered by the hood;

a vertical partition wall extending between the hood and the chute and radially downwardly to said rotor cavity between the first and fourth quadrants;

a hammer rotor mounted for rotation in the rotor cavity in a direction from across the feed chamber in the first quadrant, then across the lower grate in the second and third quadrants and thereafter across the hood in the fourth quadrant;

a plurality of hammers connected at spaced locations around



the rotor for interacting with the lower grate to shred material from the feed chamber and through the lower grate into the lower housing; and

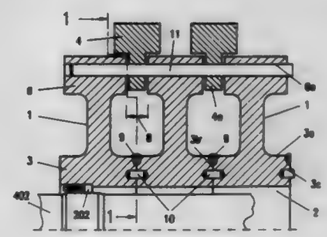
a plate extending from the trailing edge of the lower grate at a location between the third and fourth quadrants, to the back corner of the hood so that air entrained by the hammers in the rotor cavity passes into the hood from the feed chamber to insure a downdraft of air from the chute into the rotor cavity.

5,381,973

ROTOR FOR IMPACT CRUSHES OR HAMMER MILLS

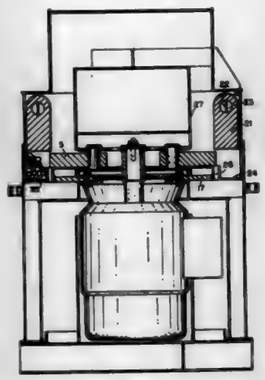
Gerhard Hemesath, Havixbeck, Germany, assignor to Noell Service und Maschinentechnik GmbH, Langenhagen, Germany

Filed Aug. 26, 1992, Ser. No. 935,814
Int. Cl.[6] B02C *13/04*
U.S. Cl. 241—191 **6 Claims**



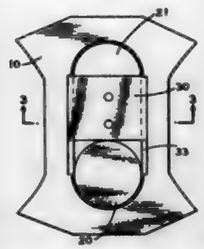
1. A rotor for impact or hammer mills, comprising a unit including a plurality of rotor disks, wherein the rotor disks are made of cast steel, wherein groove sections are furnished at the front faces of the hubs, and wherein the groove sections extend from the outer edges over a substantial part of the radial thickness of the hubs for an accommodation of weld seams, wherein the rotor disks are axially aligned relative to one axis, wherein the rotor disks are sequentially disposed along said axis, wherein the hubs of neighboring rotor disks contact each other at annular sections representing the longest extension of the rotor disks in said axial direction, wherein the groove sections at neighboring rotor disks form weld seam grooves, wherein the weld seam grooves are filled with annular weld seams, and wherein the rotor disks are connected to each other by said annular weld seams attaching neighboring hubs to each other.

5,381,974
CRUSHER
Martin H. Gygi, Stümelweg, CH-8914 Aeugst am Albis, Switzerland
Filed Mar. 3, 1993, Ser. No. 25,958
Claims priority, application Switzerland, Mar. 25, 1992, 945/92; European Pat. Off., Nov. 6, 1992, 92119007
Int. Cl.[6] B02C *19/00*
U.S. Cl. 241—188.1 17 Claims



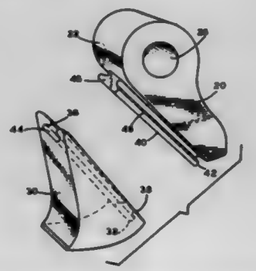
1. A crusher for crushing material comprising rotating crushing hammers in a housing, said rotating crushing hammers being driven for rotating along a substantially circular path in a direction of rotation, said path defining an annular crushing zone for receipt of falling material to be crushed,
an impact zone comprising a plurality of circumferentially distributed impact surfaces for receiving pieces of said material hit by said rotating crushing hammers,
and a stationary, annular shoulder means positioned immediately below said crushing zone for collecting pieces of material otherwise falling through said crushing zone without being engaged by one of said rotating hammers and retaining said collected pieces in said crushing zone until engaged by one of said hammers, said annular shoulder means having a shoulder with a continuous surface which blocks sufficient space underlying said annular crushing zone such that the material must pass radially outward of the shoulder to exit the crusher.

5,381,975
HAMMER FOR USE IN SHREDDERS HAVING REPLACEABLE PIN HOLES
David N. Chou, Baltimore, Md., and Andrew V. Mayuard, West Palm Beach, Fla., assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Jun. 11, 1993, Ser. No. 74,510
Int. Cl.[6] B02C *13/28*
U.S. Cl. 241—195 6 Claims



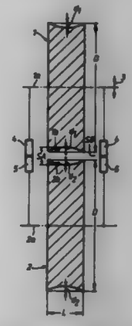
1. A hammer for use in a shredder for reducing the size of a feed material, the hammer comprising an elongated body portion, head portions formed at opposite ends of the body portion, a single elongated aperture extending through the body portion wherein the aperture has a pin receiving location adjacent each of the head portions, a pin inserted into the aperture at one of the pin receiving locations for securing the hammer to the shredder, a plug for securing the pin within the aperture, the plug detachably mounted in the aperture thereby allowing the hammer to be moved to the other pin receiving location without removal of the pin from said aperture.

5,381,976
REPLACEABLE TIP HAMMER
David N. Chou, Baltimore, Md., and Andrew V. Mayuard, West Palm Beach, Fla., assignors to The Babcock & Wilcox Company, New Orleans, La.
Continuation-in-part of Ser. No. 74,509, Jun. 11, 1993, abandoned. This application Apr. 5, 1994, Ser. No. 223,360
Int. Cl.[6] B02C *13/28*
U.S. Cl. 241—197 2 Claims



1. A hammer for use in a shredder, the hammer comprising:
a holder;
a dovetail key having a mating end and a remote end arranged on an inner surface of the holder, the key having outer edges which extend and diverge from the remote end to the mating end, the key having a depth that decreases from the remote end to the mating end;
a replaceable tip having a concave curved outer surface, a convex curved circumferential surface and an inner surface, the tip including a flat protruding surface between the outer surface and the circumferential surface, the outer surface having a protruding edge being subject to impact, the tip having a width greater than the width of the holder, the protruding surface extending across the entire width of the outer surface of the tip, the tip having a dovetail groove at the inner surface, the groove shaped to receive the dovetail key, the groove having a mating end and a remote end, the groove having a depth that decreases from the remote end to the mating end, the tip being slidably engageable with the holder such that when the groove is slid over the key the mating end of the key aligns with the mating end of the groove and the remote end of the key aligns with the remote end of the groove thereby allowing the inner surface of the holder to interlock with the inner surface of the tip, the holder including a mounting opening spaced from the dovetail key, the holder having a convex curved circumferential surface which is contiguous with the convex curved circumferential surface of the tip when the tip is mounted to the holder, the circumferential surfaces extending circumferentially with respect to the opening in the holder, the outer surface of the tip extending radially with respect to the opening; and
means for mounting the hammer to the shredder.

5,381,977
APPARATUS FOR MATERIAL BED COMMINUTION OF BRITTLE MATERIAL FOR GRINDING
Olaf Otte, Oelde, Germany, assignor to Krupp Polysius AG, Germany
Filed Aug. 25, 1993, Ser. No. 111,990
Claims priority, application Germany, Sep. 24, 1992, 4232045
Int. Cl.[6] B02C *4/30*
U.S. Cl. 241—227 4 Claims



1. Apparatus for the comminution of brittle material comprising: a pair of comminuting rolls mounted for driven rotation in opposite relative directions and biased toward one another at high pressure to define a grinding gap therebetween through which the brittle material may be passed and comminuted into agglomerated scabs, said rolls having lengths and initial diameters selected to optimize roll performance according to the formula:

$$L_{max} = \left[\frac{m}{\rho} + \frac{D2}{7200} - \frac{SO}{2000}\right]\frac{1}{t} \quad (1)$$

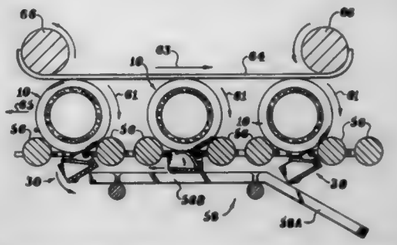
wherein
L_{max}=maximum length of the rolls,
m=specific output of apparatus,
D2=smallest permissible worn diameter of rolls,
ρ=scab density,
SO=initial dimension of grinding gap before roll wear, and
t=constant;
and

$$\frac{L}{D} \leq 0.3 \quad (2)$$

wherein,
L=selected length of rolls, and
D=selected diameter of rolls.

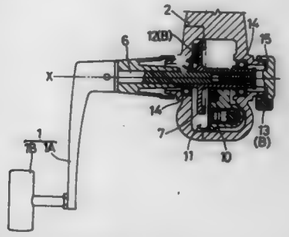
5,381,978
APPARATUS AND PROCESS FOR PRODUCING A ROLLED TAB FOR A ROLL OF PLASTIC FILM
Terry B. Smith, Midland, Mich., assignor to Dowbrands L.P., Indianapolis, Ind.
Division of Ser. No. 812,239, Dec. 19, 1991, Pat. No. 5,238,641. This application May 10, 1993, Ser. No. 60,109
Int. Cl.[6] B65H *18/14*
U.S. Cl. 242—520 29 Claims

1. An apparatus for forming a rolled tab on a roll of plastic film comprising a traction member positioned adjacent and parallel to a trunion-roller type conveyor apparatus for conveying rolls of plastic film, said rolls supported on the surface of the trunion rollers, said traction member having a tractional surface for grabbing and rolling the leading edge of a roll of plastic film such that a rolled tab for the roll of film is formed



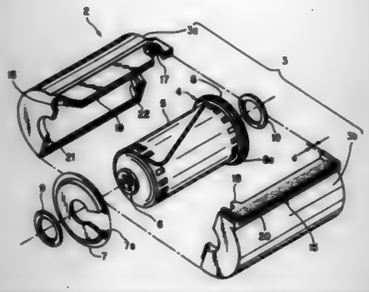
when a roll of plastic film comes in rotational contact with the traction member.

5,381,979
SPINNING REEL WITH HANDLE
Yoshiyuki Furomoto, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Jan. 8, 1993, Ser. No. 1,615
Claims priority, application Japan, Jan. 13, 1992, 4-003607
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—224 4 Claims



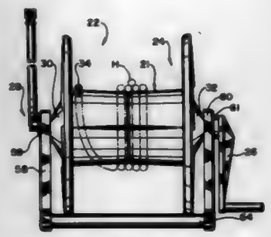
1. A spinning reel, comprising:
a reel body;
a rotor rotatably supported forwardly of said reel body;
a rotating member rotatably supported on said reel body to rotate said rotor, said rotating member having a rotational axis, and said rotating member including:
a handle having an arm extending radially on a first side of to said rotational axis,
a handle shaft connected to said handle, said handle shaft extending along said rotational axis, and
a drive gear integrally rotatable with said handle shaft, said drive gear transmitting a rotation of said handle to said rotor via said handle shaft;
a first balancer attached to said rotating member at a position remote from said handle in a direction along said rotational axis, said first balancer being located substantially on said first side of said rotational axis; and
a second balancer attached to said rotating member at a position between said handle and said first balancer, said second balancer being located substantially at a second side of said rotational axis opposite said first side of said rotational axis.

5,381,980
LIGHT SHIELDING CONTAINER FOR PHOTO-SENSITIVE MATERIAL
Masahiro Enomoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 28, 1993, Ser. No. 68,081
Claims priority, application Japan, Jun. 2, 1992, 4-141759
Int. Cl.[6] G03B *17/26*
U.S. Cl. 242—348.4 **17 Claims**



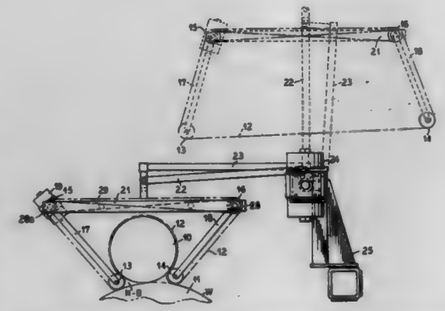
1. A container for containing a photosensitive material comprising:
a shell formed from a resin material and having a light imperviousness value T of not less than 0.8, wherein $T=t\times D$, t is a wall thickness of said container expressed in units, and D is the optical density per unit thickness of said container, said resin material having an additive agent loaded therein, the amount of said additive agent being 2% or less by weight, said additive agent comprising carbon black and titanium oxide and having a weight percentage of said titanium oxide which is at least equal to a weight percentage of said carbon black.

5,381,981
GARDEN HOSE REEL
Terry N. Nelson, Shoreview, Minn., assignor to The Specialty Mfg. Co., St. Paul, Minn.
Filed May 20, 1993, Ser. No. 64,856
Int. Cl.[6] B65H *75/14, 75/38*
U.S. Cl. 242—407.1 **10 Claims**



1. A hose reel assembly for windably storing and dispensing flexible hose comprising:
a support frame; and
a hose supporting reel rotatably carried by said support frame along a generally horizontal reel axis of rotation, said reel including a generally cylindrical hose supporting surface oriented around said reel axis of rotation and opposed reel sides extending radially outwardly relative to said hose supporting surface, said reel presenting a middle portion between said reel sides, and said reel sides each presenting a base portion and a circumferential rim oriented radially outwardly from said base portion,
said generally cylindrical hose supporting surface being canted radially inwardly from the opposed reel sides towards the middle portion of the reel, and said reel sides being tapered axially inwardly towards said reel middle portion such that said reel side circumferential rims are oriented closer together than said reel side base portions whereby said generally cylindrical hose supporting surface and said tapered reel sides act cooperatively to urge said hose toward said middle portion as it is wound on to said reel, and to resist outward bulging against said support frame under pressure of said wound hose.

5,381,982
BELTED SHEET TRANSFER DEVICE
Brian Adamski, Edgerton, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.
Filed Nov. 4, 1992, Ser. No. 971,124
Int. Cl.[6] B65H *18/22*
U.S. Cl. 242—541.3 **7 Claims**

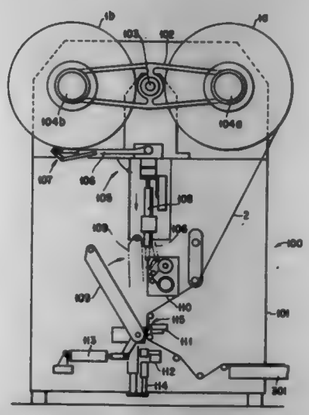


1. In a winder for starting the winding of a continuous traveling web onto a core supported on a rotary driving drum to form a wound web roll, the combination comprising:
a carrier, including a cross beam;
an endless belt having an outer surface for nipping the core for receiving the traveling web in the nip to be started for winding into a wound web roll on the core;
a first pair of spaced rollers mounted on the carrier defining a core-embracing span between them with said belt looped over said rollers;
a second pair of spaced rollers supporting the belt and mounted at spaced locations on the carrier;
a pair of pivotal swing arms extending downwardly from the carrier cross beam with said first spaced rollers mounted on the distal ends of the pivotal swing arms;
and means for lowering the carrier so that the first spaced rollers bring said belt to wrap the core with the belt span for creating a nip with the core for winding the core with the traveling web.

5,381,983
APPARATUS FOR DRAWING OUT A WEB END FROM A WEB ROLL
Makoto Sakano; Shuitiro Oku, and Shozo Horikawa, all of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan
Filed Oct. 30, 1992, Ser. No. 969,079
Claims priority, application Japan, Oct. 31, 1991, 3-311387
Int. Cl.[6] B65H *19/10*
U.S. Cl. 242—562.1 **6 Claims**

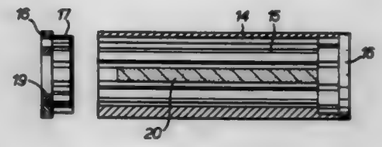
1. An apparatus for drawing out leading end portions of webs each wound on web reels, the leading end portions of the webs being temporarily adhered to a peripheral surface of the web reels with detachable adhesive tapes, a part of the web, positioned nearer to the end of said web than the adhesive tape, being projected as a detaching part in a free state, said apparatus comprising:
hubs, rotatable in a vertical plane, for holding said web reels;

a feed mechanism for feeding the webs in a predetermined direction, said feed mechanism extending in a vertical direction and feeding the webs in a substantially vertical direction while simultaneously sucking and holding the webs in a substantially vertical state by utilization of a negative pressure; and
a drawing-out mechanism for drawing out the leading end portions of the web reels held by the hubs and guiding the leading end portions to the feed mechanism, said drawing-out mechanism including:
a drawing-out arm, provided under said hubs and rotatable in a vertical plane between a substantially horizontal position and a substantially vertically downward position, having a distal end portion which abuts against the lowest part of said web on one of said web reels when said drawing-out art is moved to the substantially horizontal position;
sucking means, provided on a forward end portion of said drawing-out arm, for sucking the lowest part of said web by a negative pressure when said drawing-out arm is moved to the substantially horizontal position, and when the web reel is rotated in a direction opposite to a winding direction of said web, said detaching part of the web, sucked by said sucking means, sliding on said sucking



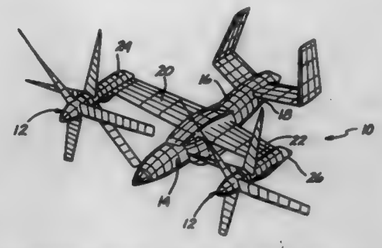
means, and bending in a direction to be separated from a peripheral surface of the web reel after passing through said sucking means;
chucking means, arranged in a position nearer to the end of said web than a position of said sucking means, for mechanically holding said detaching part of the web separated from the peripheral surface of the web reel;
a leading end portion detector, provided on said forward end portion of said drawing-out arm, for detecting said detaching part of the web, separated from the peripheral surface of the web reel, being introduced into said chucking means so as to operate said chucking means to hold said detaching part; and
a lift mechanism for moving said drawing-out arm upward and downward;
said drawing-out arm being operated such that, after said chucking means of said drawing-out arm has held said leading end portion of said web on said one of said web reels, said drawing-out arm is rotated downward by said drawing-out mechanism and moved downward by said lift mechanism so as to draw out said leading end portion of said web on said one of said web reels, said leading end portion of said web being guided to the feed mechanism in a substantially vertical state.

5,381,984
TUBULAR BODY, ESPECIALLY AS A CORE ELEMENT, AND ROLL WITH A CORE ELEMENT
Kim Hindagual, Oslo, Norway, assignor to Hygoform A.S., Oslo, Norway
Filed Jan. 6, 1993, Ser. No. 1,553
Claims priority, application Norway, Jun. 2, 1992, 922177
Int. Cl.[6] B65H *16/02;* **B65D** *85/66;* **A24F** *15/00;* **A47K** *13/14*
U.S. Cl. 242—613.5 **1 Claim**



1. A core element for a roll of wound-up web material, comprising a tubular body having two ends, radially projecting ribs means extending longitudinally between said ends, said ribs extending equal distances inwardly, thereby forming a discontinuous rotational inner bearing surface at each end, imperforate end closures removably inserted in said tubular body ends, said end closures having radial groove means receiving said rib means, each end closure having an externally accessible grip ring, and a fragrance carrier in said tubular body.

5,381,985
WINGTIP MOUNTED, COUNTER-ROTATING PROPROTOR FOR TILTWING AIRCRAFT
James K. Wechsler, Irvine, Calif., and John W. Rutherford, Scottsdale, Ariz., assignors to McDonnell Douglas Helicopter Co., Mesa, Ariz.
Filed Apr. 23, 1992, Ser. No. 872,336
Int. Cl.[6] B64C *11/48, 27/08, 27/22, 27/52*
U.S. Cl. 244—7 C **8 Claims**



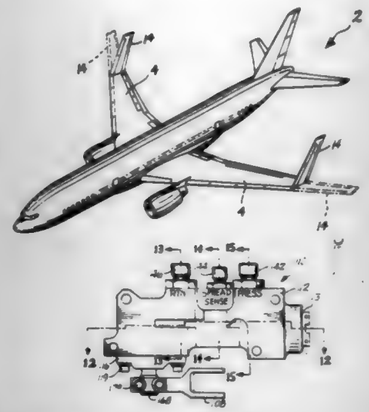
1. An aircraft capable of in-flight conversion between a hover mode and a forward cruise mode, comprising:
a fuselage having a starboard side and a port side;
a wing section extending from each of said starboard and port sides, each said wing section being fixed in both the hover mode and the forward cruise mode; and
at least one proprotor mounted on each of said starboard and port wing sections, each said proprotor comprising two blade rows positioned one behind the other along a common rotational axis, each blade row having a plurality of blades which are relatively stiff-in-plane and are mounted such that cyclic pitch adjustments may be made for hover control during flight, said two blade rows being counter-rotating;
wherein said starboard and port wing sections each have one of said proprotors mounted substantially on its tip end, so that the proprotor may have a relatively large diameter without impacting the fuselage; resulting in lower disk loading.

5,381,986

FOLDING WING-TIP SYSTEM

Mark H. Smith, Vashon Island; Michael E. Reazelmann, Woodinville, and Alan D. Marx, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 828,308, Jan. 30, 1992, Pat. No. 5,201,479. This application Apr. 12, 1993, Ser. No. 46,015
Int. Cl.[6] B64C *3/56*
U.S. Cl. 244—49 **13 Claims**



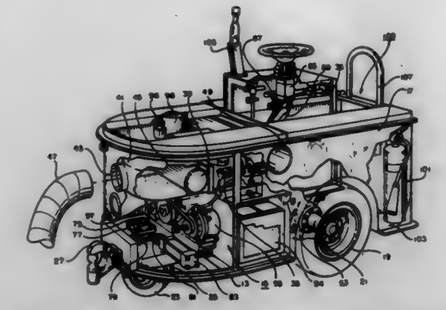
1. A folding wing-tip system, comprising:
a hinge extending substantially in a forward/aft direction along an aircraft wing and pivotably connecting a wing-tip portion to an inboard wing portion;
a plurality of latch pin assemblies; each said assembly including a latch pin having a latch position in which it latches said wing-tip portion in a spread position, and a primary lock and a secondary lock; each said lock having a locked position in which it blocks movement of said latch pin out of said latch position; and each said primary lock, when it is out of its locked position, mechanically blocking movement of the secondary lock in its assembly into said secondary lock's locked position;
a mechanism ganging said secondary locks together to cause them to move together into and out from their locked positions, said mechanism having a locked position corresponding to said locked positions of said secondary locks; and
a follow-up switch mounted adjacent to said mechanism to sense movement of said mechanism and send a signal in response to said mechanism moving into said mechanism's locked position.

5,381,987

UTILITY VEHICLE FOR TOWING AND SERVICING AIRCRAFT

William A. Carns, 108 Wisteria St., Mansfield, Tex. 76063-1836
Filed May 31, 1994, Ser. No. 251,324
Int. Cl.[6] B64C *25/50*
U.S. Cl. 244—50 **10 Claims**

1. A utility vehicle for towing and servicing aircraft, the vehicle comprising:
a frame having a normally enclosed interior and an exterior and having a plurality of ground engaging wheels mounted thereon;
at least one tow hitch connected to the frame for towing an aircraft;
an air cooled, internal combustion engine mounted on the frame within the enclosed interior and connected by a power train to at least selected ones of the wheels for powering the vehicle;
a heat collecting shroud located within the enclosed interior, the shroud having an inlet for receiving warmed cooling air passing over the engine and for receiving heat from products of combustion created by the engine, the shroud also having an outlet which communicates with the exterior of the enclosed frame;

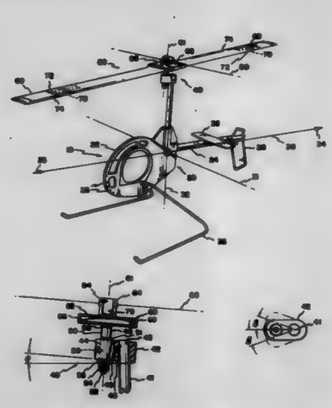


a flexible duct connectable with the shroud outlet at one extent and connectable with an aircraft engine to be serviced at an opposite extent in order to provide heated air to the aircraft engine in order to facilitate starting of the engine.

5,381,988

TETHERED MODEL GYROGLIDER

Alex P. Kattas, 1845 Larpenteur Ave., #12, St. Paul, Minn. 55113
Filed Dec. 3, 1993, Ser. No. 161,923
Int. Cl.[6] B64C *31/06*
U.S. Cl. 244—153 A **18 Claims**

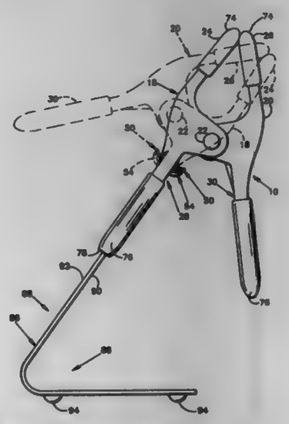


1. A tethered model gyroglider comprising:
(a) a fuselage having a longitudinal axis with forward and rearward vectors;
(b) rotor support means for supporting a rotor for rotation in a mean plane above said fuselage, said rotor support means extending upwardly from said fuselage;
(c) a unitary two-bladed rotor rotatably mounted onto said rotor support means, said rotor rotating in said mean plane about a rotor axis;
(d) teeter means for permitting said rotor to pivot about a teeter axis generally parallel to said mean plane and generally perpendicular to said rotor proximate a center of said rotor such that, when the gyroglider is subjected to a relative wind generally along said rearward vector, a forward-moving blade of said rotor is raised and a rearward-moving blade of said rotor is lowered, thereby equalizing the aerodynamic forces about said longitudinal axis; and
(e) roll trim means for changing a lateral position of said rotor axis relative to said longitudinal axis of said fuselage, comprising:
(i) a bushing having first and second apertures said second aperture defining a bearing;
(ii) a mast extending upwardly from said fuselage and inserted into said first aperture; and
(iii) a rotatable shaft for supporting said rotor inserted into said bearing of said second aperture;
(iv) said bushing being pivotable about said mast to permit changing said lateral position of said rotor axis to trim the gyroglider about said longitudinal axis.

5,381,989

ADJUSTABLE SPRING CLAMP

Ronald E. Jackson, 216 W. Southport Rd., Indianapolis, Ind. 46217
Filed Feb. 7, 1994, Ser. No. 192,627
Int. Cl.[6] F16L *3/00*
U.S. Cl. 248—122 **17 Claims**



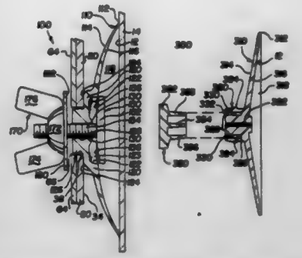
1. An adjustable clamp comprising:
first and second gripping members coupled together for pivotal movement about a pivot pin between a gripping position and a releasing position, the first gripping member including a first jaw and a first lever arm, the first jaw and the first lever arm being positioned on either side of the pivot pin;
force applying means, coupled to the pivot pin and the gripping members, for applying a closing force to the members, the force applying means including a spring wrapped around the pivot pin and having a first end extension positioned to engage the first lever arm; and
repositioning means for repositioning the applying means to change the closing force.

5,381,990

RELEASABLE SUCTION CUP ASSEMBLY

Paul Belokin; Martin P. Belokin, both of P.O. Box 1907, Denton, Tex. 76202, and Norman P. Belokin, 3341 Evers Pkwy., Denton, Tex. 76207
Filed Nov. 5, 1993, Ser. No. 148,905
Int. Cl.[6] F16B *47/00*
U.S. Cl. 248—205.9 **16 Claims**

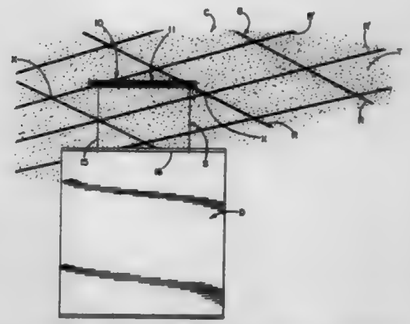
1. A suction cup assembly comprising:
(a) a cup body having an inner surface and an outer surface defining a deformable arcuate flange with a concave inner surface, a port in said concave surface connected to a duct extending through said cup body, and surface means on said cup body forming a valve seat surrounding said port in said concave surface;
(b) a valve for selectively closing said port having a valve surface and a stem portion with said valve surface selectively engaging said valve seat to close said port and said stem portion extending through said duct, said stem portion and said duct defining a passageway therebetween so that fluid can flow through said duct with said stem portion therein; and
(c) a removable retainer on said stem portion.



5,381,991

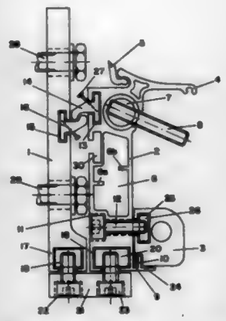
SUSPENDED DISPLAY HOLDER

Harold L. Stocker, Chicago, Ill., assignor to Sign-Up, Inc., Bartlett, Ill.
Continuation of Ser. No. 839,574, Feb. 21, 1992, abandoned. This application May 2, 1994, Ser. No. 237,238
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—206.5 **9 Claims**



8. A suspended display holder for securing a display to a base having elongate first grid members and elongate second grid members disposed in transverse relation comprising an elongate support unit adapted to subtend the base, first and second magnetic elements being rotatable about an axis substantially transverse to a longitudinal axis of said support unit and being longitudinally adjustable on said support unit for magnetic engagement with at least one of the first grid members and at least one of the second grid members, respectively, to permit orientation of the support unit in angular relation with respect thereto, and a hanger mounted on said support unit and depending from said support unit in supporting engagement with the display.

5,381,992
MOUNTING DEVICE FOR AN ARTICULATED-ARM AWNING
Viktor Lohausen, Oberheinriet, Germany, assignor to Technolizenz Establishment, Triesen, Liechtenstein
PCT No. PCT/EP91/02383, § 371 Date Aug. 4, 1993, § 102(e) Date Aug. 4, 1993, PCT Pub. No. WO92/14009, PCT Pub. Date Aug. 20, 1992
PCT Filed Dec. 12, 1991, Ser. No. 98,289
Claims priority, application Germany, Feb. 6, 1991, 4103474
Int. Cl.[6] A47K *1/00*
U.S. Cl. 248—220.2 **10 Claims**



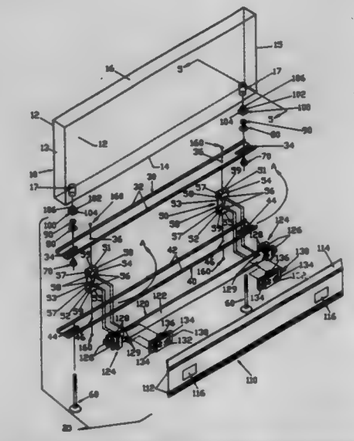
1. A mounting device for an articulated-am awning, comprising:
a bracket, a mounting tube/hollow section attachable to said bracket, a bearing block for at least one articulated arm attachable to said mounting tube/hollow section and means for mounting a fabric shaft attachable to said mounting tube/hollow section,
wherein
said mounting tube/hollow section comprises a first chamber, a second chamber above said first chamber for holding an adjusting mechanism, a back having a continuous stepped hole for a retaining bolt for attaching said bearing block, and at least one approximately hook-shaped first mounting device, and
said bracket comprises at least one hook-shaped second mounting device complementary to said first mounting device.

5,381,993
RIMMED VESSEL SUSPENSION DEVICE
Brent L. Eckler, 3085 Creek Dr., Ann Arbor, Mich. 48108
Filed Jan. 19, 1994, Ser. No. 183,716
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—312.1 **6 Claims**



1. A device for suspending a rimmed vessel, comprising:
an elongated member intended to be supported vertically; and
at least one notch formed generally upward and into the body of the elongated member, the notch defining first and second spaced apart surfaces in opposed facing relation, the first surface facing generally downward and toward the body of the member and the second surface facing generally upward and away from the body of the member, the second surface being substantially continuous,
whereby a vessel may be supported in a desired orientation with at least one point of the first surface frictionally contacting at least one point along the upper, inner edge of the rim of the vessel, and at least one point of the second surface frictionally contacting a single, localized area on the outside of the vessel, the surfaces of the elongated member and vessel facing one another below the notch being intentionally spaced apart and non-contacting.

5,381,994
UNIVERSAL BASE
Richard Welch, 909 Ludwig Rd., Fort Wayne, Ind. 46825
Filed Jul. 14, 1993, Ser. No. 91,318
Int. Cl.[6] A47B *91/00*
U.S. Cl. 248—346 **39 Claims**

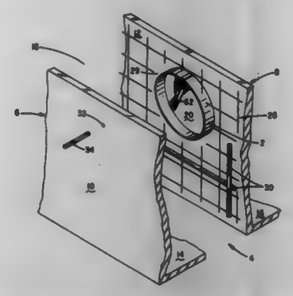


1. A base for supporting a modular wall panel, said base comprising:
at least one leg contacting a surface on which said panel is to be supported;
support means coupled to said leg for supporting said panel along an edge surface thereof; and
mounting means, coupled to said leg for mounting a wiring harness to said base, wherein at least a portion of said mounting means is rotatable so as to allow said harness to be mounted to the base from either of two opposing sides.

5,381,995
CONCRETE HOLE FORMER
William M. Del Zotto, 2300 Commonwealth Ave., Duluth, Minn. 55808-1699
Filed Apr. 6, 1993, Ser. No. 43,301
Int. Cl.[6] B28B *7/30*
U.S. Cl. 249—35 **12 Claims**

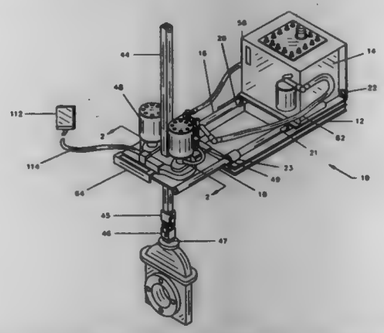
1. Mold core apparatus comprising:
a) a band having a molding surface, first and second ends having first and second flanges which project transverse to said molding surface, and first and second contoured longitudinal edges;

b) a tubular spacer;
c) means for retaining said spacer to align said first and second flanges to first and second surfaces of said spacer and a third surface of said spacer in coplanar alignment with said molding surface to define a contoured revolution at said molding surface and configure said first and second edges to complement first and second wall surfaces of first and second spaced molding forms; and



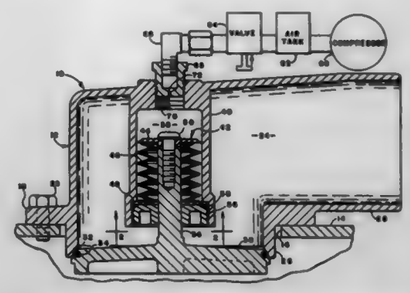
d) means for supporting the band between first and second molding form walls to engage said first and second edges thereto, whereby upon depositing a slurry of settable material between said first and second walls and allowing said material to set an opening of contoured revolution is formed through the wall of the molded structure.

5,381,996
VALVE OPERATOR
Scott Arnemann, Rolling Meadows, and Scott Ferrar, Wheeling, both of Ill., assignors to The E. H. Wachs Company, Wheeling, Ill.
Filed Mar. 7, 1994, Ser. No. 206,610
Int. Cl.[6] F16K *31/12*
U.S. Cl. 251—59 **13 Claims**



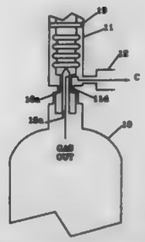
1. A valve operating machine comprising in combination:
drive means for turning the stem of a valve;
means for connecting and disconnecting said drive means to the stem of a first valve or a second valve;
motor means for rotating said drive means;
control means for controlling the application of torque by said motor means to said drive means;
first sensor means for measuring torque applied by said motor means to said drive means; and
computer means responsive to said first sensor means for controlling said control means to limit the application of torque to the valve stem of the connected valve such that the torque applied to the connected valve is limited to a predetermined value.

5,381,997
TANK CAR VENTING SYSTEM
Todd W. Anderson, 9576 Main St., Cincinnati, Ohio 45242, and Richard L. Fahl, 2403 Oak Tree Dr., Fairfield, Ohio 45014
Filed Oct. 26, 1993, Ser. No. 143,464
Int. Cl.[6] F16K *31/126*
U.S. Cl. 251—61.2 **8 Claims**



1. A tank truck venting system comprising a vent valve, adapted to be mounted on the tank, and having
a vent passage through which air may flow into and out of the tank,
a first position in which flow of air through the vent passage is blocked and the tank is sealed, and
a second position in which the vent passage is open for flow of air therethrough and the tank is vented, and
means, employing pressurized air from the tank truck's braking system, for displacing the vent valve to one of said positions, characterized by
means for isolating the pressurized air from the air flowing through the vent passage, and from all surfaces exposed to air from the vent passage,
thereby preventing any hazardous vapors in the vent passage air from entering the brake system.

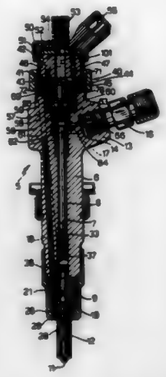
5,381,998
CYLINDER GAS VALVE
Gene A. Griffin, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 26, 1993, Ser. No. 97,793
Int. Cl.[6] F16K *11/048, 47/04*
U.S. Cl. 251—117 **13 Claims**



1. A safety valve for gas cylinders, comprising:
a valve housing attachable to a gas cylinder;
a movable valve stem within the valve housing for opening and closing the valve, and dispensing gas upward through the valve;
a first channel internal to said valve stem for flowing gas out of a gas cylinder;
a second channel external to said valve stem for flowing gas into the gas cylinder;
a restrictor in the valve stem at one end of said first channel through which gas is dispensed from the gas cylinder;

a first shoulder on the valve stem for sealing the gas cylinder when the valve is in a first position preventing gas from flowing into or out of said cylinder;
a second shoulder on the valve stem for limiting gas flow only through the valve stem and through the restrictor when the valve is in a second position; and
a reduced section of the valve stem, between said first and second shoulders, permitting gas to flow around said first and second shoulders when the gas cylinder is filled, and when the valve stem is in a position between said first and second positions.

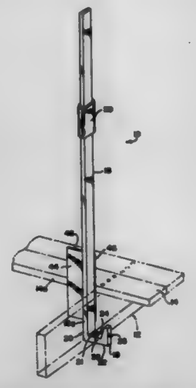
5,381,999
DEVICE FOR ADJUSTING A FUEL INJECTOR ELECTROMAGNETIC METERING VALVE
Mario Ricco, Via Ferrannini, Italy, assignor to Elasis Sistema Ricerca Fiat Nel Mezzogiorno, Pomigliano D'arco, Italy
Filed Dec. 28, 1993, Ser. No. 173,991
Claims priority, application Italy, Dec. 29, 1992, TO92A001051
Int. Cl.[6] F16K *31/06*
U.S. Cl. 251—129.16 **14 Claims**



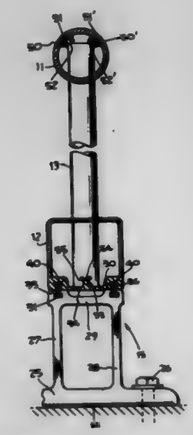
1. A device for adjusting an electromagnetic metering valve of an injector including a body (6), said metering valve comprising a control chamber (61), a shutter (67) for a drain conduit (63) of said control chamber (61), an electromagnet (42) having a fixed core (46) for operating an armature (43) controlling said shutter (67) and calibrated means (72, 74) for defining operational travel of said armature (43) and comprising a contact surface (77) on said armature (43) arrested by an annular stop element (76) upon energizing said electromagnet (42) to prevent said armature (43) from contacting said core (46), at least a first calibrated washer (88) for defining the position of said stop element (76) and at least a second calibrated washer (90) for defining the travel of said armature (43), said first and second calibrated washers (88, 90) being fitted so as to locate said stop element (76) on said body (6).

5,382,000
BOARD SETTING TOOL
Steven L. Rossman, 1305 W. Old Bay Rd., McHenry, Ill. 60050
Filed Oct. 8, 1993, Ser. No. 133,623
Int. Cl.[6] B66F *3/00*
U.S. Cl. 254—17 **18 Claims**

1. A tool for setting a board on a joist comprising:
an elongated bar; and
a hook member rigidly attached to a lower end of said bar, said hook member and said lower end forming a means for removable engaging the lower end portion of the joist, said hook member including,
a first member attached to and extending laterally outward from said lower end of said bar,
a second member attached to and extending generally vertical upward from an outer end of said first member,
at least one pointed member fixedly attached to and extending vertically upward from said upper surface of said first member, said pointed member including a pointed upper end to engage the joist and establish a fulcrum point, said second member includes an angled inward surface to guide the joist into engagement with said engagement means.

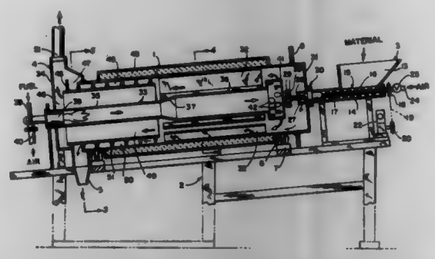


5,382,001
POSTLESS HANDRAIL
Robert D. Lichti, 642 Peninsula Dr., Lake Almanor, Calif. 95947
Continuation of Ser. No. 572,445, Aug. 27, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 928,882
Int. Cl.[6] E04H *17/14*
U.S. Cl. 256—65 **27 Claims**



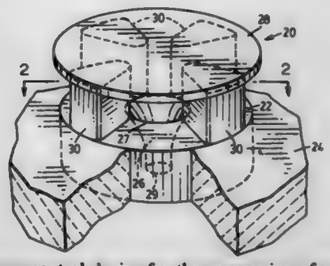
1. A postless handrail assembly comprising an upper rail, a lower rail and pickets for assembly into a composite section for erection on a supporting surface, said pickets having a length determinative of the height of said assembly and being at spaced locations along the length of the assembly, said pickets each having an upper end and a lower end, at least one of said upper rail and said lower rail being extruded stock of closed tubular cross-section having longitudinally continuous picket engaging means formed interiorly to said rails and integrally therewith, said least one of said rails further having holes diametrically opposed to said picket engaging means and spaced therealong for admitting said picket end into engagement with said picket engaging means, one of said picket engaging means and said picket end being deformable in response to force applied by urging of said pickets against said least one of said rails for making interlocking engagement therebetween.

5,382,002
APPARATUS FOR HEAT TREATING A PARTICULATE MATERIAL
Marvin Evans, 8550 N. Fielding Rd., and David H. Miller, 610 E. Birch Ave., both of Milwaukee, Wis. 53217
Filed Oct. 8, 1993, Ser. No. 134,529
Int. Cl.[6] F27B *7/08*
U.S. Cl. 266—205 **17 Claims**



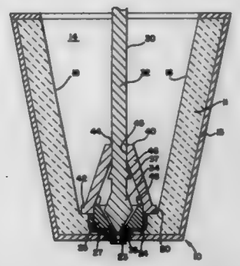
1. An apparatus for heat treating a particulate material containing combustible contaminates, comprising a rotary drum having an upstream end and a downstream end, drive means for rotating the drum, feeding means for feeding a particulate material containing combustible contaminates into the upstream end of the drum, a first tubular member disposed in the downstream end of the drum and extending a substantial distance of the length of the drum, said first tubular member having an inlet section disposed adjacent the downstream end of the drum and having an open outlet section disposed adjacent the upstream end of the drum and communicating with the interior of the drum, said outlet section having a greater cross section area than the inlet section, fuel burner means for introducing hot combustion gases into the inlet section of said first tubular member, said gases flowing from the inlet section to the outlet section and thereby expanding to cool said gases, and a second tubular member spaced radially between said drum and the inlet section of said first tubular member, the space between the drum and said second tubular member defining an outer annular chamber and the space between the second tubular member and the inlet section defining an inner annular chamber, said combustion gases being discharged from the open end of said outlet section of said first tubular member and flowing in a reverse direction to the downstream end of the drum in contact with said particulate material to volatilize the contaminates on said particulate material, means for flowing said volatilized contaminates through the inner chamber in contact with the inlet section of said first tubular member to completely combust said contaminates, and means for flowing the particulate material through said outer chamber to the downstream end of the drum.

5,382,003
FLOW CONTROL DEVICE FOR THE SUPPRESSION OF VORTICES
Ramani Sankaranarayanan, 3440 Durocher St. Apt. 1016, Montreal, Quebec, H2X 2E2, and Roderick I. L. Guthrie, 328 Roslyn Ave., Westmount, Quebec, H3Z 2L6, both of Canada
Filed Oct. 14, 1993, Ser. No. 136,071
Claims priority, application Canada, Dec. 8, 1992, 2084845
Int. Cl.[6] B22D *41/50*
U.S. Cl. 266—230 **11 Claims**



1. A flow control device for the suppression of rotational flow in a liquid being discharged vertically through a nozzle having a vertical axis and a discharge opening extending axially from an inlet to an exit, the device comprising the following elements:
a baffle plate disposed in use above the nozzle, and
radial dividers disposed about the longitudinal axis of the discharge opening and supporting the baffle plate so as to space the baffle plate axially from the discharge opening, the dividers defining radial flow paths having a combined cross-sectional area at least as great as the cross-sectional area for flow through the nozzle, the dividers being adapted to obstruct rotational forces in the liquid so that the liquid flows along the flow paths radially and horizontally towards the nozzle where the flow paths meet and the liquid then passes axially from the flow paths and through the nozzle.

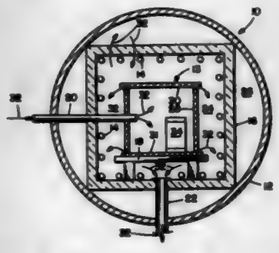
5,382,004
TUNDISH SLAG STOPPER WITH SEALING RIM
Charles W. Coanors, Sr., Wilmette, and Madjid Soofi, St. Charles, both of Ill., assignors to Magneco/Metrel, Inc., Addison, Ill.
Continuation-in-part of Ser. No. 179,930, Jan. 11, 1994. This application Feb. 16, 1994, Ser. No. 197,510
Int. Cl.[6] B22D *41/16*
U.S. Cl. 266—230 **26 Claims**



. 1. A slag stopper assembly for use in a metallurgical vessel, comprising:
a chamber including an inverted conical wall portion with a top and a base, a lip at the base of the wall, a central

opening at the top of the wall, and one or more molten metal feed inlets in the wall;
a retractable stopper plunger including an elongated piston passing through the central opening in the chamber and a drain stopper located at a lower end of the elongated piston; and
a rim positioned above the drain stopper which limits the maximum retractive movement of the piston to a lesser extent than if no rim was present, by contacting the chamber.

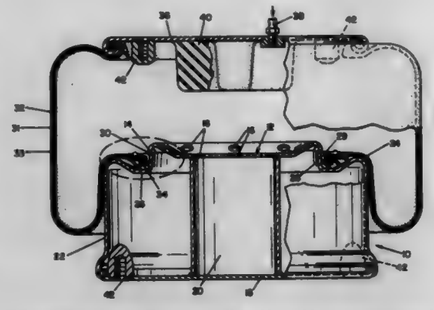
5,382,005
METHODS AND APPARATUS FOR FIRING EXTRUDED METALS
David S. Weiss, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Division of Ser. No. 734,147, Jul. 22, 1991, Pat. No. 5,225,155.
This application May 12, 1993, Ser. No. 60,263
Int. Cl.[6] C21D *1/48*
U.S. Cl. 266—257 **7 Claims**



1. A furnace for firing a green body composed of an extruded metal powder comprising:
(a) heating means;
(b) non-gas tight insulating means, said heating means and said insulating means defining a hot zone and a cold zone within said furnace;
(c) a non-gas tight chamber within the hot zone for receiving the green body;
(d) first introducing means for introducing one or more gases into the chamber;
(e) second introducing means for introducing one or more gases into the cold zone; and
(f) gas exit means for removing gases from the hot zone;
whereby the flow of gases within the furnace is from the chamber and the cold zone into the hot zone and out of the hot zone through the gas exit means.

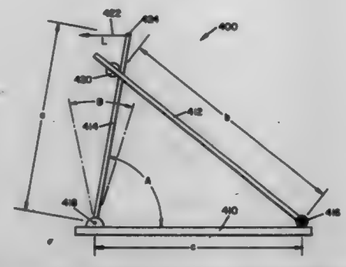
5,382,006
AIRSPRING PISTON AND AIRSPRING ASSEMBLY
John E. Arnold, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 29, 1993, Ser. No. 129,933
Int. Cl.[6] B60G *15/00*
U.S. Cl. 267—64.27 **6 Claims**

1. An airspring piston comprising:
(a) a top plate having an outer peripheral edge which is rounded perpendicular to the general plane of the plate and a plurality of vents;
(b) a bottom plate axially spaced from the top plate;
(c) an inner tubular support connected between the top and bottom plates; and
(d) an intermediate outer wall connected between the top and bottom plates, the upper portion of which includes a rounded shoulder inwardly and downwardly sloping to a horizonal flange and a bead seat area generally perpendicular to the flange and connected to the peripheral edge of the top plate such that the outer surface of the bead seat is



radially inwardly offset from the outer peripheral edge of the top plate to form a bead retention lip.

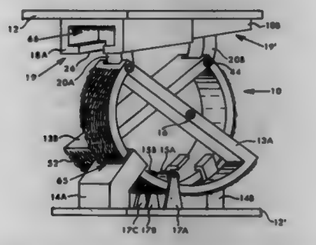
5,382,007
CONSTANT FORCE TORSION SPRING APPARATUS
John C. Holzheimer, Wilmington, N.C., assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Aug. 31, 1992, Ser. No. 938,090
Int. Cl.[6] F16F *1/14*
U.S. Cl. 267—154 **22 Claims**



1. An apparatus for acting upon a load comprising:
base means;
load arm means with a length d1 and having: a) a first end pivotally connected to said base means; and b) a second end for applying the load thereto;
spring arm means with a length d2 and having: a) a third end pivotally connected by torsion spring means to said base means a predetermined distance from said first end; and b) a fourth end slidably connected to said load arm means,
whereby the load applied at said second end: a) causes said first and third ends to pivot relative to said base; b) causes said fourth end to translate along said load arm means; and c) is acted upon by a constant force provided by said apparatus.

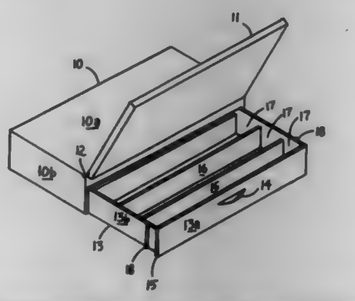
5,382,008
SHOCK ABSORBING SUSPENSION
Adolf Tyutinman, 2983 Cambridge Dr., San Jose, Calif. 95125
Filed Jan. 5, 1994, Ser. No. 177,464
Int. Cl.[6] F16F *1/14*
U.S. Cl. 267—154 **6 Claims**

1. A suspension comprising:
a first mounting means and a second mounting means spaced apart from each other by a variable distance, such that said first mounting means and said second mounting means can be compacted together and extended apart,
a plurality of frames positioned between said first mounting means and said second mounting means, said frames being concentrically and rotatably mounted about an axis, and
a gripping means for slidably gripping said frames, said gripping means comprising
a first pair of gripping means attached to said first mounting means, and



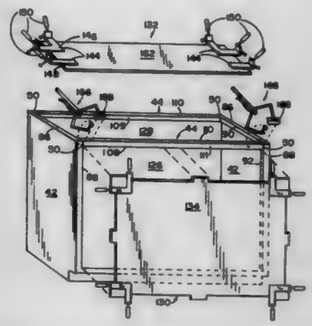
a second pair of gripping means attached to said second mounting means, said second pair of gripping means including at least one hollow bar and at least one brake shoe, said brake shoe moving inside said hollow bar,
whereby said first mounting means and said second mounting means will substantially resist being compacted together, but can be easily extended apart.

5,382,009
PORTABLE HINGED CUTTING BOARD WITH DRAWER
Dyanna Mertz, and John C. Mertz, both of Mansfield, Ohio, assignors to Recreations, Inc., Mansfield, Ohio
Filed Jun. 18, 1993, Ser. No. 79,679
Int. Cl.[6] B23Q *3/00*
U.S. Cl. 269—16 **13 Claims**



1. A portable hinged cutting board with drawer comprising,
(a) a housing comprising a rigid rectangular horizontal top panel, a rigid rectangular horizontal bottom panel, three contiguous vertical sides and said top panel, said bottom panel and said vertical sides form a compartment wherein the fourth side of said compartment is open and the top of said top panel has a top edge that runs along said fourth open side of said compartment;
(b) a second rigid rectangular horizontal panel which corresponds in length and width with the top panel with a top and a bottom and said second panel is rotatably attached to said top panel of said housing wherein in a closed position the top of said top panel and the top of said second panel are adjacent to each other, in the open position the top of said top panel and the top of said second panel form and open surface in alignment on the same plane;
(c) a slidable drawer with a horizontal bottom, a contiguous vertical back wall, a contiguous vertical side walls inside said housing and when said drawer is slid out from said housing said drawer forms a support means for said second panel when said second panel is in said open position.

5,382,010
FURNITURE ARTICLE AND FIXTURE FOR MAKING SAME
Raymond J. Gerdes, Greenville, and Dennis L. Dufon, Spring Lake, both of Mich., assignors to Metalarc Inc., Muskegon, Mich.
Filed Mar. 17, 1993, Ser. No. 32,793
Int. Cl.[6] B25B *1/20*
U.S. Cl. 269—41 **14 Claims**



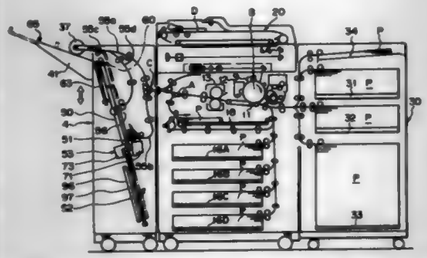
1. A fixturing system for furniture for improving dimensional integrity and squareness during assembly of the furniture, the furniture including a plurality of members loosely arranged in a picture frame shape to be secured together to form an opening, comprising:
a fixture including a plate for resting within the opening defined in the furniture, the plate including a perimeter of predetermined shape with three orthogonal edges and two corners configured to stably engage the plurality of members in a manner accurately defining the width and squareness of the opening; and
a plurality of clamps secured to said plate proximate said three orthogonal edges, at least one of said clamps being located along each of said three orthogonal edges, said clamps each including a clamping foot and being actuatable so that said clamping foot engages a selected one of said plurality of members and holds same against a corresponding selected one of the three orthogonal edges of said plate during fixturing of the plurality of members together, whereby said plurality of members are held in the predetermined shape of said perimeter when said clamps are actuated.

5,382,011
RECORDING APPARATUS WITH A FOLDER/STAPLER DEVICE
Tatsuo Tani, Urayasu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jul. 1, 1993, Ser. No. 84,146
Claims priority, application Japan, Jul. 1, 1992, 4-174406
Int. Cl.[6] B41L *43/02*; B31B *1/68*
U.S. Cl. 270—37 **14 Claims**

1. A recording apparatus operable in both of an edge bind mode and a center bind mode for binding sheets undergone recording by a stapler, comprising:
a substantially flat staple tray for stacking sheets thereon and capable of changing a relative position of said stapler and said sheets for the edge bind mode or the center bind mode;
first discharging means arranged along said staple tray for transporting the sheets from said staple tray to a discharge section;
a pair of fold rollers facing a discharge path defined by said first discharging means;
a stop selectively movable into or out of said discharge path

for folding the sheets in cooperation with said fold rollers; and

second discharging means for transporting the sheets from said pair of fold rollers to said discharge section,



wherein the sheets bound at an edge thereof without folding are transported by said first discharging means to said discharge section, and the sheets bound at a center thereof are folded by said pair of fold rollers and said stop and transported by said second discharging means to said discharge section.

5,382,012

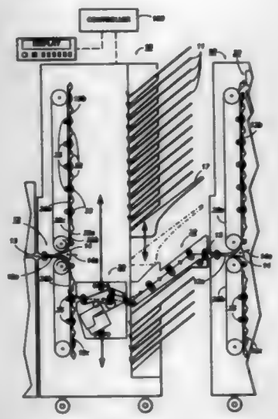
MULTIPLE SECTION SHEET SORTER WITH STACKING TRAY POSITIONED THERE BETWEEN

Barry P. Mandel, Fairport; Charles F. Prevost; Charles D. Rizzolo, both of Rochester; Frederick A. Green, Fairport, and Richard A. Van Dongen, Newark, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 54,943, Apr. 27, 1993, Pat. No. 5,342,034. This application Dec. 6, 1993, Ser. No. 161,615

Int. Cl.[6] B65H *39/10*; B42C *1/12*

U.S. Cl. 270—53 **9 Claims**



1. In a sheet output module for the collection, separation and stacking of printed media sheets received from the output of a reproduction apparatus, with multiple separate sheet collection bins in a vertical array, a sheet input for receiving the print media sheets from the output of the reproduction apparatus, and a sheet transport path for transporting the sheets from said sheet input to a selected said bin, the improvement wherein:

said sheet input is at a vertical level intermediately of said module and said vertical bin array;

said vertical bin array is intermediately divided into first and second portions with a vertical space therebetween;

said sheet transport path has a common shared path portion from said central sheet input to a branching position where said sheet transport path branches arcuately in opposite directions, with a first branch path extending upwardly to feed sheets to said first portion of said bins and a second branch path extending downwardly to feed sheets to said second portion of said bins;

a sheet deflector gate is mounted at said branching position for selectively deflecting sheets from said common shared path portion into one of said first and second branch paths;

and a high capacity stacking tray is located within said vertical space between said first and second portions of said vertical array of bins also connecting with said sheet transport path to receive said print media sheets.

5,382,013

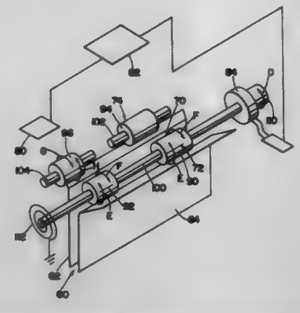
CLUTCH DRIVEN INVERTER SHAFT

James D. Walsh, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 12, 1993, Ser. No. 135,233

Int. Cl.[6] B65H *29/00*

U.S. Cl. 271—186 **24 Claims**



1. A method of operating an inverter apparatus for reversing the orientation of a moving paper sheet in a duplex processing operation, the method comprising the steps of:

detecting a lead edge of said moving sheet and generating a START signal;

receiving said lead edge of said moving sheet into a first continuously driven nip including a first continuously driven main drive roller and a first idler roller;

responsive to said START signal, operating a first selectively driven nip in a first direction;

receiving said lead edge of said moving sheet into said first selectively driven nip;

detecting the trailing edge of said moving sheet and disabling said START signal;

responsive to said START signal disabling, operating said first selectively driven nip in a second direction opposite the first direction;

receiving said trailing edge of said moving sheet into a second continuously driven nip including said first continuously driven main drive roller and a second idler roller;

expelling said sheet from said second continuously driven nip in said reversed orientation; and,

providing a clutched transmission connecting the first selectively driven nip with an operatively associated external continuously driven source of rotational motion.

5,382,014

SHEET FEED DEVICE FOR IMAGE FORMING EQUIPMENT USING A DIELECTRIC, RECIPROCATING PLATE

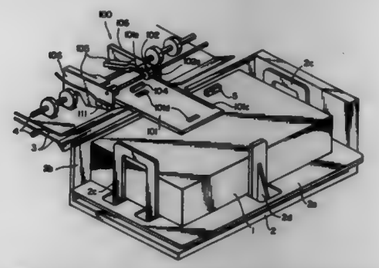
Noriaki Fukube, Soka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 94,424

Claims priority, application Japan, Jul. 23, 1992, 4-197112

Int. Cl.[6] B65H *3/16*

U.S. Cl. 271—18.1 **9 Claims**



2. A sheet feed device for image forming equipment and capable of feeding sheets one by one from a stack by separating said sheets, said device comprising:

a plate having a dielectric portion capable of making surface-to-surface contact with a top of the stack;

a reciprocating means for causing said plate to move in a reciprocating motion, wherein said reciprocating means comprises a pair of rollers nipping said flat plate and at least one of which is a drive roller and teeth holding said drive roller and said flat plate in mesh with each other;

a moving means for selectively moving said plate into or out of contact with the top of the stack; and

a voltage applying means for applying a voltage to said plate to cause said plate to exert an electrostatic adhering force.

5,382,015

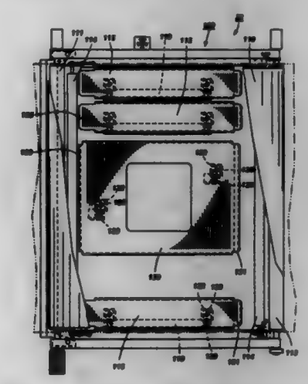
DOCUMENT HANDLER PLATEN TRANSPORT HAVING A BELT URGING SYSTEM

Mark H. Baddendeck, Macedon; Gerald R. Curry, Lima, and Kelly J. Zastrow, Meadon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 61,333, May 12, 1993, abandoned, which is a continuation of Ser. No. 814,521, Dec. 30, 1991, abandoned. This application Jun. 30, 1994, Ser. No. 268,909

Int. Cl.[6] B65H *5/02*

U.S. Cl. 271—275 **11 Claims**



11. In a document feeder for an imaging platen of a printing apparatus, in which document sheets must be fed over the imaging platen in a document feeding direction with a frictional platen belt transport, with a belt normal force system for urging the platen belt transport towards the imaging platen while the document sheets are being fed over the imaging platen by the platen belt transport, the improvement in the belt normal force system comprising at least two separate and substantially spaced apart elongated ski members extending in the document feeding direction and engaging only selected minor areas of the belt extending in the document feeding direction to provide a normal force only in the selected minor areas of the belt, to reduce wear yet provide adequate normal force for the document sheets being fed over the imaging platen by the platen belt transport.

5,382,016

SHEET SORTER WITH A STAPLER HAVING A CONTROLLED SHEET ALIGNING MEMBER

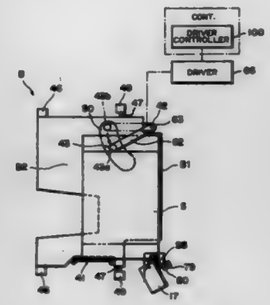
Kenji Kobayashi, Tokyo; Koichi Murakami; Masakazu Hiroi, both of Yokohama, and Naho Wakao, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 892,721, May 29, 1992, abandoned, which is a continuation of Ser. No. 666,457, Mar. 5, 1991, abandoned, which is a continuation of Ser. No. 321,842, Mar. 10, 1989, abandoned. This application Oct. 29, 1993, Ser. No. 143,250

Claims priority, application Japan, Mar. 11, 1988, 63-057807; Mar. 11, 1988, 63-057808; Mar. 11, 1988, 63-057809; Mar. 11, 1988, 63-057810; Mar. 11, 1988, 63-057811; Mar. 11, 1988, 63-057812; Mar. 12, 1988, 63-058676

Int. Cl.[6] B65H *39/10*

U.S. Cl. 271—293 **18 Claims**



17. A sheet sorter, comprising:

sheet discharge means for discharging sheets;

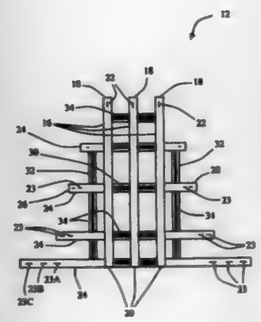
bin means including a plurality of bins for accommodating sorted sheets, wherein said bins sequentially receive copy sheets discharged from the sheet discharge means and having the same copy image with stepping movements thereof, and the operation is repeated to sort the copy sheets on the bins;

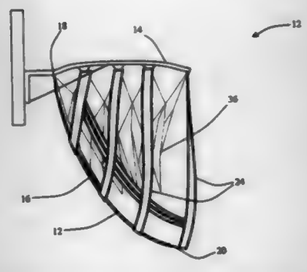
aligning means for abutting edges of the sheets accommodated in said bins to align the sheets;

driving means for driving said aligning means between an aligning position for aligning the sheets and a waiting position away from the sheets; and

control means for controlling said driving means to start moving said aligning means to the aligning position from the waiting position in one continuous movement before completion of the movement of such one of said bins as is opposed to said sheet discharge means and to finish moving said aligning means to the aligning position and thereby end said one continuous movement after completion of the movement of said one of the bins.

5,382,017
BASKETBALL NET WITH ADJUSTABLE RETURN CONTROL
Jon P. Pippert, 1500 SW. Park Ave., #317, Portland, Oreg. 97201
Filed May 20, 1994, Ser. No. 246,519
Int. Cl.[6] A63B *69/00*
U.S. Cl. 273—1.5 A 20 Claims

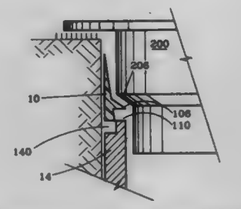




1. A basketball net for directing the return path of a basketball after passing through a rim, comprising:
at least one elongated flexible channel strap having a top end and a bottom end, the top end of each channel strap having attachment means for coupling directly onto the basketball rim; and
at least one flexible support strap having a first end, a second end and a center portion, the first and second end coupled to the rim and the center portion attached laterally across the bottom end of the channel strap forming said channel strap into a downwardly sloping concave arch shape; and
adjustment means joined to the first and second ends of the support strap that vary how far the center section of the support strap hangs below the rim, thereby, varying the shape of the arch formed with the channel strap.

14. A method for controlling the direction that a basketball travels through a basketball net, comprising:
providing an adjustable basketball net having a set of parallel channel straps each having a top and bottom end and a set of side straps each having opposite ends and a center section joined transversely across the channel straps;
attaching the top ends of the channel straps to the rim so that the channel straps hang vertically downward; and
attaching the ends of each support strap to the rim on opposite lateral sides of the channel straps thereby raising the bottom ends of the channel straps upward shaping the channel straps into a downwardly sloping convex arch,
the slope of the arch formed with the channel straps defining a given basketball return angle in which a basketball exits through said basketball net.

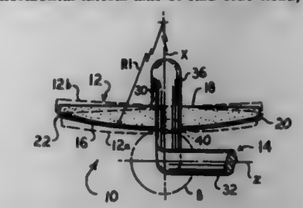
5,382,018
METHOD OF INSTALLING PUTTING HOLE LINER AND COLLAR
Richard P. Browne, 26 Lazy La., The Woodlands, Tex. 77380
Continuation-in-part of Ser. No. 959,389, Oct. 28, 1992, Pat. No. 5,316,292, which is a continuation-in-part of Ser. No. 766,056, Sep. 26, 1991, Pat. No. 5,180,162. This application Jan. 3, 1994, Ser. No. 176,764
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—34 R 1 Claim



1. A method for installing a golf hole collar for preserving the shape and firmness of a golf hole while increasing the visibility of the golf hole, the collar abutting an earthen strip above the cup liner which forms the bottom and sides of the golf hole, the collar having an upper perimeter having a uniform cylindrical shape and a lowermost perimeter having a uniform cylindrical shape, such method incorporating the use of a cup setter, the cup setter having a base with a side for flushly engaging the earth surrounding the hole and a cylindrical member extending from the base for pushing the liner into the hole a specific depth below the surface of the earth engaged by the base, the cylindrical member having a larger outside diameter portion adjacent the base for engaging the upper inner surface of the hole and a reduced outside diameter portion below the larger diameter portion for engaging and forcing the cup liner to the specified depth, the method of installing the golf hole collar comprising the steps of:
(a) coring a cylindrical golf hole;
(b) inserting the cup liner into the cylindrical golf hole;
(c) affixing the collar onto the cup setter such that the upper perimeter of the collar removeably engages the larger outside diameter portion of the cylindrical member of the cup setter and the lower perimeter of the collar removeably engages the cup setter so as to have an inclined relationship therebetween such that the portion of the collar closest to the base remains displaced from the base a fixed uniform distance;
(d) engaging the cup setter, with the collar affixed thereto, with the cup liner such that the engagement of the collar with the liner is an interlocking configuration to provide a secure unmoving relationship;
(e) pushing the assembly comprising the cup setter, the collar and the liner into the cored golf hole until the side of the base flushly engages the earth surrounding the cored hole; and
(f) removing the cup setter from the golf hole such that the collar and the liner remain securedly affixed in the cored golf hole and the collar remains displaced from the surface of the earth a fixed uniform distance corresponding to the distance the collar was displaced from the base.

5,382,019
GOLF PUTTER
Wilbert L. Sneed, 1004 McArthur Dr., Jacksonville, Ark. 72076
Filed Feb. 1, 1994, Ser. No. 190,357
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—80 C 13 Claims

1. A golf putter for striking a golf ball in the game of golf, said golf putter comprising:
a club head including a shaft extending therefrom;
said club head further including opposite first and second ends and opposite top and bottom surfaces, said first and second ends and said top and bottom surfaces defining a front face and an opposite rear surface, said front face and said rear surface each including a geometric center;
said club head further includes a horizontal lateral axis extending thereacross, said shaft includes a lower shaft segment and an upper shaft portion, each having an angular displacement from a perpendicular relationship relative to said horizontal lateral axis of said club head;

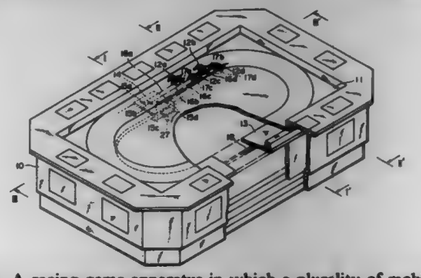


said angular displacement of said upper shaft portion being greater than said angular displacement of said lower shaft segment;
said front face including a convex curvature thereon, whereby;
said convex curvature of said front face of said club head reduces inadvertent error in the path of a ball struck by said golf putter due to inadvertent arcuate misalignment of said front face of said club head when the ball is struck substantially at said geometric center of said front face.

5,382,020

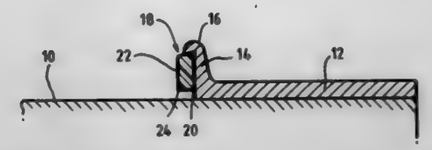
Patent Not Issued For This Number

5,382,021
HORSE RACING GAME HAVING ROTATING ARM AND TETHERED MEMBERS
Hiroyuki Tatesaka, and Takanao Moritsu, both of Setagaya, Japan, assignors to Sigma, Incorporated, Tokyo, Japan
Filed Jun. 2, 1994, Ser. No. 252,688
Claims priority, application Japan, Jun. 7, 1993, 5-135908; Jun. 7, 1993, 5-135912
Int. Cl.[6] A63F *9/14*
U.S. Cl. 273—86 R 13 Claims



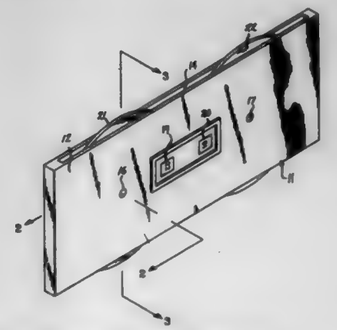
1. A racing game apparatus in which a plurality of mobile bodies compete on a predetermined travel road surface plate, the racing game comprising:
a travel car arranged to travel along a travel road surface plate;
a plurality of mobile bodies arranged to travel across the travel road surface plate;
a plurality of carriers for attracting said mobile bodies to cause the mobile bodies to travel on the travel road by using magnetic force such that each carrier has an associated mobile body; and
a plurality of flexible string members for connecting said travel car with said plurality of carriers such that each string member has an associated carrier.

5,382,022
GAME TABLE
Michael A. Cook, Blackburn North, and Felix Saja, Kew, both of Australia, assignors to Gamemasters Pty Ltd, Preston, Australia
Filed Sep. 21, 1993, Ser. No. 124,968
Claims priority, application Australia, Sep. 23, 1992, PL4873
Int. Cl.[6] A63B *67/14*
U.S. Cl. 273—126 R 9 Claims



1. A game table for table hockey comprising a planar playing surface bounded by walls having inwardly facing inner sides, the inner sides of said walls being lined with a layer comprising material having satisfactory sound deadening properties and being resilient enough to provide satisfactory rebound of an object when said object strikes said layer, said layer being composed of material selected from polyurethane polymers having a durometer reading of 78±5% on the Shore D Scale or natural or synthetic rubbers having a durometer reading of 40±10% on the Shore A Scale, said walls being formed by upwardly extending flanges provided upon side members mounted on said table, said layer being spaced above said surface.

5,382,023
RANDOM NUMBER GENERATOR WITH SPRING PROPELLED ROTATING WHEELS
John W. Roberts, and Ramoth G. Roberts, both of 496 Lakeshore Dr., St. Augustine, Fla. 32095
Filed Oct. 20, 1993, Ser. No. 138,727
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—142 H 1 Claim



1. A random number generator, comprising,
a rigid tubular housing, said housing including a front wall spaced from a rear wall, with the front wall and rear wall arranged in a parallel coextensive relationship, the housing including a housing cavity oriented between the front wall and the rear wall, and
a first entrance opening directed into the cavity at a first end of the cavity, and a second entrance opening directed into the cavity at a second end of the cavity,
at least one axle directed through the housing and through the cavity extending orthogonally through the front wall and the rear wall, the axle secure to the front wall and the rear wall, and

an annular disc fixedly mounted to the axle within the cavity, and the disc being rotatably mounted about the axle, with the disc directing exteriorly of the cavity and extending beyond the first entrance opening and the second entrance opening for ease of manual grasping of the annular disc, the disc including an annular numerical array concentric relative to the axle, with the numerical array in facing relationship relative to the front wall from within the cavity, and

the disc having an outer annular periphery, the numerical array spaced a predetermined radius relative to the first axle, and the numerical array positioned between the axle and the annular periphery, and

at least one window directed through the front wall spaced said predetermined radius from the axle, and

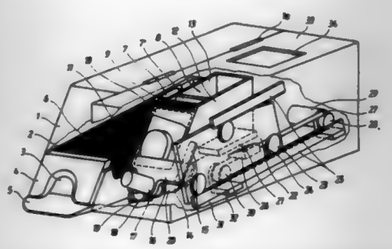
further including a helical spring, the helical spring having a first end fixedly secured to the axle, and a second end, the second end having a V-shaped hook, and an engaging flange fixedly secured to the disc in facing relationship relative to the front wall from within the cavity, and the V-shaped hook releasably receiving the engaging flange therewithin permitting manual winding of the disc about the axle, and subsequent release of the flange from the hook upon manual release of the disc.

5,382,024

PLAYING CARD SHUFFLER AND DISPENSER

Ernst Blaha, Unter-Tullnerbach, Austria, assignor to Casinos Austria Aktienbesellschaft, Vienna, Austria

Filed Sep. 15, 1993, Ser. No. 122,881
Claims priority, application Austria, Oct. 13, 1992, 2011/92
Int. Cl.[6] A63F *1/12*
U.S. Cl. 273—149 R **9 Claims**



1. A playing card shuffler and dispenser comprising

(a) a housing,

(b) a storage container for a stack of shuffled playing cards arranged in the housing, the storage container defining

(1) an output opening for consecutively discharging a single one of the playing cards from the stack,

(c) a playing card shuffling container for a stack of playing cards to be shuffled, the shuffling container being arranged in the housing adjacent the storage container and being movable parallel and relative thereto between two end positions,

(1) the housing defining an input opening for feeding the playing cards to be shuffled into the shuffling container in one of the end positions thereof, and the shuffling container comprising

(2) a,bottom wall,

(3) a side wall adjacent the storage container and

(4) an end wall at a front end of the side wall, the end wall consisting of an upper plate and a lower plate defining a gap therebetween, the plates defining an ejection slot with the front end of the side wall, the ejection slot having a width corresponding substantially to the thickness of a single one of the playing cards,

(d) a randomly operable drive for moving the shuffling container between the end positions,

(e) a playing card ejector for pushing a respective one of the playing cards to be shuffled from the shuffling container into the storage container, the playing card ejector being operable to move through the gap while being glidingly guided along the front end of the side wall for pushing the respective playing card into the storage container, and

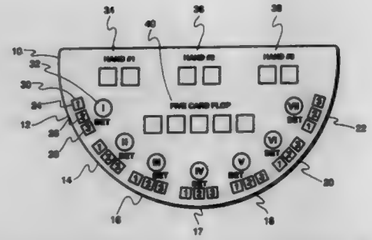
(f) a randomly operable drive for operating the ejector.

5,382,025

METHOD FOR PLAYING A POKER GAME

David B. Sklansky, and Daniel A. Jones, both of Las Vegas, Nev., assignors to D & D Gaming Patents, Inc., Pompano Beach, Fla.

Continuation-in-part of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,863,553. This application Jul. 8, 1993, Ser. No. 88,785
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **97 Claims**



81. A method of playing a poker game, comprising the steps of:

dealing at least three incomplete hands each consisting of a first predetermined number of cards including at least one face-up card;

requiring one or more players, after viewing said hands, to each select one of said incomplete hands;

completing said hands with additional cards;

comparing each of said hands using poker rank as the criterion for comparison to determine a winning hand; and

designating as a winner each player who selected said winning hand.

5,382,026

MULTIPLE PARTICIPANT MOVING VEHICLE SHOOTING GALLERY

Albert F. Harvard, Huntington Beach, Calif., and Kenneth R. Brooke, Arlington, Tex., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 20,895, Feb. 22, 1993, abandoned, which is a continuation of Ser. No. 763,847, Sep. 23, 1991, abandoned. This application Mar. 17, 1994, Ser. No. 210,094
Int. Cl.[6] F41J *5/10, 9/14*
U.S. Cl. 273—310 **19 Claims**

1. A multiple participant moving vehicle shooting gallery system comprising:

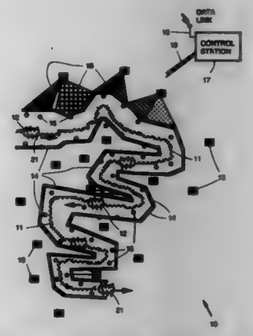
an enclosure for defining a darkened lengthy path;

a track adapted to move a plurality of vehicles through the darkened path within the enclosure;

at least one vehicle disposed on the track, said at least one vehicle comprising means for seating a participant, a simulated weapon that is actuable by the participant and which is adapted to respond to light emitted from simulated moving targets in projected images, and first communication means for communicating data and control information to and from the vehicle;

a projection system comprising a plurality of rear-screen projectors and plurality of speakers disposed adjacent the track, and a plurality of projection screens disposed adjacent the track between the projectors and the vehicle, said projection screens forming a substantial portion of said enclosure, and wherein the projectors are adapted to project images onto the screens that comprise the simulated moving targets, and wherein the plurality of speakers are adapted to project sound in conjunction with the projected images;

a control station, comprising a computer, a video processor, a sound system including a sound processor and the plurality of speakers, second communication means for communicating data and control information to the first communication means in the vehicle, means for controlling an adjustable game scenario comprising a story line, wherein said adjustable game scenario comprises a plurality of scenes, each scene comprising images and sounds, including images and sounds representative of the simulated targets, and being projected on a different projection screen, and the projection of images and sound representative of the adjustable game scenario and the simulated targets to which the participants respond, means for varying the order of the playing of the scenes and for selecting the projection screen to play said scene, means for controlling the movement of the vehicle along the track, and means for processing hits and misses scored by the participants in response to operation of the weapon.

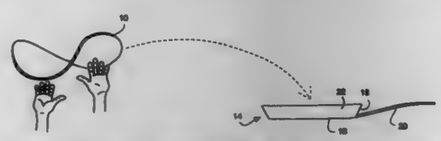


5,382,027

SIMULATED DOUGH TOSSING GAME

Pauline Eatherly, 29252 Kensington Dr., Laguna Niguel, Calif. 92677-1600

Filed Feb. 28, 1994, Ser. No. 202,767
Int. Cl.[6] A63B *67/00*
U.S. Cl. 273—317 **12 Claims**



1. A simulated dough tossing and placement game of enjoyment and skill, said game comprising:

a) a flexible foldable material sheet comprising a single sheet of material and simulating a sheet of dough and having a flexibility approximating that of a thin sheet of dough to be made into a pizza, said sheet being formed of a soft drapable material which will drape around the fingers and hands of a player when held on upright fingertips of a player, said sheet also having sufficient integrity so that when engaged by the fingertips of a player of the game on the underside thereof and twirled, it will assume somewhat of a flat shape for purposes of launching and propelling; and

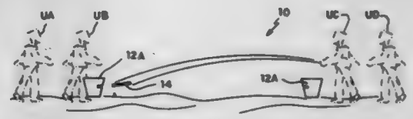
b) a sheet-receiving member having a sufficient size and shape to correspond to that sheet to receive and reasonably retain the material sheet, said sheet-receiving member having a flat bottom wall such that a player attempts to achieve a twisting or rotating of said material sheet and tosses same from the fingertips of that player to attempt to cause the sheet to land in the sheet-receiving member and on the flat bottom wall thereof, said sheet being launched from the fingertips of a hand of a player of the game initially in somewhat of a vertical trajectory when the hand and forearm of the player are in somewhat of a vertical orientation so that the sheet is launched and twirled around and partially hovers in a generally stable horizontal attitude, such that the tossing of the sheet simulates the tossing of a sheet of pizza dough into a pizza pan, whereby the player of the game tossing the sheet of material learns or improves the skill of tossing including hand-eye coordination and improving manual dexterity and which game provides a source of play enjoyment.

5,382,028

APPARATUS AND METHOD OF PLAY FOR A DISC TOSSING GAME

Charles C. Sciandra, 1426 Westwood Dr., and Paul L. Swisher, 27 Hagen Ave., both of Tonawanda, N.Y. 14120

Filed Nov. 2, 1993, Ser. No. 144,435
Int. Cl.[6] A63B *67/06*
U.S. Cl. 273—401 **14 Claims**



1. A disc tossing game played on a supporting surface comprising:

a first tapered, substantially cylindrical container having at least a side wall defining a top including a top opening, said top having a circumference of a predetermined diameter, said first container side wall having at least a first container slot;

a second tapered substantially cylindrical container having at least a side wall defining a top including a top opening, said top having a circumference of a predetermined diameter, said second container side wall having at least a second container slot; and

a toroidal disc having at least a predetermined thickness and a circumference of a predetermined diameter;

wherein said first container and said second container have substantially the same height; said first container and said second container being spaced a predetermined distance apart and located above and supported on the supporting surface, so said toroidal disc may strike a portion of the side wall of one of said containers, enter the top opening of one of said containers or enter the slot of one of said containers when said toroidal disc is propelled toward one of said containers.

5,382,029

METAL LAMINATE GASKET WITH DEFORMATION PREVENTING MECHANISM

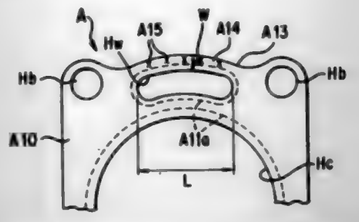
Tsunekazu Udagawa, Ichikawa, and Yoshio Yamada, Tokyo, both of Japan, assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 19,199

Claims priority, application Japan, Feb. 26, 1992, 4-008769[U]; Feb. 26, 1992, 4-008773[U]

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—235 B **10 Claims**



1. A metal laminate gasket for an internal combustion engine, said engine having an outer profile, at least one cylinder bore, at least two bolt holes and an additional hole situated along the outer profile between the outer profile and the cylinder bore and between the two bolt holes, said additional hole having a length extending along the outer profile so that the length of the additional hole is greater than a distance between the additional hole and the outer profile, said gasket comprising,

a plurality of metal plates extending substantially throughout an entire area of the engine to constitute a metal laminate gasket, each of said metal plates including a side edge extending along the outer profile of the engine, a cylinder bore and bolt holes of the gasket corresponding to those of the engine, a gasket hole having a size corresponding to that of the additional hole and situated near and along the side edge and between the bolt holes of the gasket, and an elongated portion located between the side edge and the gasket hole and between the bolt holes of the gasket, said metal plates being immovably fixed together at the elongated portions of the metal plates to prevent the elongated portions from deforming outwardly of the engine.

5,382,030

COLLET AND METHOD FOR OPTIMIZING GRIPPING ACTION THEREOF

Roger J. Kanaan, Easley, S.C., assignor to Jacobs Chuck Technology Corp., Wilmington, Del.

Continuation-in-part of Ser. No. 940,666, Sep. 4, 1992, abandoned. This application Jan. 6, 1994, Ser. No. 178,229

Int. Cl.[6] B23B *3/20*

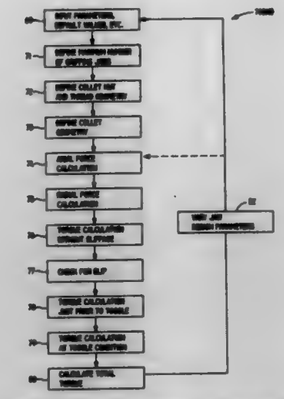
U.S. Cl. 279—46.7 **65 Claims**

1. A machine tool collet which is actuated by engagement with a mating surface of a collet holder, said collet being of a given outer diameter configuration and inner diameter capacity, comprising:

a plurality of gripping jaws held in a desired longitudinally and angularly spaced relation about a longitudinal centerline axis through said collet, said gripping jaws having an inner face parallel to the centerline axis whereby said plurality of gripping jaws define an opening through said collet for receiving a tool shank, said opening defining the capacity of said collet, said gripping jaws having an outer face whereby said plurality of gripping jaws defines an outer surface for engaging the collet holder mating surface, said outer face defining an outer diameter configuration of said collet, the number of said gripping jaws defining a first variable design parameter of said collet, the thickness of said gripping jaws defining a second variable design parameter of said collet, and the type material of said gripping jaws defining a third variable design parameter of said collet;

resilient material disposed between said gripping jaws for holding said plurality of gripping jaws in said desired spaced relation; and wherein

for a given configuration and capacity of said collet, at least one of said variable design parameters being selected for



given values of said other variable design parameters so that with respect to said at least one design parameter said collet generates the maximum total torque possible on a bar passing therethrough, maximum total torque being the torque generated by said gripping jaws on said bar just prior to a toggle condition existing between said gripping jaws and said bar, and total moment force generated by said gripping jaws at a toggle condition.

5,382,031

SKATE WITH IMPROVED STEERING CAPABILITIES

Luca Marconato, Padernello Di Paese, and Alessandro Pozzobon, Paderno Di Ponzano Veneto, both of Italy, assignors to Nordica S.p.A., Trevignano, Italy

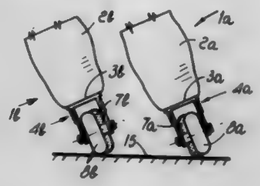
PCT No. PCT/EP92/01263, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/22363, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 5, 1992, Ser. No. 965,279

Claims priority, application Italy, Jun. 11, 1991, TV91A000065

Int. Cl.[6] A63C *17/04*

U.S. Cl. 280—11.22 **10 Claims**



1. Skate with improved steering capabilities, comprising a support for the sole of an item of footwear and for at least three aligned wheels, wherein at least of said wheels, which is arranged approximately in the median region, is arranged and rotates on a plane which is parallel to the plane of the remaining wheels, the skate comprising a right skate and a left skate, each of which has four aligned wheels, wherein at each skate, two of said four wheels, which are adjacent to the tip and heel of said item of footwear, are arranged and rotate at a same first plane which is arranged parallel to the median plane which is longitudinal to said support and is directed toward the outer lateral edge of said right and left skates.

5,382,032

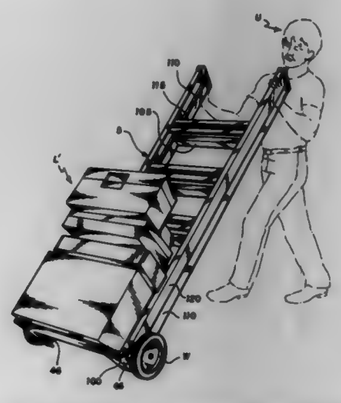
STEPLADDER DOLLY

James R. Wilson, P.O. Box 263, Looper, Tex. 75432

Filed Jun. 11, 1993, Ser. No. 74,474

Int. Cl.[6] B62B *1/12*

U.S. Cl. 280—30 **20 Claims**



1. A dolly for use with a conventional stepladder having a step portion including a pair of legs and a plurality of steps and a support portion including a pair of legs and a plurality of crossbraces, and with both stepladder portions being respectively pivotable in relation to one another to allow for an open and closed configuration, said dolly comprising:

a support frame, said support frame including a leg engaging means arranged and configured to receive the legs of a stepladder, and a crossbrace engagement support means that further includes a step engaging means;

a crossbrace engagement means proximate said crossbrace engagement support means, said crossbrace engagement means arranged and configured to receive at least one of the plurality of crossbraces on the support portion of the stepladder;

a load stop connected to and protruding from said leg engagement means; and

at least two wheels pivotably connected to said leg engagement means; whereby

when the stepladder is in an open configuration, said dolly can be placed such that said step engagement means is in contact with a step of the stepladder and said leg engagement means further places the legs and thus the stepladder in a partially fixed relationship with said dolly, and whereby then placing the stepladder into a closed configuration brings the crossbrace engagement means into contact with the crossbraces on the support portion thus further bringing the stepladder into a fixed relationship relative to said dolly such that said dolly and the stepladder can be moved together on said wheels and the support portion and step portion of the stepladder will support and thus transport a load, said load being held maintained in position by said load stop.

5,382,033

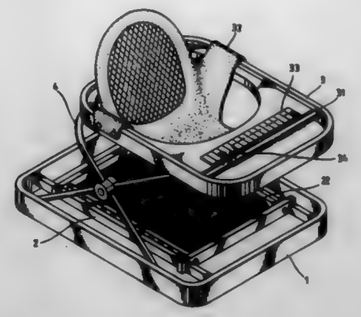
STRUCTURE OF BABY WALKER

Tseng-Fan Chen, No. 24, Shing Shye Street, Hsinchu City, Taiwan, Prov. of China

Filed Oct. 4, 1993, Ser. No. 130,913

Int. Cl.[6] B62B *9/00*

U.S. Cl. 280—87.051 **2 Claims**



1. A baby walker comprising a movable base, a seat frame and a folding frame arranged between said movable base and said seat frame, said seat frame holding a seat for supporting a child learning to walk; said movable base including an open frame, a series of parallel rollers arranged within a central opening of said open frame, and an endless belt mounted around said series of parallel rollers, said series of parallel rollers including first and last rollers and a plurality of intermediate rollers arranged between said first and last rollers, said first and last rollers each having a gear on two opposite ends thereof, said endless belt having a series of parallel teeth transversely spaced around an inside wall thereof engaging said gears of said first and second rollers,

wherein said movable base is arranged so that rotation of said endless belt about said plurality of rollers moves said baby walker.

5,382,034

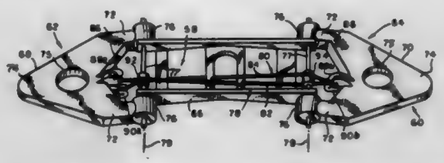
DUAL COMPENSATING STABILIZER

Eric G. Parker, Elgin, and Louis M. Spoto, Sleepy Hollow, both of Ill., assignors to Illinois Tool Works, Inc., Glenview, Ill.

Filed Oct. 14, 1993, Ser. No. 136,337

Int. Cl.[6] B60G *21/00*

U.S. Cl. 280—104 **10 Claims**



1. A stabilizing system for use with a vehicle suspension, said suspension having first and second oppositely positioned control arm assemblies, said stabilizing system comprising:

first and second anchor means operatively associated with said each of said first and second oppositely positioned control arm assemblies;

first and second means for tensionably linking said opposed control arm assemblies, said first linking means operatively connected to and extending between said first anchor on said first control arm assembly and said second anchor means on said second control arm assembly, said second linking means operatively connected to and ex-

tending between said second anchor means on said first control arm assembly and said first anchor means on said second control arm assembly, said first and second linking means transferring a force imposed on one of said control arm assemblies to the other of said control arm assemblies; and

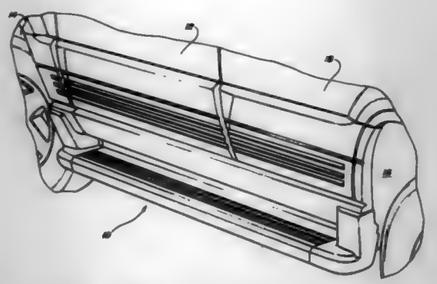
first and second means for guiding said linking means between said first and second control arm assemblies, each of said guides being positioned above or below said first and second anchor means, each of said linking means, alternately, weaved over said first guide means and under said second guide means.

5,382,035

VEHICLE RUNNING BOARD ASSEMBLY

Donald R. Waddington, Huntsville, and Robert J. Boulard, HammerBay, both of Canada, assignors to Algonquin Industries International, Inc., Huntsville, Canada

Filed Apr. 19, 1993, Ser. No. 49,184
Int. Cl.[6] B80R *3/00*
U.S. Cl. 280—169 **20 Claims**



1. A vehicle running board assembly, comprising:

a longitudinally extending overlay including a horizontally disposed section, a downwardly extending. section disposed alonq one edge of the horizontal section, and an upwardly extending section disposed along the opposite edqe of said horizontal section, said upwardly extending section including a barrier extending from the bottom surface thereof;

an elongated deck having a vertically downwardly extending section, a horizontal section extending from a first edge of said vertical section, an upwardly extendinq wall disposed along another edge of said horizontal section, said wall being engaged by said barrier to assist in securing the overlay, and means for retaining said overlay;

mounting means for supporting said deck, said mounting means including at least one support member extending transversely beneath the horizontal section of said deck;

fastening means for fastening said deck to said at least one support member; and

end caps having a horizontally disposed portion and a substantially vertically extending portion, whereby said end caps partially overlap said deck to conceal the ends of the deck.

5,382,036

MOLDED, FIBER-REINFORCED, TUBULAR WHEELCHAIR FRAME ASSEMBLY AND METHOD

David M. Counts, and Daniel E. Williamson, both of Fresno, Calif., assignors to Quickie Designs Inc., Fresno, Calif.

Filed Jun. 2, 1992, Ser. No. 893,204
Int. Cl.[6] B62M *1/14*
U.S. Cl. 280—250.1 **1 Claim**

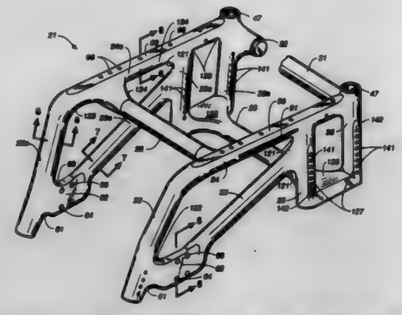
1. A lightweight, high-strength wheelchair frame assembly comprising:

a plurality of hollow frame sections connected together at a plurality of frame joints and having a configuration suitable for use as a wheelchair frame assembly,

at least one of said frame sections being formed with a bracket mounting site therein including a planar mounting surface,

said frame sections intermediate said bracket mounting site having generally curvilinear transverse cross sections and at said bracket mounting site having at least a partially rectilinear transverse cross section;

one of said frame sections being molded with one of a recess and a protrusion in an exterior surface thereof, said one of said recess and said protrusion being located and oriented for interengagement thereof by a clamping assembly having a mating one of a recess and a protrusion in a manner resisting relative rotation of said clamping assembly about



said frame section, said clamping assembly being mountable to said frame section with said clamping assembly extending around a major portion of said frame section and applying a clamping force thereto;

said frame sections being formed from a plurality of molded layers of fiber and resin, said layers of fiber and resin being blended between said curvilinear transverse cross sections and said partially rectilinear transverse cross sections and being formed with relatively large diameter fillets connecting said frame sections at said joints; and

said frame sections at said joints and said site having a combination of a transverse cross section, a number of layers, and a fiber orientation providing high resistance to the type and direction of loading of said frame assembly at said joints and said site.

5,382,037

FORK BLADE FOR A BICYCLE FRONT FORK

Wu-Sung Chang, and Huan-Yang Huang, both of No. 5-15, Lun Ya Lane, Lun Ya Lee, Yuanlin Chen, Changhwa Hsien, Taiwan, Prov. of China

Filed Jan. 21, 1994, Ser. No. 183,762
Int. Cl.[6] B62K *25/08*
U.S. Cl. 280—276 **1 Claim**

1. A fork blade for a front fork of a bicycle of the type comprised of a lower cylindrical casing, and an upper cylindrical casing having a reduced bottom end inserted into said lower cylindrical casing, the improvement comprising:

a ring nut welded to the reduced bottom end of said upper cylindrical casing on an inside portion of the cylindrical casing having a threaded center hole;

a wear cap mounted around the reduced bottom end of said upper cylindrical casing, having a hole aligned with the threaded center hole of said ring nut;

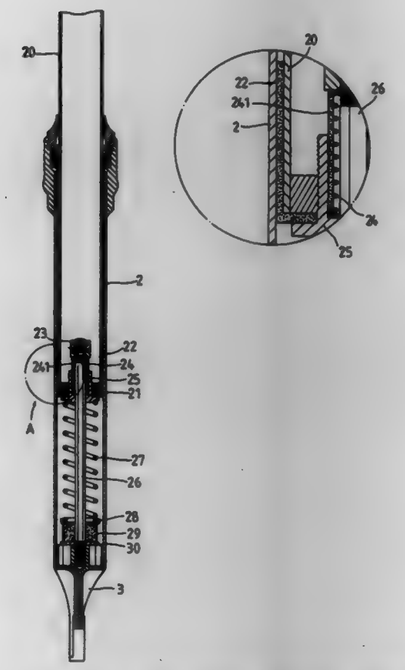
a hollow screw member which comprises a head stopped outside said wear cap, an outer thread inserted through the hole on said wear cap and threaded into the threaded center hole of said ring nut, and a stepped longitudinal through hole;

a buffer spring received in the stepped longitudinal through hole of said hollow screw member and supported above the head of said hollow screw member;

a flexible protective sleeve received in the stepped longitudinal through hole of said hollow screw member to hold said buffer spring within said sleeve;

a forked tip member welded to said lower cylindrical casing at a bottom end of the lower cylindrical casing;

a double end screw rod received inside said lower cylindrical casing, having a first outer thread on a top end thereof inserted through the stepped longitudinal through hole on said hollow screw member and a longitudinal center hole on said buffer spring, and screwed up with locknuts to retain said buffer spring and said flexible protective sleeve between said hollow screw member and said locknuts, and a second outer thread on a bottom end thereof connected to said forked tip member;



a circular rubber block mounted around said double end screw rod and supported on a washer above said forked tip member;

a shock spring mounted around said double end screw rod, having a top end stopped at the head of said hollow screw member and a bottom end supported on a ring-shaped shock spring holder member above said circular rubber block;

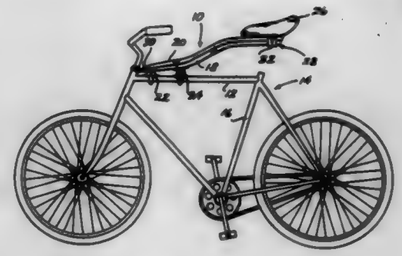
wherein said forked tip member comprises a circular upright wall at a top end welded to said lower cylindrical casing on an inside portion of the lower cylindrical casing, a center screw hole spaced from said circular upright wall by equal spaces, the center screw hole receives the second outer thread of said double end screw rod, and a plurality of through holes each spaced around said circular upright wall in communication with each of said equal spaces into which melted metal for joining said forked tip member and said lower cylindrical casing fills.

5,382,038

SHOCK ABSORBER FOR A VEHICLE

James D. Allsop; Paul Barkley, both of Bellingham, and David E. Calapp, Bellevue, all of Wash., assignors to Allsop, Inc., Bellingham, Wash.

Continuation of Ser. No. 873,878, Apr. 22, 1992, Pat. No. 5,240,268, and a continuation-in-part of Ser. No. 947,274, Sep. 18, 1992, which is a continuation-in-part of Ser. No. 873,878, Sep. 18, 1992, which is a continuation of Ser. No. 589,771, Sep. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 521,130, May 9, 1990, Pat. No. 5,029,888, Ser. No. 440,731, Nov. 22, 1989, Pat. No. Des. 324,837, Ser. No. 440,732, Nov. 22, 1989, Pat. No. Des. 324,836, and Ser. No. 440,733, Nov. 22, 1989, Pat. No. Des. 325,008, said Ser. No. 521,130, is a continuation of Ser. No. 333,891, Apr. 7, 1989, Pat. No. 4,934,724. This application Aug. 31, 1993, Ser. No. 114,452
The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.
Int. Cl.[6] B62K *19/02*; B62J *1/02*
U.S. Cl. 280—281.1 **18 Claims**



1. A shock absorber for attaching a first member to abscond member, comprising:

a first elongate beam having a front end for attachment to the second member, and a tail end distal from said front end;

a second elongate beam located above said first elongate beam and having a front end spaced from said first beam front end so as to define a gap therebetween, and a tail end fixedly secured to said first beam tail end such that when opposed loads are imposed on said first beam front end and said second beam tail end, said beam tail ends remain fixedly secured to each other and said second beam front end shifts position longitudinally with respect to said first beam front end;

a fastening means for securing the first member to at least one of said beam tail ends;

an elastomeric material in said gap extending between said beam front ends, said material being deformed in response to relative movement of said beams; and

a second member fastening means securing said first elongate beam front end and second elongate beam front end to the second member so as to prevent upward movement of said-beam front ends-and allow said second beam front end to move longitudinally.

5,382,039

SUSPENSION DEVICE FOR A SEAT OF A BICYCLE

Michael J. Hawker, 37 Lawnwood Dr., Williston, Vt. 05495

Filed May 24, 1993, Ser. No. 65,585
Int. Cl.[6] B62J *1/04*
U.S. Cl. 280—283 **7 Claims**

1. A suspension device for a seat of a bicycle which comprises:

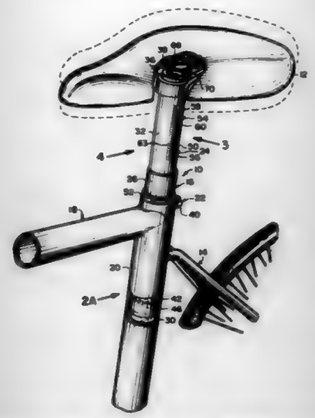
a) a telescoping seat post for carrying the seat, said telescoping seat post including an elongated tubular outer member adapted to be inserted within said seat tube, said outer member having open upper and lower ends, and an elongated tubular inner member slideable within said outer

member with an upper end of said inner member protruding through the open upper end of said outer member and adapted to carry the seat, said inner member having an open lower end and an upper end with a stop formation thereon;

b) said bicycle having a frame with a generally upright seat tube for receiving said seat post;

c) means for securing said seat post to said seat tube, said securing means being a bolt clamp on said seat tube, which is tightened after said outer member of said seat post is inserted within said seat tube; and

d) means within said seat post, for absorbing a shock received to said frame, thereby eliminating a jarring condition normally caused to a rider sitting on the seat, while the bicycle travels over rough surfaces, said shock absorbing means including said elongated tubular outer member having, a pair of aligned apertures near its open lower end, said elongated tubular inner member having a pair of aligned longitudinal slots near its open lower end, a retainer pin having a countersunk area thereon, said retainer pin extends through said aligned apertures in said outer member and said aligned longitudinal slots in said inner member with said countersunk area facing upwardly, and a compression spring which sits upon said countersunk area, holds said retainer pin in place and extends between said countersunk area of said retainer pin and said stop formation at the upper end of said inner member, thereby maintaining a resistive force between said outer member and said inner member, allowing said longitudinal slots to move up and down past the ends of said retainer pin.



5,382,040

BICYCLE TRAINING AID

John Nazzasi, 35 Jones Rd., Hackensack, N.J. 07631

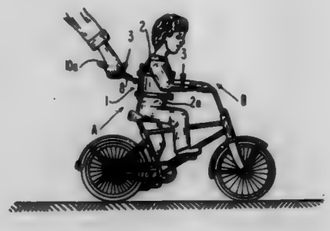
Filed Jun. 28, 1993, Ser. No. 83,346
Int. Cl.[6] B62H *7/00*
U.S. Cl. 280—293 **3 Claims**

1. A cycle training aid which comprises:

a contacting body member having a forward position and a rearward portion;

strap means secured to said body contacting member for releasably securing said body contacting member to a cyclist; and

an arm rearwardly extending from said rearward portion of said body contacting member, said arm having a proximal and a distal end, and means for attaching said distal end of said arm to said rearward portion of said body contacting member, whereby an instructor holding the proximal end assists the cyclist in maintaining balance while cycling, wherein said means for attaching said distal end comprises socket means attached to said distal end, said socket means having a seat, and a ball affixed to said rearward portion of said body contacting member, said ball being captured in said seat, said socket means being moveable in all directions relative to said body contacting member.

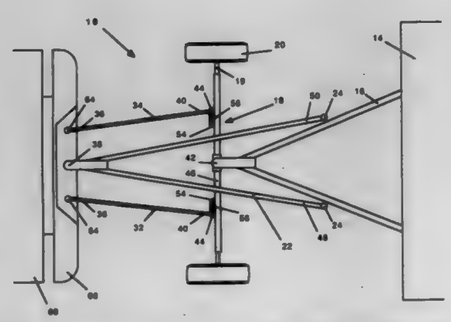


5,382,041

METHOD AND APPARATUS FOR CONNECTING A TRAILER WITH A RIGID DRAWBAR AND AT LEAST ONE CENTRALLY POSITIONED AXLE TO A TOW VEHICLE

Peter G. Keith, 1059 Edgemont Road N.W., Calgary, Alberta, Canada T3A 2J5

Filed Aug. 10, 1993, Ser. No. 105,291
Int. Cl.[6] B62D *13/00*
U.S. Cl. 280—476.1 **15 Claims**



7. An apparatus for connecting a trailer with a rigid drawbar and at least one centrally positioned axle to a tow vehicle, comprising;

a. an intermediate hitch support having rotatably mounted ground engaging wheels, the intermediate hitch support having a trailer drawbar hitch point whereby a trailer drawbar is attached to the intermediate hitch support such that hitch weight is borne by the intermediate hitch support, the intermediate hitch support having an axle that is free to move fore and aft relative to the trailer drawbar hitch point;

b. an intermediate drawbar having one end pivotally mounted to a trailer drawbar for movement about a transverse horizontal axis, and an opposed end with means for attachment to a tow vehicle;

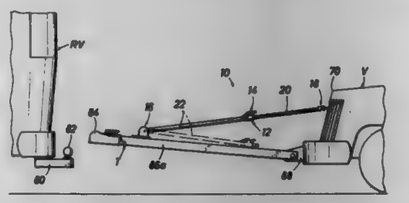
c. a pair of spaced apart rigid steering arms of a fixed length, the steering arms having tow vehicle ends and intermediate hitch support ends, the tow vehicle ends having means for attachment to a tow vehicle spaced equidistant from an intermediate drawbar hitch point, the intermediate hitch support ends being attached to the intermediate hitch support adjacent to the axle and spaced equidistant from the trailer drawbar hitch point on the intermediate hitch support, means of attachment of the steering arms being provided which is capable of omnidirectional movement thereby accommodating relative changes in attitude between the tow vehicle, the intermediate hitch support and the trailer, the fore and aft movement of the axle of the intermediate hitch support relative to the trailer drawbar hitch point accommodating simultaneous fore movement and simultaneous aft movement of the intermediate hitch support ends of the steering arms, with the steering arms serving to control the amount of fore movement and aft movement of the axle.

5,382,042

TOWING DEVICE SUPPORT

Steven J. McPhee, 1415 Merry La., La Marque, Tex. 77568, and Joan M. Earp, 224 W. Drydea, #111, Glendale, Calif. 91202

Filed Nov. 15, 1993, Ser. No. 152,407
Int. Cl.[6] B60D *1/36*
U.S. Cl. 280—477 **11 Claims**



1. A towing device support adapted to be attached to a towing device connected to an object to be towed, for supporting the towing device during alignment of said towing device with a hitch on a towing vehicle, said towing device support comprising:

(a) a telescoping assembly comprising an inner telescoping member slidably disposed within an outer telescoping member to provide a slidable connection therebetween, said inner telescoping member having an inner free end and an inner engaged end, said outer telescoping member having an outer free end and an outer engaged end, said slidable connection between said inner free end and said outer free end defining a distance between said inner free end and said outer free end which can be varied;

(b) securing means for restricting the sliding movement of said inner telescoping member relative to said outer telescoping member so that expansion of the distance between said inner free end and said outer free end is prevented and contraction is permitted;

(c) first connecting means for connecting one of said free ends of said telescoping assembly to a towing device and second connecting means for securing the other of said free ends to an object to which said towing device is secured; and

(d) releasing means for releasing said securing means to allow expansion of the distance between said outer free end of said outer telescoping member and said inner free end of said inner telescoping member once said towing device is aligned with a hitch on a towing vehicle.

5,382,043

SUSPENSION ALIGNMENT DEVICE

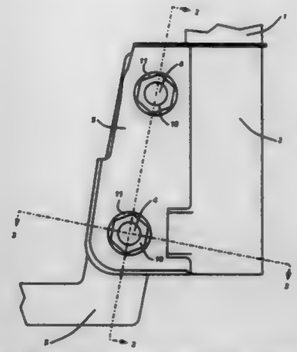
Mark P. Jordan, P.O. Box 4240, Halfmoon, N.Y. 12065

Continuation of Ser. No. 771,821, Oct. 7, 1991, abandoned, which is a continuation of Ser. No. 226,618, Aug. 1, 1988, abandoned. This application Nov. 5, 1993, Ser. No. 149,125
Int. Cl.[6] B62D *17/00*
U.S. Cl. 280—661 **10 Claims**

1. A device for adjusting independently suspended wheels of a vehicle, said wheels supported on said vehicle by a link coupling and a wheel support comprising:

an original equipment bolt comprising a head end and a round threaded shank attached to said head; and

an alignment adjustment device, said adjustment device comprising a one piece eccentric nut-washer combination, said one piece eccentric nut-washer combination being rotatably adjustable in said link coupling, said link coupling having two legs, each said leg having two apertures, said one piece eccentric nut-washer combination comprising a flat washer having two substantially planar surfaces with a circular smooth hole radially offset from the midpoint of the outside diameter of said flat washer, with one of the substantially planar surfaces of said flat washer



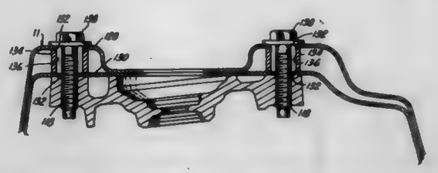
securedly fixed to a nut with said circular smooth hole axially aligned with the threaded bore of said nut wherein one of said link coupling apertures defines a slot adjacent the threaded shank end of said bolt, a shoulder formed on said link coupling adjacent said bolt, said one piece eccentric nutwasher combination being adapted to secure said bolt, said bolt extending through said link coupling and said wheel support, wherein rotation of said one piece eccentric nut-washer combination causes the shank end of said bolt to be offset in a substantially horizontal direction so as to effect a suspension alignment adjustment only on said leg of said link coupling having said slot.

5,382,044

MOUNTING STRUCTURE OF A FRONT SUSPENSION SYSTEM

Robert H. Smith, Troy, and Jan Szadkowski, Rochester Hills, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 992,372, Dec. 17, 1992. This application Sep. 30, 1993, Ser. No. 103,617
Int. Cl.[6] B60G *3/06*
U.S. Cl. 280—673 **5 Claims**



1. A mounting assembly for mounting a suspension assembly to a vehicle body, said mounting assembly comprising a tower secured to the vehicle body and including outer and inner wall members abutting against one another at a central portion thereof and spaced apart at an annular outer portion thereof; a plurality of support spacers confined between said wall members in the spaced apart annular outer portion; a bracket operatively connected to the upper end of said suspension assembly

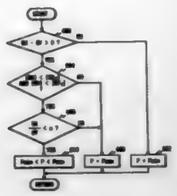
adaptable to abut against said inner wall member; an upper control arm having a pair of ends pivotally connected to said bracket; a plurality of aligned openings formed through said outer wall member, said support spacers, said inner wall member, and into said bracket, said openings in said bracket being threaded; and a plurality of threaded fasteners mounted through said respective aligned openings and threadedly secured in said threaded openings to mount said suspension assembly.

5,382,045

SUSPENSION CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE UTILIZING VARIABLE DAMPING FORCE SHOCK ABSORBER

Masayoshi Takeda, Oobu; Takayuki Nagai, Nagoya, and Toshiyasu Sahashi, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariyai, Japan

Filed Sep. 17, 1993, Ser. No. 122,161
Claims priority, application Japan, Sep. 18, 1992, 4-275261
Int. Cl.[6] B60G *17/015*
U.S. Cl. 280—707 **17 Claims**





8. A suspension control system for an automotive vehicle operable to control transmission of vibratory energy from a road surface to a vehicle body, comprising:

a shock absorber disposed between said vehicle body and a road wheel, said shock absorber providing a variable damping force;

vibration detecting means for detecting a vibratory condition of said vehicle body in a vertical direction to determine a sprung speed of a sprung portion of said vehicle;

sprung-unsprung relative displacement speed determining means for determining a vertical sprung-unsprung relative displacement speed between said sprung portion and an unsprung portion of said vehicle; and

signal setting means for setting a damping force modifying command signal to modify said variable damping force of said shock absorber, based on said sprung speed and said sprung-unsprung relative displacement speed, to produce an intermediate level damping force which represents an intermediate level between maximum and minimum damping force levels determined in a preselected relation to said sprung speed and said sprung-unsprung relative displacement speed within first regions defined around an origin in first and third quadrants on a coordinate plane defined by coordinate axes indicative of said sprung speed and said sprung-unsprung relative displacement speed;

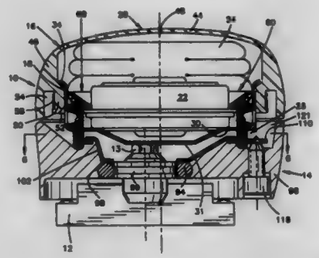
wherein said signal setting means sets said damping force modifying command signal to provide a damping force of said maximum level within regions outside said first regions in said first and third quadrants.

5,382,046

AIR BAG MODULE INSTALLATION STRUCTURE AND METHOD

Jess A. Cuevas, Scottsdale, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Feb. 25, 1991, Ser. No. 660,566
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—728 A **22 Claims**



1. Apparatus comprising a vehicle airbag module, said vehicle airbag module comprising an airbag, an airbag inflator, and an airbag retaining member, and a coupling member for coupling said airbag retaining member of said vehicle airbag module with a portion of a vehicle;

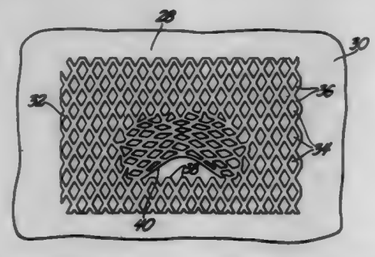
said coupling member being attached to a portion of a vehicle and mechanically changeable from a first configuration to a second configuration to thereby manipulate said coupling member into engagement with said retaining member of the airbag module to thereby couple the module with the portion of the vehicle.

5,382,047

SUPPLEMENTAL INFLATABLE RESTRAINT COVER ASSEMBLY WITH A PERFORATED SUBSTRATE

Gerry Gajewski, Dover, N.H., assignor to Davidson Textron, Dover, N.H.

Filed Jul. 14, 1993, Ser. No. 92,444
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728 B **21 Claims**



1. A cover assembly for concealing a supplemental inflatable restraint system in a vehicle passenger compartment comprising:

a substrate of ductile metal secured beneath a trim panel in a vehicle passenger compartment;

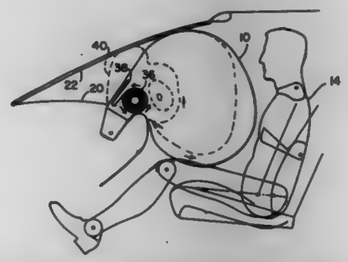
the substrate having a perforated portion that has a plurality of holes that create a lattice of stretchable members, selected ones of the members being weakened to define a door edge that creates a crescent shaped opening in the trim panel for deployment of an airbag when an inflating airbag exerts a predetermined pressure on the perforated portion of the substrate and pushes the lattice outwardly to create a dome.

5,382,048

SOFT DEPLOYMENT AIR BAG FOLD

Donald J. Paxton, Brigham City, and David J. Dyer, Kaysville, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Nov. 5, 1993, Ser. No. 147,763
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728 R **6 Claims**



5. A method of folding an inflatable air bag cushion made of air bag fabric and having a mouth defined by a cushion retainer comprising the steps, with the cushion initially unfolded and uninflated and positioned with the bottom thereof facing up and the mouth at a central side position thereof of:

a. tucking the center of the cushion toward the mouth, creating an upper pleat and a lower pleat,

b. rolling the lower pleat with the upper pleat, stopping after about half of the fabric is rolled up,

c. tucking one side of the rolled cushion fabric to the adjacent edge of the cushion mouth in between the upper and lower pleats,

d. tucking the opposite side of the rolled cushion fabric to the adjacent edge of the cushion mouth inside of the cushion between the upper pleat and the lower pleat, at the conclusion of which tucking the width of the folded cushion should be about the width of the mouth of the cushion,

e. additionally rolling the fabric of the cushion toward the mouth of the cushion, stopping at a point at which the rolled cushion may be inserted into the mouth of the air bag cushion defined by the cushion retainer with a loop of excess fabric folded over the rolled cushion,

f. inserting the rolled cushion into the mouth of the air bag cushion defined by the cushion retainer leaving a loop of excess fabric protruding from the retainer, and

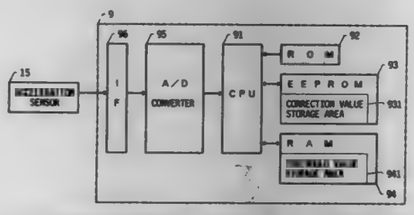
g. folding the loop of excess fabric over the rolled cushion.

5,382,049

AIR BAG CONTROLLING APPARATUS

Tetsushi Hiramitsu; Toshinori Takahashi, and Yuji Takahashi, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Feb. 8, 1993, Ser. No. 14,999
Claims priority, application Japan, Feb. 10, 1992, 4-057506
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 **20 Claims**



1. An air bag controlling apparatus for controlling inflation of an air bag for a motor vehicle and adapted to cooperate with (a) an acceleration sensor which generates a deceleration signal as a function of the vehicle's deceleration, and (b) an inflator which provides said air bag with compressed gas when ignited by an igniter, said air bag controlling apparatus comprising:

threshold value storage means for storing a threshold value used in determining whether the inflator will be ignited;

calculating means for processing the deceleration signal to derive a displacement value as a function of the deceleration of the vehicle;

waveform judging means for evaluating a waveform of said deceleration signal to determine whether an initial period for which the deceleration has a positive value continues for a predetermined interval of time after said acceleration sensor detects a predetermined deceleration;

threshold value correcting means for correcting the threshold value stored in said threshold value storage means when said waveform judging means determines that the initial period for which the deceleration has a positive value has continued for the predetermined interval of time;

discriminating means for determining whether the displacement value derived by said calculating means is greater than the corrected threshold value; and

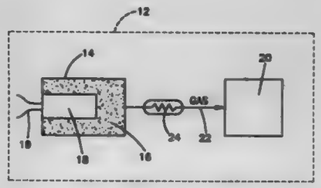
signal output means for outputting an ignition signal to said inflator so that said inflator is ignited and said air bag is inflated when the discriminating means determines that the displacement value derived by the calculating means is greater than the corrected threshold value.

5,382,050

GAS GENERATOR FOR VEHICLE OCCUPANT RESTRAINT

Leif A. Thompson, Gilbert, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Apr. 8, 1993, Ser. No. 44,939
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—741 **7 Claims**



1. A vehicle occupant restraint assembly comprising:

(a) a vehicle occupant restraint;

(b) a housing;

(c) a gas generating composition within the housing;

(d) an igniter for igniting the gas generating composition; and

(e) gas flow means for directing gas from said housing to said vehicle occupant restraint;

said gas generating composition comprising a metal oxidant and a metal azide selected from the group consisting of an alkali metal azide, an alkaline earth metal azide, and aluminum azide, wherein the metal oxidant is gamma iron oxide.

5,382,051

PNEUMATIC PADS FOR THE INTERIOR OF VEHICLES

Paul C. Glance, Troy, Mich., assignor to Concept Analysis Corporation, Plymouth, Mich.

Filed Aug. 28, 1991, Ser. No. 751,146
Int. Cl.[6] B60R *21/04*
U.S. Cl. 280—751 **7 Claims**

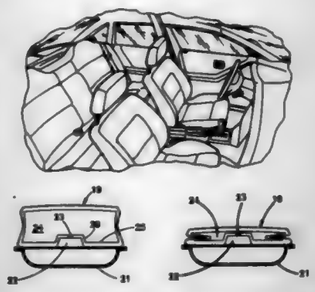
1. A resilient, shock absorbing cover for exposed interior

portions of vehicle door column and door header members in the enclosure of a vehicle passenger compartment that are in a position where they can contact the head of a vehicle occupant during an accident, the cover comprising a hollow body attached to and covering the exposed portion of the member, the body being integrally formed of a moldable elastomeric resin and having a characteristic shape in an undeflected state, the body including:

a base wall mounted against the member;

collapsible elastomeric side walls extending outwardly from opposite sides of the base wall; and

an outer wall extending between and enclosing outer ends of the side walls and forming the outer surface of the body, the outer wall being formed in a predetermined shape so as to provide the outer surface of the cover for the member,



the base, side and outer walls forming an enclosed pneumatic chamber that cushions the member against inwardly directed impact forces from the head of a vehicle occupant during an accident, the cover being constructed so as to have force-deflection characteristics that are designed to reduce head injuries, the pneumatic chamber being expanded and filled with air at approximately atmospheric pressure when the cover is in its normal, undeflected state, the air becoming pressurized with inward deflection of the outer wall toward the base wall, the air thereby resisting inward deflection of the cover, the shock absorbing cover further including restrictive outlet means from the pneumatic chamber that permits a restricted outflow of air from the pneumatic chamber as the chamber is collapsed by inward deflection of the body, the air thus dissipating inward deflection forces on the body by providing non-resilient yieldable resistance to inward deflection of the body.

5,382,052

IN-LINE ROLLER BLADE FIGURE SKATE

Min M. Tarng, 1367 Glenmoor Way, San Jose, Calif. 95129

Continuation-in-part of Ser. No. 662,717, Mar. 1, 1991, abandoned. This application Jun. 18, 1992, Ser. No. 900,136

Int. Cl.[6] A63C *17/06*

U.S. Cl. 280—844 **22 Claims**

1. A skating apparatus comprising a plurality of wheels and a composite belt,

said composite belt being flexible and compressible,

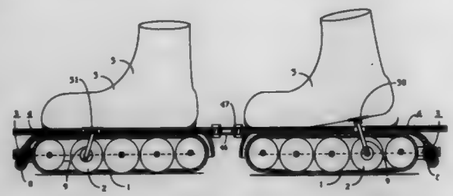
said plurality of wheels being rotatably mounted on said skating apparatus in-line,

a slot surrounding a peripheral of each of said plurality of wheels,

said composite belt comprising a resilient belt and a plurality of beads, said resilient belt fitting inside said slot, said plurality of beads being embedded in said resilient belt,

each of said beads comprising a bracket and a skating means, said bracket fitting with said slot and pressing against said resilient belt, said skating means being mounted on said bracket,

said resilient belt serving to absorb shock, to adjust the height of belt to increase contacts with ground and to adjust track curvature of said composite belt in turning direction to turn left and right wherein said composite belt



further comprising strings, said strings passing through said bracket of each of said beads to hook-up said beads to be a chain.

5,382,053

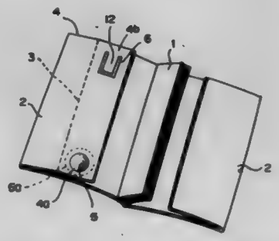
PROTECTIVE JACKET HAVING A MAGNIFYING LENS

Yoshiya Tanaka, 25-3 Minamihanda Nakamachi, Nara-Cityi, Nara-Ken, Japan

Filed Sep. 7, 1993, Ser. No. 117,976

Int. Cl.[6] B42D *9/00*

U.S. Cl. 281—42 **11 Claims**



1. A protective jacket having a magnifying lens, the protective jacket comprising:

a central panel receivable around an exterior of a book cover having a front and a rear cover part and a spine part connecting the front and rear cover parts, and two end panels foldable against interior surfaces of the front and rear cover parts of said book cover;

a magnifying lens attached to the protective jacket, said magnifying lens being fixed at an end of an elongated flexible element;

said flexible element being a material strip separably joined to at least one of said end panels along a vertical perforation; and

said material strip, when separated from said at least one end panel, being usable as a bookmark.

5,382,054

BOOK HOLDER

Michael Bettiol, 11 Ermina St., Hamilton, Ontario, Canada L8W 3K1

Filed May 12, 1994, Ser. No. 241,482

Int. Cl.[6] B42D *9/00*

U.S. Cl. 281—42 **20 Claims**

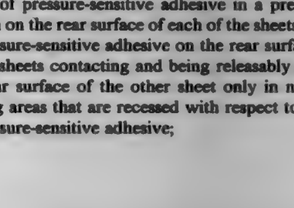
1. A book holder comprising:

two book receiving members each having a respective upper page receiving surface for the reception thereon of at least a portion of the respective outermost page of a book to be held by the holder;

a connecting member extending between the two book receiving members, connecting them together, and permitting them to move toward and away from one another between a minimum position in which the holder is adapted to hold a correspondingly small width book, and a maximum position in which they are spaced apart transversely a maximum amount and the holder is adapted to hold a correspondingly maximum width book;

each book receiving member comprising a post member extending vertically from its upper surface, a book in the holder resting on the book receiving member upper surfaces between the two post members;

each post member comprising two axially extending members having a common pivot axis extending parallel to the book side edges, the members projecting from the post member on opposite sides thereof, and



a page engaging member extending from the axially extending members away from its respective post member toward the other post member, each page engaging member being movable between a minimum position in which it contacts the upper surface of the respective book receiving member, and a maximum position in which it can contact the upper surface of the uppermost page of a book resting on the book receiving member;

each page engaging member and the respective axially extending members comprising spring biasing means urging the page engaging member into contact with the book uppermost page for the entire range of positions of the page engaging member from the minimum position to the maximum position.

5,382,055

NOTE OR NOTE PAD PREPARATION METHOD

Timothy A. Mertens, Cottage Grove, and Mark S. Vogel, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 9, 1992, Ser. No. 973,039

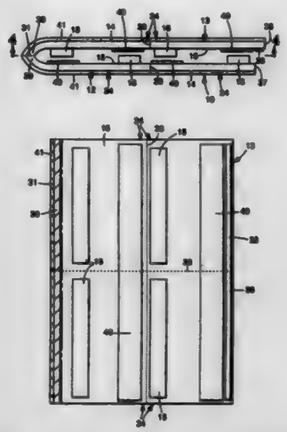
Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—67 **17 Claims**

1. A method for making custom printed notes, said method comprising the steps of:

providing a sheet assembly comprising first and second sheets each having major front and rear surfaces, and layers of pressure-sensitive adhesive in a predetermined pattern on the rear surface of each of the sheets, the layers of pressure-sensitive adhesive on the rear surface of each of the sheets contacting and being releasably adhered to the rear surface of the other sheet only in nonadhesive bearing areas that are recessed with respect to the layers of pressure-sensitive adhesive;

printing indicia on at least one of the front surfaces of the sheets in the sheet assembly;



separating the sheets along predetermined planes normal to and extending across the major surfaces of the sheets to form the custom printed notes.

5,382,056

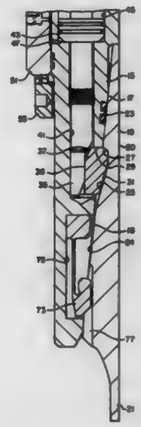
RISER WEAK LINK

Lionel J. Milberger, Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Jul. 12, 1993, Ser. No. 90,821

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—1 **23 Claims**



1. In a string of riser extending from a floating vessel to a subsea well, the string of riser having a plurality of pipe sections joined by pipe couplings, the improvement comprising in combination:

a weak link pipe coupling joining two of the pipe sections together and having an axis;

release means mounted to the weak link pipe coupling for releasing two of the pipe sections from each other if a selected axial minimum force of substantial magnitude is applied due to excessive bending of the riser;

arming means including an arming member having a locked

position for preventing operation of the release means to prevent the release means from releasing even if the minimum force is reached, and having an armed position for arming the release means to release at the minimum force; and

actuator means operable in response to hydraulic pressure supplied through a line exterior of the riser from the floating vessel for moving the arming member between the armed and locked positions.

5,382,057

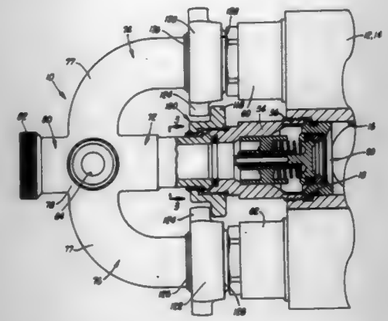
MANIFOLD FOR A FRONT-DISCHARGE FLUID END RECIPROCATING PUMP

Travis L. Richter, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 943,342, Sep. 10, 1992, Pat. No. 5,299,921. This application Aug. 26, 1993, Ser. No. 112,490

Int. Cl.[6] F16L *35/00, 55/00;* **F16B** *23/00*

U.S. Cl. 285—39 **8 Claims**



1. A nut set for connecting closely adjacent tubes to a ported member, said nut set comprising:

a first nut comprising:

an angular ring portion adapted for positioning around one of said tubes adjacent to an end thereof, said ring portion comprising:

an internally threaded surface adapted for threading engagement with said ported member;

an outer surface facing away from said ported member when said ring portion is attached thereto; and

an inner surface facing toward said ported member when said ring portion is attached thereto; and

a lug extending from said ring portion adjacent to said outer surface and longitudinally spaced from said inner surface; and

a second nut comprising:

an annular ring portion adapted for positioning around another of said tubes adjacent to an end thereof, said ring portion of said second nut comprising:

an internally threaded surface adapted for threading engagement with said ported member;

an outer surface facing away from said ported member when said ring portion of said second nut is attached thereto; and

an inner surface facing toward said ported member when said ring portion of said second nut is attached thereto; and

a lug extending from said ring portion of said second nut adjacent to said inner surface of said second nut and longitudinally spaced from said outer surface of said second nut and also longitudinally spaced from said lug on said first nut such that there is no interference therewith.

5,382,058

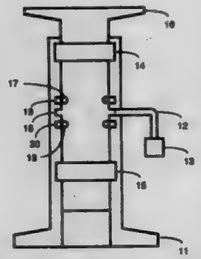
ROTATABLE FLANGE UNION FOR USE WITH VACUUM SYSTEMS

David E. Henderson, Fremont, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jun. 17, 1993, Ser. No. 79,440

Int. Cl.[6] F16L *17/10*

U.S. Cl. 285—96 **4 Claims**



1. A rotatable flange union for use with vacuum systems comprising:

a first flange;

a second flange, tubing of the first flange being placed within tubing the second flange; and,

connection means coupling the first flange to the second flange and allowing the first flange to rotate 360 degrees with respect to the second flange, the connection means including

a first quad ring seal in contact with an inner diameter of the second flange and in contact with an outer diameter of the first flange,

a second quad ring seal in contact with the inner diameter of the second flange and in contact with the outer diameter of the first flange, and

a cavity in the second flange, the cavity between the first quad ring seal and the second quad ring seal, wherein the cavity is pumped to a pressure of less than ten millitorr.

5,382,059

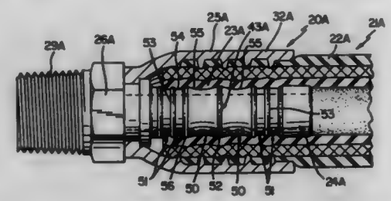
HOSE ASSEMBLY, HOSE COUPLING AND A PART THEREFOR AND METHODS OF MAKING THE SAME

Samuel L. Wilson, Greenfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Filed Jan. 13, 1994, Ser. No. 180,597

Int. Cl.[6] F16L *33/207*

U.S. Cl. 285—256 **26 Claims**



1. In a hose assembly comprising a hose coupling having an annular recess, and a hose having an end thereof clamped in said annular recess of said coupling, said coupling having a longitudinal axis and comprising a tubular insert portion inserted into said one end of said hose and having an external peripheral surface means that is generally parallel to said longitudinal axis, and a tubular ferrule portion disposed in generally concentric and spaced relation about said insert portion to define said annular recess therebetween and having been radially inwardly deformed toward said longitudinal axis to clamp said end of said hose between said ferrule portion and said insert portion after said end of said hose has been received in said annular recess, said external peripheral surface means having a plurality of spaced apart annular ridge means and having a plurality of spaced apart annular groove means therein that are separated from each other by said annular ridge means so that said insert portion has medial groove means intermediate opposite end groove means thereof, the improvement wherein said end groove means are narrower than said medial groove means.

5,382,060

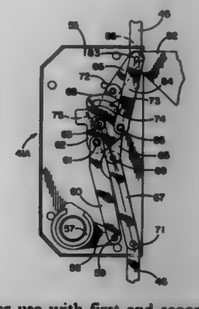
LATCHING APPARATUS FOR DOUBLE DOORS

James F. O'Toole; William M. Martz, both of Rockford, Ill.; Todd W. Bruchu, Lake Elmo, and Scott R. Beske, Stillwater, both of Minn., assignors to Amerock Corporation, Rockford, Ill.

Filed Jan. 11, 1993, Ser. No. 2,956

Int. Cl.[6] E05C *3/16*

U.S. Cl. 292—46 **4 Claims**



1. Apparatus for use with first and second adjacent doors each adapted for independent movement between open and closed positions, said apparatus comprising latching means carried by said second door and selectively movable between latched and unlatched positions, said latching means, when in said latched position, preventing said second door from moving to its open position, a drive member connected to said latching means and operable when moved in one direction to a predetermined position to cause said latching means to move from said latched position to said unlatched position, a manually movable actuator member, a lost motion connection between said actuator member and said drive member, said lost motion connection permitting said actuator member to move through a predetermined distance without moving said drive member in said one direction and thereafter causing said actuator member to move said drive member in said one direction, a latch element carried by said first door and movable between latched and unlatched conditions, said latch element, when in said latched condition, engaging said second door and preventing said first door from moving to its open position, a sensor mounted to move along a predetermined path which intersects said latched element when said latch element is in said latched condition, said sensor normally being spaced along said path from said latch element, said actuator member being connected to said sensor and being operable to move said sensor along said path, said sensor engaging and stopping against said latch element when said sensor is moved along said path and when said first door is in its closed position and said latch element is in said latched condition, engagement of said sensor with said latch element stopping movement of said actuator member before said actuator member moves said drive member in said one direction to said predetermined position whereby said latching means is prevented from being moved to said unlatched position whenever said first door is in its closed position, said sensor, when said first door is in its open position, moving further along said path and permitting said actuator member to be moved sufficiently far to cause said drive member to move in said one direction to said predetermined position and thereby cause said latching means to move from said latched position to said unlatched position.

5,382,061

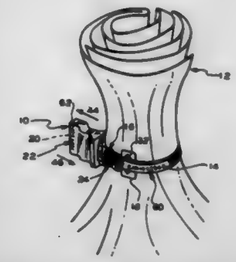
BAG SEAL

Allan W. Swift, Denville, and Donald A. Ruth, Newton, both of N.J., assignors to E.J. Brooks Company, Newark, N.J.

Filed Feb. 19, 1993, Ser. No. 19,792

Int. Cl.[6] B65D *27/30*

U.S. Cl. 292—311 **16 Claims**



1. An improved bag seal including a flexible strap for encircling and closing the neck of a bag, a plastic body with a bore therethrough, and a non-resilient ferrule attachable to a first end of the strap; the ferrule including an integral housing having therethrough a passage which is capable of receiving the strap after its second end passes therethrough; the housing being insertable into the bore; the plastic body and the housing being jointly crimped after the housing is received in the bore and the strap has been passed through the passage and tightened to encircle and close the neck of the bag to deform the plastic body and the housing, thereby locking the housing to the plastic body and the strap to the housing, wherein the improvement comprises:

cutting means formed on the housing for permitting reception of the housing in the bore without adversely affecting the plastic body and for cutting and piercing through the plastic body in response to reletive movement between the ferrule and the plastic body incident to removal or attempted removal of the housing from the bore, the pierced and cut plastic body providing a visual indication of such removal or attempted removal.

5,382,062

MOTOR-VEHICLE DOOR LATCH WITH COLLISION PROTECTION

Ulrich Köstler, Hebertshausen, Germany, assignor to Kiekert GmbH & Co. KG, Heiligenhaus, Germany

Filed May 24, 1993, Ser. No. 66,942

Claims priority, application Germany, May 23, 1992, 4217140

Int. Cl.[6] F05B *15/02*

U.S. Cl. 292—340 **8 Claims**

1. In a motor-vehicle latch assembly comprising:

a door having a front end pivoted about an upright axis, a rear end with a rearwardly directed end face, and an inside face immediately adjacent the rear end face;

a frame member having a forwardly directed front face confronting the rear end face of the door in a fully closed position of the door;

a holding element fixed to the front face of the frame member and having a part projecting inward past the inside face of the door in the fully closed position of the door and having a support face facing forward toward the rear end face of the door;

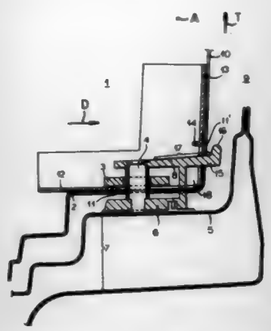
a retaining member fixed in the holding element; and

means including a retaining element on the rear end face of

the door engageable with the retaining member to latch the door in the fully closed position; the improvement wherein

the holding element is fixed solely to and extends forward from the front face of the frame member,

the part of the holding element projecting inward past the



inside face of the door in the fully closed position thereof is formed with a forwardly directed bump lying inward of the inside face of the door in the fully closed position, said bump having a free end, whereby if the door is pushed back in a collision the inner face of the door will be prevented by the free end of the bump from sliding inward over the end of the holding element.

5,382,063

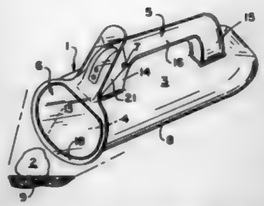
WASTE PRODUCT COLLECTION DEVICE

Lois D. Wesener, and Randall M. Crawford, both of 2424 E. Morgan Ave., Milwaukee, Wis. 53207

Continuation of Ser. No. 986,583, Dec. 7, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 228,959

Int. Cl.[6] A01K *29/00*; E01H *1/12*

U.S. Cl. 294—1.3 **4 Claims**



1. An animal waste product collection device comprising an elongated tubular body formed as a single integral plastic member with an open end defining a waste receiving opening and a closed end, said body having a bottom wall with a distinct shallow curvature and sidewalls and a top wall, said top wall and said bottom wall having a width substantially greater than the vertical length of said side walls, the receiving opening of said tubular body including said bottom wall extending rearwardly to define a forward deflecting lip portion at the receiving opening, said bottom wall being formed of a deflectable resilient plastic and said sidewalls and top wall are formed sufficiently rigid to establish deflection of said lip portion in response to a force applied to said top wall, a handle secured to said top wall with a horizontal portion close spaced from the top wall to define an opening beneath the horizontal portion of the handle for grasping by the hand of a user immediately adjacent the top wall for moving said tubular body into and over ground engagement under a downward preasure on said handle deflecting said lip portion into a relatively flat tip for picking up of animal waste product by moving of the tubular body through the location of the waste product with the lip portion flattened substantially in the plane of the bottom wall and moving underneath the waste product for picking up the same, said receiving opening having a planar front edge, and a cover pivotally secured to said body and including a planar portion overlying said front edge to effectively close the receiving opening, an upwardly extending portion of said cover aligned with the handle for manual positioning of said cover, a resilient element coupled between said handle and said cover resiliently urging said cover to a closed position overlying and engaging said front edge and movable to an opened position spaced from said front edge, said body is formed as an elongated tubular body formed of a single integral molded plastic having said waste receiving end opening as the only inlet and outlet into said body, said body being formed with continuously smooth and curved surfaces between said side walls and said to wall and bottom wall.

5,382,064

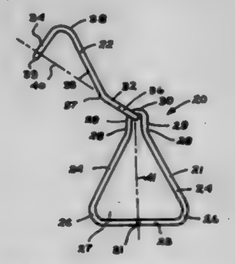
GAME DRAG

Sam L. Blais, 4102 MacArthur Rd., Muskegon, Mich. 49442

Filed Sep. 3, 1991, Ser. No. 753,828

Int. Cl.[6] A01M *31/00*; B65G *7/12*

U.S. Cl. 294—26 **23 Claims**



1. A game drag device, comprising:

a handle member, fabricated from a length of rigid durable rod-like material formed generally into a shape of a figure enclosing a substantially planar area, said rod-like material forming a perimeter of said planar area, said area having a first dimension in a plane including said enclosed area at least sufficient to accept a width of a palm of a user hand therethrough and a second dimension, substantially orthogonal, in said plane including said enclosed area, to said first dimension, at least sufficient to accept a thickness of a palm of a user hand therethrough, said figure including a first region of circumferential extent adapted to be grasped by the hand of the user, and a second region of circumferential extent, generally opposite to said first region, said handle member having maximum first and second dimensions limited to enable carrying said handle member in a pocket of the clothing worn by the user;

a hook member, comprising a length of rigid durable rod-like material formed into a shape having a shank region, a loop formed at a first end of said shank region, and a point-bearing region formed at a second end of the shank region, a distal end of said point-bearing region being formed as a point of sufficient acuteness to enable said point-bearing region to penetrate and engage with an appropriate portion of the anatomy of dead game, said hook member having a first dimension, extending from said loop to said point-bearing region, that is substantially equal to, but not greater than, said second dimension of said handle member, said hook member having a second dimension substantially equivalent to the distance that said point-bearing region extends radially outwardly from the shank, said hook member's second dimension being sufficiently less than said first dimension of said handle member such that when the hook member lays flat in an overlapping position with respect to the handle member, with said loop of said hook member disposed substantially at a position of said second region of said handle member and said hook member extending therefrom toward said first region of said handle member, said point-bearing region of said hook member lies within the perimeter of the handle member and is substantially parallelly adjacent said first region of said handle member, with said point of said hook member being shielded from incidental engagement with the anatomy of a user by said first region of said handle member, said overlapping position of said hook member and said handle member defining a storage or carrying arrangement of said game drag device; and

means for coupling said loop of said shank of said hook member to said second region of said handle member, said means providing capability that said hook member may be deployed relative to said handle member from said carrying arrangement therebetween to a second arrangement therebetween wherein said point-bearing region of said hook member has been pivoted through substantially 180 degrees of angle describing a cylinder of revolution having said second region of said handle member as an axis of revolution, said hook member extending, when in said second arrangement, substantially within a plane including said enclosed area of said handle member, in a direction away from said second region of said handle member opposed to the direction of said first region of said handle member from said second region of said handle member, said second arrangement defining a use arrangement of said device.

5,382,065

COMPOST CUTTING AND STIRRING APPARATUS

John R. Snell, 918 Rosewood Ave., East Lansing, Mich. 48823

Filed Oct. 4, 1993, Ser. No. 130,693

Int. Cl.[6] A01B *1/02*

U.S. Cl. 294—53.5 **7 Claims**



1. A compost cutting and stirring apparatus, comprising,

a support shaft, the support shaft having a shaft first end spaced from a support shaft second end, and the support shaft symmetrically oriented about a shaft axis, and

the first end including a first end handle orthogonally oriented relative to the axis, and

a blade member, the blade member of a generally truncated triangular configuration, including pivot means pivotally mounting the blade member to the shaft second end,

the blade member includes a first end edge having a first length, a second end edge having a second length less than the first length, and the blade member further including a first side edge and a second side edge, wherein the first side edge and the second side edge are canted towards one another extending from the first end edge to the second end edge, and wherein the second end edge, the first side edge, and the second side edge are of a sharpened blade-like configuration,

said pivot means includes a second end tube fixedly mounted to the support shaft second end, and the blade member including axle support loops positioned on opposed ends of the second end tube, and a pivot axle directed through the second end tube and the support loops, wherein the pivot axle and the second end tube are oriented between and parallel to the first end edge and the second end edge,

the pivot axle is spaced from the first end edge a first spacing, and the pivot axle is spaced from the second end edge a second spacing, wherein the first spacing is greater than the second spacing, and wherein the blade member is pivotal from a first position substantially parallel to the shaft axis to a second position orthogonally oriented relative to the shaft axis, and including an abutment blade fixedly and orthogonally mounted to the blade member, wherein the abutment blade includes an abutment wall orthogonally oriented to the blade member and orthogonally oriented relative to the shaft axis in adjacency to the shaft axis, and wherein the support shaft includes a flattened portion oriented in adjacency relative to the second end for abutment with the abutment wall in the second end position, and said abutment spaced from the blade member to permit reception of said second end tube between the abutment blade and the blade member.

5,382,066
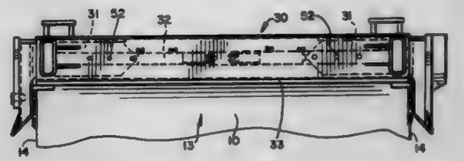
MECHANISM FOR LIFTING FREIGHT CONTAINERS

Thomas P. Kelly, Colleyville, Tex., assignor to The Atchison, Topeka & Santa Fe Railway Company, Euless, Tex.

Filed Sep. 23, 1993, Ser. No. 126,038

Int. Cl.[6] B66C *1/66*

U.S. Cl. 294—68.3 **3 Claims**



1. A lifting assembly comprising in combination:

a container having a top, a bottom and side walls defining an interior volume;

a plurality of bearing mechanisms affixed to the side walls of the container so as not to reduce the interior volume of the container, said bearing mechanisms each comprising a plate-like structure having an outer face opposite an inner face, each such face defining a plane, and said bearing mechanisms each further including an aperture configured in an arcuate shape defining an apex;

a spreader assembly including a plurality of lift members which are positionable within the apertures of the bearing mechanisms to facilitate lifting the container;

the spreader assembly further including locking mechanisms to prevent inadvertent withdrawal of the lift members from the bearing mechanisms, and also including mechanisms for stopping the movement of the lift members toward the container when the lift members are being positioned within the apertures but before the lift members engage the container; and

each lift member comprising a knob movable into the aperture in a direction perpendicular to the side walls of the container, said knob also being movable during lifting so as to be guided by the aperture into engagement with the apex such that forces from the knob are transferred to the bearing mechanism, thereby facilitating lifting of the container, with the knob not penetrating the plane defined by

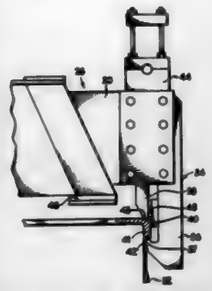
the inner face of the bearing mechanism during said lifting operation.

5,382,067

SDE LATCH INTERCONNECT APPARATUS AND METHOD FOR TRANSPORTING A CONTAINER

James A. Baumann, 16413 Grant Ave., Orland Park, Ill. 60606

Continuation of Ser. No. 989,338, Dec. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 945,747, Sep. 16, 1992, and Ser. No. 973,723, Nov. 9, 1992, Pat. No. 5,332,274.
This application Mar. 14, 1994, Ser. No. 209,487
Int. Cl.[6] B66C *1/62*
U.S. Cl. 294—68.3 23 Claims



1. A releasable latch apparatus for releasable connection to a side of a container having a lower engagable portion and an upper engagable portion, comprising:

a substantially rectangular framing structure adapted for coupling to a container lifting device, said framing structure includes slave bars extending longitudinally;

latching means for releasable latching onto a side of a container to provide a substantially vertical vice grip-like engagement, including a lower engagement member and an upper engagement member adapted for cooperating with the respective lower and upper engagable portions on the side of the container for releasably gripping a container, operably coupled to and extending substantially downwardly and inwardly from the framing structure to sufficiently reach a side portion of the container substantially minimally or without extending into the cargo space of the container; and

front and rear retractable interconnectable means for lateral adjustment of the latching means with respect to the framing structure, including a middle portion coupled to said framing structure and end portions coupled to a plurality of said latching means, defining tandem latching means, whereby a container is handlable from its sides.

5,382,068

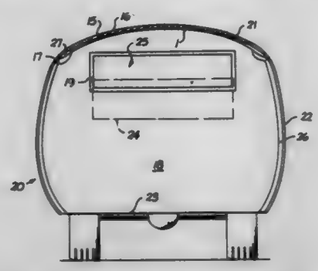
EASILY INSTALLED FLEXIBLE BARRIERS FOR VANS

Michael L. Simmons, 8561 Blackfoot Ct., Lorton, Va. 22079, and Robert J. Goldsborough, 7627 Matera St., #3, Falls Church, Va. 22043

Continuation of Ser. No. 45,110, Apr. 12, 1993, abandoned. This application Dec. 9, 1993, Ser. No. 164,991
Int. Cl.[6] B60R *27/00*
U.S. Cl. 296—24.1 8 Claims

5. A removably insertable flexible mounting fixture adapted to be wedged into place and supported by ridges on van sidewalls adjacent a van roof for use in supporting a flexible barrier sheet extending from roof to floor for isolating a driver compartment of a van from a rear work compartment, comprising in combination:

a sturdy weight bearing metal crossbar brace for supporting said barrier sheet in a weight bearing relationship, said brace being of fixed length and curved to hug the roof contour of the van, means comprising opposite end structure integrally formed on the brace for flexibly and frictionally conforming into to be firmly retained by ridges formed on opposite sides of the van when the brace is twisted from a skewed installation position adjacent the



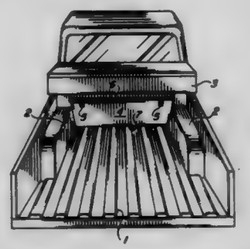
van roof to a transverse resident mounted position with the integral end structure frictionally secured in the ridges as the sole fastening means, thereby enabling the brace to support weight imposed by the flexible barrier.

5,382,069

HIDEAWAY DOOR FOR TRUCK BEDS

Mark D. Chambers, 5307 N. 32nd Pl., Phoenix, Ariz. 85018

Filed Mar. 2, 1992, Ser. No. 844,215
The portion of the term of this patent subsequent to Apr. 17, 2010, has been disclaimed.
Int. Cl.[6] B60R *11/00*
U.S. Cl. 296—37.6 7 Claims



1. In a truck of the type having a cab with a bed located behind the cab, said truck bed having a floor and side wall panels with a tool box extending between the side walls, a storage compartment comprising:

(a) a door panel having top, bottom and opposite sides positionable below the tool box in a closed, generally vertical position with the door extending between the side walls and between the floor and bottom of the tool box;

(b) detachable hinge members attached to said panel and one of said tool box or said truck bed floor, said hinge members having a first hinge strap having an aperture therein and a second hinge member engageable in said aperture whereby said door may be pivoted between said closed position and an open position disposed against said bed floor and whereby said door may be selectively detached from said truck at said hinge members; and

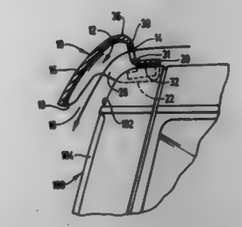
(c) latch means associated with said door and the other of said tool box and truck bed floor for selectively securing said door in said closed position.

5,382,070

AERO DEFLECTOR FOR VEHICLES

Douglas A. Turner, Costa Mesa, Calif., assignor to G.T. Styling, Inc., Irvine, Calif.

Continuation of Ser. No. 962,838, Oct. 19, 1992, abandoned.
This application Apr. 21, 1994, Ser. No. 231,987
Int. Cl.[6] B62D *35/00*
U.S. Cl. 296—180.1 34 Claims



1. An aero deflector for a vehicle, comprising:

a frame having a flange which defines a leading edge and adapted to be mounted by the flange to an exterior of the vehicle; a frontal support portion having a plurality of deflector supports coupled to the flange downstream of the leading edge of the flange and defining a forward air intake downstream of the leading edge of the flange between the plurality of deflector supports and the flange to receive a flow of air passing directly downstream over the leading edge of the flange between the plurality of deflector supports; a trailing edge spaced from the exterior of the vehicle and oriented generally downwardly to define a rear air exhaust; a flow directing portion supported by the frontal support portion downstream of the air intake spaced from the exterior of the vehicle and having an interior surface shaped to direct the flow of air received from the forward air intake to the rear air exhaust at the trailing edge so that the flow of air is directed by the exterior of the vehicle and the interior surface of the flow directing portion and is exhausted downwardly over the exterior of the vehicle; and

means carried by the leading edge for coupling the leading edge of the frame to the exterior of the vehicle.

5,382,071

MOTOR VEHICLE WITH A CENTRAL PILLAR CONSTITUTED BY AN EXTRUDED SECTION

Norbert Enning, Denkendorf, and Heinrich Timm, Ingolstadt, both of Germany, assignors to Audi AG, Ingolstadt, Germany

PCT No. PCT/EP91/02263, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/11157, PCT Pub. Date Jul. 9, 1992
PCT Filed Nov. 29, 1991, Ser. No. 983,525
Claims priority, application Germany, Dec. 20, 1990, 4041038
Int. Cl.[6] B62D *25/00*
U.S. Cl. 296—203 8 Claims

1. A center pillar in a motor vehicle body having an upper end portion which is joined to a roof stringer and a lower end portion which is joined to a lower lengthwise member comprising in operative combination:

a) a pair of vertically oriented extruded sections including a first extruded section having at least one vertical side surface cut at an angle over a substantial length thereof, and a second extruded section having a uniform cross section;

b) said cut vertical side surface of said first extruded section is joined to a vertical side surface of said second extruded section to form a center pillar which tapers at an upper end portion thereof; and

c) at least one of said extruded sections includes a smoothly curved bottom end region which diverges away from the other of said extruded sections and is cut at an angle along



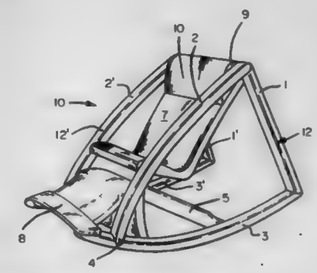
a bottom terminal end thereof to fit against and join to said lower lengthwise member.

5,382,072

CHILD'S HIGHCHAIR

Berndt Diefenbach, Munich, Germany, assignor to Big-Spielwarenfabrik, Fuerth/Bayern, Germany

Filed Jan. 27, 1993, Ser. No. 12,158
Claims priority, application Germany, Jan. 28, 1992, 9200975
Int. Cl.[6] A47C *13/00*
U.S. Cl. 297—1 4 Claims



1. A child's seating device comprising:

two generally triangular lateral frame parts connected with each other,

at least one transverse strut connecting said lateral frame parts together,

two straight sections of the frame parts defining a base,

two arcuately curved sections of the frame parts extending from the base forming runners of a rocking chair, said two arcuately curved sections each having two ends with one of said two ends of said two arcuately curved sections connected to said two straight sections,

a transverse yoke connecting together the other end of said two ends of said two arcuately curved sections,

two additional sections of the frame parts extending from the base and intersecting said two arcuately curved sections at a distance from the other end of said two ends of said two arcuately curved sections, and

a seat mounted between the frame parts for use in one of a highchair and a rocking chair with the seat positioned between the frame parts so that a portion of said two arcuately curved sections form arm rests and said at least one transverse strut forms a support for a back rest of the seat when the seat is positioned for use as a highchair.

5,382,073

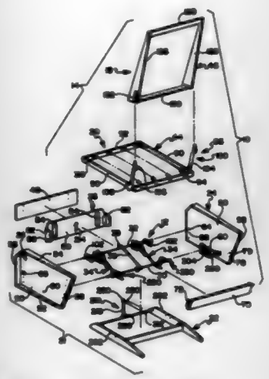
MODULAR RECLINING CHAIR AND METHOD

Douglas A. Habegger, Millbury, Ohio; Larry P. LaPointe, Temperance, Mich.; Clifford K. Weyher, Maybee, Mich.; Jonathan R. Saul, LaSalle, Mich., and Karl J. Komorowski, Petersburg, Mich., assignors to La-Z-Boy Chair Co., Monroe, Mich.

Division of Ser. No. 772,231, Oct. 11, 1991, Pat. No. 5,301,413. This application Jul. 16, 1992, Ser. No. 913,823

Int. Cl.[6] A47C *1/02*

U.S. Cl. 297—85 **18 Claims**



1. A reclinable seating unit comprising:
a pair of side frame members;
a support shaft transversely extending between said side frame members;
a drive rod transversely extending between said side frame members;
a leg rest assembly suspended from said support shaft and operatively coupled to said drive rod, said drive rod being moveable between a first position wherein said leg rest assembly is releasably retained in a retracted position and a second position wherein said leg rest assembly is permitted to move toward an extended position;
a seat assembly having a seat, a detachable seat back, and swing link means for pivotally interconnecting said seat and seat back to said side frame members, said swing link means operable to permit reclining movement of said seat assembly between an upright position and a reclined position in response to pressure applied by a seat occupant to said seat back;
guide means operable for guiding and limiting longitudinal movement of said seat with respect to said support shaft in response to reclining movement of said seat assembly;
linkage means operatively coupling said leg rest assembly to said drive rod for biasingly retaining said leg rest assembly in said retracted position when said drive rod is in said first position and for biasingly driving said leg rest assembly toward said extended position when said drive rod is in said second position; and
means for permitting said seat occupant to selectively move said drive rod between said first and second positions.

5,382,074

DETACHABLE STROLLER TRAY

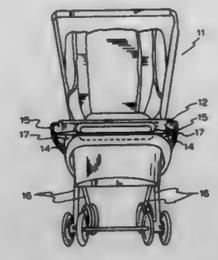
Barbara M. Pietra, 11368 Homedale St., Los Angeles, Calif. 90049

Continuation of Ser. No. 874,544, Apr. 27, 1992, abandoned. This application Jan. 4, 1994, Ser. No. 177,345

Int. Cl.[6] A47B *39/00*

U.S. Cl. 297—153 **2 Claims**

1. A tray made of firm plastic for attachment to a baby stroller having armrests and side frame rods, the tray having a deep receptacle means located centrally thereof and extending substantially along the lateral extent of the tray for fitting between the armrests of the baby stroller, the tray having a width sufficient to permit the tray to rest upon the armrests of the stroller, the tray further comprising opposed side portion means for extending beyond the armrests of the baby stroller, each side portion means having a side edge and slit formed in



each side portion means adjacent to and generally parallel with the side edge; a strap member is located in each slit, each strap member comprised of a single length of material having two ends, said ends each including one complimentary hook-and-loop fastening means thereon for attachment of the ends to one another; said strap members are secured to the tray through the slits, each strap member having a length adequate to allow its attachment around the side frame rods of the baby stroller.

5,382,075

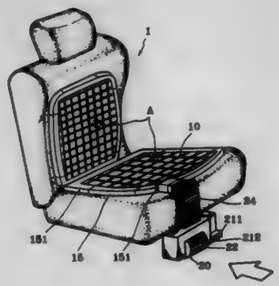
CHAIR SEAT WITH A VENTILATION DEVICE

Chao C. Shih, Taipei, Taiwan, Prov. of China, assignor to Champion Freeze Drying Co., Ltd., Taipei, Taiwan, Prov. of China

Filed Oct. 19, 1993, Ser. No. 138,920

Int. Cl.[6] A47C *7/72*

U.S. Cl. 297—180.14 **4 Claims**



1. A chair seat with a ventilation device comprising a chair seat and an air-blowing unit; said chair seat being a cubic and gridiron-shaped structure, and comprising a top layer, a bottom layer, a plurality of mid-supporting posts, a plurality of air guide plates, and a slip-proof cover; said mid-supporting posts being fixedly connected with said top layer and said bottom layer as supporting means; each said mid-supporting post including a hollow upper post, a solid lower post and a spring; said spring being mottoted in said hollow upper post with a salient part of said lower post to form a stretchable structure; said air guide plates being in curved shape, and each having a plurality of air vents; said air guide plates being mounted in said chair seat to enable air to circulate smoothly; said slip-proof cover being fixedly connected with said top layer and said bottom layer, and having several vent ports between said top and bottom layers; said air-blowing refit including a ventilation hose, a motor and a fan; said ventilation hose being a stretchable hose, of which one end being connected with a vent port on said slip-proof cover, and the other end thereof being connected with an air outlet of said fan.

5,382,076

SEAT FOR A MOTOR VEHICLE

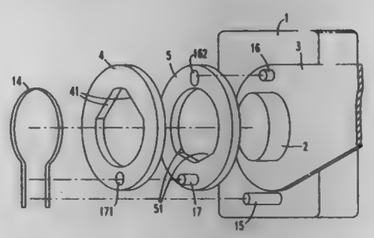
Georg Scheck, Weitramsdorf; Reinhard Meschkat, Ahorn, and Hans Rampel, Ahorn-Schorkendorf, all of Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG, Coburg, Germany

Filed Mar. 26, 1993, Ser. No. 41,214

Claims priority, application Germany, Mar. 26, 1992, 4209770

Int. Cl.[6] B60N *2/02*

U.S. Cl. 297—354.12 **20 Claims**



1. Seat for a motor vehicle, wherein said seat comprises:
back rest means;
seat cushion means;
means for hingedly connecting said back rest means with said cushion means;
said connecting means comprising:
a shaft being connected to at least one of said back rest means and said cushion means;
said shaft having a cylindrical contour;
a double-acting drive for producing a rotary movement which takes place starting from a neutral position of a drive lever into one or other direction of rotation wherein the shaft is turned by the drive only as long as the drive lever is moving away from its neutral position whereas when the drive lever is swivelled towards its neutral position the shaft is not entrained, characterised in that two force locking elements which exert substantially oppositely directed forces on the shaft are provided to connect the drive lever and shaft wherein the force locking elements have force engagement areas which can be brought into engagement with the cylindrical contour of the shaft, and which have at least one articulated joint for interconnection, and that
a) a rigid connection is provided directly between one of said force-locking elements and the drive lever or
b) an articulated connection
b1) is provided directly between one of said force-locking elements and the drive lever or
b2) directly between two force-locking elements and the drive lever or
b3) indirectly between two force-locking elements or the drive lever,
wherein when using several articulated connections at least one articulated joint is designed as a rotary slide joint.

5,382,077

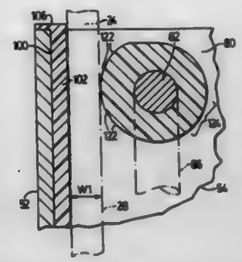
HEIGHT ADJUSTMENT MECHANISM FOR A CHAIR SEAT BACK

William S. Stumpf, Kitchener; Art A. Patton, and Gerard G. Helmond, both of Waterloo, all of Canada, assignors to Doerner Products Ltd., Canada

Filed Jul. 29, 1992, Ser. No. 921,895

Int. Cl.[6] B60N *2/02*

U.S. Cl. 297—353 **2 Claims**



1. A chair having a height adjustable seat back, comprising;
a) a chair base and a chair seat attached to said chair base;
b) a seat back having a seat back support arm attached at one end to said seat back; and
c) a height adjustment mechanism for said chair seat back, the height adjustment mechanism including a mounting bracket having a back wall and spaced side walls attached to said back wall, the bracket being attached to said chair, and including an elongate, generally cylindrical cam having a rotational axis, the cam being mounted between said side walls spaced from said back wall for rotation about said rotational axis, the cam being provided with a handle, the other end of said seat back support arm being receivable in said space between said cam and said wall, said cam having an outer surface comprising a plurality of planar faces extending parallel to said rotational axis, said plurality of planar faces disposed about at least a portion of the circumference of said cam, the distance between the planar faces and said rotational axis increasing from one planar face to the next in one direction along the circumference of the cam such that rotation of the cam in one sense decreases the spacing between said cam and the back wall to clamp the support arm therein such that loading of said seat back in the direction of said base urges said cam in said one sense.

5,382,078

VEHICULAR HEAD ARREST ASSEMBLY

Michael A. Lanteri, 39 Wayhill Rd. W., Waterford, Conn. 06385

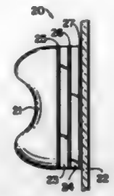
Continuation-in-part of Ser. No. 839,619, Feb. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 419,122, Oct. 10, 1989, abandoned, which is a division of Ser. No. 120,715, Nov. 6, 1987, Pat. No. 4,880,275, which is a continuation-in-part of Ser. No. 928,823, Nov. 10, 1986, abandoned. This application Jan. 5, 1994, Ser. No. 177,559

Int. Cl.[6] A47C *7/38*

U.S. Cl. 297—395 **3 Claims**

1. An improved energy absorbing head restraining assembly for truck cabs adapted to bridge the variable distances between said truck cab's rear inner wall and occupant seating comprising an energy absorbing skin covered core and multiple filler panels, said skin covered core having a flat back and contoured front and sides, said multiple filler panels conforming to the dimensions of said core flat back; said filler panels having front, side and rear portions, said front and rear portions of sale multiple filler panels having permanent adhesive applied thereon, said filler panel's side portion having a skin thereon, a first of said multiple panel's rear portion adhereing to said truck's rear inner wall, a second of said multiple filler panel's

rear portion adhering to said first adhered filler panel front portion said skin covered core flat back adhereing to said



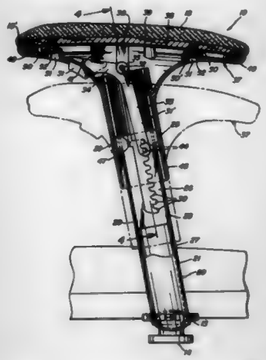
second filler panel's front portion thereby forming said improved energy absorbing head restraining assembly permanently adhered to said truck cab's inner wall.

5,382,079

ADJUSTABLE ARM ATTACHABLE TO A CHAIR BODY

Robert L. Wilson, Memphis, Tenn.; Ernest Pittman, Courtland, and Lester E. Holmes, Southhaven, both of Miss., assignors to Chromcraft Revington, Inc., Senatobia, Miss.

Filed Oct. 25, 1993, Ser. No. 142,704
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.36 **6 Claims**



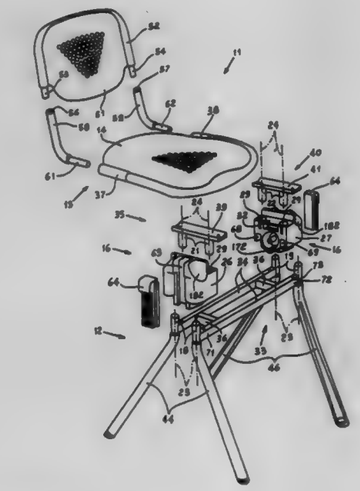
1. An adjustable arm attachable to a chair body and capable of being moved horizontally toward and away from the chair body and vertically with respect to the chair body, comprising:
an arm frame assembly having a bracket at its lower end and a tubular portion extending upwardly from the bracket;
an adjustment bracket mounted in the upper end of the tubular portion of the frame assembly, said adjustment bracket having a series of vertically arranged notches within the tubular portion;
an arm body having an upper housing, and a sleeve portion slidably mounted on the tubular portion of the frame assembly;
an attachment plate fixed to the arm body upper housing having a pivot support within the upper housing;
an adjustment lever pivotally mounted on the pivot support having a control arm extending into the tubular portion of the frame assembly for engaging the notches on the adjustment bracket, permitting vertical adjustment of the arm body on the tubular portion; and
an actuating button integral with the adjustment lever and extending out of the upper housing for pivoting the control arm into and out of engagement with the notches on the adjustment bracket, said adjustment lever is engaged with a spring for biasing the lever.

5,382,080

CHAIR

Gino Gamberini, Via Santi No. 8, Toscanella (Bologna), and Carlo Casuccio, Ivrea, both of Italy, assignors to Gino Gamberini, Toscanella, Italy

Filed Jul. 6, 1992, Ser. No. 909,233
Claims priority, application Italy, Jul. 4, 1991, TO91 A 000515
Int. Cl.[6] A47C *7/00*
U.S. Cl. 297—440.1 **19 Claims**



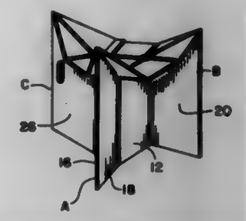
1. Chair comprising:
a base structure;
a seating structure with a seat having a predetermined depth, the seating structure includes a tip-up seat and a backrest with two side arms,
the base structure and the seating structure each include two coupling parts which extend along corresponding extension axes, said coupling parts of said base structure being separate and independent of said coupling parts of said seating structure, each said coupling part of said seating structure including an arm coupling part and a seat coupling part, the arm coupling part being permanently fixed to the seating structure,
means for connecting the base structure and the seating structure, the means for connecting including two connecting nuclei arranged at sides of the base and seating structures, having a limited depth with respect to the depth of the seat, and each connecting nucleus includes a base coupling counter means for coupling with one said coupling part of the base structure and a seat coupling counter means for coupling with one said coupling part of the seating structure, respectively, along respective base and seating coupling axes, each said nucleus including a seat coupling counter means,
the seat coupling part of each said coupling part of said seating structure being rotatably coupled to the seat coupling counter means along an axis which is horizontal and perpendicular to a vertical plane of symmetry, so as to allow said seat to be freely tipped and which allows the seating structure to rock freely with respect to said nuclei, and
the coupling axes of the seating structure are aligned and are horizontal and perpendicular to a vertical plane of symmetry of the chair.

5,382,081

FOLDABLE, PORTABLE SEAT STRUCTURE

Glen F. Henry, 2628 Willow La., Cedar Falls, Iowa 50613

Filed Aug. 2, 1993, Ser. No. 100,251
Int. Cl.[6] A47C *4/00*
U.S. Cl. 297—440.12 **2 Claims**



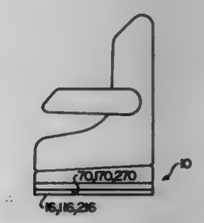
1. A portable seat that can be repeatedly folded into a substantially flat structure for carrying and into a stable seat structure when used as a seat, said portable seat comprising a rectangular-shaped blank of heavy cardboard material and having an upper edge, a lower edge and two end edges, a plurality of vertical fold lines formed at spaced intervals between said end edges and extending upwardly from the bottom edge toward the top edge to form panels between said vertical fold lines, means joining the end edges when the blank is folded along three of the vertical fold lines that are spaced apart from each other to form a unified substantially flat structure when not in use as a seat, horizontal fold lines along some of said panels between the said three of the vertical fold lines so as to form inner support sections, the other of the panels extending outwardly from the inner support sections to the said three vertical fold lines to form three triangular corners of the seat, angled fold lines extending from the horizontal fold lines above the inner support sections to the upper edge of the blank and terminating at triangular corners, the areas above the horizontal fold lines and the angled fold lines forming upper sections in each of all the panels which horizontal and angled fold lines provide for the upper sections to be folded outwardly by the user to form the seat structure with the inner support sections forming the base for the seat structure, said upper sections being foldable inwardly by the user to return the structure to its substantially flat condition for ease of portability, and finger openings formed at the juncture of the horizontal fold lines with the angled fold lines and those of the vertical fold lines that define the inner support sections, said finger openings providing for the easy folding of the upper sections outwardly to form the seat.

5,382,082

SEAT PEDESTAL

Robert P. Fatchett, Warsaw, Ind., assignor to Haimbaugh Enterprises, Inc., Warsaw, Ind.

Filed Sep. 18, 1992, Ser. No. 948,149
Int. Cl.[6] A47C *4/02*
U.S. Cl. 297—440.22 **15 Claims**



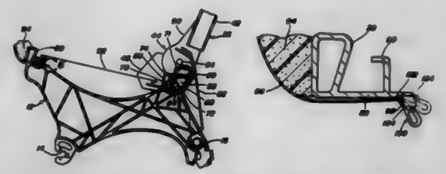
1. A universal pedestal for a vehicle seat comprising a base plate and a seat support, said seat support being positioned over and secured to said base plate, said seat support being adapted to be secured to a vehicle seat, said base plate having an upwardly facing surface with front and rear portions, said base plate having a pair of elongated side flats adapted to be secured to the floor of a vehicle, said upwardly facing surface being higher than said flats, said seat support having a fastener and a latch removably securing said base plate and seat support together whereby said seat support and base plate can be separated and secured together as desired, said seat support having a top and bottom and opposite sides, said top and bottom having front and rear portions, said fastener comprises a single hook portion at said rear portion of said bottom, said book portion being engagable with said base plate by sliding said seat support over said base plate toward an aligned position in which said seat support is superimposed on said base plate, said latch being enggable between said seat support and said base plate when said base plate is in said aligned position.

5,382,083

LIGHT WEIGHT VEHICLE SEAT FRAME

Anthony J. Fecteau, Madison Hts.; Christopher Boehme, Temperance; Robert Geenens, Monroe, and Lynn Papalambros, Ann Arbor, all of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed May 28, 1993, Ser. No. 69,118
Int. Cl.[6] B60N *2/42*; A47C *31/02*
U.S. Cl. 297—452.2 **15 Claims**



1. A seat assembly for a motor vehicle comprising:
a pair of laterally spaced risers adapted to be attached to a vehicle floor to install said seat assembly in the vehicle;
a seat cushion including a seat cushion frame attached to said risers, said seat cushion frame having spaced front and rear cross members extending laterally across said seat assembly and at least one fore and aft extending support member joined to and extending between said front and rear cross members, said rear cross member comprising an elongated hollow body having two cavities extending the length thereof, said two cavities sharing a common wall and having exterior walls defining said hollow body;
seat belts attached to said rear cross member;
a plurality of tapping blocks disposed within said cavities, said tapping blocks each having a base portion engaging an interior surface of an exterior wall of one of said cavities and said tapping blocks each including an aperture therein for receiving a threaded fastener means extending through said exterior wall and into said tapping block for attaching said risers to said rear cross member and for attaching said seat belts to said rear cross member; and
a seat back mounted to said seat cushion frame at the rear thereof and extending upwardly therefrom.

5,382,084

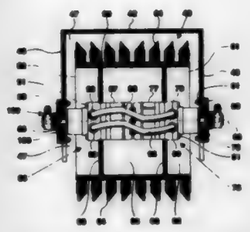
MILLING DRUM WITH INTERNAL DRIVE MOTOR

David R. Diver; Mark R. Kinder, and Charles C. Zanetis, all of Brownsburg, Ind., assignors to Alitec Corporation, Brownsburg, Ind.

Filed Jul. 28, 1993, Ser. No. 98,509
Int. Cl.[6] E01C *23/12*
U.S. Cl. 299—39 **47 Claims**

1. A rotary apparatus comprising:

means for supporting an axially rotatable groundworking implement,
an axially rotatable groundworking implement having an axis of rotation and opposing first and second ends, the groundworking implement being rotatable with respect to the axially rotatable groundworking implement supporting means,
at least one hydraulic motor comprising a casing, a shaft, and hydraulic fluid input and output ports, the motor casing being substantially disposed between the first and second ends,
primary hydraulic fluid input means,
primary hydraulic fluid output means,



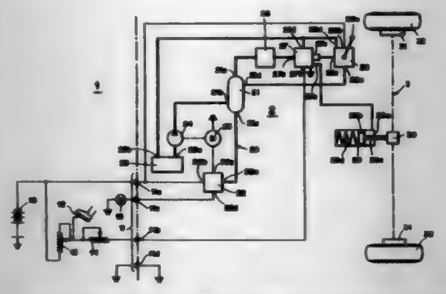
the primary hydraulic fluid input means being in communication with the input port of the at least one hydraulic motor,
the primary hydraulic fluid output means being in communication with the output port of the at least one hydraulic motor, such that hydraulic fluid may flow from the input means to the output means through the at least one hydraulic motor,
the primary hydraulic fluid input means introducing fluid which passes through the first end of the groundworking implement, and
the primary hydraulic fluid output means removing fluid which passes through the second end of the groundworking implement.

5,382,085

ELECTROHYDRAULIC OR ELECTROPNEUMATIC BRAKING CONTROL DEVICE FOR AXLES OF TRAILERS WITH MECHANICAL BRAKES, AND SAFETY VALVE

Otto Zhinden, La Chauderette, 1728 Rossens, Switzerland

PCT No. PCT/CH91/00272, § 371 Date Aug. 13, 1992, § 102(e) Date Aug. 13, 1992, PCT Pub. No. WO92/11151, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 17, 1991, Ser. No. 920,278
Claims priority, application Switzerland, Dec. 17, 1990, 3995/90
Int. Cl.[6] B60T *13/14, 13/68*
U.S. Cl. 303—7 **16 Claims**



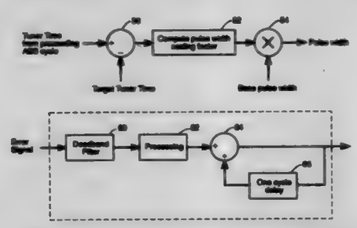
1. A device for braking a trailer attached to a tractor vehicle, said tractor vehicle comprising means supplying an electric braking-control signal, said trailer comprising electro-fluid means for actuating mechanical brakes,
wherein said electro-fluid means comprises:
an electric motor;
means driven by said electric motor for putting a pressure accumulator under pressure, said pressure accumulator feeding a fluid control circuit including:
a pressure limiting valve
a control valve, and
a safety valve;
said valves controlling a braking jack actuating brakes of said trailer, said electric braking-control signal acting upon the control valve such that said electro-fluid means is controlled only by said electric braking-control signal.

5,382,086

VEHICULAR ANTILOCK BRAKE SYSTEM INCORPORATING IMPROVED ADAPTIVE CONTROL FEATURE

Brian Tuck, Ann Arbor, and Peter Schnerer, Dearborn Heights, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed May 3, 1994, Ser. No. 237,291
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—100 **30 Claims**



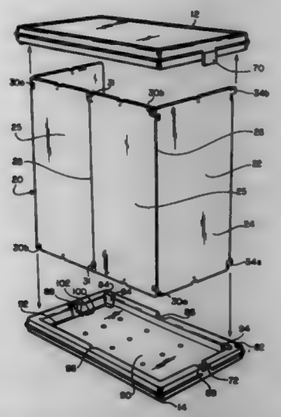
1. An antilock brake system for a vehicle having at least one wheel, said system comprising:
brake means for selectively, controllably applying and relieving braking force to and from said wheel;
first determination means for determining when said wheel exhibits a tendency to lock during application of braking force thereto by said brake means;
second determination means for determining when said wheel recovers from its tendency to lock after relief of braking force therefrom by said brake means;
clock means responsive to said second and first determination means for calculating a tuner time, which represents the time elapsed between
(a) when said wheel recovers from its tendency to lock, as determined by said second determination means, and
(b) when said wheel next exhibits a tendency to lock, as determined by said first determination means; and
control means responsive to said clock means and also to said first determination means in an antilock brake control cycle, extending between successive occurrences of a tendency said wheel to lock, said control means controlling said brake means when said wheel exhibits a tendency to lock
(a) initially, in a decreasing force phase, to relieve braking force, and
(b) thereafter, in an increasing force phase, to increase braking force as a function of the tuner time measured by said clock means in a preceding antilock brake control cycle.

5,382,087

PORTABLE COUNTER-BAR

Thomas S. Pouch, 2747 Scarlet Oak Dr., Toledo, Ohio 43615

Filed Sep. 24, 1992, Ser. No. 950,200
Int. Cl.[6] A47B *43/00, 47/04*
U.S. Cl. 312—140.2 **4 Claims**



1. A foldable stand comprising: four panels, a top member, and a bottom member, each panel having a first edge, a second edge, a top edge, a bottom edge, and front and back planar surfaces with said first edge being beveled at an angle relative to said planar surfaces, and said second edge being perpendicular to said planar surfaces, a notch formed in each of said first and second edges at the top and bottom thereof, and a nodule formed on each of said first and second edges at the top and bottom thereof beneath each notch, each bottom notch being defined by a top surface section, a bottom surface section, and an inner surface section, each top notch being defined by a bottom surface section and an inner surface section and being open at its top, each of said inner surface sections of said notches on said first edge being beveled at an angle relative to said planar surfaces and each of said inner surface sections of said notches in said second edge being perpendicular to said planar surfaces, each nodule extending normal to said inner surface section located thereabove, said nodules on said first edge of each panel being received within said notches in said first edge of an adjacent panel, and aid nodules on said second edge of two of said panels being received within said notches in said second edge of said two panels, thereby forming a panel assembly said top and bottom edges of said panels being received in said top and bottom members, respectively, said top member and said bottom member being interchangeable in that each may be used as the other, and said top member being capable of connection with said bottom member, said panel assembly capable of being folded and stored in said connected top and bottom members.

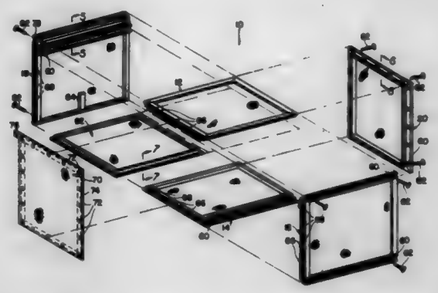
5,382,088

SITE ERECTABLE CABINET

Nelson Young, 112 Cuba Hill Rd., Greenlawn, N.Y. 11740

Filed Feb. 4, 1993, Ser. No. 13,586
Int. Cl.[6] A47B *47/00*
U.S. Cl. 312—263 **10 Claims**

1. A cabinet comprising:
a plurality of wall panels, each wall panel including a plurality of panel members interconnected to form a frame, each wall panel further including a fabric attached to said frame; and
securing means for securing said plurality of wall panels together to form an enclosure;
wherein each of said panel members consists of a tubular member, said tubular member having a face with a section thicker than the remainder of said tubular member; and



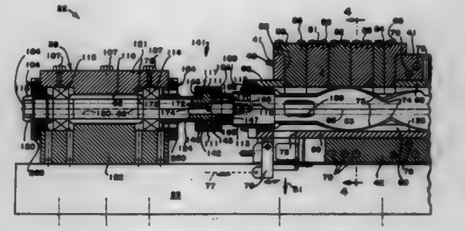
wherein said securing means includes screws passing through said section.

5,382,089

CONVENIENT ACCESS FOR CLEAN-OUT AND MAINTENANCE OF MIXING CHAMBER AND BOTH ROTORS IN TWO-ROTOR CONTINUOUS MIXERS FOR PLASTIC MATERIALS

Douglas E. Mosher, Oxford, Conn., assignor to Farrel Corporation, Ansonia, Conn.

Filed Jun. 7, 1991, Ser. No. 711,805
Int. Cl.[6] B29B *1/10*
U.S. Cl. 366—83 **11 Claims**



1. For use in a two-rotor continuous mixer for plastic materials having openable chamber means defining an openable mixing chamber, first and second rotor means comprising:
three-piece first rotor means including as first, second and third separable pieces, respectively: a first rotor body, a first drive journal and a first driven journal
said first rotor body, first drive journal and first driven journal each having a rotational axis;
said first rotor means being disconnectibly assembled with said first rotor body being positioned between and being disconnectibly connected to said first drive and first driven journals with the axis of said first rotor body being aligned with the axes of said first drive and first driven journals;
three-piece second rotor means including as fourth, fifth and sixth separable pieces, respectively: a second rotor body, a second drive journal and a second driven journal; and
said second rotor means being disconnectibly assembled with said second rotor body being positioned between and being disconnectibly connected to said second drive and second driven journals with the axis of said second rotor body being aligned with the axes of said second drive and second driven journals;
for enabling said first rotor means to be disassembled by disconnecting said first rotor body from said first drive and first driven journals for removing said first rotor body

from an opened mixing chamber and for enabling said second rotor means to be disassembled by disconnecting said second rotor body from said second drive and second driven journals for removing said second rotor body from the opened mixing chamber;

for thereby providing unimpeded access to the opened mixing chamber and to the first and second rotor bodies removed therefrom.

5,382,090

MACHINE FOR MAKING AND DISPENSING ICE CREAM SHAKES

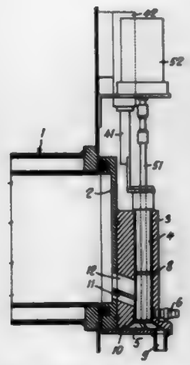
Gino Cocchi, Bologna, Italy, assignor to Carpigiani S.r.l., Bologna, Italy

Filed Nov. 10, 1993, Ser. No. 149,780

Claims priority, application Italy, Nov. 27, 1992, GE92A000125

Int. Cl.[6] B01F *15/02, 15/06*

U.S. Cl. 366—177 **4 Claims**



1. A machine for making and dispensing ice cream for shakes of various flavors comprising:

an ice cream freezing barrel;

a door closing one end of said barrel;

a block joined to said door and comprising a vertical tube and a sealing element carried by said block and around a face of said tube such that a vertical area is formed along said tube below said sealing element;

an ice cream inlet pipe connecting said freezing barrel to said tube above said sealing element;

a piston slidable in said tube to sealingly engage said sealing element;

a moving means for driving said piston along said tube between a lower position engaging said sealing element and an upper position above said sealing element such that ice cream flows through said vertical area when said piston is in the upper position and does not flow when said piston is in the lower position;

at least two injectors opening into said area of said tube;

a source of flavoring syrups connected to said injectors;

a mixing chamber in an end of said tube beneath said syrup injectors and said area for mixing the ice cream with the syrups; and

a mixing rotor in said chamber, a drive shaft which is coaxial and concentric with said piston connected to said mixing rotor, and a drive means connected to said drive shaft for rotating said drive shaft and said mixing rotor.

5,382,091

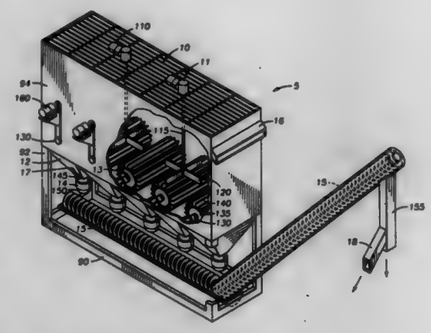
BARITE SCRUBBER MUD TANK

John W. Roff, Jr., P.O. Box 881-7, Conroe, Tex. 77305

Filed Feb. 17, 1994, Ser. No. 198,030

Int. Cl.[6] B01F *7/00*

U.S. Cl. 366—186 **16 Claims**



1. A scrubber, comprising:

a tank, said tank having an inlet and an outlet and a bottom and an interior;

said bottom including a series of hoppers formed along the length of said bottom;

blade agitators mounted on said tank extending into the interior of said tank above said hoppers;

paddle wheel agitators mounted on said tank and extending into said tank below said blade agitators and at the entrance to said hoppers;

each of said hoppers includes a dump valve;

a conveyor; and

each of said dump valves having an outlet opening onto said conveyor.

5,382,092

MIXING APPARATUS AND BOTTOM RIBBON BLADE USED THEREIN

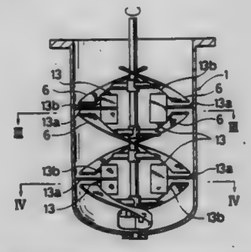
Yukimichi Okamoto; Masahiko Kikuchi; Kazutaka Takata, and Hisayoshi Ito, all of Hyogo, Japan, assignors to Shinko Pantec Co., Ltd., Hyogo, Japan

Filed Nov. 12, 1993, Ser. No. 150,988

Claims priority, application Japan, Nov. 18, 1992, 4-308991

Int. Cl.[6] B01F *7/08*

U.S. Cl. 366—320 **27 Claims**



1. A mixing apparatus for being driven by a driving device, comprising:

a vertically positioned mixing vessel including a cylindrical wall and a bottom wall disposed in a lower portion of said cylindrical wall, wherein said bottom wall is of one of a semi-ellipsoid, a dished shape, and a circular cone shape with an obtuse apex angle, wherein said bottom wall has a convex surface which is oriented downwardly,

an impeller shaft vertically and coaxially aligned within said mixing vessel and connected to said driving device;

at least one helical ribbon blade disposed within said mixing vessel in such a manner as to be rotated by said driving device through said impeller shaft; and

at least one bottom ribbon blade connected to a lower end of said helical ribbon blade and disposed in proximity with said bottom wall from a center thereof to a peripheral portion thereof, wherein a centrally located portion of said bottom ribbon blade has a surface which is substantially perpendicular to said bottom wall, and a lower edge of said bottom ribbon blade is formed in such a manner as to correspond to a logarithmic spiral curve at least for a centrally located portion thereof, wherein said logarithmic spiral curve is expressed by an exponential function in polar coordinates: $r=r_0 \exp(-c\Theta)$ wherein said c is a general constant, and said r_0 expresses a length of r in $\Theta=0$ rad.

5,382,093

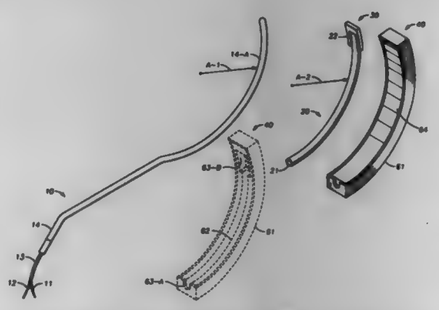
REMOVABLE TEMPERATURE MEASURING DEVICE

Dale E. Dutcher, Pasadena, Tex., assignor to Gay Engineering & Sales Co., Inc., Pasadena, Tex.

Continuation of Ser. No. 993,611, Feb. 22, 1993, abandoned. This application Mar. 11, 1994, Ser. No. 212,491

Int. Cl.[6] G01K *1/08*

U.S. Cl. 374—208 **11 Claims**



1. In a temperature monitoring assembly adapted to be positioned adjacent a structure in order to make temperature measurements at the surface of said structure, the improvement comprising:

a sheathed thermocouple comprising a pair of lead wires forming a junction at one end, said lead wires being insulatingly positioned within cable means, said cable means being positioned within a tubular jacket;

a curved, hollow, tubular guide for said sheathed thermocouple, said guide having a passageway substantially therethrough with an open end and, opposite thereto, a closed end, said guide carrying means for permitting said guide to be secured to the outer periphery of said structure; and

said sheathed thermocouple being so configured as to be removably insertable within said guide passageway, when said guide is secured to said structure, to a position wherein said junction is adjacent said guide passageway's closed end, whereby said thermocouple may be removed from said guide without removing said guide from said structure.

5,382,094

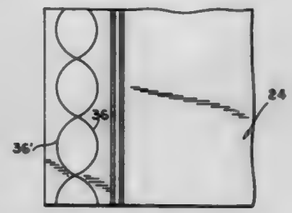
RECLOSABLE PLASTIC BAG WITH OSCILLATING GRIP STRIP

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Division of Ser. No. 880,253, May 8, 1992, Pat. No. 5,259,904. This application Aug. 6, 1993, Ser. No. 103,280

Int. Cl.[6] B65D *33/16*

U.S. Cl. 383—65 **9 Claims**



1. A reclosable plastic bag comprising:

first and second sidewalls each extending to a top edge;

first and second mating profiles each disposed on an inner surface of one of said sidewalls to form a reclosable closure;

a lip defined between each of said profiles and its associated sidewall top edge; and

a first grip strip extruded onto an outside surface of one of said lips and displaced from said profile by movement of an outlet nozzle of an extruder for said grip strip relative to a movement of said profile, said grip strip extending in the same direction as said profile and oscillating toward and away from said top edge.

5,382,095

STATIC PRESSURE BEARING DEVICE

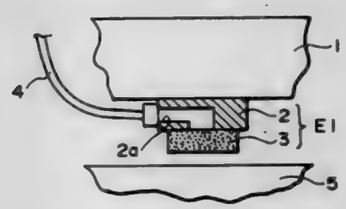
Kotaro Akutsu, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1994, Ser. No. 195,199

Claims priority, application Japan, Feb. 22, 1993, 5-056448

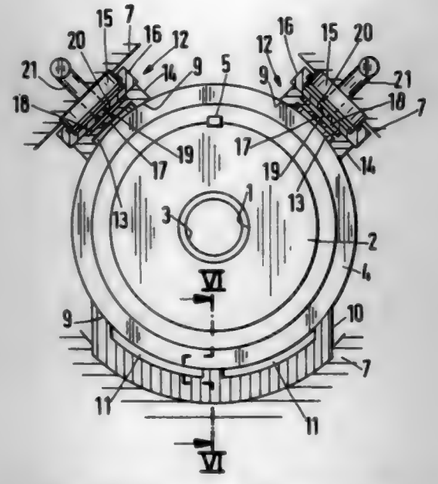
Int. Cl.[6] F16C *32/06*

U.S. Cl. 384—100 **5 Claims**



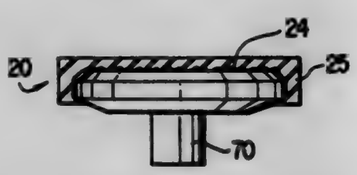
1. A static pressure bearing device comprising a porous restrictor type spouting device for spouting pressurized fluid into a gap between a pair of objects and noncontactly supporting the two objects by the static pressure thereof, static pressure in the gap having a periodic fluctuation component having a phase delay of 90° relative to the periodic fluctuation of the dimension of the gap when a periodic variation in the dimension of the gap occurs, the natural frequency of a vibration system of each of the objects being regulated such that the periodic fluctuation component is a positive value of a frequency equal to the natural frequency.

5,382,096
BEARING FOR A HEATED ROLL
Heinrich Stein, Monchen-Gladbach; Rolf Van Haag, Kerken, and Dieter Junk, Kreuztal, all of Germany, assignors to Sulzer Papertec Krefeld GmbH, Krefeld, Germany
Filed Jun. 9, 1994, Ser. No. 257,345
Claims priority, application Germany, Jun. 14, 1993, 4319579
Int. Cl.[6] F16C *32/06*
U.S. Cl. 384—116 7 Claims



1. A bearing for a heated calendar roll comprising:
a bearing ring having a first surface, said bearing being rotatable about an axis:
a first radially fixed hydrostatic bearing arcuate segment having a first surface which mates with said first surface of said bearing ring, said hydrostatic bearing having at least one bearing pocket, said bearing pocket having means for permitting hydraulic fluid to flow into said at least one bearing pocket, said hydrostatic bearing being disposed substantially at a circumferential position with respect to said bearing which corresponds to a bearing load from said calendar roll;
a second hydrostatic bearing arcuate segment having a first surface which mates with said first surface of said bearing ring, said second hydrostatic bearing having a first radially adjustable bearing pocket, said radially adjustable bearing pocket having means for permitting hydraulic fluid to flow into said radially adjustable bearing pocket, said second hydrostatic bearing being disposed substantially diametrically opposite to said first hydrostatic bearing;
a running gap being formed between said first surface of said first hydrostatic bearing and said first surface of said bearing ring, said running gap having a gap height which varies from a middle of said running gap toward an edge of said running gap such that at the beginning of a heating cycle the middle gap height is less than said edge gap height and in a heated state of said calendar roll the middle gap height is greater than said edge gap height.

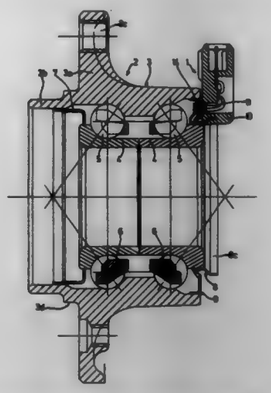
5,382,097
VARIABLE CHARACTERISTIC THRUST BEARNG
Russell D. Ide, 122 Ridge Dr., Exeter, R.I. 02822
Division of Ser. No. 954,144, Sep. 30, 1992, Pat. No. 5,255,984, which is a continuation-in-part of Ser. No. 949,225, Sep. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 541,131, Jun. 4, 1990, Pat. No. 5,125,754, which is a continuation-in-part of Ser. No. 516,781, Apr. 30, 1990, Pat. No. 5,054,938, and Ser. No. 516,977, Apr. 30, 1990, Pat. No. 5,066,144, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, Pat. No. 5,137,373, and Ser. No. 283,529, Oct. 25, 1988, Pat. No. 5,112,143, which is a continuation-in-part of Ser. No. 55,340, May 29, 1987, abandoned, said Ser. No. 516,781, is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, Pat. No. 5,137,373, said Ser. No. 949,225, is a continuation-in-part of Ser. No. 685,148, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, Pat. No. 5,137,373. This application Aug. 13, 1993, Ser. No. 105,948
Int. Cl.[6] F16C *17/06*
U.S. Cl. 384—122 20 Claims



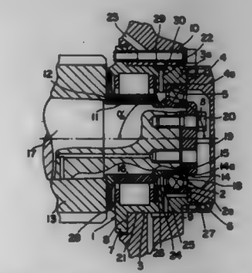
1. A bearing pad for use in a hydrodynamic thrust bearing of the type that includes a carrier member having a plurality of openings formed therein, the openings being spaced about a predetermined axis and a plurality of bearing pads secured in the openings of the carrier, the bearing pad comprising: a pad portion having a substantially planar ped surface and a support portion supporting the pad portion; wherein the pad portion is formed in a sector shape and the support portion extends from the pad portion along an axis that is perpendicular to the pad surface, the support portion having a first end secured to the pad portion and a second end that is the portion of the bearing pad spaced furthest from the pad surface and wherein the support portion is connected to the lower surface of the pad portion at a location that is spaced from every edge of the pad.

5,382,098
SEALING DEVICE INCLUDING AN ENCODING ELEMENT FOR A BEARING, AND BEARING EQUIPPED WITH SUCH A DEVICE
Christian Rigaux, Artannes-sur-Indre; Pascal Lhote, Saint-Cyr-sur-Loire; Claude Caillault, Saint-Roch, and Christophe Houdayer, Tours, all of France, assignors to SKF France, Clamart, France
Filed Nov. 18, 1993, Ser. No. 154,075
Claims priority, application France, Nov. 24, 1992, 92 14074
Int. Cl.[6] F16C *33/76*; G01P *3/48*
U.S. Cl. 384—448 20 Claims

1. A sealing device for a bearing which bearing includes a rotating race, a non-rotating race coaxial with the rotating race and rolling elements arranged between the rotating and non-rotating races, said sealing device comprising:
a first piece of annular overall shape which is dimensioned for securement to the non-rotating race of the bearing and which supports a permanent magnet;
a second piece of annular overall shape which is dimensioned for securement to the rotating race of the bearing and which includes an annular part forming a pulse generator and a flexible sealing part in frictional contact with the first piece,
the first and second pieces being mounted in a radial space provided between the rotating and non-rotating races to provide a sealing of the bearing with respect to external surroundings, the permanent magnet being arranged facing a sensor which is fixed with respect to the non-rotating race, the pulse generator passing between the permanent magnet and the sensor during a rotation of the bearing to generate variations in magnetic flux detected by the sensor.



5,382,099
BEARING ASSEMBLY COMPRISING A RADIAL AND AXIAL BEARING
Bernhard Bauer, Hassfurt; Rut Heemskerk, Kutzberg; Knut Mirring, Gochsheim; Armin Olschewski, Schweinfurt; Martin Schepp, Schweinfurt; Klaus Kispert, Schweinfurt; Jurgen Scholl, Schweinfurt; Rainer Stanzel, Gerolzhofen, and Robert Stolz, Schweinfurt, all of Germany, assignors to SKF GmbH, Germany
Filed Apr. 2, 1993, Ser. No. 42,258
Claims priority, application Germany, Apr. 4, 1992, 4211399
Int. Cl.[6] F16C *19/54, 33/66*
U.S. Cl. 384—454 8 Claims



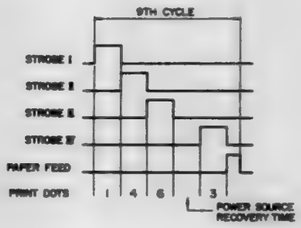
1. A bearing assembly comprising a radial bearing and an axial bearing, the outer ring of the radial bearing being extended in the axial direction at one end to define a pocket for holding the axial bearing, characterized in that the outer ring (3) of the radial bearing (1) consists of a solid annular member, and in that the extension (3^a) of the outer ring (3) is provided with a bore (4^a), extending from the end surface (4), to hold the axial bearing (2), said bore being sealed by a bearing housing cover (6), which rests against the end surface (2^a) of the axial bearing (3) and is connected to the outer ring (3), an oil supply ring (18) mounted on a shaft (17) between the radial bearing (1) and the axial bearing (2), said oil supply ring being provided with a groove (24) having side surfaces (25), (26) which form angles α and β respectively with the axis of the bearing.

5,382,100
TAPE PRINTING DEVICE WITH JUSTIFICATION OF MULTISIZED CHARACTERS
Shoji Sakuragi, Nagoya; Minako Ishida, Ama, and Sachiyo Nagase, Nishikasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Jun. 17, 1993, Ser. No. 79,109
Claims priority, application Japan, Jun. 17, 1992, 4-184345
Int. Cl.[6] B41J *19/14*
U.S. Cl. 400—9 9 Claims

1234567890
A B C DEF G H

1. A wordprocessing device wherein characters having a first size add a second size different from said first size are able to be mixedly arranged on a line, said device comprises:
justifying means for justifying a plurality of characters over a plurality of lines by inserting additional spaces that includes a first space and a second space different from said first space between respective pairs of adjacent characters on respective lines to be justified wherein the second character size is smaller than the first character size and the second space is smaller than the first space and said second means determines said second space is to be inserted between an adjacent pair of characters when both characters of said pair of adjacent characters are the second size;
first means for determining a total space to be distributed over each line of said plurality of lines; and
second means for determining the first and second space for the additional space to be inserted between each pair of characters on each line based upon the total space determined by said first determining means in accordance with the first and second size of the character sizes of said pair of characters.

5,382,101
PRINTER DRIVING APPARATUS FOR LINE PRINTER
Kesayoshi Iguchi, Fujisawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 743,106, Aug. 9, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,643
Claims priority, application Japan, Aug. 20, 1990, 2-219227
Int. Cl.[6] B41J *2/30*
U.S. Cl. 400—124.03 2 Claims



1. A line printer driving apparatus, comprising:
a power source;
a plurality of print heads, each of which is provided for a print dot;
a strobe signal driving circuit;
a plurality of driving means for driving the print heads, said

driving means being connected to said power source and said print heads and being divided into a plurality of groups, each of said plurality of groups corresponding to a character to be printed, the driving means for each said character to be printed being actuated simultaneously by the power source in response to application of a strobe signal by said strobe signal driving circuit to said driving means for each said character to be printed;

measuring means for measuring a number of dots to be printed; and

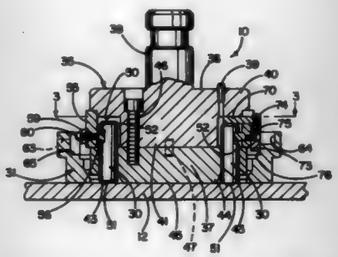
said strobe signal driving circuit being actuated to generate said strobe signal in response to said number of dots measured by said measuring means so that an actuated total number of said print heads at one time does not exceed a predetermined number, thereby to determine a number of said plurality of groups to be actuated simultaneously.

5,382,102

INDEXABLE MARKING TOOL FOR USE WITH A PUNCH PRESS

Theodore F. Brolund, and Alfred J. Julian, both of Rockford, Ill., assignors to W. A. Whitney Co., Rockford, Ill.

Filed Sep. 28, 1993, Ser. No. 127,940
Int. Cl.[6] B41J *1/54*
U.S. Cl. 400—134 **7 Claims**



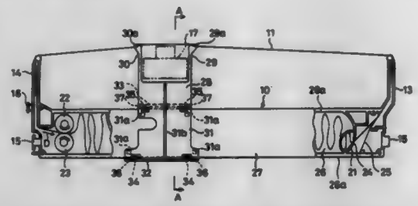
1. A marking tool assembly for stamping indicia on a workpiece, said tool assembly comprising a holder adapted to be indexed about a vertical axis and adapted to be reciprocated upwardly and downwardly along said axis, a stripper ring encircling said holder and fixed against rotation relative to said holder, said holder moving vertically relative to said stripper ring when said holder is reciprocated upwardly and downwardly, said holder having a lower end surface disposed in a generally horizontal plane and engageable with the workpiece when said holder is shifted downwardly through an active stroke, a plurality of marking punches mounted for up and down sliding in said holder and each having an indicia-forming character on its lower end, said punches being spaced angularly around said axis and being located radially outwardly of said lower end surface of said holder, successive punches being indexed to a punching position when said holder is indexed through successive steps about said axis whereby any selected punch may be located in said punching position, the lower ends of all of said punches being positioned in said holder to project downwardly and substantially equi-distantly below the lower end surface of said holder and to engage the workpiece just prior to engagement of the lower end surface of said holder with said workpiece when said holder is shifted downwardly through its active stroke, all punches except the selected punch in said punching position sliding idly upwardly relative to said holder when the lower ends of such punches engage the workpiece and as said holder continues downwardly through its active stroke, and means connected to said stripper ring and preventing the selected punch in said punching position from sliding upwardly relative to the holder whereby the lower end of said selected punch stamps indicia on the workpiece as the holder completes its active stroke and as the lower end surface of the holder engages the workpiece.

5,382,103

MULTIPLE COLOR INK RIBBON CASSETTE

Koichi Kimura, and Yasushi Ishikawa, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1993, Ser. No. 99,033
Int. Cl.[6] B41J *33/32*
U.S. Cl. 400—248 **1 Claim**



1. A multiple color ink ribbon cassette, comprising:

a cassettes case fitted with a multiple color ink ribbon and comprising a case body and a case cover with a pair of opposed side surfaces;

a ribbon guide, mounted on the cassette case in such a way that it is free to slide in the direction of the length of the cassette case, for guiding the multiple color ink ribbon over the end of a printing head;

a pair of longitudinal flange portions provided in the case body extending outwardly, along each side of the upper part of the case body, and which are mounted on the case cover;

a base board portion provided in the ribbon guide, and facing and in slidable contact with the top surface of the case cover; and

a pair of leg portions provided in the ribbon guide, and projecting in the same direction from the base board portion such that an inner surface of each leg portion faces a respective side of the cassette case, and which are provided with guide portions facing the side surfaces of the case cover, and with engaging projections facing the undersides of the flange portions;

wherein the movement of the ribbon guide in the direction of the length of the cassette case is guided by the guide portions sliding along the side surfaces of the case cover, and the ribbon guide is held onto the cassette case by the engagement between the engaging projections and the flange portions and by the contact of the base board portion and the top surface of the case cover, securely and such that it can slide in the longitudinal direction.

5,382,104

PRINTING APPARATUS

Tetsuro Hirono, and Mikio Shinada, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

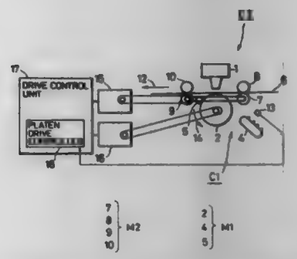
Filed Nov. 17, 1993, Ser. No. 153,877
Claims priority, application Japan, Nov. 11, 1991, 3-294152
Int. Cl.[6] B41J *11/50*
U.S. Cl. 400—608.2 **40 Claims**

19. A method of operating a printing apparatus, comprising:

conveying a first printing medium on a first conveyance system,

printing with a print head on the printing medium over a platen,

rotating the platen during said step of printing or said step of conveying at a rate that causes the surface of the platen below the first printing medium to move at a rate that is different from the rate of conveyance of said first medium on said conveyance system, and



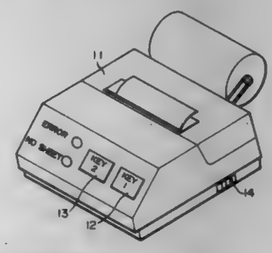
detecting the absence of a second printing medium on a second conveyance system and wherein the step of rotation is performed in response to the step of detecting.

5,382,105

PRINTER WITH AUTOMATIC CUTTER

Kesayoshi Iguchi, Fujisawa, and Masahiro Yamaguchi, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 8, 1992, Ser. No. 941,701
Claims priority, application Japan, Sep. 19, 1991, 3-239194
Int. Cl.[6] B41J *11/66*
U.S. Cl. 400—621 **2 Claims**



1. A printer comprising:

an automatic cutter for cutting paper;

a paper feed key for feeding the paper;

a condition setting key for setting the condition of said printer; and

a processing means for receiving ON and OFF signals from said paper feed and condition setting keys to process said ON and OFF signals and for testing said automatic cutter in accordance with the condition of said paper feed and condition setting keys.

5,382,106

TOOTHBRUSH WITH A TEETH CLEANSING SUBSTANCE DISPENSING SYSTEM

Bernard Voigt, 15 High St., Hicksville, N.Y. 11801

Filed May 13, 1993, Ser. No. 61,036
Int. Cl.[6] A45D *40/00*; **A46B** *11/02*; **B65D** *35/34*
U.S. Cl. 401—155 **2 Claims**

1. An improved toothbrush with a teeth cleansing substance dispensing system which comprises:

an enlarged handle having a hollow compartment therein;

a head and neck attached to a first end of said enlarged handle, said head and said neck having a channel therethrough connected to said hollow compartment;

a flexible elongate enclosure tube for retaining the teeth cleansing substance therein, said tube being fit into said hollow compartment and having a spout extending into said channel in said neck so as to permit flow of the teeth cleansing substance from said tube through said spout into said channel in said neck and head;

a plurality of bristle groups extending outwardly from a surface of said head;

lateral passageways in said head extending from said bristle groups into said channel in said head;

dispensing means, cooperating with the compartment in said enlarged handle, for dispensing some of the teeth cleansing substance through said channel and said lateral passageways into said bristle groups so that said bristle groups can clean teeth, said dispensing means comprising;

a pair of elongated side slots on opposite sides of said handle said slots being parallel and extending along a longitudinal direction of said handle;

a plurality of teeth formed along a lower edge of each said side slot and extending toward an upper edge of each said slot so as to form a pair of racks;

a shaft extending transversely across said hollow compartment in said handle between and through said side slots, said shaft having an elongated aperture for inserting an end of said tube therethrough so as to be able to wrap said tube about said shaft; and

pinwheels affixed to opposite ends of said shaft externally of said enlarged handle wherein each pinwheel includes;

a planar inner surface parallel with a side of said handle in which said side slots are formed:

a circular group of tooth like appendages projecting normally inwardly from said planar inner surface into a respective said side slot to engage said teeth in one of said racks; and

a cylindrical outer surface suitable for manually gripping and turning said pinwheel and said shaft; and

sealing means for sealing said lateral passageways when not in use, said sealing means comprising;

a track built into said head directly below said lateral passageways and extending into said neck;

a slide plate for moving in said track, said slide plate having apertures at positions corresponding to the positions of said lateral passageways in said head, and a tongue extending into said neck from an opposite end thereof;

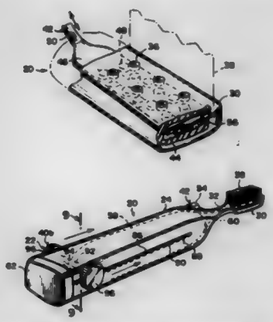
spring means mounted on a forward end of said slide plate for biasing said plate to a closed position where said apertures are not aligned with said lateral passageways;

a slot in a top surface of said neck overlying a distal end of said tongue opposite said forward end of said slide plate; and

a slide button above said slot connected to said distal end of said tongue; wherein

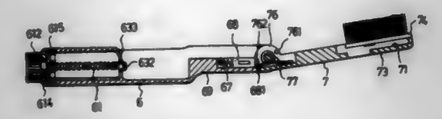
when said pinwheels are manually turned, said tooth like appendages engage said teeth in said side racks to wrap said tube about said shaft and force some of the teeth cleansing substance from said tube, through said spout, and into said channel in said neck; and wherein

when said slide button is manually moved, said slide plate will move in said track, against the bias of said spring



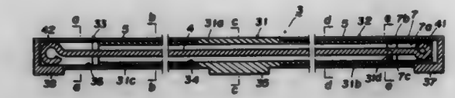
means, to a position aligning said apertures in said slide plate with said lateral passageways in said head so as to allow the teeth cleansing substance pass into said bristle groups, and when said slide button is released, the biased spring means returns said slide plate to said closed position to stop any flow of the teeth cleansing substance and prevent foreign elements from contaminating the teeth cleansing substance remaining in said channel and said tube.

5,382,107
FOLDABLE TOOTHBRUSH
Jan-Jer Nian, No.2, Alley 71, Lane 42, Ting-Chin-Chung St., San-Min Dist., Kaohsiung City, Taiwan, Prov. of China
Filed Jan. 12, 1994, Ser. No. 180,552
Int. Cl.[6] A46B *11/02*
U.S. Cl. 401—191 **4 Claims**



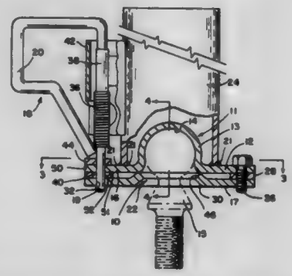
1. A toothbrush comprising:
an elongated handgrip portion and an elongated head portion which is pivoted to said handgrip portion and movable between a folded position and a stretched position;
said elongated head portion having a front end provided with a bristle unit and a rear end provided with a spaced pair of oppositely facing first lugs, said pair of first lugs having a pair of circular pivot holes that are coaxial with one another, a pair of first positioning peripheral notches that are aligned with one another, a pair of second positioning peripheral notches that are aligned with one another and that are angularly spaced from said pair of first positioning peripheral notches;
said elongated handgrip portion having a first end, a second end and a pair of spaced parallel plates which extend longitudinally from said first end, each of said parallel plates having a longitudinal groove which corresponds with said longitudinal groove on the other one of said parallel plates, said parallel plates further having a spaced pair of oppositely facing second lugs which are respectively provided with a circular pivot hole that is coaxial with said pivot hole on the other one of said second lugs, said pivot holes of said second lugs being aligned with said circular pivot holes of said first lugs to permit passage of a pin with a torsional spring sleeved thereon, thereby connecting pivotally said head and handgrip portions; and
a slider for retaining the toothbrush in said respective folded and stretched positions wherein said slider is provided between said parallel plates and engaging slidingly in longitudinal grooves, said slider having a projection extending longitudinally towards said pin, said slider being biased by a spring member provided between said first end of said handgrip portion and said slider to urge said slider to insert said projection into said first positioning peripheral notches of said first lugs when said toothbrush is at said folded position, and into said second positioning peripheral notches of said first lugs when said toothbrush is at said stretched position.

5,382,108
SLOW-ACTING ROTARY SHAFT DEVICE
Juji Ojima, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Aiko, Japan
Continuation of Ser. No. 793,537, Nov. 18, 1991, abandoned. This application Nov. 18, 1993, Ser. No. 154,381
Claims priority, application Japan, Nov. 21, 1990, 2-319204
Int. Cl.[6] F16C *11/00*
U.S. Cl. 403—120 **4 Claims**



1. A slow-acting rotary shaft device, comprising:
a rotary member which rotates relative to a stationary member,
a hollow shaft body latched with said rotary member,
two cap members, each of which is inserted pivotally on one end of said hollow shaft body and latched to said stationary member,
a torsion bar, one end of which is latched with said hollow shaft body and another end of which is latched with one of said cap members, and
viscous grease shielded between said hollow shaft body and said cap members, said hollow shaft body being divided into two portions, one of said two portions being a main portion which is latched with said rotary member, the other of said two portions being latched with the end of said torsion bar, one of said two portions having a projection and the other of said two portions having a concave, said projection and said concave being disposed on opposing end surfaces of said two portions, said projection and said concave together defining an idling area so that said two portions are rotatable relative to each other, and said projection being urged upon one wall of said concave when said device is assembled with said rotary member being closed.

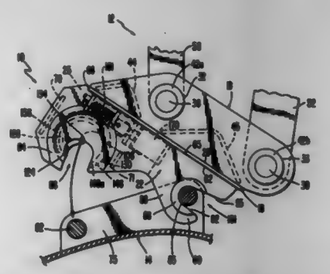
5,382,109
COUPLING DEVICE
Oscar W. Nyman, El Paso, Tex., assignor to The Hammerblow Corporation, Wausau, Wis.
Filed Jul. 29, 1992, Ser. No. 921,931
Int. Cl.[6] F16B *2/02*
U.S. Cl. 403—316 **10 Claims**



1. A coupling device for pivotally securing and releasing structure to each other, and comprising:
a. mating male and female coupling members;
b. the male coupling member having a generally convex surface;
c. the female coupling member comprising a concave cavity

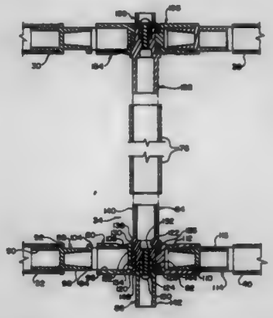
defined by a stationary inner element and a pivotally supported, apertured, plate-like outer element,
i. said inner element being provided with an internal cavernous surface portion generally conforming to the convex surface of the male coupling member, said inner element being further provided with an external, outwardly extending flanged area surrounding the cavernous surface portion, and
ii. said outer element comprising a lock plate of generally planar configuration and defining inner surface and an outer surface, said lock plate including an aperture and being pivotally slidable with respect to the flanged surface said inner element, and wherein said lock plate aperture is normally coaxial with the axis of the cavernous surface portion of said inner element and displacable to a locked position upon pivotal movement of said lock plate, and wherein a defining marginal surface of the lock plate aperture is tapered and is continuous and uninterrupted to provide a constricted area at its inwardly facing surface and being distended at the outwardly facing surface;
A) wherein entrance of the male coupling member into the concave cavity is facilitated by means of guided initial contact with the distended and tapered lock plate aperture, and
B) wherein disengagement of the coupled
members is prevented by engagement of a said inwardly facing surface of the lock plate with said male coupling member.

5,382,110
QUICK COUPLING DEVICE
Richard D. Perotto, Beaverton; Terry L. Briscoe, Portland; Christopher M. Carpenter, Tualatin, and Dean F. Richards, Hillsboro, all of Oreg., assignors to ESCO Corporation, Portland, Oreg.
Filed Dec. 30, 1992, Ser. No. 998,671
Int. Cl.[6] F02F *3/413*
U.S. Cl. 403—322 **24 Claims**



9. A quick coupling device for releasably attaching a tool having a pair of tool mounting pins to a boom of a carrier, said quick coupling device comprising:
an assembly adapted to attach said quick coupling device to a boom of a carrier;
a coupling structure including a notch having a first seating wall for receiving therein and seating a first of the tool mounting pins; and
a coupling member mounted for rotation about an axis between an open position and a locked position, said coupling member including a channel having an open end and a second seating wall, said channel at least adjacent said second seating wall having a non-radial configuration with respect to said axis,
in said open position said coupling member is adapted to receive a second of the tool mounting pins in said open end of said channel,
in said locked position said open end of said channel is displaced from said second tool mounting pin, said second tool mounting pin is engaged against said second seating wall such that the center of the second tool mounting pin is offset from said axis, and said tool mounting pins are firmly engaged and locked by said first and second seating walls, said coupling device having the capacity to effect firm gripping of pairs of tool mounting pins having different spacings therebetween.

5,382,111
HINGED FRAME STRUCTURE
Robert A. Melashenko, and Connie R. Melashenko, both of 1673 Dwight St., Redlands, Calif. 92373
Filed Jun. 22, 1992, Ser. No. 901,811
Int. Cl.[6] E04H *17/00*; F16C *11/00*
U.S. Cl. 403—329 **13 Claims**



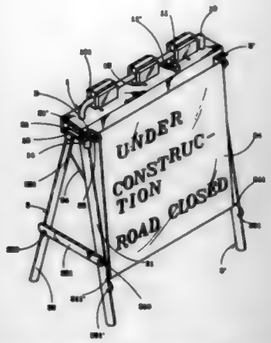
1. Hinging apparatus for coupling opposite first and second generally horizontal beams to a generally vertical corner member comprising:
a clevis having a pair of legs extending therefrom with each of the legs having an aperture therein;
means for releasably and nonrotatably coupling the clevis to the first beam;
a lever having a leg extending therefrom with an aperture therein, the leg being disposed between the pair of legs of the clevis;
means for releasably and nonrotatably coupling the lever to the second beam;
a shaft coupled to the vertical corner member and extending through the apertures in the pair of legs of the clevis and the aperture in the leg of the lever; and
a cap coupled to the shaft on an opposite side of the clevis and the lever from the vertical corner member.

5,382,112
FOLDING ROAD BARRIER
Hsiang-Wen Fu, No. 8, Alley 4, Lane 172, Min-An W. Rd., Hsin-Chuang City, Taipei Hsien, Taiwan, Prov. of China
Filed Feb. 24, 1994, Ser. No. 201,330
Int. Cl.[6] E01F *9/01*
U.S. Cl. 404—6 **5 Claims**

1. A folding road barrier comprising:
a cross member having a front side, a top, a bottom, and two opposite ends;
two roller supports projecting from said front side;
a folding stand pivotally connected to each of the two opposite ends of said cross member, each folding stand comprising a pivotably mounting frame pivoted to one of said two opposite ends of said cross member at the bottom, each mounting frame having an outer side, and each folding stand further comprising a first leg connected to the mounting frame at said outer side by a first pivot pin and a second leg connected to the mounting frame at said outer side by a second pivot pin;
a shade roller supported on and extending between said

roller supports so as to be freely rotatable thereon for showing warning words;

a signal lamp assembly mounted on said horizontal top rod of said cross member; and



a control circuit mounted on said cross member to control the operation of said signal lamp assembly to give a flashing signal.

5,382,113

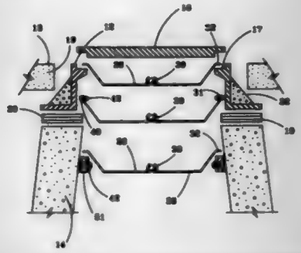
MANHOLE AQUA BLOK INFLOW PROTECTOR

Jack Chilton, 17288 Earth Wind, Dallas, Tex. 75248, and C. Richard Braswell, 13829 Creekside Pl., Dallas, Tex. 75240

Filed Sep. 13, 1993, Ser. No. 119,308

Int. Cl.[6] E02D *29/12*

U.S. Cl. 404—25 **8 Claims**



1. For a manhole of prescribed circular radial dimensions that has a cover over an opening into a circular frame mounted on a chimney and or cone, an improved water block insert for the manhole, comprising:

a flexible bowl, having an inner, upper surface and outer, upper rim on the bowl with dimensions shaped to match the circular radial dimensions of the frame;

a compressible gasket secured on the outer, upper rim of the bowl;

an expandable, steel ring mounted within the inner, upper surface of the bowl, and

latch means on said ring, for expanding and latching said ring against the inner edge of the bowl, thus forcing the rim of the bowl and the gasket against the frame of the manhole to secure said bowl in a position to catch any water that seeps into the manhole above the water block insert.

5,382,114

TUNNEL EXCAVATION APPARATUS

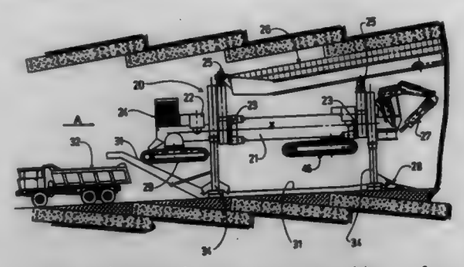
Davide Trevisani, Cesena, Italy, assignor to Trevi S.p.A., Cesena, Italy

Filed Oct. 8, 1992, Ser. No. 958,510

Claims priority, application Italy, Feb. 28, 1992, TO.92-A/00171

Int. Cl.[6] E21D *9/10, 11/10*

U.S. Cl. 405—140 **8 Claims**



1. A tunnel excavation apparatus comprising a frame mounted on crawler tracks and provided with pistons comprising stabilizer feet, a power unit operating at least one working unit, and auxiliary movement and positioning services, the working unit being arranged on an arm mounted on one end of telescopic uprights, which are hinged at their other ends to the frame about an axis substantially parallel to the longitudinal direction of the machine, characterized in that the working unit comprises a rectilinear rigid structure, at the perimeter of which excavation tools are arranged on a chain, to circulate along the side and front of the structure, there being hinged to the side of said working unit, on an axis substantially parallel to the structure, a caisson open on the side opposite the hinged side and provided with means for conveying concrete into an interior of said caisson.

7. A tunnel excavation method using an apparatus as claimed in claim 4, characterized by comprising the steps of:

a) forming a longitudinal excavation at an angle to the horizontal by inserting the working unit and the caisson associated therewith into the earth with the shoes and rollers in their retracted position;

b) moving the working unit along an arched trajectory of the tunnel with consequent excavation into the earth during advancement, with the shoes and rollers in their extended position;

c) continuously injecting concrete into the caisson to the side of the working unit during its movement along the arched trajectory;

d) extracting the working unit from the excavation on termination of the arched trajectory with the rollers and shoes in their retracted position;

e) removing the earth enclosed by the excavation;

f) advancing the working unit at the same inclination as the preceding step b) to commence a new cycle in the same manner as the preceding steps b) through e).

5,382,115

APPARATUS INTENDED TO BE BURIED IN GROUND BENEATH WATER

Brian A. Jones, Newbury, and Derek W. Clarke, Torphins, both of United Kingdom, assignors to British Gas plc, England

Filed Mar. 3, 1993, Ser. No. 26,056

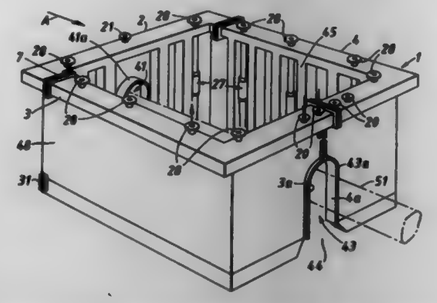
Claims priority, application United Kingdom, Mar. 3, 1992, 9204556

Int. Cl.[6] E02D *29/00*

U.S. Cl. 405—226 **27 Claims**

1. Apparatus intended to be at least partially buried in ground beneath water, comprising a hollow structural framework including a chamber having an inlet via which pressurised fluid can be supplied to said chamber, said chamber

communicating with a plurality of openings in said framework from which jets of the pressurised fluid are intended to issue and communicating with at least one fluid operated pump via



a first pump inlet, the pump being operable by the pressurised fluid to draw or suck water-suspended solids through the pump via a second pump inlet to a discharge outlet from the pump.

5,382,116

GROUND REFORMING METHOD WITH A HARDENING MATERIAL MIXED AND INJECTED AT A SUPER HIGH PRESSURE AND REFORMING DEVICE OF SAME

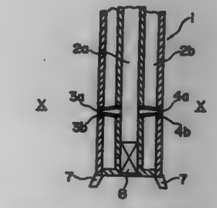
Wataru Nakanishi, Machida, Japan, assignor to N.I.T. Co., Ltd., Tokyo, Japan

Division of Ser. No. 870,232, Apr. 20, 1992, Pat. No. 5,217,327, which is a continuation of Ser. No. 477,125, Feb. 7, 1992, abandoned, which is a continuation of Ser. No. 375,616, Jul. 5, 1989, abandoned. This application May 25, 1993, Ser. No. 66,437

Claims priority, application Japan, Nov. 18, 1988, 63-292078

Int. Cl.[6] E02D *3/12, 5/44*

U.S. Cl. 405—269 **4 Claims**



1. A ground reforming method, comprising the steps of:

a) inserting an injection rod into ground to be reformed, the injection rod including a first conduit and a second conduit surrounding the first conduit and having an outer wall, a first radially outwardly directed nozzle secured to and in communication with the second conduit, and a second radially outwardly extending nozzle secured to and in communication with the first nozzle and aligned with and extending into the first nozzle;

b) causing rotary and longitudinal movement of the injection rod;

c) individually feeding first and second components of an instantaneously hardening material into the first and second conduits;

d) discharging at high pressure the first and second components through the first and second nozzles within the periphery of the outer wall; and

e) intermixing the first and second components issuing from the first and second nozzles while performing said causing step.

5,382,117

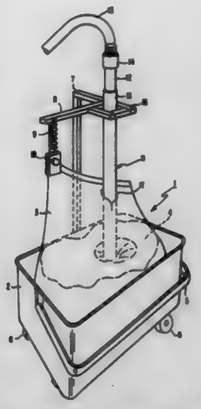
APPARATUS FOR HOLDING A POWDER CONTAINER

Friedel Rings, Monheim, and Peter Holz, Duesseldorf, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Mar. 28, 1994, Ser. No. 182,199

Int. Cl.[6] B65G *53/24*

U.S. Cl. 406—39 **4 Claims**



1. Apparatus for preparing a bag containing powder for removal of the powder by means of a suction line, said apparatus comprising:

a bucket-like container for holding said powder bag, said container including sides and a base;

a gallows-like bracket attached to one side of said container, said bracket including:

a guide loosely surrounding said suction line;

an extending support arm;

a holding element attached to a free end of said support arm;

said support arm and guide being arranged at a height above said container with said bag being held at an upper corner by said holding element for holding said bag in an upright position, whereby said suction line is retained loosely guided by said guide in a position permitting said suction line to enter said bag through an opening therein and dip into the powder in said bag.

5,382,118

MILLING CUTTER INSERT

Amir Satran, Kfar Havradim, and Yiri Man, Haifa, both of Israel, assignors to Iscar Ltd., Migdel Tefen, Israel

Filed Aug. 30, 1993, Ser. No. 114,417

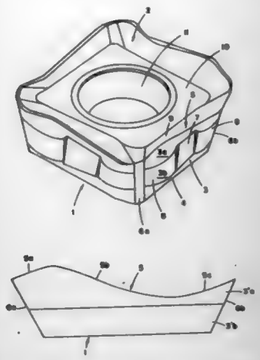
Claims priority, application Israel, Sep. 9, 1992, 103115

Int. Cl.[6] B23C *5/10*

U.S. Cl. 407—42 **8 Claims**

1. An exchangeable milling insert for mounting in a cylindrical milling cutter tool and comprising a substantially square, planar base, a substantially square upper rake surface, side flanks extending outwardly from respective side edges of said base and intersecting said rake surface at respective cutting edges of said insert, each cutting edge comprising first, second and third successive portions wherein said first and third portions extend respectively from adjacent corners of said insert so as to merge with said second portion; said second portion constituting the major portion of the overall length of said cutting edge; said first portion sloping away from said base towards said second portion; said second portion sloping towards said base away from said first portion and towards said third portion and said third portion sloping away from said base away from said second portion and towards an adjacent

corner of said insert; each side flank comprising upper and lower angularly disposed side surfaces of which the upper constitutes a relief flank surface and the lower constitutes a locating portion; at least the relief angle of said relief flank surface in the region of a leading end substantially equals the relief angle in the region of the trailing end, all when measured with respect to the tool; wherein during cutting, the first and



second portions of a cutting edge cut an upright surface of a substantially 90° recess in a workpiece with a third portion of an adjacent cutting edge serving as a wiper for a base surface of the recess, at least the first and second portions of each cutting edge being so located that all points thereon lie on a cylindrical envelope generated by a line parallel to a rotary axis of the cutting tool and rotating with respect to the rotary axis at a radius equal to the cutting radius of the cutting tool.

5,382,119

CHIP FORMING INSERT, ESPECIALLY FOR TURNING AND SLOTTING

Wlajko Mihic, Gävle, Sweden, assignor to Mircona AB, Gävle, Sweden

PCT No. PCT/SE92/00278, § 371 Date Mar. 17, 1994, § 102(e) Date Mar. 17, 1994, PCT Pub. No. WO92/19402, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 28, 1992, Ser. No. 140,035

Claims priority, application Sweden, Feb. 5, 1991, 9101324

Int. Cl.[6] B23B *27/08, 27/22*

U.S. Cl. 407—116 **2 Claims**



1. A cutting insert for mounting in an insert holder of a lathe or similar machining apparatus for performing a cutting operation on a work piece, comprising:

(a) a cutting edge;

(b) a surface adjoining said cutting edge and extending in a plane, said surface having a middle portion and two side portions adjacent said middle portion;

(c) bottom and side recess surfaces defining a recess adjoining said middle portion of said surface adjoining said cutting edge downstream in a direction of movement of a chip cut from the work piece, said side surfaces of said recess being obliquely arranged at an angle in a range of 20° to 40° relative to the plane of said surface adjoining said cutting edge, said bottom and side surfaces of said recess positioned to engage and laterally bend a central portion of the chip as the chip is fed rearwardly from said cutting edge while edge flanks of the chip are carried by said side portions of said surface adjoining said cutting edge; and

(d) an abutment end surface adjoining each of said side portions of said surface adjoining said cutting edge and positioned downstream in a direction of movement of the chip cut from the work piece, said abutment end surfaces being arranged at angle in a range of 45° to 65° relative to the plane of said surface adjoining said cutting edge, whereby said abutment end surfaces engage the edge flanks of the chip for continually bending the edge flanks away from the plane of said surface adjoining said cutting edge and causing an abrupt bending of the chip which results in a breaking of the chip.

5,382,120

DRILL BIT DEPTH MINDER

Richard E. Parsons, 835 Oak La., Escondida, Calif. 92029

Filed Dec. 27, 1993, Ser. No. 173,127

Int. Cl.[6] B23B *49/00*; G01B *5/14*

U.S. Cl. 408—16 **4 Claims**



1. A device to limit a drill bit's entry to a predetermined depth into material which comprises an elongated body with a thumb screw attached to one end of a threaded rod, said body adapted to threadably receive said threaded rod on one end of said body, a stop disk fitted to another end of said threaded rod, an opening on another end of said elongated body, an elongated opening on a side of said body wherein said thumb screw is adapted to turn in order to set said stop disk at a predetermined depth as shown on at least one scale adjacent to said elongated opening on said body, a stop collar adapted to receive a drill bit therein, said stop collar adapted to become adjacent to said opening on said another end of said elongated body so that said drill bit can engage a face of said stop disk to allow a set screw to position said stop collar to a measured depth on said drill bit.

5,382,121

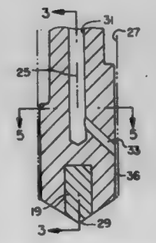
DRILL BIT FOR USE IN CONCRETE AND ASPHALT

David P. Bicknell, P.O. Box 627, Rockland, Me. 04841

Filed Sep. 2, 1993, Ser. No. 115,021

Int. Cl.[6] B23B *51/02*

U.S. Cl. 408—57 **4 Claims**



1. A drill bit adapted to rotate and vibrate axially, for drilling concrete and asphalt:

said drill bit comprising a drill body having a rotational axis and a cylindrical side surface concentric around said axis;

two helical grooves in said drill body forming two helical lands extending around and along the drill body side surface;

said drill body having a terminal end adapted to penetrate the work to be drilled, and a hardened drilling insert extending transversely across said terminal end on a diametrical plane coincident with the drill body rotational axis;

said drilling insert having a diametrical dimension greater than the diameter of the drill body, so that the diameter of the drilled hole is greater than the diameter of the drill body;

an air intake passage means extending longitudinally within the drill body for supplying pressurized air to said terminal end of the drill body;

said air passage means comprising a flow duct communicating with a side surface of the drill body in near proximity to said drilling insert, whereby pressurized air is injected into the drilled hole alongside the drilling insert, said cylindrical surface having a flat face extending from said terminal end at a slight angle to the drill bit rotational axis to form a relief space, said flow duct having an exit end at said flat face, whereby pressurized air is delivered into the relief space; and

said helical grooves being in open communication with said flow duct, whereby the air injected into the drilled hole is enabled to convey debris through the helical grooves and out of the drilled hole.

5,382,122

BALANCING DEVICE FOR ROTARY CUTTING TOOLS

Wlajko Mihic, Gävle, Sweden, assignor to Mircona AB, Gävle, Sweden

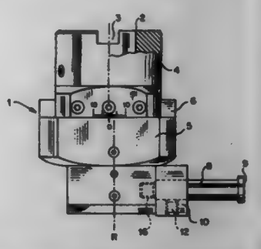
PCT No. PCT/SE92/00379, § 371 Date Nov. 30, 1993, § 102(e) Date Nov. 30, 1993, PCT Pub. No. WO92/21463, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 3, 1992, Ser. No. 157,097

Claims priority, application Sweden, Jun. 4, 1991, 9101692

Int. Cl.[6] B23B *31/02*

U.S. Cl. 409—141 **4 Claims**



1. A balancing device for a rotatable tool holder where a tool is attachable in different radial positions relatively to an axis of rotation of the tool holder thereby causing an unbalance, comprising:

(a) support means positioned in a predominant direction of radial displacement of the tool and adapted to receive at least one radially adjustable weight, said support means includes an elongated shaft threaded into and extending from a radial bore in the tool holder in an outer part thereof radially movable relatively to an inner part, said elongated shaft having an outer head; and

(b) at least one weight radially adjustably secured to said elongated shaft.

5,382,123

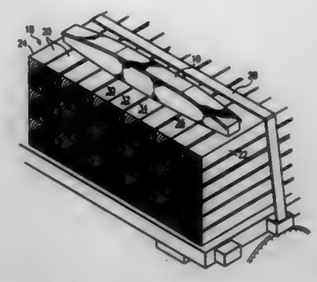
DEVICE FOR SECURING STACKED LUMBER

William L. Dawson, P.O. Box 104, Caddo Mills, Tex. 75135

Filed Nov. 24, 1992, Ser. No. 981,101

Int. Cl.[6] B65D *63/00*

U.S. Cl. 410—100 **5 Claims**



1. A method of securing lumber in a stack, the stack having a first substantially flat surface comprising a plurality of individual elements, comprising the steps of:

placing a flexible member having a convex surface such that it contacts a first number of said elements;

placing a strap over the flexible member relative to the stack;

tensioning said strap, whereby said tensioning reduces the convexity of the convex surface and causes said surface to contact a second number of said elements, said second number of elements being greater than said first number of elements.

5,382,124

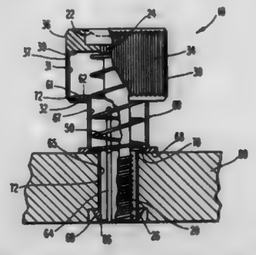
FULLY RETRACTABLE CAPTIVE SCREW

Albert J. Frattarola, Swarthmore, Pa., assignor to Southco, Inc., Concordville, Pa.

Filed Feb. 7, 1994, Ser. No. 192,855

Int. Cl.[6] F16B *21/18, 39/00*

U.S. Cl. 411—352 **9 Claims**



1. A captive screw for attaching an upper panel to a lower surface with a threaded hole comprising:

a. a threaded shaft;

b. at least one means to facilitate rotation of said threaded shaft;

c. a partially hollow knob, rigidly disposed on an end of said threaded shaft, with an end cap;

d. a hollow ferrule, through which said threaded shaft slides, comprising:

a first and a second end, and

a snap-in panel attachment means on said second end to attach said ferrule to a top side of said upper panel;

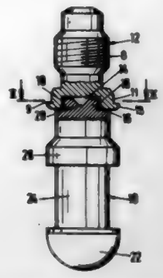
e. a threaded shaft captivation means wherein said first end of said ferrule is slidably and rotatably attached to said knob such that when said threaded shaft is in a fully retracted position, said threaded shaft captivation means prevents said ferrule and said knob from separating; and

f. a biasing means, extending between said ferrule and said knob, that causes said threaded shaft to be in a fully retracted position when no axial load is applied to said knob.

5,382,125
SCREW UNIT

Walter Dürr, Panoramastrasse 5, D7537 Remchingen, and Axel Kirsch, Talstrasse 23, D7024 Filderstradt, both of Germany

PCT No. PCT/DE92/00290, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO92/20297, PCT Pub. Date Nov. 26, 1992
PCT Filed Apr. 7, 1992, Ser. No. 971,862
Claims priority, application Germany, May 13, 1991, 4115961
Int. Cl.[6] F16B *23/00*
U.S. Cl. 411—396 **12 Claims**



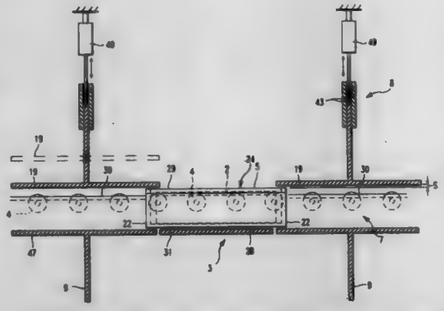
1. In a screw unit with a closing screw with a screw head for the aseptic closing of an internal thread in a member to be implanted in a bone material, the improvement comprising an elongated introduction post with a longitudinal axis having one end forming a firm, detachable connection with the closing screw, said detachable connection providing a positive contact between the post and the closing screw in the rotation direction and a frictional contact therewith in the axial direction, said detachable connection being formed by the screw head having an elongated screw slot, which terminates inward of a peripheral edge of the screw head, and the introduction post being provided with at least one tongue at said one end, said tongue having an elongated cross section with at least one outward bulge having pressing edges and a trapezoidal shape in a section along a longitudinal extension of the tongue, said tongue with the bulge resting under clamping action in the screw slot, when the introduction post and the closing screw are assembled.

5,382,126
MULTICHAMBER COATING APPARATUS

Klaus Hartig, Brighton, Mich., and Joachim Szczyrbowski, Goldbach, Germany, assignors to Leybold AG, Hanau, Germany

Filed Mar. 30, 1993, Ser. No. 39,865
Claims priority, application Germany, Mar. 30, 1992, 4210346; Feb. 6, 1993, 4303462
Int. Cl.[6] C23C *16/54, 17/00*; B65G *49/06*
U.S. Cl. 414—217 **13 Claims**

1. Multichamber coating apparatus for coating a substrate with a plurality of coatings, said apparatus comprising
- a first coating chamber,
- a second coating chamber,
- a wall between said first and second coating chambers, said wall having an opening therethrough, said opening having a cross-section,
- a transport means including a car for carrying said substrate and guide means for guiding said car through said opening in a direction of movement along a path from said first chamber to said second chamber, said car having a cross section transverse to said direction of movement, and

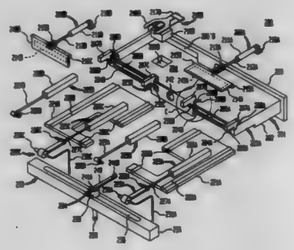


means for adjusting the cross section of said opening so that said cross section of said opening conforms to said cross section of said car.

5,382,127
PRESSURIZED INTERFACE APPARATUS FOR TRANSFERRING A SEMICONDUCTOR WAFER BETWEEN A PRESSURIZED SEALABLE TRANSPORTABLE CONTAINER AND A PROCESSING EQUIPMENT

George Garric, Perthes, and André Lafond, Nemours, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1993, Ser. No. 102,076
Claims priority, application European Pat. Off., Aug. 9, 1992, 92480111.1
Int. Cl.[6] H01L *21/02*; B65G *49/00*
U.S. Cl. 414—217 **19 Claims**

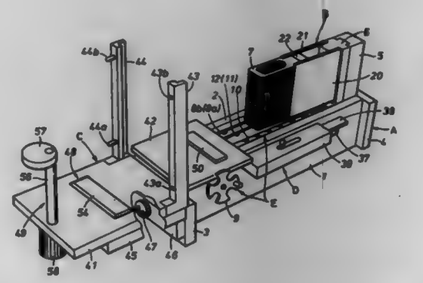


1. A pressurized interface apparatus (**200**) for transferring a workpiece to be processed from within a pressurized sealable transportable container (**100**) of the type consisting of a box-shaped housing (**102**) provided with an access opening (**104**) sealed by releasable door means (**124**) and gas injection valve means (**129**) into a specified environment and vice versa; said interface apparatus comprising a first section comprising:
- a box-shaped frame (**201**) comprising a port zone defining an interior space (**204**) provided with a first opening (**205A**) and a second opening (**205'A**) opposite to said first opening and communicating with said specified environment;
- lid means (**214A**) controlled by drive means (**209A**) sealing said first opening thereby causing the port zone to operate as a loadlock chamber;
- transfer handler means (**216A**) provided with workpiece gripping means (**218A**) mounted in said port zone;
- container receiving means (**221A**) in front of said first opening for receiving a container either in a first waiting position or in a second working position adjacent to said first opening;
- clamping/actuating means (**225***a* and *b*) for clamping and moving the container from said first position to said second position and vice versa.

5,382,128
WAFER TRANSFER DEVICE

Kiyoshi Takahashi, 17-25 Hirai 7-chome, and Kazuo Takahashi, 17-3 Higashikasai 2-chome, both of Edogawa-ku, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,522
Claims priority, application Japan, Mar. 3, 1993, 5-065951
Int. Cl.[6] B65G *65/30*
U.S. Cl. 414—404 **9 Claims**

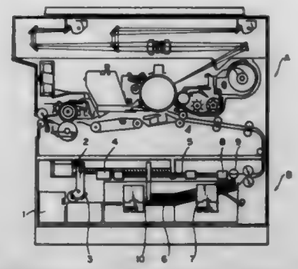


1. A wafer transfer device for transferring wafers from a first basket to a second basket, each of said baskets having an open front end, and a plurality of horizontal slots defined in mutually opposing inner side walls thereof for supporting a plurality of wafers in a vertically spaced relationship by receiving side edges of said wafers in said slots, comprising:
- a base;
- a first basket support table mounted on said base for supporting a first basket;
- a second basket support table mounted on said base for supporting a second basket;
- a carriage slidably supported by said base and guided by guide means provided on said base so as to be slidable toward and away from said first and second wafer baskets;
- actuation means for moving said carriages toward and away from said open front ends of said first and second baskets;
- a plurality of wafer support plates carried by said carriage horizontally and in a vertically spaced relationship to be inserted in gaps defined between said wafers carried by said first wafer basket; and
- cam means provided in said base for lifting said wafer support plates when said carriage passes a first part of said guide means where said wafer support plates are inserted in said gaps defined between said wafers carried by said first basket to thereby lift said wafes from ribs defined between said slots of said first basket, and lowering said wafer support plates when said carriage passes a second part of said guide means where side edges of said wafers supported by said wafers support plates are placed in said slots provided in said inner side walls of said second basket to thereby lower said wafers on ribs defined between said slots of said second basket.

5,382,129
SHEET FEED DEVICE FOR AN IMAGE FORMING APPARATUS

Tomohito Shimizu, Yokohama; Hiroshi Mori, Yamato; Yoshinobu Kagami, Yokohama; Takeshi Yamakawa, Fujisawa; Susumu Shiina, Tokyo, and Keisuke Hayashi, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,071
Claims priority, application Japan, Jan. 16, 1992, 4-005983
Int. Cl.[6] B65H *1/30*
U.S. Cl. 414—411 **7 Claims**



1. A sheet feed device capable of automatically removing a wrapping from a sheet pack inserted into an image forming apparatus, said device comprising:
- a device body defining an enclosure having at least first and second side walls;
- an inlet formed through one of said first and second side walls of said device body for allowing the sheet pack to be inserted;
- transporting means for transporting the sheet pack inserted through said inlet to a predetermined position defined in said device body, said predetermined position defining an individual sheet feed position; and
- unwrapping means for removing the wrapping from the sheet pack located at said predetermined position, said unwrapping means removing the wrapping of the sheet pack located at said sheet feed position, wherein said unwrapping means solely comprises pulling means for pressing against a tongue of the wrapping extending out from one end of the sheet pack and then pulling said tongue away from said sheet pack while pressing against said tongue to thereby remove said wrapping.

5,382,130
WHEELCHAIR LIFT WITH STOW LATCH MECHANISM AND IMPROVED BARRIER CYLINDER MOUNTING

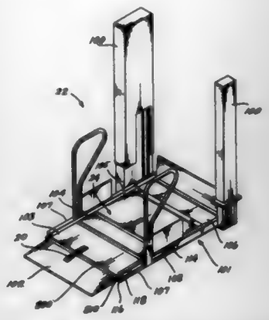
Dale Kempf, Clovis, Calif., assignor to Hogan Mfg., Inc., Escalon, Calif.

Continuation-in-part of Ser. No. 701,143, May 15, 1991, Pat. No. 5,284,414. This application Mar. 26, 1992, Ser. No. 859,563
Int. Cl.[6] B60D *1/46*
U.S. Cl. 414—540 **6 Claims**

1. A lilt designed to be installed in an entryway of a vehicle, the lift comprising:
- a platform having an upper surface, a lower surface, right and left sides, and an outer edge between the right and left sides, and being movable between a stowed position and an extended position;
- a carriage assembly to which the platform is mounted, the carriage assembly comprising at least one elongate support member extending substantially parallel to the right and left sides of the platform, the support member having a top surface and an opening formed in the top surface;
- a safety barrier having an upper surface, a lower surface, and right and left sides, the safety barrier being pivotally attached to the platform adjacent the outer edge of the platform so as to be rotatable about a pivot axis between (a) a first position in which the upper surface of the safety

barrier confronts and is substantially parallel to the upper surface of the platform, and (b) a second position in which the safety barrier projects vertically from the platform; and

a projection operatively connected to the safety barrier and extending outwardly relative to one of the right and left sides of the safety barrier;



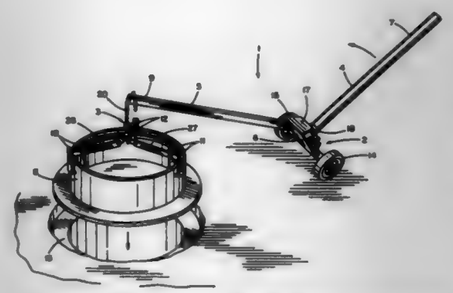
wherein when the platform is in the stowed position and the safety barrier is in the first position, the projection engages the opening in the support member to latch the platform in the stowed position, and when the platform is in the stowed position and the safety barrier is in the second position, the projection is disengaged from the opening in the support member.

5,382,131

TOOL FOR MANIPULATING HEAVY OBJECTS

Paul E. Werthmann, 530 Alyce La., Aurora, Ill. 60505

Filed Nov. 12, 1992, Ser. No. 974,717
Int. Cl.[6] B66F *11/00*
U.S. Cl. 414—684.3 **5 Claims**



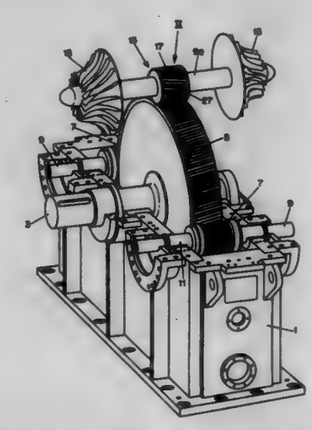
1. A carriage supported tool for manipulating a heavy object comprising: a mobile carriage assembly including a movable carriage which has a frame, a set of wheels supporting the frame, an operating arm, a clamp-assembly support boom with both the arm and the boom attached to the carriage and projecting from the carriage in different directions on opposite sides of the frame upwardly from the carriage frame in a common vertical plane when the set of wheels is resting on a horizontal plane; a clamp assembly coupled to the boom and including a plurality of spaced jaw sets for engaging a heavy object which is to be moved with each of the plurality of jaw sets being angularly spaced from the other jaw sets when the heavy object is engaged for manipulation by manual handling of the operating arm; a jaw-set support arm for each jaw set with each jaw set having a first jaw fixed to its associated support arm and a second jaw adjustably movable relative to both its associated support arm and its associated fixed jaw and in which each jaw-set support arm is elongated and radially and angularly disposed relative to the other support arms and in which each jaw set is positioned at an outer end of its associated support arm; and coupling means engaging the inner ends of all of the support arms and connecting those ends to the boom, in which the coupling means is a chain and a hook and a plurality of loops, each of said loops connected between said hook and one of said arms.

5,382,132

TOOTHED WHEEL GEAR UNIT FOR A COMPRESSOR SYSTEM

Jürgen Mendel, Senden, Germany, assignor to BHS-Voith Getriebetechnik GmbH, Southofen, Germany

Filed Nov. 10, 1993, Ser. No. 150,695
Claims priority, application Germany, Dec. 7, 1992, 4241141
Int. Cl.[6] F01D *13/00*
U.S. Cl. 415—60 **25 Claims**



1. A toothed wheel gear unit for a compressor system having said toothed wheel gear unit inserted in a drive train between a drive unit and a compressor region of the system, said toothed wheel gear unit comprising a transmission housing (1), a transmission input shaft (3) supported in the transmission housing (1), a main gearwheel (5) near the input shaft and drivingly coupled to the input shaft (3), and at least one output shaft (9, 9a), driven by a pinion (7, 19) mounted thereon and leading from the main gearwheel (5) to the compressor region, wherein the improvement comprises:

the pinion driving at least one output shaft (9a) comprises an externally-toothed sun gear (19) of a planetary gear (15);

the planetary gear (15) including a planet carrier (23) fixed on the transmission housing (1);

the planetary gear (15) further including a ring gear (17) rotatably supported on a bearing part (43) that is stationary with respect to the transmission housing (1), the ring gear (17) having inner and outer teeth (29, 27);

the outer teeth of the ring gear (17) being in engagement with the main gearwheel (5);

at least one planet gear (21) being rotatably supported on the planet carrier (23) in toothed engagement with the inner teeth (29) of the ring gear (17) and with the teeth of the sun gear (19);

at least one of the sun gear (19) and said at least one output shaft (9a) being fixed in the axial direction by af least one pressure plate (33) acting on the at least one planet gear (21); and

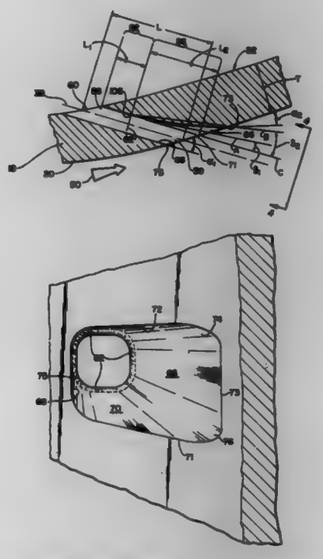
said at least one planet gear (21) being supported in the axial direction on the planet carrier (23) by an axial force-transmitting bearing arrangement (35).

5,382,133

HIGH COVERAGE SHAPED DIFFUSER FILM HOLE FOR THIN WALLS

Robert P. Moore, Tequesta, and Donald L. Deptowicz, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 15, 1993, Ser. No. 137,866
Int. Cl.[6] F01D *5/18*
U.S. Cl. 415—115 **12 Claims**



1. A cooled wall comprising

an outer surface exposed to a hot gas stream flowing in a first direction over said outer surface:

an inner surface defining an internal cavity containing a coolant fluid; and

a plurality of coolant passages extending between said inner surface and said outer surface through which said coolant fluid flows from said inner surface to said outer surface, each passage having a passage outlet connected to said outer surface and over which the hot gas stream flows in said downstream direction, each passage including

a metering section connected to said inner surface, said metering section adapted to receive a flow of coolant from the coolant compartment and to control the rate of flow of coolant fluid through said passage, and

a diffusing section connected to said passage outlet and having a longitudinal axis extending therethrough, a diffusing section inlet opposite said passage outlet and connected to the metering section, a first side surface spaced apart from and facing a second side surface, a third surface spaced apart from and facing a fourth surface, each of said side surfaces connected to and extending between said third and fourth surfaces, said fourth surface is downstream of said first, second, and third surfaces and said fourth surface is curved and curls away from said axis in the direction of said passage outlet, and said first, second, third and fourth surfaces are connected to, and extend between, said diffusing section inlet and said passage outlet;

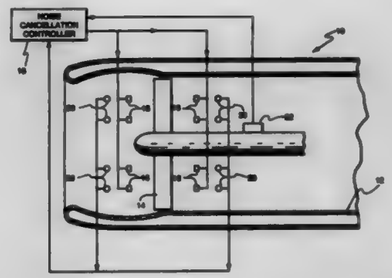
wherein immediately adjacent the metering section the fourth surface diverges from the axis at an angle δ_1 of at least five degrees.

5,382,134

ACTIVE NOISE CONTROL USING NOISE SOURCE HAVING ADAPTIVE RESONANT FREQUENCY TUNING THROUGH STIFFNESS VARIATION

Frederic G. Pla, Schenectady; Harindra Rajiyah, Clifton Park; Anthony A. Renshaw, Albany, and Robert A. Hedeen, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1993, Ser. No. 143,602
Int. Cl.[6] F01D *25/00*
U.S. Cl. 415—119 **26 Claims**



1. A noise source for use in an active noise cancellation system which minimizes noise emanating from an aircraft engine having an outer shroud and a fan, said noise source comprising:

a noise radiating element mounted to said outer shroud;

means for applying a variable force to said noise radiating element;

a sensor disposed on said noise radiating element, said sensor producing a feedback signal proportional to displacement of said noise radiating element;

means for producing a blade passage frequency signal corresponding to the blade passage frequency of said fan; and

a controller having an input connected to said sensor, another input connected to said means for producing a blade passage frequency signal, and an output connected to said means for applying a variable force, said controller being responsive to said feedback signal and said blade passage frequency signal to determine a control signal which is sent to said means for applying a variable force, said control signal causing said means for applying a variable force to vary the force applied to said noise radiating element.

5,382,135

ROTOR BLADE WITH COOLED INTEGRAL PLATFORM

Dennis J. Green, Amston, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 980,850, Nov. 24, 1992, abandoned.
This application Oct. 20, 1993, Ser. No. 139,625
Int. Cl.[6] F01D *5/18*
U.S. Cl. 416—97 R **14 Claims**

1. A rotor blade for an axial flow gas turbine engine disposed about a longitudinal axis, the gas turbine engine including an axially directed flow path defining a passage for working fluid, a rotor assembly including a rotatable disk and the rotor blade, and a source of cooling fluid, the rotor blade including:

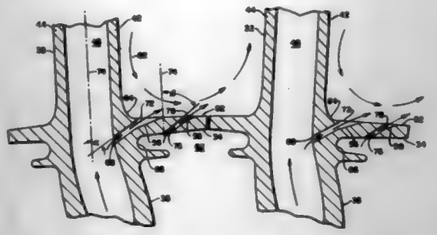
an airfoil section extending through the flow path, the airfoil portion including a pressure surface and a suction surface, the airfoil portion having a hollow core;

a root portion disposed radially inward of the airfoil portion and engaged with the disk to secure the blade to the disk, the root portion including a core path defining a flow path for cooling fluid, the core path being in fluid communication with the source of cooling fluid and with the hollow core of the airfoil portion;

and a platform extending laterally from the blade and disposed radially between the airfoil portion and the root

portion, the platform including an outer surface defining a flow surface for the flow path, a first fillet adjoining the outer surface and the airfoil portion, an inner surface defining in part an under platform cavity, and a second fillet adjoining the inner surface and the root portion; and

wherein a first cooling hole extends between the core path and the outer surface, the first cooling hole being disposed radially inward of the first fillet and radially outward of



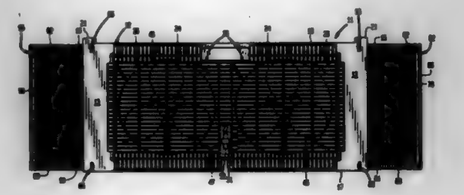
the second fillet, the first cooling hole having an inlet disposed in the core path and an exit disposed on the outer surface and laterally outward of the first fillet, and wherein a second cooling hole extends between the under platform cavity and the outer surface, the second cooling hole including an inlet disposed on the inner surface and an exit disposed on the outer surface, the second cooling hole exit disposed laterally outward of the first cooling hole exit.

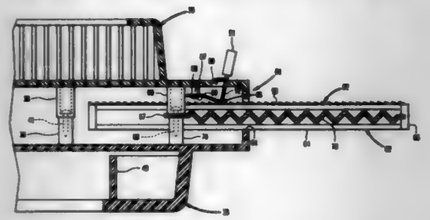
5,382,136

EXPANDABLE WINDOW FAN

Jui-Shang Wang, Taipei, Taiwan, Prov. of China, assignor to Duracraft Corporation, Whitinsville, Mass.

Filed May 10, 1993, Ser. No. 59,075
Int. Cl.[6] F03D *11/04*
U.S. Cl. 416—247 R **13 Claims**





1. A window fan comprising:

a housing comprising a bottom wall for mounting on a sill of a window opening, a front wall defining an air outlet, a rear wall defining an air inlet, a first side wall joined to said front wall and said rear wall, a second side wall joined to said front wall and said rear wall; and wherein said first side wall defines an elongated opening extending between opposite ends thereof;

a blower means retained by said housing and activatable to produce air flow between said air inlet and said air outlet;

partition means movable through said elongated opening into a projecting position extending between said first end wall and one side of the window opening, said partition means comprising a convoluted panel contractible into a recessed position within said housing and expandable into said projecting position, and wherein said convoluted panel is formed in a contracted condition from a resilient material that tends to return to said contracted condition after being expanded into an expanded condition thereby inherently biasing said partition means toward said recessed position; and

latch means for retaining said partition means in said projecting position, said latch means comprising at least one ratchet bar movable with said partition means, and at least one pawl fixed to said housing and engaged with said ratchet bar.

5,382,137

MULTIPLE STAGE AIRLIFT PUMP

James K. Lane, 116 E. Columbine Rd., Wildwood Crest, N.J. 08260

Filed Apr. 15, 1994, Ser. No. 228,195
Int. Cl.[6] F04F *1/18*
U.S. Cl. 417—108 **6 Claims**



1. A multiple stage airlift for elevating liquids, comprising:

a lower elongated member means having means for receiving air adjacent the bottom thereof, said air being adapted to move liquid upwardly through said airlift;

at least one additional elongated member means arranged end to end above said lower member means and being connected thereto;

each of said elongated member means having a nozzle means connected to and extending from an upper end thereof, at least one of said nozzle means extending into a next consecutively positioned elongated member means;

at least one of said elongated member means having an elongated separating means extending upwardly therein and forming a passageway between said elongated member means and said separating means for the passage of said liquid and air, said separating means including a cylindrically shaped member having a sealed end and an open end, said open end being flared outwardly for receiving said nozzle means, said separating means being adapted to receive said air and liquid from said nozzle means and being adapted to separate said liquid and air and deflect said liquid downwardly and into said passageway, and

said air becoming pressurized in said separating means,

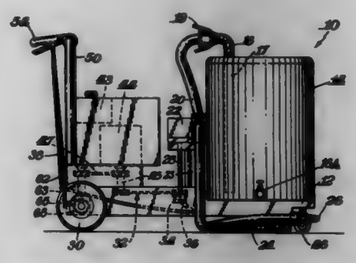
thereby causing said air to escape from said separating means and bubble up through said liquid in said passageway carrying the same upwardly through said elongated member means.

5,382,138

DEVICE FOR EMPTYING THE SEWAGE HOLDING TANK OF A BOAT

Daniel T. Chilton, 400 Foulk Rd., Wilmington, Del. 19803

Filed Jan. 29, 1993, Ser. No. 990,070
Int. Cl.[6] F02B *21/00*
U.S. Cl. 417—234 **15 Claims**



1. A self propelled device for emptying a sewage holding tank of a boat comprising: a frame, a tank mounted to said frame for the storage of sewage from the boat, an engine mounted to said frame, a pump mounted to said frame, said pump comprising means for pumping sewage from said sewage holding tank, said pump being operated by said engine, at least one pair of hoses, one of said hoses being a discharge hose having one end connected to said tank and the other end mounted to said pump and another of said hoses being a second hose which is an intake hose having one end mounted to said pump and the other end being free, at least one pair of wheels mounted to and extending at least partially below said frame to facilitate the transportability of said device, and where said device being self propelled.

5,382,139

GUIDING MECHANISM FOR RECIPROCATING PISTON OF PISTON TYPE COMPRESSOR

Masahiro Kawaguchi; Masanori Sonobe; Shigeki Kanzaki, and Tomohiko Yokono, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jodoshokki Seisakusho, Kariya, Japan

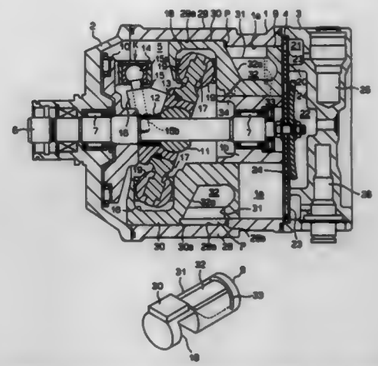
Filed Aug. 11, 1993, Ser. No. 104,858
Claims priority, application Japan, Aug. 21, 1992, 4-223085
Int. Cl.[6] F04B *1/12*
U.S. Cl. 417—269 **6 Claims**

1. A piston guiding mechanism for use in a piston-type compressor of the type including a housing containing a cylinder block where the cylinder block has at least one bore in which a reciprocative piston is disposed, the piston having a central portion and a peripheral surface, whereby a refrigerant gas containing lubricating oil can be drawn into said bore from outside the compressor to be compressed within said bore and discharged from the compressor in response to reciprocating motion of said piston, said piston guiding mechanism comprising:

an oil transfer section extending radially from said central portion to said peripheral surface of said piston and including in said piston a longitudinally extending hollow section and a cut-away portion, the cut-away portion constituting a passage communicating with said hollow section;

said oil transfer section being movable between points in said housing and said bore during reciprocating motion of said piston for transferring said lubricant oil contained in said refrigerant gas from said point in the housing to said bore;

a radially extending projection formed on said peripheral surface of said piston and located adjacent an end of said hollow section and cut-away portion; and



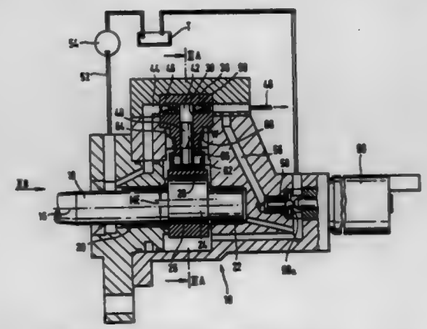
a guiding surface formed inside said housing for guiding said projection to slide smoothly along said guiding surface when said piston reciprocates.

5,382,140

RADIAL-PISTON PUMP

Egon Eisenbacher, Karlstadt; Franz Pawellek, Marktheidenfeld, and Bernhard Arnold, Roden-Ansbach, all of Germany, assignors to Elasis Sistema Ricerca Fiat Nel Mezzogiorno, Viale Impiero, Italy

Filed Feb. 11, 1993, Ser. No. 16,738
Int. Cl.[6] F04B *1/04*
U.S. Cl. 417—273 **16 Claims**



1. A radial-piston pump comprising:

a number of cylinders (12) respectively arranged a given angular distance apart about a drive shaft (18);

a number of pistons (140, 240) respectively having inner radial ends (180) and sliding inside said cylinders respectively (12);

a cam (228) rotating on an eccentric portion (24) of said drive shaft (18);

a number of pads (162, 262) respectively connected to said pistons (140, 240) so that said inner radial ends (180) thereof respectively rest on said pads (162, 262) by action of a return Spring (166, 266) and said pads (162, 262) rest on a flat portion (232) of said cam (228) so that sliding friction (Q) between said pads (162, 262) and said flat portion (232) is directed perpendicular to said drive shaft (18);

retaining means (186, 286) for preventing in-service detach-

ment of said pads (162, 262) from said pistons (140, 240); and

seats (185, 285) respectively in said pads (162, 262) for housing said inner radial ends (180, 280) of said pistons (140, 240);

wherein said pads (162,262) are circular in shape and respectively provided with shoulders (198, 298), and said retaining means comprises a retaining disk (186, 286) fitted to said pads (162, 262) and axially connected to said pistons (140, 240), said retaining disk (186, 286) comprising at least one clamping portion (188, 288) engaging said shoulders (198, 298) with a central opening (192, 292) for connection to said pistons (140, 240).

5,382,141

COMPRESSOR SYSTEM AND METHOD OF OPERATION

Kjell O. Stinessen, Oslo, Norway, assignor to Kvaerner Rosenberg a.s. Kvaerner Subsea Contracting, Oslo, Norway

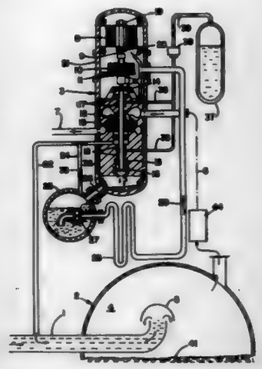
PCT No. PCT/NO92/00023, § 371 Date Sep. 16, 1993, § 102(e) Date Sep. 16, 1993, PCT Pub. No. WO92/14061, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 6, 1992, Ser. No. 98,391

Claims priority, application Norway, Feb. 8, 1991, 910499

Int. Cl.[6] F04B *47/06*

U.S. Cl. 417—423.8 **6 Claims**



1. A compressor system in a subsea station for transporting a well stream, comprising a compressor (12, 13) with a motor (8) in a common drive atmosphere within a pressure shell (21), a gas chamber (4) and a gas suction line (6) between the gas chamber and an inlet in the compressor, and a lube oil circuit comprising a lube oil sump (25) open to the drive atmosphere in the pressure shell, a lube oil pump (27) bearings (19, 20, 14, 15, 16) of the motor (8) and compressor (11, 12, 13), and a lube oil flow line (29) to the bearings, characterized by means (34–36; 34–39) for supplying a suitable dry extraneous gas as the drive atmosphere in the pressure shell (21), and means (22,24,33) for discharging gas from the drive atmosphere to the gas chamber (4).

5,382,142

WALL PUMP HAVING BACKWASH VALVE ACTUATOR

Harry L. Spears, Tomball, Tex., assignor to Spears Speciality Oil Tools, Inc., Tomball, Tex.

Filed Apr. 6, 1993, Ser. No. 43,187

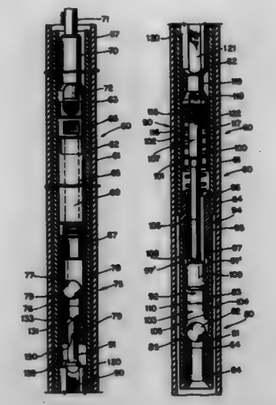
Int. Cl.[6] F04B *7/00, 21/02*

U.S. Cl. 417—445 **21 Claims**

1. A backwash valve actuator, for use in a sucker-rod actuated fluid pump disposed in a length of tubing, the pump having: a pump barrel with upper and lower ends, a moveable piston, with upper and lower ends, disposed within the pump barrel; a traveling valve assembly, including a first valve seat and a first ball valve, connected to the lower end of the moveable piston; and a standing valve assembly, including a second valve seat and a second ball valve disposed at the lower end of the pump barrel, comprising:

a traveling ball valve actuator for selective engagement with the first ball valve of the traveling valve assembly to selectively unseat the first ball valve from the first valve seat;

a standing ball valve actuator for selective engagement with the second ball valve of the standing ball valve assembly to selectively unseat the second ball valve from the second valve seat;



control means for selectively actuating the standing ball valve actuator to engage the second ball valve when it is desired to unseat the second ball valve from the second valve seat; and

means for connecting the standing ball valve actuator, traveling ball valve actuator, and control means to the lower end of the pump barrel, including a tubular shaped member having a first threaded surface upon selective, substantially simultaneous actuation of the standing ball and traveling ball valve actuators, any fluid contained in the pump and length of tubing may flow downwardly through, and outwardly from, the length of tubing and pump.

5,382,143

SCROLL TYPE COMPRESSOR HAVING A THRUST PLATE IN A FRAME RECESS

Toshiyuki Nakamura; Takashi Yamamoto; Hiroshi Ogawa; Norihide Kobayashi; Fumiaki Sano; Masahiko Oide; Katsuyoshi Wada, and Minoru Ishii, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 984,690, Dec. 2, 1992, abandoned, which is a division of Ser. No. 721,140, Jun. 26, 1991, Pat. No. 5,188,520. This application May 24, 1994, Ser. No. 248,545

Claims priority, application Japan, Jul. 13, 1990, 2-186181

Int. Cl.[6] F04C *18/04*

U.S. Cl. 418—55.1 **4 Claims**

1. A scroll type compressor comprising:

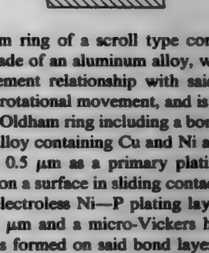
a fixed scroll including a fixed wrap;

an orbiting scroll having an orbiting wrap, whereby the wraps of said fixed scroll and said orbiting scroll form a compressing chamber therebetween, said orbiting scroll further including a base plate;

a crankshaft for orbiting the orbiting scroll;

a frame through which said crankshaft extends, said frame including an upper annular surface and an outer peripheral wall portion extending about said upper annular surface and extending upwardly from said upper annular surface;

wherein said orbiting scroll is disposed at least partially within said peripheral wall portion, and wherein a plate is disposed above said upper annular surface and below said base plate of said orbiting scroll;



wherein said plate is a flat disk having a projection extending from a periphery thereof, said projection extending into a notch provided in said frame whereby said projection prevents relative rotation between said annular plate and said frame.

5,382,144

OLDHAM RING OF SCROLL TYPE COMPRESSOR

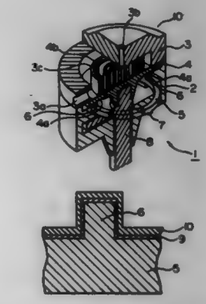
Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Tohru Kato, Seto, and Yoshiaki Sato, Gifu, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Jan. 18, 1994, Ser. No. 182,556

Claims priority, application Japan, Feb. 23, 1993, 5-033097

Int. Cl.[6] F04C *18/02*

U.S. Cl. 418—55.3 **6 Claims**



1. An Oldham ring of a scroll type compressor having a swivel scroll made of an aluminum alloy, which Oldham ring is in an engagement relationship with said swivel scroll to restrain its free rotational movement, and is made of an aluminum alloy, said Oldham ring including a bond layer of a multiplex zinc base alloy containing Cu and Ni and having a thickness of 0.05 to 0.5 μm as a primary plating layer which is formed at least on a surface in sliding contact with said swivel scroll, and an electroless Ni—P plating layer having a thickness of 3 to 15 μm and a micro-Vickers hardness of 550 or greater which is formed on said bond layer, so that the existence of said bond layer of the multiplex zinc base alloy enhances fatigue resistance of said Ni—P plating layer and bonding strength of said Ni—P plating layer on the aluminum alloy.

5,382,145

APPARATUS FOR THE APPORTIONED RELEASE OF FLOWABLE SUBSTANCES

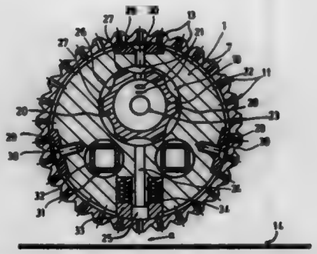
Rupert Harreither, Baden, Austria, assignor to Berndorf Band Gesmbh, Berndorf, Austria

Filed Aug. 27, 1993, Ser. No. 112,521

Claims priority, application Austria, Aug. 28, 1992, 1730/92

Int. Cl.[6] B01J *4/02, 2/20*

U.S. Cl. 425—8 **38 Claims**



1. Apparatus for the apportioned release of flowable substances comprising:

an endless sleeve and a distributor for said substances, said distributor comprising, a cross section, a circular outer region, said sleeve having a predetermined cross section, a circular inner region and a substantially horizontal axis and a plurality of continuous openings for the passage of said substances, said sleeve and distributor being movable relative to each other, said distributor having a distribution channel for said substances, said distribution channel extending transversely to a direction of movement of said distributor and said sleeve relative to each other, said distribution channel being connected, via at least one inlet having a plurality of bores with an outwardly open recess, said recess extending transversely to the direction of movement of said distributor and said sleeve relative to each other, said substances being deposited, in portions, via said recess, downwardly through said plurality of openings, upon means for transporting, within and along said distribution channel, a distribution conduit is arranged, said distribution conduit to which said substances are fed including an exit for said substances remote from said recess, with a flow of said substances occurring through said exit transversely to said distribution conduit.

5,382,146

CONTROL DEVICE FOR THE MECHANICAL THERMAL ADJUSTMENT OF THE NOZZLE OF AN EXTRUDER FOR ELONGATE PRODUCTS

Ernst Krüger, Georgsmarienhütte, and Reinhard Klose, Rinteln, both of Germany, assignors to Friedrich Theysohn GmbH, Bad Oeynhausen, Germany

Filed Oct. 13, 1993, Ser. No. 136,114

Claims priority, application Germany, Oct. 16, 1992, 4234924

Int. Cl.[6] B29C *47/92*

U.S. Cl. 425—141 **3 Claims**

1. A control device for adjusting a nozzle of an extruder for an elongated product, comprising

a wall thickness measuring device which measures the thickness of a wall of said elongated product;

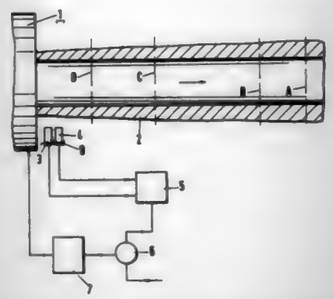
said wall thickness measuring device comprising at least one movable ultrasonic measuring head, at least one stationary ultrasonic measuring head and an evaluating unit;

said movable ultrasonic measuring head measuring the wall thickness of said elongated product while moving around the periphery or reciprocating over the width of said elongated product and delivering a first measured value based on said measurement to said evaluating unit;

said stationary ultrasonic measuring head measuring the wall

thickness of said elongated product at a fixed location along the periphery or along the width of said elongated product and delivering a second measured value based on said measurement to said evaluating unit;

said evaluating unit combining said first and second measured values so as to eliminate a component resulting from the wall thickness fluctuation in the longitudinal direction



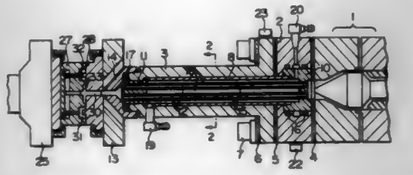
and outputting a control value for adjusting said nozzle based on the difference between said first and second measured values so as to control the wall thickness of said elongated product based on said difference thereby eliminating the fluctuations of the wall thickness in the longitudinal direction of the elongated product from control of said nozzle.

5,382,147

INTERMITTENTLY HEATED INJECTION MOLDING APPARATUS

Isago Miura, 1-4-19 Honcho, Asaka-shi, Saitama-ken 351, and Takashi Miura, 1-14-1 Hiyoshi, Kohoku-ku, Yokohama-shi, Kanagawa-ken 233, both of Japan

Filed Mar. 31, 1993, Ser. No. 41,013
Claims priority, application Japan, May 11, 1992, 4-117332
Int. Cl.[6] B29C *45/20*
U.S. Cl. 425—144 **6 Claims**



1. An intermittent heating apparatus for plasticizing fluids comprising:

a heating/cooling passageway;

at least one electrically conductive heating tube for carrying a plasticizing fluid, said at least one heating tube provided within said heating/cooling passageway;

means for heating said plasticizing fluid and intermittently pumping said plasticizing fluid into said at least one heating tube;

means for intermittently applying a heating electrical current to said at least one heating tube;

means for alternatingly circulating a heating medium and a cooling medium through said heating/cooling passageway;

control means for deactivating said cooling medium circulating means and activating said heating electrical current means and said heating medium circulating means when said means for heating and pumping is activated; and

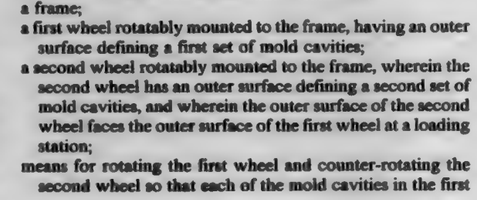
control means for deactivating said electrical current means and said heating medium circulating means, and activating said cooling medium circulating means, when said means for heating and pumping is deactivated.

5,382,148

TWO-STAGE MAT FORMING, PREFORMING AND MOLDING APPARATUS

Daniel T. Buckley, Shrewsbury, Vt., assignor to C.A. Lawton Corporation, Depere, Wis.

Division of Ser. No. 828,310, Jan. 30, 1992, Pat. No. 5,217,654. This application Feb. 10, 1993, Ser. No. 15,817
Int. Cl.[6] B29C *33/06, 35/08, 35/10*
U.S. Cl. 425—174.4 **11 Claims**



1. Apparatus for making a preform comprising:

(a) means for providing a two-stage binder including a first binder constituent which has a first photo initiator responsive to visible light to generate free radicals which cross link and provide a viscosity sufficient to hold glass fibers together and a second binder constituent which has a cationic-type second photoinitiator responsive to ultraviolet light to generate electrons for cross linking and render the binder rigid;

(b) means for applying the two-stage binder received from the providing means to coat a layer of glass fiber reinforcement material;

(c) means for exposing the two-stage binder coated layer to visible light to activate the first binder the binder such that it has a viscosity sufficient to hold the glass fibers together for subsequent handling;

(d) a preforming mold which is transparent to ultraviolet radiation for pressing the exposed layer into a desired shape;

(e) means for precutting the exposed layer into precut portions;

(f) means for placing one of said precut portions of the exposed layer into said preforming mold; and

(g) ultraviolet generation means for exposing the precut portion to ultraviolet radiation through said preforming mold to activate the second photoinitiator and produce a rigid three-dimensional preform.

5,382,149

METHOD AND APPARATUS FOR PRODUCING MOLDED FOOD PIECES

Robert L. Yates, Yuba City, Calif.; Lyle Burkholder, Partridge, and Greg Roepke, S. Hutchinson, both of Kans., assignors to Sunsweet Growers, Inc., Yuba City, Calif.

Division of Ser. No. 24,602, Mar. 1, 1993, Pat. No. 5,358,727. This application Oct. 13, 1993, Ser. No. 136,319
Int. Cl.[6] B29C *35/00, 43/00*
U.S. Cl. 425—237 **15 Claims**

1. A food paste molding apparatus, including:

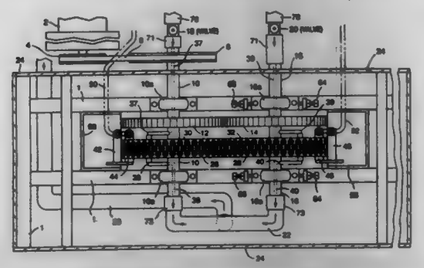
a frame;

a first wheel rotatably mounted to the frame, having an outer surface defining a first set of mold cavities;

a second wheel rotatably mounted to the frame, wherein the second wheel has an outer surface defining a second set of mold cavities, and wherein the outer surface of the second wheel faces the outer surface of the first wheel at a loading station;

means for rotating the first wheel and counter-rotating the second wheel so that each of the mold cavities in the first set rotates into alignment with one of the mold cavities in the second set at the loading station, and so that each pair of aligned mold cavities travels along a path from the loading station to a release station, wherein the aligned mold cavities separate at said release station, wherein a first channel extends through the first wheel and a second channel extends through the second wheel;

chilled coolant fluid in the first channel and the second



channel, said fluid having a temperature that maintains the mold cavities at a cavity temperature, in a range from about −10° F. to 32° F., and sufficient to cause portions of food paste to into pieces as said portions are carried between said each pair of aligned mold cavities from the loading station to the release station; and

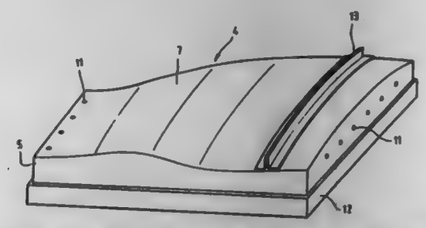
cooling means for flowing the chilled coolant fluid through the first channel and the second channel so as to maintain the mold cavities at said cavity temperature.

5,382,150

APPARATUS FOR MOLDING A COMPOSITE MATERIAL ARTICLE

Philippe Henrio, Lardy, France, assignor to Societe nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Division of Ser. No. 992,466, Dec. 17, 1992, Pat. No. 5,322,661. This application Mar. 16, 1994, Ser. No. 214,191
Claims priority, application France, Dec. 24, 1991, 91 16096
Int. Cl.[6] B29C *51/10, 51/28*
U.S. Cl. 425—390 **6 Claims**



1. Apparatus for molding an article from composite material wherein the article has opposite sides with different surface configurations comprising:

a) former having a first forming surface with a configuration matching one of the sides of the article, the first surface adapted to receive a stack of plies of prepregs thereon;

b) a semi-rigid molding shell having a second forming surface with a configuration different from the first forming surface so as to match the configuration of the opposite side of the article operatively associated with the former such that the second forming surface is located so as to contact a stack of plies of prepregs on the former, the molding shell having an upper surface further comprising bracing means located on the upper surface; and

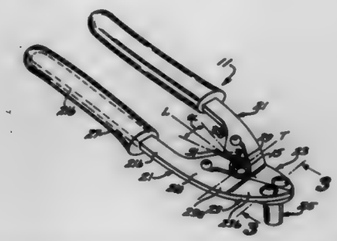
c) a flexible gas-impermeable member operatively associated with the former so as to cover the molding shell such that, when a vacuum is drawn between the flexible impermeable member and the former, the stack of plies of prepregs is compressed between the first and second forming surfaces.

5,382,151

TOOL FOR COLD FORM FLARING TUBING ENDS

Frank F. Hayes, Jr., 11620 Warner Ave., #621, Fountain Valley, Calif. 92708, and Kent A. Rianda, P.O. Box 1734, Mammoth Lakes, Calif. 93546

Continuation of Ser. No. 123,698, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 885,957, May 19, 1992, abandoned. This application Mar. 23, 1994, Ser. No. 217,011
Int. Cl.[6] B25B *7/12*; B29C *55/24*; B21D *41/02*
U.S. Cl. 425—392 **1 Claim**



1. Apparatus for cold form flaring a tubing end, comprising:

first and second pivotally interconnected levers respectively forming first and second handles at one of their ends and first and second jaws on their other ends, wherein said first and second handles are pivotally movable about a pivot axis for opening said jaws when said handles are moved toward each other;

said first and second jaws comprised respectively of (a) first and second flat proximal jaw sections proximal to the pivot axis and (b) first and second flat distal jaw sections respectively attached to said first and second proximal jaw sections and respectively forming an obtuse angle with said first and second flat proximal jaw sections, said first and second flat distal jaw sections respectively having faces that are at more than 180 degrees relative to adjacent faces of said first and second flat proximal jaw sections;

first and second mandrel tips each having the shape of a half conical frustum including a base with a base radius and a narrow end with a radius that is less than the base radius, said first and second mandrel tips together forming a conical frustum when in a closed position, and being respectively supported on the first and second flat distal jaw sections with their bases adjacent the faces of said distal jaw sections that are at more than 180 degrees relative to adjacent faces of said proximal jaw sections and with the mandrel tips in the closed position when said jaws are in a closed position, such that the centerline of the closed mandrel tips forms an acute angle with the pivot axis.

5,382,152

DEVICE FOR THE AUTOMATIC SUPPLY OF A PRESS FOR MOULDING THERMOPLASTIC MATERIAL SHEETS

Giorgio Ravera, Via Coppieri 7/6, 10066 Torre Pellice (Torino), Italy

Filed May 24, 1993, Ser. No. 64,988
Claims priority, application Italy, May 27, 1992, T092A000453
Int. Cl.[6] B29C *31/00, 65/00*
U.S. Cl. 425—397 **11 Claims**

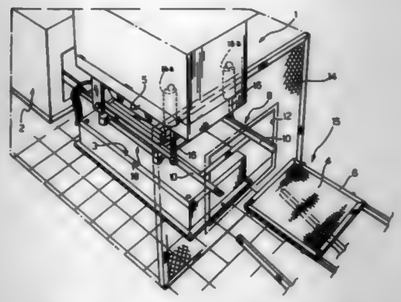
1. Apparatus for the automatic supply to a press of a cover material to be applied to a formed thermoplastic sheet, said

press including two dies for simultaneous moulding of the sheet and application of the cover material thereto, the apparatus comprising:

a take-up station disposed outside the press for receiving a sheet of cover material; and

a take-up assembly for transferring said sheet from the take-up station to a moulding station between the dies; said take-up assembly being integral with the mould and further including,

a first pair of guides supported by one of said dies and extending from said take-up station to said moulding station, said first pair of guides being movable between



a loading position and an unloading position, and said first pair of guides being articulated about a transverse axis;

a take-up member mounted for sliding movement along the first pair of guides and driven by first actuator means for controlled movement between said take-up and moulding stations, and

second actuator means for controlling displacement of said first pair of guides, said second actuator means being operative to pivot said first pair of guides about said axis between said loading and unloading positions, said unloading position being inclined.

5,382,153

APPARATUS FOR PRODUCING FILLING MATERIAL FOR THREE-DIMENSIONALLY SHAPED TEXTILE STRUCTURES

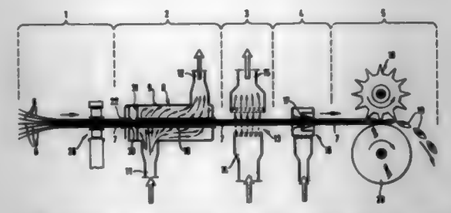
Karl Nettelnstroth, Augsburg, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Aug. 22, 1991, Ser. No. 748,675

Claims priority, application Germany, Aug. 25, 1990, 4026916

Int. Cl.[6] B29B *9/06, 9/14*

U.S. Cl. 425—308 **5 Claims**



1. Apparatus for producing filling material from a tow of continuous filament or staple fiber containing at least one kind of filling fiber and at least one kind of binding fiber comprising

a production line including a feed zone, heating means downstream of the feed zone, cooling means downstream of the heating means, and heated tow cutting means comprising a plurality of spaced apart heated cutter blades downstreams of the cooling means for cutting the tow into pieces while fusing the binding fibers to the filling fibers where tow is cut, guide structure for continuously guiding the tow from the feed zone through the heating and cooling means into and through the heated tow cutting means, and annular die located between the cooling means and the heated tow cutting means for transporting the tow via a fluid means along the guide structure.

5,382,154

METHOD AND DEVICE FOR ALIGNING AND BENDING INDIVIDUAL ROUND ELONGATED DOUGH PIECES

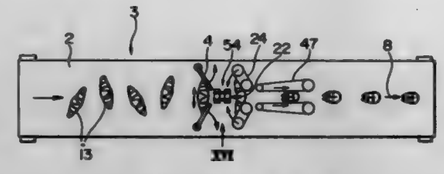
Michio Morikawa; Torahiko Hayashi, and Nobuyuki Saito, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Tochigi, Japan

Division of Ser. No. 49,528, Apr. 20, 1993. This application Mar. 22, 1994, Ser. No. 216,171

Claims priority, application Japan, Apr. 27, 1992, 4-134138; Apr. 28, 1992, 4-135887

Int. Cl.[6] A21C *3/00*

U.S. Cl. 425—321 **4 Claims**



1. A device for aligning with a feeding line of a transfer conveyor and bending a round elongated dough piece randomly placed on the transfer conveyor for the transfer, comprising:

an aligning device disposed above the conveyor so as to block and release the dough piece, the aligning device including a pair of stoppers movable between blocking and releasing positions, the stoppers at the blocking position being symmetrically inclined with respect to the feeding line in the shape of a funnel;

a bender disposed downstream of the aligning device, the bender including a pair of stoppers extending transversely of the feeding line, the stoppers being inwardly movable so as to bend the round elongated dough piece received from the aligning device; and

a holding member disposed at a central position between the stoppers of the bender, the holding member being movable to and away from the elongated dough piece at the central position in order to hold a central portion of the elongated dough piece.

wherein the stoppers of the bender are rotatable to bend the elongated dough piece in association with the holding action of the holding member and to release the bent dough piece.

5,382,155

MOLDS FOR FORMING CARDBOARD BOXES

Jose Boix Jaen, Elche, Spain, assignor to Boix Maquinaria, S.A., Elche, Spain

Filed Jul. 15, 1993, Ser. No. 92,194

Claims priority, application Spain, Jul. 16, 1992, 9201493

Int. Cl.[6] B29C *43/04, 43/36, 43/50*

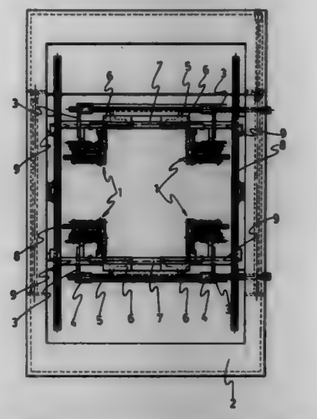
U.S. Cl. 425—577 **4 Claims**

1. A box forming machine comprising:

a frame;

four corner forming members being mounted on said frame;

a pair of spindles being rotatably connected to said frame, each of said pair of spindles have a first threaded portion and a second oppositely threaded portion, two of said corner forming members being slidably connected to each of said pair of spindles by a pair of bushings, one of said bushings being disposed about said first threaded portion and a second one of said bushings being disposed about said second oppositely threaded portion such that rotation of said spindle causes said two of said corner forming members to move in an opposite linear direction to achieve an adjustment in the length of a box to be formed;



a pair of linear guides being connected to said frame, two of said corner forming members being slidably connected to each of said pair of linear guides by a pair of bridges to cause said two of said corner forming members to move in an opposite linear direction to achieve an adjustment in the width of a box to be formed.

5,382,156

APPARATUS FOR EXTRACTING INJECTION-MOLDED PRODUCT

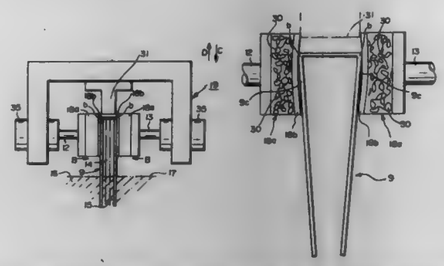
Yoichi Hayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 28, 1993, Ser. No. 127,378

Claims priority, application Japan, Oct. 12, 1992, 4-076975[U]

Int. Cl.[6] B29C *45/40*

U.S. Cl. 425—436 R **6 Claims**



1. An apparatus for extracting an injection-molded product from a mold while sandwiching said molded product, comprising: a pair of chuck arms facing each other and movable relative to each other so as to sandwich a molded product therebetween; surface members for contacting said molded product formed on respective forward ends of said chuck arms; and elastic members made of silicon foam rubber including continuous bubbles connected with each other formed on said forward ends of said chuck arms disposed between said respective surface members and said chuck arms.

5,382,157

EQUIPMENT FOR THE MANUFACTURE OF POLYETHYLENE TEREPHTHALATE CONTAINERS

Gerard Denis, 22, rue Georges Pompidou, 76280 Turretot, and Paul La Barre, 21, rue Joseph Cambon, 76310 Sainte Adresse, both of France

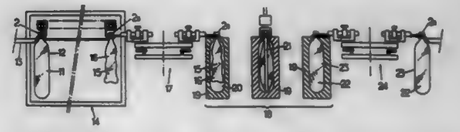
Division of Ser. No. 868,734, Apr. 15, 1992, Pat. No. 5,277,574, which is a division of Ser. No. 654,701, Feb. 13, 1991, Pat. No. 5,229,042. This application Dec. 23, 1993, Ser. No. 172,166

Claims priority, application France, Feb. 13, 1990, 90 01688

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[6] B29C *49/64*

U.S. Cl. 425—526 **32 Claims**



1. Equipment for manufacturing a PET container capable of withstanding, without appreciable deformation, relatively severe thermal conditions encountered during processing by filling with a hot liquid or pasteurization of the contents of the container, comprising:

(a) a first mold with means to shape the body of an intermediate container from the body of an amorphous PET preform, wherein the first mold has a molding cavity whose dimensions are larger than the dimensions of the final container to be obtained;

(b) a treatment station comprising a first heating device with means to first heat only the body of the intermediate container to a temperature of about 160° to about 240° C. to rapidly shrink the body of the intermediate container and then to heat the neck while the contracted intermediate container body continues to be heated to effect crystallization of the neck section and increase the crystallinity of the contracted intermediate container body, and means to slowly cool the neck section while the heating of the contracted intermediate container body continues; and

(c) a second mold with means to shape the body of the final container from the heated body of the intermediate container, wherein the second mold has a molding cavity with dimensions that match the body of the final container and being fitted with means enabling the walls of the cavity to be kept at a predetermined temperature.

5,382,158

INJECTION MOLDING APPARATUS COMPRISING A STACK MOLD

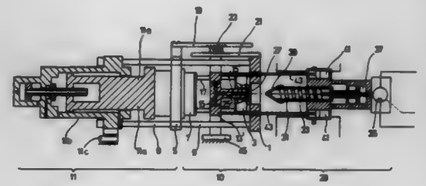
Richard Herbst, Freisinger Strasse 3 b, D-8057 Eching, Germany

Filed Jun. 10, 1993, Ser. No. 75,212

Claims priority, application Germany, Jun. 17, 1992, 4219924

Int. Cl.[6] B29C *45/64*

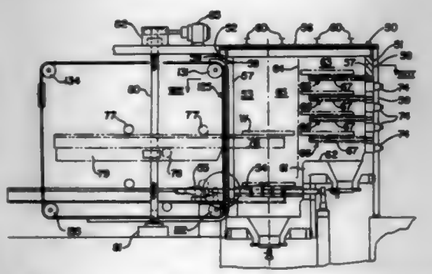
U.S. Cl. 425—572 **20 Claims**



1. An injection molding apparatus comprising:

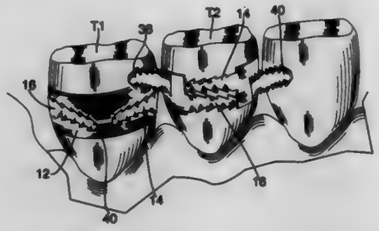
a stack mold having
a first outer mold portion;
a second outer mold portion;
a center platen arranged between said first and said second outer mold portions along a longitudinal axis of said molding apparatus, said center platen having two lateral sides respectively opposed to said first and said second outer mold portions for defining hollow form cavities on said lateral sides between said center platen and each of said first and said second outer mold portions, said center platen being, further, provided with a connector opening opposed to said first outer mold portion; and
a plurality of feed ducts in said center platen interconnecting said hollow form cavities with said connector opening;
an injection molding device having an injection cylinder with a discharge means constructed and arranged to pass through said first outer mold portion and mate with said connector opening;
a drive-and-close unit connected to said center platen and to said first and said second outer mold portions, respectively, for effecting a relative axial displacement therebetween to thereby open and close, respectively, said hollow form cavities; and
means for establishing a continuous tight coupling between said center platen and said injection cylinder by pressing said discharge means against said connector opening, even during said relative axial displacement between said center platen and said first and said second outer mold portions.

5,382,159
HEATING FURNACE SYSTEM AND METHOD FOR PRODUCING HOT ROLLED WORKPIECES
Francis H. Briemont, Pittsburgh, Pa., assignor to Bricmanage, Inc., McMurray, Pa.
Filed Feb. 3, 1993, Ser. No. 12,574
Int. Cl.[6] F27B *9/14*
U.S. Cl. 432—124 **16 Claims**



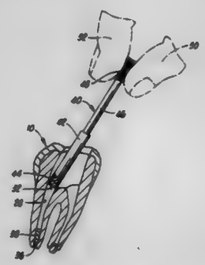
1. A reheat furnace for elongated metal workpieces, said furnace including the combination of:
furnace walls defining a vertically extending heating chamber having a length to receive horizontally arranged elongated workpieces, said heating chamber comprising a loading zone extending vertically at one lateral side of a heating zone;
means for advancing a workpiece along the length of said heating chamber;
rows of vertically spaced carriers supported by the furnace walls in said heating zone for supporting workpieces in a vertically spaced apart relation to one another, said carriers including horizontally extending workpiece support members supported in a cantilever fashion by said side wall comprising one of said furnace walls in said heating zone; and
means for transporting a workpiece through said loading zone between said means for advancing a workpiece and one of said carriers.

5,382,160
DENTAL MATRIX WITH RETENTION AND LOCKING MECHANISM
Arthur Shemet, 133 E. 58th St., Suite 308, New York, N.Y. 10022
Filed Sep. 23, 1993, Ser. No. 125,121
Int. Cl.[6] A61C *5/04*
U.S. Cl. 433—39 **9 Claims**



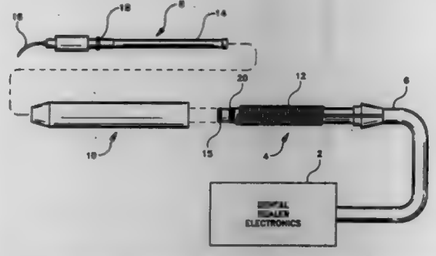
1. A dental matrix comprising:
(a) a central portion made of a thin film having a length and height of about that of a patient's tooth: and
(b) one-way central portion retention and locking means extending outwardly from said central portion for securing said central portion about a patient's tooth, said locking means comprising a slot cut through said dental matrix and a first longitudinal arm extending outwardly from a first side of said central portion, said arm having a series of ratchet teeth lying in the same plane as said central portion.

5,382,161
ENDODONTIC GUTTA PERCHA PLACEMENT
James B. Roane, 707 SW. 24th St., Norman, Okla. 73069
Continuation of Ser. No. 785,043, Oct. 30, 1991, Pat. No. 5,286,193. This application Nov. 22, 1993, Ser. No. 155,527
Int. Cl.[6] A61G *5/02*; A61C *5/02, 5/04*
U.S. Cl. 433—81 **43 Claims**



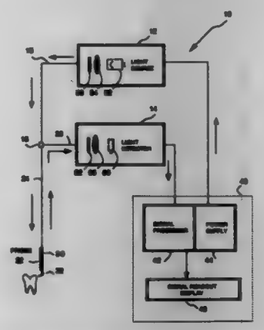
1. A prefilled apparatus for placing thermoplastic filling material in an endodontically prepared root canal comprising:
a hollow carrier having a distal end and a proximal end and having a cylindrical carrier bore defined therethrough from said distal end to said proximal end, said carrier being free of any external lateral protrusions for grasping of the carrier; a plug of thermoplastic filling material occupying a distal portion of said carrier bore, said plug terminating adjacent said distal end of said carrier, said distal portion being less than all of said carrier bore thus defining a proximal portion of said carrier bore unoccupied by said plug; and
a displacing shaft means, received in said proximal portion of said carrier bore and held in place in said carrier bore by adhesion to said plug, for displacing said plug of thermoplastic filling material from a distal end of said carrier bore directly into said endodontically prepared root canal.

5,382,162
AUTOCLAVABLE DENTAL SCALER HANDPIECE SHEATH
Michael C. Sharp, Centerport, N.Y., assignor to Parkell Products, Inc., Farmingdale, N.Y.
Filed Nov. 4, 1993, Ser. No. 147,642
Int. Cl.[6] A61C *1/16*
U.S. Cl. 433—116 **20 Claims**



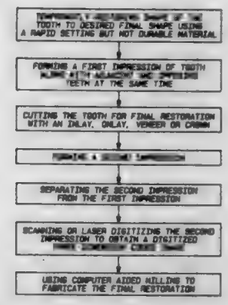
1. An ultrasonic dental scaler handpiece adapted for receiving a dental scaler insert comprising:
a removable, protective, elongated outer sheath dimensioned to be selectively positioned around said scaler handpiece, the outer sheath being shaped to facilitate gripping by an operator; and
coupling means for removably securing said outer sheath to said scaler handpiece such that when said outer sheath is removed from said scaler handpiece, the outer sheath is sterilizable to prevent cross-contamination among patients, said coupling means being provided on surfaces substantially independent of an exposed outer surface of said outer sheath thereby maintaining a substantially continuous gripping shape.

5,382,163
METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF DENTAL PLAQUE OR CALCULUS
David L. Putnam, 21806 NE. 1st, Redmond, Wash. 98053
Filed Jul. 20, 1992, Ser. No. 916,382
Int. Cl.[6] A61C *5/00*
U.S. Cl. 433—215 **28 Claims**



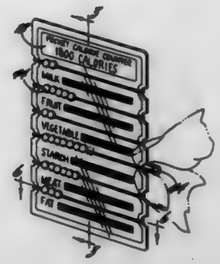
1. A method of detecting presence of dental or calculus at a site on a tooth in an animal, comprising:
generating a first electromagnetic radiation having a range of wavelengths and extending beyond 457 nm;
coupling said first electromagnetic,, radiation to said site thereby illuminating said site with said electromagnetic radiation, said first electromagnetic radiation causing a second electromagnetic radiation to be returned from said site if dental plaque or calculus is present at said site;
coupling said second electromagnetic radiation from said site to an analysis location outside, said body; and
analyzing a predetermined characteristic of said second electromagnetic radiation to detect the presence of a dental plaque or calculus at said site.

5,382,164
METHOD FOR MAKING DENTAL RESTORATIONS AND THE DENTAL RESTORATION MADE THEREBY
Sylvan S. Stern, 14720 Loretta Pl., Oak Park, Mich. 48237
Filed Jul. 27, 1993, Ser. No. 97,956
Int. Cl.[6] A61C *5/10, 11/00*
U.S. Cl. 433—223 **12 Claims**



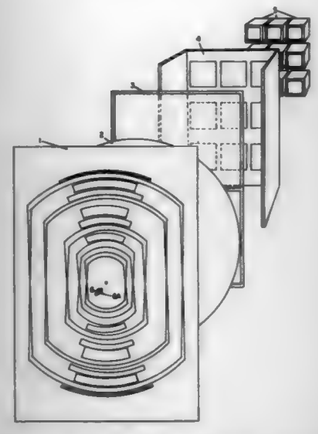
1. A method of making dental restorations comprising the steps of temporarily repairing a tooth area to be restored to a desired shape of a final restoration, taking a first impression of the tooth area to be restored, preparing the tooth area to be restored for restoration, forming a second impression within the first impression with material that is non-adherent to the first impression, separating the first impression from the second impression and optically scanning the second impression to electronically obtain an image of the final restoration.

5,382,165
CALORIE COUNTER DEVICE AND METHOD FOR USE
Jayne B. Knox, 1000 Asbury Rd., Columbia, S.C. 29209
Filed Jul. 16, 1993, Ser. No. 93,318
Int. Cl.[6] G09B *19/02*
U.S. Cl. 434—127 **20 Claims**



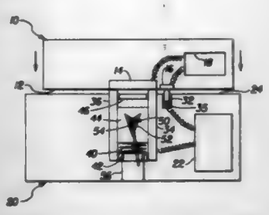
1. A device for counting calories comprising:
a card having an front surface and a back surface,
a plurality of elastic bands circumferentially surrounding said card and disposed in spaced parallel relationship, and
a plurality of beads movably attached to each of said bands, said beads movable from said front surface of said card to said back surface.

5,382,166
ELECTRON-SPACE DIAGRAM AND DISPLAY MODEL
Rhamal M. Ahmose, P.O. Box 296, Fort George G. Meade, Md. 20755
Filed Aug. 12, 1993, Ser. No. 104,860
Int. Cl.[6] G09B *23/26*
U.S. Cl. 434—281 7 Claims



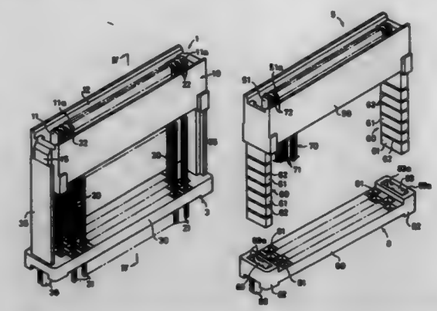
1. A device for displaying lights in various patterns comprising:
a) housing structure;
b) a display board affixed to said housing structure, said display board bearing a diagram and having systematically positioned apertures;
c) an axle aligned with an absolute center of said board;
d) a disk-shaped wheel rotatably affixed to said axle arid having systematically positioned apertures, said wheel being in juxtaposition with said display board such that said wheel may be rotated relative to said display board and a number of said apertures of each of said display board and said wheel may be brought into and out of alignment relative to each other; and
e) at least one strobe light for producing flashing light, said at least one strobe light being supported by said housing structure, said housing structure aiding in focusing the flashing light of said at least one strobe light toward the apertures of said display board and said wheel.

5,382,167
MAGNETICALLY SECURED TEMPORARY ELECTRICAL CONNECTOR
Wilbert F. Janson, Jr., Shortsville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 3, 1993, Ser. No. 161,638
Int. Cl.[6] H01R *11/30*
U.S. Cl. 439—38 21 Claims



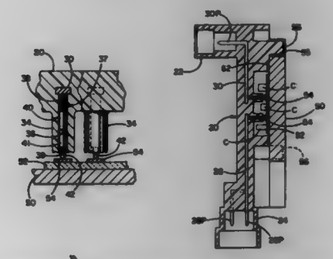
1. A magnetically retained, electrical connection system for making secure, temporary electrical contact between a first coupling surface of a portable appliance and a second coupling surface of a base unit for providing electrical communication with said appliance when brought into contact with said base unit, said connection system comprising:
first electrical contact means electrically coupled to an electrical component of said portable appliance and positioned with respect to said first coupling surface for conducting electrical signals to or from said base unit;
second electrical contact means electrically coupled to an electrical component of said base unit and positioned with respect to said second coupling surface for conducting said electrical signals to or from said appliance when said first electrical contact means of said portable appliance is brought into electrical contact with said second electrical contact means of said base unit on positioning of said first coupling surface in mating relation against said second coupling surface;
a magnetically attractive member positioned with respect to said first coupling surface in a predetermined position with respect to said first electrical contact means;
means for providing a magnetic field within said base unit; and
push operable means for establishing a magnetic circuit between said magnetically attractive member and said magnetic field when said appliance is positioned with respect to said base unit with said first and second coupling surfaces in mating relationship and is subjected to a first push movement of said first coupling surface against said second coupling surface, whereby said magnetic circuit exerts magnetic attractive force between said base unit and said portable appliance to stabilize the electrical connection between said first and second electrical contact means, and for breaking said magnetic circuit when said appliance is subjected to a subsequent, second push movement of said first coupling surface toward said second coupling surface.

5,382,168
STACKING CONNECTOR ASSEMBLY OF VARIABLE SIZE
Youichiro Azuma, and Shigeyasu Kitamura, both of Tokyo, Japan, assignors to KEL Corporation, Tokyo, Japan
Filed Nov. 29, 1993, Ser. No. 158,629
Claims priority, application Japan, Nov. 30, 1992, 4-343211
Int. Cl.[6] H05K *1/00*
U.S. Cl. 439—65 14 Claims



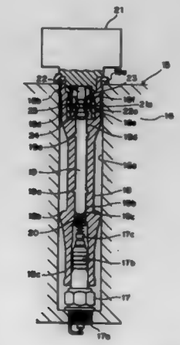
1. An electrical connector assembly of variable size comprising:
a connector member for mating with a complementary connector member and comprising a housing of insulating material having a mating face; a series of electrical contacts each having a mating portion and an elongate lead portion extending longitudinally therefrom, the contacts being anchored in the housing to extend therethrough with the mating portions at the mating face and the lead portions extending away from the mating face;
a positioning plate of insulating material formed with a series of lead receiving apertures extending therethrough; and
a pair of spacing arms each attached at one of their respective ends to one of the housing and positioning plate at spaced apart locations thereof and having free ends severable to selected lengths;
mounting means at spaced apart locations of one of the positioning plate and housing and cooperable with respective free ends after severing for mounting the respective spacer arms extending between the positioning plate and housing thereby maintaining them spaced apart by a distance determined by the lengths selected.

5,382,169
ELECTRICAL CONNECTORS
William R. Bailey, Glen Ellyn; Antonio A. Garay, Norridge, and Keith A. Rosborough, St. Charles, all of Ill., assignors to Labinal Components and Systems, Inc., Elk Grove Village, Ill.
Filed Jan. 14, 1994, Ser. No. 182,641
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—76 26 Claims



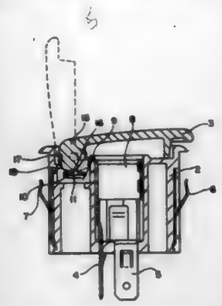
1. An electrical connector device for connecting with a mating connector member that has a mating face which includes generally planar conductive contact surfaces and components adjacent such contact surfaces which extend upwardly above such contact surfaces, said connector device comprising:
a molded insulator body including a wall having a surface exposed toward a receiving position for supporting such a mating connector member in generally parallel spaced relation to said wall surface with such components therebetween, said insulator body defining conductor positions for a plurality of spaced electrically conductive members behind said wall surface and further including a plurality of projections which are aligned with said conductor positions and extend from said wall surface generally normal thereto a distance which exceeds the extension of such components above such contact surfaces of such a mating member;
each of said projections and the respective adjacent portion of said wall defining an aperture extending from the respective conductor position to the distal end of said projection;
electrically conductive contact means extending through each of said apertures and exposed at the distal end of the respective projection for contacting a conductive member in the respective conductor position while also contacting a contact surface adjacent said distal end, said electrically conductive contact means including a resiliently compressible element in each of said apertures which permits resilient compressive retraction of the conductive contact means at said distal end; and
said projections being disposed in a predetermined array which corresponds to the array of the contact surfaces of such a mating connector member;
whereby conductive members in said conductor positions are electrically connected to the contact surfaces of such a mating connector member through said projections and such upwardly extending components of said mating connector member are accommodated beside said projections.

5,382,170
COUPLING CONSTRUCTION
Hisao Imanishi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Jun. 30, 1993, Ser. No. 83,506
Claims priority, application Japan, Jul. 16, 1992, 4-189186
Int. Cl.[6] H01R *13/434*
U.S. Cl. 439—127 6 Claims



1. A coupling construction for coupling a shaft-shaped high-voltage terminal of an ignition coil for use in an internal combustion engine and a cylindrical electric conductor with each other with the high-voltage terminal inserted into a first end of the cylindrical electric conductor, a second end of the cylindrical electric conductor being detachably connected to another electric component, comprising:
an engaging concave portion formed on the peripheral surface of the high-voltage terminal;
a through-hole, formed on the electric conductor, corresponding to the engaging concave portion of the high-voltage terminal;
an engaging ring which engages the peripheral surface of the electric conductor and has an engaging convex portion projecting inward toward the high-voltage terminal through the through-hole and engaging the engaging concave portion of the high-voltage terminal due to the contraction of the engaging ring;
a moving sleeve, for preventing the diameter of the engaging convex portion of the engaging ring from expanding, the moving sleeve being movable between a locking position at which the moving sleeve engages the peripheral surface of the engaging ring and an unlocking position at which the moving sleeve disengages therefrom; and
a spring connected to the electric conductor, the spring electrically connecting the electric conductor to the another electric component.

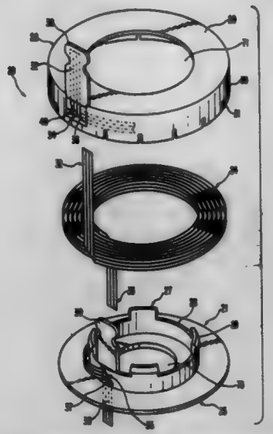
5,382,171
ELECTRIC SOCKET ESPECIALLY FOR MOTOR VEHICLES
Dieter Hofmann, Aschaffenburg, and Berthold Kalkus, Butzbach, both of Germany, assignors to Schoeller & Co. and Elektrotechnische Fabrik GmbH & Co., Frankfurt am Main, Germany
Filed Jul. 28, 1993, Ser. No. 98,534
Claims priority, application Germany, Aug. 4, 1992, 4225689
Int. Cl.[6] H01R *13/447*
U.S. Cl. 439—142 **4 Claims**



1. An electric plug-in socket, especially for motor vehicles, comprising:
a housing;
a hinged-lid, wherein said hinged-lid is connected to said housing;
a chamber, wherein said chamber is formed in said housing;
a spring device, wherein said spring device has a spherical section formed integrally thereon, wherein said spring device is used in conjunction with said hinged-lid, and further wherein said spring device is formed integrally with said housing, and further wherein said spring device is located in a spring device chamber which is formed in said housing; and
a cam device, wherein said cam device is formed integrally with said hinged-lid, and wherein said cam device is provided with a control curve which is utilized in conjunction with said spring device,
wherein said hinged-lid is automatically held in one of a closed position and an open position.

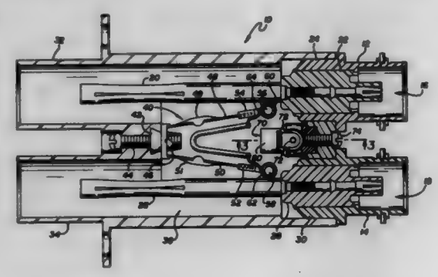
5,382,172
SPIRAL CABLE BOX
Jurgen Klier, Am Herrnacker 9, D 63303 Dreieich; Gerhard Satzinger, Jaegerluk 3, D 91735 Muhr am See, and Gerhard Schule, Kastenerstr. 3, D 91785 Pleinfeld, all of Germany
Filed Jul. 15, 1993, Ser. No. 92,271
Int. Cl.[6] H01R *39/02*
U.S. Cl. 439—164 **16 Claims**

1. A spiral cable box for the accommodation and installation of a cable spiral for an electrical air bag comprising a cable with cable ends that are angled off from the cable spiral to different sides of a spiral level to form an inner angular end area and an outer angular end area and a strain relief device containing the cable, said spiral cable box having a first outer box part and a second box inner part, which are turned relative to each other and which enclose a ring-shaped cable receiving chamber, wherein the box parts are provided with cable entry openings to guide the inner angular end area and the outer angular end area out of the box, wherein the cable receiving chamber is limited axially by a disk-shaped wall on one side and radially outside by an outer cylinder wall of the outer box part, and axially on another side by a disk wall and radially inside by an inner cylinder wall of the inner box part and wherein the cable entry openings are arranged in the outer cylinder wall of the first outer box part and the inner cylinder wall of the second inner part, and the cable entry openings are provided with deflection devices each provided with a deflection edge to cause the cable ends to deflect at an angle and with



a fixing device to clamp down the cable ends between the fixing devices and the deflection devices so as to act as a strain relief.

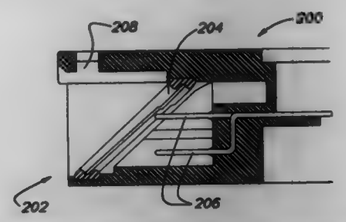
5,382,173
ELECTRICAL CONNECTOR
Gregory S. Brown, Ventura; Frank Quach, Northridge, and Jose Silva, Reseda, all of Calif., assignors to Trompeter Electronics, Inc., Westlake Village, Calif.
Filed Sep. 1, 1993, Ser. No. 115,978
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **24 Claims**



1. In combination,
a first connector having a first probe and a first casing, the first probe being disposed in coaxial and insulated relationship with the first casing,
a second connector having a second probe and a second casing, the second probe being disposed in coaxial relationship with the second casing,
the second casing being common with the first casing,
electrically conductive means having first and second spring arms biased into engaged relationship with the first and second probes to establish a series relationship between the first and second connectors,
first and second insulating means respectively disposed on the first and second spring arms of the electrically conductive means at the ends of these arms,
first and second electrical contact means supported by the first and second insulating means for engaging the first and second probes in the engaged relationship of the electrically conductive means, and

means for electrically connecting the first and second electrical contact means,
an impedance having a first terminal disposed to establish an electrical circuit with the probe of an individual one of the connectors when the spring arm associated with such first terminal is moved to establish an electrical continuity between the associated contact means and such first terminal,
the impedance having a second terminal common with the first and second connectors.

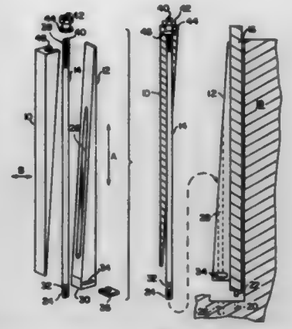
5,382,174
WATERPROOF ELECTRICAL CONNECTOR
Shoji Kinoshita, Kawasaki, Japan, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Jul. 9, 1993, Ser. No. 89,879
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—271 **21 Claims**



1. An electrical connector having first and second matable connector halves having an axial insertion direction for matable engagement with each other, comprising:
a first matable connector half comprising a male member with electrical contacts and a first seal disposed along exterior side surfaces of said male member;
a second matable connector half comprising a female member with electrical contacts disposed therein and arranged for electrical contact with said male member contacts, and further including an aperture for matably receiving said male member;
a lock arm member formed on one of said matable connector halves, wherein the lock arm member is operatively disposed for releasable engagement with the other of said matable connector halves; and
wherein said seal is generally band-shaped and has a longitudinal band-axis therein positioned generally around said male member with at least a portion of said seal longitudinal band-axis, which portion passes along at least one exterior side surface of said male member, being aligned at an acute angle relative to said axial insertion direction.

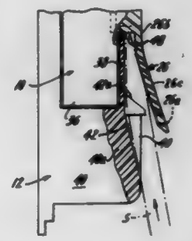
5,382,175
THERMAL CORE WEDGE CLAMP
Scott H. Kunkel, Centreville, Va., assignor to E-Systems, Inc., Dallas, Tex.
Filed Jul. 28, 1993, Ser. No. 103,033
Int. Cl.[6] H05K *7/20*
U.S. Cl. 439—327 **21 Claims**

1. A clamp for seating a circuit card assembly (CCA) in a chassis and for establishing thermal contact between the CCA and the chassis, the clamp comprising:
a fixed wedge carried by a shaft, said fixed wedge effecting longitudinal movement of any CCA carried by said fixed wedge;
a movable wedge that is free-floating relative to said fixed wedge,
said shaft being threaded at an inserted end so that rotation thereof effects movement of said fixed wedge relative to the chassis to seat the CCA carried by said first wedge in the chassis without effecting the relative position of said fixed wedge to said movable wedge;
a flanged nut at an exposed end of said shaft to move said movable wedge relative to said fixed wedge to establish thermal contact between the CCA and the chassis without effecting seating of the CCA in the chassis; and



a U-shaped retainer inserted into a lateral slot in said fixed wedge for preventing longitudinal motion of said fixed wedge relative to said shaft while allowing said shaft to rotate.

5,382,176
ELECTRICAL CONNECTORS
Alexander R. Norden, Boca Raton, Fla., assignor to Cooper Industries Inc., Houston, Tex.
Filed Dec. 28, 1992, Ser. No. 997,023
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—357 **14 Claims**



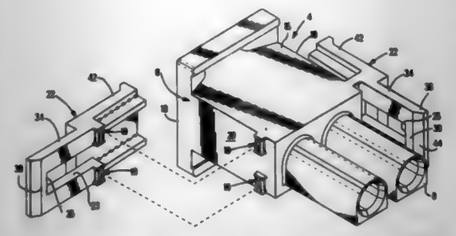
1. In combination, first and second electrical connectors and a connector-separating tool, said connectors having respective contacts, the contacts of said first connector mating with respective contacts of said second connector when the connectors are in their plugged-in condition, one of said connectors having a resilient latch and the other of said connectors having a catch cooperable with the latch for blocking separation of the connectors, said first connector having an abutment against which thrust may be applied for separating the connectors while the second connector is restrained, said other of said connectors providing a passage therealong adjacent to said catch for insertion of said tool, said tool being operable along said passage both for releasing the latch from the catch and, while the latch is held released by the tool, for applying connector-separating thrust to said abutment.

5,382,177

CONNECTOR HOUSING WITH IMPROVED LATCH MEMBERS

Richard D. Hutchinson, Jr., Greensboro; Daines M. Self, Jr., Oak Ridge, and Michael P. Trull, Winston-Salem, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 21, 1991, Ser. No. 795,583
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—358 **18 Claims**



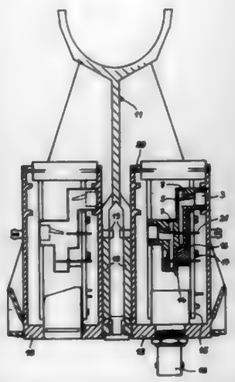
1. A hinge joint for joining a deflectable section integrally to a plastic housing, the hinge joint having a pivot axis about which said deflectable section pivots and having a cross section comprising a narrow midsection with first and second enlarged ribs integrally attached to the midsection, the first rib is positioned at a first end of the midsection and the second rib is positioned at a second end of the midsection, the longitudinal axis of the first and second ribs extends in a direction which is essentially perpendicular to the longitudinal axis of the midsection, the first and second ribs extend beyond sidewalls of the midsection, the midsection and the first and second ribs extend between and are integrally attached to the deflectable section and the housing, said cross section lying in a plane parallel to said pivot axis, whereby as forces are applied to the deflectable section, the associated stresses of the hinge joint will be distributed to the first and second ribs to prevent the failure of the hinge joint.

5,382,178

PROCESS AND APPARATUS FOR THE TERMINATION OF ELECTRIC CABLES INSTALLED IN A BUILDING FOR SUBSEQUENT CONNECTION

Laurent Laloum, Avignon, and Didier Lecomte, Cavaillon, both of France, assignors to Interco S.A., Cavillon, France

Filed Mar. 19, 1993, Ser. No. 34,804
Claims priority, application France, Mar. 30, 1992, 92 03810
Int. Cl.[6] H01R *13/58*
U.S. Cl. 439—460 **4 Claims**



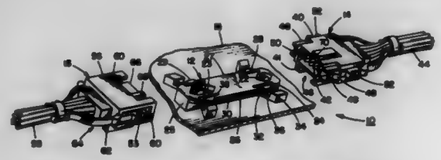
1. Apparatus for the termination of electric cables (2) installed in a building to be subsequently connected to various equipment to be supplied, comprising a block (1,14) having at least one cavity (9) traversed by a recess (7) for a wire (2), the recess (7) being traversed by a connecting hole (8) and at least one locking means housed in the cavity (9) and locking the corresponding cable (2) within the apparatus, characterized in that each locking means is produced in the form of a locking part (3) having a flexible, oblique clip (5) oriented towards the interior of the recess (7), whose end (6) leads into a connecting portion (4) of the cavity (3) occupied by the recess (7), so as to be able to exert a pressure on the wire (2) and maintain it in place, while preventing any withdrawal of said wire (2), further characterized in that it comprises a printed circuit (15) fixed to the block (14) by means of split studs (17), and in that it comprises an intermediate support (16) placed between the block (14) and the printed circuit (15).

5,382,179

ELECTRICAL CONNECTION SYSTEM WITH MOUNTING TRACK

Rocco J. Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Aug. 12, 1993, Ser. No. 106,130
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—533 **15 Claims**



1. An electrical connection system comprising:
a mounting track having side rails and means for connecting the track to a frame;
a first electrical connector having means for directly mechanically connecting to the mounting track; and a second electrical connector having means for directly mechanically connecting to the mounting track and, directly electrically connecting to the first electrical connector wherein the system allows the first and second electrical connectors to be physically connected to the frame through the mounting track such that movement of the connectors relative to the frame can be restrained, wherein the first and second connectors each have a side rail channel which receive the side rails such that the first and second connectors can be slidingly mounted onto the mounting track.

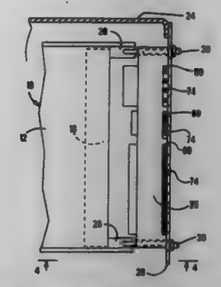
5,382,180

ELECTRICAL CONNECTOR FOR BACK PANEL MOUNTING

Robert N. Whiteman, Jr., Middletown, and Charles H. Weidler, Lancaster, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 43,319, Apr. 6, 1993, Pat. No. 5,288,246.
This application Nov. 9, 1993, Ser. No. 149,409
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—571 **2 Claims**

1. An electrical connector for mounting to a panel of an equipment rack wherein a unit of equipment having a mating connector attached thereto is arranged to slide within said rack so that the two connectors engage and electrically mate when said unit is fully inserted into said rack, said electrical connector comprising:
a housing having multiple cavities and multiple connectors in said cavities, walls of said cavities engaging the external surfaces of each of said multiple connectors to accurately position and hold them with respect to said housing,
said housing including a mounting face for mounting against said panel, said mounting face of said housing including at least one cutout extending through a surface adjacent said mounting face that is in communication with one of said



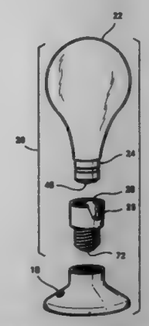
cavities so that a conductor may extend along said panel and into said cutout and electrically connect to the connector in said cavity, and
said cutout extends through two opposite surfaces adjacent said mounting face so that said conductor extends into said cutout via one of said two surfaces and exits said cutout via the other of said two surfaces.

5,382,181

LIGHTING SYSTEM

Jose A. Ortiz, Paterson, N.J., assignor to John Tirado, Paterson, N.J.

Continuation-in-part of Ser. No. 769,722, Oct. 2, 1991, Pat. No. 5,171,292. This application May 4, 1992, Ser. No. 877,720
The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.
Int. Cl.[6] H01R *31/06*
U.S. Cl. 439—628 **16 Claims**



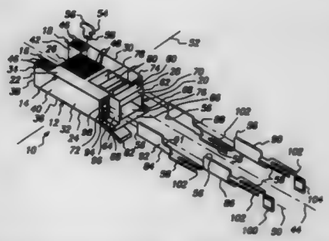
1. A lighting system including an electric light bulb and an adapter socket arrangement, said bulb with a globe sealed to a metal alloy bulb base, with a central insulated terminal in said bulb base, and with a lamp filament connected across said bulb base and said insulated terminal, said system comprising, in combination:
a bulb with a substantially cylindrical wall at said base thereof;
groove means for securing said bulb extending into and about said bulb base with the centerline thereof lying within a plane normal to the longitudinal axis of said bulb, said groove means having a throat portion with a gradual sloping entry and a shoulder portion with a radius defining a travel limit;
a socket arrangement, in turn, comprising:
a socket base portion at one end of said socket arrangement with an open cavity therein and a substantially cylindrical wall dimensioned to slidably engage said bulb base;
an adapter portion at the end opposite said base portion, said adapter portion having a metal alloy threaded adapter base and providing electrical connection therethrough from a threaded socket base to said socket base portion;
retaining spring means for retaining said bulb, said retaining spring means in the wall of said base portion with a plurality of lug portions of said retaining spring means extending into said cavity of said socket base;
spring terminal means for electrical connection to the bottom of said bulb base; and,
said plurality of lug portions of said retaining spring means dimensioned to, upon the bulb insertion into the receptacle, seat within said groove means, said plurality of lug portions being equally spaced about the groove means and exerting balanced spring pressure on the bulb to retain the bulb in the socket;
whereby the insertion of the bulb into the socket is by axial movement without orientation and without rotation thereof.

5,382,182

SPECIAL PURPOSE MODULAR CONNECTOR PLUG

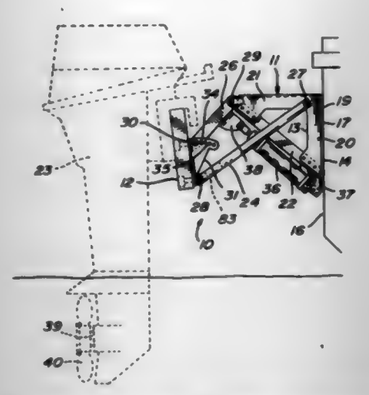
David W. Shea, Cupertino; Robert A. Howard, Mountain View; Robert A. Riccomini, Saratoga; Steven J. Young, Milpitas, all of Calif.; Robert E. L. Cox, Croissy-sur-Seine; Philippe Le Bars, Elancourt, both of France, and Keiichi Tsukinari, Mission Viejo, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 28, 1993, Ser. No. 68,868
Int. Cl.[6] H01R *23/02*
U.S. Cl. 439—676 **24 Claims**



1. A special purpose modular connector plug for coupling with a female receptacle comprising:
a housing having a central body with a first end, a second end, a first side, a second side, a top side and a bottom side, and a first extending arm member;
a first set of contacts, each contact having a first end and a second end, the first ends of the first set of contacts disposed along a first plane proximate the first end of the housing, the second ends of the first set of contacts proximate the second end of the housing and being accessible for the transmission of electronic signals over the first set of contacts;
a second set of contacts, each contact having a first end and a second end, the first ends of the second set of contacts disposed along a second plane that is not co-planar with the first plane and disposed within the first extending arm member, the second ends of the second set of contacts being accessible for the transmission of electronic signals over the second set of contacts; and
means for removably fastening the connector in mating disposition with the female receptacle.

5,382,183
ARTICULATED SUPPORT FOR MOUNTING AN OUTBOARD MOTOR TO THE TRANSOM OF A BOAT
Stéphane Rompré, 236, Belleau, Chicoutimi, Québec, Canada G7H 2Y8
Filed Nov. 26, 1993, Ser. No. 157,520
Int. Cl.[6] B63H 21/26
U.S. Cl. 440—59 7 Claims



1. An articulated support for mounting to the transom of a boat an outboard motor provided with a propeller driven through a rotative axle, and for moving said outboard motor between a lower position in which the propeller is immersed in water, an intermediate position higher than said lower position but in which said propeller is at least partially immersed in water, and an upper position, comprising:

a stationary support section to be secured to the transom of the boat;

a movable support section on which the outboard motor is to be mounted;

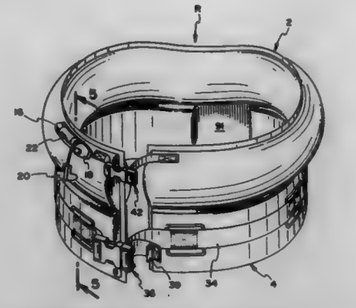
shorter arm means having a proximate end connected to said stationary support section through a first pivot means distant from the transom of the boat, and a distal end connected to the movable support section through a second upper pivot means;

longer arm means having a proximate end connected to the stationary support section through a third pivot means situated between the first pivot means and the transom of the boat, and a distal end connected to the movable support section through a fourth lower pivot means, said first, second, third and fourth pivot means being substantially parallel; and

mechanical means for rotating said proximate and distal ends of the shorter and longer arm means about the respective pivot means in order to pivot said movable support section about said stationary support section and thereby move the outboard motor between said lower, intermediate and upper positions;

wherein the first and third pivot means are positioned and spaced apart on the stationary support section and wherein the second and fourth pivot means are positioned and spaced apart on the movable support section in function of the lengths of said shorter and longer arm means to form an arrangement in which (a) the rotative axle of the outboard motor is horizontal in both the lower and intermediate positions of the outboard motor but is not horizontal between said lower and intermediate positions, and (b) the longer and shorter arm means cross each other in said upper position of the outboard motor to tilt said outboard motor forwardly.

5,382,184
PERSONAL FLOTATION DEVICE IN THE FORM OF AN INFLATABLE BELT
Mario P. DiForte, Jr., P.O. Box 8537, Baltimore, Md. 21234
Filed Oct. 7, 1993, Ser. No. 132,936
Int. Cl.[6] B63C 9/08
U.S. Cl. 441—108 19 Claims



1. A personal flotation device, comprising:

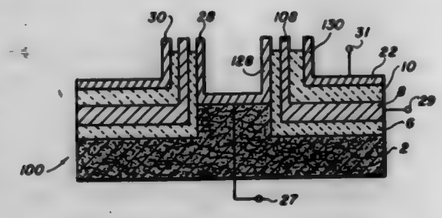
a) an elongate member for encircling the waist of the user including intermediate and end portions, said intermediate portion being non-buoyant;

b) a buckle for securing together said end portions;

c) said member including an upper elongate inflatable chamber and first and second lower buoyancy chambers; and

d) said first and second lower buoyancy portions being spaced apart from each at said intermediate portion such that said first and second lower buoyancy portions are disposed substantially at the sides and front of the user, thereby to cause the user to be positioned in a face-up and laid-back position in the water.

5,382,185
THIN-FILM EDGE FIELD EMITTER DEVICE AND METHOD OF MANUFACTURE THEREFOR
Henry F. Gray, and David S. Y. Hsu, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 31, 1993, Ser. No. 40,944
Int. Cl.[6] H01J 1/30
U.S. Cl. 445—49 27 Claims

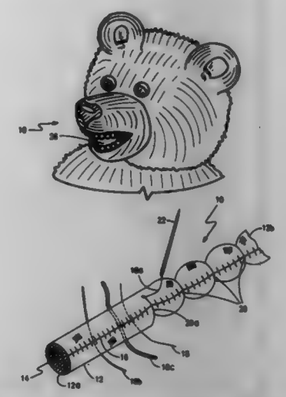


1. A thin-film edge field emitter device comprising:

(a) a substrate having a first portion and having a protuberance extending from said first portion, said protuberance defining at least one side-wall, said side-wall constituting a second portion; and

(b) at least two layers disposed on said substrate including said second portion, wherein at least one of said at least two layers comprises a conductive thin-film including a portion extending beyond said second portion and defining an exposed emitter edge.

5,382,186
SIMULATED TOY TEETH
Marjorie E. West, 628 S. A. Rd., Arvada, Wyo. 82831
Filed May 25, 1994, Ser. No. 249,227
Int. Cl.[6] A63H 3/02
U.S. Cl. 446—372 16 Claims



1. A plurality of simulated toy teeth for use with the mouth of a toy figurine, comprising:

a) a flexible hollow tubular casing having a first end and a second end;

b) a fill material that is disposed inside of said casing, said fill material providing bulk sufficient to expand said casing and being compressible in response to a sufficient force that is applied to the outside of said casing;

c) means for sealing said first end and said second end of said casing; and

d) means for reducing at least a portion of the circumference of said casing whereby said means for reducing supplies a force sufficient to compress said casing and said fill material disposed therein to reduce said portion of the circumference thereof.

5,382,187
DOLL HAVING A PHOTOGRAPH FOR A FACE
Dorothy A. Wilson, 1710 County House Rd., White Bluff, Tenn. 37187
Filed Aug. 23, 1993, Ser. No. 110,317
Int. Cl.[6] A63H 3/36, 3/02
U.S. Cl. 446—391 11 Claims

11. A method of making a cloth doll using square grid grain fabric with the photograph of an individual's face heat pressed thereon, including the steps of:

a. cutting a face panel from the cloth;

b. cutting a side of the head panel from the cloth diagonally of the grain of the fabric, said side of the head panel being substantially rectangular in shape with elongated ends and having a front and a back;

c. cutting an upper silhouette from the cloth and forming a plurality of darts about the perimeter thereof;

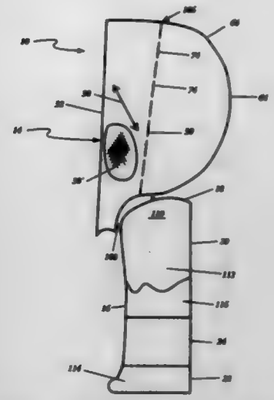
d. shaping the side of the head panel into a substantially oval configuration;

e. sewing the face panel to the front of the side of the head panel and the upper silhouette to the back of the side of the head panel thereby creating a chamber into which material can be stuffed to form the head of the doll;

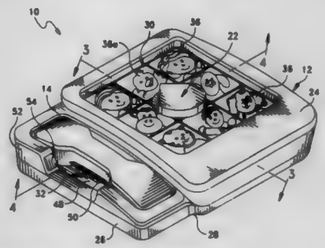
f. stuffing material into the said chamber to form the head of the doll;

g. compacting the material stuffed into said chamber so that the face panel of the head of the doll will be substantially flat and the upper silhouette will be shaped substantially spherical; and

h. heat pressing a photograph of an individual's face onto the face panel of the head of the doll after the chamber forming the head of the doll has been stuffed with filler material.



5,382,188
AUDIO PLAYBACK DEVICE
Dalita R. Tomellini, Rehoboth, Mass., assignor to Playskool, Inc., Pawtucket, R.I.
Filed Jun. 21, 1993, Ser. No. 79,745
Int. Cl.[6] A63H 5/00, 33/30
U.S. Cl. 446—397 9 Claims



1. An audio playback device comprising:

an image plate having a plurality of images thereon;

sound reproducing means containing a plurality of prerecorded sound tracks, each of said sound tracks corresponding to a respective one of said images;

selector means for individually selecting said images; and

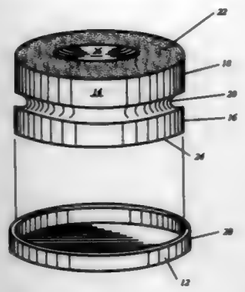
switch means actuatable with said selector means for actuating said sound reproducing means to reproduce the prerecorded sound track corresponding to a selected image, said switch means comprising a plurality of depressible switches which are arranged in a circular array, said plurality of images being arranged in a generally circular array wherein said plurality of images are in corresponding radial alignment with said plurality of switches.

5,382,189

HAND HELD ABRASIVE DISK

William L. Arendall, 757 Hill Rd., Brentwood, Tenn. 37027

Continuation of Ser. No. 843,306, Feb. 27, 1992, abandoned, which is a continuation of Ser. No. 614,287, Nov. 16, 1990, abandoned. This application Mar. 17, 1993, Ser. No. 14,499
Int. Cl.[6] B24D *15/00*
U.S. Cl. 451—557 2 Claims



1. A hand held abrasive disk for use on a work piece comprising:

a. a stone having a lower surface and an upper surface, a top lip, and a bottom lip, and a finger groove arcuately formed between said top lip and said bottom lip;

b. said stone having a top shape formed by the upper surface and the top lip and a bottom shape formed by the lower surface and the bottom lip;

c. a hollow flexible cap having an inner cross-sectional shape, the inner cross-sectional shape of the hollow portion of the cap being of a size to allow the inside wall of the hollow portion of the cap to be slid over and into engagement with a lip of the stone;

d. said cap having a shape conforming to both the shape of the top and the shape of the bottom of the stone; and

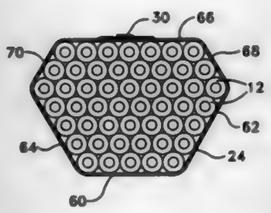
e. said cap further comprising a formable or moldable material adapted for protecting a user's hand and for receiving imprinted information.

5,382,190

PACKAGE OF SHIRRED FOOD CASINGS

Robert P. Graves, Downers Grove, Ill., assignor to Viskase Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 30,923, Mar. 12, 1993. This application Mar. 11, 1994, Ser. No. 209,128
Int. Cl.[6] B65D *85/20*; A22C *13/00*
U.S. Cl. 452—21 11 Claims



1. A caddie of tubular shirred sticks of food casing comprising:

a) a plurality of tubular shirred sticks of food casing all of substantially equal diameter and length arranged in a stack with their longitudinal axes parallel and their ends coplanar;

b) said sticks being arranged in a plurality of rows piled one on another including a lowermost first row containing at least two of said sticks and defining a base surface of said stack, each of the next four rows containing one stick more than the row below and a sixth row containing one less stick than the row below;

c) said rows being piled one on another such that said stack in transverse cross section has a shape comprising a perimeter of six sides and six internal angles of 120° each, said lowermost row defining a base side of said perimeter and no more than two of said sides being equal in length to said base side and said shape having mirror image symmetry about a line perpendicular to said base side and bisecting said shape, and

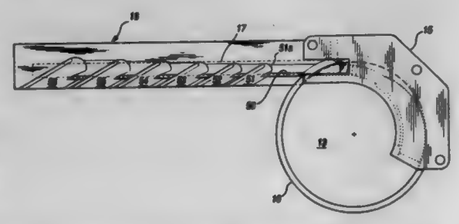
d) a retainer comprising plastic film disposed in tension transversely about said stack for bundling said sticks tightly together and the width of said retainer being greater than the length of said sticks in said stack.

5,382,191

COIN QUEUING DEVICE AND POWER RAIL SORTER

James M. Rasmussen, Chicago, Ill., assignor to Cummins-Allison Corp., Mt. Prospect, Ill.

Filed Mar. 26, 1993, Ser. No. 37,269
Int. Cl.[6] G07D *3/12*
U.S. Cl. 453—11 17 Claims



11. A power rail coin sorter comprising

an elongated horizontal plate forming a series of coin exit channels spaced along the length thereof and extending inwardly from one of the elongated edges of the plate,

a coin drive belt positioned over said elongated plate and having a resilient lower surface for engaging the upper surfaces of the coins supplied to said plate and pressing the engaged coins against the upper surface of said plate while advancing the coins longitudinally along the upper surface of the plate and across the inboard ends of said exit channels, and

coin queuing means for supplying coins of mixed denomination to one end of said elongated plate, said coins being supplied in a single file of flat coins with the edges of the coins closest to the exit ends of said exit channels in alignment with each other,

the inboard ends of said exit channels being located progressively farther away from said elongated plate edge to which said exit channels extend, so that the non-aligned edges of progressively larger-diameter coins enter the inboard ends of successive exit channels along the length of said plate.

5,382,192

DAMPER CONTROL APPARATUS

Jeffrey H. Hoffman, Two Rivers, Wis., assignor to Classic Modular Systems, Inc., Two Rivers, Wis.

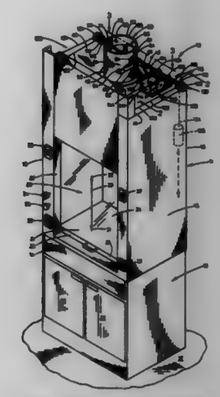
Filed Jul. 2, 1993, Ser. No. 86,687
Int. Cl.[6] B08B *15/02*
U.S. Cl. 454—61 17 Claims

1. A damper control apparatus for a fume hood which has a moveable sash, the damper control comprising:

an axle assembly borne by the fume hood;

a cable assembly borne by the sash and disposed in force transmitting relations relative to the axle assembly, and wherein the cable assembly includes a cable which has opposite ends, and wherein one end of the cable is fixed on the sash, and the opposite end of the cable has a weight fixed thereon, and wherein the cable is wrapped about the axle assembly in a predetermined direction, and wherein movement of the sash causes rotational movement of the axle assembly;

a damper borne by the fume hood and disposed in force receiving relation relative to the axle assembly;



a clutch borne by the fume hood and which is disposed in both force receiving relation relative to the axle assembly, and in force transmitting relation relative to the damper; and

means borne by the fume hood for disengaging the clutch and wherein the damper is moveable along a path of travel into assorted operational positions which correlate with the position of the sash, thereby regulating the amount of air withdrawn from the fume hood.

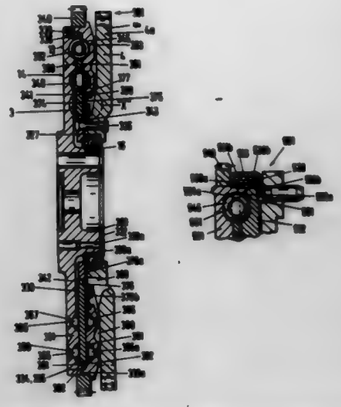
5,382,193

APPARATUS FOR DAMPING VIBRATIONS

Oswald Friedmann, Lichtenau, and Johann Jäckel, Bühl, both of Germany, assignors to Luk Lamellen Und Kupplungsbau GmbH, Bühl, Germany

Division of Ser. No. 872,955, Apr. 19, 1992, Pat. No. 5,273,372, which is a division of Ser. No. 626,384, Dec. 19, 1990, abandoned, which is a continuation of Ser. No. 434,524, Nov. 7, 1989, abandoned, which is a continuation of Ser. No. 63,301, Jun. 17, 1987, abandoned. This application Sep. 28, 1993, Ser. No. 128,633
Claims priority, application Germany, Jul. 5, 1986, 3622697; Oct. 4, 1986, 3633870; Dec. 13, 1986, 3642679
The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.
Int. Cl.[6] F16D *3/14*
U.S. Cl. 464—64 11 Claims

1. Apparatus for damping vibrations between an engine and a power train, comprising a first flywheel connectable with the engine; a second flywheel connectable with the power train by way of a clutch, said flywheels being concentric with and being rotatable relative to each other; and a damper device between said flywheels, said first flywheel constituting an input member and said second flywheel constituting an output member of said device, one of said flywheels including walls defining at least one annular compartment, energy storing elements disposed and supported in said at least one compartment, a substantially flange-like member rotatable with the other of said flywheels and extending into said at least one compartment and engaging said energy storing elements, said walls flanking said flange-like member and said energy storing elements including portions which are remote from the common axis of said flywheels, at least one of said walls having portions disposed radially outwardly of and in the path of radially outward movement of said remote portions of said energy storing elements under the action of centrifugal force when said flywheels rotate, said portions of said at least one wall having surfaces bounding said at least one compartment, and at least a portion of said surfaces being stressed by said



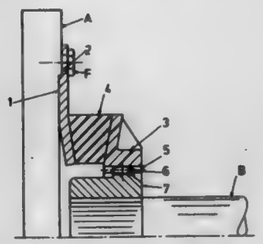
energy storing elements, at least when said flywheels rotate, whereby said energy storing elements are acted upon by centrifugal force, and means for reducing wear upon at least said portion of said surfaces, said means for reducing wear including at least one insert, said insert being contacted by said energy storing elements at least when said flywheels rotate.

5,382,194

PLUG-IN AXIALLY AND ANGULARLY YIELDABLE TOOTHED COUPLING FOR TRANSMITTING TORQUE

Helmut Scherer, Ibbenbüren; Reinhard Wibbeling, Hörstel, and Josef Schürhörster, Rheine, all of Germany, assignors to KTR Kupplungstechnik GmbH, Rheine, Germany

Continuation of Ser. No. 512,099, Apr. 10, 1990, abandoned, which is a continuation of Ser. No. 268,174, Nov. 7, 1988, abandoned. This application Apr. 9, 1991, Ser. No. 683,485
Int. Cl.[6] F16D *3/50*
U.S. Cl. 464—92 20 Claims



1. A plug-in elastic axially and angularly yieldable coupling for transmission of torque between driving and driven units, comprising a hub having an axis and being connectable to one of the units and including an annulus of external teeth; and a flange connectable to the other of the units and including a support, a plastic sleeve having an annulus of internal teeth in mesh with the annulus of external teeth, and an elastomeric connector joining said support to said sleeve with limited freedom of movement in the axial, radial and angular directions of said hub, said hub and said sleeve being substantially

unrestricted at all times against relative displacement in the general direction of said axis in a sense to move said internal and external teeth out of mesh with one another.

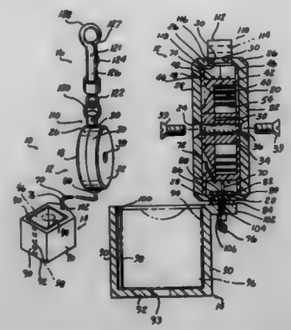
5,382,195
METHOD FOR MAKING A SELF-DRILLING AND SELF-TAPPING SCREW
Allen J. Hiler, Shelby, Ohio, assignor to Atlas Bolt & Screw Company, Ashland, Ohio
Filed Dec. 22, 1992, Ser. No. 995,112
Int. Cl.[6] B23G *9/00*
U.S. Cl. 470—9 **10 Claims**



1. A method of making a self-drilling screw having a self-drilling point formed by first and second operations on a screw blank which has a head and a cylindrical stem, having a central axis, which extends from one side of said head to a distal end,
said screw blank being held in a position wherein said distal end of said cylindrical stem is engaged successively by first and second pairs of circular saws, each of said circular saws having a central axis about which it rotates,
said first pair of said saws engaging said distal end of said screw blank to form a self-drilling point,
said second pair of saws engaging said stem in arcuate paths beginning at said distal end of said screw blank to form a pair of flutes, each of which has a base, and which extend from said distal end of said screw blank toward said head.

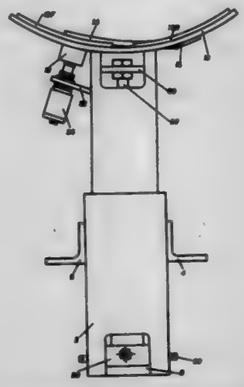
5,382,196
PERSONAL CUE CHALK HOLDER
Lester B. Lodrick, 603 E. Meyers, Hazel Park, Mich. 48030
Continuation of Ser. No. 898,310, Jun. 15, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 105,473
Int. Cl.[6] A63D *15/16*
U.S. Cl. 473—38 **9 Claims**

1. A cue chalk holder for mounting a cue chalk block on an article of clothing worn by a user comprising:
a housing, a first aperture formed in the housing;
a spool rotatably mounted in the housing;
a flexible line having first and second ends, the first end attached to the spool, the line normally wound in a plurality of turns around the spool;
a receptacle having a back wall from which a side wall extends, an outer edge of the side wall surrounding an open end which opposes the back wall, a hollow interior cavity formed between the outer edge, the side wall and the back wall shaped to releasably receive a cue chalk block therein;
the second end of the line extending through the first aperture in the housing;
a flange formed on the side wall of the receptacle immediately adjacent the outer edge of the side wall and having a planar portion extending planarly outward from the outer edge;
an aperture formed in the flange for receiving the second end of the line therethrough, the planar portion of the flange normally disposed in registry with the housing about the first aperture in the housing when the second end of the flexible line is fully retracted within the housing to dispose the open end of the receptacle in a direction substantially facing the housing;
biasing means, mounted in the housing and connected to the



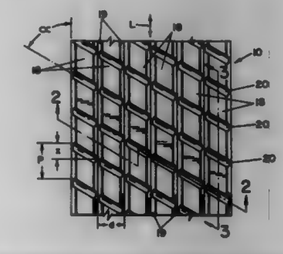
spool, for allowing rotation of the spool in a first direction to extend the second end of the line outward from the housing and for normally biasing the spool in an opposite direction to retract the second end of the line toward the housing; and
attachment means, connected to the housing, for releasably attaching the housing to an article of clothing worn by a user.

5,382,197
VERTICAL BALL-LIFT WITH PNEUMATIC ACTUATOR
George D. Koury, 601 E. Nikolaus, Show Low, Ariz. 85901
Filed Apr. 12, 1994, Ser. No. 226,710
Int. Cl.[6] A63D *5/02*
U.S. Cl. 473—111 **1 Claim**



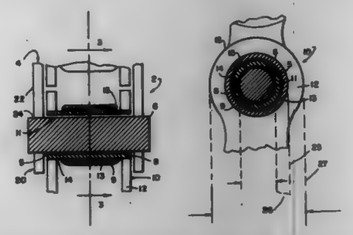
1. An air assisted ball-lift attached to and in combination with an automatic pinsetter comprising;
a. an outer tubular housing slidably containing an inner tubular housing within an interior thereof, the combination which facilitates the raising and lowering of said inner tubular housing;
b. a top pad means attached to an end of the inner tube for supporting a ball;
c. a trigger assembly means which is mounted within said inner tubular housing and to the top pad for sensing the presence of a ball and for initiation of operation of an electrical switch;
d. an electrical switch connected to said trigger assembly means for activating an accessory solenoid;
e. an accessory air solenoid connected to said electrical switch; and
f. an air cylinder mounted to the base of the outer tubular housing and mounted to an uppermost end of the inner tubular housing, being connected to said air solenoid which activates said air cylinder for producing linear energy to the inner tubular housing so as to cause a vertical movement of the top pad in order to raise a bowling ball.

5,382,198
HELICALLY GROOVED MULTI-RIBBED POWER TRANSMISSION BELT
Michel L. Jeune, Raymond, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 26, 1994, Ser. No. 187,335
Int. Cl.[6] F16G *5/20*
U.S. Cl. 474—205 **2 Claims**



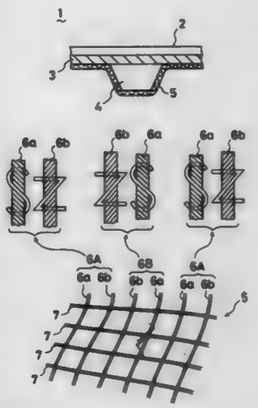
1. A multi-ribbed power transmission belt **10** comprising a tension section **12**, a load carrying section **14**, and a compression section **16**, said compression section having a plurality of longitudinal ribs **18**, and a plurality of parallel transverse grooves **20** longitudinally, spaced by a Pitch P, wherein the transverse grooves **20** are oriented at an angle α other than perpendicular to the longitudinal direction L and such that any transverse grooves **20** in adjacent longitudinal ribs are offset from each other in the longitudinal direction L by a distance x of from 10% to 50% of the Pitch P.

5,382,199
LARGE BEARING AREA ROLLER CHAIN
Leon N. Ducharme, Holyoke, Mass., assignor to U.S. Tsubaki, Inc., Wheeling, Ill.
Filed Feb. 3, 1992, Ser. No. 829,234
Int. Cl.[6] F16G *13/10*
U.S. Cl. 474—210 **20 Claims**



1. A large bearing area roller chain apparatus comprising a chain having plural spaced bushing links and plural spaced pin links, respectively connected in alternating relationships of bushing link, pin link, bushing link and pin link; each bushing link having first and second spaced opposite bushing plates, each bushing plate having first and second bushing-receiving openings, each bushing link further incorporating first and second parallel tubular cylindrical bushings extending into the first and second openings in the opposite bushing plates, wherein ends of the bushings are secured in the bushing-receiving openings for holding each bushing link in the assembled condition; each pin link incorporating first and second spaced opposite pin plates positioned outward of end portions of bushing plates on spaced bushing links, wherein each pin plate has first and second pin-receiving openings and first and second parallel pins extending respectively through first and second openings in one pin plate, through second and first bushings respectively in spaced bushing links and through first and second openings in the first and second pin plate, the pins fitting within the bushings for free rotary bearing motion between the pins and the bushings; the ends of the pins being fixed in pin plates for rigidly connecting elements of the pin links and permitting the pin links and bushing links to rotate about each other on the pins and bushings; each bushing provided with a roller which is a hollow tubular cylindrical structure having an inner diameter slightly larger than the outer diameter of the bushing, wherein each roller is placed on a bushing prior to securing of the bushing to the second bushing plate, the inner diameter of the bushing having a diameter slightly larger than the outer diameter of the pin; the rollers and bushings having thin cross-sectional annular thicknesses profiles less than standard rollers and standard bushings and the pins and bushings having respective external and internal diameters greater than that of pins and bushings of ANSI standard roller chains, the said diameters of the pins and bushings accommodating increased bearing areas therebetween, thereby slowing wear and elongation; the cylindrical rollers having outer and inner diameters adapted to accommodate enlarged diameter bushings while allowing usage of the roller chain on standard sprockets.

5,382,200
BELT
Kanji Kimoto, Kobe, Japan, assignor to Bando Chemical Industries, Ltd., Kobe, Japan
Filed Sep. 17, 1993, Ser. No. 122,658
Claims priority, application Japan, Sep. 24, 1992, 4-253325
Int. Cl.[6] F16G *1/00*
U.S. Cl. 474—260 **5 Claims**



1. A belt comprising:
a belt body; and
a canvas composed of a warp yarn and a weft yarn for covering said belt body in such a manner that the warp yarn accords with a longitudinal direction of said belt,

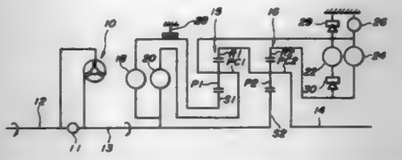
wherein the warp yarn of said canvas is composed of a necessary number of spun yarns or filament yarns gathered and given a final twist at 1500 to 3000 times per meter,
the weft yarn is composed of spun yarns or filament yarns,
said canvas is such woven that a first pair of warp yarns made of an S twist yarn and a Z twist yarn and a second pair of warp yarns made of a Z twist yarn and an S twist yarn are arranged alternately in a belt-width direction, and
said canvas is formed so as to have a large stretchability in the longitudinal direction of said belt.

5,382,201

CONTROL SYSTEM FOR AUTOMOTIVE AUTOMATIC TRANSMISSION

Naonori Iizuka, Fuji, Japan, assignor to JATCO Corporation, Fuji, Japan

Filed Jun. 10, 1993, Ser. No. 74,339
Claims priority, application Japan, Aug. 24, 1992, 4-247327
Int. Cl.[6] F16H *61/06*
U.S. Cl. 475—123 **3 Claims**



1. In an automotive automatic transmission having a friction element powered by a line pressure,
a control system comprising:
first means for detecting a gear ratio provided by said transmission;
second means for measuring an inertial phase keeping time elapsed from the time when a change of said gear ratio starts to the time when said change ends;
third means for adjusting the line pressure in a manner to harmonize said inertial phase keeping time with a first predetermined time;
fourth means for measuring an inertial phase starting time elapsed from issuance of a gear change instruction to the time when the change of said gear ratio starts;
fifth means for increasing the line pressure irrespective of condition of said third means when said inertial phase starting time exceeds a second predetermined time; and
sixth means for suppressing the operation of said fifth means in case wherein even when said inertial phase starting time exceeds a third predetermined time longer than said second predetermined time, the change of said gear ratio fails to occur.

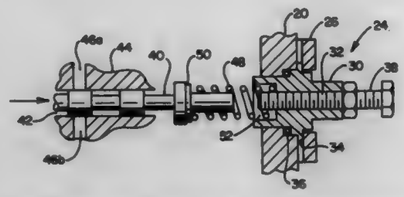
5,382,202

AUTOMATIC TRANSMISSION CONTROL SYSTEM AND METHOD

Jeffrey A. Solove, Blacklick; Thomas D. Buchanan, Newark; Richard L. Irvin, and Terry R. Toops, both of Columbus, all of Ohio, assignors to Barney & White Auto Parts, Inc., Columbus, Ohio

Filed Mar. 12, 1993, Ser. No. 30,839
Int. Cl.[6] F16H *5/46*
U.S. Cl. 475—124 **20 Claims**

1. In vehicle having a pump for providing a pressurized hydraulic fluid to an automatic transmission having a mechanical planetary gear train with gear shift elements actuable in response to the pressure of said hydraulic fluid, a transmission control system for controlling the pressure of said hydraulic fluid provided to said gear shift elements comprising:
a governor for deriving a pressure signal proportional to the speed of said vehicle;
a cylindrical control valve movable along a longitudinal axis in response to said governor pressure signal to select control positions controlling the flow of said pressurized hydraulic fluid to said gear shift elements,



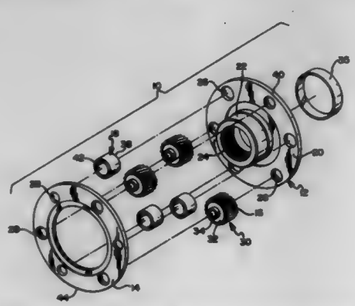
a biasing member for normally biasing said control valve at a first select control position; and
an adjustable position delimiter for maintaining said control valve at a second select control position effective for providing said hydraulic fluid to said gear shift elements at a pressure effective for actuating said gear shift elements at a preselect vehicle speed.

5,382,203

PLANETARY GEARSET CARRIER ASSEMBLY

James C. Bellman, Batavia, Ohio, and Dale E. Martin, Novi, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 1, 1993, Ser. No. 41,108
Int. Cl.[6] B23B *31/16*
U.S. Cl. 475—331 **11 Claims**



1. A carrier for an automatic transmission, the carrier comprising:
a hub;
a face plate;
a plurality of hollow posts extending between the hub and the face plate to maintain a gear pocket therebetween; and
a plurality of planetary gears disposed in the gear pocket.

5,382,204

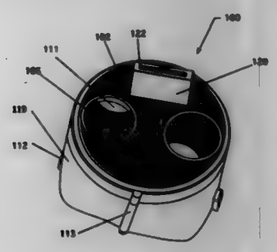
SOLAR PHOSPHENE GENERATOR

Glenn K. Green, P.O. Box 17997, Boulder, Colo. 80308

Filed Jan. 25, 1993, Ser. No. 8,626
Int. Cl.[6] A61B *5/00*
U.S. Cl. 607—95 **12 Claims**

1. In a phosphene generating toy comprising a case having eye holes, a spinning shade on said case creating alternating light and dark pulses on closed eyelids through the eye holes, and means for rotating the spinning shade, the improvement comprising:

said means for rotating the spinning shade further comprising a solar powered motor having a solar panel; and



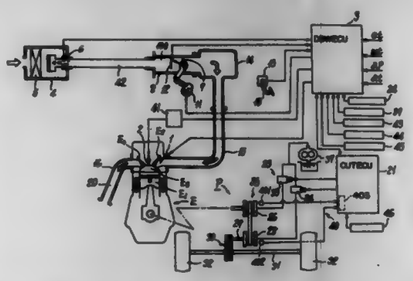
a spring loaded shutter means mounted over said eye holes, functioning to block the eye holes.

5,382,205

CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE AND A CONTINUOUS VARIABLE TRANSMISSION

Kazuhide Togai, Takatsuki; Takashi Takatsuka, Kyoto; Makoto Shimada, Okazaki; Junji Kawai, Anjo, and Kazuya Hayafune, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/00391, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/17348, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 30, 1991, Ser. No. 949,882
Claims priority, application Japan, Mar. 29, 1991, 3-066820; Mar. 29, 1991, 3-066821; Apr. 2, 1991, 3-070132; Apr. 19, 1991, 3-088602
Int. Cl.[6] F16H *59/14, 67/02*
U.S. Cl. 477—43 **69 Claims**



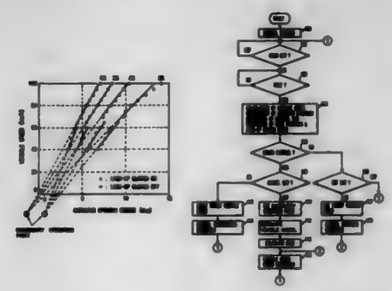
1. A control device for controlling an internal combustion engine and a continuously variable transmission, the continuously variable transmission transmitting power between the internal combustion engine and driving wheels, and having a continuously changeable transmission ratio, said control device comprising:
driving condition detecting means for detecting driving conditions of said vehicle;
objective transmission ratio setting means for setting an objective transmission ratio for said continuously variable transmission according to the driving condition detected by the driving condition detecting means;
transmission ratio detecting means for detecting an actual transmission ratio of said continuously variable transmission;
transmission ratio deviation calculating means for calculating a deviation between the objective transmission ratio set by said objective transmission ratio setting means and the actual transmission ratio detected by said transmission ratio detecting means;
transmission ratio changing speed setting means for setting a transmission ratio changing speed which is a changing rate of the transmission ratio according to the transmission ratio deviation calculated by said transmission ratio deviation calculating means;
transmission controlling means for controlling said continuously variable transmission to obtain the transmission ratio changing speed set by said transmission ratio changing speed setting means;
transmission auxiliary torque calculating means for calculating a transmission auxiliary torque which is consumed during a transmission operation of said continuously variable transmission based on the transmission changing ratio speed set by said transmission ratio changing speed setting means; and
internal combustion engine controlling means for controlling output of the internal combustion engine according to the transmission auxiliary torque calculated by the transmission auxiliary torque calculating means.

5,382,206

METHOD OF AND SYSTEM FOR CONTROLLING THE SPEED OF A MOTOR VEHICLE BASED ON AN ADJUSTABLE CONTROL CHARACTERISTIC SO THAT THE SPEED OF THE VEHICLE FOLLOWS A TARGET SPEED

Kyoji Oda, Tokai; Hitoshi Takeuchi, Toyohashi; Masao Tsujii, Nagoya, and Masahiro Ohba, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 26, 1992, Ser. No. 904,051
Claims priority, application Japan, Jun. 26, 1991, 3-154694
Int. Cl.[6] B60K *31/00*
U.S. Cl. 477—108 **20 Claims**



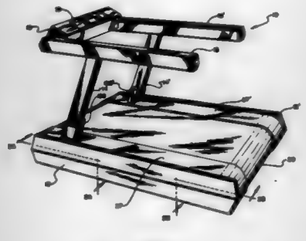
1. A speed control system for a motor vehicle, comprising:
means for detecting a travelling speed of said vehicle;
means for setting a target speed for a constant-speed travelling of said vehicle on a road surface;
actuator means for adjusting the travelling speed of said vehicle;
means for controlling said actuator means based on a control characteristic so that the travelling speed of said vehicle follows said target speed;
means for detecting an operating position of said actuator means;
means for detecting a gear-shifted state in a transmission of said vehicle;
means for setting an imaginary operating point for the operating position of said actuator means on the basis of the gear-shifted state in said transmission wherein said imaginary operating point is defined to be a point where a group of straight lines intersect, each straight line being indicative of a static characteristic corresponding to a slope of a road surface on which said vehicle is travelling, said imaginary operating point being indicative of an original oper-

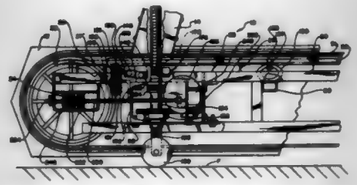
sting point of a prestored static characteristic of the travelling speed of said vehicle;
means for converting data including the detected vehicle travelling speed and the detected actuator means operating position into data defined in terms of the set imaginary operating point;
means for estimating a dynamic characteristic of said vehicle from a variation of the travelling speed of said vehicle to a variation of the operating position of said actuator means on the basis of the converted travelling speed and actuator means operating position; and
means for adjusting a control characteristic of said control means in accordance with the estimated vehicle dynamic characteristic.

5,382,207
EXERCISE TREADMILL

Richard E. Skowronski, Elk Grove Village; Kenneth F. Lautz, Oak Park; Tomas F. Leon, Chicago, all of Ill.; Donald J. Alexander, Milwaukee, Wis.; George Koiomayets, Chicago, Ill.; Vincent C. Adams, Buffalo Grove, Ill., and Eugene B. Szymczak, Glen Ellyn, Ill., assignors to Life Fitness, Franklin Park, Ill.

Continuation-in-part of Ser. No. 452,885, Dec. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 368,450, Jun. 19, 1989, abandoned. This application Apr. 17, 1991, Ser. No. 686,906
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **39 Claims**





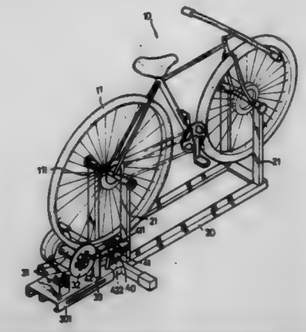
21. An exercise treadmill, comprising:
a frame structure including two rotatable pulleys, said pulleys being positioned substantially parallel to each other;
means for rotating one of said pulleys;
an endless, moveable surface looped around said pulleys to form an upper run and a lower run, said moveable surface being rotated when one of said pulleys is rotated; and
support means for providing support for the upper run of said moveable surface including a deck member secured beneath at least a portion of said upper run, said deck member having a crowned portion crowned substantially upward between the front and rear of said exercise treadmill.

23. An exercise treadmill, comprising:
endless belt means including two rotatable pulleys substantially parallel to each other and an endless belt looped around said pulleys, said belt being rotated when one of said pulleys is rotated for providing a movable exercise surface;
a support deck located below a portion of said belt means for limiting the downward deflection of the exercise surface;
a treadmill frame having longitudinal and lateral frame members; and
a plurality of sets of at least two vertically oriented cylindrical elastomeric deck support members fastened between said deck and said frame for allowing the deck to move in the longitudinal and lateral horizontal directions and for limiting movement of said deck in the vertical direction.

5,382,208
MAGNETIC-RESISTANCE CONTROL DEVICE FOR AN EXERCISE BICYCLE

Hui-Hsin Hu, 4th Fl., No. 48-3, Sec. 3, Tien Chin Rd., Pei Tun Dist., Taichung, Taiwan, Prov. of China

Filed Mar. 2, 1994, Ser. No. 204,873
Int. Cl.[6] A63B *69/16, 21/24*
U.S. Cl. 482—63 **6 Claims**



1. A magnetic-resistance control device for an exercise bicycle (10) which has a front wheel and a rear wheel (11) respectively rotatably mounted around a front axle and a rear axle (111), a base (20) having two pairs of vertical extensions (21) extending upwardly therefrom for respectively supporting the front and rear axles (111), said magnetic-resistance control device comprising:
a platform (301) connected with said base (20);
a flywheel axle (31) rotatably mounted above said platform (301) and engaged with said rear wheel (11) rotate in an opposite direction thereof;
a flywheel (32) made of magnetism-conducting material and mounted to said flywheel axle (31) for rotating therewith;
a bracket (33) mounted on said platform (301);
a U-shaped permanent magnet (42) slidably engaged on said bracket (33) and defining an opening in which said flywheel (32) is partly encircled, said flywheel (32) interacting with magnetic flux generated by said magnet (42) when said flywheel (32) rotates such that a magnetic force is exerted on said flywheel (32), thereby generating resistance to said flywheel (32); and
means for driving said magnet (42) to reciprocate relative to said flywheel (32).

5,382,209
APPARATUS FOR ADJUSTING INCLINATION OF AN EXERCISE MACHINE

Paul A. Pasier, 3331 Mission Ridge La., Atlanta, Ga. 30339, and Ravi Y. Navare, 1600 Wilson Way, Suite 7, Symrna, Ga. 30082

Filed Feb. 8, 1993, Ser. No. 14,743
Int. Cl.[6] A63B *69/18*
U.S. Cl. 482—70 **8 Claims**

1. An apparatus for adjusting inclination of an exercise machine comprising:
a parallel pair of a series of platform-like gradations having levels of said platform-like gradations of one said series corresponding to levels of said platform-like gradations of an other said series, each said platform-like gradation having means adapted for receiving a support leg of the exercise machine; and

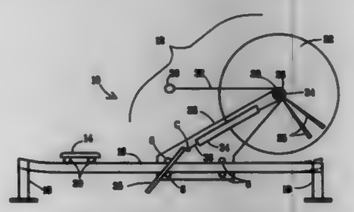


means for connecting said pair of a series of platform-like gradations and for preventing movement of said pair of a series of platform-like gradations with respect to one another.

5,382,210
DYNAMICALLY BALANCED ROWING SIMULATOR

Casper J. N. Rekers, Baalder Esch 8, NL-7772 JV Hardenberg, Netherlands

Filed Nov. 13, 1992, Ser. No. 976,166
Int. Cl.[6] A63B *69/06*
U.S. Cl. 482—72 **12 Claims**

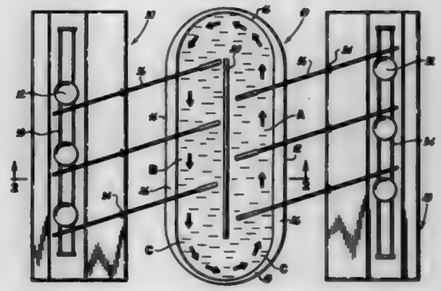


1. A dynamically balanced rowing simulator comprising:
a beam, having a substantially horizontal central portion and at least one upwardly curving end portion;
a seat, engaged with said beam and movable there-along in a generally horizontal translation; and
an energy dissipating unit, engaged with said beam and freely movable there-along in a generally horizontal translation independently from said seat, said energy dissipating unit comprising:
a frame for supporting a flywheel, said flywheel rotatably mounted on a flywheel shaft;
a handle;
a drive means, connected to said handle, for converting a translation of said handle into a rotation of said flywheel;
a take-up means, attached to said frame, said take-up means rewinding and maintaining a predetermined tension on said drive means, said take-up means comprising one of a constant tension spring element or an elastic cord and a plurality of pulleys; and
a footrest, attached to said frame.

5,382,211
ROWING MACHINE

Frank Solymosi, Massapequa Park, N.Y.

Continuation of Ser. No. 984,894, Dec. 2, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 210,262
Int. Cl.[6] A63B *69/06*
U.S. Cl. 482—72 **4 Claims**



1. Apparatus for training rowers comprising an oblong tank formed of a bottom wall and a continuous vertical peripheral wall, said tank being filled with a body of water, a central bulkhead extending fixedly from said bottom upwardly along the longitudinal axis of said tank, the ends of said bulkhead being spaced from the wall of said tank to separate the body of water in said tank into two parallel sections and to provide a passageway around the end of said bulkhead connecting said sections, a rowing bench positioned exterior of the peripheral wall of said tank of each of the longitudinal sides of said tank in spaced parallel relationship, each rowing bench having a plurality of seats and associated oarlocks mounted thereto, a plurality of oars mountable within said oar locks and extending into said tank toward said central bulkhead, wherein each of said oars are positioned on their respective sides of said bulkhead, said seats being arranged on said benches so that the rowers on one bench manipulate the oars in a direction opposed to the manipulation of the oars by those rowers on the other bench relative to the bulkhead to cause the flow of water created by the rowing to take a continuous circular path about the sections of the tank.

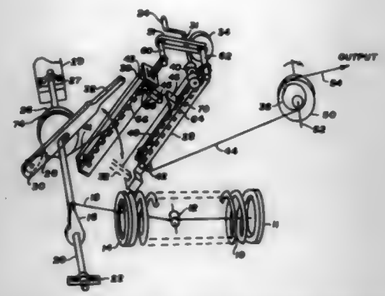
5,382,212
CONSTANT FORCE LOAD FOR AN EXERCISING APPARATUS

Bruce Davenport, Bowen Island, and James A. McArthur, Surrey, both of Canada, assignors to Med°Ex Diagnostics of Canada, Inc., British Columbia, Canada

Continuation-in-part of Ser. No. 943,912, Sep. 11, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,307
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—123 **7 Claims**

1. A constant force load apparatus for an exercising device, comprising:
(a) a frame;
(b) spring means for providing a force load;
(c) cam means for making the force load exerted by said spring means constant;
(d) force transmission means for changing the magnitude of the force transmitted from said cam means;
(e) a point of load attachment coupled to said force transmission means movable with respect to said force transmis-

sion means so as to change the magnitude of the force at an output thereof;



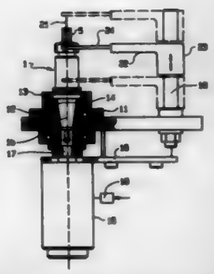
wherein said spring means and said point of load attachment move together relative to said force transmission means.

5,382,213

MECHANICAL DEVICE FOR TOOL CLAMPING IN ADAPTORS

Shimon Kopel, Naharlya, and Gideon Drori, Mitzpe Hila, both of Israel, assignors to Iscar Ltd., Tefen, Israel

Filed Aug. 4, 1993, Ser. No. 102,036
Claims priority, application Israel, Aug. 5, 1992, 102732
Int. Cl.[6] B73Q *3/157, 3/12;* B23B *31/10*
U.S. Cl. 483—7 **3 Claims**



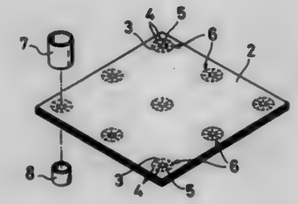
1. A tool locking and releasing device comprising a support frame; a spindle rotatably mounted on said frame; a socket formed in said spindle coaxial with an axis of rotation of said spindle and adapted to receive and retain a tool holder against relative rotational movement; rotational drive means mounted on said frame and coupled to said spindle for rotational displacement of said spindle in first and second opposite directional senses; torque control means for limiting the drive torque transmitted to said spindle to a predetermined magnitude; a support column mounted on said frame and directed substantially parallel to said rotational axis; a wrench support arm, directed substantially normally to said column, slidably mounted at one end thereof on said column; a wrench handle retainably coupled to an opposite end of said support arm and having a wrench head adapted to grip a tool locking member, said wrench handle being axially displaceable with respect to said wrench support arm; the arrangement being such that application of a rotary drive to said spindle in said first directional sense results in the rotation of said tool holder and the tightening of said tool locking member with a predetermined torque, and rotation of said spindle in said opposite directional sense results in the loosening of said tool locking member.

5,382,214

METHOD FOR FABRICATING A CARDBOARD PALLET AND AN APPARATUS FOR FABRICATING THE SAME

Toshiyuki Mano, Numazu, Japan, assignor to Iwatani Sangyo Kabushiki Kaisha, Osaka and Nikki Box Stitching Machine Co, Ltd., Shizuoka, both of Japan

Filed Jun. 9, 1993, Ser. No. 73,493
Int. Cl.[6] B31D *1/00, 3/04;* B65D *19/34*
U.S. Cl. 493—89 **5 Claims**



1. A method for fabricating a cardboard pallet comprising the steps of:

applying adhesive to both side surfaces of a row of attachment portions, said attachment portions being arranged in plural rows that are spaced a predetermined distance range in a cardboard table element, each said attachment portion having a plurality of adhesion finger members formed by die-cut lines defined inside of a phantom folding line, the adhesive being applied to each row of attachment portions successively;

intermittently advancing the cardboard table element by said predetermined distance range;

arranging one open end of an outer leg element formed of tubular cardboard at one side surface of each attachment portion in said row of attachment portions that have been applied with the adhesive so as to be in contact therewith and an inner leg element formed of tubular cardboard at the other side surface of said attachment portion in alignment with the one open end of said outer leg element;

simultaneously pushing each said inner leg element within said row of attachment portions into a corresponding said outer leg element to hold and secure the adhesion finger members of said attachment portion between the outer leg element and the inner leg element; and

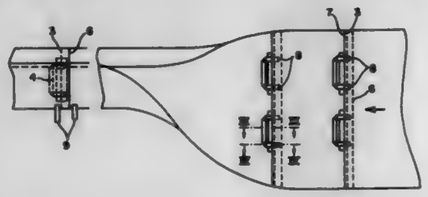
repeating the steps of said method so as to secure an outer leg element uprightly at every attachments portion on one side surface of the cardboard table element.

5,382,215

PROCESS FOR PRODUCING PAPER BAGS WITH HANDLES

Günter Mattiebe, Bielefeld, Germany, assignor to Windmoller & Holscher, Lengerich/Westf., Germany

Filed Nov. 16, 1993, Ser. No. 152,172
Claims priority, application Germany, Nov. 16, 1992, 4238655
Int. Cl.[6] B31B *37/86, 23/14, 23/26*
U.S. Cl. 493—221 **11 Claims**



1. A process for producing paper bags with handles glued to the insides of the facing opening edges,

comprising providing a paper web with transverse perforation lines at distances corresponding to the length of a section necessary to produce bag,

gluing handles to the web in adjacent pairs at a given distance from the transverse perforation lines, wherein the outer handle parts project beyond the transverse perforation lines,

joining side edges of the web together into a tubular web by folding over the side edges, such that the handles face each other and the overlapping side edges that have been folded over are glued together,

detaching the sections along the transverse perforation lines, and providing bottom portions at ends of the bags opposite the handles,

said process further comprising:

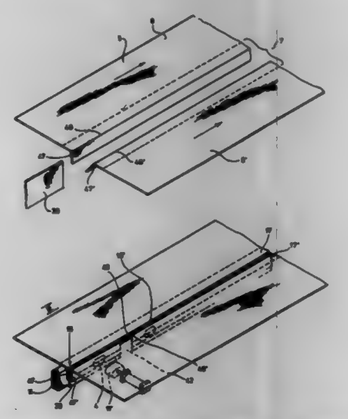
providing the web with adhesive coatings in a transverse direction between arms of a handle in the area in which the handles are glued on, and providing Z-shaped folds comprising two parallel fold lines lying in the area of the handle arms.

5,382,216

METHOD OF MANUFACTURING PACKAGING BAGS WITH A HANDLE

Josef Willing, Vreden, Germany, assignor to M &W Verpackungen Mildenberger & Willing GmbH, Gronau, Germany

Division of Ser. No. 983,908, Dec. 1, 1991, Pat. No. 5,322,450.
This application Dec. 7, 1993, Ser. No. 163,415
Claims priority, application Germany, Aug. 6, 1992, 4225998
Int. Cl.[6] B31B *1/86*
U.S. Cl. 493—226 **7 Claims**



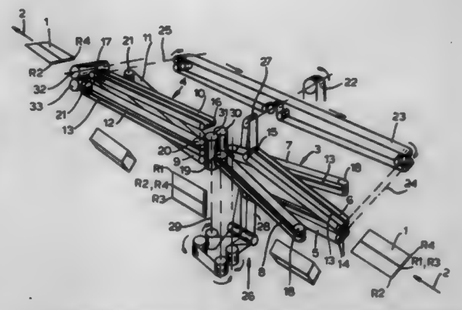
1. A method of manufacturing bags that are rectangular when collapsed and which comprise two superimposed flat sides, sealed at the edges, and a handle member, said method comprising the steps of: laying out in a plane a single web forming three adjacent parallel, longitudinal sections, one lateral section on each lateral side of the web and a middle section therebetween; longitudinally separating the middle section and longitudinally folding the separated edges substantially out of the plane to form adjacent top flanks; attaching a separate strip-shaped handle member to at least one of the top flanks; providing the handle member with a finger slot and with cutouts that allow the middle section to be pulled apart along the handle member to form a gusset; bringing the two lateral sections together; and attaching the lateral sections together along seams to create bag edges and cutting off the bags along their edges.

5,382,217

SYSTEM FOR BREAKING IN CREASES OF A BOX BLANK

Hermann Namowitz, Brüggen, Germany, assignor to Jagenberg Aktiengesellschaft, Dusseldorf, Germany

Filed Sep. 24, 1993, Ser. No. 127,260
Claims priority, application Germany, Oct. 1, 1992, 4232956
Int. Cl.[6] B31B *1/78*
U.S. Cl. 493—310 **11 Claims**



1. A method of breaking in a box tube blank having first, second, third, and fourth panels joined together at first, second, third, and fourth creases, the method comprising the steps, starting with the blank oriented in a starting plane with the first and third creases juxtaposed and the second and fourth creases spaced apart, of sequentially:

pressing the second and fourth creases toward each other parallel to the starting plane to spread the first and third creases away from each other until the second and fourth creases are juxtaposed and the first and third creases lie spaced apart and the blank lies generally perpendicular to the starting plane;

passing the tube blank between an upstream pair of parallel rollers extending perpendicular to the starting plane and compressing the tube blank between the upstream roller pair parallel to the starting plane;

pressing the first and third creases toward each other perpendicular to the starting plane to spread the second and fourth creases away from each other until the first and third creases are juxtaposed and the second and fourth creases lie spaced apart and the blank lies generally parallel to the starting plane; and

passing the tube blank between a downstream pair of parallel rollers extending parallel to the starting plane and compressing the tube blank between the downstream roller pair perpendicular to the starting plane.

5,382,218

ROTOR HAVING MAGNET MOUNTABLE SEATS FOR ROTOR IDENTIFICATION, AND CENTRIFUGE USING THE SAME

Tadahiro Uchida, Sayama, Japan, assignor to Kabushiki Kaisha Kubota Seisakusho, Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,734
Claims priority, application Japan, Dec. 28, 1992, 4-348984
Int. Cl.[6] B04B *13/00*
U.S. Cl. 404—10 **5 Claims**

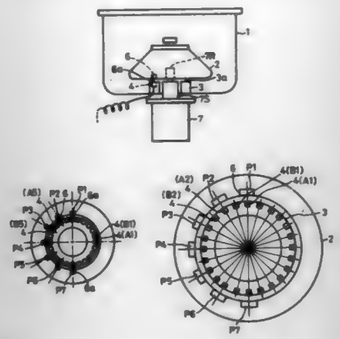
1. A centrifuge comprising:

a rotor having a central axis and a lower portion, said rotor having a plurality of magnet mountable seats arranged on said lower portion at equal angular intervals along a circle around the central axis, each of the magnet mountable seats being adapted to receive one magnet;

a magnet mounted in at least one of said magnet mountable seats, presence and absence of magnets in the respective

magnet mountable seats being arranged in an array pattern peculiar to the type of said rotor;

a plurality of magnetic sensors mounted in opposing, spaced relation to said circle along which said magnet mountable seats are provided, said magnetic sensors being arrayed and fixed at equal angular intervals equal to 1/n the equal angular intervals of the magnet mountable seats, where n is a positive integer satisfying $n \geqq 2$, every nth one of said



magnetic sensors defining one of n series of magnetic sensors;

n data selecting means adapted to be supplied with outputs from said n series of magnetic sensors;

logical OR means for taking a logical OR of the outputs of said n data selecting means at corresponding positions thereof to determine the array pattern; and

processing means for identifying the type of said rotor on the basis of said array pattern.

5,382,219

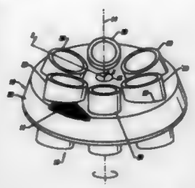
ULTRA-LIGHT COMPOSITE CENTRIFUGE ROTOR

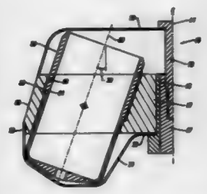
Mohammad G. Malekmadani, Cupertino, Calif., assignor to Composite Rotor, Inc., Santa Clara, Calif.

Continuation of Ser. No. 4,684, Jan. 14, 1993, abandoned. This application Feb. 25, 1994, Ser. No. 202,676

Int. Cl.[6] B04B *5/02, 7/08*

U.S. Cl. 494—16 **9 Claims**





1. A centrifuge rotor having a vertical axis of rotation and comprising:

a single rotor plate composed of fiber-reinforced composite material, the rotor plate including at least two counterbored through holes with each counterbore defining an annular step;

means for attaching the rotor plate to a spindle of a centrifuge; and

tube holders mounted to the rotor plate in the counterbored through holes, wherein each tube holder is cylindrical in shape and is composed of fiber-reinforced composite material, wherein each tube holder has a circumferential flange that mates with and is bonded to the annular step in one of the counterbores of the rotor plate, wherein each tube holder has an open top for receiving a sample tube and a bottom for supporting the sample tube, wherein the top and bottom of each tube holder extend outward on opposite sides of the rotor plate, wherein the height of the rotor plate is less than the height of the tube holders, and wherein the center of mass of the tube holders is vertically positioned within the height of the rotor plate.

5,382,220

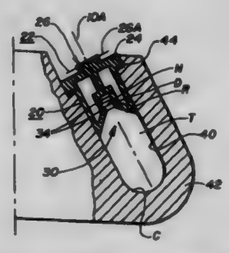
CENTRIFUGE TUBE ADAPTER

William A. Romanauskas, and Edward T. Sheeran, Jr., both of Southbury, Conn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 35,513, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 695,871, May 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 552,631, Jul. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 432,646, Nov. 7, 1989, abandoned. This application Apr. 12, 1994, Ser. No. 229,844

Int. Cl.[6] B04B *5/02*

U.S. Cl. 494—85 **44 Claims**



1. An adapter for supporting a centrifuge tube within a cavity in a centrifuge rotor, the tube having a predetermined size and configuration, the adapter having an axis extending therethrough that, in use, aligns in parallel relationship with an axis of the rotor cavity in which the adapter is disposed, the adapter comprising:

a first and a second adapter segment, each segment having an exterior surface and a mating surface thereon, each segment having an indentation in the mating surface thereof,

at least one hinge connecting the segments and supporting the relative pivotal movement, about a hinge axis, of at least one segment with respect to the other from an open to a mated position, the hinge axis-extending perpendicular to the axis of the adapter,

in the mated position, the mating surfaces of the segments being disposed in contacting relationship and the indentations therein cooperating to define a recess having a size and shape that corresponds to the size and shape of at least a portion of the tube.

5,382,221

AUTOMATIC MASSAGER

Chi-Hsueh Hsu, and Chih-Yee Shyu, both of 4F, No. 144, Chu-Lin Road, Yung-Ho Shih, Taipei Hsien, Taiwan, Prov. of China

Filed May 18, 1993, Ser. No. 63,088

Int. Cl.[6] A61H *7/00*

U.S. Cl. 601—114 **4 Claims**



1. An automatic massager comprising:

(a) A housing defining an internal chamber;

(b) A worm gear rotatably mounted to a wall of said housing and located within said internal chamber;

(c) planet gear means located within said housing for responsive rotation to the rotation of said worm gear, said planet gear means including a central sun gear in meshing drive contact with three planet gears and an epicyclic gear having internal and external teeth, said epicyclic gear internal teeth in meshing engagement with said sun gear and said epicyclic external teeth in meshing engagement with said worm gear, said planet gears positionally located between said sun gear and said epicyclic gear for simultaneous rotation of said planet gears, said sun gear, and said epicyclic gear;

(d) a plurality of brushes, each of said brushes mounted on a disc cover, said covers being coupled to each of said planet gears by a respective coil spring for resilient coupling of said brushes to said planet gears;

(e) a massager hanger of substantially planar and rectangular contour having a plurality of screw through openings for insertion therethrough of respective screws for fixedly coupling said massager hanger to a wall, said massager hanger having a longitudinally directed through slot having opposing toothed edge sidewalls forming said through slot, a slide block secured to a rear wall of said housing and slidingly engaging through slot toothed edge sidewalls; and,

(f) means for rotatively driving said worm gear to responsively rotate said epicyclic gear, said planet gears, and said sun gear for massaging a user's body by said brushes.

5,382,222

MASSAGING DEVICE

Chang Yih-Jong, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Dec. 9, 1992, Ser. No. 987,607

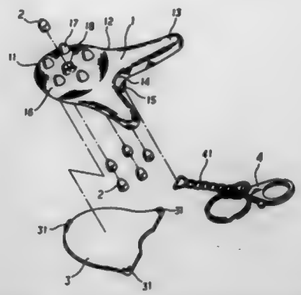
Int. Cl.[6] A61H *7/00*

U.S. Cl. 601—135 **1 Claim**

1. A massaging device comprising:

a massaging pad having a curved head portion and two curved side portions extending from said head portion, said two curved side portions forming two elongated arms which intersect at a curved V-shaped recess;

said head portion having a partially spherical surface with a recess at the center of said surface, said head portion having a plurality of hollow protuberances spaced about said recess, wherein said recess and each of said hollow protuberances contains a magnet; and



a bottom cover having a plurality of tenons engaging with a bottom of said massaging pad.

5,382,223

CONTOURED ORTHOPAEDIC SUPPORT HAVING REDUCED SKIN IRRITATION PROPERTIES

Michael A. Springs, Leawood, Kans., assigner to Ortho-Care, Inc., Raytown, Mo.

Filed Feb. 1, 1993, Ser. No. 11,975

Int. Cl.[6] A61F *5/00;* **B32B** *31/00*

U.S. Cl. 602—6 **5 Claims**



1. An orthopaedic support consisting essentially of an elongated, tubular body having a continuous sidewall and a pair of opposed, open ends, said sidewall presenting a recessed region intermediate said ends for anatomically conforming with a limb joint, said sidewall being free of dart-defining seams oriented transverse to the longitudinal axis of said body at said recessed region, said body being formed from a single piece, unitary blank presenting a pair of opposed, inwardly arcuate side margins, with said side margins being adhesively interconnected to give a single, elongated, axially extending seam which is essentially free of stitching, there being an elongated synthetic resin tape adhesively secured over at least one face of said seam.

5,382,224

DROP FOOT BRACE

Harry V. Spaagler, 510 W. Harmont, Phoenix, Ariz. 85021

Filed Oct. 13, 1992, Ser. No. 959,627

Int. Cl.[6] A61F *5/00*

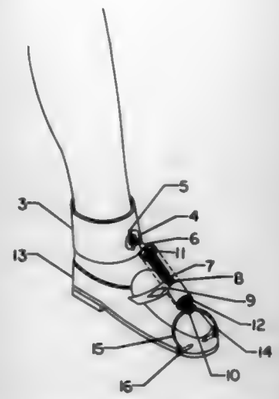
U.S. Cl. 602—23 **1 Claim**

1. A leg brace comprising a leather strap adapted to be placed around a patient's ankle;

a linkage means connected to said leather stap by a swivel means, said linkage means including a spring attached to said swivel means;

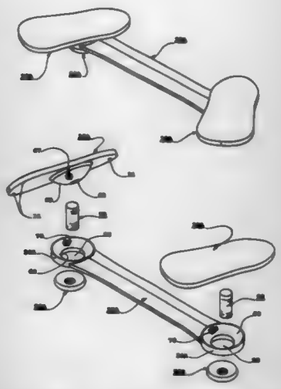
a connector attached to said spring;

a tube that encases said swivel means, said spring, and said connector;



a flexible, nylon cord attachable to a shoe, said nylon cord is adapted to be connected to said shoe by a fastening means, said nylon cord is attached to said linkage means by a fastening means.

5,382,225
UNIVERSAL NIGHT SPLINT
Brian L. Sutcliffe, c/o P.O. Box 33, Ephraim, Utah 84627
Filed Jul. 14, 1992, Ser. No. 913,294
Int. Cl.[6] A61F *3/00*
U.S. Cl. 602—24 **6 Claims**



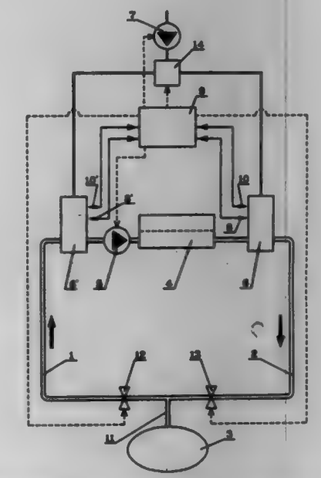
1. An orthopedic foot splint adapted to be attached to the shoes or feet of a patient comprising:
a. a pair of foot plates adapted to be affixed to the shoes or feet of a patient, and
b. an elongated bar interconnecting said foot plates,
c. means for enabling said foot plates to rotate and tile with respect to said bar further comprising:
a male cupped articulated clutch mounted to the underside of each of said plates having slightly protruding knobs arranged in a regular array on the interfacing surface and cupped articulated clutch sockets positioned on the ends of said bar having shallow detents arranged in a regular array on the interfacing surface, whereby tilting and rotating can be accomplished with said cupped clutch components, so that the patient's feet can be tilted to protect subtalar joint.

5,382,226
INFLATABLE CERVICAL TRACTION AND EXERCISING DEVICE
Richard A. Graham, 18582 Main St., Huntington Beach, Calif. 92648
Filed Feb. 12, 1993, Ser. No. 17,042
Int. Cl.[6] A61H *1/02*
U.S. Cl. 602—32 **5 Claims**



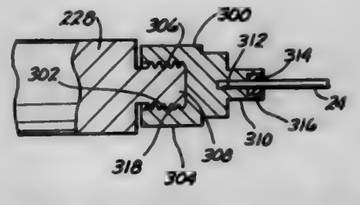
1. A cervical traction and exercise device adapted to be positioned against a rigid support surface and secured about the user's head and neck for imparting a forward curve to the cervical spine and manipulating the spine and intervertebral discs to promote fluid transfer to the discs, said device comprising:
a support frame defining lateral support portions adapted to be disposed on opposite sides of the user's head and neck, said portions defining contact surfaces disposed in a common plane for abutting the rigid support surface;
A transverse neck support carried by said lateral support portions of said frame and extending thereacross outwardly spaced from said contact surfaces in a first direction normal to said plane;
An inflatable elongated bladder carried by said neck support and having an upper portion and a lower portion and defining a central longitudinal axis extending parallel to said plane and normal to said lateral support portions of said frame, said bladder being expandable in said first direction outwardly from said neck support and in a second direction substantially normal to said first direction and upon inflation, said upper portion of said bladder having a convex cross section taken along said longitudinal axis and extending outwardly from the transverse neck support;
means for securing said device to the user's head such that said upper portion of said bladder is disposed adjacent the back of the user's neck and transverses the cervical spine such that said first direction of expansion is toward and substantially normal to the cervical spine; and
means for selectively inflating and deflating said bladder whereby upon said bladder expanding in said first direction, said upper portion of said bladder bears outwardly against the back of the user's neck and forces the cervical spine to curve forwardly and upon expanding in said second direction, applies an angular traction to the cervical spine and, upon repeated inflation and deflation of said bladder, a forward curve is imparted to the cervical spine and fluid transfer to the intervertebral discs is actively induced.

5,382,227
APPARATUS AND METHOD FOR SETTING THE LEVEL OF A LIQUID IN A CHAMBER OF AN EXTRACORPOREAL BLOOD CIRCUIT
Jean-Claude Riquier, Rilleux, France, assignor to Hospal Industrie, Meyzieu Cedex, France
Filed Feb. 5, 1992, Ser. No. 831,532
Claims priority, application France, Feb. 6, 1991, 91 01564
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—4 **13 Claims**



1. A device for treating blood including an extracorporeal blood circuit, the device comprising:
an arterial portion of the circuit for conveying liquid from a source to a treatment device in fluid communication with the arterial portion;
a venous portion of the circuit for conveying treated liquid away from the treatment device, the venous portion being in fluid communication with the treatment device;
at least one circulation pump in operative communication with the circuit;
an arterial chamber in fluid communication with the arterial portion of the circuit for containing liquid in a lower portion thereof, and for containing gas in an upper portion thereof;
a venous chamber in fluid communication with the venous portion of the circuit for containing liquid in a lower portion thereof, and for containing gas in an upper portion thereof;
a chamber pump operatively connected to at least one of the arterial and venous chambers for varying a quantity of gas inside at least one of the arterial and venous chambers;
means associated with at least one of the arterial and venous chambers for detecting a liquid level within at least one of the arterial and venous chambers and for outputting a corresponding signal;
means, communicating with the chamber pump and with the level detecting means, for controlling the chamber pump in response to the signal from the level detecting means in order to obtain a predetermined liquid level within at least one of the arterial and venous chambers, the controlling means including means for ensuring that predetermined high liquid levels are simultaneously reached in both the arterial and venous chambers, and means for ensuring that predetermined low liquid levels are simultaneously reached in both the arterial and venous chambers.

5,382,228
METHOD AND DEVICE FOR CONNECTING ULTRASOUND TRANSMISSION MEMBER (S) TO AN ULTRASOUND GENERATING DEVICE
Henry Nita, Mission Viejo, and Timothy C. Mills, Newport Beach, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.
Continuation-in-part of Ser. No. 911,546, Jul. 9, 1992, Pat. No. 5,312,328. This application Sep. 28, 1993, Ser. No. 127,936
Int. Cl.[6] A61B *17/20*
U.S. Cl. 604—22 **22 Claims**

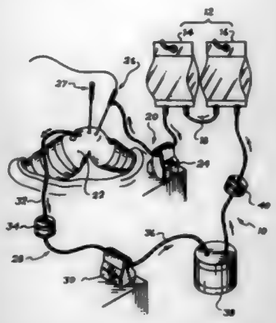


1. An ultrasonic catheter for removing obstructions from tubular anatomical structures such as blood vessels, said ultrasonic catheter comprising:
an elongated flexible catheter body having a proximal end, a distal end, and at least one lumen extending longitudinally therethrough;
an ultrasound transmission member extending longitudinally through the lumen of said catheter, said ultrasound transmission member having a proximal end connectable to a separate ultrasound generating device and a distal end member terminating adjacent the distal end member of said catheter body;
a sonic connector assembly being positioned on the proximal end of said ultrasound transmission member to facilitate connection of said ultrasound transmission member to a separate ultrasound transducer, said ultrasound transducer having first threads formed thereon, said sonic connector assembly comprising:
(i) a proximal end member having second threads complimentary to said first threads formed thereon for attaching said sonic connector to said ultrasound transducer;
(ii) a distal end member having a bore formed therein into which said ultrasound transmission member is received; and
(iii) an absorber member disposed within said bore and distal of the proximal end of said ultrasound transmission member, said absorber member substantially surrounding a portion of said ultrasound transmission member for mitigating transverse vibration thereof.

5,382,229
IRRIGATION SOLUTION RE-CIRCULATING SYSTEM
Richard W. Grabenkort, Barrington; Robert J. Kruger, McHenry; Joaquin Mayoral, Downers Grove, and Sheldon M. Wecker, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Sep. 21, 1993, Ser. No. 124,734
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—27 **12 Claims**

1. A continuous re-circulating system for recirculating a generally clear irrigation solution used in surgical procedures, comprising:
a reservoir of irrigation solution;
a solution supply line for joining said reservoir of irrigation solution in fluid communication with a surgery site for delivering a controlled volume of the irrigation solution to the surgery site;
a return line for further joining the surgery site in fluid communication with said reservoir such that said reser-

voir, said supply line, said surgery site and said return line form a loop;
a pump connected to said return line for returning irrigation solution from said surgery site to said reservoir of irrigation solution; and
at least one means for filtering the solution connected to said



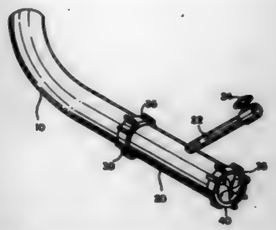
return line for removing contaminants from said irrigation solution prior to return to said reservoir to permit re-circulation of the filtered solution to the surgery site wherein said at least one filtering mean comprises a semi-permeable membrane that removes occluding contaminants so as not to impair visualization through the solution at the surgery site.

5,382,230

VASCULAR ACCESS SHEATH FOR INTERVENTIONAL DEVICES

Joseph Bosa, Strafford, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed Dec. 16, 1991, Ser. No. 808,003
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—32 **11 Claims**



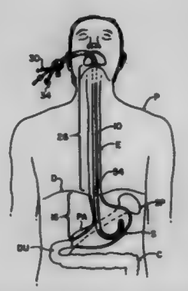
1. A sheath for introducing an interventional device into a vessel of a patient comprising:
a rigid tubular structure, having a proximal end, a distal end, and a passage therethrough;
a first valve having a proximal end, a distal end and a passage therethrough, the passage having a diameter continuously variable by operation of a means for controllably opening and closing said passage to selectively permit fluid flow in an open position or preclude fluid flow in a fully closed position, wherein said distal end of said first valve is connected to said proximal end of said rigid tubular structure and said proximal end of said first valve is a sealable port for inserting an interventional device into and through the rigid tubular structure;
a second valve having a proximal end, a distal end and a passage therethrough, the passage having a diameter continuously variable by operation of a means for controllably opening and closing said passage to selectively permit fluid flow in an open position or preclude fluid flow in a fully closed position, wherein said proximal end of said second valve is connected to said distal end of said rigid tubular structure and said distal end of said second valve is a sealable port for inserting an interventional device into the patient; and
a flexible tubular structure, having a proximal end, a distal end, and a passage therethrough, wherein said distal end of said second valve is connected to said proximal end of said flexible tubular structure,
whereby said first and second valves may be selectively opened to create an opening having a diameter to admit the interventional device through at least one of the valves while maintaining hemostasis by a sliding seal.

5,382,231

METHOD FOR TRANSESOPHAGEAL RETRACTION OF THE STOMACH

Leonard M. Shlain, 40 Century Dr., Mill Valley, Calif. 94941

Filed Feb. 2, 1993, Ser. No. 12,219
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—49 **8 Claims**



1. A method for performing a laparoscopic procedure in the region of a patient's stomach, said method comprising:
insufflating the abdomen to raise the abdominal wall over the stomach;
introducing a laparoscope into the region between the abdominal wall and the stomach;
viewing the region of the stomach through the laparoscope;
providing a device having a distal and proximal end with means for forming a J-shaped curvature in the distal end of the device from the proximal end of the device;
inserting a device through the patient's esophagus so that a distal end of the device lies within the stomach and a proximal end of the device extends outward from the patient's mouth;
manipulating the proximal end of the device to form the J-shaped curvature in the distal end of the device through the patient's esophagus to move the stomach and expose a region of or near the patient's stomach to the laparoscope; and,
performing a procedure in the exposed region through an incision in the abdominal wall while viewing the region through the laparoscope.

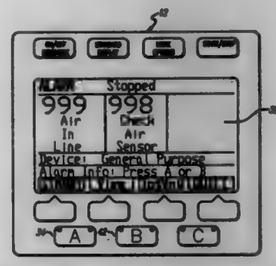
5,382,232

INFUSION SYSTEM WITH AIR-IN-LINE CLEAR FUNCTION

Clifford W. Hague, Canyon Country, and Paul A. Koenig, Valencia, both of Calif., assignors to Ivac Corporation, San Diego, Calif.

Filed Mar. 13, 1992, Ser. No. 852,622
Int. Cl.[6] A61M *31/00, 1/00*
U.S. Cl. 604—65 **16 Claims**

1. A medication infusion pump, comprising:
pump means for delivering a selected therapeutic liquid to an infusion line under controlled flow conditions for infusion to a patient;
an air-in-line sensor associated with said pump means, the air-in-line sensor having a detection field configured to receive a short length of the infusion line and comprising means for detecting gas bubbles within the short length of infusion line, and alarm means for responding to a detec-



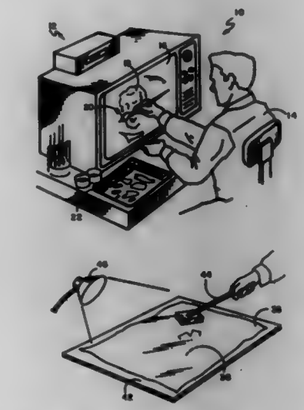
tion of gas bubbles within the infusion line by said means for detecting to activate an alarm; and
manually actuated means for operating said pump means to deliver an output pulse of the therapeutic liquid to the short length of the infusion line to dislodge and move gas bubbles detected within the detection field along the infusion line to a position downstream of the detection field.

5,382,233

METHOD OF ART INSTRUCTION

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Continuation-in-part of Ser. No. 909,674, Jul. 7, 1992, Pat. No. 5,252,073. This application Oct. 7, 1993, Ser. No. 132,797
Int. Cl.[6] G09B *11/00*
U.S. Cl. 604—88 **6 Claims**



1. A method for teaching artistic methods and techniques, comprising the steps of:
providing a television set having a screen;
providing a televised image on said screen of said television set;
painting a copy of said televised image directly on said television screen directly over said televised image to form a painted image;
providing a first sheet of transparent material having a front surface and a back surface;
positioning said back surface of said first sheet of material over said painted image on said television screen;
adhering said painted image on said television screen to said back surface of said first sheet of material with stronger adhesion than the adhesion of said painted image to said television screen; and
removing said first sheet of material and pulling said painted image from said television screen for viewing said painted image on said first sheet of material.

5,382,234

OVER-THE-WIRE BALLOON CATHETER

Richard G. Cornelius, Golden Valley; Larry A. Walter, Minneapolis; Douglas C. Lee, Maple Grove, and Frank A. Maubach, St. Paul, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Apr. 8, 1993, Ser. No. 45,017
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **13 Claims**



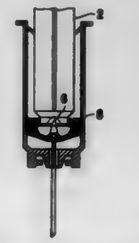
1. An over-the wire catheter comprising:
(a) a first tubular member defining a first lumen;
(b) a second tubular member defining a second lumen;
(c) said first and second tubular members having exterior surfaces in contact with each other over a substantial length thereof in a non-coaxial manner;
(d) a flexibility control member co-extending with and exterior to both the first and second tubular members, the flexibility control member joined to at least one of the first and second tubular members along a portion of their longitudinal length to define a catheter shaft; and
(e) a balloon joined to the distal end of the catheter shaft and in fluid communication with the first lumen.

5,382,235

DEVICE FOR CAPTURING AND RETRACTING THE NEEDLE CANNULA OF A DISPOSABLE SYRINGE

Robert F. Sak, Boca Raton, Fla., assignor to R.M.S. Safety, Inc., Boca Raton, Fla.

Continuation-in-part of Ser. No. 101,723, Aug. 4, 1993, and a continuation-in-part of Ser. No. 129,312, Sep. 30, 1993, and a continuation-in-part of Ser. No. 86,988, Jul. 7, 1993, abandoned, and a continuation-in-part of Ser. No. 96,445, Jul. 26, 1993, abandoned. This application Dec. 29, 1993, Ser. No. 175,236
Int. Cl.[6] A61M *5/00, 5/32*
U.S. Cl. 604—110 **19 Claims**



1. In a syringe having a cylinder, and needle extending into said cylinder, and a piston stem with a flange on a distal end thereof, said flange supporting a piston for axial displacement within said cylinder, and said piston presenting a concavity

facing proximally of said syringe and a groove in an internal surface of said concavity, said groove being engaged by said flange to facilitate attachment of said piston to said stem while leaving a void generally defined by said stem distal end and said internal surface of said concavity, the improvement comprising:

means for enabling a proximal end of said needle to pierce said rubber piston upon generally complete expulsion of fluid from said cylinder; and

means for receiving and capturing said needle proximal end after piercing of said rubber piston, said capturing means comprising a separate, generally hollow device received within said void and at least partially retained therein by said piston attached to said stem, such that said capturing means is adapted to existing syringes without modification of said piston and stem.

5,382,236

IMPLANTABLE INFUSION PUMP

Karl-Heinz Otto, and Gerd Pfister, both of Kiel, Germany, assignors to Aeschlitz & Co., GmbH, Germany

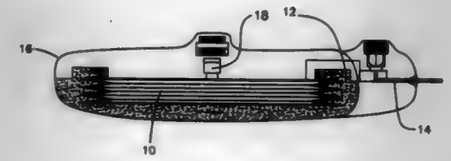
PCT No. PCT/DE91/00944, § 371 Date Jun. 14, 1993, § 102(e) Date Jun. 14, 1993, PCT Pub. No. WO92/09316, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 29, 1991, Ser. No. 934,520

Claims priority, application Germany, Nov. 29, 1990, 4038049

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—141 **4 Claims**



1. In an infusion pump for implanting within the body of a patient, the pump including an outer housing enclosing a propellant chamber and an elongated inner housing containing a medication, the propellant chamber containing at least 2.5 bar over atmospheric pressure of a propellant gas, a capillary tube of restricted diameter leading out of the inner housing for restricting the medication flow and a means for filling the inner housing with the medication, the improvement comprising the housing containing the medication is elastic, and the propellant is dichlorotetrafluoroethane to cause a minimal flow rate change for the medication to be infused when pressure or temperature in the patient changes.

5,382,237

Patent Not Issued For This Number

5,382,238

CATHETER STIFFENERS

Timothy A. Abrahamson, Seattle, and Richard K. Sommercorn, Renton, both of Wash., assignors to Quinton Instrument Company, Bothell, Wash.

Filed May 20, 1993, Ser. No. 65,081

Int. Cl.[6] A61M *5/172, 25/00*

U.S. Cl. 604—170 **16 Claims**



1. A wire stiffener for use with a catheter, said wire stiffener comprising:

an elongate member having distal and proximal end portions thereon and a body portion therebetween, wherein said distal end portion includes a distal tip thereon and said proximal end includes a cap member thereon for operative connection with a catheter;

said distal tip being a generally elongate member having a first outer diameter and a passageway extending therethrough, said passageway including distally and proximally oriented openings wherein said proximally oriented opening opens generally adjacent to said body portion; and

said body portion is operatively interconnected with and extends between said cap member and said distal tip and includes at least one area of increased flexibility thereon as compared to the flexibility of the remainder of said body portion.

5,382,239

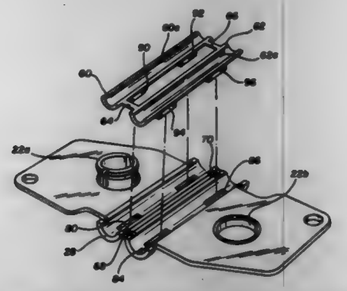
REPOSITIONAL CATHETER FIXATION DEVICE

Douglas P. Orr, Sandy; Gerald D. Powelson, American Fork, and Mark Crawford, Sandy, all of Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 24, 1992, Ser. No. 873,903

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—177 **27 Claims**



21. A medical device for securing tubing to a patient, the device comprising:

a first semi-cylindrical member and a second semi-cylindrical member, the first and second semi-cylindrical members respectively comprising first and second elongate gripping channels and first and second tabs respectively secured to the first and second elongate gripping channels;

a hinge disposed between the first and second semi-cylindrical members and secured to the first and second elongate gripping channels such that the semi-cylindrical members are rotatable about the hinge between an open position and a closed position in which the tubing is gripped between the elongate gripping channels;

a connector for releasably connecting the first semi-cylindrical member to the second semi-cylindrical member comprising a first fitting on said first, member and a second fitting on said second member, said fittings releasably engaging when the device is in the closed position; and

liner means disposed in the first and second elongate gripping channels, the liner comprising a tacky surface to grip the tubing.

5,382,240

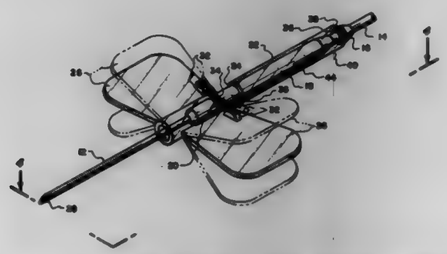
CANNULA GUARD

David Lam, Walnut, Calif., assignor to Precision Dynamics Corporation, San Fernando, Calif.

Continuation of Ser. No. 640,709, Jan. 14, 1991, abandoned. This application Feb. 4, 1994, Ser. No. 192,201

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—177 **13 Claims**



1. In a cannula guard assembly, the combination of: cannular means having a distal end for insertion in a patient and a proximate end operably connected to fluid receiving means; an outer sheath member slidably disposed about said cannular means, said sheath member having a first end and a second end and further having an opening in said sheath member disposed between said first and second ends; first engagement means for establishing interlocking engagement between said cannular means and said outer sheath member and second engagement means for retaining said distal end of said cannular means within said outer sheath member after said distal end has been slidably retracted thereinto, in which said outer sheath member includes gripping means associated therewith and in, which said first engagement means include projecting portions operably disposed on said gripping means and selectively movable from a first non-engaged position to a second position in which said projecting portions extend through said opening and engage in corresponding receiving portions on said cannular means.

5,382,241

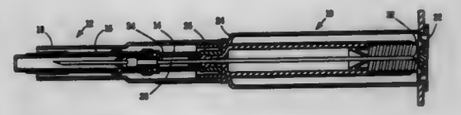
ADAPTER ASSEMBLY FOR CANNULA HUB SYRINGE

Hrishikesh Choudhury, Gurnee; Joseph F. Julian, Libertyville, and John C. Tanner, III, Lake Bluff, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 30, 1993, Ser. No. 130,059

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—192 **5 Claims**



1. A syringe assembly having a cylindrical, closed-end injector housing portion, a tapered cannula hub circumferentially extending from the closed end of the injector housing portion, a blunt cannula extending from the tapered cannula hub, and an adapter assembly removably attached to the tapered cannula hub, the adaptor assembly comprising:

an axially extending hollow tube having a proximal end, a distal end, and a length greater than the extending blunt cannula;

a first interior luer fitment at the proximal end of the hollow tube, the first luer fitment removably attached in an axial manner to the tapered cannula hub;

an exterior luer taper portion and first securing means at the distal end of the hollow tube; and

a removable sharp needle assembly including:

a tapered needle hub having a second interior luer fitment and second securing means, the second interior luer fitment removably attached to the exterior luer taper portion and the second securing means removably secured in a rotational manner to the first securing means at the distal end of the hollow tube,

a sharp needle extending from the tapered needle hub, and

a tubular needle cover removably attached in an axial manner to the tapered needle hub to surround the sharp needle, so that a predominantly axial force applied to the needle cover removes the needle cover from the tapered needle hub, and so that a rotational force applied to the removable sharp needle assembly removes the sharp needle assembly and second securing means from the distal end of the hollow tube and the first securing means, and so that an axial force applied to the hollow tube in an axial direction removes the hollow tube and attached sharp needle assembly from the tapered cannula hub; and

an annular flange fixed to the closed end of the injector so that the flange does not extend beyond the tapered cannula hub and a hollow sheath having a first and second open end, the first open end slidably and removable attached to the annular flange at the closed end of the injector housing portion so that the adapter assem-

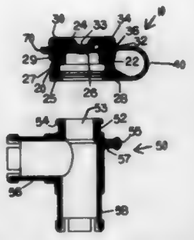
bly fits within the inner diameter of the sheath and only the tubular needle cover extends beyond the second open end of the of the sheath.

5,382,242

CAPPING DEVICE FOR CONDUIT CONNECTOR

Duane L. Horton, St. Louis, Mo., and Richard V. Nye, Laguna Hills, Calif., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Aug. 6, 1993, Ser. No. 103,014
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 **23 Claims**



1. A combination of a conduit connector and a capping device; the conduit connector having three inlets leading to a common passageway within said conduit connector, one of said inlets comprising an access port for providing access from outside said conduit connector to said common passageway; and the capping device comprising:
- a first cap for covering and sealing said access port of said conduit connector; the first cap having an access opening therethrough which allows access to said common passageway within said conduit connector without removing said first cap from said conduit connector; wherein said first cap is selectively removable form said conduit connector;
- a second cap for selectively sealing said access opening of said first cap;
- a flexible tether strap connecting said second cap with said first cap; and
- a flexible anchor strap extending from said first cap; said anchor strap having means at one end for detachably snap-engaging said anchor strap with said conduit connector to selectively anchor said capping device to said conduit connector;
- wherein said conduit connector includes a first lip extending peripherally outward from said access port of said conduit connector; and
- wherein said first cap includes:
- a first cover portion for extending across said access port of said conduit connector; and
- a first continuous skirt portion extending from said first cover portion and terminating in a first inwardly projecting rim; said first rim being detachably snap-engageable with said first lip of said access port of said conduit connector to form a sealing fit between said first cap and said conduit connector.

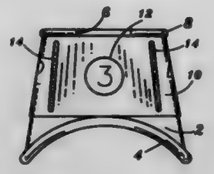
5,382,243

APPARATUS WITH INDICATOR FOR ADMINISTRATION OF EYE MEDICATION

Adrian Mulholland, 1050 College Street, Duncan, British Columbia, Canada V9L 2E7

Filed Sep. 14, 1993, Ser. No. 120,417
Int. Cl.[6] A61H *33/04*
U.S. Cl. 604—301 **17 Claims**

16. An apparatus for use in administering eye medication to the eye of a patient comprising:
- (a) a hollow truncated shell having a first end and a second end;
- (b) plate means attached to the first end of the shell and having an aperture formed in the interior region thereof;
- (c) a plurality of locations indicated on the exterior surface of the shell;



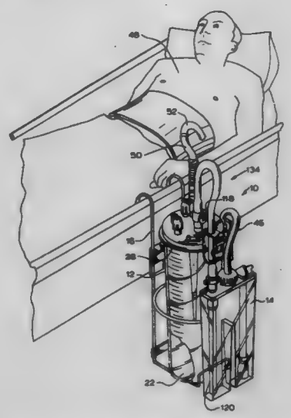
- (d) indicator means mounted on the exterior of the shell, said indicator means being moveable in relation to the shell, in relation to the indicator locations displayed on the exterior of the shell; and
- (e) a dispenser bottle having a neck which is inserted through the aperture so that a dispensing tip formed in the end of the neck of the dispenser penetrates into the interior of the shell.

5,382,244

STAND ALONE CONTROL MODULE

Anil M. Telang, Saugus, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Filed Feb. 25, 1991, Ser. No. 660,386
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—319 **9 Claims**



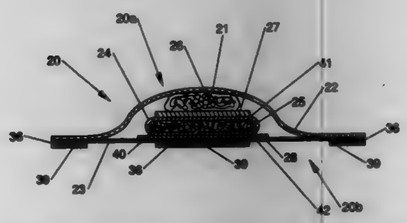
1. A stand-alone control module for transforming a variable high vacuum source into a constant low vacuum source for medical applications and for providing a one-way check valve to prohibit return of air when draining fluids and air through a drainage tube having a first end located in the plural cavity of a patient comprising:
- a first chamber containing a first column of fluid having a height at a first predetermined level;
- a second chamber containing a second column of fluid at a second predetermined level, said second level being less than said first level;
- a lid covering an upper surface of both of said first and second chambers, said lid having a first port for connecting said second chamber to a high vacuum source, said lid providing a connecting pathway connecting said first and second chambers above said fluid levels in said first and second chambers thereby equalizing a pressure differential between said first and second chambers,
- a first tube within said first chamber, said first tube having first and second ends, said first end of said first tube being immersed in said first column of fluid and said second end of said first tube extending above said first chamber through said lid and being open to atmospheric pressure, whereby when said high vacuum source is applied to said first chamber through said connecting pathway, said first tube supplies atmospheric air to said first chamber through said first column of fluid via bubbles thereby creating a residual pressure in said first chamber which remains constant and dependent on the height of said first column of fluid in said first chamber, said first end of said first tube having a mesh net covering said end to break up air in said tube into fine bubbles before entering said first fluid column to reduce turbulence and noise in said first chamber; and
- a second tube within said second chamber, said second tube having first and second ends, said first end of said second tube being immersed in said second column of fluid in said second chamber and said second end of said second tube being connected to said second end of said drainage tube to be in communication with the plural cavity of the patient, said second chamber having a vacuum which is normally lower than a vacuum in the patient's pleural cavity thereby causing air in the pleural cavity to be pulled through said second end of said second tube through said second column of fluid toward said high vacuum source, when said vacuum in said pleural cavity is greater than vacuum in the second chamber, fluid in said second chamber is pulled into said second tube to prevent air in said second chamber from returning to said pleural cavity, said second tube having a valve located at said second end which closes when said second fluid column rises to said second end of said tube.

5,382,245

ABSORBENT ARTICLES, ESPECIALLY CATAMENIALS, HAVING IMPROVED FLUID DIRECTIONALITY

Hugh A. Thompson, Fairfield; Gerald A. Young; Thomas W. Osborn, III, both of Cincinnati; Charles W. Chappell, West Chester; Theresa L. Johnson, Cincinnati; John L. Hammons, Hamilton; Bruce W. Lavash, West Chester; James C. Horney, Cincinnati, and Lee M. Hines, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 734,404, Jul. 23, 1991, abandoned. This application Jul. 23, 1992, Ser. No. 915,286
Int. Cl.[6] A61F *13/15, 13/20*
U.S. Cl. 604—367 **9 Claims**



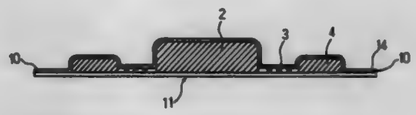
1. An absorbent article having a longitudinal direction, a transverse direction, and a z-direction, said absorbent article comprising:
- (a) a liquid pervious topsheet;
- (b) a liquid impervious backsheet;
- (c) an absorbent core positioned between said topsheet and said backsheet, said core having an uppermost surface facing said topsheet and a lowermost surface facing said backsheet, said uppermost surface of said core having an aperture therein; and
- (d) a transport layer having a lower portion and an upper portion, the lower portion of said transport layer being positioned below the uppermost surface of said core and being oriented substantially in the longitudinal direction of said absorbent article, the upper portion of said transport layer being gathered into a bun, said bun extending through said aperture in said uppermost surface of said absorbent core toward said topsheet.

5,382,246

DISPOSABLE DIAPER

Masashi Kawano, Tokyo, Japan, assignor to Koyo Disposable Goods Company, Japan

Filed Sep. 18, 1990, Ser. No. 584,562
Int. Cl.[6] A61F *13/15, 13/20*
U.S. Cl. 604—385.2 **10 Claims**



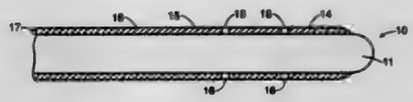
1. A disposable diaper comprising:
- a liquid impermeable outer sheet;
- a liquid permeable inner sheet attached to said outer sheet so as to form an enclosed space;
- a central absorber in said enclosed spaced;
- first and second elastic strips, said first elastic strip located between said central absorber and a first outer edge of said enclosed space, said second elastic strip located between said central absorber and a second outer edge of said enclosed space, said second outer edge being opposite said first outer edge; and
- first and second peripheral absorbers in said enclosed space, said first peripheral absorber located between said first elastic strip and said first outer edge of said enclosed space, said second peripheral absorber located between said second elastic strip and said second outer edge of said enclosed space, portions of said central absorber and first peripheral absorber defining a first space therebetween in which is disposed at least a portion of said first elastic strip, portions of said central absorber and second peripheral absorber defining a second space therebetween in which is disposed at least a portion of said second elastic strip.

5,382,247

TECHNIQUE FOR ELECTROSURGICAL TIPS AND METHOD OF MANUFACTURE AND USE

William W. Cimino, Louisville; Michael D. Loatine, Westminster, and Michael P. Schollmeyer, Longmont, all of Colo., assignors to Valleylab Inc., Boulder, Colo.

Filed Jan. 21, 1994, Ser. No. 184,515
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—33 **20 Claims**



1. An electrosurgical tip for the application of electromagnetic energy in either a monopolar or a bipolar circuit through the tissue and the bodily fluids of an animal or human comprising:
- an electrically conductive electrode for connection to a

source of electromagnetic electrosurgical energy and for transmission of the electromagnetic electrosurgical energy to the tissue and the bodily fluids of the animal or human;

an electrical and thermal insulator held about the electrically conductive electrode for preventing the flow of electromagnetic and thermal energy from the electrically conductive electrode to the tissue and the bodily fluids;

a surface of the electrical and thermal insulator for contact with the tissue and the bodily fluids of the animal or human, the surface having a low surface free energy;

openings through the electrical and thermal insulator, the openings extending from the electrically conductive electrode to the surface for the passage of electromagnetic electrosurgical energy from the electrically conductive electrode to the tissue and the bodily fluids, and

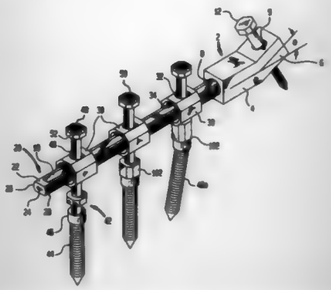
a wall of the electrical and thermal insulator traversing between the surface of the electrical and thermal insulator and the electrically conductive electrode recessed in the openings, the wall of a thickness about the openings and ample to space the electrically conductive electrode from substantially any direct contact with the tissue of the animal or human and to physically isolate heat generated in the electrically conductive electrode due to the passage of energy from the electrically conductive electrode through the openings to the tissue and the bodily fluids of the animal or human.

5,382,248

SYSTEM AND METHOD FOR STABILIZING BONE SEGMENTS

Robert E. Jacobson, Coral Gables, and Brian J. Mirson, Miami, both of Fla., assignors to H. D. Medical, Inc., Miami, Fla.

Filed Sep. 10, 1992, Ser. No. 944,206
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—60 **24 Claims**



1. A device for stabilizing bone segments, said device comprising:

at least one elongated rod member, said member defining at least one slotted opening therethrough and having a threaded exterior portion; and

means for anchoring said at least one rod member to a plurality of bone segments, each said anchoring means comprising

a post member adapted for engaging one of said bone segments, said post member having a proximal end, a distal end and a shoulder portion located between said proximal and said distal ends, wherein said proximal end is configured for passage through said at least one opening in said rod member and thereafter into a block nut member for securing said post member and said rod member, and wherein said distal end is threaded for insertion into and engagement with one of said bone segments, and further wherein said shoulder portion is adapted for spacing said rod member from said bone segments and is provided upon an upper portion thereof with a bevel adapted to facilitate a substantially locking engagement between said post member and said block nut member;

a block nut member mounted upon said rod member for securing said rod member relative to said post member, said block nut member defining a bore extending substantially vertically therethrough, said bore configured and adapted to permit passage of at least a portion of said post member proximal end to create an interlocking fit with said post member; and

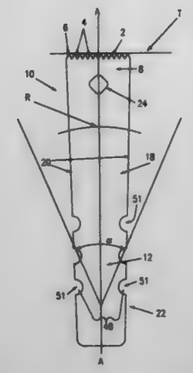
at least one spacer member located between said post member shoulder portion and said block nut member, said at least one spacer member configured for controlling the distance between said shoulder portion and a lower surface of said block nut member.

5,382,249

ADJUSTABLE SURGICAL BLADE

Henry H. Fletcher, Folsom, Calif., assignor to Synvasive Technology, Inc., Rancho Cordova, Calif.

Continuation-in-part of Ser. No. 707,903, May 30, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 149,605
Int. Cl.[6] A61B *17/00, 17/32*
U.S. Cl. 606—79 **20 Claims**



1. An oscillatory cutting saw useful for surgical penetration of bone comprising:

(a) an oscillatory power tool having a blade retention device;

(b) a cutting blade attached to the oscillatory cutting saw, said blade comprising:

(i) a central cutting blade shank having a longitudinal axis;

(ii) a distal end having a plurality of cutting teeth disposed substantially on a tangent perpendicular to the longitudinal axis of the cutting blade shank; and

(iii) a proximal end having a plurality of spaced-apart attachment elements, each of said attachment elements being capable of cooperating with the blade retention device so as to firmly attach the blade to the oscillatory cutting saw;

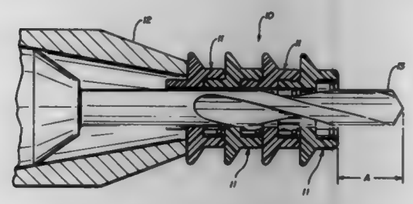
whereby the attachment of the blade to the oscillatory cutting saw by one of the attachment elements results in a distance between the cutting teeth and the blade retention device which is different from the distance between the cutting teeth and the blade retention device resulting from the attachment of the blade to the oscillatory cutting saw by a different attachment element.

5,382,250

CRANIAL DRILL STOP

Robert Kranz, Attleboro, Mass., assignor to Johnson & Johnson Professional Inc., Raynham, Mass.

Filed Mar. 8, 1994, Ser. No. 207,978
Int. Cl.[6] A61B *17/16*
U.S. Cl. 606—80 **2 Claims**



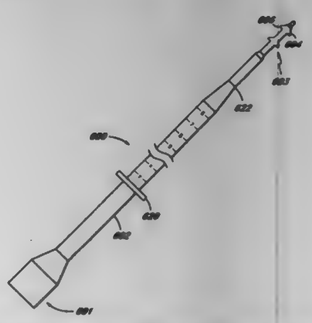
1. A cranial drill stop comprising a plurality of spacers, each of said spacers having a body having a first end and a second end, said first end comprising a cylindrical portion having a bore extending therethrough, said second end comprising a flat disk adjacent said cylindrical portion and having a plurality of tabs affixed thereto and extending perpendicular from the face of said disk and arrange in a circumferential pattern around a bore centrally located in said disk and axially aligned with the bore in said cylindrical portion, the periphery of said disk defining a gripping flange having a diameter larger than the diameter of said cylindrical portion, each of said tabs having an indent positioned on an outer surface, a bead positioned around the interior diameter of said cylindrical portion, said indents in said tabs adapted to engage and retain a bead of another spacer when the spacers are fitted together to define a drill stop.

5,382,251

PLUG PULLING METHOD

Larry L. Hood, Laguna Hills; Gregg Hughes, Lake Forest; Ted Carlson, Mission Viejo, all of Calif.; John Berkman, Grants Pass, Oreg.; James T. Caillouette, Newport Beach, Calif.; Robert C. Klapper, Los Angeles, Calif., and Woodrow W. Watson, Mission Viejo, Calif., assignors to Biomet, Inc., Warsaw, Ind.

Continuation-in-part of Ser. No. 713,959, Jun. 11, 1991, which is a continuation-in-part of Ser. No. 665,418, Mar. 5, 1991, which is a continuation-in-part of Ser. No. 304,820, Jan. 31, 1989, Pat. No. 5,019,083. This application Feb. 14, 1992, Ser. No. 836,109
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—99 **11 Claims**



1. A method of removing a deposit of cement from a cavity in a bone, comprising the steps of:

identifying a deposit of a cement in a bone cavity;

providing a removal tool comprising a working tip;

transmitting coherent light through a fiber optic waveguide to said working tip of said removal tool;

converting the energy of the coherent light to thermal energy at the working tip of the removal tool to heat at least a portion of the working tip;

conducting heat from said removal tool to the cement;

converting at least a portion of the cement from a first hardened state to a second softened state;

advancing the working tip of the removal tool into the softened portion of the cement;

permitting the softened portion of the cement to return to the first hardened state; and thereafter

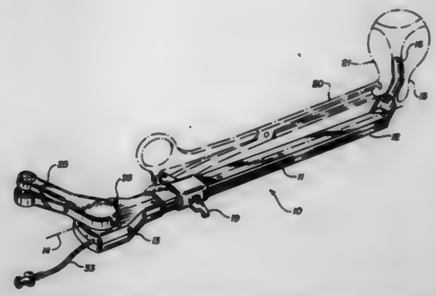
withdrawing the removal tool, thereby withdrawing the cement from the bone cavity.

5,382,252

TRANSVAGINAL UTERINE MANIPULATOR

Stephen J. Failla, Cincinnati; Patrick J. Traini, Bellbrook, and Charles M. Rarey, Cincinnati, all of Ohio, assignors to Ethicon Endo-Surgery, Cincinnati, Ohio

Filed Mar. 24, 1994, Ser. No. 217,266
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—119 **5 Claims**



1. A transvaginal uterine manipulator of the type having an elongated housing having distal and proximal ends and a longitudinal axis, a tip releasably attached at said housing distal end for positioning a uterus of a patient, a handle lever rotatably mounted to said housing proximal end and a control linkage connecting said handle lever to said tip for pivoting said tip from a first position parallel to said longitudinal axis to a second position when said handle lever is rotated, and a tenaculum holder slidable on said elongated housing for attaching a tenaculum having proximal and distal ends to grip and hold said patient's cervix; wherein the improvement comprises:

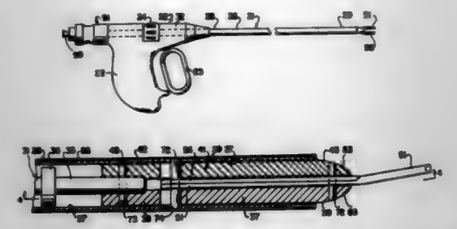
a) means for applying a constant axial pulling force on said tenaculum holder toward said housing proximal end thereby causing a constant tension on said patient's cervix when said holder engages said tenaculum proximal end and said tenaculum distal end is attached to grip and hold said patient's cervix,

b) means for indicating arcuate position of said tip at said housing proximal end,

c) a connection between said handle lever and said control linkage connecting said handle lever to said tip wherein arcuate rotation of said handle lever produces substantially identical arcuate pivoting motion to said tip, and

d) locking menas comprising an unlocking arm pivotally attached to said handle lever for selectively maintaining or releasing said handle lever from a locked pivoted position relative to said housing longitudinal axis.

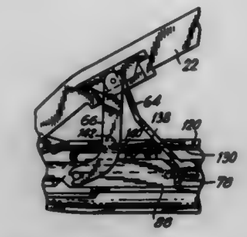
5,382,253
CLIP APPLIER TOOL
Michael Hogendijk, Sunnyvale, Calif., assignor to Unisurge, Inc., Cupertino, Calif.
Filed Mar. 5, 1993, Ser. No. 27,012
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—142 11 Claims



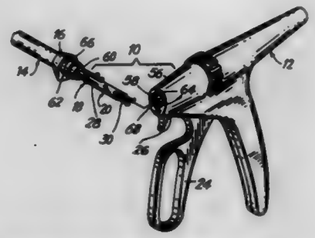
1. A clip applier tool for applying a clip inside of a body in a laparoscopic surgical procedure comprising an elongate tubular member having a bore extending therethrough and having proximal and distal extremities, a push-pull rod slidably mounted in said bore and having proximal and distal extremities, actuator means mounted in said bore and having circumferential surfaces engaging the inside of the distal extremity of said tubular member for slidable movement therein, means connecting the actuator means to the distal extremity of the push-pull rod, first and second clip applier jaw members having elongate proximal extremities extending through said actuator means and having distal extremities adapted for gripping the clip and pivotal means connecting the proximal extremities of the Jaw members to said tubular member to permit the distal extremities of the jaw members to move between open and closed positions, each of the Jaw members being provided with a slot formed therein between the proximal and distal extremities thereof and pin means extending through the slots and coupled to the actuator means so that as the push-pull rod is actuated the pin means travels through the slots to cause the jaw members to move between open and closed positions with respect to each other, the actuator means engaging the jaw members distal of the slots to inhibit shifting of the distal extremities of the jaw members during application of the clip.

5,382,254
ACTUATING HANDLE FOR SURGICAL INSTRUMENTS
Richard A. McGarry, Norwalk; Paul J. Phillips, Middlebury; Giovanni Gonzalez, Norwalk, and Salvatore Castro, Seymour, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 939,029, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 794,492, Nov. 19, 1991, abandoned, which is a division of Ser. No. 530,652, May 30, 1990, Pat. No. 5,084,057, which is a continuation-in-part of Ser. No. 381,265, Jul. 18, 1989, Pat. No. 5,100,420. This application Oct. 30, 1992, Ser. No. 969,754
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—143 9 Claims

1. An actuating handle for attachment to an endoscopic portion of an endoscopic surgical instrument, which comprises:
a frame;
a pusher drive member positioned within said frame and movable between proximal and distal positions;
a spring member positioned within said frame and operatively connected to bias said pusher drive member toward said distal position;
a first actuating member at least partially extending from said frame, and configured and adapted to cooperate with said pusher drive member such that actuation of said first actuating member causes said pusher drive member to move distally under the bias of said spring member;
a second actuating member at least partially extending from said frame and movable between non-actuated and actuated positions, said second actuating member being operatively connected to a channel drive member slidably positioned within said frame and movable between proximal and distal positions; and
means at least partially connected to said first actuators member for preventing substantial movement of said second actuating member from said non-actuated position to said actuated position until said pusher drive member is in said distal position.

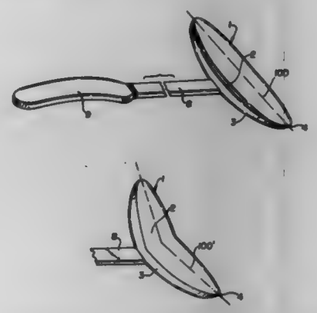


5,382,255
APPARATUS AND METHOD FOR ASSEMBLY OF SURGICAL INSTRUMENTS
Salvatore Castro, Seymour; Paul J. Phillips, Middlebury, and Giovanni Gonzalez, Norwalk, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 8, 1993, Ser. No. 2,208
Int. Cl.[6] A61B *17/10*
U.S. Cl. 606—143 19 Claims



1. A surgical instrument which comprises:
housing means having at least one active element for performing a function during surgical procedures;
frame means having element actuating means for actuating said at least one active element, and a distal end portion adapted to receive at least a portion of said housing means; and
connecting means associated with said frame means for releasably connecting said housing means to said frame means such that said at least one active element is operatively connected to said element actuating means and said connecting means is maintained in a fixed relationship with respect to said frame means when said housing means and said frame means are connected, and said housing means is permitted to rotate with respect to said connecting means and said frame means.

5,382,256
PROTECTIVE INSTRUMENT FOR SUTURING
Javier B. del Castillo, Sant Ferran 60, 08700-Igualada (Barcelona), Spain
Filed Jul. 12, 1991, Ser. No. 729,209
Claims priority, application Spain, Jul. 13, 1990, 9002237[U]; Jun. 19, 1991, 9101945[U]
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—148 15 Claims



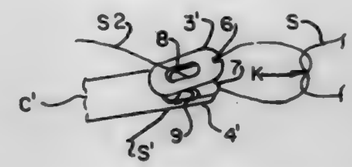
1. A protective instrument for suturing, comprising:
a rigid concavo-convex body member having a concave portion, a convex portion, and a rounded peripheral edge, said rigid body member extending in a longitudinal direction that terminates in blunt ends; and
handling and positioning means, including a handle and a grip, said handle connected to said rigid body member and extending in a direction that is other than said longitudinal direction of said rigid body member, said handling and positioning means being attached to the convex portion of the rigid body member.

5,382,257
IMPLANT ASSIST APPARATUS
Royce Lewis, Lubbock, Tex., and Thomas W. Sander, Newtown, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 644,620, Jan. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,552, Sep. 6, 1990. This application Jun. 5, 1992, Ser. No. 895,171
Int. Cl.[6] A01B *17/04*
U.S. Cl. 606—148 21 Claims



1. An implant assist apparatus for implanting material in tissue to be reapproximated or reinforced comprising:
a cannula having a hollow body and a first and second end;
a point detachably fixed to said first end of the cannula for penetrating tissue; and
suture means releasably attached to said point and extending from said point into said cannula.

5,382,258
ARTHROSCOPIC KNOT TYING DEVICE
James C. Y. Chow, Mount Vernon, Ill., assignor to Linvatec, Fla.
Continuation of Ser. No. 947,827, Sep. 21, 1992, Pat. No. 5,318,579. This application Aug. 30, 1993, Ser. No. 114,437
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 6 Claims

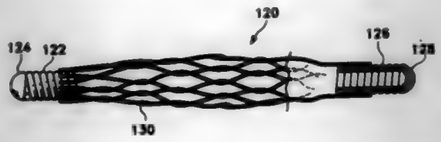


1. A medical instrument for use by a surgeon performing an endoscopic or arthroscopic procedure in which an incision is made at a remote site within the patient's body, the instrument being usable by the surgeon to tie a surgical knot with with a suture at the surgical site to close the incision, comprising:
an elongate instrument body;
a pair of jaws located at one end of the instrument body, one of the jaws being movable with respect to the other to open and close the jaws;
handle means at the other end of the instrument body graspable by the surgeon for holding the instrument and for manipulating the jaws;
hinge means positioned at the end of the instrument body adjacent the handle means, the handle means and the jaws being operably connected to the hinge means for manipulation of the handle means by the surgeon to operate the hinge means to open and close the jaws; and,
means for inserting one end of the suture through one of the jaws, and the other end of the suture through the other jaw, the inserting means comprising a pair of separate, spaced channels formed in a jaw body of each jaw intermediate respective sides of the jaw, at least one of said channels being for the respective end of the suture to be threaded into the jaw through one of the openings therein and out of the jaw through the other channels therein, inserting the ends of the suture through the respective jaws allowing the surgeon to form a surgical knot in the suture with the ends of the suture remote from the surgical site, insert the ends of the suture through the jaws after the knot is formed, draw the knot down on the surgical site by inserting the elongate instrument body, jaws end first, through a cannula, and tightening the knot, after the knot is drawn down on the incision, by opening the jaws to exert opposite pulling forces on the respective ends of the suture.

5,382,259
VASOOCCLUSION COIL WITH ATTACHED TUBULAR WOVEN OR BRAIDED FIBROUS COVERING
James J. Phelps, Sunnyvale, and Nga T. Van, Santa Clara, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.
Filed Oct. 26, 1992, Ser. No. 965,973
Int. Cl.[6] A61F *2/02*; A61B *17/00*
U.S. Cl. 606—151 27 Claims

1. A vasoocclusive device comprising:
a. a helical coil having a multiplicity of windings and having a first end and a second end, a passageway between the first end and second end, and which is closed at least one of said helical coil first end and second end;
b. at least one fibrous woven tubular member extending

coaxially about at least a portion of the helical coil and adhering to the helical coil at least one location on the coil where the device is of a size which may be introduced through the lumen of a vascular catheter.

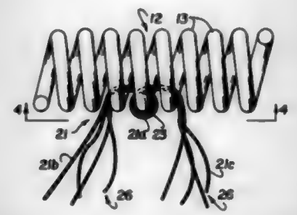


5,382,260

EMBOLIZATION DEVICE AND APPARATUS INCLUDING AN INTRODUCER CARTRIDGE AND METHOD FOR DELIVERING THE SAME

Ray H. Dormandy, Jr., San Bruno, and Marcelyn A. Berlo, San Francisco, both of Calif., assignors to Interventional Therapeutics Corp., Fremont, Calif.

Filed Oct. 30, 1992, Ser. No. 969,008
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—151 12 Claims



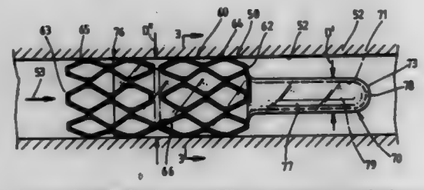
1. An embolization device comprising an elongate coil having a plurality of turns formed of a metal which is opaque to x-rays and having rounded ends comprising a first group of fibers, said first group of fibers having an intermediate portion and first and second end portions, said intermediate portion being looped about one of said turns to form a loop on one of said turns, the first and second end portions extending interiorly of the coil and outwardly of the coil through two adjacent turns adjacent the turn about which the loop is formed, the ends of the fibers of the first and second end portions of each first group being free to move, said first group of fibers being free of knots and said loop serving as the sole means for retaining the group of fibers on the coil.

5,382,261

METHOD AND APPARATUS FOR OCCLUDING VESSELS

Julio C. Palmaz, San Antonio, Tex., assignor to Expandable Grafts Partnership, San Antonio, Tex.

Filed Sep. 1, 1992, Ser. No. 938,816
Int. Cl.[6] A61B *17/00*; A61M *29/02*
U.S. Cl. 606—158 28 Claims



1. A vessel occluder for providing permanent occlusion of a vessel in a person, the vessel having an inner wall surface and having a body fluid flowing therethrough, comprising:

at least one metallic tubular shaped member, having an outer surface, an interior and first and second open ends, the tubular shaped member having a first diameter which permits intraluminal delivery of the at least one tubular shaped member into the vessel to be occluded;

a flexible closure member, attached to the first open end of the at least one tubular member, which seals the first open end, the closure member having a first diameter, which is substantially the same as the at least one tubular shaped member first diameter; and

the at least one tubular shaped member and at least a portion of the flexible closure member having a second expanded permanent diameter, upon the application from the interior of the tubular shaped member of a radially outwardly extending force, which second diameter is variable and controlled by an amount of force applied to the tubular shaped member, which force deforms at least a portion of the at least one tubular shaped member to permanently retain the at least one tubular shaped member and the portion of the closure member with the second expanded permanently diameter, whereby the closure member is disposed in sealing engagement with the inner wall surface of the vessel and occludes the vessel to prevent the body fluid from flowing past the closure member.

5,382,262

PROCESS FOR PREPARING A SUPER SATURATED LIQUID ALKALI COMPOSITION FOR REACTIVE DYEING OF TEXTILES

Samuel B. Moore, Burlington, N.C., assignor to Burlington Chemical Co., Burlington, N.C.

Filed Apr. 27, 1992, Ser. No. 874,754
Int. Cl.[6] C09B *67/00*
U.S. Cl. 8—543 4 Claims

1. A process for preparing a supersaturated liquid mixture for reactive dyeing of cotton and cotton blended fabrics, said process comprising the steps of:

(a) introducing an aqueous solution of caustic Potash into a reaction vessel;

(b) adding caustic Potash flake to the mixture while mixing to adjust the amount of available alkali;

(c) reacting the mixture with liquid CO_2 while mixing;

(d) stopping the CO_2 when the pH value of an aqueous solution of a 2% concentration is about 12; and

(e) cooling the mixture to about room temperature.

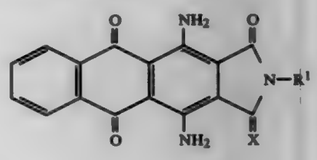
5,382,263

BLUE DYE MIXTURES OF HIGH BRILLIANCE

Helmut Degen, Frankenthal; Arno Lange, Bad Duerkheim; Sabine Gruettner-Merten, Mutterstadt, and Helmut Reichelt, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 18, 1992, Ser. No. 946,652
Claims priority, application Germany, Sep. 26, 1991, 4132075
Int. Cl.[6] C09B *29/03, 67/22*
U.S. Cl. 8—638 3 Claims

1. A blue dye mixture containing from 30 to 95% by weight, based on the total weight of the dyes, of one or more blue anthraquinone dyes of the formula I



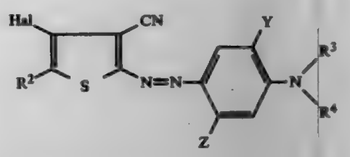
(I)

where

R^1 is C_1–C_{10}-alkyl optionally interrupted by 1 or 2 oxygen atoms in ether function and optionally substituted by C_1–C_8-alkoxycarbonyl, hydroxyl or phenyl, and

X is oxygen or imino,

and also from 5 to 70% by weight, based on the total weight of the dyes, of one or more blue thiopheneazo dyes of the formula II



(II)

where

Hal is chlorine or bromine,

R^2 is formyl or cyano,

Y is hydrogen or C_1–C_4-alkoxy,

Z is C_1–C_4-alkyl, C_1–C_4-alkoxy, optionally halogen-, cyano-, hydroxyl-, C_1–C_4-alkoxy- or C_1–C_4-alkanoyloxy-substituted C_1–C_8-alkanoylamino or C_3–C_4-alkenoyl-amino, and

R^3 and R^4 are identical or different and each is independently of the other hydrogen or C_1–C_6-alkyl optionally substituted by hydroxyl, C_1–C_4-alkoxy or C_1–C_4-alkanoyloxy.

5,382,264

PROCESS FOR DYEING SPANDEX FIBERS

Jai P. Sharma, Hickory, N.C., assignor to UKI Supreme Corporation, Hickory, N.C.

Filed Oct. 7, 1992, Ser. No. 957,658
Int. Cl.[6] C09B *45/00*
U.S. Cl. 8—685 4 Claims

1. A process for dyeing spandex, said process comprising the steps of:

(a) setting the dyebath to a pH of between about 4 to 6 with an organic acid selected from the group consisting of formic and acetic acid;

(b) adding a pre-metallized acid dye to the dyebath;

(c) submitting the spandex to the dyebath;

(d) heating the dyebath at a rate of between about 0.5° F. and 3° F. per minute to between about 220° F. and 250° F., holding the bath at said temperature range for about 1 hour until completion of dyeing; and

(e) cooling the dyebath.

5,382,265

PERCHLORATE REMOVAL PROCESS

Glenn L. Mower, Mt. Sterling, Utah, assignor to Thiokol Corporation, Odgen, Utah

Filed Oct. 26, 1993, Ser. No. 143,190
Int. Cl.[6] C01D *13/00*; A67D *3/00*
U.S. Cl. 23—302 R 16 Claims

1. A process for removing ammonium perchlorate from waste water comprising:

(a) concentrating a waste ammonium perchlorate solution;

(b) adding granular solid potassium chloride (KCl) to the concentrated waste perchlorate solution to form potassium perchlorate ($KClO_4$);

(c) effecting crystallization of the potassium perchlorate in the resulting solution; and

(d) separating the crystallized potassium perchlorate from the resulting solution.

5,382,266

FUEL WITH STABILITY ADDITIVE AND PROCESS FOR STABILIZING FUEL USING AN ADDITIVE

Fan-Nan Lin, and Filippo Pennella, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 25, 1992, Ser. No. 982,215
Int. Cl.[6] C10L *1/26*
U.S. Cl. 44—382 18 Claims

1. Process for inhibiting the degradation of a fuel oil which comprises:

a) drying said fuel oil; and

b) adding to said fuel oil and effective inhibiting amount of a stabilizing additive.

5,382,267

METHOD OF REDUCING INORGANIC AND ORGANIC SULFUR IN SOLID CARBONACEOUS MATERIAL PRIOR TO USE OF THE SOLID CARBONACEOUS MATERIAL

Robert L. Savage, and Lazarin K. Lazarov, both of Athens, Ohio, assignors to Ohio University, Athens, Ohio

Filed Mar. 18, 1993, Ser. No. 32,879
Int. Cl.[6] C10L *5/00*
U.S. Cl. 44—623 18 Claims

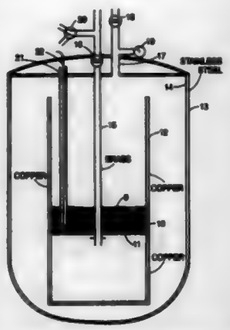
1. A method of reducing the quantity of both inorganic and organic sulfur in a solid carbonaceous material prior to use of said solid carbonaceous material which comprises:

heating said solid carbonaceous material containing inorganic and organic sulfur in the presence of a metallic solid copper-containing material and a hydrogen-producing agent,

utilizing said metallic solid copper-containing material in a surface activated condition as a catalyst for the dehydro-

genation of said hydrogen-producing agent to produce in-situ produced hydrogen,

reacting said in-situ produced hydrogen so produced with said inorganic and organic sulfur in said carbonaceous material to produce hydrogen sulfide,



reacting said hydrogen sulfide so produced with said metallic solid copper-containing material to form copper sulfide, and

utilizing said copper sulfide so produced as a catalyst for organic sulfur hydrodesulphurization reactions of said solid carbonaceous material.

5,382,268

METHOD AND APPARATUS FOR USE IN MICROPROPAGATION

Frank R. Brown, Clifton, and William P. Billington, Flitwick, both of England, assignors to British Technology Group Ltd., London, England

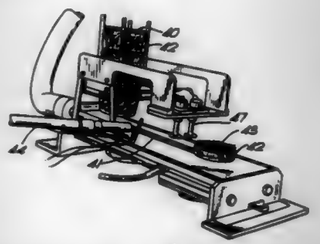
PCT No. PCT/GB90/01447, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO91/3929, PCT Pub. Date Apr. 4, 1991

Filed Mar. 20, 1992, Ser. No. 842,098

Claims priority, application United Kingdom, Sep. 21, 1989, 8921403

Int. Cl.[6] A01G *9/00*

U.S. Cl. 47—1.01 **15 Claims**



1. A method of operating on plantlets during micropropagation comprising the steps of:

presenting at a work station a closed, sterilized container containing plantlets growing in a nutrient medium;

cutting open the container by a laser to provide access to the plantlets; and

then performing an operation on the plantlets in the opened container.

5,382,269

ARTIFICIAL SEEDS

Bruno Giroud-Abel, Ecully, and Francis Molle, Lyons, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

PCT No. PCT/FR91/00984, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/10087, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 9, 1991, Ser. No. 917,131

Claims priority, application France, Dec. 10, 1990, 90 15740

Int. Cl.[6] A01C *1/06, 21/00, 1/00*; **A01B** *79/00*

U.S. Cl. 47—57.6 **29 Claims**

1. An artificial seed which comprises:

a) an isolated meristematic tissue derived from somatic or zygotic embryos,

b) a support in contact with said isolated meristematic tissue, said support surrounding said isolated meristematic tissue on all sides, wherein the support is:

i) a solid substance which is not compact and which comprises, in the air and in the dry state, a ratio by volume of air of at least 10%,

ii) permeable to gases and/or vapors,

iii) dry or dryable, and

iv) fibrous, porous or alveolar;

c) a shell made of polymer material and soluble in water, which surrounds the unit composed of support and meristematic tissue, and

d) a water-tight film which covers the inside of the shell of polymer material.

5,382,270

PLANT GROWTH MEDIA COMPRISING CROSS-LINKED HYDROGEL PARTICLES

Neil B. Graham, Glasgow; Robert A.K. Szmidt, and Ralph C. Kirkwood, both of Ayr, all of Scotland, assignors to University of Strathclyde, Glasgow, Scotland

Division of Ser. No. 613,913, Feb. 8, 1991, Pat. No. 5,273,066. This application Sep. 9, 1993, Ser. No. 118,259

Claims priority, application United Kingdom, Jun. 10, 1988, 8813837; Jun. 10, 1988, 8813839

Int. Cl.[6] A01G *29/00, 31/00*; **A01B** *79/00*; **A01C** *1/00*

U.S. Cl. 47—58 **5 Claims**

1. A method of plant growing in which method one or more plants are grown in a growing medium comprising particles of partially crystalline, cross-linked polyethylene glycol or polyethylene oxide hydrogel, obtained by reaction of polyethylene glycol or polyethylene oxide, respectively, with a polyisocyanate and optionally another polyol, charged with aqueous nutrient solution for the plant or plants, the growing medium being housed in a container composed of a substantially water-impermeable material and the plants extending out of the container, and, when the water content within the hydrogel particles falls below a predetermined level, introducing further nutrient solution into the container.

5,382,271

HYDROGEN GENERATOR

Moses L. Ng; Mu-Jen Young, and Yaw-Chung Cheng, all of Hsinchu, , assignors to Industrial Technology Research Institute, Hsinchu,

Filed Dec. 26, 1991, Ser. No. 814,114

Int. Cl.[6] B01J *7/00*

U.S. Cl. 48—61 **9 Claims**

7. A hydrogen generator for extracting hydrogen from a liquid-containing feed of fluid and hydrocarbons with the aid of at least one catalyst and heat supplied by burning a combustible gas, comprising:

a hollow shell;

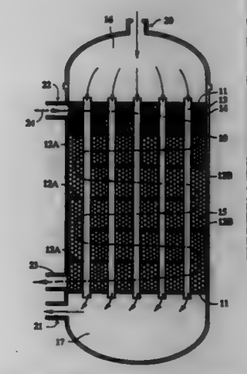
first and second partition plates for separating said hollow shell into a combustion chamber, a reaction chamber, and an exhaust chamber spaced sequentially in said hollow shell;

communicating means for communicating said combustion chamber with said exhaust chamber;

said communicating means including means for exchanging heat with said reaction chamber;

a plurality of plates in said reaction chamber effective to separate said reaction chamber into a plurality of layers;

a porous metal layer in at least one of said plurality of layers being effective to store said heat and evaporate said liquid-containing feed into a gaseous state;



at least one catalyst in said plurality of layers to react with said gaseous feed;

a feed inlet being connected to said reaction chamber at said porous metal layer;

a feed outlet being connected to said reaction chamber at a location downstream of said at least one catalyst;

said plurality of plates being effective to establish a flow path between said feed inlet and said feed outlet; a gas inlet connected to said combustion chamber for introducing combustible gas; and

a gas outlet connected to said exhaust chamber for removing said combustible gas.

5,382,272

ACTIVATED POLISHING COMPOSITIONS

Lee M. Cook, Steelville; Scott B. Loscki, Lincoln University, both of Pa., and Gregory Brancaleoni, Newark, Del., assignors to Rodel, Inc., Newark, Del.

Filed Sep. 3, 1993, Ser. No. 116,322

Int. Cl.[6] B24D *18/00*

U.S. Cl. 51—293 **8 Claims**

1. A process for preparing compositions suitable for polishing articles wherein a base abrasive is activated by chemical adsorption of a cation whose oxide exhibits a higher polishing rate than the base abrasive alone onto the surface of said base abrasive, said process comprising subjecting said base abrasive and a compound containing said cation to cyclic impact in an aqueous medium whose pH is at a level which is favorable for adsorption of said cation onto said base abrasive surface.

5,382,273

SILICON NITRIDE CERAMIC AND CUTTING TOOL MADE THEREOF

Pankaj K. Mehrotra, and Robert D. Nixon, both of Greensburg, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Jan. 15, 1993, Ser. No. 4,022

Int. Cl.[6] B24D *17/00*; **C04B** *35/58*

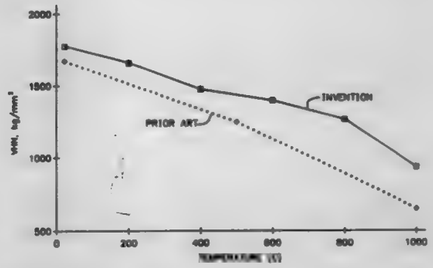
U.S. Cl. 51—307 **47 Claims**

1. A ceramic cutting tool for high speed chip forming machining of metallic materials, said ceramic cutting tool comprising:

a rake face over which chips formed during said chip forming machining of metallic materials will flow;

a flank face;

a cutting edge, for cutting into said metallic materials at high speeds to form said chips, formed at a junction of said rake face and said flank face;



said ceramic consisting essentially of

beta silicon nitride phase;

and an intergranular phase;

wherein said ceramic has at least 0.2 w/o yttria and at least 0.2 w/o magnesia, wherein the sum of yttria and magnesia is less than 3.5 w/o, and wherein said ceramic has greater than 1.3 w/o and up to 3.5 w/o of oxygen on an elemental basis and less than 0.2 v/o porosity.

5,382,274

MOLD WITH FILM OF 0–5 ATOM % HYDROGEN AND MOLDING METHOD UTILIZING SAME

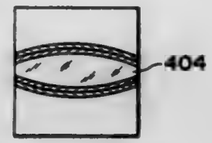
Kiyoshi Yamamoto, Yokohama; Keiji Hirabayashi; Noriko Kurihara, both of Tokyo; Yasushi Taniguchi, Kawasaka, and Keiko Ikoma, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 683,537, Apr. 10, 1991, Pat. No. 5,202,156, which is a division of Ser. No. 394,208, Aug. 15, 1989, Pat. No. 5,026,415. This application Dec. 31, 1992, Ser. No. 999,124

Claims priority, application Japan, Aug. 16, 1988, 63-202739; Sep. 16, 1988, 63-230148; Sep. 16, 1988, 63-230149; Sep. 19, 1988, 63-232234; Jul. 11, 1989, 1-177144

Int. Cl.[6] C03B *11/08*

U.S. Cl. 65—26 **2 Claims**



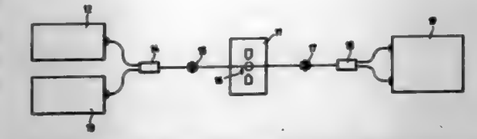
1. A mold for use for press-molding an optical element, comprising at least the molding surface of a mold base material coated with a hard carbon film containing 0–5 atom% of hydrogen therein and having a spin density of 1×10^{18} spin/cm^3 or less and a film density of 1.5 g/cm^3 or more.

5,382,275

METHOD FOR FUSION-FORMING AN OPTICAL SIGNAL ATTENUATOR

Marco Decao, Cinisello Balsamo; Aurelio Pianciola, Casteggio, and Tiziana Tamboseo, Milan, all of Italy, assignors to Sirti S.P.A., Milan, Italy

Filed Jun. 16, 1993, Ser. No. 78,439
Claims priority, application Italy, Jun. 19, 1992, MI92A001521
Int. Cl.[6] C03B 37/23
U.S. Cl. 65—407 9 Claims



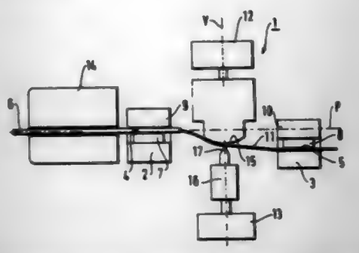
1. A method for fusion-forming an optical signal attenuator using a piece of optical fibre, comprising essentially the following steps:
a) fusing the piece of optical fibre having a length of the order of one centimeter, with a thin core and having a cut-off wavelength much lower than the lowest operational wavelength, and with a numerical aperture greater than the numerical aperture of said optical fibres at the operational wavelengths;
b) manipulating the piece of optical fibre during fusion;
c) inserting the piece of optical fibre into a mechanical adaptor for connection to two standard connectors butt-coupled respectively to the ends of two optical fibres, characterized in that said manipulation of the piece of optical fibre during fusion is effected by subjecting said piece of optical fibre to both axial misalignment and angular misalignment.

5,382,276

METHOD AND APPARATUSES FOR CUTTING A RIBBON OF AN OPTICAL FIBERS OBLIQUELY

Roland Hakoun, Domont, and Michel Reslinger, Bondoufle, both of France, assignors to Mars Actel, Vrigne Aux Bois, France

Filed Jul. 20, 1993, Ser. No. 93,714
Claims priority, application France, Jul. 24, 1992, 92 09170
Int. Cl.[6] C03B 37/023
U.S. Cl. 65—433 5 Claims



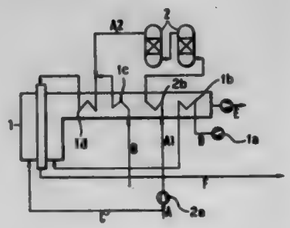
1. A method of cutting an optical fiber ribbon obliquely, the ribbon being constituted by a plurality of optical fibers that are all parallel to a "longitudinal" axis of said ribbon, the fibers all being situated in the same horizontal plane referred to as the plane of said ribbon, and being protected by a common sheath, the method comprising the following steps:
stripping a portion of said ribbon of its sheath;
holding said ribbon stationary at two points situated on either side of said stripped portion;
advancing a curved anvil along a displacement axis orthogonal to said horizontal plane into contact with said portion and tensioning said portion while inclining a part of said stripped portion relative to said horizontal plane; and
advancing a cutter facing said anvil along a displacement axis parallel to or coinciding with that of said anvil to cut said stripped portion at said inclined part.

5,382,277

PROCESS FOR REDUCING FINE-GRAIN IRON OXIDE MATERIALS WITH A GAS

Fritz Rose, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sep. 24, 1993, Ser. No. 127,267
Claims priority, application Germany, Oct. 2, 1992, 4233140
Int. Cl.[6] C22B 5/14; C21B 13/14
U.S. Cl. 75—450 11 Claims



1. A process of reducing fine grained iron oxide containing materials by a treatment with a gas under pressure in a series of connected fluidized bed reactors which includes at least a first fluidized bed reactor into which a reducing gas is fed and a last fluidized bed reactor downstream of the first fluidized bed reactor in the direction of the gas flow into which the fine grained iron oxide-containing materials are fed, comprising the steps of:
(a) cracking hydrocarbons by approximately stoichiometric steam reforming to produce a fresh reducing gas containing CO and H_2;
(b) feeding a reducing gas to a first of said fluidized bed reactors as a fluidizing gas to obtain a gaseous effluent containing dust;
(c) dedusting the gaseous effluent containing dust from said first fluidized bed reactor and then feeding the dedusted gaseous effluent as a fluidizing gas to at least one further fluidized bed reactor above the nozzle bottom thereof, in said series downstream of the first fluidized bed to obtain a gaseous effluent containing dust CO_2 and H_2O;
(d) dedusting a gaseous effluent containing dust, CO_2, and H_2O from a last of said series of connected fluidized bed reactors in said series downstream of the first and any other fluidized beds and subsequently treating said dedusted gaseous effluent containing CO_2 and H_2O from said last reactor in a scrubber-cooler to remove substantially all H_2O and any residual dust and subsequently treating said gaseous effluent with all H_2O substantially removed in a CO_2-removing scrubber to remove substantially all CO_2;
(e) reheating said gas wherein residual dust and substantially all H_2O and CO_2 are removed and recycling the reheated gas as a recycle gas and feeding said recycle gas as fluidizing gas according to step (b) into the first of said fluidized bed reactors;
(f) preheating the iron oxide-containing materials and feeding preheated iron oxide-containing materials to the last of said fluidized bed reactors; and
(g) feeding the fresh reducing gas produced in step (a) to at least one of said fluidized bed reactors.

5,382,278

PRETREATMENT OF CHROMIUM-BEARING METAL SCRAP TO REMOVE CHROMIUM

Gary J. O'Connell, and David G. Tisdale, both of Sudbury, Canada, assignors to Falconbridge Ltd., Toronto, Canada

Continuation-in-part of Ser. No. 957,132, Oct. 7, 1992, Pat. No. 5,240,496. This application Aug. 26, 1993, Ser. No. 112,064
Claims priority, application Canada, Jun. 16, 1992, 2071366
Int. Cl.[6] C22B 23/06
U.S. Cl. 75—626 13 Claims

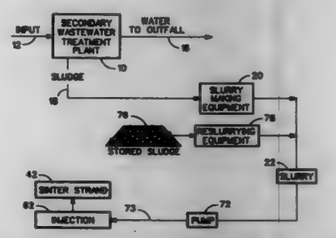
1. A process for treating chromium-bearing metal scrap containing at least one member selected from the group consisting of nickel and cobalt, comprising:
a) charging the chromium-bearing metal scrap with an iron oxide-bearing slag into a pyrometallurgical furnace,
b) heating anti melting the charge, and maintaining the charge molten at a temperature of at least 1550° C. for a time period sufficient to permit the iron oxide bearing slag to act as an oxidant and flux for chromium, thus allowing an iron oxide/chromium exchange reaction to take place oxidizing and removing chromium to the slag phase while reducing iron to the metal phase to form an alloy product containing Fe and at least one member selected from the group consisting of Ni and Co, and
c) removing the alloy product for further processing for recovery of metal values.

5,382,279

METHOD AND APPARATUS FOR COMBUSTION OF STEEL PLANT WASTES

Elmer D. Anderson, II, Valparaiso, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 7, 1994, Ser. No. 179,022
Int. Cl.[6] C21B 13/00, 1/24
U.S. Cl. 75—746 20 Claims



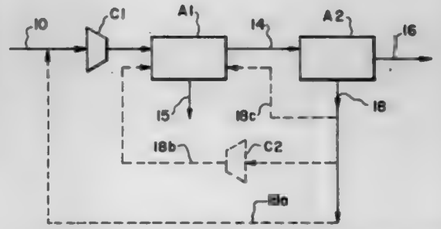
1. A process for combusting sludges, comprising the steps of:
a) providing a sinter strand, the sinter strand including a porous bed movable between remote first and second ends, a burner hood operably associated with the bed intermediate the ends, and a vacuum source operably associated with the bed for applying a vacuum thereto;
b) depositing onto the porous bed at the first end material to be sintered, and causing the material to be moved by the bed toward the second end;
c) igniting within the burner hood the material to be sintered and causing sintering thereof to begin and to continue as the material continues to be moved by the porous bed toward the second end;
d) applying a slurry; onto the ignited material as the material is being moved by the porous bed within the burner hood and thereby causing the slurry to be combusted within the hood; and
e) continuing to move the porous bed and thereby the ignited material toward the second end.

5,382,280

TWO STAGE PRESSURE SWING ADSORPTION PROCESS FOR PRODUCING THE LESS STRONGLY ADSORBED COMPONENT OF A FEED GAS MIXTURE

Jung S. Choe, Harleysville; Lyndon J. Kellogg, Jr., Salington, and Robert F. Weimer, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 16, 1993, Ser. No. 153,387
Int. Cl.[6] B01D 53/04
U.S. Cl. 95—98 8 Claims



1. Regarding a feed gas mixture consisting of a more strongly adsorbed component and a less strongly adsorbed component, a two stage pressure swing adsorption process for producing said less strongly adsorbed component comprising the steps of:
(a) passing the feed gas mixture through a first stage adsorption bed which contains an adsorbent selective for the retention and bulk removal of the more strongly adsorbed component to produce an intermediate product stream enriched in the less strongly adsorbed component wherein this step (a) is continued for a controlled time period or until the concentration of the more strongly adsorbed component in the intermediate product stream reaches a preset limit;
(b) regenerating the first stage adsorption bed wherein said regenerating comprises:
(1) depressurizing the first stage adsorption bed by withdrawing a desorbed gas stream from the first stage adsorption bed; and
(2) repressurizing the first stage adsorption bed by introducing repressurization gas into the first stage adsorption bed;
(c) passing the intermediate product stream through a second stage adsorption bed which contains an adsorbent selective for the retention and trace removal of the more strongly adsorbed component to produce a final product stream further enriched in the less strongly adsorbed component wherein this step (c) is continued for a controlled time period or until the concentration of the more strongly adsorbed component in the final product stream reaches a preset limit; and
(d) regenerating the second stage adsorption bed wherein said regenerating comprises:
(1) depressurizing the second stage adsorption bed by withdrawing a desorbed gas stream from the second stage adsorption bed wherein at least a portion of said desorbed gas stream is recycled as a portion of the feed gas in step (a) and/or at least a portion of the repressurization gas in step (b)(2); and
(2) repressurizing the second stage adsorption bed by introducing repressurization gas into the second stage adsorption bed.

5,382,281
SELF-POLISH TYPE ANTIFOULING COATING COMPOSITION

Ping-Lin Kuo, Kaohsiung, Taiwan, Prov. of China, assignor to Yung Chi Paint & Varnish Mfg Co., Ltd., Kaohsiung, Taiwan, Prov. of China

Continuation of Ser. No. 713,759, Jun. 11, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,427
Int. Cl.[6] C09D *5/20*
U.S. Cl. 106—2 **12 Claims**

1. A hydrolyzable antifouling coating composition used in forming by crosslinking, on the surface of a ship, an antifouling coating which is to be submerged in and gradually hydrolyzed in marine water to consecutively produce a smooth and fresh surface, said coating composition comprising:

(a) a metallic soap film-forming binder which has a general formula

$$(R1—A1)_n—M—(A2—R2)_m$$

wherein R1 is a alkenyl group derived from an unsaturated fatty acid or alcohol, M is a metal having a valency of at least 2, A1 and A2 are independently a functional group of a carboxylic acid, a sulfonic acid or a phosphoric acid, R2 is an unsaturated or saturated residue of an aliphatic, aromatic, alicyclic monovalent organic acid or alcohol, or an acrylic oligomer, and each of n and m=1 or 2, and n+m=2 or 3; and

(b) an effective amount of an antifouling agent which is a metallic compound other than the metallic soap of (a) to prevent fouling of coated surfaces of the ship submerged in marine water;

wherein said metallic soap film-forming binder is prepared by reacting a metal compound containing a metal having a valency of at least 2 with a reaction composition comprising at least an unsaturated fatty acid or alcohol,

and said metallic soap film-forming binder acts as a film-forming binder for the antifouling agent.

5,382,282
INK COMPOSITION AND METHOD OF MAKING, USING AND RECOVERING SUCH COMPOSITION

Thomas J. Pennaz, Brooklyn Park, Minn., assignor to Deluxe Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 92,392, Jul. 14, 1993, Pat. No. 5,338,351, which is a continuation-in-part of Ser. No. 946,762, Sep. 17, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,175
Int. Cl.[6] C09D *11/00*
U.S. Cl. 106—20 R **18 Claims**

1. A varnish for an oil based ink composition comprising a resin component and an oil or diluent component compatible with said resin component, said resin component comprising at least 5% by weight of a water insoluble hard resin and at least 5% by weight of an unneutralized, acid functional, water reducible resin.

5,382,283
INK CONTAINING PROPYLENE OXIDE/ETHYLENE OXIDE BLOCK COPOLYMERS FOR INK JET RECORDING

Toshitake Yui; Ken Hashimoto; Fuminori Koide; Yoshiro Yamashita, and Akihiko Chujo, all of Minamiashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 871,173, Apr. 20, 1992, abandoned. This application Nov. 6, 1992, Ser. No. 972,843
Claims priority, application Japan, Apr. 26, 1991, 3-122816; Nov. 15, 1991, 3-326720
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—22 R **17 Claims**

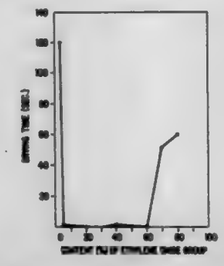
1. An ink for ink jet recording comprising:

at least one dye;

water;

at least one water soluble organic solvent which dissolves the dye;

and from 0.8 to 5 weight percent of at least one block copolymer consisting of propylene oxide and ethylene oxide, said at least one copolymer having an average molecular weight



from 1,000 to 5,000 and a content of ethylene oxide in the range from 20 to 50 weight percent based on total average molecular weight of the copolymer, said ink having a surface tension from 30 to 40 dyne/cm at 20° C. and having a viscosity from 1 to 10 centipoise at 20° C.

5,382,284
GLASS IONOMER CEMENT COMPOSITIONS AND RESTORATIVE METHODS

Thomas J. Arnold, Winslow, Ind., assignor to Mion International Corporation, Winslow, Ind.

Continuation-in-part of Ser. No. 942,375, Sep. 9, 1992, Pat. No. 5,252,122, Ser. No. 872,501, Apr. 23, 1992, Pat. No. 5,252,121, and Ser. No. 991,112, Dec. 16, 1992, Pat. No. 5,273,574. This application Jun. 18, 1993, Ser. No. 79,332
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] C09K *3/00*; **A61K** *5/00*
U.S. Cl. 106—35 **9 Claims**

1. A restoration for restoring a tooth, comprising:

a layer of carboxylate-containing adhesive bonded to the tooth; and

a layer of amalgam disposed on the layer of carboxylate-containing adhesive,

the restoration being formed by the process of applying a layer of wet carboxylate-containing adhesive directly on the tooth, placing a wet dental amalgam directly on the wet carboxylate-containing adhesive, and allowing the wet carboxylate-containing adhesive to harden to ionically bond the amalgam to the tooth.

5,382,285
BIOFOAM

Robert L. Morrison, Modesto, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Apr. 6, 1993, Ser. No. 43,300
Int. Cl.[6] C09D *105/00*; **C08J** *9/00*; **C08L** *89/00, 93/00*
U.S. Cl. 106—122 **20 Claims**

1. A method for forming a rigid, microcellular biofoam, comprising the steps:

(a) dissolving a naturally occurring organic material in a primary solvent to form a solution;

(b) forming a gel from the solution;

(c) freezing the gel; and

(d) freeze-drying the gel to form an organic biofoam.

5,382,286
ACOUSTIC GEL

Bryce L. Fanning, Dartmouth; Dennis T. Curran, and Clive M. Elson, both of Halifax, all of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Jul. 15, 1993, Ser. No. 91,297
Claims priority, application Canada, Jul. 22, 1992, 2074424
Int. Cl.[6] C09D *105/08*
U.S. Cl. 106—162 **8 Claims**

1. An aqueous polymeric gel for coating underwater acoustic projectors, comprising 0.5–1.0% by weight of a Chitosan Compound cross linked with about 5–25% by weight of a hydrophilic stabilizer selected from the group comprising ethylene glycol and glycerol, and containing about 0.024–0.48% by weight of a cross linking agent and about 1 ppm of a non-gel inhibiting and gel-soluble biocide.

5,382,287
CLAY AND MICA REPLACEMENT WITH CMC IN JOINT COMPOUND

Thomas J. Podlas, 9 Paddington Ct., Hockessin, Del. 19707

Filed Apr. 13, 1990, Ser. No. 508,563
Int. Cl.[6] C09D *101/28*
U.S. Cl. 106—197.2 **6 Claims**

1. An aqueous joint compound formulation comprising a swelling agent, binder, lubricant and thickener; characterized in that the swelling agent is uncrosslinked sodium carboxymethylcellulose (CMC) with a Degree of Substitution (D.S.) between 0.35 and 0.75 and a Degree of Polymerization (D.P.) between 200 and 4000 wherein the CMC is present in an amount of 0.01% to 0.5% by weight based on the total weight of the formulation and the formulation does not contain either clay or mica.

5,382,288
AZO PIGMENT PREPARATION

Karl H. Schenk, Idstein/Taunus; Angelika Heinrichs, Seeheim-Jugenheim, and Hans J. Metz, Darmstadt, all of Germany, assignors to Hoechst Aktiengesellshaft, Frankfurt am Main, Germany

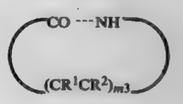
Filed Apr. 26, 1993, Ser. No. 54,004
Claims priority, application Germany, Apr. 25, 1992, 4213705
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—496 **20 Claims**

1. An azo pigment preparation comprising components a) to d):

a) an amide or a mixture of amides obtained from the reaction of the components comprising:

a1) an aminocarboxylic acid of the formula $H^2N—(CR^1R^2)_{m4}—COOH$ or

a2) a lactam of the formula



or

a3) a dicarboxylic acid of the formula $HOOC—(CR^1R^1)_{m1}—COOH$ or an anhydride thereof or an olefinic dicarboxylic acid of the formula $HOOC—CR^1=CR^2—COOH$ or an anhydride thereof and a diamine of the formula $H_2N—(CR^1R^2)_{m2}—NH_2$, in the presence of at least one long-chain primary or secondary aliphatic amine of the formula (III)

$$R^3R^4R^5N \quad \text{(III)}$$

in which

R^1 and R^2, independently of one another are each hydrogen or C^1–C^6-alkyl,

m3 is an integer from 3 to 12,

m4 is an integer from 1 to 15,

R^3 is hydrogen, C^4–C_5-alkyl or C_4–C_{25}-alkenyl,

R^4 is hydrogen, C_4–C_{25}-alkyl, C_4–C_{25}-alkenyl or $—[—(CR^1R^2)_{m5}—NR^3]_p—R^{30}$,

R^{30}, independently of R^3, has the meaning given above for R^3,

R^5 is hydrogen or $—[—(CR^1R^2)_{m5}—NR^3—]_p—R^{30}$,

p is an integer from 1 to 8,

m1 is an integer from 1 to 10,

m2 is an integer from 2 to 14, and

m5 is an integer from 2 to 14, with the proviso that R^3, R^4 and R^5 are not simultaneously hydrogen,

b) at least one diamine of the formula (II)

$$H_2N—A—NH_2 \quad \text{(II)}$$

in which A is a divalent aliphatic hydrocarbon radical having 6 to 30 carbon atoms;

c) at least one long-chain primary or secondary aliphatic amine of the abovementioned formula (III) or a salt of this amine and

d) at least one azo pigment.

5,382,289
INORGANIC FOUNDRY BINDER SYSTEMS AND THEIR USES

Ruth A. Bambauer; Heimo J. Langer, both of Columbus, and Steven C. Akey, Dublin, all of Ohio, assignors to Ashland Oil, Inc., Columbus, Ohio

Filed Sep. 17, 1993, Ser. No. 123,507
Int. Cl.[6] C04B *9/04, 35/04*
U.S. Cl. 106—690 **16 Claims**

1. An inorganic foundry binder system which comprises as separate components:

A. an acid phosphate in an aqueous acid solution of a phosphoric acid selected from the group consisting of orthophosphoric acid, pyrophosphoric acid, trimetaphosphoric acid, tetrametaphosphoric acid, polyphosphoric acid, and mixtures thereof, and

B. magnesium oxide; and

wherein a zinc compound, which will act as a mono zinc phosphate precursor, is part of either Component A, Component B, or both, such that the amount of zinc in said binder system is from 0.5 to 25 weight percent, said weight percent being based upon the total weight of Component A and Component B, and such that the weight ratio of the Component A to Component B is from 3:1 to 1:3.

5,382,290
CONVERSION OF OIL-BASE MUD TO OIL MUD-CEMENT

James J. W. Nahm, and Reece E. Wyant, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 33,404, Mar. 19, 1993, abandoned, which is a division of Ser. No. 961,217, Oct. 15, 1992, Pat. No. 5,213,160, which is a continuation of Ser. No. 691,904, Apr. 26, 1991, abandoned. This application Apr. 17, 1995, Ser. No. 210,637
Int. Cl.[6] C04B *7/14*
U.S. Cl. 106—789 **7 Claims**

1. A composition for use in drilling and cementing a well comprising the product of:

an oil mud admixed with sufficient blast furnace slag and water to form a slurry having a total solids-to-oil weight ratio of about 1.4 to 2.2 and a blast furnace slag weight ratio of about 0.15 to 0.60, to produce an oil-base universal fluid suitable for drilling a borehole and laying down a settable filter cake on the walls of said borehole; an effective amount of accelerator and/or retarder admixable with or contacting the filter cake, the accelerator and/or

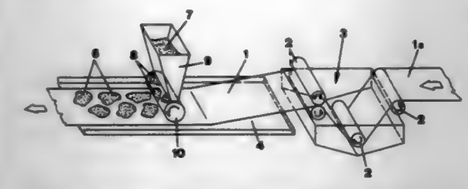
retarder being functional to cause the filter cake to harden and a salt selected from the group consisting of sodium chloride, potassium chloride, zinc chloride, sodium nitrate and ammonium sulfate.

5,382,291

APPARATUS FOR MAKING DECORATIONS ON TARRED MEMBRANES FOR SURFACE COVERING IN THE CONSTRUCTION INDUSTRY

Silvio Oliceo, Castel D'Azzano, Italy, assignor to Index S.P.A. Technologie Impermeabili, Verona, Italy

Filed Nov. 3, 1993, Ser. No. 145,212
Claims priority, application Italy, Jul. 28, 1993, VR93A000060
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—212 **11 Claims**



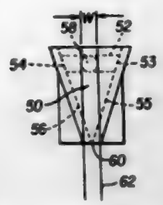
1. An apparatus for making decorations (6) on the surface of a membrane used for making surface coverings, comprising:
impregnation means (3) for impregnating a membrane to form an impregnated membrane;
at least one hopper downstream of said impregnation means and for containing solid particles, and having an outlet mouth for dispensing the solid particles;
at least one applicator means for applying the solid particles in a decorative pattern on the impregnated membrane, said applicator means being disposed below said outlet mouth of said hopper and positioned to receive the impregnated membrane traveling from said impregnation means in a membrane advancing direction, said applicator means being provided with decorative shapes identical to decorations to be applied onto the impregnated membrane so that solid particles falling from said outlet mouth of said hopper onto said applicator means are applied as decorations adhering to the surface of the impregnated membrane.

5,382,292

EDGE GUIDE LUBRICATING FLUID DELIVERY APPARATUS

James E. Conroy; Kenneth J. Ruschak, and William D. Devine, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 28, 1993, Ser. No. 98,589
Int. Cl.[6] B05D *1/30*
U.S. Cl. 118—324 **13 Claims**



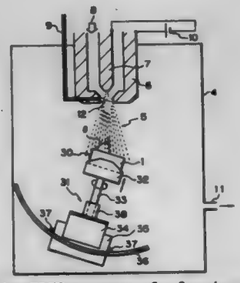
1. An apparatus for laterally guiding an edge of a falling curtain comprising:
an inlet duct positioned near a top of the free-falling curtain terminating at a first end and a second end, the first end in front of a plane of the curtain and the second end in back of the plane of the curtain;
a first slide surface joining the first end of said inlet duct;
a second slide surface joining the second end of said inlet duct wherein said first and second slide surfaces are angled downwardly towards each other;
an edge guide positioned at a bottom of said first and second slide surfaces; and
fluid providing means for providing lubricating liquid to said inlet duct.

5,382,293

PLASMA JET CVD APPARATUS FOR FORMING DIAMOND FILMS

Motonobu Kawarada, Sagamihara; Kazuaki Kurihara; Ken-ichi Sasaki, both of Atsugi; Akitomo Teshima, Isehara, and Nagaaki Koshino, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 790,115, Nov. 12, 1991, Pat. No. 5,260,106, which is a continuation of Ser. No. 562,606, Aug. 3, 1990, abandoned. This application Jul. 28, 1993, Ser. No. 98,106
Int. Cl.[6] C23C *16/54, 16/50*
U.S. Cl. 118—723 DC **1 Claim**



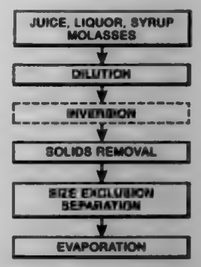
1. A plasma jet CVD apparatus for forming a diamond film on an object to be treated comprising:
an electrode forming member having a first polarity comprising an enclosed body having a nozzle for jetting thermal plasma opened therein and a discharge gas feed pipe;
an electrode forming member having an opposite polarity and positioned to be opposed to said nozzle internally of said enclosed body;
a direct current plasma torch having a power source supply system containing a direct current source for applying a direct current voltage between said electrode of the first polarity and said electrode of the opposite polarity, which feeds a gas through said discharge gas feed pipe between the electrodes to which the direct current voltage is applied, generating a thermal plasma from said gas by a direct current arc discharge between the electrodes and jetting the thermal plasma formed as a plasma jet through said nozzle;
a starting gas feed system for feeding gaseous starting compounds for vapor phase deposition to said plasma jet;
a powder supplying pipe for feeding a metal powder to an arc discharge portion between the electrodes; and
a substrate support mechanism for supporting a substrate in a non-equilibrium plasma and permitting a thermal plasma chemical vapor deposition diamond film to be deposited in a vapor phase on said substrate,
said support mechanism comprising a cooled support platform for the substrate, a motor having a rotatable shaft operably coupled with said support platform for rotating the latter, said support platform being mounted on said shaft, a movable base carrying said motor, and a guide member mounting said movable base for movement so that the substrate on the platform is positioned with a substrate surface thereof to be coated inclined at an angle θ relative to said plasma jet.

5,382,294

CHROMATOGRAPHIC SEPARATION OF ORGANIC NON-SUGARS, COLLOIDAL MATTERIALS AND INORGANIC-ORGANIC COMPLEXES FROM JUICES, LIQUORS, SYRUPS AND/OR MOLASSES

Nicholas T. Rimedio, 2017 Ashley Rd., Savannah, Ga. 31410, and Li Fu Chen, 112 Seneca La., West Lafayette, Ind. 47906

Continuation of Ser. No. 749,667, Aug. 26, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 98,237
Int. Cl.[6] C13J *1/06*; C13D *3/14*; B01D *15/08*
U.S. Cl. 127—42 **27 Claims**



1. A process for separating inorganic-organic complexes, colloidal materials and organic non-sugars from a feed selected from the group consisting of juices, liquors, syrups, molasses or mixtures thereof into two or more fractions, at least a first fraction comprising the high molecular weight non-sugar components, and at least a second fraction comprising the low molecular weight sugar, said sugar containing sucrose and soluble salt components, by means of a size exclusion chromatographic separation resin medium selected from the group consisting of porous cellulose, crosslinked agarose, crosslinked dextran, styrene-divinylbenzene polyacrylamide, methacrylic, and controlled pore glass, said process comprising the steps of:
a) diluting the feed of juice, liquor, syrup, molasses or mixtures thereof with water sufficient to permit passage of the sample through said chromatographic separation medium,
b) removing insoluble matter from the feed, and
c) passing the diluted feed through the chromatographic separation medium and eluting the feed components from the medium with water, thereby achieving separation of the high and low molecular weight components of the feed into two or more fractions, at least a first fraction comprising the high molecular weight non-sugar components comprising organic non-sugars, nitrogenous compounds, non-nitrogenous acids, waxes, sterols, phosphatides, gums, starches, pentosans, vitamins and inorganic-organic complexes, and at least a second fraction comprising the low molecular weight sugar comprising sucrose, glucose and fructose and soluble salt components.

5,382,295

METHOD FOR CLEANING ALUMINUM AND ALUMINUM ALLOYS

Tomoyuki Aoki, Chigasaki, and Yoji Ono, Hiratsuka, both of Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US91/08250, § 371 Date May 20, 1993, § 102(e) Date May 20, 1993
PCT Filed Nov. 12, 1991, Ser. No. 64,082
Claims priority, application Japan, Nov. 20, 1990, 2-314876
Int. Cl.[6] C11D *7/06*; C23G *1/14*
U.S. Cl. 134—2 **20 Claims**

1. A method for cleaning aluminum by contacting the surface of the aluminum with an aqueous alkaline cleaning composition that has a pH of 10.0 to 12.0 and consists essentially of water and:
(A) from 0.5 to 10.0 g/L of an alkali builder component selected from the group consisting of alkali metal hydroxides, inorganic alkali metal phosphates, alkali metal carbonates, and mixtures thereof;
(B) from 0.5 to 10.0 g/L of a component selected from the group consisting of aminoalkylphosphonic acids, hydroxyalkyldiphosphonic acids, water soluble salts thereof, and mixtures of any two or more of these;
(C) from 0.1 to 3.0 g/L of an aluminum ion sequestering agent component selected from the group consisting of alkali metal gluconates, alkali metal heptogluconates, alkali metal oxalates, alkali metal tartrates, sorbitol, and mixtures thereof; and
(D) from 0.5 to 5.0 g/L of a surfactant component.

5,382,296

METHOD FOR CLEANING SEMICONDUCTOR PRODUCTS

Olli Anttila, Espoo, Finland, assignor to Okmetic Oy, Espoo, Finland

Continuation of Ser. No. 840,078, Feb. 20, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 113,965
Claims priority, application Finland, Feb. 27, 1991, 910946
Int. Cl.[6] C23G *1/02*
U.S. Cl. 134—3 **16 Claims**

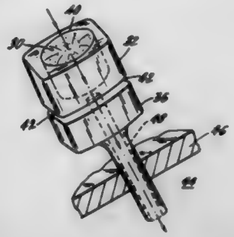
1. A method for cleaning a semiconductor product of particles accumulated on its surface as well as of metallic and organic contamination, comprising washing the semiconductor product with an acid-water solution, with a dilution ratio between $1{:}10^6$ –$1{:}10^3$ whereby said metallic contamination is reduced without increasing said particles.

5,382,297

ENDOSCOPE CLEANING AND DEFOGGING APPARATUS

Douglas E. Valentine, Oakdale, and Ronald J. Cerone, East Lyme, both of Conn., assignors to Merocel Corporation, Mystic, Conn.

Division of Ser. No. 851,536, Mar. 13, 1992, Pat. No. 5,274,874. This application Sep. 27, 1993, Ser. No. 126,642
Int. Cl.[6] A47L *25/00*
U.S. Cl. 134—15 **16 Claims**



15. A method of cleaning and defogging a medical instrument having a shaft and a lens, comprising the steps of:
a) inserting said instrument into a container attached to an endoscopic trocar cannula such that said instrument contacts a sponge disposed within said container;
b) rubbing said instrument against the sponge to clean said instrument shaft and to clean and defog said instrument lens; and
c) passing said instrument through said container into said endoscopic trocar cannula.

5,382,298

CLEANSING AND DESENSITIZING SOLUTIONS AND METHODS FOR USE IN OFFSET PRINTING

Louis E. Bonderant, P.O. Box 2074, Middleburg, Va. 22117

Continuation-in-part of Ser. No. 847,328, Mar. 6, 1992, Pat. No. 5,203,926. This application Feb. 9, 1993, Ser. No. 15,608

The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.

Int. Cl.[6] B41F *35/04*; C09D *5/20*; C11D *7/08, 7/50*

U.S. Cl. 134—42 **10 Claims**

1. Press component cleansing and desensitizing treatment solution for use, without requiring diamantling of a press, during an interruption of offset printing operations, comprising:

solution buffering means including

about 2% to about 25% by weight of a buffer selected from the group consisting of monopotassium phosphate, monoammonium phosphate, monosodium phosphate and monopotassium citrate, a trace amount of about 0.2% to about 0.7% by weight of an acid, selected from the group consisting of phosphoric acid, lactic acid, and citric acid, and combinations thereof;

about 2% to about 25% by weight of a liquid humectant;

about 0.2% to about 5% mineral spirits;

about 2% to about 25% of a liquid constituent selected from the group consisting of ethylene glycol monobutyl ether, propylene glycol n-butyl ether, and combinations thereof;

about 0.2% to about 7.5% by weight of a non-soluble solid pulverant anhydrous aluminum silicate of preselected particle size selected within the range of about three to about five micrometers, for abrading and facilitating removal of surface contaminants on such press components, and

the balance water selected from the group consisting of distilled water, deionized water, high-purity low-electrolyte water, and combinations thereof.

7. A method for treatment of offset printing press components, as mounted in a printing press for a press run, including the printing plate and metal surfaces of the fountain solution system which can be exposed to printing ink, such treatment being carried out for purposes of extending desired printing quality, comprising the steps of:

selecting a cleansing and treatment solution as set forth in claims 1 or 2, or which is acceptable in relation to selections made for compatibility of the fountain solution, printing ink and blanket cylinder in use in such printing press run,

temporarily interrupting printing operations on such printing press,

wetting a pad means to act as a carrier for the selected solution, and

wiping such printing press components with the pad means as wetted with such solution, while such components are mounted in such press and before restarting printing operations, so as to clarify printing image surfaces of such printing plate and desensitize water receptive and transfer surface portions of such press components which can be exposed to printing ink.

5,382,299

SOLDERING FLUX

Dosten Baluch, Wembley, and Anthony E. Ingham, Chiswick, both of United Kingdom, assignors to Cookson Group PLC, London, United Kingdom

Filed Jan. 28, 1994, Ser. No. 187,738

Claims priority, application United Kingdom, Feb. 1, 1993, 9301912

Int. Cl.[6] B23K *35/34*

U.S. Cl. 148—23 **14 Claims**

1. A soldering flux composition which comprises an aqueous solution containing as component (A) a compound selected from the group consisting of (i) hydrohalides and hydrophosphates of guanidine and substituted guanidines, (ii) hydrohalides and hydrophosphates of a five-membered nitrogen containing heterocyclic amine of the formula

$$C_xN_yH_3$$

in which x is 1 or 2 and y is 4 or 5, and mixtures of (i) and (ii) and as component (B) at least one compound selected from the group consisting of hydrohalides and hydrophosphates of aliphatic amines selected from aliphatic monoamines of formula $CH_3(CH_2)_nNR_2$ and aliphatic diamines of formula $R_2N(CH_2)_mNR_2$ in which n is 0 to 10, m is 5 to 10 and R is hydrogen, methyl, ethyl, propyl or butyl, said components (A) and (B) being present in the relative proportions of 25 to 100% by weight of (A) and 75 to 0% of (B).

5,382,300

SOLDER PASTE MIXTURE

Greg E. Blonder, Summit; Yinon Degani, Highland Park, and Thomas D. Dudderar, Chatham, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Mar. 22, 1994, Ser. No. 216,225

Int. Cl.[6] B23K *35/34*

U.S. Cl. 148—24 **20 Claims**

1. A solder paste comprising a vehicle and a mixture of at least two solder powders, one component of said mixture being a eutectic or near eutectic Sn/Pb alloy powder and another component of said mixture is selected from at least one elemental metal, at least one solder alloy and a mixture of at least one elemental metal and at least one alloy, wherein powders of said other component are selected from powders

1) each of which has a liquidus temperature which is lower by at least 5° C. than a solidus temperature of said eutectic or near-eutectic Sn/Pb powder,

2) each of which has a solidus temperature which is higher by at least 5° C. than a liquidus temperature of said eutectic or near-eutectic Sn/Pb powder, and

3) at least one of which has a solidus temperature which is higher by at least 5° C. than a liquidus temperature of said eutectic or near-eutectic Sn/Pb powder, said at least one of the powders with said higher solidus temperature making up at least 30 wt. % of the powders in the total powder mixture, and

said eutectic or near eutectic Sn/Pb alloy comprising between 5 and 95 weight percent of the powder mixture.

5,382,301

HIGH PERMEABILITY THIN-FILM MAGNETIC HEAD AND METHOD OF MANUFACTURE

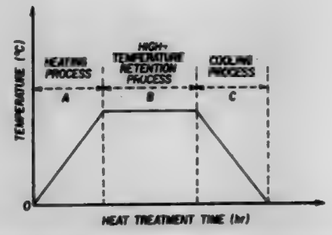
Keiji Ohkubo, Yokosuka; Yuko Arimoto, Yokohama; Hiroyuki Uwazumi, Matsumoto, and Hisashi Yamasaki, Yokohama, all of Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Oct. 15, 1992, Ser. No. 961,395

Claims priority, application Japan, Oct. 18, 1991, 3-271257

Int. Cl.[6] G11B *5/31*; H01F *41/22*

U.S. Cl. 148—108 **5 Claims**



1. A method for manufacturing a thin-film magnetic head comprising the steps of:

forming a lower magnetic core made of cobalt based amorphous alloy on a surface of a substrate;

forming a magnetic gap layer on the lower magnetic core;

forming a coil-form electric conductive layer on the magnetic gap layer;

forming an upper magnetic core made of cobalt based amorphous alloy over the coil-form electric conductive layer, wherein the upper magnetic core is connected to the lower magnetic core at first ends thereof through a central region of the coil-form electric conductive layer and the upper magnetic core is spaced from the lower magnetic core by the magnetic gap layer at second ends thereof; and

heat treating the substrate having the lower magnetic core, the magnetic gap layer, the coil-form electric conductive layer and the upper magnetic core formed thereon with a heat treatment process comprising:

heating said substrate up to a retention temperature higher than 325° C. but lower than a crystallizing temperature of the cobalt based amorphous alloy;

retaining the heated substrate at the retention temperature for more than ten minutes while applying an external rotating magnetic field greater than 0.01 kOe to the lower and upper magnetic cores formed on the substrate; and

cooling the substrate down to a temperature below 250° C. while applying the external rotating magnetic field to the lower and upper magnetic cores formed on the substrate.

5,382,302

METHOD OF PRODUCING A HIGH TENSILE STEEL SHEET HAVING EXCELLENT STRETCH FLANGING FORMABILITY

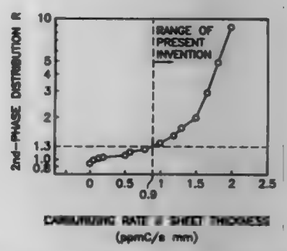
Susumu Okada, Okayama; Kouichi Hirata; Susumu Sato, both of Chiba; Masahiko Morita, and Tsuguhiko Nakagawa, both of Okayama, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Division of Ser. No. 27,182, Mar. 5, 1993, Pat. No. 5,332,453. This application Apr. 13, 1994, Ser. No. 226,957

Claims priority, application Japan, Mar. 6, 1992, 4-049825

Int. Cl.[6] C21D *1/06*

U.S. Cl. 148—226 **4 Claims**



1. A method of producing a high tensile steel sheet excelling in stretch flanging formability, comprising the steps of:

hot-rolling a steel material containing about 0.009 wt % or less of C and having an approximate composition of $(12/48)Ti^* + (12/93)Nb \geqq C$ (where $Ti^* = Ti - (48/32)S - (48/14)N$), to obtain a hot-rolled steel sheet;

carburizing said hot-rolled steel sheet for about 15 seconds or more, at a temperature which is approximately within the range extending from (A) (the Ac_1 transformation point of the steel sheet $-50°$ C.) or more to (B) (the Ac_1 transformation point $+30°$ C.) or less;

and performing said carburizing step at a carburizing rate of about (0.9/t)ppmC/sec or more, where C represents the through-thickness mean percentage content of the sheet, and t represents the thickness of the sheet in millimeters;

and then cooling the steel sheet at a cooling rate of about 10° C./sec or more at least until it is cooled to about 500° C.

5,382,303

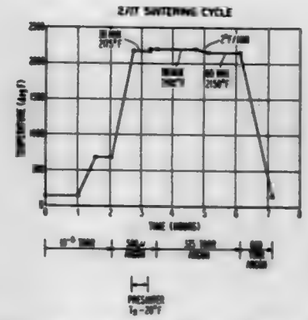
PERMANENT MAGNETS AND METHODS FOR THEIR FABRICATION

Richard L. Anderson, Marengo, Ill., and Fred G. Jones, Alma, Mich., assignors to SPS Technologies, Inc., Newtown, Pa.

Filed Apr. 13, 1992, Ser. No. 868,030

Int. Cl.[6] H01F *1/053*

U.S. Cl. 148—303 **23 Claims**



10. In step (g), third and fourth lines therein, please substitute—intrinsic coercivity—for "H_{ci}", and —maximum energy product—for "BH_{max}", respectively.

5,382,304

FERROMAGNETIC MATERIALS

Brian Cockayne; William R. MacEwan, both of Malvern; Ivor R. Harris, Birmingham, and Nigel A. Smith, Halesowen, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB91/00346, § 371 Date Oct. 19, 1992, § 102(e) Date Oct. 19, 1992, PCT Pub. No. WO91/14271, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 5, 1991, Ser. No. 937,865

Claims priority, application United Kingdom, Mar. 16, 1990, 9006055; Mar. 16, 1990, 9006056

Int. Cl.[6] C22C *38/00*; H01F *1/04*

U.S. Cl. 148—306 **10 Claims**

1. A ferromagnetic material having a $B8_2$ crystal structure consisting essentially of $Fe_{60}M_xN_y$ where M is at least one element selected from the group consisting of Al, Ga, In and Tl; N is at least one element selected from the group consisting of As, Sb and Bi; where x has a range of $1 \leqq x \leqq 39$; and where $x+y=40$ and wherein when M is Ga, N is not As.

5,382,305

SOFT MAGNETIC THIN FILM

Kouichi Terunuma, and Masahiro Miyazaki, both of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Division of Ser. No. 617,180, Nov. 23, 1990, Pat. No. 5,262,915. This application Aug. 16, 1993, Ser. No. 106,563

Claims priority, application Japan, Aug. 23, 1990, 2-223771

Int. Cl.[6] H01F *10/00*

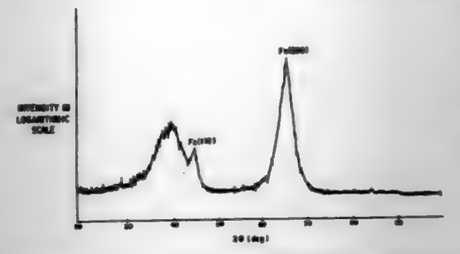
U.S. Cl. 148—306 **7 Claims**

1. A soft magnetic thin film having an atomic ratio composition of the formula:

$$((Fe_{1-y}Ni_y)_{1-x}M_x)_{1-z}N_l$$

wherein M is Zr or a mixture of Zr at least one member selected from the group consisting of Mg, Ca, Ti, Hf, V, Nb, Ta,

Cr, Mo, W, Mn, and B, $0.08 \leq x \leq 0.15$, $0 \leq y \leq 0.1$, and $0.001 \leq z \leq 0.15$, and having a relative intensity ratio of Fe (200)



peak to Fe (110) peak in an X-ray diffraction spectrum of at least $\frac{1}{3}$.

5,382,306

SPRAY UNIT FOR COOLING EXTRUDED SECTIONS

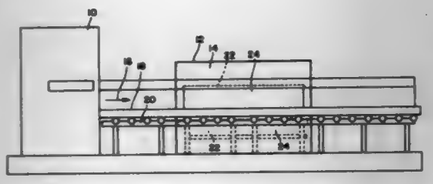
Miroslaw Plata, Vetroz; Bernard Bourqui, Noes, and Werner Strehmel, Sierre, all of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Jun. 7, 1993, Ser. No. 72,117

Claims priority, application Switzerland, Jun. 19, 1992, 01947/92-0

Int. Cl.[6] C21D *1/62*

U.S. Cl. 148—511 **13 Claims**



1. Process which comprises providing a spray unit comprising spray nozzles having nozzle outlets for spraying a program-controlled cooling medium onto an extruded section, wherein the distance, the distribution of cross-section and the direction of the spray nozzles are adjustable to take into account the specific shape and distribution of mass of the extruded section, determining the optimum setting for the spray nozzles wherein a piece of section that is to be extruded, after being heated to the exit temperature of an extrusion press, is cooled with adjustment of the spray nozzles with respect to distance from the section, the distribution and direction of the nozzles under constant air flow and different, variable water flow rate conditions, wherein the temperature change is measured at a plurality of points, and wherein the geometric arrangement is determined for the required amount of coolant flow, the same checked several times and, if a non-uniform temperature distribution is found, a correction undertaken at least once.

5,382,307

PROCESS FOR MANUFACTURING HIGH-STRENGTH BAINITIC STEEL RAILS WITH EXCELLENT ROLLING-CONTACT FATIGUE RESISTANCE

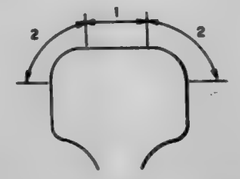
Hideaki Kageyama; Masaharu Ueda, and Kazuo Sugino, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 24, 1994, Ser. No. 201,924

Claims priority, application Japan, Feb. 26, 1993, 5-037959; May 21, 1993, 5-120265; May 31, 1993, 5-129729; May 31, 1993, 5-129730; Jul. 22, 1993, 5-181663; Jul. 22, 1993, 5-181664

Int. Cl.[6] C21D *9/04*; C22C *38/18*

U.S. Cl. 148—584 **10 Claims**



1. A process for manufacturing high-strength bainitic steel rails with an excellent rolling-contact fatigue resistance comprising the steps of hot-rolling steels consisting of 0.15% to 0.45% carbon, 0.15% to 2.00% silicon, 0.30% to 2.00% manganese, and 0.50% and 3.00% chromium, with the remainder consisting of iron and unavoidable impurities, subjecting the head of an as-rolled rail still hot or of a rail heated to a high temperature to an accelerated cooling from the austenite region to a cooling stop temperature of 500° to 300° C. at a rate of 1° to 10° C. per second, and then cooling the rail head further to a still lower temperature zone.

5,382,308

MULTIPLE MATERIAL SYSTEMS FOR SELECTIVE BEAM SINTERING

David L. Bourell; Harris L. Marcus; Joel W. Barlow; Joseph J. Beaman, and Carl R. Deckard, all of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 951,349, Sep. 25, 1992, Pat. No. 5,296,062, which is a continuation of Ser. No. 814,715, Dec. 30, 1991, abandoned, which is a continuation of Ser. No. 559,338, Jul. 30, 1990, Pat. No. 5,076,869, which is a continuation of Ser. No. 402,694, Sep. 5, 1989, Pat. No. 4,944,817, which is a continuation-in-part of Ser. No. 920,580, Oct. 17, 1986, Pat. No. 4,863,538. This application Mar. 21, 1994, Ser. No. 215,265

Int. Cl.[6] B27N *3/00*; B32B *31/00*; B23K *9/00*; B29C *67/00*

U.S. Cl. 156—62.2 **13 Claims**



1. A method of producing a part, comprising the steps of:

depositing a layer of a powder onto a target surface, said powder comprising particles of a first material coated with a second material, said second material having a lower bonding temperature than said first material;

heating the deposited layer of powder to a temperature that is near but below the bonding temperature of the second material;

irradiating a selected portion of said powder corresponding

to a cross-section of the part with a directed energy beam, so that the second material in said selected portion bonds particles of said first material;

repeating said depositing, heating and irradiating steps for a plurality of layers so that bonded portions of adjacent layers bond to one another to form a mass;

removing unbonded portions of the powder to yield the mass;

5,381,309

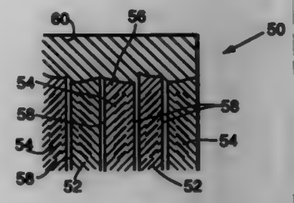
METHOD OF MAKING A FIBER REINFORCED CERAMIC GLASS COMPOSITES HAVING TAILORED COEFFICIENT OF THERMAL EXPANSION

Robert W. Seibold, Santa Monica; Bruce W. Bailer, Walnut, and James O. Gibson, El Segundo, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 766,320, Sep. 27, 1991, Pat. No. 5,229,196. This application May 13, 1993, Ser. No. 60,143

Int. Cl.[6] B29B *11/04*; C01B *31/00*; C04B *33/34*

U.S. Cl. 156—242 **7 Claims**



1. A method for preparing improved fiber reinforced composites having a tailored coefficient of thermal expansion, said method comprising the steps of:

(a) forming a preform comprising a matrix material in a fugitive binder and selected fibers;

(b) partially consolidating said preform by exposure to an elevated temperature having a maximum of 1523° K. (1250° C.) and an elevated pressure having a maximum of 13.1 MPa (1900 psig) to remove said fugitive binder and form a partially consolidated preform;

(c) completing consolidation of said partially consolidated preform by exposure to an elevated temperature having a maximum of 1713° K. (1440° C.) and an elevated pressure having a maximum of 103 MPa (15,000 psig) to form a consolidated composite;

(d) cooling said consolidated composite whereby gap structures of about 300 to 1,000 angstroms in size form in said composite between said matrix material and said fibers, and within said fibers;

(e) impregnating said composite having said gap structures with a bonding agent, said bonding agent comprising about 0.5 to 5 volume percent of said composite;

(f) treating said impregnated composite to cure said bonding agent and bond said fibers and said matrix material.

5,382,310

PACKAGING MEDICAL IMAGE SENSORS

Edward J. Ozimek, Penfield, and Terry Tarn, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1994, Ser. No. 236,782

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—275.5 **2 Claims**

1. A method of packaging a medical image sensor, comprising:

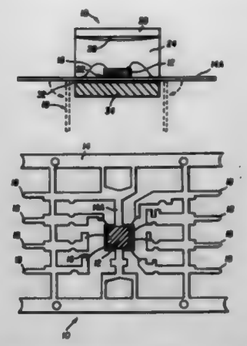
(a) securing a die (image sensor) to top surface of a conductive lead frame having top and bottom surfaces;

(b) providing electrical connections between the lead frame and the die;

(c) forming an optical transparent UV curable adhesive over the die and curing such adhesive so that the top surface of the adhesive over the die has a concave topography;

(d) filling in the concave topography with UV curable adhesive;

(e) placing a cover glass **28** over the filled in adhesive, such



cover glass **28** having an index of refraction matched to the filled in adhesive,; and

(f) exposing the filled in adhesive with UV light illuminated through the glass cover to such cured filled in adhesive and thereby securing the glass cover to the filled in adhesive.

5,382,311

STAGE HAVING ELECTROSTATIC CHUCK AND PLASMA PROCESSING APPARATUS USING SAME

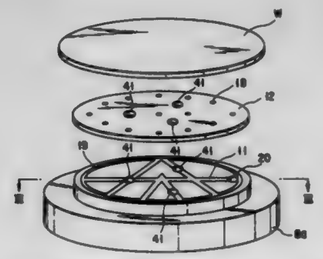
Kenji Ishikawa, Sagamihara; Mitsuaki Komino, Tokyo; Tadashi Mitui, Yamanashi; Teruo Iwata, Nirasaki; Izumi Arai, Yokohama, and Yoshifumi Tahara, Tokyo, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Filed Dec. 17, 1993, Ser. No. 168,367

Claims priority, application Japan, Dec. 17, 1992, 4-354709; Dec. 17, 1992, 4-355240; Mar. 24, 1993, 5-089239

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—345 **20 Claims**



1. A stage for holding a substrate, the substrate having a major surface serving as a surface to be treated and a lower surface opposite to the major surface, comprising:

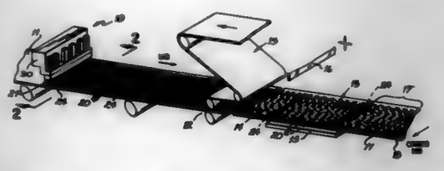
a stage main body having a support surface for supporting said substrate through the lower surface, a groove being formed in the support surface, and a gas path communicating with the groove being formed in said stage main body;

a thermal source incorporated in said main body to control a temperature of said substrate;

a sheet electrostatic chuck having a lower surface airtightly adhered to the support surface to cover the groove, a plurality of through holes being formed in said electro-

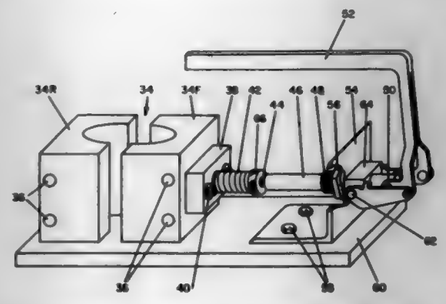
static chuck, and the through holes being arranged along and above the groove;
power supply means connected to said electrostatic chuck; and
means for supplying a heat transfer gas into the gas path, the heat transfer gas being supplied between said substrate and said electrostatic chuck through the groove and the through holes to contribute to transfer of thermal energy from said thermal source to said substrate.

5,382,312
DUAL FORMAT ADHESIVE APPARATUS FOR INTERMITTENTLY DISRUPTING PARALLEL, STRAIGHT LINES OF ADHESIVE TO FORM A BAND
John Raterman, Lawreaceville, Ga., assignor to Nordson Corporation, Westlake, Ohio
Filed Apr. 8, 1992, Ser. No. 865,094
Int. Cl.[6] B32B *7/14*
U.S. Cl. 156—500 11 Claims



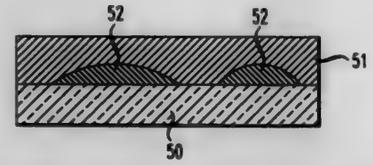
1. In an apparatus for applying adhesive to a substrate for adherence to another substrate, said apparatus including:
a plurality of adhesive nozzle means for producing a plurality of emanating adhesive beads for deposition in a pattern of straight parallel lines on a first substrate;
at least one air jet means in operative orientation with respect to said nozzle means for impinging a flow of air on said emanating beads;
a source or pressurized air intermittently connectable to said air jet means;
said air jet means, when said air flows therefrom, being operable to disturb said beads so that they intermingle laterally to form an adhesive band on said first substrate across the entire pattern said lines.

5,382,313
SUBLIMATION TRANSFER APPARATUS
Michael F. Eminger, 2896 Unaweep Ave., Grand Junction, Colo. 81503
Filed Mar. 5, 1991, Ser. No. 665,415
Int. Cl.[6] B30B *15/34*
U.S. Cl. 156—583.1 1 Claim



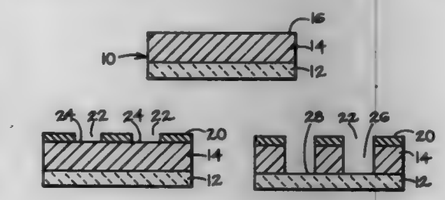
1. A sublimation transfer apparatus for use by the small shopowner to print mugs of various diameters with sublimal dyes which comprises:
a flat surfaced base;
a heated, two part, solid head positioned on the upper surface of said base, said head having front and rear diametrically opposed curvilinear cavities which are adapted to releasably receive and apply pressure to walls of a mug and a transfer sheet having sublimable dyes positioned between said cavities, said front cavity being slidably movable relative to said rear cavity which is stationary;
an insulation block affixed to and centrally positioned on said front cavity;
lever means having spring pressure means adjacent said front cavity whereby sufficient and uniform distribution of pressure against said front cavity, said transfer sheet and mug is obtained even though the diameter of the mug may vary, said spring pressures means being positioned between said lever means and said insulation block; and
a curvilinear, metal insert which mates with and is releasably attached to each of said front and rear cavities, said inserts thereby further adapting said apparatus to receive mugs of various diameters.

5,382,314
METHOD OF SHAPING A DIAMOND BODY
Sungho Jin, Millington, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Aug. 31, 1993, Ser. No. 114,704
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—628 9 Claims



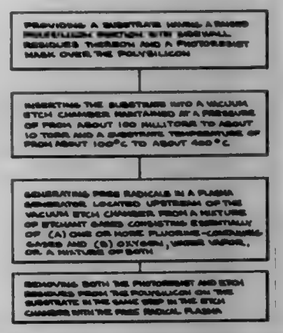
1. Method of making an article that comprises a processed diamond body, the method comprising
a) providing a starting diamond body having a major surface; and transforming the starting body into the processed body by a process that comprises
b) removing a quantity of diamond material from at least a portion of the major surface of said starting body;
CHARACTERIZED IN THAT step b) comprises
i) forming on at least one portion of the major surface of the starting body a layer of etch-retardant material of non-uniform, thickness; and
ii) contacting at least a part of said layer of etch-retardant material with etchant at a processing temperature and for a processing time effective for removal of said quantity of diamond material, wherein said etch-retarding material is selected from the materials that have less than 5 atomic percent mutual solubility with diamond and do not form an intermetallic compound with said etchant at said temperature.

5,382,315
METHOD OF FORMING ETCH MASK USING PARTICLE BEAM DEPOSITION
Nalin Kumar, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.
Continuation-in-part of Ser. No. 736,357, Jul. 26, 1991, Pat. No. 5,244,538, and a continuation-in-part of Ser. No. 52,958, Apr. 23, 1993, Pat. No. 5,312,514, which is a continuation of Ser. No. 789,220, Nov. 7, 1991, abandoned, and a continuation-in-part of Ser. No. 896,126, Jun. 9, 1992, Pat. No. 5,290,732, which is a continuation of Ser. No. 653,609, Feb. 11, 1991, Pat. No. 5,156,997. This application Sep. 13, 1993, Ser. No. 120,264
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[6] H05K *3/00*
U.S. Cl. 156—643 18 Claims



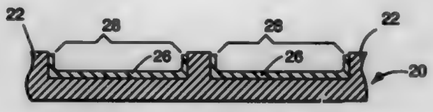
1. A method of forming channels in a substrate, comprising the steps of:
directing a particle beam at a substrate by direct-write using a liquid metal cluster source without using a mask to deposit an etch mask on the substrate which selectively exposes predetermined portions of the substrate, said etch mask consisting of particles mechanically placed on the substrate by the particle beam; and then
etching the exposed portions of the substrate through the etch mask to form channels in the substrate and removing the etch mask from the substrate.

5,382,316
PROCESS FOR SIMULTANEOUS REMOVAL OF PHOTORESIST AND POLYSILICON/POLYCIDE ETCH RESIDUES FROM AN INTEGRATED CIRCUIT STRUCTURE
Graham W. Hills, Los Gatos, and Ruth E. Bucknall, Mountain View, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Oct. 29, 1993, Ser. No. 145,357
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—643 19 Claims



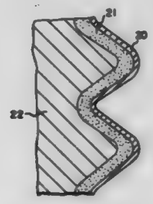
1. A plasma etch process for simultaneously removing photoresist and etch residues remaining from a prior polysilicon and/or polycide etch which comprises:
(a) generating radicals in a plasma generator upstream of an etch chamber, from an etch gas mixture comprising:
(i) oxygen, water vapor, or a mixture of same; and
(ii) one or more fluorine-containing etchant gases; and
(b) then contacting a substrate containing said photoresist and etch residues from said previous etch with said generated radicals in said etch chamber; to thereby remove both said photoresist and said etch residues.

5,382,317
METHOD OF SELECTIVELY APPLYING A COATING TO A BILEVEL SUBSTRATE
Patrick A. Thomas, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 18, 1994, Ser. No. 198,837
Int. Cl.[6] B05D *5/12*
U.S. Cl. 156—654 16 Claims



1. A method for applying a coating to the upper surface of a bilevel substrate, comprising the steps of:
providing a bilevel substrate having a planar upper surface and at least one channel therein forming a lower surface;
applying a layer of liquid material on the upper and lower surfaces of the bilevel substrate;
moving a leveling device across the upper surface, whereby the liquid material on the upper surface of the bilevel substrate is removed while the liquid material on the lower surface of the bilevel substrate is not;
hardening the liquid material on the lower surface;
depositing a coating on the planar upper surface and over the hardened material on the lower surface of the bilevel substrate; and
removing the hardened material, and the coating above the hardened material, on the lower surface of the bilevel substrate, whereby the coating remains on the upper surface of the bilevel substrate.

5,382,318
HARD AUSTENITIC STAINLESS STEEL SCREW AND A METHOD FOR MANUFACTURING THE SAME
Masaaki Tahara, Takatsuki; Haruo Senbokuya, Tondabayashi; Kenzo Kitano, Kawachinagano, and Teruo Minato, Hashimoto, all of Japan, assignors to Daidousanso Co., Ltd., Osaka, Japan
Division of Ser. No. 669,440, Mar. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 479,013, Feb. 12, 1990, Pat. No. 5,013,371. This application Mar. 3, 1993, Ser. No. 25,679
Claims priority, application Japan, Jun. 10, 1989, 1-177660; Oct. 4, 1990, 2-267729
Int. Cl.[6] B44C *1/22*
U.S. Cl. 156—656 3 Claims



1. A method for manufacturing a hard austenitic stainless

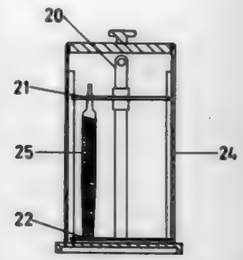
steel screw comprising steps of holding an austenitic stainless steel screw in a fluorine- or fluoride-containing gas atmosphere to form a fluorinated layer on a surface, heating the fluorinated screw in a nitriding atmosphere to form a screw surface layer into a hard nitrided layer comprising an outer ultra hard surface layer and an inner hard layer beneath connecting to a core part of the screw, said ultra hard surface layer having a hardness of 1200–1400 Hv and said inner hard layer having a hardness of 320–650 Hv, and removing said ultra hard surface layer of said hard nitrided layer in the head and neck portion of the screw to expose the inner hard layer connecting to the core part.

5,382,319

SOLUTION AND PROCESS FOR CHEMICALLY RESHARPENING SMOOTHING TOOLS, FORMING TOOLS AND CUTTING TOOLS

Anthony J. Tumminaro, Jr., P.O. Box 105, Gardena, N. Dak. 58739

Filed Oct. 12, 1993, Ser. No. 133,995
Int. Cl.[6] C23F *1/00*
U.S. Cl. 156—664 **4 Claims**



1. A process to chemically resharpen or sharpen forming, smoothing, and cutting tools which comprises:
providing an aqueous solution of from about 1% to 20% by volume of anionic and nonionic surfactant with ethyl alcohol, phosphoric acid of from about 5% to 92% by volume, and distilled water in a volume sufficient for the balance of said solution;
completely immersing said tools in said solution;
subsequently removing said tools from said solution;
drying said tools; and
allowing a rust resistant coating of said solution to adhere to said tools.

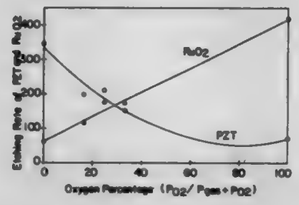
5,382,320

REACTIVE ION ETCHING OF LEAD ZIRCONATE TITANATE AND RUTHENIUM OXIDE THIN FILMS USING $CHCLFCF_3$ OR $CHCL_2CF_3$ AS AN ETCH GAS

Seshu B. Desu, and Wei Pan, both of Blacksburg, Va., assignors to CERAM Incorporated; Sharp Kabushiki Kaisha and Virginia Polytechnic Institute and State University

Continuation-in-part of Ser. No. 75,059, Jun. 10, 1993. This application Jul. 22, 1993, Ser. No. 96,171
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—667 **11 Claims**

1. A method of reactive ion etching a material that includes at least one of RuO_2 and lead zirconate titanate, comprising: placing the material into a chamber, the chamber containing at



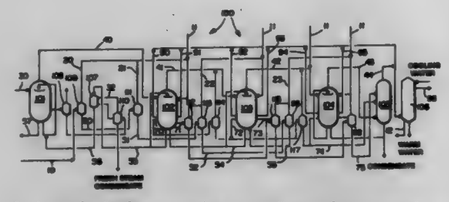
least one of $CHCl_2CF_3$ and $CHClFCF_3$, and producing a glow discharge in the chamber to etch the material.

5,382,321

PROCESS FOR THE CONCENTRATION OF SPENT LIQUORS

Olof Fägerlind, Föreboda, Sweden, and Erik Agren, Esbo, Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Apr. 15, 1992, Ser. No. 868,497
Int. Cl.[6] B01D *1/26*
U.S. Cl. 159—47.3 **11 Claims**



1. A method of evaporating spent liquor from organic solvent pulping of cellulose pulp comprising the steps of:
(a) using a series of evaporator effects, each of the evaporator effects having a plurality of distinct surfaces, including a vapor side and a liquor side;
(b) expanding the spent liquor to produce a liquor with a reduced content of volatiles, and with volatile expansion vapors;
(c) feeding the liquor with reduced volatiles to the evaporator effects so that part of it is evaporated and the solids content of the liquor is increased;
(d) in a plurality of the evaporator effects, introducing more than one vapor separately to the distinct heat exchange surfaces to provide heat for heating the liquor to effect evaporation thereof, one of the vapors being a volatile expansion vapor from step (b), and another vapor being a separately introduced vapor from another effect, some of the introduced vapors condensing when heating the liquor, to produce condensates; and
(e) recovering organic solvent pulping liquor from the volatile expansion vapor from step (b) and vapors from step (c).

8. Apparatus for recovery of volatiles from spent cellulose pulping liquors, comprising:
a plurality of series connected evaporator effects having heating surfaces therein, a vapor side, and a liquor side, and a condensate outlet from each effect;
means for expanding the spent cellulose pulping liquors to produce a liquor with a reduced content of volatiles, and with volatile expansion vapors;
at least some of said evaporator effects having said heating surfaces which are divided so that a plurality of separate compartments are formed on the vapor side in the same effect;

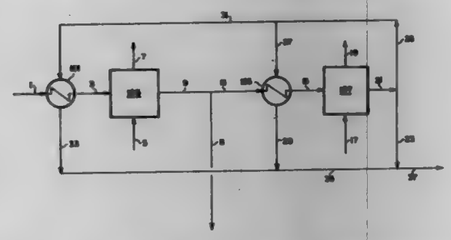
means for supplying different heating vapors, including means for supplying a volatile expansion vapor from said expanding means, and another means for separately supplying vapor from another effect, into operative association with the vapor sides of said separate compartments in a plurality of said evaporator effects; and
means connected to said condensate outlets for the separation and recovery of volatiles from condensate.

5,382,322

SELECTIVE WHITE LIQUOR OXIDATION

Vincent L. Magnotta, Wescosville; Ronald C. Naddeo, Kempton; Varin Ayala, Catasauqua; John F. Cirucci, and Virgil G. Fox, Jr., both of Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 18, 1991, Ser. No. 780,681
Int. Cl.[6] D21C *11/04*
U.S. Cl. 162—30.11 **5 Claims**



1. A method for the selective oxidation of white liquor in a pulp mill using the kraft wood pulping process, said method comprising:
(a) contacting an unoxidized white liquor feed stream comprising sodium sulfide, sodium hydroxide, and water with a first oxygen-rich gas stream in a first reaction zone at a temperature between about 180° F. and about 325° F. utilizing an oxygen supply rate and residence time sufficient to convert at least 80% of said sodium sulfide into one or more partially oxidized sulfur compounds and form a partially oxidized white liquor,
wherein the molar ratio of oxygen in said first oxygen-rich gas stream to sodium sulfide in said white liquor feed stream is between about 1.0 and about 1.3;
(b) withdrawing a portion of said partially oxidized white liquor from said first reaction zone as a partially oxidized white liquor product comprising said one or more partially oxidized sulfur compounds;
(c) contacting the remainder of said partially oxidized white liquor with a second oxygen-rich gas stream in a second reaction zone at a temperature between about 300° F. and about 380° F. utilizing an oxygen supply rate and residence time sufficient to convert at least 80% of all unoxidized and partially oxidized sulfur compounds contained therein into sodium sulfate,
wherein the molar ratio of oxygen in said second oxygen-rich gas stream to sodium sulfide in said white liquor feed stream is between about 1.0 and about 1.3; and
(d) withdrawing from said second reaction zone a fully oxidized white liquor product.

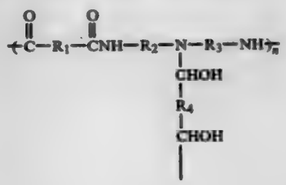
5,382,323

CROSS-LINKED POLY(AMINOAMIDES) AS YANKEE DRYER ADHESIVES

Gary S. Furman, Jr., St. Charles; James F. Kneller, La Grange Park; Kristy M. Bailey, Batavia; Martha R. Finck, Countryside, and Winston Su, Naperville, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 1,997, Jan. 8, 1993, abandoned. This application Feb. 22, 1994, Ser. No. 201,285
Int. Cl.[6] D21H *25/04*
U.S. Cl. 162—111 **8 Claims**

1. A process for manufacturing tissue paper, the process including the steps of: applying to the metal surface of a drying drum a halogen-free Yankee Dryer adhesive which comprises a cross-linked polymer having a Structure I:



wherein:
R_1 is a linear or branched alkylene group containing from 1 to 8 carbon atoms;
R_2 and R_3 may be the same, or may be different, and are selected from the group of linear or branched alkylene groups containing from 2–8 carbon atoms; and R_4 is $(CH_2)_x$, where in x is 0 to 6; and
wherein
n is a whole number of sufficient size to yield a molecular weight of at least 15,000. applying to the metal surface of a drying drum; contacting said adhesive with a continuous paper web; drying the paper web; and creping the paper web with a metal blade which compacts the paper web to form tissue paper.

5,382,324

METHOD FOR ENHANCING PAPER STRENGTH

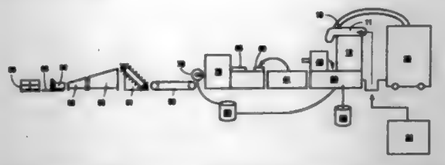
Stephen A. Fischer, Yardley; Nancy S. Clungeon, Wyndmoor, and David I. Devore, Langhorne, all of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed May 27, 1993, Ser. No. 68,447
Int. Cl.[6] D21H *17/45*
U.S. Cl. 162—168.2 **13 Claims**

1. A method for enhancing the strength of paper comprising the steps of
A) adding to a water slurry of paper fibers an aqueous solution of at least one polymer which is a water soluble random copolymer consisting of an allylamine selected from the group consisting of monoallylamine, allyldiethylenetriamine, and mixtures thereof and at least one nonionic or cationic vinyl monomer selected from the group consisting of dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, dimethylaminoethyl acrylate dimethylsulfate, dimethylaminoethyl methacrylate dimethylsulfate, dimethylaminoethyl acrylate methyl chloride, dimethylaminoethyl methacrylate methyl chloride, dimethylaminopropyl acrylamide, dimethylaminopropyl methacrylamide, methacrylamidopropyltrimethylammonium chloride, methacrylamidopropylhydroxyethyldimethylammonium acetate, isopropylaminopropyl methacrylamide, acrylamide, methacrylamide, and n-methylolacrylamide, wherein the aqueous solution has a pH of at least about 10 and is added in a quantity sufficient to provide from about 0.2 to about 2% by weight of polymer on the paper fibers, based on dry paper fibers, and wherein the copolymer consists of from about 5 to about

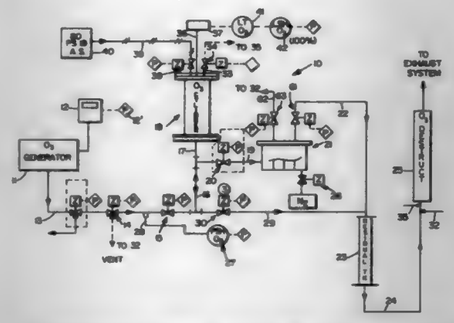
99% by weight of the allylamine and from about 95 to about 1% by weight of the vinyl monomer;
B) forming a paper sheet from the paper fibers; and
C) drying the paper sheet.

5,382,325
METHOD AND APPARATUS FOR MANUFACTURING DUNNAGE MATERIAL
Thomas S. Warda, Aurora, and Bernard J. Karnowka, Bailey, both of Colo., assignors to Envirocube, Inc., Denver, Colo.
Continuation-in-part of Ser. No. 819,764, Jan. 13, 1992, abandoned. This application Mar. 18, 1993, Ser. No. 33,134
Int. Cl.[6] D21F *13/00*
U.S. Cl. 162—218 **1 Claim**



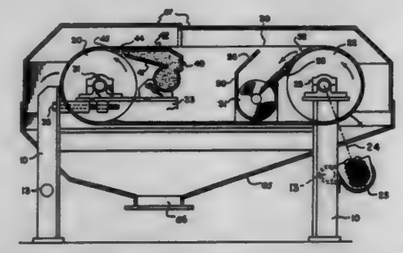
1. A method for forming articles from a pulped paper slurry, comprising the steps of:
pumping said slurry into a plurality of molds;
coupling said plurality of molds to a vacuum source;
injecting compressed air into said slurry contained within each of said plurality of molds to force water from said slurry to said vacuum source and to expand said slurry to the shape of said molds, thereby forming a void within;
maintaining the coupling of said plurality of molds to said vacuum source after the injection of compressed air ceases to allow additional water to flow from said slurry to said vacuum source, thereby drying said expanded slurry into said articles;
uncoupling said plurality of molds from said vacuum source; and
injecting compressed air into each of said plurality of molds to propel said articles from said plurality of molds.

5,382,326
OZONE MIXING TEST APPARATUS
Ryszard Szopinski, and Vincent Fragassi, both of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.
Filed Apr. 17, 1992, Ser. No. 870,374
Int. Cl.[6] D21C *9/153, 7/12*
U.S. Cl. 162—238 **15 Claims**



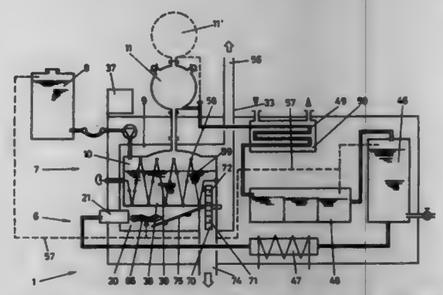
1. Laboratory apparatus for practicing experiments mixing ozone with cellulosic pulp, comprising:
an ozone generator;
a cylinder housing with a movable piston, and means for moving said piston to eject ozone containing gas from said housing;
a mixer for mixing said ozone containing gas with pulp, and having a vent;
first conduit means connecting said ozone generator to said cylinder;
second conduit means connecting said cylinder housing to said mixer;
first automatically operated valve means disposed in said first conduit means for selectively directing ozone from said generator to said cylinder housing;
second automatically operated valve means disposed in said second conduit means for selectively allowing or preventing ozone containing gas from passing from said cylinder housing to said mixer and;
automatic control means for controlling said means for moving said piston, said first and second automatically operated valve means for injecting a predetermined amount of ozone gas into said mixer.

5,382,327
APPARATUS FOR THICKENING PULP AND PAPER STOCK
Peter Seifert, and David E. Chupka, both of Middletown, Ohio, assignors to The Black Clawson Company, Middletown, Ohio
Continuation of Ser. No. 264,118, Oct. 28, 1988, abandoned. This application Jan. 29, 1991, Ser. No. 649,232
Int. Cl.[6] B01D *33/04*
U.S. Cl. 162—317 **6 Claims**



1. Apparatus for thickening a suspension of solid particles of predetermined maximum size in liquid, comprising:
(a) means defining a frame,
(b) first and second rolls rotatably mounted on substantially parallel axes in spaced relation in said frame,
(c) an endless wire belt trained around said rolls in wrapping relation with a limited angular portion of the surfaces thereof and cooperating therewith to define a space enclosing said rolls and bounded by said wire belt to which the portion of each said roll surface not wrapped by said belt is exposed,
(d) said first roll comprising means defining a discontinuous cylindrical outer surface having multiple openings therethrough and enclosing a chamber therewithin which is connected through said opening with said space and with the inner surface of the portion of said belt wrapping said roll,
(e) said openings being of sufficiently greater individual flow area than said maximum particle size to provide for free flow of said suspension and all particles therein through said surface into and out of said chamber,
(f) headbox means mounted in said space and having an outlet positioned to discharge a continuous flow of said suspension toward the wedge zone defined by said exposed surface portion of said first roll and the portion of said belt approaching said surface and thereby to cause at least some of said suspension to enter said chamber through said openings in said exposed portion of said discontinuous surface,
(g) means for driving said wire belt and rolls at a surface speed effecting the development of centrifugal force causing said suspension within said chamber to be discharged outwardly from said chamber through said openings and the liquid component thereof to be expressed through the portion of said belt wrapping said surface while said solid particles in said suspension retained by said belt form a mat of pulp on the inner surface of said belt which is further thickened by the expression of additional liquid in traveling with said belt around said second roll,
(h) means associated with said second roll for causing said deposited pulp to transfer from said wire to said exposed portion of the surface of said second roll as said wire departs therefrom, and
(i) means in said space for collecting the resulting pulp mat from said exposed surfaces of said second roll and removing said pulp from within said space.

5,382,328
INSTALLATION FOR PROCESSING WASTE OIL
Gerd Drespa, Brunebeckweg 59, Dortmund 50, D-4600, and Heinz-Günter Rittscher, Hackertsbergweg 98, Witten-Rüdinghausen D-5810, both of Germany
PCT No. PCT/DE89/00695, § 371 Date Jun. 12, 1992, § 102(e) Date Jun. 12, 1992, PCT Pub. No. WO91/06805, PCT Pub. Date May 16, 1991
PCT Filed Nov. 1, 1989, Ser. No. 852,124
Int. Cl.[6] B01D *3/00*; F23G *7/05*
U.S. Cl. 202—235 **8 Claims**



1. A waste oil processing installation comprising a distillation chamber surrounded by a combustion chamber, a cooled condensation chamber, and a waste gas cleaning section, said distillation chamber containing a cleaning and transport worm equipped with hard metal teeth and extending to the wall of the distillation chamber and a rotating cylinder with pockets, said rotating cylinder extending into the combustion chamber.

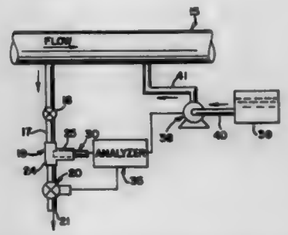
5,382,329
SEPARATION OF 1-DECENE FROM DECANE BY AZEOTROPIC DISTILLATION
Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.
Filed Mar. 11, 1994, Ser. No. 208,695
Int. Cl.[6] B01D *3/36*; C07C *7/06*
U.S. Cl. 203—60 **1 Claim**

1. A method for recovering decene-1 from a mixture of decene-1 and decane which comprises distilling a mixture of decene-1 and decane in the presence of an azeotrope forming agent, recovering the azeotrope forming agent and the decene-1 as overhead product and obtaining the decane from the stillpot, wherein said azeotrope forming agent consists of one material selected from the group consisting of methyl acetate, methyl formate, methyl propionate, ethyl butyrate, methyl t-butyl ether, t-amyl methyl ether and isopropyl ether.

5,382,330
SEPARATION OF 1-OCTENE FROM OCTANE BY AZEOTROPIC DISTILLATION
Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg
Filed Mar. 14, 1994, Ser. No. 209,252
Int. Cl.[6] B01D *3/36*; C07C *7/06*
U.S. Cl. 203—60 **2 Claims**

1. A method for recovering 1-octene from a mixture of 1-octene and octane which comprises distilling a mixture of 1-octene and octane in the presence of an azeotrope forming agent, recovering the octane and the azeotrope forming agent as overhead product and obtaining the 1-octene as bottoms product, wherein said azeotrope forming agent consists of one material selected from the group consisting of ethyl formate and t-amyl methyl ether.

5,382,331
METHOD AND APPARATUS FOR INLINE ELECTROCHEMICAL MONITORING AND AUTOMATED CONTROL OF OXIDIZING OR REDUCING AGENTS IN WATER SYSTEMS
Rodney H. Banks, Naperville, Ill., assignor to Nalco Chemical Company, Naperville, Ill.
Filed Jul. 26, 1993, Ser. No. 97,654
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—153.14 **40 Claims**



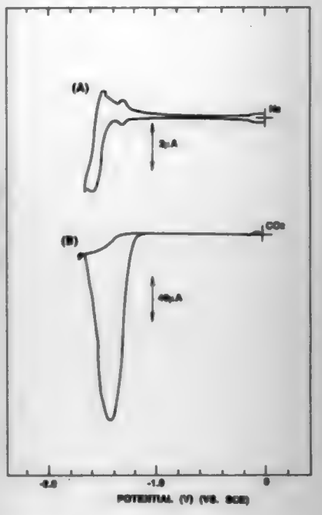
31. A method of electrochemically measuring and controlling the concentration of nitrite in a recirculating water cooling system to minimize corrosion of steel surfaces of lines and/or recirculating equipment which comprises the steps of:
providing a sample line to receive a water sample from the system to measure the nitrite concentration,
providing means for selectively supplying nitrite to the system,
providing a probe in the sample line, wherein the probe includes a plurality of nitrite concentration electrochemical measuring cells, each of which includes a plurality of electrodes,
providing a power supply for said cells,
operating the probe to maintain the electrodes clean for taking optimum concentration measurements,
statically conditioning the sample,
supplying a voltage potential to the cells,
measuring the current through the cell,
converting the current measurement to a nitrite concentration,
and driving the nitrite supplying means in accordance with a set point of the measured concentration of nitrite.

5,382,332

METHOD FOR ELECTROLYTIC REDUCTION OF CARBON DIOXIDE GAS USING AN ALKYL-SUBSTITUTED NI-CYCLAM CATALYST

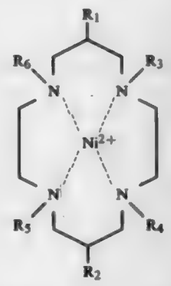
Masamichi Fujihira, Minami-kosugayajutaku 3-404, No. 2000-10, Kosugaya-cho, Sakae-ku, Yokohama City, Kanagawa Pref.; Yoshiki Hirata, Hoya; Kosaku Suga, Mitaka, and Uichi Akiba, Yamato, all of Japan, assignors to Nissan Motor Co., Ltd. and Masamichi Fujihira, both of Yokohama, Japan

Division of Ser. No. 690,832, Apr. 24, 1991, Pat. No. 5,284,563.
This application Aug. 23, 1993, Ser. No. 110,017
Claims priority, application Japan, May 2, 1990, 2-115283
Int. Cl.[6] C25B *1/00*
U.S. Cl. 204—128 20 Claims



1. A method for the electrolytic reduction of carbon dioxide gas comprising:

absorbing onto an electrode an electrocatalyst expressed by the general formula:



where each of R_1, R_2, R_3, R_4, R_5 and R_6 is selected from the group consisting of a hydrogen atom and an aliphatic saturated hydrocarbon group expressed by the formula of C_nH_{2n+1}; and at least one of R_1, R_2, R_3, R_4, R_5 and R_6 is the aliphatic saturated hydrocarbon group in which n is a number ranging from 1 to 22; and

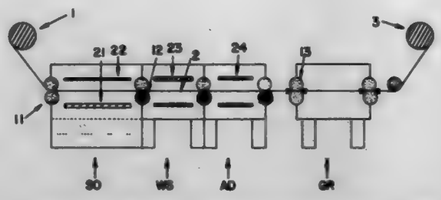
bringing carbon dioxide into association with the absorbed catalyst to effect said reduction.

5,382,333

PROCESS FOR PRODUCING COPPER CLAD LAMINATE

Kazuhiro Ando; Takamasa Kawakami; Yasuhiro Shouji, all of Ibaraki; Yasuo Tanaka, Tokyo; Takeo Kanaoka, Tokyo, and Norio Sayama, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 737,545, Jul. 30, 1991, abandoned. This application Sep. 24, 1992, Ser. No. 950,757
Claims priority, application Japan, Jul. 30, 1990, 2-199211
Int. Cl.[6] C25F *5/00*
U.S. Cl. 204—130 1 Claim



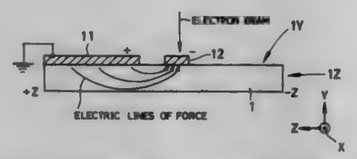
1. A process for producing a copper-clad laminate which comprises placing a (i) copper foil on (ii) prepregs to form an assembly and lamination molding the resulting assembly, wherein the (i) copper foil is an electrodeposited copper foil or a rolled copper foil and is obtained by treating a surface of a (iii) starting copper foil with an oxidizing aqueous alkaline solution to thereby form, on the surface of the (iii) starting copper foil, a fine roughness constituted of a copper oxide of a brown to black color and then reducing the copper oxide which constitutes the fine roughness in an atmosphere in which hydrazine as a reducing gas is present, to thereby form a roughened surface for adhesion while the fine roughness is maintained substantially unchanged, wherein said reducing is conducted at a temperature of from 60° to 160° C. under a hydrazine gas pressure of from 0.1 to 15 mmHg.

5,382,334

PROCESS FOR FORMING POLARIZATION INVERSION LAYER

Satoshi Miyaguchi; Atsushi Onoe, and Hiroyuki Ota, all of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 20, 1993, Ser. No. 138,214
Claims priority, application Japan, Oct. 21, 1992, 4-283054; Apr. 21, 1993, 5-094543
Int. Cl.[6] H01L *21/00*
U.S. Cl. 204—130 14 Claims



1. A process for forming a polarization inversion layer on a substrate of ferroelectric crystal, comprising the steps of:

forming plural pairs of ground anodes and voltage-applying cathodes at predetermined intervals, each pair facing each other and set apart from each other, on a major surface of said substrate parallel to an axial direction where polarization inversion easily occurs;

grounding said anodes;

irradiating an electron beam to said cathodes; and

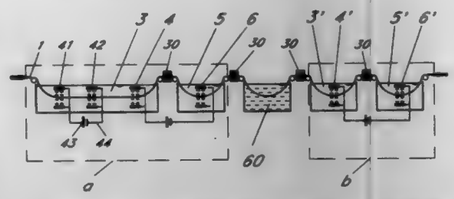
removing said anodes and cathodes, thereby forming a plurality of polarization inversion layers.

5,382,335

PROCESS AND APPARATUS FOR THE ELECTROLYTIC TREATMENT OF CONTINUOUSLY ADVANCING ELECTRICALLY CONDUCTIVE MATERIAL

Karl Jirenec, Maria Enzersdorf, and Jovan Starcevic, Vienna, both of Austria, assignors to Andritz-Patentverwaltungs-Gesellschaft m.b.H., Graz, Austria

Filed Jun. 1, 1992, Ser. No. 891,943
Claims priority, application Austria, Jun. 10, 1991, 1160/91
Int. Cl.[6] C25F *1/04, 7/00*
U.S. Cl. 204—144.5 24 Claims



1. A process for the electrolytic pickling of continuously advancing electrically conductive material, in particular metal strip, metal wires or metal profiles, by passing the material through at least two vessels charged with aqueous electrolyte and comprising the steps of:

passing the material through a first vessel in which it is polarized cathodically;

thereafter passing the material through an immediately following vessel in which the material is polarized anodically; and

completing an electric circuit between electrodes of different polarities provided in the vessels through which the material passes, which circuit conducts the electric current from at least one anode in the first vessel to at least one cathode in the following vessel, wherein the material in the vessels is treated with electrolytes of different properties and wherein the material between successive vessels is subjected to a treatment for neutralizing carried over electrolyte.

5,382,336

TIP POSITION MODULATION AND LOCK-IN DETECTION IN SCANNING ELECTROCHEMICAL MICROSCOPY

Allen J. Bard, Austin, Tex., and David O. Wipf, Starkville, Miss., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 16, 1992, Ser. No. 869,301
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—153.1 9 Claims
(2 of 12 Drawing(s) in Color)

1. A method for characterizing a substrate surface, the method comprising

establishing an electrical potential between a reference electrode and an ultramicroelectrode, the ultramicroelectrode being separated by a distance from a substrate surface and in communication with the surface through an electrolyte solution comprising a mediator; and

measuring electrical current changes in the ultramicroelectrode as a function of continuous or discrete variations in the distance separating the ultramicroelectrode from the surface as the ultramicroelectrode is scanned over the surface;

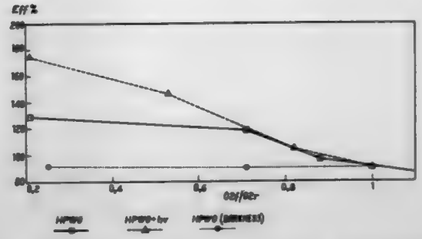
wherein the current is faradaic, decreasing with increasing distance when the surface is a conductor and increasing with increasing distance when the surface is a insulator.

5,382,337

PROCESS FOR OXIDIZING ORGANIC MATERIALS WITH HYDROGEN PEROXIDE UNDER CONDITIONS OF IRRADIATION IN AQUEOUS PHASE

Ivan Wlassics, Rapallo; Mario Alfieri, and Walter Visentin, both of Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Nov. 5, 1992, Ser. No. 972,152
Claims priority, application Italy, Nov. 6, 1991, MI91-1A002950
Int. Cl.[6] C07B *33/00*
U.S. Cl. 204—158.2 16 Claims



1. A photocatalytic process for oxidizing an organic substrate selected from the group consisting of phenols, substituted phenols, and aliphatic compounds with amidic, aldehydic, or carboxy functional groups, which comprises reacting the substrate in a homogeneous, substantially aqueous medium with hydrogen peroxide in the presence of ferrous Fe-(II) ions and, optionally, ferric Fe-(III) and cupric Cu-(II) ions, and carrying out the reaction under irradiation with artificial visible light within the wavelength range of 350 to 700 nanometers, wherein the hydrogen peroxide is added to the reaction medium in an amount such that the ratio of the concentration O_2f, expressed as g/l of 100% H_2O_2 actually added to the aqueous medium, to the concentration O_2r, expressed as g/l of 100% H_2O_2 necessary to completely oxidize the substrate to CO_2, is within the range of from 0.2 to 0.53.

5,382,338

PHOTOVOLTAIC ELECTRICFIELD GAS RECOVERY METHOD

Tony Thomas, 435 Schwartz Ave., Baltimore, Md. 21212

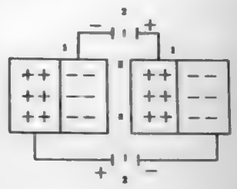
Filed Oct. 14, 1993, Ser. No. 136,466
Int. Cl.[6] H05F *3/00*
U.S. Cl. 204—164 2 Claims

1. A process for the reduction of NO_2, SO_2, CO or CO_2 waste flue gas with hydrogen in an electric field, which process comprises the steps of

a) positioning two photovoltaic cells as two parallel plates in a nonelectric conducting container, said photovoltaic cell is a binding together of n-type and p-type semiconductors;

b) contacting a gas stream containing the flue gas with a hydrogen gas;

c) applying a voltage of 14 V or greater across said photovoltaic cells to generate an electric field wherein the



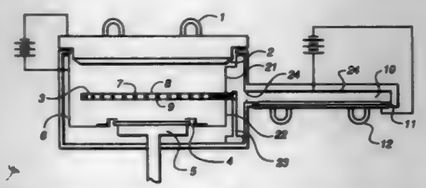
hydrogen gas is converted into plasma and the hydrogen plasma reduces the waste gas.

5,382,339

SHIELD AND COLLIMATOR PASTING DEPOSITION CHAMBER WITH A SIDE POCKET FOR PASTING THE BOTTOM OF THE COLLIMATOR

Julio A. Aranovich, Palo Alto, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Sep. 17, 1993, Ser. No. 123,420
Int. Cl.[6] C23C *14/34, 14/35*
U.S. Cl. 204—192.12 26 Claims



19. A method for the physical vapor deposition onto a plurality of wafers inside of a deposition chamber, comprising the steps of:

positioning a first target of a deposition material near the top of the chamber;

positioning a second target of a pasting material in a side pocket of the chamber;

bombarding the first target with ions to generate particles of said deposition material which pass through a collimator for depositing material form the target onto a predetermined number of wafers sequentially; and

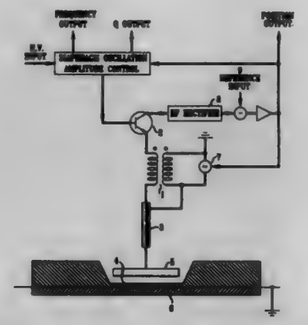
periodically moving the collimator into the side pocket of the chamber and bombarding the second target with ions for depositing pasting material from the second target onto the bottom of the collimator, wherein this step is performed with no wafer in the deposition chamber.

5,382,340

PROCESS FOR REDUCED STRESS TUNGSTEN DEPOSITION

Ratnaji R. Kola, Berkeley Heights; Gabriel L. Miller, Westfield, and Eric R. Wagner, South Plainfield, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 850,639, Mar. 13, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 166,672
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.13 9 Claims



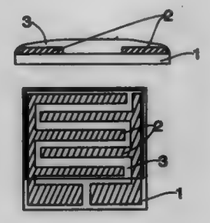
1. A process for fabricating a device comprising the steps of depositing metal on a membrane and patterning said metal characterized in that during said deposition the stress generated during said deposition is monitored by measurement of a property relatable to said stress, and adjustment of said deposition process is made in accordance with said measurement characterized in that said measurement is made frequently and rapidly such that said adjustment based on said measurement can be performed at least 6 times per minute.

5,382,341

METHOD OF MAKING SMOKE DETECTOR

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Filed Sep. 10, 1992, Ser. No. 943,071
Int. Cl.[6] C23C *14/30, 14/08, 14/34*
U.S. Cl. 204—192.21 18 Claims



1. A method of manufacturing a smoke-sensitive element whose resistance varies as a function of concentration of smoke, said method comprising: depositing a film of bismuth oxide onto a substrate layer of an electrically insulating material; heat treating the deposited bismuth oxide film, wherein said heat treatment comprises heating said film in the air by increasing the temperature of said film at the rate of 180°–240° C. per minute until the temperature of said film is about 670°–730° C., holding said film at about this temperature for about 10–20 seconds and then cooling said film at a rate of 180°–240° C. per minute to room temperature; and providing means for electrically connecting such heat treated film to means for measuring resistance.

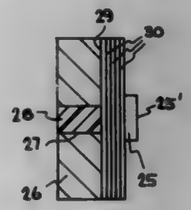
11. The method according to claim 1 wherein depositing said film of bismuth oxide onto a substrate layer is performed by sputtering.

5,382,342

FABRICATION PROCESS FOR A GRADIENT INDEX X-RAY LENS

Richard M. Bionta; Daniel M. Makowiecki, and Kenneth M. Skulina, all of Livermore, Calif., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 14, 1993, Ser. No. 4,767
Int. Cl.[6] C23C *14/00*
U.S. Cl. 204—192.26 31 Claims



16. A process for fabricating transmissive gradient index x-ray optics for the 0.5–4.0 keV energy range, comprising the steps of:

co-sputtering different materials on a rotating substrate to form a coating of thickness having a concentration gradient thereacross;

slicing the thus coated substrate perpendicular to the film growth direction to produce a gradient index optic of a thickness;

forming a mounting block having a hole therein from a material;

filling the hole in the mounting block with a dissolvable material;

polishing one side of the mounting block and the material within the hole to produce a flat surface;

depositing materials transparent to x-rays of interest on the polished side of the mounting block to form a coating of a thickness;

polishing one side of the thus formed gradient index optic;

mounting the gradient index optic on the mounting block such that the polished side of the optic is placed in contact with the coating thereon and over the hole in the mounting block;

polishing the mounted optic to reduce the thickness thereof;

dissolving the material in the hole of the mounting block;

removing material from the face of the gradient index optic by ion-thinning;

periodically, during the ion-thinning, testing the efficiency of the gradient index optic; and

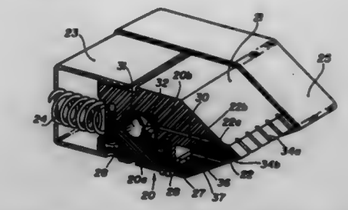
terminating the ion-thinning when an efficiency level of the optic is reached.

5,382,343

ELECTROLYTIC COATING CELL

Eric Zwerner, Commugny, Switzerland, assignor to EESA Electroplating Engineers S.A., Le Mont S/Lausanne, Switzerland

Filed Feb. 8, 1993, Ser. No. 983,554
Claims priority, application Switzerland, Jun. 11, 1991, 01734/91-5
Int. Cl.[6] C25D *17/00, 17/14*
U.S. Cl. 204—224 R 13 Claims



1. An electrolytic coating cell for forming a coating in a longitudinal track on a band of metal substrate adapted for connection to the negative pole of a source of current, said electrolytic coating cell comprising:

a plating head having an elongated prismatic body

at least a longitudinal portion of said prismatic body being formed of a metal section and adapted for connection to the positive pole of the source of current,

an outer surface of said metal section being covered with a layer of absorbent material

a series of ducts distributed along the prismatic body and opening, near the layer of absorbent material,

an electrolyte supply source,

a supply circuit for said series of ducts,

a pump for circulating pressurized electrolyte from the source through the supply circuit,

means for bringing said metal substrate into contact with a longitudinal portion of the layer of absorbent material covering said metal section,

means for producing longitudinal movement between said head and said substrate in order to form said longitudinal track,

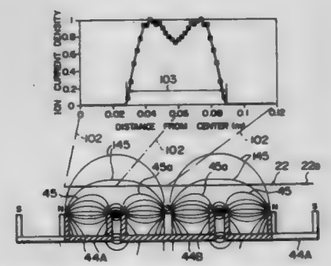
said plating head including a second series of ducts distributed longitudinally, opening near the absorbent layer, and a suction source connected to said second series of ducts.

5,382,344

SPUTTERING APPARATUS

Naokichi Hosokawa, and Kyungchik Kim, both of Fuchu, Japan, assignors to Anelva Corporation, Tokyo, Japan

Continuation of Ser. No. 917,185, Jul. 22, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 274,377
Claims priority, application Japan, Aug. 2, 1991, 3-194298
Int. Cl.[6] C23C *14/35*
U.S. Cl. 204—298.2 15 Claims



1. A sputtering apparatus comprising a vacuum vessel hav-

ing an evacuation system for evacuating said vacuum vessel, a substrate holding member disposed within said vacuum vessel for mounting a substrate on which a film is to be deposited, at least one magnetron cathode disposed in opposed relation to the substrate and having a rectangular planar target used to deposit the film on a surface of the substrate, a gas control system for supplying a gas in the interior of said vacuum vessel and thereby maintaining the inner pressure thereof at a predetermined value, and a power source system for supplying electrical power to said magnetron cathode, the improvement comprising:

a magnet assembly having a first magnet unit having at least a looped peripheral magnet with N and S poles arranged to form a first closed loop locus for drift electron motion in a first direction, said drift electron motion producing a first ion current generation region on a surface of said target when said drift electrons collide with said supplied gas in said first closed loop locus,

a second magnet unit having at least a looped peripheral magnet with S and N poles arranged to form a second closed loop locus for drift electron motion in a second direction opposite said first direction, said drift electron motion producing a second ion current generation region on a surface of said target when said drift electrons collide with said supplied gas in said second closed loop locus,

wherein said first magnet unit is disposed adjacent said second magnet unit with poles of opposite polarity adjacent each other such that said oppositely directed drift electron motions hybridize along said adjacent poles of opposite polarity, said adjacent poles of opposite polarity spaced such that any line of magnetic force formed between them does not interfere with said hybridization.

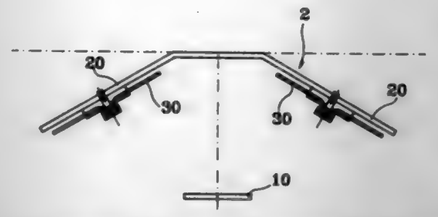
6. The sputtering apparatus of claim 1, wherein said magnetron cathode has a moving mechanism for reciprocating said magnet assembly and wherein the ion current generation regions reciprocate as a consequence of the reciprocating motion of said magnet assembly by said moving mechanism.

5,382,345

APPARATUS FOR SIMULTANEOUSLY COATING A FILM OF MAGNETO-OPTICAL RECORDING MEDIUM ON A PLURALITY OF DISK SUBSTRATES

Der-Ray Huang, Hsinchu; Tsai-Chu Hsiao, Chungli, and Shiuh Chao, Taipei, all of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute and National Tsing Hua University, both of Hsinchu, Taiwan, Prov. of China

Filed Feb. 16, 1993, Ser. No. 18,043
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.27 **7 Claims**



1. An apparatus for simultaneously coating a film of magneto-optical recording medium uniformly onto a plurality of magneto-optical disk substrates with a sputtering target, said apparatus comprising:

(a) clamping means for clamping a plurality of said magneto-optical disk substrates thereon, said clamping means comprising a base and a semi-conical extension from said base, said base being substantially parallel to a plane containing said sputtering target and disposed directly thereabove, said clamping means having a first central axis pointing through a center of said base and perpendicular to said base, wherein said semi-conical extension having an inner surface, which comprises a plurality of clamper means each of said clamper means being adapted to hold one of said plurality of magneto-optical disk substrates on said inner surface in a parallel relationship with respect to said inner surface, and each of said magneto-optical disk substrates having a second central axis perpendicular to said magneto-optical disk substrate and pointing through a center thereof;

(b) first rotating means for rotating said clamping means about said first central axis; and

(c) a second rotating means provided with each of said clamper means for rotating each of said magneto-optical disk substrates about a respective said second central axis;

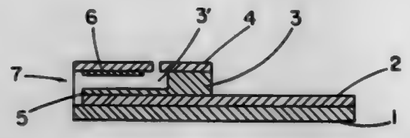
(d) wherein said inner surface of said semi-conical extension being disposed at an angle between 10 and 20 degrees with respect to said plane containing said sputtering target.

5,382,346

BIOSENSOR AND METHOD OF QUANTITATIVE ANALYSIS USING THE SAME

Harumi Uenoyama, Takatsuki, and Hisashi Okuda, Uji, both of Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 883,367, May 15, 1992, Pat. No. 5,332,479. This application Oct. 20, 1993, Ser. No. 138,263
Claims priority, application Japan, May 17, 1991, 3-113030
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—403 **7 Claims**



1. A biosensor which electrochemically detects a material which relates to a reaction of a specific compound in a liquid sample with a biologically active substance, wherein the biologically active material is placed at a part which is remote from a position of an electrode which acts as electrochemical detector means.

5,382,347

PROTECTIVE COATINGS FOR METAL PARTS TO BE USED AT HIGH TEMPERATURES

Joseph Yahalom, 19 Antwerpen Street, Haifa 34980, Israel

Continuation-in-part of Ser. No. 793,023, Oct. 25, 1992, Pat. No. 5,158,663. This application Oct. 26, 1992, Ser. No. 966,975
Claims priority, application Israel, Aug. 18, 1991, 099216
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[6] C25D *11/12, 11/34*
U.S. Cl. 205—50 **22 Claims**

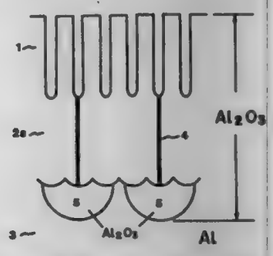
1. A method for providing a protective surface layer on a machine part, other than a capacitor anode, made of a metal capable of anodic surface oxidation to protect such metal part from corrosive conditions, consisting essentially of the steps of:

(a) oxidizing by anodic oxidation the surface of said metal part to form a surface layer of an oxide of the metal to be protected;

(b) thermally treating the part resulting from step (a) at a temperature which is at least equal to the highest temperature to which the metal part is intended to be subjected during use, said treating temperature being sufficient to cause cracks to form in the formed oxide surface layer, thereby exposing the metal to be protected; and

(c) simultaneously with or after said step (b), subjecting the part to another anodic oxidation step at a temperature

about the same as said thermally treating temperature, under conditions whereby an oxide of the metal to be protected will be formed mainly in the regions where the



metal is exposed, the additional oxide serving to anchor the oxide surface layer to the metal and to block the cracks by forming additional oxidation below said cracks so that no metal is exposed.

5,382,348

GRANULAR BITUMEN COATED WITH PRECIPITATED SILICA

Karl-Hans Müller, Bruchköbel, and Walter Barthel, Langenselbold, both of Germany, assignors to Degussa AG, Germany

Continuation of Ser. No. 858,430, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 622,535, Dec. 5, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 98,696
Claims priority, application Germany, Dec. 21, 1989, 3942215
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[6] B32B *11/04, 11/12*; C08L *95/00*
U.S. Cl. 208—22 **1 Claim**

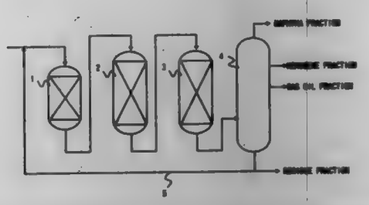
1. Free flowing bitumen granulate comprising bitumen granules having a particle size from 500 to 700 μm said granulate containing 6.1 to 15% by weight of a substance which serves as a powdering and separating agent and forms a covering on the bitumen, said substance being precipitated silica.

5,382,349

METHOD OF TREATMENT OF HEAVY HYDROCARBON OIL

Mitsuru Yoshita; Kenichi Ii; Kazuhiro Kashima; Eiichiro Kanda; Takanori Ohno, and Naotake Takeuchi, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 945,121
Claims priority, application Japan, Oct. 9, 1991, 3-261871
Int. Cl.[6] C10G *65/02, 67/02, 69/02, 69/06*
U.S. Cl. 208—49 **16 Claims**



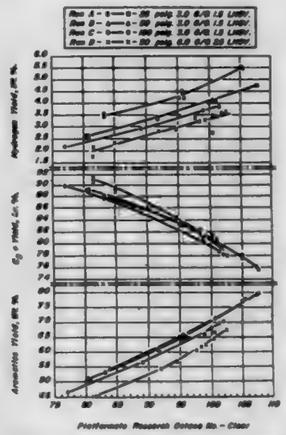
1. In a method of hydrotreatment of a heavy hydrocarbon oil in the presence of catalysts, the improvement which comprises successively hydrodemetallizing and hydrocracking the heavy hydrocarbon oil, said hydrocracking being carried out in the presence of a catalyst which comprises one or more metals or compounds of metals of the group VIB or the group VIII of the Periodic Table, supported on a carrier comprising 10 to 90 weight % of an iron-containing aluminosilicate and 90 to 10 weight % of an inorganic oxide, and thereafter hydrodesulfurizing and hydrodenitrogenating the treated hydrocarbon oil.

5,382,350

HIGH HYDROGEN AND LOW COKE REFORMING PROCESS

Robert J. Schmidt, Barrington, Ill., assignor to UOP, Des Plaines, Ill.

Filed Oct. 16, 1992, Ser. No. 961,963
Int. Cl.[6] C10G *35/06*
U.S. Cl. 208—65 **8 Claims**



1. A reforming process for contacting a feed, containing hydrocarbons, with a reforming catalyst said process comprising:

a) heating said feed to a temperature in a range of from 950°–1050° F. and contacting said feed with a reforming catalyst comprising at least one of a non-acidic L-zeolite with a platinum group metal component on a refractory inorganic oxide binder and a platinum component and a tin component on a refractory support in a first reforming reaction zone at a pressure in a range of from 25 to 150 psig, an LHSV of from 2 to 10 and an initial molar H_2/HC ratio of less than 2 to at least partially convert said feed and produce hydrogen;

b) recovering at least partially converted feed and hydrogen from said first reforming zone in an intermediate feed stream and contacting said intermediate feed stream in at least one additional reforming reaction zone with a reforming catalyst comprising at least one of a non-acidic L-zeolite with a platinum group metal component on a refractory inorganic oxide binder and a platinum component and a tin component on a refractory support at conditions to limit the total production of coke in said first reforming reaction zone and said at least one additional reforming reaction zone to less than 1.5 wt. % coke on said catalyst per 1000 SCFB of H_2 produced, said conditions including an initial temperature of from 950°–1050° F., a pressure in a range of from 25 to 150 psig, an LHSV of from 2 to 10 and an initial molar H_2/HC of less than 2 to further convert said at least partially converted feed and produce additional hydrogen;

c) recovering a product stream comprising converted feed hydrocarbons and hydrogen from the last of the at least one additional reforming reaction zones; and,

d) at least semicontinuously withdrawing coke containing reforming catalyst from and adding reforming catalyst having a reduced concentration of coke to said reforming reaction zones while contacting the feed with the reforming catalyst.

5,382,351

ZEOLITE OCTANE ADDITIVE-CRACKING PROCESS

James G. Miller, Ellicott City, and Robert R. Gatte, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 787,170, Nov. 4, 1991, Pat. No. 5,302,567.
This application Dec. 16, 1993, Ser. No. 167,307
Int. Cl.[6] C10G *11/05*
U.S. Cl. 208—120 7 Claims

1. In a process for cracking hydrocarbons with a catalyst comprising a conventional cracking catalyst dispersed in an inorganic matrix and a zeolite additive composition comprising a medium-pore zeolite with a Constraint Index from about 1 to about 12 and a silica to alumina mole ratio greater than about 12, the improvement comprising exchanging the zeolite additive with cations selected from one or more elements of Group IA, Group IIA or Group IIIA excluding rare earths of the Periodic Table to improve the octane number of the gasoline-range product of an FCC process while reducing the yield loss typically observed for such octane-enhancing additives.

5,382,352

CONVERSION OF NO_x IN FCC BUBBLING BED REGENERATOR

Allen R. Hansen, Glassboro, N.J.; David L. Johnson, Glen Mills, Pa.; Scott A. Stevenson, Newtown, Pa.; Paul H. Schipper, Doylestown, Pa., and Mohsen N. Harandi, Langhorne, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 20, 1992, Ser. No. 963,357
Int. Cl.[6] C10G *11/00*; C01B *21/00*
U.S. Cl. 208—121 20 Claims

1. A process for the catalytic cracking of a nitrogen containing hydrocarbon feed to lighter products comprising:

a. cracking said feed by contacting said feed with a supply of hot, regenerated cracking catalyst in a fluidized catalytic cracking (FCC) reactor means operating at catalytic cracking conditions to produce a mixture of cracked products and spent cracking catalyst containing coke and nitrogen compounds;

b. separating said cracked products and spent cracking catalyst containing coke and nitrogen compounds to produce a cracked product vapor phase which is charged to a fractionation means and a spent catalyst phase which is charged to a stripping means;

c. stripping said spent catalyst in said stripping means to produce stripped catalyst containing coke and nitrogen compounds;

d. regenerating, in a single, dense phase, bubbling fluidized bed catalyst regeneration means., said spent cracking catalyst by contact with an oxygen-containing gas at complete CO combustion catalyst regeneration conditions sufficient to produce a flue gas having a CO_2/CO mole ratio of at least 10:1 and to oxidize said nitrogen compounds to NO_x and wherein said catalyst regeneration conditions include a catalyst inventory, a superficial vapor velocity, and a catalyst residence time sufficient to produce a regenerated catalyst containing at least 0.2 wt % coke and sufficient coke on catalyst in said regenerator to react with NO_x formed therein and reduce at least a majority of the NO_x formed in said regenerator to nitrogen within said regenerator by reaction with coke on catalyst; and

e. removing regenerated catalyst, containing at least 0.2 wt % coke on catalyst, from said single, dense phase, bubbling fluidized bed catalyst regeneration means and charging same to said cracking reactor.

5,382,353

PRETREATMENT METHOD FOR INCREASING CONVERSION OF REFORMING CATALYST

Bernard F. Mulaskey, Fairfax; Robert L. Hise, Fairfield; Steven E. Trumbull, San Leandro; William J. Cannella, Hercules, and Robert A. Innes, San Rafael, all of Calif., assignors to Chevron Research & Technology Co., a Div. of Chevron U.S.A. Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 976,786, Nov. 16, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 151,814
Int. Cl.[6] C10G *35/095*; B01J *29/10, 29/32*
U.S. Cl. 208—138 25 Claims

1. A method of pretreating a reforming catalyst comprising a large-pore zeolite containing at least one Group VIII metal, wherein said catalyst is treated with hydrogen gas in the temperature range of from 1025° to 1275° F. while maintaining the water level of the effluent gas below 200 ppm.

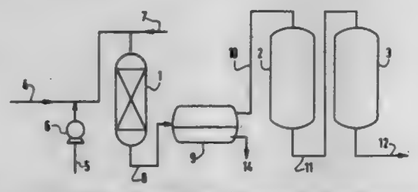
25. A reforming process comprised of contacting a hydrocarbon feed with a large pore zeolite catalyst containing at least one Group VIII metal, wherein the catalyst has been treated by the method according to claim 1.

5,382,354

PROCESS FOR THE FIXED-BED SWEETENING OF SOUR PETROLEUM DISTILLATES WITH FRACTION TEMPERATURES OF FROM ABOUT 125 TO ABOUT 350 DEGREES C.

Patrick Ansquer, Lilleboune, and Jean-Michel Orgebin, Saint-Adresse, both of France, assignors to Total Raffinage Distribution S.A., Levallois Perret Cedex, France

Filed Nov. 13, 1991, Ser. No. 753,114
Claims priority, application France, Sep. 3, 1990, 90 10942
Int. Cl.[6] C10G *27/10, 29/00*
U.S. Cl. 208—207 21 Claims



1. A process for the fixed-bed sweetening of sour petroleum distillates with fraction temperatures of from about 125° to about 350° C. having an acid number of 0.03 mg of KOH/g or higher comprising a single combined stage of reduction of the acidity of and simultaneous oxidation of the mercaptans in the distillates by passing the distillate, without and prewashing in the presence of an oxidizing agent but in the absence of a basic solution, over an oxidation catalyst whose specific surface ranges from 1 to 6 m^2/gram and whose micropore volume ranges from 0.01 to 0.04 cm^3/gram.

5,382,355

ENGINE COOLANT FILTER

Daniel A. Arlozynski, N169 W20342 Georgetown Dr. Apt. 4, Jackson, Wis. 53037

Filed Jan. 4, 1994, Ser. No. 177,524
Int. Cl.[6] B01D *27/10, 27/08, 35/02, 35/14*
U.S. Cl. 210—85 1 Claim

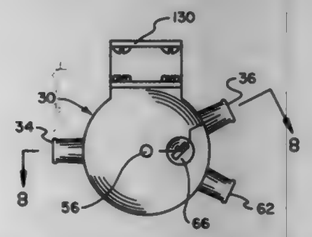
1. An engine coolant filter apparatus for removing particulate matter such as scale and rust, the engine coolant filter apparatus comprising in combination:

a cooling system including an engine, a heater core, and a radiator in fluid communication with both said engine and said heater core;

a manifold having a first input port with first fitting means for connecting a first coolant fluid hose to said first input port, the manifold also having an input chamber opening from the input port, the input chamber having an exit passage issuing therefrom, the manifold additionally having a sealing surface with a recess therein wherein a gasket may be received, the manifold further having a second input port with a threaded fitting thereon, the manifold moreover having an output chamber opening from the second input port, the output chamber having an output port issuing therefrom, the output port having second fitting means for connecting a second coolant fluid hose to said output port, the manifold additionally having a bypass passage from the input chamber to the output chamber;

removable filter means wherethrough coolant fluid may pass whereby particulate matter is removed and retained, the filter means comprising:

a hollow filter body having an input aperture therein, the input aperture being adjacent to the exit passage of the manifold input chamber wherethrough coolant fluid may flow, the filter body also having an input chamber issuing from the input aperture, the filter body additionally having a sealing surface with gasket means fixedly connected thereto surrounding the input aperture, the gasket means cooperatively engaging the recess in the manifold sealing surface such as to preclude leakage of coolant fluid, the filter body further having a central output chamber fixedly mounted therein, the output chamber having a threaded output aperture threadedly engaged with the threaded fitting of the manifold second input port whereby a liquid-tight seal is formed, the output chamber also having a wall with a plurality of equally spaced apart



perforations therethrough wherethrough coolant fluid may flow from the input chamber into the output chamber;

a porous filter medium surrounding the outside of the output chamber such that coolant fluid is forced therethrough and subsequently into the output chamber by the normal internal pressure of the engine coolant system, the filter medium having characteristics such that fine solid particles will be trapped therein while coolant fluid is passed unimpeded;

pressure-relief means for automatically shunting the coolant around the filter means through the bypass passage directly to the output chamber when excess pressure is caused by filter clogging, the pressure-relief means also having a visual annunciator means for warning a user of a clogged filter;

bracket means connected to said manifold whereby the engine coolant filter can be secured inside an engine compartment of a vehicle;

and,

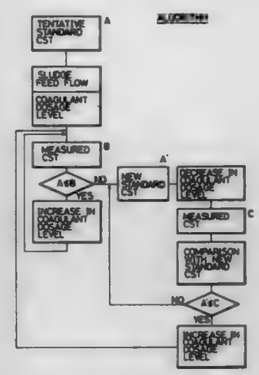
a manual warm-weather heater core bypass means for selectively directing the coolant flow through said heater core, the heater bypass means comprising a second output port issuing from the output chamber; a manually operated valve within the output chamber wherethrough coolant fluid can be directed to either the first output port or the second output port whereby the coolant fluid will either flow through the heater core or will be shunted around the heater core; and indicator means whereby a user will have a visual indication of the valve position.

5,382,356

METHOD AND APPARATUS FOR CONTROLLING SLUDGE DEWATERING

Makoto Thogho; Tamotsu Hattori; Noboru Okazaki, all of Tokyo; Kozaburo Akamatsu, Chiba; Tomoyuki Hayashi, and Tomohiko Kusumi, both of Saitama, all of Japan, assignors to Tokyo Metropolitan; Tokyo Metropolitan Sewerage Service Corp. and Japan Organo Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,439
Claims priority, application Japan, Nov. 29, 1991, 3-316633; Mar. 2, 1992, 4-044628
Int. Cl.[6] B01D *21/30*; C02F *11/14*
U.S. Cl. 210—96.1 2 Claims



1. A sludge dewatering control system for use in a sludge dewatering plant having a coagulant addition means for adding a polyelectrolyte coagulant to the sludge and a dewatering means for dewatering the sludge which has been subjected to coagulation reactions by the addition of the coagulant, which system comprises:

a sludge concentration measuring device for successively measuring sludge concentration in a sludge feed pipe upstream from a path leading from the coagulant addition means, said concentration being calculated from any one of the following combinations: (a) temperature and capillary suction time of the sludge, (b) temperature, capillary suction time and electrical conductivity of the sludge, (c) temperature, viscosity and electrical conductivity of the sludge, and (d) temperature, viscosity, electrical conductivity and capillary suction time of the sludge,

a measuring means for successively measuring the capillary suction time of filtrate discharged from the dewatering means,

a coagulant feed measuring device for successively measuring flow rate of the coagulant to be introduced to the sludge feed pipe downstream from the sludge concentration measuring device, and

a control means for controlling the coagulant addition means to control dosage level of the coagulant based on output from an arithmetic device, said arithmetic device successively determining a coagulant dosage, at which the capillary suction time of the filtrate is minimized, based on changes in the capillary suction time of the filtrate responsive to changes in the coagulant dosage ratio calculated from sludge concentration and coagulant flow.

5,382,357

SEPTIC TANK OUTLET FILTER

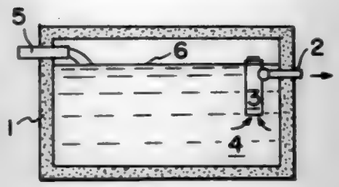
Harry L. Nurse, 12207 Plantation Blvd., Goshen, Ky. 40026

Filed Nov. 1, 1993, Ser. No. 103,711
Int. Cl.[6] B01D *21/24*
U.S. Cl. 210—170 6 Claims

1. In combination with a septic tank, a filter device

useful in continuous separation of solid matter from a fluid including:

a tubular filter element with a series of slots of preselected width extending through said tubular element and where said element has a central opening at a lower end and a top end; tubular casing means to receive said element to form an annular area between said tubular filter element and



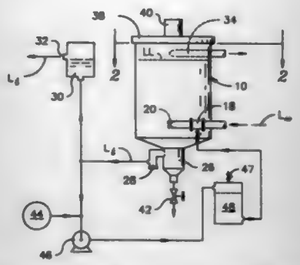
said casing; seal means provided between the tubular element and the inside of the casing at a location below the slots in the tubular element and above the outlet from the casing wherein fluid to be filtered is received in said central opening and flows upwards and through said slots from said central opening to said annular area; outlet means communicating with said annular area so the fluid can be emitted from the assembly.

5,382,358

APPARATUS FOR DISSOLVED AIR FLOATATION AND SIMILAR GAS-LIQUID CONTACTING OPERATIONS

George C. Yeh, 2 Smedley Dr., Newtown Square, Pa. 19073

Filed Mar. 24, 1993, Ser. No. 36,665
Int. Cl.[6] B01D *17/035*; C02F *1/24*
U.S. Cl. 210—194 18 Claims



13. In an improved dissolved air flotation apparatus for removing suspended matters from a liquid, said apparatus including a tank having a flow channel, an inlet port at one end of the channel for receiving the liquid and suspended matter, an outlet port at the other end of the channel for discharging liquid separated from the suspended matter, and an extractor above the channel for removing suspended matter floated to the surface of the liquid, the improvement comprising:

at least one upright involute partition extending from the bottom of the tank to an elevation below the top of the tank, said partition having an outer end joining the side of the tank and a free-standing inner end terminating a radial distance from the center of the tank to form an involute flow channel;

means for dissolving compressed air in a portion of the liquid discharged at the outlet; and

means for mixing at least a fraction of said portion with the liquid and suspended matter admitted at said inlet port.

14. Apparatus according to claim 13 wherein:

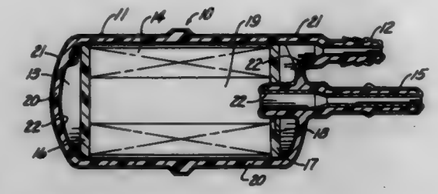
said mixing means includes a dissolution tank for ventilating undissolved air in said portion.

5,382,359

PLASTIC FUEL FILTER WITH CONDUCTIVE COATING FOR PROVIDING AN EVAPORATIVE BARRIER AND FOR DISSIPATING ELECTROSTATIC CHARGES

Timothy B. Brandt, West Des Moines, Iowa, assignor to Parr Manufacturing, Inc., Des Moines, Iowa

Filed May 13, 1993, Ser. No. 61,167
Int. Cl.[6] B01D *27/08, 35/02, 35/06*
U.S. Cl. 210—243 12 Claims



1. A fuel filter comprising:

a housing made of an electrically non-conductive material; said housing having inside and outside surfaces;

means for providing a chamber within said housing for receiving a non-polar fluid;

inlet means attached to said housing for permitting fuel under pressure to enter said chamber;

outlet means attached to said housing for permitting fuel to flow from said chamber; and

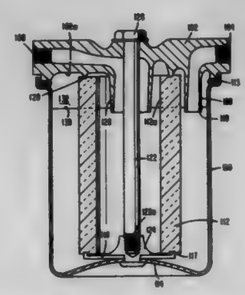
a conductive coating covering and connecting at least a portion of said inside and outside surfaces of said housing for providing an electrically conductive path between fuel within said housing and a common electrical plane outside of said housing, said electrically conductive path being effective to prevent the buildup of electrostatic charges in the fuel flowing through the filter and to thereby prevent arcing which can cause breakdown of the electrically non-conductive housing material.

5,382,360

SPILL FREE CLEAN OUT TRAPS AND FILTERS

George W. Vosper, 149 Earl Street, Kingston, Canada K7L 2H3

Division of Ser. No. 618,799, Nov. 28, 1990, Pat. No. 5,159,724, which is a continuation-in-part of Ser. No. 67,808, Jun. 30, 1987, Pat. No. 5,095,553, which is a continuation-in-part of Ser. No. 497,204, May 23, 1983, abandoned. This application Nov. 3, 1992, Ser. No. 970,704
Int. Cl.[6] B01D *35/02*
U.S. Cl. 210—239 3 Claims



1. An apparatus for filtering a liquid comprising:

(a) a container having a closed bottom and an open top;

(b) a cover detachably mounted on said container sealingly closing said open top, said cover including a liquid inlet conduit and a liquid outlet conduit extending into said cover at respective positions spaced apart from one another respectively for the inflow of liquid into the container via said inlet conduit and outflow of such liquid from the container via the outlet conduit, said conduits each having fluid flow communication with the interior of the container via respective ones of a pair of openings spaced downwardly from a bottom surface of the cover facing the interior at a position below a surface of the liquid in the container, said container thereby being only partially filled with liquid during operation of said apparatus which is at a normal fluid level spaced a selected amount downwardly from the bottom surface of said cover and above said openings for the inlet and outlet conduits, each of said inlet and outlet conduits having liquid therein and extending above said apparatus; said container having sufficient volume above the normal fluid level therein during use so as to receive and hold the liquid normally retained in said conduits when the seal between the cover and the container is broken; and

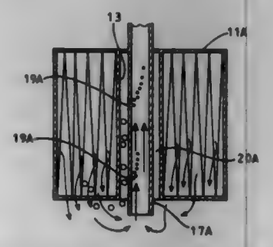
(c) an annular filter mounted within the container and extending between said inlet conduit and said outlet conduit from a position proximate the bottom surface of the cover to a position proximate the bottom of said container, whereby said filter projects upwardly above the liquid surface to define an upper portion which remains unclogged during normal operation, and wherein said filter can be removed from said container and replaced in an inverted position so that the unclogged portion of the filter is disposed adjacent the container bottom until a fresh filter can be obtained.

5,382,361

LIQUID AND ENTRAINED AIR FILTER

Philippe Brun, Vineuil, France, assignor to Lucas Industries public limited company, West Midlands, England

Filed Jul. 14, 1993, Ser. No. 91,316
Claims priority, application France, Jul. 17, 1992, 92 08852
Int. Cl.[6] B01D *35/01*
U.S. Cl. 210—436 3 Claims



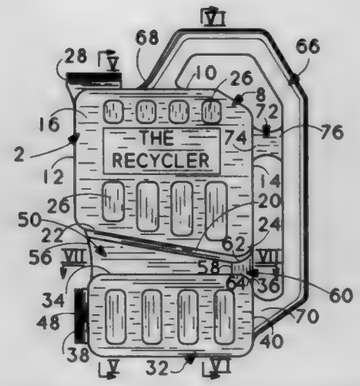
1. A filter element for liquids comprising a first imperforate tube about which is located a filter medium through which the liquid to be filtered passes, a second imperforate tube located within the first tube, said second tube receiving the filtered liquid from the filter medium, a dead space being defined between the first and second imperforate tubes in which air entrained with the liquid to be filtered collects after it has passed through the filter medium and an air bleed orifice which communicates with said dead space and through which the air in said dead space can flow at a controlled rate into the liquid filtered by said filter medium.

5,382,362

PAINT SOLVENT RECYCLE DEVICE

Homer B. Lewis, Jr., Vero Beach, Fla., assignor to Paint-Mate, Inc., Vero Beach, Fla.

Filed Dec. 6, 1993, Ser. No. 162,234
Int. Cl.[6] B01D *21/02*
U.S. Cl. 210—514 10 Claims



1. A solvent recycle device for containing a volatile solvent with particulate material suspended therein having a density greater than said solvent and enabling said particulate material to gravationally separate from said solvent into a confined space isolated from a space from which clarified solvent is withdrawn from said device which comprises:

an upper chamber defined by a top wall, a front wall, a rear wall substantially parallel to said front wall, a first side wall, a second side wall substantially parallel to said first side wall and a bottom wall, said bottom wall descending at an angle from said front wall to said rear wall thereby creating in said bottom wall a raised forward end portion and a lowered rearward end portion,

a threaded first opening through said upper chamber top wall communicating with the interior of said upper chamber and a threaded cap closing said first opening,

a lower chamber defined by a top wall comprising a back end portion, a front wall, a rear wall substantially parallel to said front wall, a first side wall, a second side wall substantially parallel to said first side wall and a bottom wall substantially parallel to said top wall,

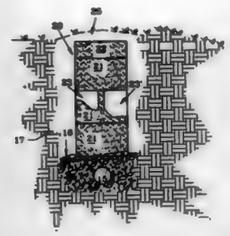
a threaded second opening through said lower chamber front wall communicating with the interior of said lower chamber and a threaded cap closing said second opening,

a trapezoidal web member defined by an upper portion integrally joined to said bottom wall of said upper chamber, a lower portion integrally joined to said top wall of said lower chamber, a front edge and a rear edge shorter in length than said front edge, said web member fixing said upper chamber over said lower chamber,

a first tubular conduit positioned behind said rear edge of said web member defined by a top end and a bottom end, said top end communicating through said lowered rear end portion of said bottom wall with said upper chamber and said bottom end communicating through said back end portion of said top wall with said lower chamber, and

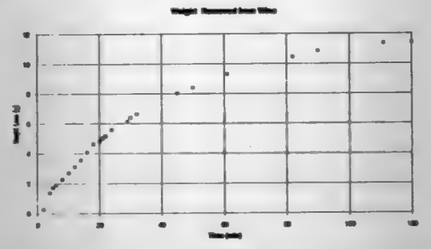
a second tubular conduit, defined by an upper junction end and a lower junction end, that extends rearward of said upper and lower chambers, said upper junction end communicating with said upper chamber through said top wall thereof and said lower junction end communicating with said lower chamber through said rear wall thereof.

5,382,363
SEPTIC SYSTEM AND METHOD
Wilford M. Boylen, 2221 Surrett Dr., High Point, N.C. 27263
Filed Dec. 27, 1993, Ser. No. 172,927
Int. Cl.[6] C02F *3/30*
U.S. Cl. 210—605 10 Claims



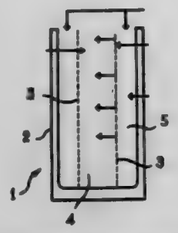
9. A method of forming a septic system comprising the steps of:
(a) installing an underground septic tank;
(b) joining said septic tank to an underground drain line;
(c) placing a porous bed over said drain line; and
(d) installing an underground closed vertical porous column having internal air pockets contiguous to and extending upwardly from said porous bed to allow aeration of the drain lines with oxygen therefrom.

5,382,364
PROCESS FOR REMOVING ALCOHOL FROM LIQUIDS
John Bowser, Newark, Del., and John Dennison, Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Continuation of Ser. No. 783,062, Oct. 25, 1991, abandoned.
This application Mar. 17, 1993, Ser. No. 32,542
Int. Cl.[6] B01D *61/36*
U.S. Cl. 210—640 8 Claims



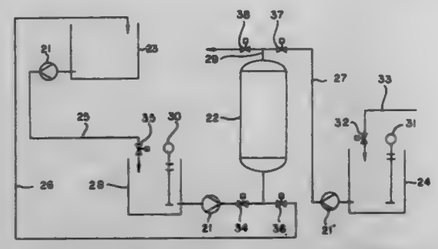
1. Process for reducing the alcohol content in a first mixture of miscible liquids, one of which is alcohol, which comprises passing a first mixture containing alcohol along one side of an expanded polytetrafluoroethylene microporous hydrophobic membrane having a pore volume of at least 30%; and simultaneously passing a second liquid, absent the alcohol, along the other side of said expanded polytetrafluoroethylene microporous hydrophobic membrane, such that alcohol in the gaseous phase is transferred from the first mixture through the micropores of said expanded polytetrafluoroethylene microporous hydrophobic membrane into solution in the second liquid by the partial pressure differential of the alcohol across a vapor space defined by said expanded polytetrafluoroethylene microporous hydrophobic membrane that exists between the first mixture and the second liquid.

5,382,365
PROCESS FOR AT LEAST PARTIAL DEHYDRATION OF AN AQUEOUS COMPOSITION AND DEVICES FOR IMPLEMENTING THE PROCESS
Philippe Deblay, Chateaay-Malabry, France, assignor to Cogis, France
Filed Oct. 21, 1992, Ser. No. 964,220
Claims priority, application France, Oct. 22, 1991, 9113013
Int. Cl.[6] B01D *61/24*
U.S. Cl. 210—644 13 Claims



1. A process for at least partial dehydration of an aqueous composition, in which said composition to be dehydrated is brought into contact, through the intermediacy of a microporous hydrophobic membrane, with a liquid receiving phase comprising an aqueous solution of at least one solute so as to enable its water activity to be lower than approximately 0.6 and in which the aqueous composition, at least partially dehydrated, is recovered.

5,382,366
RETARDATION INSTALLATION WITH COMPRESSED AIR-DIAPHRAGM PUMP AND STROKE COUNT DEVICE
Hans-Ulrich Schwering, Leonberg, and Roland Schaich, Leutenbach, both of Germany, assignors to Guetling GmbH, Fellbach, Germany
Filed Oct. 29, 1993, Ser. No. 145,862
Claims priority, application Germany, Nov. 26, 1992, 4239748
Int. Cl.[6] B01D *15/00*
U.S. Cl. 210—662 6 Claims

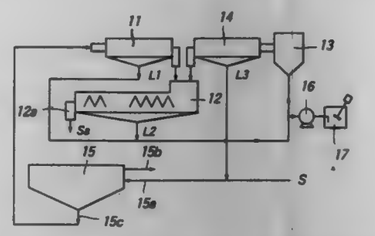


6. A method for operating a retardation installation for acid-salt separation, the retardation installation comprising a container having an acid-receiving adsorber material, a feed for watery acid-salt-solution, an additional feed for a regenerating solution to regenerate the adsorber material by means of a regenerating flow directed oppositely to a flow of the acid-salt-solution, a drain for draining the acid-salt-solution which has passed through the adsorber material, a single compressed air diaphragm pump for transporting at least one of the acid-salt-solution and the regenerating solution, a stroke count device connected to the compressed air diaphragm pump, and a device for controlling a volume flow of at least one of the acid-salt-solution and the regenerating solution based on a stroke count of the compressed air diaphragm pump, wherein the device for controlling the volume flow includes a plurality of controllable fluid valves and two relay valves for controlling all of the fluid valves,
said method comprising controlling the volume flow of at least one of the acid-salt-solution and the regenerating solution by counting the stroke count of the compressed air diaphragm pump, and controlling each of the fluid valves by means of a single relay valve.

5,382,367
METHOD OF TREATING COOLING WATER SYSTEMS
K. James Zinkan, Chagrin Falls, and Louis J. Koenig, Jr., Parma, both of Ohio, assignors to Zinkan Enterprises Co., Twinsburg, Ohio
Continuation-in-part of Ser. No. 549,398, Jul. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 191,919, May 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 82,838, Aug. 7, 1987, abandoned. This application Nov. 20, 1991, Ser. No. 794,934
Int. Cl.[6] C02F *5/10*
U.S. Cl. 210—698 7 Claims

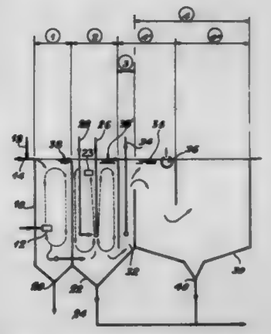
1. A method of preventing and controlling corrosion and build-up of scale in cooling water systems which consists essentially of adding to the cooling water at temperatures below 212° F. an effective amount of hydrogen peroxide to control bacteria, about 0.01 to 100 parts by weight per million parts by weight of water of at least one aromatic triazole, about 0.1 to 200 parts by weight per million parts by weight of water of at least one ethylenically-unsaturated carboxylic acid or derivative thereof polymerized to a water soluble anionic polymer having an average molecular weight ranging from about 250 to 500,000, about 0 to 200 parts by weight of a substantially water soluble polyacrylamide and 0 to 200 parts by weight of a non-ionic surfactant.

5,382,368
METHOD FOR DEWATERING SLUDGE
Hachiro Sato, Tokyo, Japan, assignor to Fukoku Kogyo Co., Ltd., Tokyo, Japan
Filed May 20, 1993, Ser. No. 63,972
Int. Cl.[6] C02F *11/14*
U.S. Cl. 210—710 13 Claims



1. A method of dewatering sludge wastes comprises the steps of:
supplying sludge wastes into a preliminary dewatering device and obtaining a preliminarily dewatered sludge and a waste water discharge;
supplying said preliminarily dewatered sludge from said preliminary dewatering device into a main dewatering device, and dewatering said preliminary dewatered sludge in said main dewatering device and discharging resulting solid substance and a waste water;
supplying the waste water discharged from said preliminary dewatering device and waste water discharged from said main dewatering device into an agglutinating reaction tank;
supplying a macromolecular agglutinating agent into said agglutinating reaction tank to form an agglutinated sludge; and
dewatering said agglutinated sludge.

5,382,369
WASTE WATER-TREATMENT PROCESS
Patrick Vion, Houilles, France, assignor to Degremont, Rueil-Malmaison, France
Filed Jul. 17, 1992, Ser. No. 913,928
Claims priority, application France, Jul. 19, 1991, 91 09189
Int. Cl.[6] B01D *21/08;* C02F *1/52*
U.S. Cl. 210—726 4 Claims



1. A waste water treatment process comprising the steps:
introducing a coagulant into a first volume of raw waste water;
stirring the first volume of raw waste water to ensure coagulation simultaneous with separation of coarse grit, from the waste water;
removing the coarse grit from the first volume;
transferring water from the first volume to a second volume while ensuring flow from the surface layer of the first volume, containing floating particles, to the surface layer of the second volume;
admixing a floculant to the water in the second volume;
stirring the second volume of water to achieve flocculation simultaneous with both coalescence of grease particles and separation of fine grit;
removing the fine grit from the second volume;
transferring water from the second volume to a third volume while ensuring flow from a surface layer of the second volume, containing floating particles, to the surface layer of the third volume;
introducing air bubbles into the third volume, sufficiently small for accelerating the rate of grease particle rise and binding of the particles, without breaking apart floc growing in the third volume;
transferring water from the third volume to a calm fourth volume while ensuring flow from a surface layer of the third volume, containing floating particles, to the surface layer of the fourth volume;
allowing the transferred water of the fourth volume to settle;
skimming the floating particles of the fourth volume, primarily grease particles;
removing skimmed grease particles from the fourth volume; and
removing a lower portion of water settled in the fourth volume, which is sludge.

5,382,370

SCREENING SYSTEM

Thomas R. Jones; Reginald L. Phillips, and Hugh R. Falcon-Steward, all of St. Austell, United Kingdom, assignors to ECC International Ltd., United Kingdom

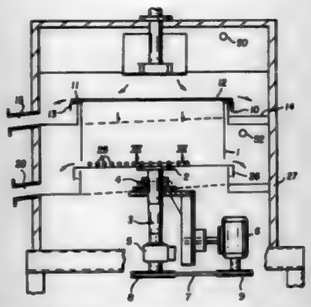
PCT No. PCT/GB91/02106, § 371 Date Apr. 7, 1993, § 102(e) Date Apr. 7, 1993, PCT Pub. No. WO92/09743, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 28, 1991, Ser. No. 39,046

Claims priority, application United Kingdom, Nov. 29, 1990, 9026028

Int. Cl.[6] B01D *33/06, 33/56, 33/82*

U.S. Cl. 210—781 **31 Claims**



1. A process for continuously separating coarse particles from a suspension containing the coarse particles, fine particles and liquid, comprising the steps of:

passing the fine particles and the liquid of the suspension through a rotating screen such that the coarse particles do not pass therethrough;

forming a pressure differential between a first area above said screen and a second area below said screen such that the first area is at a higher pressure than the second area; and

maintaining the pressure differential to be within a predetermined range by flowing air into the second area when the pressure differential exceeds a maximum value.

5,382,371

POLYMERS USEFUL IN THE RECOVERY AND PROCESSING OF NATURAL RESOURCES

G. Allan Stahl, Humble, Tex.; Ahmad Moradi-Araghi, Bartlesville, Okla.; I. John Westerman, Wadsworth, Ohio; Henry L. Hsieh, Bartlesville, Okla.; James H. Hedges, Bartlesville, Okla., and Geir Bjornson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

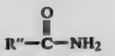
Division of Ser. No. 805,283, Dec. 10, 1991, Pat. No. 5,186,257, which is a division of Ser. No. 756,851, Jul. 18, 1985, Pat. No. 5,080,809, which is a continuation-in-part of Ser. No. 568,363, Jan. 9, 1984, Pat. No. 4,951,921, which is a continuation-in-part of Ser. No. 461,707, Jan. 28, 1983, Pat. No. 4,644,020. This application Nov. 6, 1992, Ser. No. 973,144

Int. Cl.[6] E21B *43/00*

U.S. Cl. 507—221 **65 Claims**

21. A process comprising forming a completion fluid comprising a polymer produced from a monomer composition consisting essentially of at least one hydrophilic N-vinyl lactam and a solvent consisting essentially of water and placing said fluid in a bore hole during the completion of a well wherein said fluid encounters hostile conditions as defined by a temperature and multivalent ion concentration above the infinite days line of FIG. 14.

52. A process comprising forming a completion fluid comprising a polymer produced from a monomer composition consisting essentially of at least one hydrophilic N-vinyl lactam, at least one hydrophilic unsaturated amide selected from the group consisting of monomers represented by the formulas,



where R'' is an unsaturated radical and



where each R' is individually selected from H or methyl, at least one hydrophilic vinyl-containing phosphonic acid or the salts thereof, and at least one hydrophilic vinyl-containing sulfonic acid or the sulfonate salts thereof and a solvent consisting essentially of water, and placing said fluid in a bore hole during the completion of a well wherein said fluid encounters hostile conditions as defined by a temperature of at least about 120° F.

5,382,372

SPINNING PREPARATIONS IN THE FORM OF AQUEOUS EMULSIONS OR AQUEOUS SOLUTIONS CONTAINING POLYMERS

Ulrich Eicken; Raymond Mathis, both of Duesseldorf; Heidi Fiedler, Korschenbroich, and Manfred Gorzinski, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft Auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/02288, § 371 Date Jul. 8, 1992, § 102(e) Date Jul. 8, 1992, PCT Pub. No. WO91/10717, PCT Pub. Date Jul. 25, 1991

PCT Filed Dec. 21, 1990, Ser. No. 867,704

Claims priority, application Germany, Jan. 8, 1990, 4000304

Int. Cl.[6] D06M *15/00*

U.S. Cl. 252—8.6 **9 Claims**

1. A process for reducing the spraying of spinning finishes from fiber surfaces, wherein, immediately after the fiber capillaries emerge from the spinning jet, spinning finishes in the form of aqueous emulsions or aqueous solutions are applied to the fiber surfaces, said spinning finishes containing an effective amount of one or more water-soluble polymer compounds having weight average molecular weights of more than 10^6 and selected from the group consisting polyalkylene oxides, polyacrylamides, polymethacrylamides, and copolymers of acrylamide and methacrylamide with unsaturated carboxylic acids containing 3 to 5 carbon atoms.

5,382,373

MAGNETORHEOLOGICAL MATERIALS BASED ON ALLOY PARTICLES

J. David Carlson, and Keith D. Weiss, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Oct. 30, 1992, Ser. No. 968,734

Int. Cl.[6] H01F *1/28*

U.S. Cl. 252—62.55 **16 Claims**

1. A magnetorheological material comprising a carrier fluid; a particle component having a diameter ranging from about 1.0 to 500 μm wherein the particle component is comprised of an iron alloy selected from the group consisting of iron-cobalt alloys having an iron:cobalt weight ratio ranging from about 50:50 to 85:15 and iron-nickel alloys having an iron:nickel weight ratio ranging from about 90:10 to 99:1, the iron alloy particle component being present in an amount from about 20 to 35 percent by volume and the carrier fluid being present in an amount from about 65 to 80 percent by volume; a surfactant; and a thixotropic agent.

5,382,374

HYDRAULIC FLUIDS FOR AUTOMOBILE SUSPENSIONS

Koji Takemitsu, Saitama; Kenyu Akiyama, Toyota; Hiroshi Ohashi, Sakado, and Syoichi Ichikawa, Nagoya, all of Japan, assignors to Tonen Corporation, Tokyo and Toyota Jidosha Kabushiki Kaisha, Aichi, both of Japan

Continuation of Ser. No. 675,768, Mar. 27, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 26,226

Claims priority, application Japan, Mar. 31, 1990, 2-82927; Feb. 18, 1992, 3-078683

Int. Cl.[6] C10M *105/02, 105/74, 141/10*

U.S. Cl. 252—73 **8 Claims**

1. A hydraulic fluid for automobile suspensions, said fluid having a kinematic viscosity of 4–10 mm^2/s (=cSt) at 100° C. and a viscosity of 400–2,400 mPa.ss at −40° C. comprising:

(A) a base oil which comprises

(a) 70 to 90 percent by weight of an olefin oligomer having a kinematic viscosity of 1.5–25 mm^2/s at 100° C. and

(b) 10 to 30 percent by weight of a diester obtained by condensation of an aliphatic dibasic acid having 4–14 carbon atoms and an alcohol having 4–14 carbon atoms and having a kinematic viscosity of 2–7 mm^2/s at 100° C;

(B) 0.05 to 2 percent by weight on the basis of the total hydraulic fluid of a phosphate ester friction modifier selected from the group consisting of

(1) isodecyl acid phosphate $(C_{10}H_{21}O)_2P(O)OH+C_{10}H_{21}OP(O)(OH)_2$,

(2) tridecyl acid phosphate $(C_{13}H_{25}O)_2P(O)OH+C_{13}H_{25}OP(O)(OH)_2$,

(3) isostearyl acid phosphate $(C_{18}H_{37}O)_2P(O)OH+C_{18}H_{37}OP(O)(OH)_2$ and

(4) oleyl acid phosphate $(C_{18}H_{35}O)_2P(O)OH+C_{18}H_{35}OP(O)(OH)_2$

to improve the friction characteristics and antiwear characteristics in an initial stage;

(C) 0.5 to 2 percent by weight on the basis of the total hydraulic fluid of at least one friction modifier selected from the group consisting of dioleyl hydrogenphosphite $(C_{18}H_{35}O)_2P(OH)$ and phosphoric ester amine of the reaction product of $(i\text{-}C_8H_{17}O)_2P(OH)O$ and $(18H_{37})NH_2$ to retain low friction characteristics over a long period of time; and

(D) 10 to 25 percent by weight on the basis of the total hydraulic fluid of a polymethacrylate viscosity index improver having a weight average molecular weight of at least 20,000 but lower than 100,000.

5,382,375

LOW POLLUTION POWDER DETERGENT COMPOSITION CONTAINING FATTY ACID ESTER

Seong-Soo You, Seoul, and Hyun-Soo Kim, Kyounggido, both of Rep. of Korea, assignors to Mukunghwa Fats & Oils Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 27, 1991, Ser. No. 799,485

Claims priority, application Rep. of Korea, Jul. 1, 1991, 11133/1991

Int. Cl.[6] C11D *9/30, 9/22*

U.S. Cl. 252—117 **6 Claims**

6. A powder detergent composition comprising a conventional fatty acid soap, a fatty acid alkanol amide, a builder for powderization, and polyoxyethylene fatty acid esters, characterized by (a) the polyoxyethylene fatty acid ester having the formula $R_1COO[CH_2CH_2O]_nH$ wherein R_1 is an alkyl group having 12 through 20 carbon atoms and n is an integer of 5–25 , (b) the fatty acid soap having the formula R_2COOM wherein R_2 is an alkyl group having 12 through 20 carbon atoms and M is a salt-forming pair ions of alkali metals, (c) the fatty acid alkanol amide comprising fatty acid mono- and di- ethanol amides or mixtures thereof having the formulae, $R_3CONHCH_2CH_2OH$ and $R_3'CON[CH_2CH_2OH]_2$, respectively wherein both R_3 and R_3' are alkyl groups having 12 through 20 carbon atoms, and (d) the builder comprising a sodium carbonate having an apparent specific gravity of one or less, wherein the sodium carbonate is between 20 wt % and 50 wt % of said powder detergent composition, the polyoxyethylene fatty acid ester is between about 0.1 wt % and 20 wt % of said powder detergent composition, the fatty acid soap is between about 0.1 wt % and 6 wt % of said powder detergent composition, and the fatty acid mono- and di- ethanol amides or mixtures thereof are between about 0.1 wt % and 10 wt % of said powder detergent composition.

5,382,376

HARD SURFACE DETERGENT COMPOSITIONS

Daniel W. Michael, Cincinnati, and Michael S. Maile, Maineville, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 955,610, Oct. 2, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 105,702

Int. Cl.[6] C11D *1/12, 1/66, 1/722, 17/00*

U.S. Cl. 252—153 **25 Claims**

1. A hard surface detergent composition with excellent spotting/filming characteristics comprising propylene glycol-/ethylene glycol block copolymer nonionic detergent surfactant; optional hydrophobic cleaning solvent that provides a cleaning function; optional suds control system; minor ingredient selected from the group consisting of color, perfume, and mixtures thereof; and, optionally, an aqueous solvent system, the pH of said composition being from about 3 to about 12.5, the level of nonionic detergent surfactant being at least 1% and not more than about 15%, the level of hydrophobic solvent, when present, being from about 0.5% to about 6%, any optional polycarboxylate builder, when present, being at a level of at least 0.5%, and said composition not being in stick form.

5,382,377

PROCESS FOR THE PRODUCTION OF DETERGENTS

Wilfried Raehse, Duesseldorf; Jochen Jacobs, Wuppertal; Hans Kruse, Korschenbroich; Guenther Vogt, Toenisvorst; Eduard Smulders, Hilden, and Monika Boecker, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/00567, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO91/15567, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 25, 1991, Ser. No. 930,672

Claims priority, application Germany, Apr. 2, 1990, 4010533

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[6] C11D *17/00*

U.S. Cl. 252—174 **7 Claims**

1. The process of producing a detergent in the form of portioned pressings, comprising extruding a homogenous premix containing a plasticizer or lubricant into strands through a perforated die under a pressure of from about 25 to about 200 bar, forming compacted granules thereof, and pressing said compacted granules under a pressure of from about 1 to about 300 bar to form said portioned pressings.

5,382,378

COMPOSITION USEFUL FOR TREATING SUSPENDED SOLIDS AND COLOR BODIES IN WATER SYSTEMS

Robert J. Guerrini, Aliquippa, and Paul A. Rey, Corapolis, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

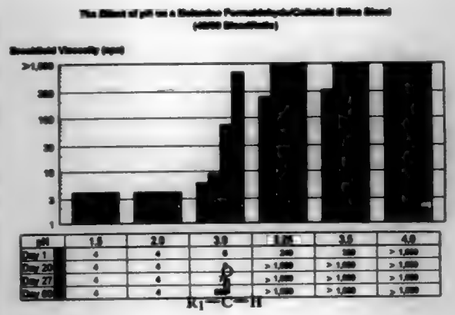
Filed Feb. 10, 1993, Ser. No. 15,767

Int. Cl.[6] C02F *5/10*

U.S. Cl. 252—181 **15 Claims**

1. A stable, blended composition, which comprises:

(1) an aqueous solution of a water soluble polymer selected from the group consisting of a melamine aldehyde, melamine is substituted or unsubstituted; aldehyde is



where R_1 is C_{1-4}alkyl;

(2) a colloidal silica, wherein the polymer and colloidal silica are blended in the range of 99.5:0.5 to 0.5:99.5, respectively, on a total solids basis; and

(3) an acid environment, resulting in said composition having a pH of 3.0 or less.

5,382,379

CYCLOHEXANE DERIVATIVE

Yuichi Onji; Makoto Ushioda; Shuichi Matsui; Tomoyuki Kondo, and Yasuyuki Goto, all of Chiba, Japan, assignors to Chisso Corporation, Ohsaka, Japan

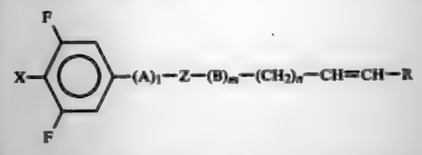
Filed Oct. 7, 1993, Ser. No. 132,917

Claims priority, application Japan, Oct. 7, 1992, 4-268868

Int. Cl.[6] C09K *19/30*; C07C *43/225, 19/08*

U.S. Cl. 252—299.63 **9 Claims**

9. A liquid crystal composition comprising at least one liquid crystalline compound and at least one cyclohexane derivative expressed by the formula (I)



(I)

wherein X represents a fluorine atom, a trifluoromethyl group, a trifluoromethoxy group or a difluoromethoxy group, —A— represents 1,4-cyclohexylene or 1,4-phenylene, —B— represents 1,4-cyclohexylene, l represents 0, 1 or 2, m represents 0, 1 or 2, and l+m=1 or 2, Z represents $—CH_2CH_2—$ or a single bond, n represents an integer of 0 to 4, R represents a hydrogen atom or a linear alkyl group of 1 to 7 carbon atoms, and when R represents an alkyl group, the double bond has a trans-configuration; excluding 5-(4'-trans-(3'',4'',5''-trifluorophenyl)cyclohexyl)-2E-pentene.

5,382,380

P-TERPHENYL DERIVATIVES AND LIQUID CRYSTALLINE COMPOSITIONS

Makoto Kurihara; Hiromi Inoue; Atsushi Sugiura; Kenji Suzuki, and Tsunenori Fujii, all of Soka, Japan, assignors to Kanto Kagaku Kabushiki Kaisha, Tokyo, Japan

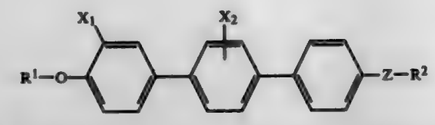
Continuation of Ser. No. 397,907, Aug. 24, 1989, abandoned. This application Jun. 1, 1992, Ser. No. 892,735

Claims priority, application Japan, Sep. 1, 1988, 63-216294

Int. Cl.[6] C09K *19/12*; C07C *69/76, 41/00*

U.S. Cl. 252—299.66 **14 Claims**

10. A ferroelectric liquid crystalline composition comprising at least one p-terphenyl derivative of the formula



wherein R^1 represents a group of the formula $—CH_2—R$ wherein R is an asymmetric carbon-containing alkyl group having 3–17 carbon atoms; R^2 is a straight chain alkyl group having 5–18 carbon atoms; Z is a single bond, O, COO or OCO; and one of X_1 and X_2 is a hydrogen atom, and the other is a fluorine atom, X_2 being in the 2' or 3' position in case of a fluorine atom; wherein said derivative exhibits a chiral smetic C phase and said composition exhibits a ferroelectric response.

5,382,381

ALKOXYLATED SILICONE PHOSPHATE ESTERS AS EMULSIFIERS

John Imperante, 4 Lance Rd., Lebanon, N.J. 08833, and John H. Hannon, Park Ridge, N.J., assignors to John Imperante, Somerville, N.J.

Filed Dec. 14, 1992, Ser. No. 995,385

Int. Cl.[6] B01D *13/00*

U.S. Cl. 252—312 **10 Claims**

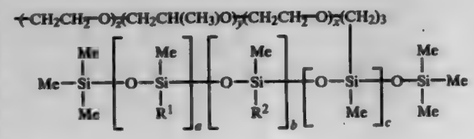
1. A process for preparing an oil in water emulsion which comprises;

(a) mixing an oil selected from the group consisting of esters, hydrocarbons, polydimethylsiloxanes; and fatty alcohols; with effective emulsifying concentration of a silicone based phosphate ester conforming to the following structure;



wherein;

R is



Me is methyl;

a is an integer from 0 to 200;

b is an integer from 0 to 200;

c is an integer from 1 to 200;

R^1 is methyl;

R^2 is $—(CH_2)_3—(OCH_2CH_2)x—(OCH_2CH(CH_3))y—(OCH_2CH_2)z—OH$;

x, y and z are integers and are independently ranging from 0 to 20 with the proviso that x+y+x is greater than or equal to 3;

e and f range from 1 to 2 with the proviso that e+f=3;

M is selected from the group consisting of H, Na, K, Li, NH4 and $N—(CH_2—CH_2—OH)_3$

(b) subsequently adding water; and in a final optional step

(c) homogenizing the resulting mixture.

5,382,382

SHEET-LIKE HEATING ELEMENTS AND PREPARATION THEREOF

Toshikage Asakura, Toyonaka; Wolfgang Wernet; Masaki Ohwa, both of Kobe, and Kenichiro Kai, Toyonaka, all of Japan, assignors to Japat Ltd., Basel, Switzerland

Filed Mar. 11, 1993, Ser. No. 29,579

Claims priority, application Japan, Mar. 12, 1992, 4-087580

Int. Cl.[6] H01B *1/00*

U.S. Cl. 252—500 **16 Claims**

1. A heating element in the form of a sheet having a thickness of 1 to 500 μm said sheet being laminated to a support and said sheet being prepared from an electrically conductive polymer complex comprising:

a) a polycationic of a polyheteroaromatic compound; and

b) a polyanion of a thermoplastic polymer containing a sulfated alcohol group in the repeating structural unit thereof and having film-forming properties.

5,382,383

COATING SOLUTIONS FOR FORMING TRANSPARENT CONDUCTIVE CERAMIC COATINGS, SUBSTRATES COATED WITH TRANSPARENT CONDUCTIVE CERAMIC COATINGS AND PROCESS FOR PREPARING SAME, AND USES OF SUBSTRATES COATED WITH TRANSPARENT CONDUCTIVE CERAMIC COATINGS

Toshiharu Hirai, Munakata; Yoseji Abe, Kitakyushu, and Michio Komatsu, Edogawa, all of Japan, assignors to Catalysts & Chemicals Industries Co., Ltd. and Asahi Glass Company, both of Tokyo, Japan

PCT No. PCT/JP89/00866, § 371 Date Apr. 24, 1990, § 102(e) Date Apr. 24, 1990, PCT Pub. No. WO90/02157, PCT Pub. Date Mar. 8, 1990

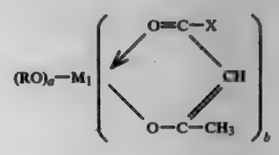
PCT Filed Aug. 24, 1989, Ser. No. 474,117

Claims priority, application Japan, Aug. 24, 1988, 63-210362

Int. Cl.[6] H01B *1/00, 1/24*

U.S. Cl. 252—501.1 **21 Claims**

1. A coating solution for forming a transparent conductive ceramic coating, said coating solution being a homogeneous solution or dispersion consisting essentially of at least one compound selected from the group consisting of an acetylacetonate chelate compound and condensate thereof, and an inorganic conductive compound in a mixture of water and an organic solvent, wherein the acetylacetonate chelate compound is represented by the following formula:



(I)

wherein a+b is 2–4, a is 0–3, b is 1–4, R is $C_nH_{2n+1}—$ (n=3 or 4), X is $CH_3—$, $CH_3O—$, $C_2H_5—$, or $C_2H_5O—$, and M_1 is an element selected from Groups IB, IIA, IIB, IIIA, IIIB, IVA, IVB, VA, VB, VIA, VIIA, or VIII or vanadyl (VO).

5,382,384

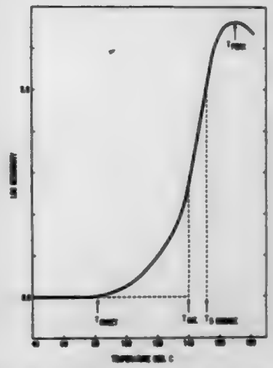
CONDUCTIVE POLYMER COMPOSITION

Stephen Baigrie, Swindon, United Kingdom; Edward F. Chu, Sunnyvale, Calif.; George B. Park, Swindon, United Kingdom; Vijay N. Reddy, San Mateo, Calif.; James A. Rinde, Fremont, Calif., and Robert P. Saltman, Redwood City, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 788,655, Nov. 6, 1991, Pat. No. 5,250,228. This application Jun. 29, 1993, Ser. No. 85,698

Int. Cl.[6] H01B *1/00, 1/20, 1/22, 1/24*

U.S. Cl. 252—511 **15 Claims**



1. A process for preparing a conductive polymer composition, said process comprising

(1) mixing together to form a mixture

(A) a polymeric component which comprises (i) 10 to 75 parts by weight of the total polymer component of an essentially amorphous thermoplastic resin, and (ii) 90 to 25 parts by weight of the total polymeric component of a thermosetting resin,

(B) a curing agent which has a curing temperature T_{cure}, and

(C) a particulate conductive filler dispersed in the polymeric component which is 5 to 65% by volume of the polymeric component;

(2) shaping the mixture at a temperature less than T_{cure} to form a shaped mixture; and

(3) heating the shaped mixture at a rate of at least 15° C./minute to a temperature of at least T_{cure} and maintaining the shaped mixture at the temperature of at least T_{cure} for a time sufficient to cure the mixture.

5,382,385

SINTERED VARISTOR MATERIAL WITH SMALL PARTICLE SIZE

Hideo Ochi, Misato; Akihide Igari; Masaaki Toyoda, both of Saitama, and Zenbee Nakagawa, Yokohama, all of Japan, assignors to Sonar Corporation, Japan

Filed Mar. 24, 1992, Ser. No. 856,571

Claims priority, application Japan, Sep. 30, 1991, 3-278649

The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.

Int. Cl.[6] H01B *1/06*; H01L *45/00*

U.S. Cl. 252—519 **7 Claims**

1. A sintered body of a varistor material having a particulate structure with an average grain diameter of not greater that 5 μm, a varistor electric voltage of at least 800 V/mm, a non-linear coefficient of at least 30, a specific resistivity of at least 1×10^9 ohm.cm and a composition consisting of 85–97 mole % of ZnO and 3–15 mole % of MnO.

5,382,386
CROSSLINKED ALKYL VINYL ETHER/MALIC ANHYDRIDE COPOLYMER
Gary J. Jakubicki, Robbinsville; Carl R. Schwarz, Lincroft, and Alp J. Uray, Piscataway, all of N.J., assignors to Colgate Palmolive Co., Piscataway, N.J.
Continuation of Ser. No. 691,668, Apr. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,497, Nov. 21, 1990, abandoned. This application Mar. 17, 1993, Ser. No. 32,949
Int. Cl.[6] C11D *1/22*
U.S. Cl. 252—548 5 Claims

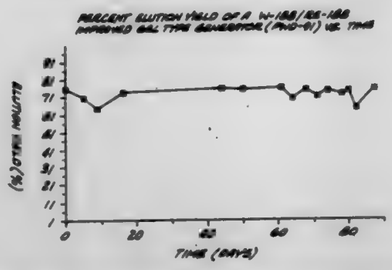
1. A liquid detergent composition which consists of approximately by weight:
(a) 3 to 10% of at least one hydrotrope other than ingredient (d);
(b) 5 to 10% of an alkanolamide;
(c) 22 to 50% of a liquid carrier being selected from the group consisting of water and a mixture of said water and a water-soluble solvent; and
(d) 32 to 54% of the reaction product of magnesium compound and a C_{11} to C_{18} alkyl benzene sulfonic acid wherein said composition has a viscosity of less than 20,000 cps and said composition contains at least 40 wt. % of solid ingredients.

5,382,387
MOULDINGS CONTAINING EXPANDABLE GRAPHITE, THEIR PRODUCTION AND THEIR USE
Wulf von Bonin, Odenthal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of Ser. No. 730,360, Jul. 15, 1991, Pat. No. 5,182,049. This application Sep. 2, 1992, Ser. No. 939,200
Claims priority, application Germany, Sep. 12, 1991, 4130335
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[6] C09K *21/04;* C04B *35/00;* C09D *5/16*
U.S. Cl. 252—602 7 Claims

1. A molding consisting essentially of (1) expanded graphite, (2) 4% to 75% by weight of an acid phosphate of a metal selected from the group consisting of metals of Group 2 of the Periodic Table of the elements, metals of Group 3 of the Periodic Table of the elements, and mixtures thereof, and (3) 5% to 70% by weight of a binder having a boiling point above 180° C. and a decomposition point between 180° C. and 600° C., said binder being different than said acid phosphate; the balance of weight % of said molding being said expanded graphite, said molding having a density of 30 to 450 kg/m^3, and having been formed in a closed mould which is permeable to gas.

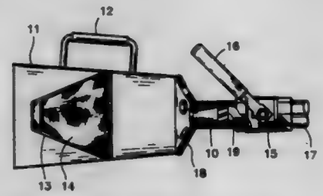
5,382,388
PROCESS FOR THE PREPARATION OF RHENIUM-188 AND TECHNETIUM-99M GENERATORS
Gary J. Ehrhardt, Columbia; Robert G. Wolfangel, and Edward A. Deutsch, both of St. Louis, all of Mo., assignors to Curators of University of Missouri, Columbia and Mallinckrodt Medical, Inc., St. Louis, both of Mo.
Filed Aug. 21, 1992, Ser. No. 933,385
Int. Cl.[6] C09K *11/00, 3/00;* B01J *13/00*
U.S. Cl. 252—635 20 Claims

1. A process for preparing gels containing (η,γ) Mo-99 or (η,γ) W-188 comprising:
providing a substantially clear solution containing a metallic cation and an anion comprising (η,γ) W-188 or (η,γ) Mo-99, the metallic cation being present in the solution as a component of a dissolved complex of the metallic cation and a complexing agent and/or the anion being present in the solution as a component of a dissolved complex of the anion and a complexing agent,
decomposing the dissolved complex(es) to form a slurry containing a precipitate of the metallic cation, and



collecting the precipitate to provide a substantially insoluble gel.

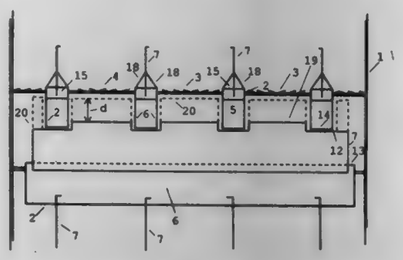
5,382,389
FOAM PRODUCING VENTURI AND METHOD OF USING SAME
Allen Goodine, Aroostook, New Brunswick, E0J 1B0, and Robert J. Goodale, Perth-Andover, New Brunswick, E0J 1V0, both of Canada
Filed Oct. 25, 1993, Ser. No. 140,532
Claims priority, application Canada, Sep. 20, 1993, 2106526
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—18.1 26 Claims



1. A method for producing medium expansion foam with a venturi having an inlet and an outlet, said venturi including a nozzle and a diffusing body, comprising the steps of:
inducing a swirling motion in a fluid containing a foaming agent and water;
accelerating said fluid through said nozzle;
expanding said fluid into a foam at said outlet of said nozzle within said diffusing body, said body having a cross-section area substantially larger than a cross-section of said outlet of said nozzle;
injecting air into said foam adjacent said outlet;
further expanding said foam in said diffuser; and
breaking up said foam through a screen into a finer, coherent and voluminous texture.

5,382,390
MULTIPLE-DOWNCOMER FRACTIONATION TRAY WITH VAPOR DIRECTING SLOTS AND EXTENDED DOWNCOMER BAFFLES
Michael R. Resetarits, Depew, and Michael J. Lockett, Grand Island, both of N.Y., assignors to UOP, Des Plaines, Ill.
Continuation-in-part of Ser. No. 779,216, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 579,502, Sep. 10, 1990, abandoned. This application Jan. 28, 1994, Ser. No. 188,181
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—114.3 11 Claims

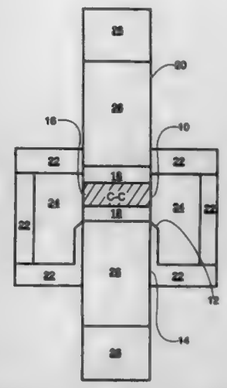
1. An apparatus for performing fractional distillation which comprises vertically aligned upper first and lower second vapor-liquid contacting trays, each tray having a generally circular circumference, and comprising:
(i) at least two narrow, trough-shaped downcomers which are parallel to each other and equidistantly spaced across the tray, each downcomer being formed by two opposing side walls and two end walls which are shorter than the side walls, the side walls and end walls oriented perpendicular to the plane of the tray, each downcomer having a liquid sealable outlet means; and,
(ii) a plurality of elongated vapor-liquid contacting decks, with a vapor-liquid contacting deck being located adjacent each downcomer side wall such that the tray has at least one more vapor-liquid contacting deck than downcomer means; with perforations being substantially evenly distributed across the entire surface provided by the vapor-liquid contacting deck and with at least a portion of said perforations being in the form of vapor flow directional slots having openings facing a downcomer side wall;
with the apparatus being further characterized in that the downcomers of the second tray are perpendicular to those on the first tray and in that each tray comprises a plurality of anti-jump baffles comprising a vertical plate centrally mounted over the downcomers of the tray parallel to the downcomer sidewalls, with the anti-jump baffles of the lower second tray having notches which surround the bottom portion of downcomers of the upper first tray.



5,382,391
METHOD FOR PRODUCING TRANSFERABLE MODIFIER-CONTAINING FILM
Roger L. Juhl, Asheville, N.C.; Stanley Lustig, Park Forest, and Donatas Tijunelis, Buffalo Grove, both of Ill., assignors to Viskase Corporation, Chicago, Ill.
Division of Ser. No. 966,914, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 573,770, Aug. 28, 1990, abandoned. This application Sep. 23, 1993, Ser. No. 125,265
Int. Cl.[6] B29C *47/06, 55/28*
U.S. Cl. 264—22 19 Claims

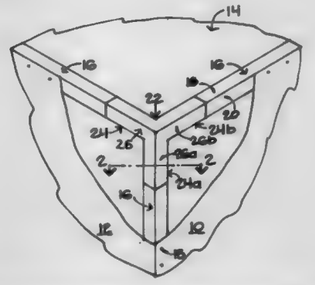
1. A method for making a modifier transferable film article comprising the steps of:
a) providing a resin blend comprising a thermoplastic polymer and a poly(ethylene oxide) comprising between about 15 and 40 wt. % of said blend and having a weight average molecular weight of at least about 70,000 and less than 300,000,
b) extruding said resin blend into a film, and
c) contacting a modifier with the extruded film, to produce a film having said modifier absorbed therein.

5,382,392
PROCESS FOR FABRICATION OF CARBON FIBER-REINFORCED CARBON COMPOSITE MATERIAL
Dusan C. Prevorsek, and Hsin L. Li, both of Morris, N.J., assignors to AlliedSignal Inc., Del.
Filed Feb. 5, 1993, Ser. No. 13,895
Int. Cl.[6] C04B *35/52;* F16D *69/02*
U.S. Cl. 264—29.5 19 Claims



1. A method for the manufacture of a carbon-carbon composite material comprising heating a mixture of a polymeric material which yields carbon when heated to a temperature of at least 600° C. and carbon fibers to a temperature of at least 600° C. whilst the mixture is acted upon by press means to apply a substantially uniaxial compressive load and is acted upon by a lateral restraining means to control the lateral deformation of said mixture during application of said compressive load, said lateral restraining means comprising a tubular mold having a variable diameter and maintaining the applied temperature, the uniaxial compressive load and said lateral restraining means to consolidate the mixture whilst in its softened condition, to substantially wholly carbonize the material, and to densify the material during the carbonizing process.

5,382,393
METHOD AND APPARATUS FOR FORMING CHAMFERED OUTSIDE CORNERS ON CONCRETE PRODUCTS
Robert J. Steinke, 98-889 Ka'ahele St., Aiea, HI. 96701
Filed Jun. 4, 1993, Ser. No. 72,515
Int. Cl.[6] E04B *1/16;* E04G *9/00*
U.S. Cl. 264—31 11 Claims



4. A method for forming a chamfered corner in a concrete product comprising the steps of:

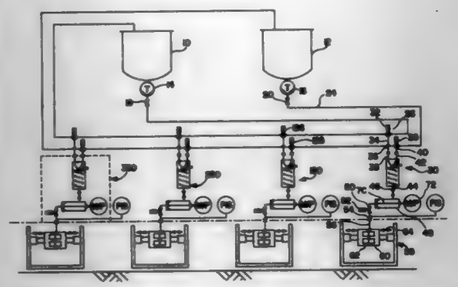
defining the surfaces of the concrete product using planar forming members;
securing a pre-formed member to the planar forming members to form a chamfered corner where three formed surfaces are to meet in permanent perpendicular relation to one another, said pre-formed member having three arms;
securing triangular chamfer forming members to the interior of said planar forming members to form chamfered edges where two formed surfaces are to meet in perpendicular relation to one another, an end of each arm of said pre-formed member being aligned with an end of one of said chamfer forming members; and
forming the concrete by adding the concrete to the form and allowing it to harden.

5,382,394

APPARATUS AND METHOD FOR SUPPLYING VISCOUS BLENDS THAT CURE

Josef Terhardt, Rhede, Germany, assignor to Verfahrenstechnik Hubers GmbH, Bocholt/Westf., Germany

Filed Jun. 21, 1993, Ser. No. 80,267
Int. Cl.[6] B29C *31/10, 45/12, 45/20*
U.S. Cl. 264—40.7 **15 Claims**



1. An apparatus for supplying viscous blends of two or more components that react and cure when blended comprising
a) one holding tank for each component,
b) a set of flow controls downstream of each holding tank,
c) a valve in or downstream of each set of flow controls,
d) a line downstream of each set of flow controls or of each valve,
e) blenders communicating with each line, and
f) an injector downstream of each blender and supplying the blend to a compression-setting mold,
the improvement wherein the line leading out of each holding tank and through the flow controls and check valve extends past each blender and back into the tank, accordingly constituting a closed loop that begins and ends at the tanks, the loops extending through FORWARD/DIVERT valves with one intake and two alternatively opening and closing outlets, one outlet forwarding the component on through its loop and the other outlet diverting it out of the loop to one of the blenders, each flow control being a variable-capacity pump upstream of a check valve.

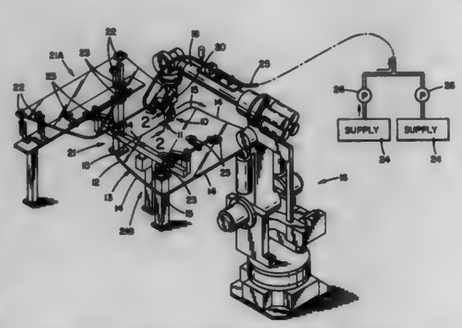
7. The method of operating apparatus for supplying viscous blends of two or more components that react and cure when blended, the apparatus comprising
a) one holding tank for each component,
b) a set of flow controls comprising variable-capacity pumps downstream of each holding tank,
c) a check valve in or downstream of each set of flow controls, and
d) a closed loop downstream of each set of flow controls and check valve and leading up to each blender and then back to the holding tank,
e) each loop extending through FORWARD/DIVERT valves with one intake and two alternatively opening and closing outlets, one outlet forwarding the component on through the loop and the other outlet diverting it out of the loop to one of the blenders,
wherein the following steps are performed:
1. first, the flow controls continue supplying each loop with its particular component until it is fully charged and the component is returning to the holding tank,
2. second, the FORWARD/DIVERT valves that divert the components to a particular blender disestablish communications with the loops and divert the components flowing through the loops to the blender
3. third, the flow controls remain in operation until the blender contains a specific volume of the components,
4. fourth, the first and second steps are repeated with at least one more blender,
5. fifth, the blenders proceed to blend the components and condition the blend, and
6. sixth, the blend is introduced into compression-setting through the injectors.

5,382,395

PROFILE EXTRUSION APPARATUS AND METHOD FOR EXTRUDING A PROFILE

Mark S. Hoenke, Stow, Ohio, assignor to Admiral Equipment Co., Midland, Mich.

Filed May 14, 1993, Ser. No. 62,102
Int. Cl.[6] B29C *47/92*
U.S. Cl. 264—40.7 **20 Claims**



1. An apparatus for extruding a profile material to form a profile of substantially constant cross-section onto the peripheral edge of an article, comprising:
a movable die head for circumferentially traversing the peripheral edge of the article; said die head having a profile orifice positioned proximate to the peripheral edge of the article, and a supply channel means in fluid communication with both said profile orifice and a pressurized source of the profile material; and,
selectively pivotable vane means positioned within said supply channel and proximate to said profile orifice, wherein said vane means is pivotable to variably direct the flow of a substantially constant amount of the profile material to said profile orifice.

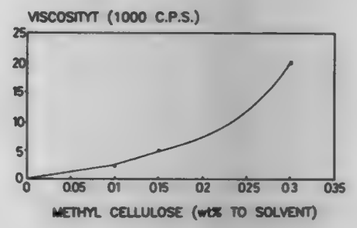
13. A method for extruding a profile material to form a profile of substantially constant cross-section onto the peripheral edge of an article, comprising the steps of:
directing a flow of the profile material under pressure through a supply channel and through a profile orifice of a die head as said die head is directed to circumferentially traverse the periphery of the article; and,
variably directing the flow of the profile material to said profile orifice with a selectively pivotable vane means positioned within said supply channel and proximate to said profile orifice, such that a substantially constant amount of the profile material is directed to flow through said profile orifice as said die head is directed to circumferentially traverse the periphery of the article.

5,382,396

METHOD OF MAKING A POROUS CERAMIC FILTER

Chun-Sho Lee, Taichung, and Ai-kang Li, Hsinchu, both of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Jun. 15, 1992, Ser. No. 898,302
Int. Cl.[6] C04B *35/65*
U.S. Cl. 264—44 **6 Claims**



1. A process for manufacturing a porous Si_3N_4 ceramic filter comprising:
mixing silicon powder, water and methyl cellulose to obtain a slurry,
dipping a sponge into the slurry so that the slurry is adsorbed to the sponge,
drying the sponge,
biscuit firing the sponge, and
sintering the sponge in a nitriding furnace for about 15 hours at temperature in a range of 1200°–1400° C. to form the porous Si_3N_4 ceramic filter.

5,382,397

METHOD OF FORMING CLOSED CELL FOAM SEALS FOR AUTOMOTIVE BODY SEAMS

Herman E. Turner, Jr., Wellington, Ohio, assignor to Nordson Corporation, Westlake, Ohio

Continuation of Ser. No. 175,330, Mar. 30, 1988, abandoned.
This application Mar. 5, 1993, Ser. No. 27,557
Int. Cl.[6] B29C *67/22*
U.S. Cl. 264—46.5 **12 Claims**



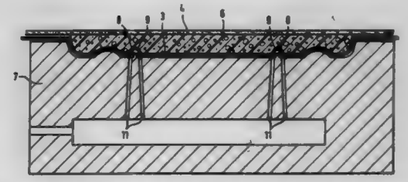
1. A method of sealing automotive body seams comprising
supplying a controlled amount of foamable liquid polymeric sealant material from a bulk reservoir through a mixer for mixing said sealant material with a gas to a dispensing nozzle, said mixer having a housing with an inlet for receiving said polymeric material and an outlet for dispensing said polymeric material,
introducing said gas under pressure into said mixer for solubilization in said polymeric material,
providing a laminar flow of said polymeric material through said mixer to increase dissolution of said gas into said polymeric material to form a polymer/gas solution under pressure,
maintaining said gas in solution with said polymeric material in said mixer,
dispensing the polymer/gas solution downstream of said mixer outlet with a low pressure drop across said mixer inlet to said outlet thereby avoiding premature foaming of said polymeric material in said mixer whereby said gas is released at atmospheric pressure from solution forming a polymer sealant foam,
forming directly in place a bead of said polymer sealant foam from said nozzle into an automobile body seam,
controlling said bead to a desired width and amount as the foam expands to fill the seam,
and curing said polymer sealant foam thereby providing in said seam a seal having a closed cell foam structure with a multitude of fine cells containing gas, thereby sealing said automotive body against moisture, dust and noise intrusion.

5,382,398

METHOD OF FABRICATING AN INTERIOR FURNISHING PART WITH DECORATIVE OR ATTACHMENT SEAM

Fritz Dräxlmaier, Jr., Geisenhausen, Germany, assignor to Eldra-Kunststofftechnik GmbH, Vilsbiburg, Germany

Continuation of Ser. No. 706,581, May 28, 1991, abandoned.
This application Dec. 9, 1993, Ser. No. 165,559
Claims priority, application Germany, May 28, 1990, 4017173
Int. Cl.[6] B29C *67/22*
U.S. Cl. 264—46.5 **12 Claims**



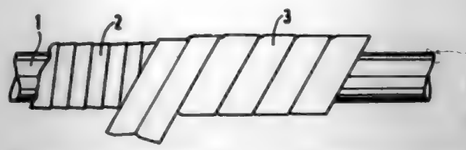
1. A method of fabrication of interior furnishing parts for motor vehicles and having a decorative or fastening seam, said method comprising the steps of:
providing a mold having a molding surface corresponding to a predetermined profile of an exterior surface of an interior furnishing part;
placing a sheet of profiled covering material into the mold for obtaining the predetermined profile of the exterior surface of the furnishing part, the mold having means provided on the molding surface thereof that forms a rectilinearly extending deformation on an exterior surface of the covering material;
placing a carrier element of the furnishing part at least partially in a spaced relationship relative to the profiled covering material;
filling the space between the carrier element and the profiled covering material with a foamable material and molding the carrier element and the profiled covering material together by foaming the foamable material; and
thereafter, sewing the decorative or fastening seam with a sewing machine using the rectilinearly extending deformation on the exterior surface of the covering material as a guide for a presser foot of the sewing machine, with the seam penetrating and passing through the finished molded interior furnishing part.

5,382,399

METHOD FOR THE PRODUCTION OF FLUORINATED RESIN TUBES, PARTICULARLY OF POLYTETRAFLUOROETHYLENE

Bernard Moret de Rocheprise, Chalindrey; Tisserand Serge, Chanoy, and Pascal Dugand, Chaumont, all of France, assignors to Compagnie Plastic Omnium, Lyons, France

Filed Jul. 22, 1992, Ser. No. 918,657
Claims priority, application France, Jul. 26, 1991, 91 09516
Int. Cl.[6] B29C *53/60*
U.S. Cl. 264—127 **9 Claims**



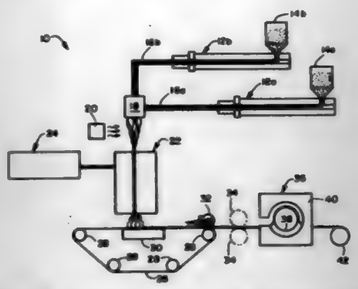
1. A process for producing a tube from a synthetic material, the tube having a predetermined wall thickness, which comprises winding a first layer of a tape of a synthetic material and having a longitudinal axis over a mandrel having a longitudinal axis, to produce a first layer in which each turn of the tape overlaps a large majority of the width of the tape of an adjacent turn, and wherein the angle between the longitudinal axis of the mandrel and the tape is close to 90°, said first layer having no helical interstices between the turns, and winding a plurality of subsequent layers of tape over said first layer wherein said angle is between about 45° and less than 90°, with the turns of each subsequent layer overlapping each other to a substantially lesser extent than the turns of said first layer, in winding said plurality of subsequent layers, adjacent layers of subsequent layers are wound at different angles, and continuing winding said plurality of subsequent layers until the predetermined wall thickness is produced, and then completing the fabrication of the tube.

5,382,400

NONWOVEN MULTICOMPONENT POLYMERIC FABRIC AND METHOD FOR MAKING SAME

Richard D. Pike, Norcross; Kurtis L. Brown; Sharon W. Gwaltney, both of Woodstock, all of Ga.; Thomas A. Hershberger, Appleton, Wis., and Scott D. Siegel, Thomasville, N.C., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 21, 1992, Ser. No. 933,444
Int. Cl.[6] D01D *5/22*
U.S. Cl. 264—168 **30 Claims**



1. A process for making a nonwoven fabric comprising the steps of:

a. melt spinning continuous multicomponent polymeric filaments comprising first and second polymeric components, the multicomponent filaments having a cross-section, a length, and a peripheral surface, the first and second components being arranged in substantially distinct zones across the cross-section of the multicomponent filaments and extending continuously along the length of the multicomponent filaments, the second component constituting at least a portion of the peripheral surface of the multicomponent filaments continuously along the length of the multicomponent filaments, the first and second components being selected so that the multicomponent filaments are capable of developing latent helical crimp;

b. drawing the multicomponent filaments;

c. at least partially quenching the multicomponent filaments so that the multicomponent filaments have latent helical crimp;

d. activating said latent helical crimp; and

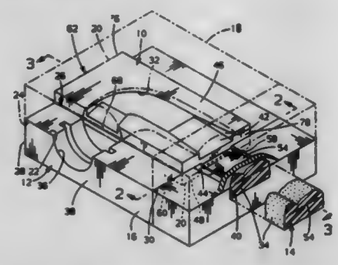
e. thereafter, forming the crimped continuous multicomponent filaments into a first nonwoven fabric web.

5,382,401

EXTRUSION DIE STABILIZER GUIDE AND METHOD OF EXTRUSION

Thomas J. Pickett, Troy; Richard A. Otten, Warren; Bruce J. Stribbell, Rochester, and Manhar K. Sheth, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1993, Ser. No. 103,957
Int. Cl.[6] B29C *47/12*
U.S. Cl. 264—177.16 **8 Claims**



1. An extrusion die for extruding a thermoplastic material encapsulating a stabilizer having a material characteristic of fraying, said extrusion die having a flow passage way with a die exit and comprising:

a guide seated in said flow passage way of said extrusion die and having abutting surfaces that provide a parting line lying in a plane between said abutting surfaces;

said guide having a slot for guiding said stabilizer through said extrusion die; said guide, in combination with said flow passage way defining flow paths around opposing sides of said guide, said guide having a slot exit at an end of said guide;

said extrusion die's flow passage way, between said end of said guide and said die exit, defining an individual flow path wherein a flow of said thermoplastic material pulls said stabilizer through said guide; and said slot lying completely outside the plane of said parting line so that, when pulled, said stabilizer does not wander into said parting line.

8. A method of extruding a thermoplastic body molding encapsulating a stabilizer having the material characteristic of fraying within said thermoplastic body molding without fraying or melting said stabilizer, the steps comprising:

providing an extrusion die with a cavity extending from the front of said extrusion die to a point within said extrusion die, and said extrusion die having a passage way that extends from an entrance into said extrusion die to an exit out of said extrusion die converging with said cavity between said front and said point;

providing a two piece guide seated in said cavity of said extrusion die and having a parting line between said two pieces of said guide with a slot extending through the length of said guide so that said slot does not lie in the same plane as said parting line, and said guide having a recess in the top and the bottom of said guide which is in communication with said passage way;

inserting said stabilizer into said slot of said guide in said front of said extrusion die and feeding said stabilizer through said slot until said stabilizer exits said guide within said extrusion die;

pouring a thermoplastic material into said passage way at said entrance into said extrusion die; forcing said thermoplastic through said passage way and along said recesses in the top and the bottom of said guide to surround and encapsulate said stabilizer with said thermoplastic material upon said stabilizer exiting said slot of said guide pulling said stabilizer through said guide with said forced thermoplastic material; and

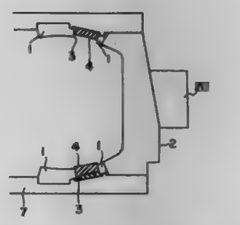
extruding said thermoplastic encapsulated stabilizer through a pre-formed passage way at said exit of said extrusion die to obtain a desired geometry.

5,382,402

TIRE MOLD AND METHOD OF MOLDING A TIRE BY MEANS OF SUCH A MOLD

Jacques Espie, Pont-du-Chateau, and Daniel Lefevre, La Roche Blanche, both of France, assignors to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France

Filed Jun. 25, 1993, Ser. No. 82,755
Claims priority, application France, Jul. 2, 1992, 92 08299
Int. Cl.[6] B29C *35/02;* **B29D** *30/72*
U.S. Cl. 214—326 **11 Claims**



1. A tire mold having at least one shell for molding the outer surface of a tire sidewall with a marking of a contour to be molded on said sidewall, the shell comprising a cutout the shape of which on a molding face of the shell corresponds precisely to a negative of the contour of said marking, and a mold plugging part having a surface which closes the cutout, a clearance between the cutout and said mold plugging part being in communication with the outside of the mold in order to assure venting of the mold.

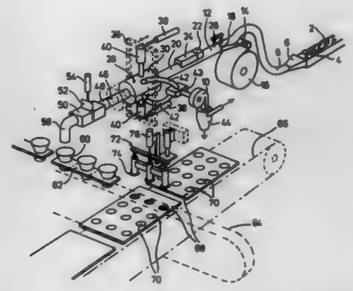
8. A method of molding a tire having, on at least one of its sidewalls, a marking molded by means of a mold having at least one shell for molding the outer surface of a tire sidewall with a marking of a contour to be molded on the sidewall, the shell comprising a cutout the shape of which on a molding face of the shell corresponds precisely to a negative of the contour of the marking, a mold plugging part having a surface which closes the cutout, a clearance between the shell and the mold plugging part being in communication with the outside of the mold and in which the markings are recessed or in relief on the surface of the sidewall, including filling the mold and cutout with material for molding the tire and venting the mold by the clearance between the cutout and said mold plugging part.

5,382,403

METHOD AND A SYSTEM FOR PRODUCING BLOCK BODIES FROM LOOSE MATERIAL SUCH AS SPHAGNUM

Øyvind Ellegaard, Højvangs Parkvej 34, DK-6700 Esbjerg, Denmark

PCT No. PCT/DK91/00255, § 371 Date May 14, 1993, § 102(e) Date May 14, 1993, PCT Pub. No. WO92/03914, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 3, 1991, Ser. No. 984,574
Claims priority, application Denmark, Sep. 3, 1990, 2110/90
Int. Cl.[6] B29C *67/00*
U.S. Cl. 264—511 **16 Claims**



1. A method of manufacturing compacted substrate material from a loose material comprising:

suctioning the loose material through a pipe into a suction chamber for deposition and compaction into the compacted substrate material within the suction chamber by suction applied through a perforated tube in the suction chamber to the loose material; and

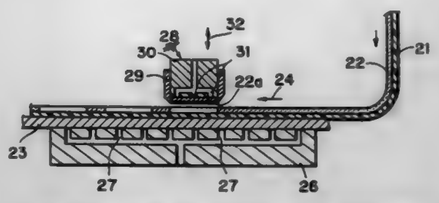
conveying the compacted substrate material from the suction chamber.

5,382,404

METHOD OF CUTTING OUT A PORTION OF A WEAK SHEET

Toshihiko Kogame, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 347,498, May 4, 1989, abandoned. This application Jun. 15, 1993, Ser. No. 77,944
Int. Cl.[6] B28B *11/16;* **B26D** *7/06*
U.S. Cl. 264—547 **20 Claims**



1. A method of cutting out a cut sheet having predetermined dimensions from a weak sheet, said method comprising the steps of:

forming a release layer of a mold release agent on a carrier film;

forming a weak sheet on the release layer ;

moving said weak sheet onto a base surface plate with said carrier film interposed between said weak sheet and said base surface plate;

applying a punching edge to said weak sheet to punch

through said weak sheet and said release layer and to at least reach said carrier film, thereby defining a continuous cutting line to form a cut sheet and a remaining part in said weak sheet wherein said carrier film is incompletely cut punching edge as it punches through said weak sheet and

removing said cut sheet from the remaining part of said weak sheet and said carrier film by suction, while applying a stronger suction force to a peripheral portion of said cut sheet than to a central portion of said cut sheet.

5,382,405

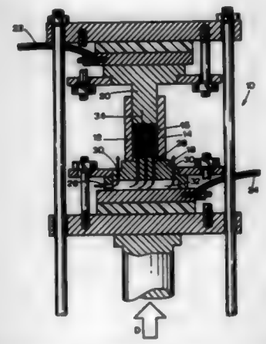
METHOD OF MANUFACTURING A SHAPED ARTICLE FROM A POWDERED PRECURSOR

Kenneth F. Lowrance, II, Lansing, Ill.; Eric C. Knorr, Crown Point, Ind.; William M. Goldberger, Columbus, Ohio; Daniel Boss, Grayslake, and Doreen Edwards, Chicago, both of Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed Sep. 3, 1993, Ser. No. 117,213

Int. Cl.[6] B22F *3/14*; H05B *7/20*

U.S. Cl. 505—125 **29 Claims**



1. A method of manufacturing a shaped article comprising:

a) admixing solid components capable of undergoing a self-propagating high-temperature synthesis reaction to form a powdered precursor;

b) compressing the powdered precursor to form a preform having a density of at least about 30% of theoretical maximum density and having a shape of the shaped article;

(c) positioning the preform in a bed of electrically-conductive particles such that the preform is surrounded by the electrically-conductive particles; and

(d) heating the preform and the bed of electrically-conductive particles to a sufficient temperature and for a sufficient time to initiate and sustain the self-propagating high-temperature synthesis reaction while simultaneously pressurizing the preform and the bed of electrically-conductive particles to provide the shaped article, said shaped article having a different compositional makeup than the powdered precursor, having a density of at least 80% of theoretical maximum density, and having a net shape substantially identical to the preform

wherein the shaped article can be used for its intended purpose without a post-reaction processing step.

5,382,406

STERILE FILLING METHOD

Robert J. Kruger, McHenry, and Joaquin Mayoral, Downers Grove, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 510,317, Apr. 17, 1990, abandoned. This application Jul. 16, 1993, Ser. No. 93,297

Int. Cl.[6] B65B *55/10*

U.S. Cl. 422—28 **4 Claims**



1. A method for the on-line sterile filling of a container with a sterile solution from a filling nozzle in a filling head, which comprises the steps of:

providing a container having an open end and a hollow body portion for receiving the sterile solution;

providing an access passageway tube, the access passageway tube having first and second open ends and a pierceable septum sealing the passageway at an intermediate position within the tube;

sealing the first open end of the access passageway tube in the open end of the container so as to close the hollow body portion of the container;

sterilizing the sealed hollow body portion of the container;

isolating an antechamber formed between the second open end of the access passageway tube and the septum from the surrounding environment by axially advancing and sealably seating the filling head within the second open end of the access passageway tube;

sterilizing the isolated antechamber for a time period sufficient to reduce the viable micro-organism population present to a predetermined level;

axially advancing a filling nozzle from the filling head through the isolated and sterilized antechamber and piercing the septum of the access passageway tube;

filling the sterilized hollow body portion of the container through the filling nozzle with the sterile solution; and

sealing the open end of the container between the hollow body portion and the filling nozzle before the filling nozzle is removed from the septum.

5,382,407

MEMBRANE BLOOD OXYGENATOR

Ronald J. Leonard, Ann Arbor, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 657,338, Feb. 15, 1991, Pat. No. 5,152,964, which is a continuation of Ser. No. 248,092, Dec. 14, 1988, abandoned. This application Oct. 5, 1992, Ser. No. 957,415

Int. Cl.[6] A61M *1/14*

U.S. Cl. 422—48 **11 Claims**

1. A membrane oxygenator comprising:

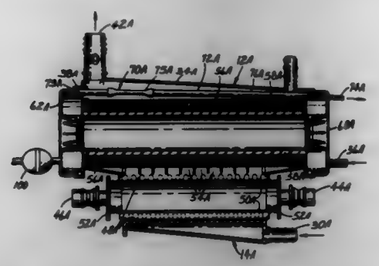
a housing having means defining a hollow portion,

transfer membrane means comprising a hollow fiber bundle disposed within the hollow portion of the housing and defining oxygenating gas flow paths between an oxygenating gas inlet and an oxygenating gas outlet and through individual fibers in said hollow fiber bundle, and defining blood flow paths between a blood inlet and a blood outlet, said blood flow paths being around individual fibers in said hollow fiber bundle; and

automatic maintaining means for automatically maintaining the total pressure of the oxygenating gas at each point within the gas flow paths sufficiently near yet below the total pressure of the blood opposite the transfer membrane means generally throughout the oxygenator to avoid bubbling the oxygenating gas into the blood,

said automatic maintaining means comprising tube having a flexible portion within said housing,

said flexible portion being adapted to restrict the flow of



oxygenating gas exiting through said oxygenating gas outlet by being deflected by a pressurization fluid at approximately the pressure of the blood exiting through said blood outlet to thereby raise the pressure of the oxygenating gas within the oxygenator near that of the exiting blood,

wherein the pressurization fluid comprises blood, and wherein the pressurization fluid and oxygenating gas outlet are situated in the hollow portion of the housing.

5,382,408

MICROCENTRIFUGE TUBE WITH UPWARDLY PROJECTING LID EXTENSION

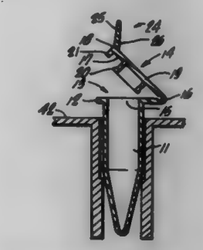
Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Continuation-in-part of Ser. No. 883,420, May 11, 1992, Pat. No. 5,225,165. This application Jul. 2, 1993, Ser. No. 86,591

The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[6] B01L *3/00*

U.S. Cl. 422—102 **11 Claims**



11. A microcentrifuge tube comprising:

a container having an upper opening defined by an inner perimeter wall having an upper perimeter wall surface and a lip flange,

a lid hingedly attached to said container by a fixed hinge,

wherein said lid comprises a sealing wall having a lower surface and a lower annular sealing portion positioned adjacent said lower surface and extending downwardly from said lower surface,

wherein said lower annular sealing portion is adapted to fit within said upper opening and sealingly mate with said inner perimeter wall, and wherein said lower surface is adapted to mate with said upper perimeter wall surface;

said lid further comprising an upper surface, a lower surface and extending upwardly from said upper surface, a lid extension extending upwardly at an angle between 20° and 80° from said upper surface and outwardly from said hinge in such a manner which allows the lid to be unseated and moved from the opening of said container when mechanical pressure by a user's finger is applied to said lid extension without contact with any other portion of said lid; said lid further comprising a guard portion extending downwardly from the lower surface of said lid and configured and arranged adjacent the lip flange of said container to act as a finger guard to prevent a user's finger from contacting the underside of said lid when said lid is unseated and moved from the opening of said container.

5,382,409

APPARATUS FOR USE IN ANALYTICAL INSTRUMENTS

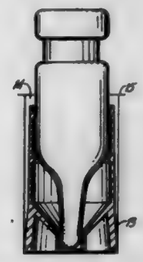
James A. Baxter, London, United Kingdom, assignor to Chromacol Limited, London, United Kingdom

Continuation of Ser. No. 837,356, Feb. 14, 1992, abandoned. This application Dec. 1, 1993, Ser. No. 159,937

Claims priority, application United Kingdom, Apr. 6, 1991, 9107258.7; European Pat. Off., Jul. 24, 1991, 91306737.7

Int. Cl.[6] G01N *35/02*; B01L *3/00*

U.S. Cl. 422—102 **7 Claims**



1. A combination comprising an autosampler including a plurality of wells, a sleeve for being located in one of said wells, and a vial for being located within said sleeve, wherein said vial has an open end and a closed end, said vial having a tapering portion towards its closed end; said sleeve comprising a cylindrical body portion, a skirt depending from the cylindrical portion, and an internal annular lip forming a frustoconical portion, the skirt extending level to or beyond the extent of the lip, and the frustoconical portion adapted to accommodate part of the tapering portion of the vial to locate the vial, wherein the skirt is frustoconical and is of wider cross section at its distal portion for frictionally engaging the well and preventing inadvertent removal of the sleeve from the well when an inserted vial is axially removed from the sleeve.

5,382,410

ELECTROSTATIC VAPOR/AEROSOL GENERATOR WITH METHOD AND APPARATUS FOR CONDITIONING BUILDING SPACES

Mark E. Peltier, Minneapolis, Minn., assignor to In-Vironmental Integrity, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 667,200, Mar. 11, 1991, Pat. No. 5,196,171. This application Mar. 22, 1993, Ser. No. 34,297

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

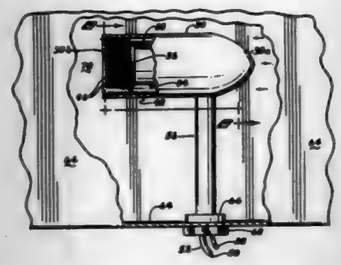
Int. Cl.[6] A62B *11/00*

U.S. Cl. 422—121 **19 Claims**

1. Vaporizing emitter apparatus for generating electrostatically charged aerosols and vapors comprising:

a capillary unit of elongated, tubular configuration having a vapor dispensing end, said capillary unit comprising an elongated tubular support and a vaporizing emitter sleeve disposed and supported on the tubular support in embracing relation thereto, said emitter sleeve being comprised of

nonconductive fibers woven in an annular configuration to comprise a plurality of capillament bundles, with each bundle comprising a plurality of elongated fibers extending longitudinally of said elongated tubular support and terminating at their free ends in a bundle of freely extending fiber tips at the vapor dispensing end of said capillary unit from which vapor is emitted;



an electrical conductor having a contact terminal defining a single electrode unit for conducting high voltage direct current to said emitter sleeve disposed in close proximity to said emitter sleeve;

means for the controlled supply of liquid to said capillary unit, whereby liquid passes through said capillary unit in proximity to said electrode and is electrostatically charged and dispensed as vapor or aerosol from said fiber tips at the dispensing end of said capillary unit.

5,382,411

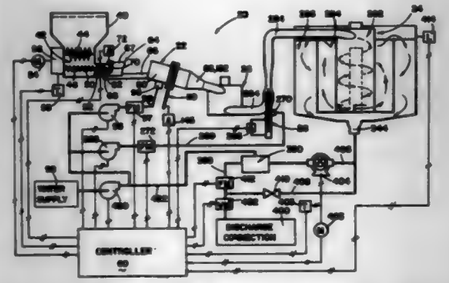
APPARATUS AND METHOD FOR CONTINUOUSLY MIXING FLUIDS

Thomas E. Allen, Comanche, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 5, 1993, Ser. No. 1,232

Int. Cl.[6] C08F *2/00*; B28C *5/08*; B01F *15/02*

U.S. Cl. 422—131 **30 Claims**



1. Apparatus for hydrating a particulated polymer and producing a gel, such as a well treatment gel, comprising:

water spraying induction mixing means for spraying the polymer with a water spray and forming a water-polymer mixture having a motive energy; and

a centrifugal diffuser means, connected to the water spraying induction mixing means, for receiving the mixture from the mixing means and passively converting the motion of the mixture into circular motion, thereby centrifugally separating and discharging air from the mixture, centrifugally dissipating the motive energy of the mixture, and hydrating the mixture into a gel.

5,382,412

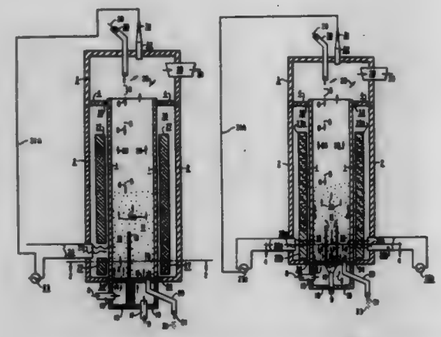
FLUIDIZED BED REACTOR HEATED BY MICROWAVES

Hee Y. Kim; Yong M. Song; Jong Y. Jeon; Dae H. Kwon; Kang M. Lee; Jae S. Lee, and Dong S. Park, all of Daejeon, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejeon, Rep. of Korea

Continuation-in-part of Ser. No. 967,100, Oct. 27, 1992, abandoned. This application Apr. 28, 1993, Ser. No. 55,239

Int. Cl.[6] F27B *15/14*; B01J *8/26, 8/42*

U.S. Cl. 422—142 **7 Claims**



1. Apparatus for preparing polycrystalline silicon comprising:

a fluidized bed reactor means;

means for introducing silicon particles into said reaction means;

partition means in said reactor means partitioning said reactor means into a reaction zone and a heating zone having an open upper end, said partition means precluding fluid communication and lateral penetration of silicon particles between said heating zone and said reaction zone other than through said oepn upper end of said heating zone;

first inlet means for introducing a reaction gas comprising a silicon source material into said reaction zone and for fluidizing silicon particles in said reaction zone such that said silicon source material is deposited as silicon metal on said silicon particles at a reaction temperature;

second inlet means for introducing a carrier gas into said heating zone and for fluidizing said silicon particles in said heating zone;

heating means for heating said silicon particles by microwave energy in said heating zone to a temperature above said reaction temperature such that said heated silicon particles in the upper section of said heating zone are mixed with said silicon particles in said reaction zone to thereby transfer the heat of said heated silicon particles in said heating zone to said reaction zone;

insulating means juxtaposed to said heating zone, said insulating means comprising microwave-transparent insulating material;

first outlet means on said reactor means for removing said silicon particles on which said silicon source material has been deposited; and

second outlet means on said reactor means for removing unreacted fluidizing gases and reaction by-product gases from said reactor means.

5,382,413

SAFETY MODULE FOR HYDROGEN GENERATING REACTORS

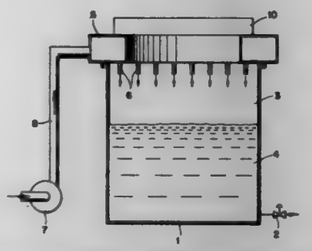
René Clair, Martigues, France, assignor to Elf Atochem S.A., Puteaux, France

Filed Jan. 21, 1993, Ser. No. 6,522

Claims priority, application France, Jan. 21, 1992, 92/00604

Int. Cl.[6] B01D *50/00*; G05B *9/00*; C22B *3/02*

U.S. Cl. 422—168 **5 Claims**



1. A reactor for the reaction of a substance from which there evolves a gas stream having vesicles of reaction entrained therein, said reactor comprising:

a reaction vessel containing as reactants, a metal or an oxide and an acid, to form a salt and evolve hydrogen, and including an upper outlet for discharging gas evolved from the reaction;

a demister disposed adjacent said outlet and extending across a travel path of gas evolving from the reaction for conducting the gas through the demister while removing vesicles therefrom; and

an air-introducing conduit connected to a source of air and arranged to introduce air into the reaction vessel at a location below said demister to mix with the gas upstream of said demister, for maintaining the air/gas mixture below the explosive limits thereof.

5,382,414

APPARATUS FOR PERFORMING CHEMICAL AND PHYSICAL PRESSURE REACTIONS

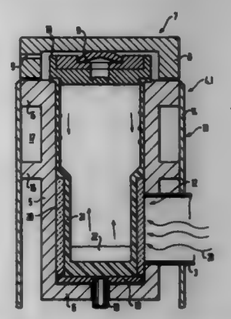
Werner Lautenschläger, Leutkirch, Germany, assignor to MLS Mikrowellen-Labor Systeme GmbH, Leutkirch, Germany

Filed Feb. 13, 1992, Ser. No. 835,624

Claims priority, application Germany, Feb. 19, 1991, 4105094; May 3, 1991, 4114525

Int. Cl.[6] B01S *19/12*

U.S. Cl. 422—186 **17 Claims**



1. Apparatus for performing chemical and physical pressure reactions on a sample or samples by the action of microwaves, comprising a container insert or inserts to receive to receive the sample or samples that is or are at least partially microwave-permeable and is or are arranged in a microwave-impermeable housing means, connected via at least one coupling opening to a microwave generator, characterized in that the housing means comprises at least one pressure vessel of microwave-impermeable material which is formed with said at least one coupling opening; and a microwave-permeable, pressure tight container insert positioned within said pressure vessel, said container insert being of a microwave-permeable, pressure-resistant material, said container insert being pressure sealed with a lid which is pressed against a wall of the insert, said container insert extending over said coupling opening.

5,382,415

AIR BAG INFLATION GAS GENERATOR

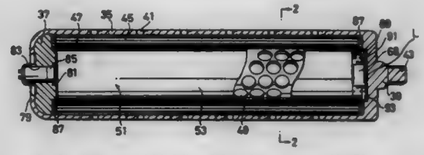
Junichi Kishimoto, and Takashi Minamizawa, both of Fukushima, Japan, assignors to Nippon Koki Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1993, Ser. No. 127,757

Claims priority, application Japan, Jun. 22, 1993, 5-150390

Int. Cl.[6] B01J *7/00*

U.S. Cl. 422—305 **5 Claims**



1. An air bag inflation gas generator comprising:

a longitudinal outer cylindrical member having an outer periphery with gas outlets formed therein and a bottom end;

an inner cylindrical member having an outer periphery with gas outlets formed therein and at least one open end;

wherein the inner cylindrical member is within the outer cylindrical member and said at least one open end of the inner cylindrical member is at the bottom end of the outer cylindrical member;

a filter between the inner cylindrical member and the outer cylindrical member;

gas generating agents within the inner cylindrical member;

mating sections at said at least one open end of the inner cylindrical member and mating sections at the bottom end of the outer cylindrical member; and

wherein the mating sections of the inner cylindrical member and the mating sections of the outer cylindrical members interlock to maintain a predetermined positional relation between the outer cylindrical member and the inner cylindrical member preventing rotation therebetween, so that the predetermined positional relation aligns the gas outlets of the inner cylindrical member and the gas outlets of the outer cylindrical member providing an optimal route for combustion gas from the gas generating agents out of the inner and outer cylindrical members.

5,382,416

METHOD FOR PURIFYING EXHAUST GAS

Masao Nakano, Hikari; Akinori Eshita, and Kazuhiko Sekizawa, both of Shinnanyo, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Continuation of Ser. No. 54,207, Apr. 30, 1993, abandoned, which is a continuation of Ser. No. 805,956, Dec. 12, 1991, Pat. No. 5,208,198. This application Mar. 28, 1994, Ser. No. 218,294

Claims priority, application Japan, Dec. 18, 1990, 2-411254; Dec. 18, 1990, 2-411255; Dec. 18, 1990, 2-411256; Dec. 18, 1990, 2-411257

Int. Cl.[6] B01J *8/06*; B01D *53/36*; C01B *21/00*

U.S. Cl. 423—213.2 **16 Claims**

1. A method for purifying an exhaust gas by removing nitrogen oxides, carbon monoxide and hydrocarbons from an oxy-

gen-rich exhaust gas containing the same, comprising bringing the exhaust gas into contact with a catalyst comprising (i) a zeolite having an SiO_2/Al_2O_3 mole ratio of at least 15 and (ii) (a) cobalt, (b) an alkaline earth metal and (c) silver, incorporated thereinto.

5,382,417

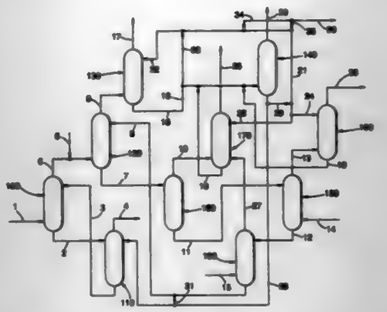
PROCESS FOR REMOVAL OF SELECTED COMPONENT GASES FROM MULTI-COMPONENT GAS STREAMS

Donald J. Haase, Nixon, Tex., assignor to Herr Haase, Inc., Nixon, Tex.

Continuation of Ser. No. 704,361, May 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 460,309, Jan. 3, 1990, abandoned. This application May 4, 1993, Ser. No. 58,677

Int. Cl.[6] B01D *53/14, 53/34*

U.S. Cl. 423—219 **18 Claims**



1. A method of removing a complexible ligand from a multi-component gaseous stream containing the complexible ligand, which gaseous stream is capable of reducing cupric ions in a liquid treating agent to form an insoluble precipitate, said method comprising the steps of:

(a) forming a solution of liqueform cuprous halide amine compound having four moles of amine per mole of cuprous halide in a solvent;

(b) including cupric ions in the solution to provide the liquid treating agent, said cupric ions occupying less than about one percent by moles of the total copper concentration;

(c) contacting the liquid treating agent with the gaseous stream to form a complex between the ligand and the cuprous halide amine to transfer the ligand from the gaseous stream to the liquid treating agent;

(d) maintaining the concentration of cupric ions under conditions where an insoluble precipitate would otherwise form in the treating agent at a level to inhibit precipitation and depletion of cupric ions in the treating agent and maintain the treating agent in a clear amber state;

(e) decomplexing the ligand from the cuprous halide amine to remove the ligand from the liquid treating agent; and

(f) recycling the liquid treating agent for contact with the gaseous stream.

5,382,418

PROCESS FOR REMOVING POLLUTANTS FROM COMBUSTION EXHAUST GASES

Bernd Thöne, Friedberg; Gerhard Schmidt, Karben, and Erhard Herrmann, Leverkusen, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 1, 1993, Ser. No. 25,355

Claims priority, application Germany, Mar. 3, 1992, 4206602

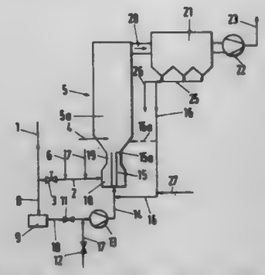
Int. Cl.[6] B01J *8/24;* **C01B** *21/20*

U.S. Cl. 423—239.1 **1 Claim**

1. A process for removing pollutants and dust from a combustion exhaust gas, comprising the steps of

(a) admixing with at least 90% of said exhaust gas, at least one absorbent for pollutants therein, said absorbent containing NH_3 and a granular denitrating catalyst;

(b) feeding said absorbent containing exhaust gas into an entrance chamber annularly surrounding a lower portion of an upright tube, from said entrance chamber said absorbent containing exhaust gas being fed upwardly through an annular space surrounding said upright tube, said annular space forming a constriction for the gas flow and the gas velocity in upward direction in said annular space being higher than in said entrance chamber, from said annular space feeding said absorbent containing exhaust gas into a lower portion of a fluidized bed, said fluidized bed being disposed in a fluidized bed reactor, temperatures in said fluidized bed being in the range of about 40° to 500° C., said fluidized bed being disposed above said upright tube;



(c) reacting said exhaust gas with said absorbent in said fluidized bed above said tube;

(d) withdrawing gas with entrained solids from said fluidized bed reactor;

(e) dedusting the gas from said reactor in at least one dedusting means and separating entrained solids from the dedusted gas; and

(f) recycling a portion of the solids separated in step (e) to said fluidized bed rector by blowing at least part of said portion of the solids into said bottom of said fluidized bed through said tube in an entraining gas, said entraining gas being selected from the group which consists of a portion of exhaust gas, a portion of said dedusted gas, inert gas and air.

5,382,419

PRODUCTION OF HIGH-PURITY POLYCRYSTALLINE SILICON ROD FOR SEMICONDUCTOR APPLICATIONS

Kenichi Nagai; Yosifumi Yatsurugi, both of Moses Lake; Hiroshi Morihara, Vancouver, all of Wash., and Junji Izawa, Hadano, Japan, assignors to Advanced Silicon Materials, Inc., Moses Lake, Wash.

Filed Sep. 28, 1992, Ser. No. 953,480

Int. Cl.[6] C01B *33/02*

U.S. Cl. 423—348 **13 Claims**

1. A process for the production of polycrystalline silicon rods from monosilane, the process comprising:

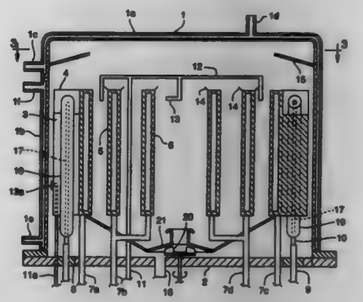
providing a reactor vessel having (a) an interior surface including a floor, a wall and a ceiling, (b) a cooled partition with a wall which defines multiple reaction chambers, and (c) a powder catcher which is displaced from the reaction chambers and has a cooled wall;

positioning a starter filament in each reaction chamber where a polycrystalline silicon rod is to be grown;

heating the starter filaments;

passing a monosilane-containing reactant gas through the reaction chambers such that polycrystalline silicon deposits on the starter filaments and forms silicon powder due to the thermal decomposition of the monosilane and then passing the reactant gas, with entrained silicon powder, from the reaction chambers to and along the cooled wall of the powder catcher; and

maintaining the wall of the powder catcher at a temperature that is sufficiently low that powder deposits on the surface



of the wall and is removed from the reactant gas flowing along the wall.

5,382,420

ECR-33: A STABILIZED RARE-EARTH EXCHANGED Q TYPE ZEOLITE

David E. W. Vaughan, Flemington, N.J., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 950,539, Sep. 25, 1992, abandoned. This application Aug. 24, 1993, Ser. No. 111,353

Int. Cl.[6] C01B *33/34*

U.S. Cl. 423—716 **6 Claims**

1. A synthetic crystalline zeolite, ECR-33, having the composition in the dehydrated form, in terms of mole ratios:

(xK, yH, zR) $AlSiO_4$

where R are rare-earth elements having atomic numbers between 57 and 71, and an x-ray diffraction pattern given in Table 1, and x×=0.4 to 0.8; y=0 to 0.15; z=0.05 to 0.20.

3. A process of preparing the material of claim 1 which comprises:

(a) preparing zeolite Q; and

(b) exchanging said zeolite Q with a solution of rare-earth elements having atomic numbers between 57 and 71 such that the pH does not fall below 4.5.

5,382,421

CONTRAST AGENTS FOR MAGNETIC RESONANCE IMAGING OF THE SMALL INTESTINE AND HEPATOBILIARY SYSTEM

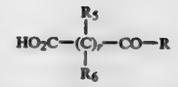
David L. White, Oakland; Barry L. Engelstad, Orinda, both of Calif., and Kurt Muetterties, Kirkland, Wash., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 973,216, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 633,107, Dec. 20, 1990, abandoned, which is a division of Ser. No. 205,201, Jun. 10, 1988, Pat. No. 4,999,445. This application Sep. 17, 1993, Ser. No. 123,727

Int. Cl.[6] A61B *5/055;* **A61K** *31/295*

U.S. Cl. 424—9 **12 Claims**

1. A method of performing a magnetic resonance imaging diagnostic procedure on a subject comprising the step of administering to said subject a magnetic resonance image enhancing amount of a diagnostic medium, and then measuring a magnetic resonance image of at least a portion of said subject's body, wherein said diagnostic medium comprises a physiologically compatible complex of a metal ion with a ligand of the following structure:



wherein R is —desferrioxamine B; r is an integer from 2 to 18; and each R_5 and R_6 is independently hydrogen, aryl of 6 to 14 carbon atoms, or substituted aryl having at least one substituent selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, nitro, sulfonyl, hydroxyl, alkoxy of 1 to 6 carbon atoms, carboalkoxy of 2 to 6 carbon atoms, alkoxycarbonyl of 2 to 6 carbon atoms and sulfhydryl; and the step of performing a magnetic resonance imaging procedure upon said subject.

5,382,422

METHOD AND APPARATUS FOR FORMATION AND DELIVERY OF INSECT ATTRACTANT BASED ON CARBON DIOXIDE

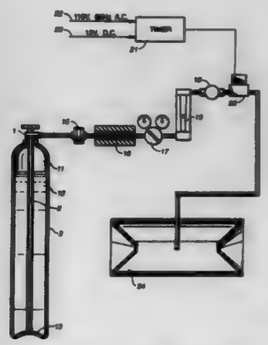
Jose M. Dieguez, St-Bruno, and Robert G. H. Lee, Montreal, both of Canada, assignors to Canadian Liquid Air Ltd. and Air Liquide Canada Ltee, Montreal, Canada

Filed Oct. 1, 1991, Ser. No. 769,245

Claims priority, application Canada, Oct. 4, 1990, 2026945

Int. Cl.[6] A01N *25/06, 31/02*

U.S. Cl. 424—45 **2 Claims**



1. A method of providing a flow of carbon dioxide gas containing a vapor of a liquid insect attractant soluble in liquid carbon dioxide which is selected from the group consisting of acetone and octanol, to an insect trap, which comprises:

(a) flowing a desired amount of said liquid insect attractant soluble in liquid carbon dioxide from a second vessel into an evacuated first vessel of known weight for holding liquid carbon dioxide,

(b) flowing said liquid carbon dioxide through said second vessel into said first vessel at a temperature and under a pressure effective to maintain flow of said liquid carbon dioxide until a desired amount of liquid carbon dioxide is contained with said liquid chemical in said first vessel with formation of a liquid mixture of liquid carbon dioxide and said insect attractant in said first vessel, and

(c) maintaining a gaseous head space under pressure in said first vessel above the liquid mixture;

(d) connecting said first vessel by an out-flow conduit means to the insect trap at which the carbon dioxide gas containing said vapor is desired;

(e) allowing the pressure of gas in said head space to force the liquid mixture from said first vessel into said out-flow conduit means, and

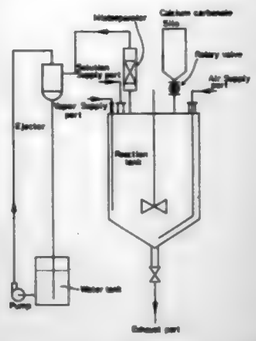
(f) vaporizing said liquid mixture in said out-flow conduit means

(g) delivering the vaporized liquid mixture to said insect trap.

5,382,423
APPARATUS FOR RECOVERING CALCIUM FLUORIDE FROM FLUOROETCHANT

Tadahiro Ohmi, Sendai; Hiroyuki Harada, Tokyo; Nobuhiro Miki; Toshiro Fukutome, both of Osaka; Matagoro Maeno, Izumi; Norio Terasawa, Tokyo; Yoshihiro Eto, Kanagawa, and Masahiro Sakata, Tokyo, all of Japan, assignors to Hitachi Plant Engineering & Construction Co., Ltd., Tokyo, Japan

Division of Ser. No. 953,960, Oct. 1, 1992. This application Jun. 2, 1993, Ser. No. 70,293
Claims priority, application Japan, Oct. 3, 1991, 3-283747; Mar. 13, 1992, 4-89775; May 12, 1992, 4-146278
Int. Cl.[6] F28D *21/00*
U.S. Cl. 422—198 1 Claim



1. Apparatus for recovering fluorine as calcium fluoride from a fluoroetchant solution mainly composed of hydrogen fluoride and ammonium fluoride which comprises a sealed reaction tank equipped with:
a supply means for adding the fluoroetchant solution to the tank,
a supply means for adding calcium carbonate to the tank,
a vapor supply means for adding steam to the tank,
an air supply means for providing air to aerate contents of the tank,
a stirrer for stirring the contents of the tank,
a mist separator connected to said tank,
an ejector downstream from said mist separator for removing vapors from the tank, and
an exhaust port for removing calcium fluoride from the tank.

5,382,424
BREATH PROTECTION MICROCAPSULES

Judith H. Stapler, Wilmington, and Mary A. Hunter, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 805,432, Dec. 11, 1991, abandoned. This application Nov. 10, 1993, Ser. No. 150,663
Int. Cl.[6] A61K *7/16, 7/22, 9/50*
U.S. Cl. 424—54 5 Claims

1. Microcapsules which are free and not in a product matrix suitable for reducing oral bacteria and breath protection comprising a shell material for use in the mouth and ingesting and a core composition each containing equivalent levels of a breath protection agent/antimicrobial selected from the group consisting of quaternary ammonium salts and mixtures thereof, wherein said microcapsules are spherical and have a diameter of from about 2 mm to about 9 mm.

5,382,425
RECOMBINANT SWINEPOX VIRUS

Mark D. Cochran, Carlsbad, and David E. Junker, San Diego, both of Calif., assignors to Syntro Corporation, Lenexa, Kans.

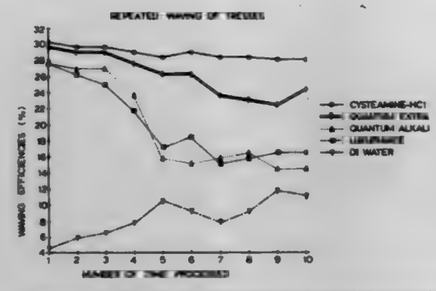
Filed Jan. 13, 1992, Ser. No. 820,154
Int. Cl.[6] C12P *21/02, 19/34;* C12N *15/00, 7/00, 5/00;* C07K *3/00;* C07H *15/12*
U.S. Cl. 435—69.1 20 Claims

1. A recombinant swinepox virus which comprises a foreign DNA inserted within the swinepox virus genomic DNA, wherein the foreign DNA sequence is inserted within the larger HindIII to BglII subfragment of the HindIII M fragment of the genomic DNA, and is capable of being expressed in a swinepox virus infected hose cell.

5,382,426
CYSTEAMINE PERMAMENT WAVE COMPOSITION AND METHOD

Arun Nandagiri, Libertyville; Richard A. Abbott, Westmont; Renee E. Nardone, Chicago, all of Ill., and Edward T. Borish, Mahwah, N.J., assignors to Helene Curtis, Inc., Chicago, Ill.

Division of Ser. No. 819,113, Jan. 10, 1992, Pat. No. 5,260,054. This application Jul. 22, 1993, Ser. No. 96,364
Int. Cl.[6] A61K *7/06, 7/11;* A45D *2/12, 7/04*
U.S. Cl. 424—70.51 21 Claims



1. A method of breaking sulfur to sulfur bonds in human hair to leave the hair weakened so that it can be reconfigured to a predetermined configuration, while minimizing further damage to damaged hair, including contacting the hair for a predetermined amount of time with an aqueous cysteamine reducing agent-containing composition comprising about 7.8% to about 9.0% by weight of a cysteamine; and sufficient alkali such that the composition has a pH of about 7.8 to about 8.8; forming the hair in a desired configuration such that the hair is in contact with the reducing agent-containing composition while formed in the new configuration; and then removing most of the reducing agent-containing composition from the hair.

5,382,427
USE OF IL-4 TO TREAT SOLID TUMORS

Marian L. Plunkett, Edison, and Joseph J. Catino, Lebanon, both of N.J., assignors to Schering-Plough Corporation, Kenilworth, N.J.

PCT No. PCT/US91/06126, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO92/04044, PCT Pub. Date Mar. 19, 1992
Continuation-in-part of Ser. No. 578,968, Sep. 6, 1990, abandoned. This PCT application Sep. 3, 1991, Ser. No. 984,414
Int. Cl.[6] A61K *37/02;* C07K *13/00*
U.S. Cl. 424—85.2 9 Claims

1. A method of treating solid tumors in a mammal afflicted with solid tumors which comprises systemically injecting into said mammal at a site distal from the solid tumors an amount of IL-4 effective for such treating.

5,382,428
METHOD FOR PREPARING A PURIFIED EXTRACTION RESIDUE FRACTION AND ITS USE IN STIMULATING THE IMMUNE RESPONSE

Virginia Livingston-Wheeler, San Diego County, Calif., and John J. Majnarich, King County, Wash., assignors to John J. Mainarich and Virginia Livingston-Wheeler, both of Redmond, Wash.

Continuation of Ser. No. 150,512, Feb. 8, 1988, abandoned, which is a continuation of Ser. No. 935,123, Nov. 26, 1986, abandoned, which is a continuation of Ser. No. 712,468, Mar. 15, 1985, abandoned, which is a continuation of Ser. No. 523,679, Aug. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 255,678, Apr. 20, 1981, Pat. No. 4,410,510, which is a continuation-in-part of Ser. No. 128,919, Mar. 10, 1980, abandoned, which is a continuation of Ser. No. 957,206, Nov. 3, 1978, abandoned. This application Apr. 11, 1989, Ser. No. 336,567
Int. Cl.[6] A61K *37/00, 39/02;* C12N *1/20;* A01N *37/18*
U.S. Cl. 424—234.1 8 Claims

1. A method of preparing an antigenic fraction of a *Progenitor cryptocides* microorganism having all of the essential characteristics of ATCC Deposit Accession No. 31874, isolated from a warm-blooded animal or malignant tumor of a warm-blooded animal, the microorganism having the capacity to synthesize the polypeptide known as "chorionic gonadotropin" in its total form or in its alpha and beta subunits, comprising:
culturing the microorganism in an appropriate culture media,
separating the microorganism from the culture media,
extracting the antigenic fraction of the microorganism, and
recovering the antigenic fraction.

5,382,429
***BACILLUS THURINGIENSIS* PROTEIN TOXIC TO COLEOPTERAN INSECTS**

William P. Donovan, Levittown, Pa.; Mark J. Rupar, Wilmington, Del.; Annette C. Slaney, Hamilton Square, N.J., and Timothy B. Johnson, Langhorne, Pa., assignors to Ecogen Inc., Langhorne, Pa.

Division of Ser. No. 496,568, Mar. 20, 1990, Pat. No. 5,187,091. This application Sep. 24, 1992, Ser. No. 950,352
Int. Cl.[6] C12N *15/00;* A01N *63/00;* C07K *13/00*
U.S. Cl. 424—93.461 7 Claims

1. An isolated coleopteran-toxic protein having the amino acid sequence illustrated in FIG. 1.

2. An insecticide composition comprising an insecticidally effective amount of the protein of claim 1 and an agriculturally acceptable carrier.

5,382,430
METHOD FOR THE STIMULATION OF THE IMMUNE SYSTEM OF AN ANIMAL BY USE OF LIMULUS TEST-POSITIVE PLANT GLYCOLIPID

Gen-Ichiro Soma, 1-10-21, Higashi-Tamagawa Setagaya Ward, Tokyo; Jun Yoshimura; Daisuke Tsukioka, both of Chiba; Den'ichi Mizuno, Okamoto-18, Kamkura City, Kanagawa, and Haruyuki Oshima, Hachioji, all of Japan, assignors to Chiba Flour Milling Co., Ltd., Chiba; Den'ichi Mizuno, Kamakura and Gen-Ichiro Soma, Tokyo, all of Japan

Division of Ser. No. 475,890, Feb. 6, 1990, Pat. No. 5,236,709. This application Dec. 14, 1992, Ser. No. 990,640
Claims priority, application Japan, Feb. 6, 1989, 1-25739; Oct. 2, 1989, 1-255210
Int. Cl.[6] A61K *35/78*
U.S. Cl. 424—195.1 11 Claims

1. A method of stimulating the immune system of an animal in need of such immune system stimulation, comprising administering to said animal an effective amount of a limulus test-positive plant glycolipid wherein the limulus test-positive plant glycolipid has the following properties:
Molecular weight: 8,000 ±1,000 (SDS electrophoresis)
Number of phosphorus: not less than 1 per mol
Number of hexosamine: 6 ±2 per mol
Number of fatty acid moieties: 6 ±2 per mol.

5,382,431
TISSUE PROTECTIVE AND REGENERATIVE COMPOSITIONS

Loren R. Pickart, Bellevue, Wash., assignor to Skin Biology, Inc., Bellevue, Wash.

Filed Sep. 29, 1992, Ser. No. 954,620
Int. Cl.[6] A61K *37/02*
U.S. Cl. 424—401 13 Claims

1. A method for accelerating the healing of topical wounds in a warm-blooded animal which comprises:
administering to the wound a therapeutically effective amount of a composition which comprises a heat stable peptone digest complexed with an ionic transition metal.

5,382,432
COSMETIC METHOD FOR TREATMENT OF SKIN

John P. McCook, Guilford; Alan J. Meyers, Trumbull, and Anthony Vargas, Monroe, all of Conn., assignors to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.

Filed Nov. 15, 1993, Ser. No. 152,151
Int. Cl.[6] A61K *7/48*
U.S. Cl. 424—401 10 Claims

1. A method for improving skin condition with a system whose steps comprise:
(i) applying to the skin separately on a plurality of days a first composition comprising:
from about 0.0001 to 20% of an α-hydroxy carboxylic acid selected from the group consisting of lactic acid, glycolic acid, α-hydroxycaprylic acid and combinations thereof or a β-hyudroxycarboxylic acid which is salicylic acid; and
from about 1 to 99.9% of a first pharmaceutically acceptable carrier;
(ii) applying to the skin, after completion of step (i), a second composition separately on a plurality of further days comprising:
from about 0.0002 to 20% of an α-hydroxy carboxylic acid selected from the group consisting of lactic acid, glycolic acid, α-hydroxycaprylic acid and combinations thereof or a β-hydroxycarboxylic acid which is salicylic acid, the hydroxy carboxylic acid being identical to but at a concentration at least about 10% higher than that employed in step (i); and
from about 1 to 99.9% of a second pharmaceutically acceptable carrier.

5,382,433
PIGMENTED COSMETIC COMPOSITIONS AND METHOD OF MAKING SAME

Harold E. Pahlck, Waldwick, N.J.; Shari R. Martin, Suffern, N.Y., and Michael E. Squires, Mahwah, N.J., assignors to Avon Products, Inc., Suffern, N.Y.

Continuation of Ser. No. 935,646, Aug. 26, 1992, Pat. No. 5,320,835, which is a continuation of Ser. No. 798,274, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 634,932, Dec. 27, 1990, abandoned, which is a continuation of Ser. No. 443,262, Nov. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 426,204, Oct. 25, 1989, abandoned. This application Jan. 21, 1994, Ser. No. 184,962
Int. Cl.[6] A61K *7/027, 7/031*
U.S. Cl. 424—401 13 Claims

1. A cosmetic formulation having a renewable palette of color shades comprising:
a base phase characterized by a color;
a quantity of microcapsules dispersed in said base phase, each said microcapsule containing a colorant which is released into the base phase when said microcapsules are fractured by mechanical action applied to said cosmetic

formulation to produce an intense shade in the color which characterizes said base phase, each said microcapsule having a core comprising up to 70% pigment by weight, and the amount of said colorant being in the range of about 2% to about 60% of said base phase by weight; and

a quantity of colorant entrapping substrate particles dispersed in said base phase, each said colorant entrapping substrate particle having an irregular surface for entrapping said colorant which is released into said base phase when mechanical action is applied to said cosmetic formulation to produce a subtle shade in the color which characterizes said base phase, whereby the combined effect of said intense shade and said subtle shade produces a palette of color shades in said base phase which is renewable by mechanical action applied to said cosmetic formulation.

5,382,434

LOW STEROID DOSE DRY PHARMACEUTICAL PREPARAITON

Pieter de Haan, Oss, and M. Deurloo, 's-Hertogenbosch, both of Netherlands, assignors to Akzo N.V., Arnhem

Continuation of Ser. No. 849,921, Mar. 12, 1992, abandoned. This application Mar. 22, 1994, Ser. No. 216,236

Claims priority, application European Pat. Off., Mar. 12, 1991, 91.200.524

Int. Cl.[6] A61K *9/20, 31/56, 31/585*

U.S. Cl. 424—465 **18 Claims**

1. A pharmaceutical dosage unit consisting essentially of 1 to 100 parts, by weight, of at least one steroidal medicinal agent uniformly distributed throughout 2000 to 20,000 parts, by weight, of an excipient capable of binding said steroidal medicinal agent to an extent greater than 80% and a demixing potential of less than 10% for said steroidal medicinal agent, in the form of tablets, capsules or slugged granulates.

5,382,435

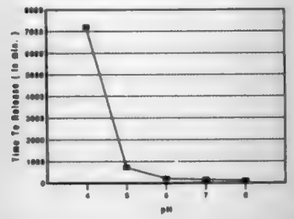
MICROPARTICULATE PHARMACEUTICAL DELIVERY SYSTEM

Richard S. Geary, and Herman W. Schlameus, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Mar. 24, 1993, Ser. No. 36,633

Int. Cl.[6] A61K *9/14, 37/22, 9/20, 9/28*

U.S. Cl. 424—489 **6 Claims**



1. A pharmaceutical composition capable of delivering a pharmaceutical to be absorbed in the Peyer's gland of the small intestine, consisting essentially of a shaped enteric material having distributed therethrough pharmaceutical loaded particles, said particles having a size no greater than about 10 microns in any dimension and being alkali insoluble.

5,382,436

CAFFEINE IN THE TREATMENT OF HERPES SIMPLEX VIRUS INFECTIONS

Michael Potts, Moreton in Marsh, United Kingdom, assignor to Surtech International Limited, United Kingdom

PCT No. PCT/GB90/01819, § 371 Date Jul. 23, 1992, § 102(e) Date Jul. 23, 1992, PCT Pub. No. WO91/07969, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 23, 1990, Ser. No. 849,447

Claims priority, application United Kingdom, Nov. 24, 1989, 8926595

Int. Cl.[6] A61K *31/52*

U.S. Cl. 424—489 **9 Claims**

1. A pharmaceutical composition for topical use in the treatment of infections with Herpes virus, comprising as active ingredient an effective concentration of caffeine in the range from 8–12% and a pharmaceutically acceptable excipient suitable for topical administration, wherein said caffeine has a particle size distribution in which at least 90% of the particles have a mass median diameter (MMD) less than 9 μm in size.

5,382,437

FROZEN LIQUIFIED GAS COMPOSITION AND METHOD FOR ORAL ADMINISTRATION OF DRUGS, BIOLOGICALS, NUTRIENTS AND FOODSTUFFS

Bernard Ecanow, Wilmette, Ill., assignor to Hunter Research Corporation, Wilmette, Ill.

Filed Oct. 25, 1993, Ser. No. 142,714

Int. Cl.[6] A61K *9/20, 9/14*

U.S. Cl. 424—499 **12 Claims**

1. A method of manufacturing a porous carrier material having sufficient rigidity for carrying and administration of an active material selected from the group consisting of drugs, nutrients, vitamins, biologically-active compounds, foodstuffs, and combinations thereof comprising the steps of:

(a) freezing a liquified ammonia solution comprising liquid ammonia, a liquid ammonia-soluble gel or foam material and a rigidifying agent for said gel or foam material, wherein the rigidifying agent is selected from the group consisting of a monosaccharide, a polysaccharide, and combinations thereof; and

(b) deammoniating the frozen material from step (a) by causing material transfer of ammonia from the frozen state to the gas state.

5,382,438

PREPARATION OF YOGURT WITH LAC(−) L. BULGARICUS

Herbert Hottinger, Blonay; Olivier Mignot, Vevey, and Beat Mollet, Mollie-Margot, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed May 21, 1992, Ser. No. 887,351

Claims priority, application European Pat. Off., Jun. 14, 1991, 91109807

Int. Cl.[6] A23C *9/123*

U.S. Cl. 426—43 **19 Claims**

1. A process for preparing a yogurt comprising inoculating and fermenting a milk with a strain of Streptococcus thermophilus and a lac(−) mutant strain of Lactobacillus bulgaricus, wherein the DNA of the mutant strain has a deletion of at least part of the β-galactosidase gene.

5,382,439

PRODUCT AND PROCESS OF IMPROVING THE STABILITY OF VITAMIN D

Jerry L. Hill, Johnstown; Benjamin D. Travis, Westerville; Mohamed I. Mahmoud, Columbus; James R. Brooks, West Worthington; Timothy W. Scheaz, Powell, and Normanella T. Dewille, Upper Arlington, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed May 14, 1993, Ser. No. 61,885

Int. Cl.[6] A23L *1/303, 1/304*

U.S. Cl. 426—73 **5 Claims**

1. A method for improving the stability of Vitamin D in a liquid nutritional product for infants which contains a nitrogen source selected from the group consisting of hydrolyzed proteins and free amino acids, said method comprising the steps of:

(a) adding an emulsifier to said liquid nutritional product, and subjecting the liquid nutritional product to a preliminary heat treatment;

(b) adding Vitamin C to said liquid nutritional product such that the concentration of Vitamin C is at least 300 mg/l during the shelf-life of said liquid nutritional product; and

(c) adding cystine to said liquid nutritional product.

5,382,440

FLAKY PIE SHELLS THAT MAINTAIN STRENGTH AFTER FILLING

Joanne Sullivan, Wyckoff, N.J., assignor to Nabisco, Inc., Parsippany, N.J.

Filed Dec. 2, 1992, Ser. No. 984,407

The portion of the term of this patent subsequent to Jan. 3, 2012, has been disclaimed.

Int. Cl.[6] A23L *1/10*

U.S. Cl. 426—138 **15 Claims**

1. In a pie shell having a fat component, an improvement wherein at least 25% of the fat component is replaced with triglycerides both bearing long, saturated residues derived from C_{16} to C_{22} fatty acids, and short acid residues derived from the group consisting of acetic acid, propionic acid, butyric acid, and mixtures of these in amounts sufficient to increase the cohesiveness and integrity of the shell when filled with a moist filling such that pie pieces made with the shells can be lifted without breaking apart.

5,382,441

METHOD OF PROCESSING FOOD UTILIZING INFRARED RADIATION

Ronald R. Lentz, Wayzata; Peter S. Peabeck, Brooklyn Center; George R. Anderson, Minneapolis; Jimmy DeMars, Hugo, and Thomas R. Peck, Vadnais Heights, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Apr. 16, 1993, Ser. No. 49,265

Int. Cl.[6] A21D *6/00*

U.S. Cl. 426—241 **13 Claims**

1. A method of selectively heating food, comprising:

selecting a filtered source of radiation suitable for deep heating food, wherein at least 60% of the total power is delivered in a selected wavelength band capable of deep heating; and

exposing the food to the radiation for a time sufficient to heat an interior of the food to a selected temperature.

5,382,442

MODIFIED FAT BLENDS

Daniel Perlman, Arlington, and Kenneth C. Hayes, Wellesley, both of Mass., assignors to Brandeis University, Waltham, Mass.

Filed May 15, 1992, Ser. No. 883,642

Int. Cl.[6] A23D *9/00*

U.S. Cl. 426—607 **7 Claims**

1. An oxidation-resistant fat-oil blend which comprises

(a) from one to ten parts by weight cholesterol-reduced animal fat having myristic acid, wherein the cholesterol-reduced animal fat comprises less than 40 mg cholesterol per 100 g animal fat; and

(b) one part by weight vegetable oil having linoleic acid;

wherein said fat-oil blend provides oxidation resistance and includes between about 2 parts and about 9 parts linoleic acid per 1 part myristic acid.

5,382,443

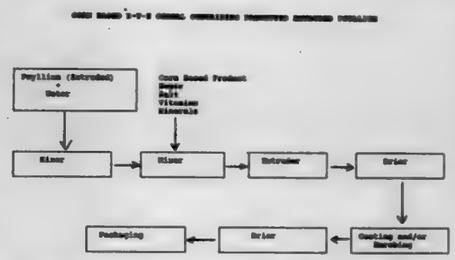
READY-TO-EAT CEREALS CONTAINING EXTRUDED PRE-WETTED PSYLLIUM

James G. Kincaid, and Michael W. Talbot, both of Battle Creek, Mich., assignors to Kellogg Company, Battle Creek, Mich.

Filed Sep. 17, 1993, Ser. No. 123,352

Int. Cl.[6] A23L *1/0526, 1/164*

U.S. Cl. 426—620 **21 Claims**



1. Ready-to-eat (R-T-E) cereal products comprising:

(i) at least one cereal ingredient, and

(ii) at least 2% by dry weight of extruded, prewetted psyllium.

5,382,444

PROCESS FOR PREPARING REDUCED FAT MEAT

Paul G. Roehrig, New Glarus; Henry J. Overkamp, and Paul G. Morin, both of Madison, all of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Continuation of Ser. No. 838,121, Feb. 19, 1992, abandoned. This application Oct. 1, 1993, Ser. No. 130,347

Int. Cl.[6] A23L *1/317*

U.S. Cl. 426—646 **27 Claims**

1. A process for providing reduced fat meat having a fat level of about 10 percent by weight or less and a functionality of at least 4, comprising the steps of:

providing a supply of comminuted meat having a fat content between about 20% and about 60% by weight, based on the total weight of the comminuted meat;

heating said comminuted meat supply on a continuous-flow basis and in the absence of comminution to a temperature adequate to generally melt fat within the supply of comminuted meat and low enough to avoid any significant denaturation of protein within the comminuted meat supply in order to provide a continuous flow of heated substantially undenatured comminuted meat, said heated comminuted meat temperature being between about 100° and about 115° F.;

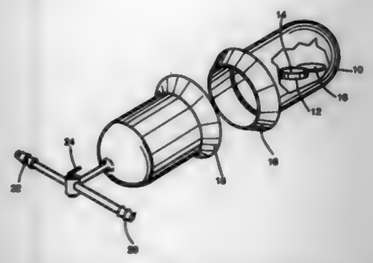
passing said continuous flow of said heated comminuted meat at said temperature and in the substantial absence of interruption of said continuous flow and in the absence of comminution into a centrifuge to subject said continuous flow of said heated comminuted meat to a gravitational force sufficient to reduce the fat content of the comminuted meat to a target reduced fat percentage, and separating said flow of heated comminuted meat into a generally liquid phase containing substantially all of the fat content of the supply of heated comminuted meat and into a lean meat phase which is substantially undenatured and has a functionality of at least 4, said lean meat phase being at said target reduced fat percentage which is about 10

percent by weight or less, based on the total weight of the lean meat phase;
collecting the lean meat phase as a flow of reduced fat meat from the centrifuge; and
collecting the generally liquid phase as a high fat byproduct.

5,382,445
MECHANICALLY COMPACTED FABRICS FOR ORTHOPEDIC CASTING TAPES
Rafael M. Yasis, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 25, 1993, Ser. No. 8,161
Int. Cl.[6] A61L *15/12*
U.S. Cl. 427—2.31 **15 Claims**

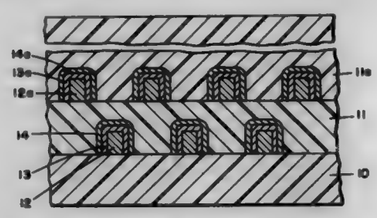
1. A method of making an orthopedic casting bandage, comprising the steps of:
treating a fiberglass fabric to a mechanical compaction process by knitting under tension a fiberglass yarn to form a fabric having adjacent rows of contacting loops, and then mechanically overlapping said adjacent rows of loops thereby compacting said fabric,
heat setting said compacted fabric; and then coating said heat set fabric with a curable liquid resin.

5,382,446
SURFACE TREATMENT PROCESS FOR LIQUID CRYSTAL CELL SUBSTRATES
Willis H. Smith, Jr., Newbury Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed May 19, 1993, Ser. No. 64,601
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—126.3 **13 Claims**



1. A process for preparing a treated substrate to produce alignment of a liquid crystal on a surface of said substrate, said surface provided with an electrically conducting layer, comprising the steps of:
(a) depositing a layer of silica on said substrate from a source of silica;
(b) treating the silica-coated substrate with an alcohol vapor by
(1) placing said silica-coated substrate in an enclosed, non-electrically conducting vessel, together with a source for generating said alcohol vapor, said source consisting essentially of an alcohol,
(2) placing said enclosed vessel in a microwave oven, and
(3) energizing said microwave oven so as to heat at least said substrate in said microwave oven for a time ranging from about 1 to 5 minutes to thereby treat said silica-coated substrate with said alcohol vapor; and
(c) covering said treated substrate with a layer of liquid crystal.

5,382,447
PROCESS FOR FABRICATING IMPROVED MULTILAYER INTERCONNECT SYSTEMS
Suryanarayana Kaja, Hopewell Junction; Eugene J. O'Sullivan, Nyack, and Alejandro G. Schrott, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 2, 1993, Ser. No. 161,764
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—126.6 **16 Claims**



1. A process for fabricating a multilayer interconnect package comprising conductor circuit layers separated by and adhered to polyimide dielectric layers comprising:
a) forming a circuit pattern of conductive metal lines on a substrate;
b) electrolessly depositing a capping metal layer on the surface of said pattern of conductive metal lines, said capping metal characterized as being essentially chemically inert when in contact with polyimide precursor;
c) subjecting said capping metal layer to oxidative conditions to form a layer of capping metal oxide adhered to the surface of said capping layer;
d) forming a uniform coating of polyimide precursor material on a planar surface of said substrate to overcoat said substrate and said circuit pattern, thereby forming a laminar structure; and
e) heating said laminar structure to cure said polyimide precursor material, thereby forming a polyimide surface.

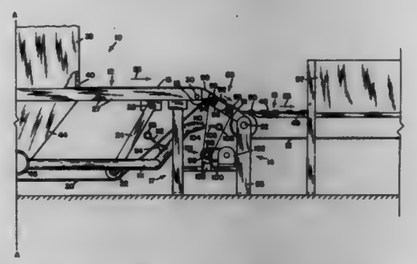
5,382,448
METHOD OF MANUFACTURING OPTICAL TRANSMISSION MEDIUM FROM SYNTHETIC RESIN
Yasuhiro Koike, 1-31-30, Ohokayama, Meguro-ku, Tokyo 152, and Eisuke Nihei, Kawasaki, both of Japan, assignors to Yasuhiro Koike and Nippon Petrochemical Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 839,775, Apr. 16, 1992, abandoned.
This application Mar. 21, 1994, Ser. No. 215,386
Claims priority, application Japan, Aug. 16, 1990, 2-216360
Int. Cl.[6] B05D *5/06*
U.S. Cl. 427—163.2 **4 Claims**

1. A method of manufacturing a multimode optical transmission medium formed from a synthetic resin having a distribution of refractive index varying continuously in a fixed direction comprising feeding a monomeric liquid selected from the group consisting of a monofunctional monomer and a mixture of two or more monofunctional monomers into a vessel formed of a transparent thermoplastic polymer, said monomeric liquid characterized by it being homopolymerizable into a polymer having a refractive index which differs from said transparent thermoplastic polymer by at least 0.005 and by its ability to dissolve said transparent thermoplastic polymer; radically polymerizing said monomeric liquid whereby a gel layer is formed adjacent to the inside wall of said vessel; and continuing said polymerization such that said gel layer is shifted from said inside wall of said vessel to the inner portion of said vessel whereby the concentration of said transparent thermoplastic polymer component in the synthetic resin is lowered in the direction of movement of the gel.

5,382,449
METHOD OF USING VOLCANIC ASH TO MAINTAIN SEPARATION BETWEEN ASPHALT ROOFING SHINGLES
Kenneth B. Hedges, 1207 N. Hersey, Beloit, Kans. 67420
Filed Oct. 27, 1993, Ser. No. 143,923
Int. Cl.[6] B05D *1/12*
U.S. Cl. 427—187 **9 Claims**

6. An improvement in the method of production of asphalt roofing shingles where a core material is coated with asphalt and a first surface is covered with colored granules and a second surface is sprayed with a separating agent, the improvement comprising:
selecting volcanic ash as said separating agent, sizing said volcanic ash to provide a first fine particulate component and a second remainder separating agent component, and spraying said second remainder separating agent component onto said second surface.

5,382,450
METHOD FOR POWDER SPRAY COATING AN ARTICLE USING A CONVEYOR HAVING A WIPING SURFACE
Richard Salisbury, Laguna Niguel, Calif., assignor to Blodgett & Blodgett, P.C., Worcester, Mass.
Division of Ser. No. 839,498, Feb. 20, 1992, Pat. No. 5,264,037, which is a continuation of Ser. No. 486,513, Feb. 28, 1990, Pat. No. 5,000,985. This application Nov. 23, 1993, Ser. No. 156,432
The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.
Int. Cl.[6] B05D *3/02, 1/06*
U.S. Cl. 427—195 **6 Claims**



1. A method of coating an article which has at least one flat surface, said method comprising:
(a) positioning the article on a foraminous first conveyor which has an upper substantially horizontal surface so that the flat surface of said article rests on said upper surface,
(b) spraying the article with uncured coating particles while the article is being conveyed on said conveyor to cover exposed surfaces of said article with said particles,
(c) positioning said article so that said flat surface rests on the upper surface of a second conveyor in which said upper surface is a wiping surface,
(d) retaining said article so that said upper wiping surface move relative to said article and removes all uncured coating particles from the flat surface of said article,
(e) curing the coating particles on said article to form a coating on all surfaces of said article except for said flat surface,
(f) positioning said article on a foraminous conveyor which has an upper substantially horizontal surface of said conveyor with the flat surface of said article out of contact with said upper surface,
(g) spraying the article with said uncured coating particles so that said flat surface is completely covered with said particles, and
(h) curing the uncured coating particles on said flat surface so that said article is coated completely.

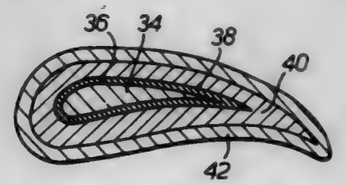
5,382,451
METHOD FOR COATING ADHESIVE POLYMERS
Richard H. Johnson, Washington; Stephen E. Krampe, Maplewood, and Chung I. Young, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.
Filed Apr. 6, 1992, Ser. No. 863,857
Int. Cl.[6] B05D *5/10*
U.S. Cl. 427—208.4 **48 Claims**

1. A method of coating an adhesive polymer comprising hot-melt coating an adhesive composition of a hydrophobic adhesive polymer and a transient polar processing aid from an orifice of a coating die onto a substrate, wherein the transient polar processing aid comprises at least 0.5 percent by weight above the weight of residual water present in the hydrophobic adhesive polymer equilibrated at ambient conditions, and wherein the composition is hot-melt coated at a temperature below the boiling point of the transient polar processing aid at atmospheric pressure.

5,382,452
LUMINESCENT MATERIALS PREPARED BY COATING LUMINESCENT COMPOSITIONS ONTO SUBSTRATE PARTICLES
Salvatore A. Bruno, and Donald K. Swanson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 995,647, Dec. 18, 1992, abandoned.
This application Feb. 25, 1994, Ser. No. 202,867
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—215 **10 Claims**

1. A process for preparing a luminescent composition comprising the steps of:
(a) preparing an aqueous or aqueous organic slurry of particles comprising one or more inert particles,
(b) adding a stable solution comprising at least one metal chelate to the slurry,
(c) raising the pH of the slurry to above about 9,
(d) heating the slurry to a temperature of at least about 50° C. for a time sufficient to deposit at least one hydrous metal oxide onto at least a portion of the surface of said particles,
(e) recovering the particles, and;
(f) calcining the particles at a temperature sufficient to activate said hydrous metal oxide upon the particles thereby obtaining the luminescent composition.

5,382,453
METHOD OF MANUFACTURING A HOLLOW SILICON CARBIDE FIBER REINFORCED SILICON CARBIDE MATRIX COMPONENT
Stephen Mason, Warwickshire, England, assignor to Rolls-Royce plc, London, England
Filed Aug. 31, 1993, Ser. No. 114,340
Claims priority, application United Kingdom, Sep. 2, 1992, 9218578
Int. Cl.[6] C23C *16/00*; **B05D** *3/02*
U.S. Cl. 427—249 **13 Claims**



1. A method of manufacturing a hollow silicon carbide fiber reinforced silicon carbide matrix component comprising the steps of:
(a) arranging silicon carbide fibers in a predetermined pat-

tern and in a predetermined shape around a silicon carbide coated graphite member to form a preform,
(b) vapor depositing silicon carbide onto the silicon carbide fibers of the preform to form a silicon carbide fiber reinforced silicon carbide matrix component having an exterior surface,
(c) coating the exterior surface of the silicon carbide fiber reinforced silicon carbide matrix component with glass,
(d) heating the glass coated silicon carbide fiber reinforced silicon carbide matrix component in oxygen to burn out the graphite member to form a hollow glass coated silicon carbide fiber reinforced silicon carbide matrix component.

5,382,454

THERMOPLASTIC MIXTURE COMPRISING AN AGENT TO IMPROVE THE LACQUER BONDING

Robertus E. de Jong, Paulusberg, and Jacobus J. C. van der Kort, Florastraat, both of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 682,769, Apr. 9, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 975,151

Claims priority, application Netherlands, Apr. 10, 1990, 9000838

Int. Cl.[6] B05D *1/02, 5/10*

U.S. Cl. 427—393.5 **3 Claims**

1. A method for improving the bonding of an aqueous lacquer to the surface of a molded or extruded article comprising the steps of
1. Blending together:
a) polyalkylene phthalate ester
b) copolyether ester
c) an impact strength enhancing agent, and
d) an effective amount of a polyalkylene glycol polymer or copolymer
(2) forming an article
(3) coating said article with an aqueous lacquer and
(4) drying the lacquer coating.

5,382,455

METHOD AND APPARATUS FOR IMPARTING A SLIDING CAPACITY TO A WIRE

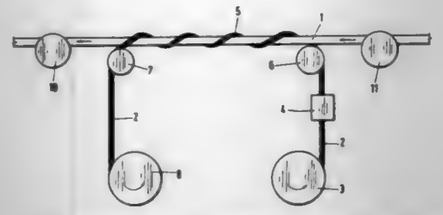
Gerhard Boockmann, Sonnenstrasse 14, D-8741 Niederlauer-Unterebersbach, Germany, assignor to Gerhard Boockmann, Niederlauer-Unterebersbach, Germany

Continuation of Ser. No. 831,502, Feb. 5, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 106,142

Claims priority, application Germany, Feb. 18, 1991, 4104897; Oct. 15, 1991, 4134070

Int. Cl.[6] B05D *1/28*

U.S. Cl. 427—429 **17 Claims**



1. A method for imparting a sliding capacity to a wire comprising the steps of:
providing a strand of material coated with a lubricant;
guiding said wire through at least one loop of said strand of material;
advancing said strand of material along a path at a first speed;
advancing said wire through said loop at a second speed which is greater than said first speed such that said wire contacts said loop and receives a substantially continuous coating of said lubricant over its entire outer surface, wherein between about 2 mg/m^2 and 1000 mg/m^2 of lubricant is applied to said wire.

5,382,456

PRODUCTION OF CERAMIC FILAMENTS

Michael G. Hocking, and Paulette S. Sidky, both of Guildford, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom and Northern Ireland, United Kingdom

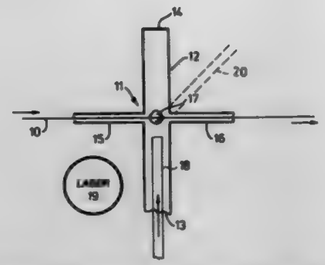
PCT No. PCT/GB91/01202, § 371 Date Feb. 17, 1993, § 102(e) Date Feb. 17, 1993, PCT Pub. No. WO92/01649, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 18, 1991, Ser. No. 971,825

Claims priority, application United Kingdom, Jul. 19, 1990, 9015872

Int. Cl.[6] B05D *1/18*

U.S. Cl. 427—434.6 **15 Claims**



1. Apparatus for producing refractory material filaments (10) comprising:
an enclosure (11);
means for heating constituents of the refractory material;
non-contacting means for supporting a drop (17) of molten material, comprising a first constituent of the refractory material, within the enclosure, said non-contacting means comprises electromagnetic levitation; and
means for transporting a filament comprising a second constituent of the refractory material, through the drop of molten material.

5,382,457

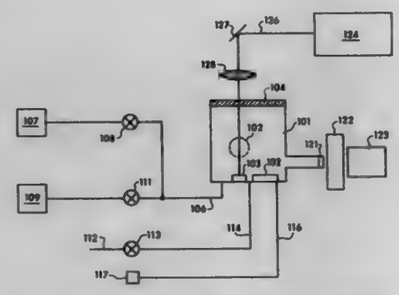
NEAR-RESONANT LASER SPUTTERING METHOD

Robert D. Coombe, Lakewood, Colo., assignor to Colorado Seminary, Denver, Colo.

Filed Sep. 30, 1993, Ser. No. 130,096

Int. Cl.[6] B05D *3/06, 5/06*

U.S. Cl. 427—596 **13 Claims**



1. A laser sputtering method comprising the steps of:

providing a vacuum chamber having a reagent gas inlet and a transparent window;
providing a substrate inside the vacuum chamber and having a surface;
providing a sputter target comprising a first material composition, wherein the first material composition includes an element in Group II of the periodic table and wherein the sputter target is located inside the vacuum chamber and has a surface in proximity with the substrate;
providing a laser outside of the vacuum chamber, wherein the laser produces a laser beam having a wavelength;
supplying a reagent gas comprising a second material to the vacuum chamber via the reagent gas inlet, wherein the second material comprises an element in Group VIA of the periodic table;
directing the laser beam through the transparent window onto the target surface thereby removing atoms from the target surface;
illuminating the removed atoms with the laser beam to excite electrons having a ground state energy in the removed atom into a metastable energy state; and
causing a chemical reaction to occur between the excited removed atoms and the reagent gas to form a compound of the first material and the second material, wherein the compound deposits onto the substrate as a thin film.

5,382,458

METHOD OF MAKING CERAMIC COMPOSITE ARTICLES AND ARTICLES MADE THEREBY

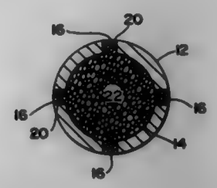
Ratnesh K. Dwivedi, Wilmington, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 823,727, Jan. 21, 1992, Pat. No. 5,254,365, which is a continuation of Ser. No. 429,210, Oct. 30, 1989, Pat. No. 5,082,700, which is a continuation of Ser. No. 84,550, Aug. 10, 1987, Pat. No. 4,886,766. This application Oct. 18, 1993, Ser. No. 138,314

The portion of the term of this patent subsequent to Dec. 12, 2006, has been disclaimed.

Int. Cl.[6] F16L *9/10*

U.S. Cl. 428—34.4 **20 Claims**



1. A generally unitary self-supporting ceramic composite body comprising a plurality of axially aligned spaced apart cylindrical walls having a bounded cross-section forming a central bore and at least one longitudinal channel between said cylindrical walls, and means for supporting said cylindrical walls in a spaced relationship, said support means being located between and connecting said cylindrical walls, said support means comprising a ceramic material, said cylindrical walls comprising a polycrystalline ceramic matrix incorporating at least one filler material.

5,382,459

GLASS FIBER REINFORCED RESIN COMPOSITION AND WHEEL CAP FORMED OF SAME

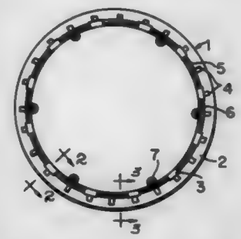
Junji Takeuchi, Inazawa, and Junji Koizumi, Nagoya, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 620,469, Nov. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 598,885, Oct. 19, 1990, abandoned. This application Aug. 27, 1993, Ser. No. 112,304

Claims priority, application Japan, Oct. 20, 1989, 1-274528

Int. Cl.[6] B29D *22/00*; C08F *10/02*; C08K *3/40*; C08G *63/48*

U.S. Cl. 428—36.4 **9 Claims**



1. A glass fiber reinforced resin composition consisting essentially of:
(1) 45 to 83% by weight of crystalline ethylene-propylene block copolymer exhibiting a melt flow rate of 20 to 100 grams/10 minutes, comprising (i) an ethylene component in an amount of 3 to 12% by weight, and (ii) components having low molecular weights falling within the range of 1,000 to 50,000 in weight average molecular weight and soluble in chloroform at room temperature, in an amount of 0.3 to 3.5% by weight;
(2) 2 to 20% by weight of a polypropylene resin modified with an unsaturated carboxylic acid derivative; and
(3) 15 to 35% by weight of glass fiber.

5,382,460

OPTICAL RECORDING DISK AND PRODUCTION PROCESS THEREFOR

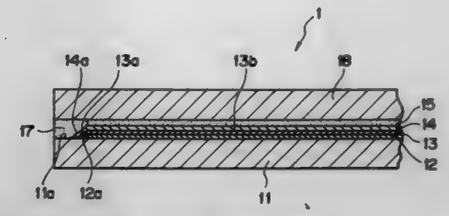
Nobuaki Onagi; Shinichiro Suzuki, and Takamasa Yoshikawa, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 6, 1991, Ser. No. 788,421

Claims priority, application Japan, May 16, 1991, 3-111776

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—64 **5 Claims**



1. An optical recording disk comprising:
a light transmissive substrate,
a recording film disposed on the substrate directly or through an intermediate layer, and
a protection film disposed on the recording film,
wherein an entire upper flat surface and a side surface of the recording film are integrally covered with the dielectric material protection film and said dielectric material pro-

tection film comprises a material selected from the group consisting of ZnS, SiN_x, AlN, AlON, SiO, SiO_2, and CaF_2.

5,382,461
EXTRUSION LAMINATE OF INCREMENTALLY STRETCHED NONWOVEN FIBROUS WEB AND THERMOPLASTIC FILM AND METHOD

Pai-Chuan Wu, Cincinnati, Ohio, assignor to Clopay Plastic Products Company, Inc., Cincinnati, Ohio

Filed Mar. 12, 1993, Ser. No. 32,355
Int. Cl.[6] B32B *3/26, 5/02, 31/30*
U.S. Cl. 428—86 **16 Claims**



1. An extrusion laminate of a nonwoven fibrous web and a thermoplastic film comprising

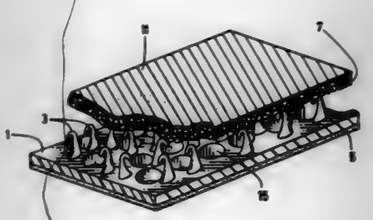
a nonwoven fibrous web having a multitude of fiber ends extending outwardly from both web surfaces formed by incremental stretching of the fibrous web along lines substantially uniformly across the web and throughout its depth, and

a thermoplastic film extrusion laminated to one surface of said web with said fiber ends extending into said film for bonding said web to said film without penetrating through said film, the other surface of said web having said fiber ends extending outwardly therefrom to provide a soft fibrous texture to the laminate.

5,382,462
CARPET TAPE

Joseph R. Pacione, Thornhill, Canada, assignor to Tac-Fast Systems SA, Switzerland

Filed Jul. 28, 1993, Ser. No. 102,994
Int. Cl.[6] B32B *3/10, 7/12*
U.S. Cl. 428—95 **5 Claims**



1. A plastic carpet tape for securing a wall-to-wall carpet having loop means on an underside thereof across an area of a floor, the tape comprising:

a sheet having hook means projecting from a first side for attachment to the loop means;

adhesive on a second opposite side of the sheet for attachment to the floor; and

a solid covering for the hooks; and wherein,

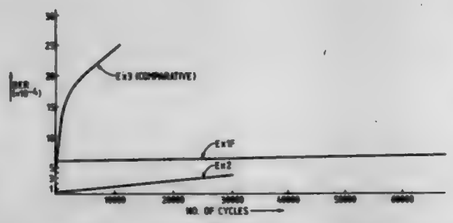
there are holes through the tape in non-contiguous areas thereof such that the tape relies on adherence to the floor for dimensional stability when installed; and

the solid covering adds dimensional stability to the tape to permit installation of the tape and to prevent premature engagement of the hooks of an installed tape with the loops of an overlaid carpet.

5,382,463
DATA STORAGE MEDIA

Kelvin P. Adkins, Essex, and Duncan E. Riddle, Suffolk, both of England, assignors to Imperial Chemical Industries plc, London, United Kingdom

Filed Jun. 11, 1992, Ser. No. 897,144
Claims priority, application United Kingdom, Jun. 11, 1991, 9112505; Jun. 11, 1991, 9112514; Jun. 11, 1991, 9112515; Jan. 13, 1992, 9200634
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—141 **4 Claims**

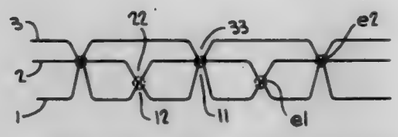


1. An optical tape recording medium comprising a substrate in the form of a tape, a layer of optical recording material applied to one face of the tape, an optional overcoat layer overlying the recording layer, and a backcoat layer applied to the opposite face of the tape whereby the backcoat and recording layer, or overcoat layer if present, contact one another when the tape is in spooled form, the backcoat layer and the overcoat layer, if present, comprising organic polymeric material substantially free of fillers, at least the backcoat layer having a surface texture with an average roughness Ra ranging from 0.1 to 2 microns imparted thereto substantially entirely by the morphology of the polymeric material such that the static coefficient of friction between the backcoat layer and the recording layer, or thee overcoat layer if present, is between 1.2 and 10 and the bit error rate (BER) of the recording layer does not exceed 8×10^{-4} after subjecting the recording tape to 10^3 winding passes.

5,382,464
MULTI-PLY EMBOSSED PAPER AND MANUFACTURING METHOD AND APPARATUS

Remy Ruppel, Durrenentzen; Pierre Laurent, Colmar, and Joel Huegler, Urschenheim, all of France, assignors to Kayserberg, S.A., Kayserberg, France

Filed Mar. 31, 1993, Ser. No. 40,614
Claims priority, application France, Mar. 31, 1992, 92/03903
Int. Cl.[6] B32B *3/00;* **B31F** *1/12*
U.S. Cl. 428—172 **12 Claims**



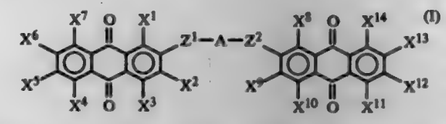
1. A multi-ply composite comprising a first embossed ply having bosses of two differing depths wherein bosses having a greater depth alternate with bosses having a shallower depth in a repeating pattern, and a second embossed ply having bosses of a uniform depth, wherein the bosses having a shallower depth of said first ply are positioned and bonded in a tip-to-tip relation with the bosses in the second embossed ply, and the bosses having a greater depth in said first ply nest between two bosses formed in the second ply.

5,382,465
ANTHRAQUINONIC COLORANT AND POLARIZING FILM CONTAINING THE COLORANT

Tsutami Misawa; Hisato Itoh; Tsutomu Nishizawa, all of Yokohama; Masami Nakano, and Hiroyuki Katayama, both of Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

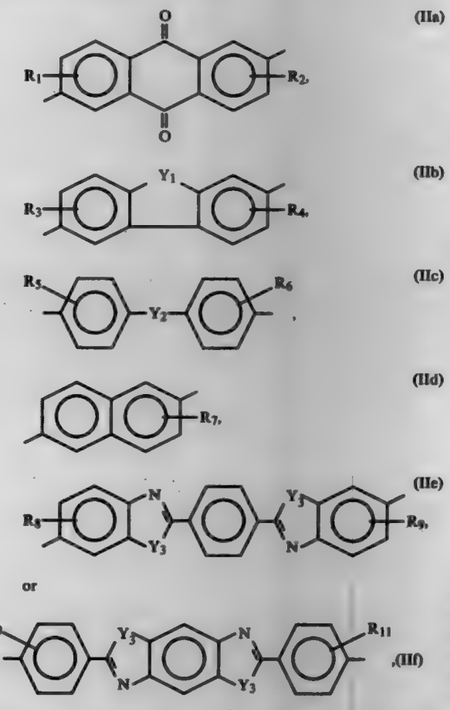
Division of Ser. No. 905,505, Jun. 26, 1992, Pat. No. 5,252,769, which is a continuation of Ser. No. 635,427, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 221,216, Jul. 19, 1988, abandoned. This application May 18, 1993, Ser. No. 62,227
Claims priority, application Japan, Jul. 22, 1987, 62-181253
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—195 **2 Claims**

1. A polarising film comprising a hydrophobic polymer, as a film base, and an anthraquinonic colorant represented by formula (1):



(I)

wherein X' is a hydroxyl group, an amino group or a lower alkylamino group; X^2 to X^{14} are each independently a hydrogen atom, a halogen atom, a hydroxyl group, an amino group or a lower alkylamino group; Z^1 and Z^2 are each independently —N=CH—, —CH=CH— or —COO—; and A is an aromatic divalent group shown as follows:



(IIa) (IIb) (IIc) (IId) (IIe)

or

(III)

wherein R_1 to R_{11} are independently a hydrogen atom, a halogen atom, a methyl group, a hydroxyl group or a methoxy group, Y_1 is —CO— or —O—, Y_2 is —NHCO—, —O—, —S—, —SO_2— or —CO—, and Y_3 is —O— or —S—.

5,382,466
WARP KNITTED FABRIC CONTAINING INDIVIDUAL WALES COMPRISING LOOPS FORMED SOLELY OF ELASTIC YARNS AND LOOPS FORMED SOLELY OF INELASTIC YARNS WITHIN THE SAME WALE

Philip Ingham, Hebden Bridge, United Kingdom, assignor to Smith & Nephew plc, United Kingdom

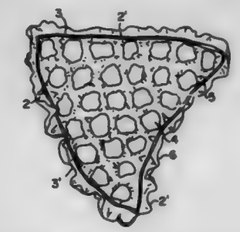
Division of Ser. No. 663,875, Mar. 6, 1991, Pat. No. 5,256,134. This application Aug. 3, 1993, Ser. No. 101,483
Claims priority, application United Kingdom, Sep. 9, 1988, 8821223; Jan. 10, 1989, 8900437
Int. Cl.[6] A61F *5/04;* **D04B** *11/04, 21/18, 11/12*
U.S. Cl. 428—219 **10 Claims**

1. A warp knitted fabric suitable for use as a substrate in a resin coated orthopaedic splinting bandage which contains wales which are knitted from both elastic and inelastic yarns, wherein the fabric contains individual wales comprising a repeating pattern of loops knitted from an elastic yarn and an inelastic yarn, with the elastic or inelastic yarn mislapping when not knitted to form the loops, and wherein individual wales within the fabric contain loops knitted solely from inelastic yarns and loops knitted solely from elastic yarns within the same wale but in different courses.

5,382,467
RESILIENT BODY AND A METHOD FOR ITS MANUFACTURE

Urban Widlund, Mölnlycke, and Roy Haasson, Mölndal, all of Sweden, assignors to Molnlycke AB, Goteborg, Sweden

PCT No. PCT/SE90/00860, § 371 Date Jun. 22, 1992, § 102(e) Date Jun. 22, 1992, PCT Pub. No. WO91/09581, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 20, 1990, Ser. No. 862,531
Claims priority, application Sweden, Dec. 21, 1989, 8904314-5
Int. Cl.[6] A61F *13/15*
U.S. Cl. 428—284 **10 Claims**



1. A resilient body for use in diapers and incontinence guards comprising: two layers (1, 6) of flexible material, of which at least one layer is elasticated, material bodies (4) arranged in a given pattern between the layers (1, 6) and attached mutually spaced from one another in a stretched state of said at least one elasticated layer; said layers being mutually joined at parts located between the bodies; and said bodies having an intrinsic stiffness such that said bodies will substantially retain their shape when said at least one elasticated layer contracts from a stretched state to at least a substantially relaxed state.

5,382,468

BIODEGRADABLE MAGNETIC MICROCLUSTERS AND METHODS FOR MAKING THEM

Mark S. Chagnon, Pelham, N.H.; John R. Ferris, Newburyport, Mass.; Barry L. Flore, Auburn, Ala.; Michelle J. Carter, Derry, and Tracy J. Hamilton, Hudson, both of N.H., assignors to Molecular Bioquest, Inc., Atkinson, N.H.

Division of Ser. No. 806,478, Dec. 13, 1991, Pat. No. 5,225,282. This application Dec. 22, 1992, Ser. No. 995,070

Int. Cl.[6] B32B *27/02*

U.S. Cl. 428—328 **3 Claims**

1. A biodegradable magnetic microcluster which comprises: a cluster of metal or metal oxide particles encapsulated within a macromolecular species, said particles having an individual crystal diameter of 70 Angstroms or less characterized in that said particles are non-magnetic in the unclustered state and a sufficient number of particles are encapsulated within said macromolecular species to provide a magnetic microcluster characterized in that the magnetic microcluster is about 100 Angstroms to 2 microns in size.

5,382,469

CERAMIC-TITANIUM NITRIDE ELECTROSTATIC CHUCK

Yoshihiro Kubota; Makoto Kawai; Shinji Kojima, and Ken-ichi Arai, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1993, Ser. No. 72,233

Claims priority, application Japan, Jun. 26, 1992, 4-193020

Int. Cl.[6] B32B *18/00*

U.S. Cl. 428—332 **3 Claims**

1. A ceramic electrostatic chuck which comprises:

two insulating layers made from a ceramic material and an electrode layer made from a metal and integrally sandwiched between the insulating layers;

the ceramic material consisting of a mixture of a resistive ceramic material having a volume resistivity of at least 1×10^{14} ohm.cm at 20° C. and means to provide the ceramic material of the insulating layers with a volume resistivity in the range from 1×10^{8} to 1×10^{13} ohm.cm at 20° C., said means being titanium nitride, the amount of titanium nitride not exceeding 5% by weight based on the amount of the resistive ceramic material.

5,382,470

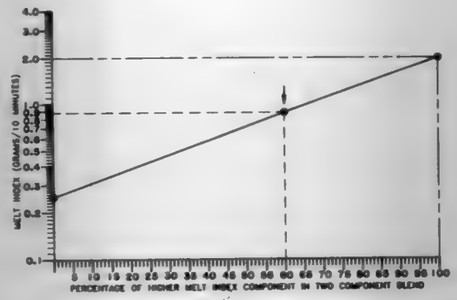
EVOH OXYGEN BARRIER STRETCHED MULTILAYER FILM

Stephen J. Vicik, Darien, Ill., assignor to Viskase Corporation, Chicago, Ill.

Filed Apr. 9, 1993, Ser. No. 44,669

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—334 **20 Claims**



1. A biaxially stretched oriented heat shrinkable multilayer film prepared by the double bubble process having at least five layers comprising:

a) an oxygen barrier core layer comprising a polymer blend of between about 70 and about 85 wt. % ethylene vinyl alcohol (EVOH) and between about 15 and about 30 wt. % nylon 6,66 copolymer, said EVOH having a melting point of between about 162° C. and about 178° C. and comprising between about 36 and about 44 wt. % ethylene, and said polymer blend having a relatively high average melting point, said core layer having a thickness of between about 0.05 and about 0.1 mil and providing an oxygen barrier such that the oxygen permeability through the film is below about 35 cc./m^2/24 hours;

b) second and third intermediate adhesive layers directly adhered to opposite sides of said core layer and each comprising a blend of between about 35 and about 80 wt. % very low density polyethylene and between about 20 and about 40 wt. % of either polyethylene-based modified anhydride adhesive having melt index below about 1.7 g/10 min or ethylene vinyl acetate-based modified anhydride adhesive having melt index below about 0.5 g/10 min, and between 0 and about 40 wt. % ethylene vinyl acetate having fractional melt index and between about 7 and about 15 wt. % vinyl acetate content, said blend having a fractional average melt index and also having a relatively low average melting point below said melting point of said polymer blend of said core layer, said second and third intermediate adhesive layers each comprising between about 2.5 and about 5% of the film thickness;

c) a self heat sealable fourth outer layer directly adhered to one side of said second intermediate adhesive layer and comprising thermoplastic polymer with ethylene vinyl acetate content between 0 and about 45 wt. %, having a fractional melt index and also a relatively low melting point below said melting point of said polymer blend of said core layer, said fourth outer layer comprising between about 40% and about 70% of the film thickness; and

d) an abuse-resistant fifth outer layer directly adhered to one side of said third intermediate adhesive layer and comprising thermoplastic polymer with ethylene vinyl acetate content between 0 and about 45 wt. %, having a fractional melt index and also a relatively low melting point below said melting point of said polymer blend of said core layer, said fifth outer layer comprising between about 20% and about 35% of the film thickness;

e) at least one of said fourth and fifth outer layers having a melting point of at least about 105° C.; and

f) said film having at least 30% free shrink at 90° C. in the transverse direction and a total thickness of between about 1.5 and about 3.5 mils.

5,382,471

ADHERENT METAL COATING FOR ALUMINUM NITRIDE SURFACES

John K. Ariedge, Lauderhill; Thomas J. Swirbel, Davie, and James L. Davis, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 770,270, Oct. 3, 1991, Pat. No. 5,217,589. This application Feb. 3, 1993, Ser. No. 12,824

Int. Cl.[6] B32B *15/04*

U.S. Cl. 428—336 **3 Claims**

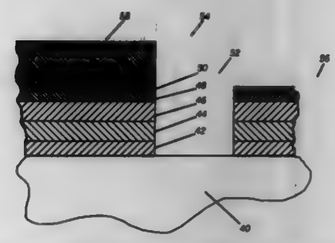
1. A metallized substrate, comprising:

an aluminum nitride substrate;

a first layer deposited on the substrate, having a thickness of between about 10 Ångstroms and about 500 Ångstroms, and comprising chromium, chromium oxide, and a complex represented by the formula

$$Al_aN_bO_cCr_d$$

where a, b, c and d are numbers representing the relative combining ratios, and a and b are each between 0.5 and 1.5., c is between 0.5 and 3.0, and d is between 0.5 and 5; and



a second layer of metal deposited on the first layer.

5,382,472

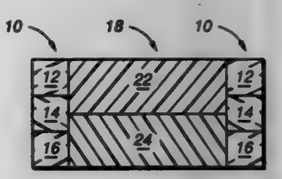
RESEALABLE PACKAGING MATERIAL

Apostol Yanidis, Cincinnati, Ohio, and Bruce Sanderford, Danville, Calif., assignors to James River Paper Company, Inc., Milford, Ohio

Continuation-in-part of Ser. No. 706,475, May 28, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 952,275

Int. Cl.[6] B32B *27/08, 7/12*

U.S. Cl. 428—349 **15 Claims**



1. A flexible packaging material comprising a side-by-side coextruded film having a first band comprising a first thermoplastic resin and a second band comprising a surface layer of a heatsealable polymer, a layer of pressure sensitive adhesive adjacent the surface layer of heatsealable polymer, and a layer of a second thermoplastic resin adjacent the layer of pressure sensitive adhesive, whereby the layer of pressure sensitive adhesive forms a core layer between the surface layer of the heatseal polymer and the layer of the second thermoplastic resin in the second band, the film being capable of being heat-sealed to itself by the sealing jaws of a packaging machine acting on the band of heatsealable polymer to form a package having a heatseal which has an initial bond strength such that the package remains closed during normal handling but which can be readily pulled apart manually to open the package, the heatseal layer being ruptured when the heatseal is pulled apart such that the pressure sensitive adhesive is exposed at the surface of the heatseal area, whereby the film may be resealed to itself at the area of the seal by the application of manual pressure alone to reclose the package, the pressure sensitive adhesive being distributed in the packaging material only in the second band to form the resealable seal, and not in the first band.

5,382,473

MULTILAYER FILM STRUCTURE

Gordon L. Musclow, Henrietta; Robert V. Poirier, and Ralph J. Weber, both of Fairport, all of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 20, 1992, Ser. No. 963,610

Int. Cl.[6] B23B *7/12, 27/36*

U.S. Cl. 428—353 **4 Claims**

1. A printable film structure comprising a polymeric film substrate of a member selected from the group consisting of nylon, polyethylene terephthalate, polycarbonate, polyethylene, polypropylene, coextrudates and laminates of any two or more thereof, at least one surface having a prime coating thereon of the type which causes destructive film blocking between contacting layers of such coated films, said prime coating being a coating of a member selected from the group consisting of (A) the reaction product of acidified aminoethylated vinyl polymer and an epoxy resin (B) poly(ethyleneimine) and (C) mixtures thereof, and said prime coating having thereon an ink base of a linear water-dissipatable polyester having an inherent viscosity of about 0.1 as measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C., and at a concentration of 0.5 gram of polyester in 100 ml of solvent, the polyester containing substantially equimolar proportions of acid moiety repeating units (100 mole %) to hydroxy moiety repeating units (100 mole %), the polyester comprising repeating units of components (a), (b), (c), and (d), as follows, wherein all stated mole percentages are based on the total of all acid and hydroxy moiety repeating units being equal to 200 mole %:

(a) about 90 to about 97 mole % isophthalic acid,

(b) about 3 to about 10 mole % 5-sulfoisophthalic acid,

(c) about 70 to about 85 mole % 1,4-cyclohexanedimethanol, and

(d) about 15 to about 30 mole % diethylene glycol.

5,382,474

METHOD FOR PRODUCING POLYETHYLENE TEREPHTHALATE FIBERS WITH REDUCED FLAMMABILITY

Atish Adhya; Thomas F. Corbin, and Robert L. Lilly, all of Asheville, N.C., assignors to BASF Corporation, Parsippany, N.J.

Filed Sep. 24, 1992, Ser. No. 950,864

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—364 **8 Claims**

1. A process for producing polyethylene terephthalate fibers with reduced flammability, comprising the steps of:

(a) condensating terephthalic acid and ethylene glycol in a mole ratio of from 1:1.1–1.5 at a temperature of from 180° to 240° C. in the presence of a catalyst;

(b) adding a polyalkylene glycol phosphate ester in an amount that the polyethylene terephthalate contains from about 500 to about 2000 ppm phosphorous;

(c) polycondensating at a temperature of from 265°–280° C. under a pressure decreasing from 760 torr to less than 2 torr to form the polyethylene terephthalate; and

(d) melt spinning fibers.

5,382,475

PIGMENTED ALGAE-RESISTANT GRANULAR MATERIALS AND COMPOSITES SHEETS INCLUDING SAME

Mark H. Kayser, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 15, 1992, Ser. No. 945,127

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—403 **12 Claims**

1. A long-term algae-resistant granule comprising an inorganic substrate granule and a ceramic coating, the ceramic coating comprising:

a) a first ceramic layer comprising the reaction product of an

alkali metal silicate and a first reactive aluminosilicate, cuprous oxide, and cupric oxide, said cuprous oxide present in an amount ranging from about 30 gms to about 40 gms per kg of said substrate granule, and said cupric oxide present in an amount ranging from about 5 gms to about 10 gms per kg of said substrate granule;

b) a second ceramic layer substantially the same thickness as the first ceramic layer and comprising the reaction product of an alkali metal silicate and a second reactive aluminosilicate, cuprous oxide, and cupric oxide, said cuprous oxide present in an amount ranging from about 30 gms to about 40 gms per kg of said substrate granule, said cupric oxide present in an amount ranging from about 5 gms to about 10 gms per kg of said substrate granule; and

c) a third ceramic layer having a thickness approximately 0.25 to 0.5 times the thickness of each of the first and second ceramic layers and comprising the reaction product of an alkali metal silicate and a third reactive aluminosilicate which is more reactive toward alkali metal silicates than said first and said second reactive aluminosilicates from about 0.5 to about 5 gms zinc oxide per kg of said substrate granule having an average particle size less than about 0.13 micrometer, a borate compound having approximately the same concentration as the zinc oxide, and a pigment present in sufficient amount to provide said granule with an L^* delta of less than about 2.0 after an 80 minute standard oxidation test.

5,382,476

RECYCLING OF CURED AMINOPLAST RESINS

Juergen Weiser, Schriesheim; Wolfgang Reuther, and Erwin Hahn, both of Heidelberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 196,493, Feb. 15, 1994. This application May 20, 1994, Ser. No. 247,184

Claims priority, application Germany, Feb. 20, 1993, 4305298

Int. Cl.[6] B32B *9/04*; C14C *9/00*

U.S. Cl. 428—411.1 **3 Claims**

1. A method which comprises coating moldings with a low molecular weight degradation product of cured aminoplast resins, which degradation products are obtained by treating cured aminoplast resins with an aqueous sulfite, hydrogen sulfite, or disulfite solution.

5,382,477

ORGANIC ELECTROLUMINESCENT ELEMENT AND PROCESS FOR PRODUCING THE SAME

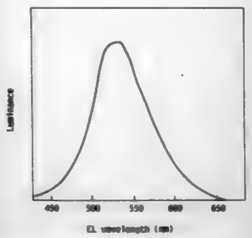
Shogo Saito; Tetsuo Tsutsui, both of Fukuoka; Chihaya Adachi, Tokyo, and Yuji Hamada, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 24, 1992, Ser. No. 840,174

Claims priority, application Japan, Feb. 27, 1991, 3-032905; Feb. 27, 1991, 3-032906; Sep. 3, 1991, 3-222793; Sep. 3, 1991, 3-222794; Nov. 27, 1991, 3-312380

Int. Cl.[6] H05B *33/14*

U.S. Cl. 428—690 **68 Claims**



1. An organic EL element, comprising:

an electron injection electrode;

a hole injection electrode; and

at least one layer made from an organic material between the electron injection and the hole injection electrode, the organic material being selected from the group consisting of (i) an oxadiazole series compound having a plurality of oxadiazole rings and one benzene ring between the oxadiazole rings, (ii) an oxadiazole series compound having a plurality of oxadiazole rings and two benzene rings between the oxadiazole rings, and (iii) an oxadiazole series compound having a plurality of oxadiazole rings and an alkyl chain between the oxadiazole rings.

5,382,478

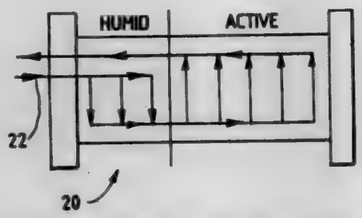
ELECTROCHEMICAL FUEL CELL STACK WITH HUMIDIFICATION SECTION LOCATED UPSTREAM FROM THE ELECTROCHEMICALLY ACTIVE SECTION

Clarence Y. Chow, Vancouver, and Bogusiav M. Wozniczka, Coquitlam, both of Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Filed Mar. 15, 1994, Ser. No. 213,615

Int. Cl.[6] H01M *8/04*

U.S. Cl. 429—26 **6 Claims**



1. An electrochemical fuel cell stack comprising an inlet fuel stream, an inlet oxidant stream, a humidification section and an electrochemically active section, said humidification section disposed upstream from said active section such that said inlet fuel stream and said inlet oxidant stream are introduced into said humidification section without first being directed through said active section.

5,382,479

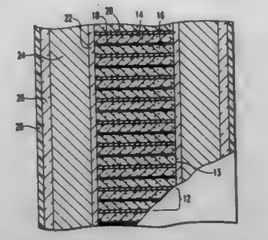
ADVANCED STACKED MULTICELL THERMAL BATTERY

Nicholas Schuster, Madison, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1993, Ser. No. 137,337

Int. Cl.[6] H01M *10/39*

U.S. Cl. 429—112 **14 Claims**



1. An improved battery of the type heated to an operating temperature and having a plurality of stacked cells, each cell having an anode and a cathode separated from one another by a separator, each cell containing an electrolyte, each cell further having an outer periphery, the improvement comprising:

a sleeve of pyrotechnic heat source provided around the outer periphery of selected cells.

5,382,480

BATTERY TERMINALS

John Molyneux, Runcorn, United Kingdom, assignor to Silent Power GmbH Fur Energiespeichertechnik, Germany

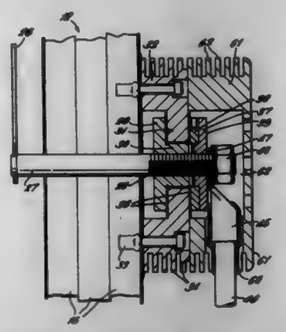
PCT No. PCT/GB91/10346, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/02963, PCT Pub. Date Feb. 20, 1992

PCT Filed Feb. 20, 1992, Ser. No. 971,757

Claims priority, application United Kingdom, Aug. 7, 1990, 9017310

Int. Cl.[6] H01M *10/50*

U.S. Cl. 429—120 **11 Claims**



1. A battery terminal comprising a thermally and electrically conductive bar having means to connect it at one end to an electrical cable and at its other end to cells of the battery, said bar leading out through a battery casing, and means for dissipating heat fastened to said battery casing in thermal contact with and electrically insulated from said lead out bar, said heat dissipating means including a first collar in thermal contact with said lead out bar and a layer of electrically insulating material located therebetween.

5,382,481

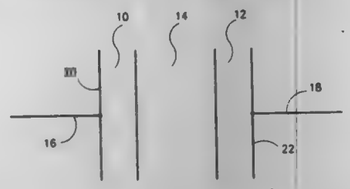
SOLID STATE ELECTROCHEMICAL CELL CONTAINING A PROTON-DONATING AROMATIC COMPOUND

Niles A. Fleischer, Rehovot, Israel, assignor to E.C.R.-Electro-Chemical Research Ltd., Yavne, Israel

Filed Sep. 7, 1993, Ser. No. 128,497

Int. Cl.[6] H01M *4/60*

U.S. Cl. 429—192 **18 Claims**



1. A battery comprising an anode, a cathode and a solid state electrolyte between, and in contact with, the anode and cathode, wherein:

(a) the anode includes a material composed of a proton-donating aromatic compound which donates protons during discharge of the battery and accepts protons during charging of the battery via reactions involving the formation and breakage of inter-atomic bonds in the aromatic compound;

(b) the cathode includes a proton-accepting compound which accepts protons during cell discharge when the anode releases protons via reactions involving the formation and breakage of inter-atomic bonds in the aromatic compound and releases protons during cell charging when the anode accepts protons via reactions involving the formation and breakage of inter-atomic bonds in the aromatic compound; and

(c) the electrolyte is a solid state proton-conducting material for transporting protons between the anode and the cathode during cell discharge and charge when the anode reacts in reactions involving the formation and breakage of inter-atomic bonds in the aromatic compound.

5,382,482

ZINC ELECTRODE FOR ALKALINE STORAGE BATTERY

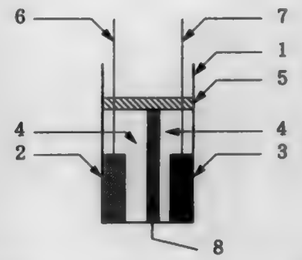
Masanobu Suga, Yokohama; Seiichi Akita, Fujisawa, and Nobuyuki Kuroda, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 99,174

Claims priority, application Japan, Aug. 7, 1992, 4-251812; Aug. 12, 1992, 4-255323

Int. Cl.[6] H01M *10/24*

U.S. Cl. 429—206 **9 Claims**



1. A negative zinc electrode for an alkaline storage battery, comprising an electrode using zinc as an active material and a polymer layer formed on said electrode, said polymer layer containing at least a polymer having a crosslinked structure, wherein said polymer is selected from the group consisting of a polymer A having an ion conductivity of 10^{-3} to 10^{1} S/cm in an alkali electrolyte, a crosslinked polymer obtained by crosslinking the polymer A, a polymer A′ obtained by introducing a group B into a portion of a main chain of the polymer A, said group B being able to improve gas permeability, a polymer C having an oxygen permeability constant of larger than 1×10^{-10} cm^3 (STP) $cm^{-1}s^{-1}cmHg^{-1}$, a crosslinked polymer obtained by crosslinking the polymer C, and a polymer C′ obtained by introducing a group D into a portion of a main chain of the polymer C, said group D being able to improve ion conductivity.

5,382,483

SELF-ALIGNED PHASE-SHIFTING MASK

Malcolm A. Young, Manassas, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1992, Ser. No. 821,385

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **18 Claims**



1. A method for fabricating a self-aligned phase-shifted mask comprising the steps of:

exposing a mask to a single patterning sequence to form a pattern of material opaque to exposing radiation of a selected wavelength on selected areas of a surface of a substrate, the substrate being transparent to the exposing radiation, and the opaque pattern having a first surface which is generally orthogonal to the surface of the substrate and a second surface which is generally parallel to the surface of the substrate; and

forming a spacer of phase-shifting material on the first surface of the opaque pattern by depositing phase-shifting material on the generally orthogonal surfaces of the opaque pattern and the transparent substrate, the spacer having a thickness at the first surface of the opaque pattern such that the exposing radiation passing through the spacer is phase-shifted in the range of 0.67 pi to pi radians with respect to exposing radiation passing through other areas of the mask.

5,382,484

METHOD OF CORRECTING DEFECTS IN THE PATTERN OF PHASE SHIFT MASK

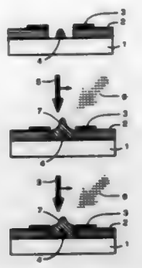
Kunihiro Hosono, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 54,616

Claims priority, application Japan, Aug. 21, 1992, 4-222543; Apr. 8, 1993, 5-081966

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **20 Claims**



1. A method of correcting a pattern defect in a phase shift mask including a substrate, a phase shifter, and a light shielding film and having a bump defect, comprising the steps of:

forming a correction film to surround and cover said bump defect; and

removing away said bump defect together with said correction film by etching back said correction film, wherein said etching back is performed utilizing a focused ion beam.

5,382,485

PROCESS FOR STORING INFORMATION

Jin Mizuguchi, Fribourg, and Gérald Giller, Balle, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 5, 1993, Ser. No. 26,965

Claims priority, application Switzerland, Mar. 11, 1992, 787/92

Int. Cl.[6] G11B *7/00*

U.S. Cl. 430—21 **33 Claims**

1. A process for the optical recording and storage of information in the form of bits by irradiating a recording material comprising a substrate coated with at least one layer of a pigment selected from the group of the dithiopyrrolopyrroles, dithioquinacridones, phthalocyanines or mixtures of two or more of these pigments as recording layer dotwise or linearly with laser light in the near infrared range (NIR range), which pigment (a) has a crystal modification having an absorption band in the NIR range, and (b) is in contact with a solid hydrazone that changes the crystal modification of the pigment upon irradiation with laser light, so that (c) after irradiation the absorption in the NIR range is reduced, while the hydrazone exhibits no absorption in the NIR range before and after irradiation; wherein the stored information is read out once or repeatedly by measuring the shift in absorption by the reflection or transmission method using laser light in the NIR range.

5,382,486

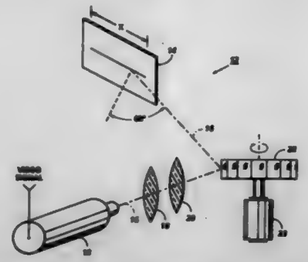
ELECTROSTATOGRAPHIC IMAGING MEMBER CONTAINING CONDUCTIVE POLYMER LAYERS

Robert C. U. Yu, Webster; Geoffrey M. T. Foley, Fairport; William G. Herbert, Williamson; William W. Limburg, Penfield; Satchidanand Mishra, Webster; Richard L. Post, Penfield, and Donald C. VonHoene, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1993, Ser. No. 38,447

Int. Cl.[6] G03G *15/00*

U.S. Cl. 430—56 **18 Claims**



1. An electrostatographic imaging member comprising a supporting substrate, at least one electrostatographic imaging layer capable of retaining an electrostatic latent image, and at least one electrically conductive layer, said at least one electrically conductive layer comprising electrically conductive molecular acid doped polyaniline.

5,382,487

ELECTROPHOTOGRAPHIC IMAGE FORMING MEMBER

Tadaji Fukuda, Kawasaki, and Toshiyuki Komatsu, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 29,300, Mar. 8, 1993, abandoned, which is a continuation of Ser. No. 819,640, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 701,017, May 13, 1991, abandoned, which is a continuation of Ser. No. 569,387, Aug. 15, 1990, abandoned, which is a continuation of Ser. No. 442,411, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 339,885, Apr. 18, 1989, abandoned, which is a continuation of Ser. No. 102,763, Sep. 24, 1989, abandoned, which is a continuation of Ser. No. 886,944, Jul. 22, 1986, abandoned, which is a continuation of Ser. No. 674,711, Nov. 26, 1984, abandoned, which is a continuation of Ser. No. 457,696, Jan. 13, 1983, abandoned, which is a continuation of Ser. No. 216,280, Dec. 15, 1980, abandoned. This application May 6, 1994, Ser. No. 238,787

Claims priority, application Japan, Dec. 13, 1979, 54-161872; Dec. 26, 1979, 54-169576

Int. Cl.[6] G03G *5/082, 5/14*

U.S. Cl. 430—57 **72 Claims**

1. An electrophotographic image forming member characterized in comprising: a substrate, and a photoconductive layer comprising an amorphous material containing therein silicon atom as the matrix and halogen atom as the constituent atom, wherein the content of said halogen atom ranges from 1 to 40 atomic percent.

26. An electrophotographic image forming member characterized in comprising: a substrate, and a photoconductive layer

comprising an amorphous material containing therein silicon atom as the matrix and, as the constituents, halogen atom and hydrogen atom, wherein the total quantity of said halogen atom and said hydrogen atom is 1–40 atomic %.



35. The image forming member as set forth in claim 1 or 26, wherein said photoconductive layer has two layer regions of different polarity.

5,382,488

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP92/01194, § 371 Date May 18, 1993, § 102(e) Date May 18, 1993

PCT Filed Sep. 18, 1992, Ser. No. 64,056

Claims priority, application Japan, Sep. 19, 1991, 3-266903; Oct. 23, 1991, 3-302659; May 6, 1992, 4-139630; May 6, 1992, 4-139631

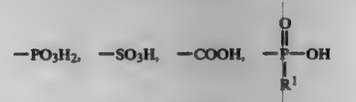
Int. Cl.[6] G03G *5/087, 5/09*

U.S. Cl. 430—95 **9 Claims**

1. An electrophotographic light-sensitive material having a photoconductive layer containing at least an inorganic photoconductive substance, a spectral sensitizing dye and a binder resin, wherein the binder resin comprises at least one resin (A) shown below and at least one resin (B) shown below:

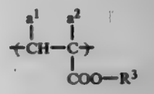
Resin (A):

a starlike polymer having a weight average molecular weight of from 1×10^3 to 2×10^4 and comprising an organic molecule having a weight average molecular weight of 1,000 or less and having bonded thereto at least three polymer chains each containing a polymer component containing at least one polar group selected from the group consisting of



(wherein R^1 is a hydrocarbon group and —OR^2 (wherein R^2 represents a hydrocarbon group)) and a cyclic acid anhydride group and a polymer component corresponding to a repeating unit represented by the general formula (I) described below, wherein the starlike polymer contains the polymer component containing a polar group in an amount of from 1 to 20% by weight and the polymer component represented by the general formula (I) in an amount not less than 30% by weight:

Formula (I)



(wherein a^1 and a^2 each is a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, —$COOR^4$ or —$COOR^4$ bonded via a hydrocarbon group (wherein R^4 represents a hydrocarbon group); and R^3 represents a hydrocarbon group);

an AB block copolymer having a weight average molecular weight of from 3×10^4 to 1×10^6 and comprising an A block containing a polymer component containing at least one polar group selected from the specified polar groups as described in the resin (A) above and a B block containing a polymer component corresponding to a repeating unit represented by the general formula (I) as described in the resin (A) above, wherein the A block contains the polymer component containing a polar group in an amount of from 0.05 to 10% by weight based on the AB block copolymer and the B block contains the polymer component represented by the general formula (I) in an amount not less than 30% by weight based on the AB block copolymer.

5,382,489

ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH POLYCARBONATE RESIN MIXTURE

Fumio Ojima; Kiyokazu Mashimo; Toru Ishii; Tomoo Kobayashi, and Taketoshi Hoshizaki, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

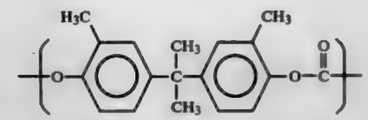
Filed Jul. 30, 1993, Ser. No. 99,541

Claims priority, application Japan, Aug. 6, 1992, 4-229388; Aug. 6, 1992, 4-229389

Int. Cl.[6] G03G *5/04*

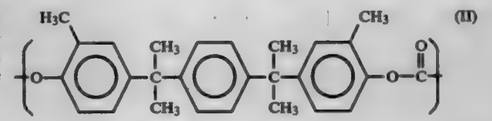
U.S. Cl. 430—96 **6 Claims**

1. An electrophotographic photoreceptor comprising a conductive substrate having formed thereon at least a photosensitive layer, wherein said photosensitive layer contains as binder resins, (A) a polycarbonate resin comprising a recurring unit represented by formula (I)

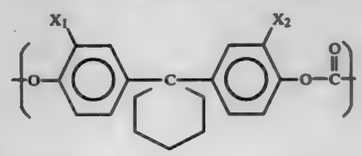


(I)

and (B) a polycarbonate resin comprising a recurring unit represented by formula (II) or (III):



(II)



(III)

wherein X_1 and X_2 each represents a hydrogen atom or an alkyl group, said polycarbonate resin (B) having a lower molecular weight than that of said polycarbonate resin (A) and wherein the ratio of polycarbonate resins (A) to (B) is from 95:5 to 60:40.

5,382,490

ELECTROPHOTOGRAPHIC TONER

Shigeo Yamamura, Omiya; Junko Yamamoto, Kawaguchi; Tadayuki Kiyoyanagi, Urawa, and Masaharu Nomura, Hasuda, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

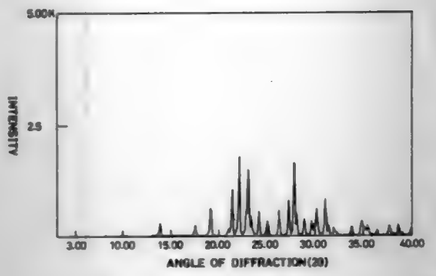
Filed Aug. 18, 1992, Ser. No. 931,705

Claims priority, application Japan, Aug. 30, 1991, 3-244329; Jun. 30, 1992, 4-194558

Int. Cl.[6] G03G *9/00*

U.S. Cl. 430—110 **6 Claims**

1. An electrophotographic toner containing particles of the compound represented by the following formula (1) as a charge control agent:





(1)

wherein X represents SO_2, said particles having a diameter less than 5 μm.

5,382,491

TONER COMPOSITION

Arthur F. Diaz, San Jose, Calif.; Jean M. Guay, Boulder, Colo., and My T. Nguyen, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1993, Ser. No. 172,682
Int. Cl.[6] G03G *9/097*
U.S. Cl. 430—110 **7 Claims**

1. A toner composition for use in electrophotography comprising toner and a nonconductive base treated polyaniline.

5,382,492

QUATERNARY AMMONIUM COMPOUND AS CHARGE ADJUVANTS FOR POSITIVE ELECTROSTATIC LIQUID DEVELOPERS

Lyla M. El-Sayed, Kennett Square, Pa.; Gregg A. Lane, San Diego, Calif., and Kathryn A. Pearlstine, Wilmington, Del., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 29, 1993, Ser. No. 159,004
Int. Cl.[6] G03G *9/135*
U.S. Cl. 430—115 **17 Claims**

1. A positive-working electrostatic liquid developer consisting essentially of

(A) a nonpolar liquid having a Kauri-butanol value of less than 30, present in a major amount;

(B) thermoplastic resin particles having dispersed therein a benzylacetyldimethylammonium chloride monohydrate quaternary ammonium compound which is substantially insoluble in the nonpolar liquid; and

(C) a nonpolar liquid soluble ionic or zwitterionic charge director compound.

5,382,493

HYDROXYGERMANIUM PHTHALOCYANINE PROCESSES

Beng S. Ong, Mississauga, Canada; Terry L. Bluhm, Pittsford, N.Y.; Cheng-Kuo Hsiao, and James M. Duff, both of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1993, Ser. No. 105,264
Int. Cl.[6] G03G *5/06*; C09B *67/50*
U.S. Cl. 430—135 **14 Claims**

1. A process for the preparation of Type II dihydroxygermanium phthalocyanine consisting essentially of treating at a temperature of from 0° C. to about 50° C. dihalogermanium phthalocyanine or dialkoxygermanium phthalocyanine with a strong acid, followed by treatment with water, and subsequent optional washing with an organic base and an aprotic organic solvent.

5,382,494

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL HAVING EXCELLENT TRANSPORTING ABILITY

Ichiro Kudo; Izumu Michihata, and Yasuo Kurachi, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Feb. 25, 1994, Ser. No. 201,533
Claims priority, application Japan, Mar. 1, 1993, 5-040047
Int. Cl.[6] G03C *5/14*
U.S. Cl. 430—140 **9 Claims**

1. A silver halide photographic light-sensitive material comprising a support, a silver halide emulsion layer on one side thereof and a backing layer on the other side thereof, a magnetic recording layer on said backing layer, wherein said backing layer contains inorganic particles comprised of a metal oxide at least a surface thereof being water-insoluble, said inorganic particles being dispersed in a binder in an amount of 3.5 to 10.0 g/m^2 and in a proportion of 75.0% to 660% by weight based on said binder.

5,382,495

OVERCOATS FOR DIAZO-CONTAINING LAYERS WITH CHEMICALS AND ABRASION RESISTANCE

Thomas C. Niziolek, Agawam; George Hodgins, Granby, and Marie B. Ray, Ware, all of Mass., assignors to Rexham Graphics, Inc., South Hadley, Mass.

Filed May 1, 1991, Ser. No. 694,064
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[6] G03C *1/52*
U.S. Cl. 430—162 **26 Claims**

1. A photographic element comprising a support, a diazo-containing layer and a water vapor and ammonia vapor permeable protective coating over the diazo-containing layer comprising a cellulose ester, a hydroxylated resin, a crosslinking agent, microcrystalline silica and an acid catalyst.

5,382,496

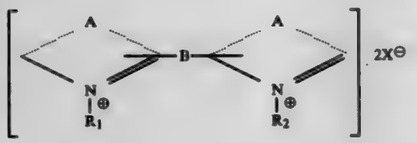
SILVER HALIDE LIGHT-SENSITIVE MATERIAL AND A METHOD FOR FORMING IMAGE USING THE SAME

Minoru Sakai; Kazunobu Katoh, and Kiyoshi Morimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 7, 1993, Ser. No. 162,843
Claims priority, application Japan, Dec. 25, 1992, 4-357688
Int. Cl.[6] G03C *1/06*
U.S. Cl. 430—264 **24 Claims**

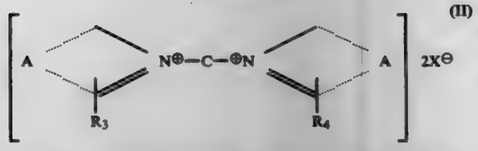


1. A silver halide light-sensitive material containing at least one compound represented by the following Formula (I) or (II):



(I)

-continued



(II)

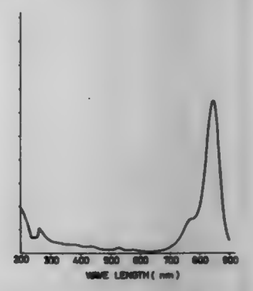
wherein A represents an organic group necessary for completing a hetero ring; B and C each represents a group constituted of one or more members selected from the group consisting of an alkylene group, an arylene group, an alkenylene group, —SO_2—, —SO—, —O—, —S—, and —N(R_5)—, where R_5 represents an alkyl group, an aryl group, or a hydrogen atom; R_1 and R_2 each represents an alkyl group; R_3 and R_4 each represents a substituent which is selected from the group consisting of a halogen atom, an unsubstituted alkyl group, an aryl-substituted alkyl group, a hydroxy alkyl group, an unsubstituted aryl group, an alkyl- or halogen-substituted aryl group, an unsubstituted acyl group, a halogen-substituted phenyl group, an alkyl-substituted acyl group, a sulfo group, a carboxy group, a hydroxy group, an alkoxy group, an aryloxy group, an amide group, a sulfamoyl group, a carbamoyl group, a ureido group, an unsubstituted or alkyl-substituted amino group, a cyano group, a nitro group, an alkylthio group and an arylthio group; and X represents an anion group, provided that X is not necessary when the compound is an inner salt.

5,382,497

OPTICAL RECORDING MEDIUM AND PROCESS FOR RECORDING THEREUPON

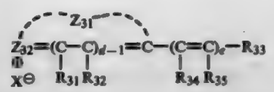
Kazuharu Katagiri; Yoshihiro Oguchi, both of Yokohama, and Yoshio Takasu, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 86,113, Jul. 6, 1993, Pat. No. 5,320,930, which is a division of Ser. No. 769,636, Oct. 1, 1991, Pat. No. 5,246,814, which is a division of Ser. No. 512,587, Apr. 24, 1990, Pat. No. 5,079,127, which is a division of Ser. No. 378,491, Jul. 11, 1989, abandoned, which is a continuation of Ser. No. 53,563, May 21, 1987, abandoned, which is a continuation of Ser. No. 756,570, Jul. 18, 1985, abandoned, which is a continuation of Ser. No. 481,741, Apr. 4, 1983, abandoned. This application Apr. 1, 1994, Ser. No. 221,904
Claims priority, application Japan, Apr. 6, 1982, 57-56963; Apr. 19, 1982, 57-64926; Apr. 19, 1982, 57-64927; Jun. 14, 1982, 57-64928; Jun. 14, 1982, 57-102579; Jun. 14, 1982, 57-102580; Jun. 16, 1982, 57-103603; Jun. 16, 1982, 57-103604; Jul. 15, 1982, 57-123144
Int. Cl.[6] G03C *5/00*
U.S. Cl. 430—269 **40 Claims**



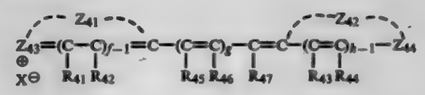
1. An optical recording medium for pit recording with a recording light beam consisting essentially of a substrate and a recording layer having a thickness of 10 microns or less which forms pits upon irradiation with said recording light beam, wherein said recording layer consists of (a) a layer consisting essentially of at least one of the compounds represented by Formulas (3)–(5), (7) and (8) or (b) a layer consisting essentially of an organic resinous binder and at least one of the compounds represented by Formulas (3)–(5), (7) and 8 as follows:

Formula (3):



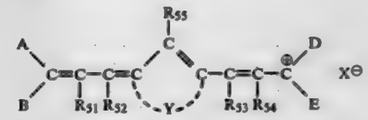
wherein Z_{32} in sulfur, oxygen, or selenium; Z_{31} is a hydrocarbon residue necessary to complete a pyrylium, thiapyrylium, selenapyrylium, benzopyrylium, benzothiapyrylium, benzoselenapyrylium, naphthapyrylium, naphthothiapyrylium, napththoselenapyrylium ring which is substituted or unsubstituted; R_{31} and R_{32} are each hydrogen or a substituted or unsubstituted alkyl, aryl, or styryl residue; R_{33} is a substituted or unsubstituted aryl or heterocyclic residue; R_{34} and R_{35} are each hydrogen or alkyl; X^- is an anion; d is 1 or 2; and e is 0, 1, or 2; wherein, when e is 2, each R_{34} is the same or different and each R_{35} is the same or different;

Formula (4):



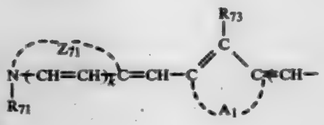
wherein Z_{43} and Z_{44} are each sulfur, oxygen, or selenium Z_{41} is a hydrocarbon residue necessary to complete a pyrylium, thiapyrylium, selenapyrilium, benzopyrylium, benzothiapyrylium, benzoselenapyrylium, naphthopyrylium, naphthothiapyrylium, or naphthoselenapyrylium ring which is substituted or unsubstituted; Z_{42} is a hydrocarbon residue necessary to complete a pyrane, thiapyrane, selenapyrane, benzopyrane, benzothiapyrane, banzoselenapyrane, naphthopyrane, napththothiapyrane, or naphthoselenapyrane ring which is substituted or unsubstituted; R_{41}, R_{42}, and R_{44} are each hydrogen or a substituted or unsubstituted alkyl or aryl residue; R_{45}, R_{46}, and R_{47} are each hydrogen, halogen, or a substituted or unsubstituted alkyl, aryl, or aralkyl residue, f and h are each 1 or 2; g is 0, 1, or 2; and X^- is an anion; wherein when g is 2, each R_{45} is the same or different;

Formula (5):

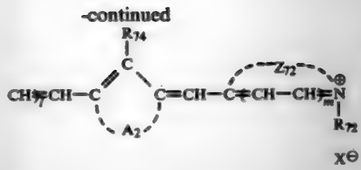


wherein A, B, D, and E are each aryl or substituted aryl; R_{51}, R_{52}, R_{53} R_{54} and R_{55} are each hydrogen, halogen, or alkyl; Y is a divalent residue necessary to complete a 5- 6-membered ring; and X^- is an anion;

Formula (7):

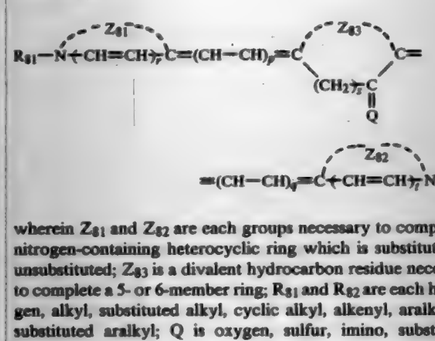


-continued



wherein Z_{71} and Z_{72} are each groups necessary to complete a nitrogen-containing heterocyclic ring which is substituted or unsubstituted; A_1 and A_2 are each a divalent hydrocarbon residue necessary to complete a 5- or 6-membered ring; R_{71} and R_{72} are each hydrogen, alkyl, substituted alkyl, cyclic alkyl, alkenyl, aralkyl, or substituted aralkyl; R_{73} and R_{74} are each hydrogen or halogen; X^- is an anion; k and m are each 0 or 1; and l is 1 or 2;

Formula (8):



wherein Z_{81} and Z_{82} are each groups necessary to complete a nitrogen-containing heterocyclic ring which is substituted or unsubstituted; Z_{83} is a divalent hydrocarbon residue necessary to complete a 5- or 6-member ring; R_{81} and R_{82} are each hydrogen, alkyl, substituted alkyl, cyclic alkyl, alkenyl, aralkyl, or substituted aralkyl; Q is oxygen, sulfur, imino, substituted imino, or an organic divalent residue; s, t, and r are each 0 or 1; and p and q are each 0, 1, or 2 and wherein the recording layer contains at least 1% by weight of the at least one of the compounds of Formulas (3–5), (7) and (8).

5,382,498

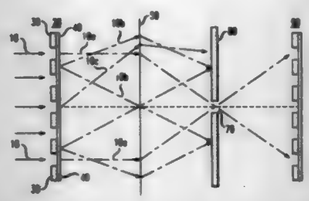
PROCESSES FOR ELECTRON LITHOGRAPHY

Steven D. Berger, Basking Ridge, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 16, 1992, Ser. No. 991,685

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—296 **5 Claims**



1. A process for fabricating a device having a design rule of 0.5 μm or less comprising at least one lithographic delineation step, said step comprising illuminating a mask by scanning a beam of particles so as to produce a projected image on a device substrate by use of a lens system including a projection lens characterized in that the distance between said mask and said substrate is 0.75 meter or less and said beam has a current density of 10 mA/cm^2 or more at the substrate.

5,382,499

COLOR REVERSAL PHOTOGRAPHIC ELEMENTS ADAPTED FOR UNDERWATER PHOTOGRAPHY

Brian W. Keelan, Rochester; Robert Niklewicz, Penfield; Diane P. Libby, Webster, and John V. Nelson, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 920,077, Jul. 27, 1992, abandoned. This application Aug. 31, 1993, Ser. No. 114,523

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—503 **11 Claims**

1. A color reversal photographic film particularly adapted for underwater photography comprised of

a film support and, coated on the film support, three superimposed recording layer units consisting of

a blue recording silver halide emulsion layer unit capable of forming a yellow dye image,

a green recording silver halide emulsion layer unit capable of forming a magenta dye image, and

a red recording silver halide emulsion layer unit capable of forming a cyan dye image,

wherein at an exposure temperature of 5500° K. and an optical density of 0.8 above minimum density the red recording layer unit exhibits a speed that is (T/10) log E greater than that of the green recording layer unit, where E is exposure in lux-seconds and T is the light transmission distance in meters through water required to match the speed of the red recording layer unit to the speed of the blue recording layer unit, T being in the range of from 1.5 to 15 meters.

5,382,500

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shuichi Sugita; Hidenobu Ohya, and Masakazu Tonishi, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Dec. 27, 1993, Ser. No. 173,787

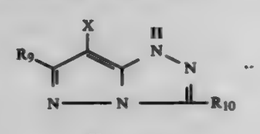
Claims priority, application Japan, Feb. 5, 1993, 5-018954

Int. Cl.[6] G03C *1/46*

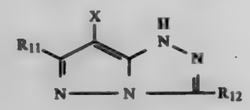
U.S. Cl. 430—505 **2 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having provided thereon, a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer, and a red-sensitive silver halide emulsion layer, wherein said green-sensitive silver halide emulsion layer contains at least one coupler represented by a formula selected from the group consisting of Formulas (M-IX), (M-X), (M-XI) and (M-XII); and at least one non-color-forming compound represented by Formula A-1;

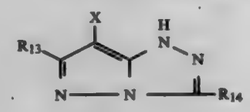
Formula (M-IX)



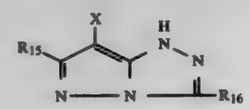
Formula (M-X)



Formula (M-XI)



Formula (M-XII)



wherein, R_9 represents primary alkyl having a total of not less than 2 carbon atoms, R_{10} represents a substituent, R_{11} represents hydrogen or a substituent; R_{12} represents secondary or tertiary branched alkyl, R_{13} represents tertiary alkyl; R_{14} represents a substituent, R_{15} represents hydrogen or a substituent; R_{16} represents aryl, X represents hydrogen or a substituent capable of splitting off upon reaction with an oxidized product of a color developing agent:

Formula (A-1)

$R_{21}—NHSO_2—R_{22}$

wherein R_{21} and R_{22} each independently represent aryl.

5,382,501

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroshi Inoie, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,277

Claims priority, application Japan, Dec. 24, 1991, 3-341166

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—506 **5 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon a silver halide red-sensitive layer, a silver halide green-sensitive layer and a silver halide blue-sensitive layer, wherein said blue-sensitive layer comprises three or more silver halide emulsion layers including a layer having the highest sensitivity and a layer having the lowest sensitivity, wherein the difference between the average silver iodide content of said emulsion contained in the highest sensitivity layer of said blue-sensitive layers and the average silver iodide content of said emulsion contained in the lowest sensitivity layer of said blue-sensitive layers is represented by Equation 1, and the sum total of the silver halides contained in said silver halide color light-sensitive material is within the range of 4.0 to 8.0 g/m^2 in terms of metal silver;

Equation 1

Average silver iodide content of the highest sensitivity layer) —(average silver iodide content of the lowest sensitivity layer)

is 0 to 4.5 mol %; and

wherein each of the red, green and blue silver halide emulsions comprise a monodispersed silver halide emulsion comprising substantially twin silver halide grains.

5,382,502

HYDROXYQUINOLINE CYAN COUPLERS AND THEIR PROCESS OF PRODUCTION

Philip T. S. Lau; Danny R. Thompson, and Stanley W. Cowan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 809,951, Dec. 18, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 97,315

Int. Cl.[6] G03C *7/34*

U.S. Cl. 430—552 **12 Claims**

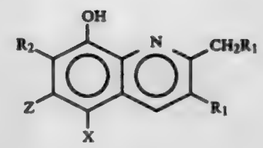
1. In a photographic material comprising:

at least one red-sensitive silver halide emulsion layer with which a cyan dye-forming coupler is associated;

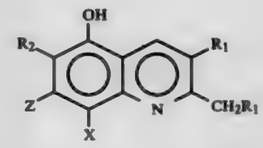
at least one green-sensitive silver halide emulsion layer with which a magenta dye-forming coupler is associated;

at least one blue-sensitive silver halide emulsion layer with which a yellow dye-forming coupler is associated; and

a support bearing said at least one red-sensitive, said at least one green-sensitive, and said at least one blue-sensitive silver halide emulsion layers, wherein the improvement comprises said cyan dye-forming coupler having the formulae:



or



, wherein

R_1 is a substituted or unsubstituted alkyl group with 8 to 30 carbon atoms;

R_2 is hydrogen or another substituent;

X is a group capable of being released by a coupling reaction with an oxidized aromatic primary amine developing agent; and

Z is a non-nucleophilic substituent.

5,382,503

SILVER HALIDE EMULSION AND SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shuji Murakami; Yukio Ohya, Odawara, and Makoto Kaga, Hino, all of Japan, assignors to Konica Corporation, Japan

Filed Sep. 20, 1993, Ser. No. 124,312

Claims priority, application Japan, Sep. 22, 1992, 4-253080

Int. Cl.[6] G03C *1/035, 1/09*

U.S. Cl. 430—567 **5 Claims**

1. A silver halide emulsion comprising silver halide grains having a minimum silver chloride content of 95 mol %, and a minimum silver bromide content of 0.1 mol %, wherein said silver halide grains are formed in the presence of at least one compound selected from the group consisting of K_3IrBr_6, K_2IrBr_6, Na_3IrBr_6, Na_2IrBr_6, $K_3IrBr_4Cl_2$, $K_2IrBr_4Cl_2$, $K_2IrBr_3Cl_3$, $K_3IrBr_3Cl_3$, K_3IrBr_5Cl, K_2IrBr_5Cl, $K_3IrBr_5(-H_2O)$, $K_3IrBr_5(H_2O)_2$, K_3IrBr_5I, and K_2IrBr_5I.

5,382,504

PHOTOTHERMOGRAPHIC ELEMENT WITH CORE-SHELL-TYPE SILVER HALIDE GRAINS

Steven M. Shor, Woodbury; Chaofeng Zou, Maplewood; Pu Zhou, Woodbury, all of Minn., and Shozo Aoki, Machida, Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 22, 1994, Ser. No. 199,114

Int. Cl.[6] G03C *1/498*

U.S. Cl. 430—619 **23 Claims**

1. A negative-acting, photothermographic element comprising a support bearing at least one heat-developable, photosensitive, image-forming photothermogrpahic emulsion layer consisting essentially of:

(a) preformed core-shell-type, photosensitive silver halide grains containing a total silver iodide content of less than 4 mole %, said core having a first silver iodide content of from about 4–14 mole % based upon the total amount of silver halide in said core, said shell having a second silver iodide content lower than the silver iodide content of said core;

(b) a non-photosensitive, reducible source of silver;

(c) a reducing agent for said non-photosensitive, reducible source of silver;

(d) a binder; and

(e) at least one compound selected from the group consisting

of: a halogen molecule; an organic haloamide; and hydrobromic acid salts of nitrogen containing heterocyclic compounds which are further associated with a pair of bromine atoms.

5,382,505

METHOD OF MAKING A LAMINATED STRUCTURE WITH SHEAR FORCE DELAMINATION RESISTANCE

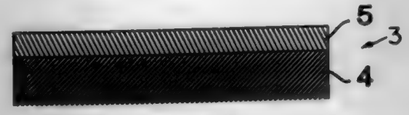
Walter Schmidt, Zürich, and Marco Martinelli, Neftenbach, both of Switzerland, assignors to Dyconex AG, Zürich, Switzerland

Filed Mar. 20, 1992, Ser. No. 854,884

Claims priority, application Switzerland, Apr. 10, 1991, 01 063/91-0

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—313 **10 Claims**



1. A method for producing a laminated structure having improved resistance to delamination by shear forces comprising, in sequence, the steps of

providing a body having an exterior layer of metal with a surface to which a resin layer is to be attached,

etching the surface of the layer of metal so that it has a pattern of openings through the surface, each opening having lateral dimensions, each opening leading to a cavity behind the surface which has lateral dimensions larger than the surface opening, and

applying a layer of a resin to the etched metal surface so that the resin enters the cavities behind the surface openings, thereby interlocking the resin layer to the metal body to form a structure having resistance to separation by shear forces.

5,382,506

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL AND THE IMAGE-FORMING PROCESS THEREOF

Yasuo Tosaka, and Masayuki Sasagawa, both of Odawara, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 20, 1993, Ser. No. 110,083

Claims priority, application Japan, Aug. 25, 1992, 4-226014

Int. Cl.[6] G03C *7/00*

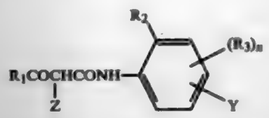
U.S. Cl. 430—358 **9 Claims**

1. A silver halide color photographic light sensitive material comprising:

a reflective support which is both side coated with a polyolefin resin, having thereon a hydrophilic colloidal layer containing a white pigment and a silver halide emulsion layer,

wherein the silver halide emulsion layer contains at least one of the compounds represented by the following Formula I,

Formula I



wherein R_1 represents an alkyl group, a cycloalkyl group or an aryl group; R_2 represents a fluorine atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a dialkylamino group, an alkylthio group or an arylthio group; R_3 represents a group substitutable to a benzene ring; n is an integer of 0 or 1; Z represents a hydrogen atom or a group capable of splitting off when coupling it to the oxidized product of a developing agent; and Y represents a monovalent organic group including a ballast group.

5,382,507

METHOD FOR PROCESSING BLACK-AND-WHITE SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Akira Shimizu; Shoji Nishio; Takeshi Sanpei, and Hiroyuki Ushiroyama, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Jan. 19, 1994, Ser. No. 183,487

Claims priority, application Japan, Jan. 21, 1993, 5-026132

Int. Cl.[6] G03C *1/33, 1/34, 5/305, 5/31*

U.S. Cl. 430—399 **10 Claims**

1. A method for processing both a first black and white silver halide photographic light-sensitive material and a second black and white silver halide photographic light-sensitive material, with a common developer,

said first black and white silver halide photographic light-sensitive material comprising a support having provided thereon a first photographic component layer comprising a silver halide emulsion layer containing a hydrazine compound and gelatin in an amount of not more than 3.0 g per m^2 of material, said second black and white silver halide photographic light-sensitive material comprising a support having provided thereon a second photographic component layer comprising a silver halide emulsion layer containing a tetrazolium compound, and gelatin in an amount of not more than 3.0 g per m^2, said method comprising:

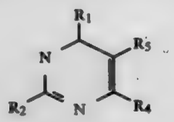
exposing each of said first black and white silver halide photographic light-sensitive material and said second black and white silver halide photographic light-sensitive material to form exposed materials;

developing said exposed materials with a developer having a pH of 9.5 to 10.7, said developer containing a chelating agent and a silver stain inhibitor, said developer being replenished with a developer replenisher in an amount of 60 to 250 cc/m^2 of light-sensitive material being developed to form developed materials; and

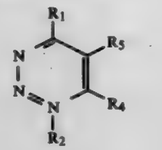
fixing said developed materials with a fixer,

wherein said silver stain inhibitor is selected from the group consisting of compounds represented by Formulas A-1, A-2, and A-3:

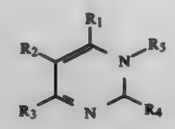
A-1



A-2



A-3



wherein R_1, R_2, and R_3 independently represent hydrogen, halogen, lower alkyl, hydroxy, sulfo, lower alkenyl, amino, COOM, in which M represents hydrogen or a

cation, carbamoyl, aryl, or mercapto, provided that at least one of R_1, R_2, and R_3 is mercapto; R_4 and R_5 independently representing sulfo, phosphono, amino, alkyl, arylalkyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, aryl, mercapto, nitro, hydroxy, cyano, or hydrogen, provided that R_4 and R_5 may combine to form a ring.

5,382,508

PHOTOGRAPHIC-FILM PRODUCT

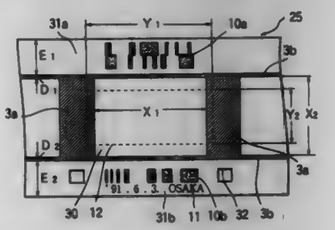
Shinpei Ikenoue, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 845,013, Mar. 3, 1992, abandoned. This application May 24, 1993, Ser. No. 65,025

Claims priority, application Japan, Mar. 8, 1991, 3-012987[U]; May 17, 1991, 3-113420; May 17, 1991, 3-113421; Jul. 5, 1991, 3-051993[U]

Int. Cl.[6] G03C *3/00*; G03B *17/24*

U.S. Cl. 430—496 **6 Claims**



1. A photographic film product comprising:

a roll of film; and

indications formed at positions which define a location of image-areas on said film;

wherein said indications extend in both a lengthwise and widthwise direction of said film along a periphery of said image-areas, and said indications are capable of being made visual by developing said film;

said film includes a data-recording portion formed outside said image-areas in the widthwise direction of said film;

a first distance defined between said indications and extending in the widthwise direction of said film and a second distance defined as a length of said image-areas as measured in the lengthwise direction of said film, a third distance defined as a distance between said indications extending in the lengthwise direction of said film and a fourth distance defined as a width of said image-areas as measured in the widthwise direction of said film;

a first difference between said first distance and said second distance being larger than a second difference between said third distance and said fourth distance.

2. A photographic film product comprising:

a cartridge;

a spool carried in said cartridge for rotation about a longitudinal axis of said spool;

a film wound into a roll around said spool capable of recording an image with an image-area having a varying aspect ratio; and

recording means for recording on the film information about a desired aspect ratio of the image-area, said recording means being provided on at least one of said film and said cartridge,

wherein a plurality of marks are printed on said film during one of film production and photography, such that a periphery of the image-area can be defined by connecting a subset of marks selected from said plurality of marks, where the subset of marks are selected based on the desired aspect ratio of the image to be recorded indicated by the film information.

5,382,509

METHOD AND KIT FOR THE DIAGNOSIS OF HUMAN PAPILLOMAVIRUS TYPE 41

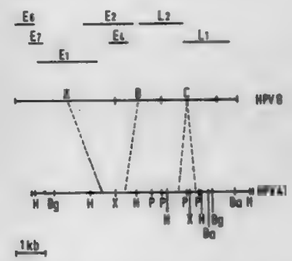
Margitta Grimmel, Neustadt, and Ethel-Michele de Villiers, Hirschberg, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Germany

Continuation of Ser. No. 25,812, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 840,090, Feb. 24, 1992, abandoned, which is a division of Ser. No. 216,913, Jul. 8, 1988, Pat. No. 5,142,032. This application Nov. 23, 1993, Ser. No. 156,936

Claims priority, application Germany, Jul. 11, 1987, 3722968

Int. Cl.[6] C12Q *1/70*; C07H *21/04*

U.S. Cl. 435—5 **2 Claims**



1. A diagnostic kit for detecting human papillomavirus type 41 (HPV 41) containing characterized by the restriction enzyme cleavage pattern of FIG. 1 and contained in clones K10 and K6.

2. A method for the diagnosis of HPV 41 infections, which comprises hybridizing the RNA or DNA under investigation with HPV 41 DNA under high stringency hybridizastion stringent conditions, said HPV 41 DNA being characterized by the restriction enzyme cleavage pattern of FIG. 1 and contained in clones K10 and K6.

5,382,510

METHODS OF DIAGNOSING PRE-CANCER OR CANCER STATES USING PROBES FOR DETECTING MUTANT P53

Arnold J. Levine; Thomas E. Shenk, both of Princeton, N.J., and Cathy A. Finlay, Yardley, Pa., assignors to The Trustees of Princeton University, Princeton, N.J.

Continuation of Ser. No. 543,963, Jun. 27, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 912,011

Int. Cl.[6] C12Q *1/68*

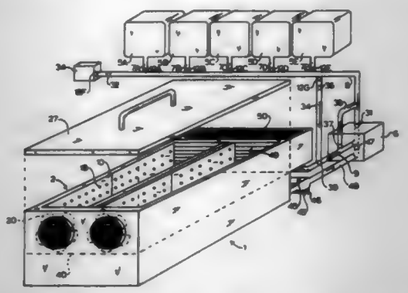
U.S. Cl. 435—6 **6 Claims**

1. A method of correlating a set of human p53 gene or protein point mutations in pre-cancer or cancer cells with a phenotype, the method comprising:

(a) determining which set of human p53 gene or protein mutations point is present in a sample of pre-cancer or cancer cells with a probe or probes that can distinguish between sets of human p53 gene or protein point mutations, each set of point mutations correlating with a phenotype that is different from the phenotype associated with the wild-type p53 gene or protein and from the phenotype associated with at least one other set of point mutations; and

(b) correlating the set of gene or protein point mutations with its transformation frequency, half-life, or ability to bind to the heat shock protein hsc70, or a phenotype related thereto.

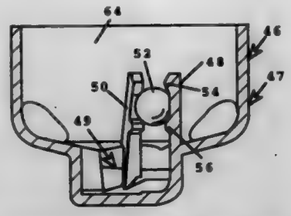
5,382,511
METHOD FOR STUDYING NUCLEIC ACIDS WITHIN IMMOBILIZED SPECIMENS
Marilyn J. Stapleton, Durham, N.C., assignor to Gene Tec Corporation, Durham, N.C.
Continuation of Ser. No. 227,348, Aug. 2, 1988, abandoned. This application Aug. 24, 1992, Ser. No. 935,637
Int. Cl.[6] C12Q *1/68*; C12P *19/34*
U.S. Cl. 435—6 **16 Claims**



1. A method for studying genetic material of a sample in situ, comprising the steps of:
(a) preparing a thin agarose matrix containing the sample in which the genetic material of the sample is anchored in separate positions in the matrix; and
(b) treating the matrix with treatment liquids in an amount effective to remove interfering, non-genetic material from the sample; said treatment utilizing an apparatus comprising:
(i) a reaction chamber for situating the samples;
(ii) reservoirs for treatment liquids;
(iii) treatment liquid transfer lines, said reservoirs connected to the reaction chamber by means of said treatment liquid transfer lines;
(iv) means to control the addition to the reaction chamber of the treatment liquids in the reservoirs;
(v) means to regulate air flow and temperature in the reaction chamber;
(vi) a pump to cause the treatment liquids to move in the treatment liquid transfer lines; and
(vii) means to remove treatment liquids from the reaction chamber;
(c) amplifying target genetic material in the samples, wherein amplifying the genetic material consists essentially of utilizing repetitive enzymatic techniques selected from a group consisting of polymerase techniques to synthesize new DNA complementary to nucleic acid targets and ligase techniques to join together oligonucleotide sequences bound to their complementary nucleic acid targets when said oligonucleotide sequences bound to their nucleic acid targets are directly adjacent;
(d) determining and enumerating the presence of nucleic acid targets;
wherein all sample treatment steps are done in a generally horizontal matrix.

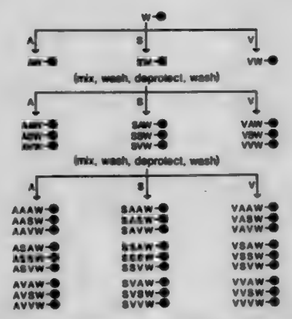
5,382,512
ASSAY DEVICE WITH CAPTURED PARTICLE REAGENT
Rick T. Smethers, Fremont, and Brian D. Warner, Martinez, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.
Filed Aug. 23, 1993, Ser. No. 110,435
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **9 Claims**

1. An assay device for use in detecting an analyte in a liquid sample by means of a detectable reaction that is related to the amount of analyte present in the sample, comprising
wall means defining a well having a bottom wall and an upper opening through which such a reaction can be detected,
a particle having surface-bound ligand molecules for use in analyte detection, said particle being supported on said bottom wall, and



flexible retaining means attached to said wall means, for retaining said particle in a captured position within said well, when the retaining means is in an undeformed condition, and which can be deformed to admit said particle into the well.

5,382,513
METHOD OF SCREENING A PEPTIDE LIBRARY
Kit S. Lam, and Sydney E. Salmon, both of Tucson, Ariz., assignors to Bioligand Inc., Tucson, Ariz.
Division of Ser. No. 717,454, Jun. 19, 1991, which is a continuation-in-part of Ser. No. 546,845, Jul. 2, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 14,979
Int. Cl.[6] C12Q *1/00*; G01N *33/566, 33/543*; C07K *3/00*
U.S. Cl. 435—7.1 **26 Claims**



1. A method of screening a library of peptides and determining a sequence of a peptide ligand for an acceptor molecule of interest comprising the steps of:
a) introducing an acceptor molecule to a peptide library, wherein the library comprises a multiplicity of species of solid phase supports having a linker, by which analyzable quantities of deprotected peptides are attached to the support, wherein the sequences of said peptides are not pre-determined and a single species of peptide is attached to each support;
b) identifying the solid-phase supports having peptides thereon that bind the acceptor molecule, wherein said identified supports represent at most about 1 part per 1,000 parts of the supports of the library;
c) isolating at least one identified support from all other species of the library; and thereafter
d) determining the sequence of the peptide species attached to the isolated support.

5,382,514
IN VIVO ANGIOGENESIS ASSAY
Antonino Passaniti, Baltimore, and George R. Martin, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.
Filed Mar. 31, 1992, Ser. No. 862,622
Int. Cl.[6] G01N *33/567, 33/574*
U.S. Cl. 435—7.21 **10 Claims**

1. A method of performing an in vivo angiogenesis assay which comprises:
providing a liquid matrix material which forms a matrix gel when injected into a host wherein said liquid matrix material is MATRIGEL;
adding an angiogenesis inducing or inhibiting agent to said liquid matrix material;
injecting said liquid matrix material containing said angiogenesis inducing or inhibiting agent into a host to form a matrix gel;
recovering said matrix gel from said host; and
quantitating angiogenesis of said recovered matrix gel.

5,382,515
CREATIVE KINASE-MB IMMUNOASSAY FOR MYOCARDIAL INFARCTION AND REAGENTS
Vipin D. Shah, Saratoga; Shing-Erh Yen, Foster City, both of Calif., and Gerald M. Anchin, Bellaire, Tex., assignors to International Immunoassay Laboratories, Inc., Santa Clara, Calif.
Continuation of Ser. No. 467,837, Jan. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 299,277, Jan. 23, 1989, Pat. No. 5,202,234, which is a continuation-in-part of Ser. No. 76,038, Jul. 21, 1987, Pat. No. 4,900,662. This application Jun. 25, 1993, Ser. No. 83,853
Int. Cl.[6] G01N *33/573, 33/53*; C07K *15/28*
U.S. Cl. 435—7.4 **9 Claims**

1. An immunological method for determining the time of occurrence of an acute myocardial infarction in a patient, where infarction is associated with an increase in the body fluid concentration of a CK-MB species selected from the group consisting of
a first CK-MB isoform having a C-terminal lysine on the M subunit,
a second CK-MB isoform produced by in vivo loss of the C-terminal lysine from the M subunit of the first isoform, wherein the loss of the C-terminal lysine alters a first epitope on the first isoform to produce a second epitone on the second isoform, and
total CK-MB,
wherein the concentrations of the CK-MB species in the body fluid change in a known pattern with time, comprising the steps of:
(1) determining the concentration A of a first selected species in the body fluid,
(2) determining the concentration B of a second selected species different from the first selected species in the body fluid,
wherein one of the first and second determining steps comprises detecting the amount of said first or second CK-MB isoform in the body fluid by contacting the body fluid with an antibody that specifically binds to the first or second epitope of said first or second CK-MB isoform, and
(3) correlating any change in the concentration A or B with the known pattern of concentration change to determine the time of occurrence of the infarction.

5,382,516
METHOD AND DEVICES FOR DELIVERY OF SUBSTRATE FOR THE DETECTION OF ENZYME-LINKED, MEMBRANE-BASED BINDING ASSAYS
Christopher N. Bush, Richmond; Charlene A. Audette, Keene, and Michael A. Harvey, Spofford, all of N.H., assignors to Schleicher & Schuell, Inc., Keene, N.H.
Filed Sep. 15, 1992, Ser. No. 945,097
Int. Cl.[6] C12P *1/00*; C12Q *1/34, 1/26*; G01N *21/77*
U.S. Cl. 435—41 **30 Claims**

ENZYME LINKED MEMBRANE BINDING ASSAY
SUBSTRATE IMPREGNATED POROUS MATERIAL

1. A method for supplying an enzyme substrate to a membrane-based, enzyme-linked reaction, comprising:
providing an open pore, high liquid retention capacity material impregnated with a predetermined amount of a substrate for an enzyme, the substrate being free to diffuse from the material; and
contacting the material with a membrane containing the enzyme in an enzyme-linked reaction under conditions which permit diffusion of the enzyme substrate to sites on the membrane containing the enzyme.

5,382,517
PROCESS FOR THE PREPARATION OF L-SERINE BY AN ENZYMATIC METHOD
Daisake Ura; Tadashi Hashimukai; Toshio Matsumoto, and Nobuhiro Fukuhara, all of Fukuoka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Continuation of Ser. No. 592,508, Oct. 3, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,446
Claims priority, application Japan, Oct. 6, 1989, 1-260203
Int. Cl.[6] C12P *13/06*
U.S. Cl. 435—116 **13 Claims**

1. In a process of preparing L-serine from glycine and formaldehyde in the presence of a harvested microorganism or the cell extract thereof having a serine hydroxymethyl transferase activity, the improvement which comprises pretreating *Escherichia coli* MT-10350 FERM BP-793, *Escherichia coli* MT-10351 FERM BP-794 or the cell extract of either of the *Escherichia coli* strains in a suspension or solution form, under conditions of dissolved oxygen of 1 ppm or more and a temperature of 60° C. or less prior to the addition of the reaction mixture.

5,382,518
URATE OXIDASE ACTIVITY PROTEIN, RECOMBINANT GENE CODING THEREFOR, EXPRESSION VECTOR, MICRO-ORGANISMS AND TRANSFORMED CELLS
Daniel Caput, Toulouse; Pascual Ferrara, Villefranche de Lauragais; Jean-Claude Guillemot, Toulouse; Mourad Kaghad, Ramonville St. Agne; Richard Legoux, Caraman; Gérard Loison, Toulouse; Elisabeth Larbre, Avignon; Johannes Lupker, Castanet-Tolosan; Pascal Leplatois, Cuq Toulza; Marc Salome, Castanet-Tolosan, and Patrick Laurent, Pechbusque, all of France, assignors to Sanofi, Paris, France
PCT No. PCT/FR90/00532, § 371 Date Apr. 25, 1991, § 102(e) Date Apr. 25, 1991, PCT Pub. No. WO91/00909, PCT Pub. Date Jan. 24, 1991
Continuation of Ser. No. 659,408, Apr. 25, 1991, abandoned. This PCT application Jul. 13, 1990, Ser. No. 920,519
Claims priority, application France, Dec. 29, 1989, 89 17466; Feb. 6, 1990, 90 01368; Jul. 13, 1990, 89 09550
Int. Cl.[6] C12N *9/00*; C12P *21/00*
U.S. Cl. 435—191 **9 Claims**

1. A protein possessing a specific urate oxidase activity of at

least 16 U/mg and having the following sequence (SEQ ID NO:1):

Ser	Ala	Val	Lys	Ala	Ala	Arg	Tyr	Gly	Lys
Asp	Asn	Val	Arg	Val	Tyr	Lys	Val	His	Lys
Asp	Glu	Lys	Thr	Gly	Val	Gln	Thr	Val	Tyr
Glu	Met	Thr	Val	Cys	Val	Leu	Leu	Glu	Gly
Gln	Ile	Glu	Thr	Ser	Tyr	Thr	Lys	Ala	Asp
Asn	Ser	Val	Ile	Val	Ala	Thr	Asp	Ser	Ile
Lys	Asn	Thr	Ile	Tyr	Ile	Thr	Ala	Lys	Gln
Asn	Pro	Val	Thr	Pro	Pro	Glu	Leu	Phe	Gly
Ser	Ile	Leu	Gly	Thr	His	Phe	Ile	Glu	Lys
Tyr	Asn	His	Ile	His	Ala	Ala	His	Val	Asn
Ile	Val	Cys	His	Arg	Trp	Thr	Arg	Met	Asp
Ile	Asp	Gly	Lys	Pro	His	Pro	His	Ser	Phe
Ile	Arg	Asp	Ser	Glu	Glu	Lys	Arg	Asn	Val
Gln	Val	Asp	Val	Val	Glu	Gly	Lys	Gly	Ile
Asp	Ile	Lys	Ser	Ser	Leu	Ser	Gly	Leu	Thr
Val	Leu	Lys	Ser	Thr	Asn	Ser	Gln	Phe	Trp
Gly	Phe	Leu	Arg	Asp	Glu	Tyr	Thr	Thr	Leu
Lys	Glu	Thr	Trp	Asp	Arg	Ile	Leu	Ser	Thr
Asp	Val	Asp	Ala	Thr	Trp	Gln	Trp	Lys	Asn
Phe	Ser	Gly	Leu	Gln	Glu	Val	Arg	Ser	His
Val	Pro	Lys	Phe	Asp	Ala	Thr	Trp	Ala	Thr
Ala	Arg	Glu	Val	Thr	Leu	Lys	Thr	Phe	Ala
Gln	Asp	Asn	Ser	Ala	Ser	Val	Gln	Ala	Thr
Met	Tyr	Lys	Met	Ala	Glu	Gln	Ile	Leu	Ala
Arg	Gln	Gln	Leu	Ile	Glu	Thr	Val	Glu	Tyr
Ser	Leu	Pro	Asn	Lys	His	Tyr	Phe	Glu	Ile
Asp	Leu	Ser	Trp	His	Lys	Gly	Leu	Gln	Asn
Thr	Gly	Lys	Asn	Ala	Glu	Val	Phe	Ala	Pro
Gln	Ser	Asp	Pro	Asn	Gly	Leu	Ile	Lys	Cys
Thr	Val	Gly	Arg	Ser	Ser	Leu	Lys	Ser	Lys
Leu									

preceded, if appropriate, by a methionine.

5,382,519

PERIPLASMIC 3':5'-CYCLIC NUCLEOTIDE PHOSPHODIESTERASE AND RELATED METHODS FOR PRODUCING AND USING THE SAME

Paul V. Dunlap, and Sean M. Callahan, both of Woods Hole, Mass., assignors to Woods Hole Oceanographic Institution, Woods Hole, Mass.

Filed Jan. 13, 1993, Ser. No. 4,751
Int. Cl.[6] C12N *15/31, 15/53, 15/70*
U.S. Cl. 435—69.1 **18 Claims**

1. Isolated DNA coding for a periplasmic 3':5'-cyclic AMP phosphodiesterase obtainable from *Vibrio fischeri.*

5,382,520

AUTOMATED METHOD FOR CONTROLLING THE RATE OF CHLORINE DIOXIDE GENERATION

Dale A. Jenson, and Sam F. Eltomi, both of Overland Park, Kans., assignors to Drew Chemical Corporation, Boonton, N.J.

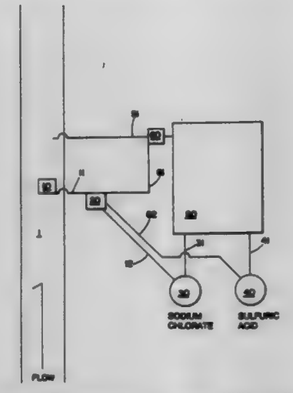
Continuation-in-part of Ser. No. 709,010, May 31, 1991, Pat. No. 5,227,306. This application Jul. 14, 1993, Ser. No. 91,842
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[6] G01N *35/08*
U.S. Cl. 436—55 **3 Claims**

1. A method of treating a system with chlorine dioxide produced by means feeding two reactants into a chlorine dioxide generator wherein said reactants are (a) a solution of an alkaline earth metal chlorate-chloride, and (b) sulfuric acid, said generator having an inlet for feed of said reactants and an outlet means for egress of a chlorine dioxide product stream therefrom wherein the amount of chlorine dioxide used to treat the system is automatically controlled in response to the treatment in the system required by the system, said method comprising the steps of:

(a) measuring the need for chlorine dioxide treatment;

(b) adjusting the quantity of one of said reactants fed to the chlorine dioxide generator to an amount proportional to the measured need for treatment; and

(c) adjusting the quantity of the second reactant for chlorine dioxide fed to the chlorine dioxide generator to bring the composition of the product stream to a predetermined



state, thereby producing a quantity of chlorine dioxide sufficient to meet the measured need for treatment,

wherein said alkaline earth metal chlorate is selected from the group consisting of sodium chlorate, lithium chlorate, potassium chlorate, rubidium chlorate, cesium chlorate and francium chlorate.

5,382,521

METHOD OF DETERMINING METASTATIC POTENTIAL OF BLADDER TUMOR CELLS

Avraham Raz, West Bloomfield, Mich.; Ivan R. Nabi, Montreal, Canada; Hideomi Watanabe, Machoshi, Japan, and Thomas Otto, Essen, Germany, assignors to Michigan Cancer Foundation, Detroit, Mich.

Filed Jul. 14, 1992, Ser. No. 913,107
Int. Cl.[6] G01N *33/574*
U.S. Cl. 435—7.23 **8 Claims**

1. A method of screening for human bladder cancer, said method comprising:

contacting a sample of human bladder cells with an antibody which specifically binds gp78-hAMFR protein, wherein the antibody is detectable;

removing unbound antibody from the sample; and

determining the level of antibody bound to the sample to determine the level of gp78-hAMFR protein expression of the sample;

wherein increased expression of the gp78-hAMFR protein is associated with the presence of bladder cancer.

5,382,522

IMMUNOASSAY FOR CREATINE KINASE-MB AND CREATINE KINASE-BB ISOFORMS AND REAGENTS

Vipin D. Shah, Saratoga; Shing-Erh Yen, Foster City, both of Calif., and Gerald M. Anchin, Bryan, Tex., assignors to International Immunoassay Laboratories, Inc., Santa Clara, Calif.

Continuation of Ser. No. 554,621, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 467,837, Jan. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 299,277, Jan. 23, 1989, Pat. No. 5,202,234, which is a continuation-in-part of Ser. No. 76,038, Jul. 21, 1987, Pat. No. 4,900,662. This application Jun. 25, 1993, Ser. No. 83,854
Int. Cl.[6] G01N *33/573, 33/53;* C07K *15/28*
U.S. Cl. 435—7.4 **12 Claims**

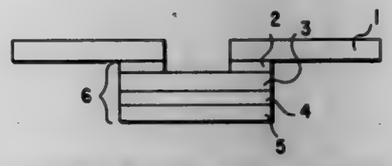
1. A method for determining the amount of a CK-BB isoform having a C-terminal lysine on each B subunit in a sample comprising contacting said sample with an antibody which specifically binds said CK-BB isoform, but does not specifically bind said isoform after loss of said C-terminal lysine from each B subunit and determining the amount of CK-BB isoform bound to said antibody.

5,382,523

USE OF SPARINGLY SOLUBLE SALT OF A HETEROPOLY ACID FOR THE DETERMINATION OF AN ANALYTE, A CORRESPONDING METHOD OF DETERMINATION AS WELL AS A SUITABLE AGENT THEREOF

Joachim Hoenes, Zwigenberg; Hans Wielinger, Weinheim, and Volker Unkrig, Ladenburg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Division of Ser. No. 620,697, Dec. 3, 1990, Pat. No. 5,240,860. This application Apr. 13, 1993, Ser. No. 45,203
Claims priority, application Germany, Dec. 2, 1989, 3940010
Int. Cl.[6] C12Q *1/54, 1/00, 1/34, 1/26*
U.S. Cl. 435—14 **8 Claims**



1. A reagent for the determination of an analyte comprising:

a substance or substances capable of reacting with the analyte to form an organic amine which is a stronger reducing agent than aniline, and

a sparingly soluble salt of a heteropoly acid which forms heteropoly blue with the organic amines wherein the cation of the sparingly soluble salt of the heteropoly acid is larger than NH_4+.

5,382,524

CLONING AND EXPRESSION OF BIOLOGICALLY ACTIVE α-N-ACETYLGALACTOSAMINIDASE

Robert J. Desnick; David F. Bishop; Yiannis A. Ioannou, and Anne M. Wang, all of New York, N.Y., assignors to The Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Filed Oct. 24, 1990, Ser. No. 602,608
Int. Cl.[6] C12N *15/00, 9/40, 9/24*
U.S. Cl. 435—200 **20 Claims**

1. A method for producing human α-N-acetylgalactosaminidase comprising:

(a) culturing a eukaryotic cell containing a chromosomally integrated nucleotide sequence encoding human α-N-acetylgalactosaminidase controlled by a regulatory sequence that promotes gene expression and a selectable marker controlled by the same or different regulatory sequence, so that the α-N-acetylgalactosaminidase nucleotide sequence is stably overexpressed and an enzymatically active α-N-acetylgalactosaminidase enzyme is secreted by the eukaryotic cell; and

(b) isolating enzymatically active α-N-acetylgalactosaminidase enzyme from the eukaryotic cell culture.

5,382,525

METHOD OF EFFECTING INCREASED PERFORMANCE OF DIAGNOSTIC ENZYME REACTION SYSTEMS USING NOBLE GASES

Kevin C. Spencer, Hinsdale, Ill., assignor to American Air Liquide, Walnut Creek, Calif.

Filed Nov. 27, 1992, Ser. No. 982,493
Int. Cl.[6] C12N *1/38;* C12Q *1/00;* A61K *33/00*
U.S. Cl. 435—244 **21 Claims**

1. A method of increasing the enzymatic reaction rate of at least one enzyme used in a diagnostic enzyme reaction system, which comprises contacting at least one reagent of said diagnostic enzyme reaction system in a reaction medium during use of the at least one reagent in conjunction with the reaction system with an effective amount of an atmosphere selected from the group consisting of a noble gas, a mixture of noble gases and a gas mixture consisting of at least one noble gas and a carrier gas;

said noble gas being selected from the group consisting of argon, neon, krypton and xenon; and

said carrier gas being selected from the group consisting of nitrogen, oxygen, nitrous oxide, helium and carbon dioxide.

5,382,526

BLOOD STORAGE CONTAINER AND MATERIAL

Henry M. Gajewski, Winnetka; Barry H. Veraick, McHenry; Paul E. Measells, Libertyville, and Jan W. Garber, McHenry, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 173,014, Mar. 21, 1988, abandoned, which is a continuation of Ser. No. 52,220, May 19, 1987, abandoned, which is a continuation of Ser. No. 906,651, Sep. 11, 1986, abandoned, which is a continuation of Ser. No. 786,183, Oct. 10, 1985, abandoned, which is a continuation of Ser. No. 690,692, Nov. 11, 1985, abandoned, which is a continuation of Ser. No. 471,745, Mar. 9, 1983, Pat. No. 4,507,387, which is a continuation of Ser. No. 202,515, Oct. 31, 1980, abandoned. This application Mar. 17, 1989, Ser. No. 326,449
Int. Cl.[6] C12M *1/24*
U.S. Cl. 435—296 **4 Claims**

1. A container for storage of blood or blood components comprising polyvinyl-chloride plasticized with a mixture of plasticizers, said mixture comprising from about 5 percent to about 30 percent by weight of a first plasticizer material which is essentially nonextractable by blood plasma during the storage period, and from about 10 percent to about 25 percent by weight of trioctylphosphate plasticizer capable of suppressing red cell hemolysis during the storage period and being physiologically compatible with blood, said trioctylphosphate plasticizer being sufficiently extracted by blood plasma stored in said bag such that, in a 35 day storage period, the concentration of said trioctylphosphate plasticizer in blood plasma rises to at least 10 parts per million.

5,382,527

TRANSPOSABLE ELEMENTS FROM STREPTOMYCES AND OTHER ORGANISMS

Patricia J. Solenberg, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 898,353, Jun. 12, 1992, Pat. No. 5,264,354, which is a continuation of Ser. No. 252,095, Sep. 30, 1988, abandoned. This application Oct. 18, 1993, Ser. No. 138,329
Int. Cl.[6] C12N *15/11, 15/76*
U.S. Cl. 435—320.1 **11 Claims**

1. A recombinant DNA compound comprising the transposable element IS493, wherein one strand of the DNA sequence comprises:

5'-AGCGTTTTCC	ATCCTCAAGC	TGAGCTGGCC
TGATGCAGGC	AGAGGACGGC	CTGGACGAGG
ACCGTGACGC	GGGTGGTCGA	GCAACGGAGC
CTGCGAAGGA	GTCGCCAGGA	CTTGAGGGTC

-continued

GCGACGGCTT	GCTCGACGAG	CGCCCGGATC
TTCGCGTGGG	ATCGATTGAC	GGCCTGCTGC
CCTGCAGAGA	GCGTCTCCCA	CCGGCCGCGG
TAGGGAACAC	GGACCGTGCC	TCCGGCGCCC
TGGTAGCCCT	TGTCTGCCCA	GCAGTTGACG
TCGGCTGTGG	CAAGCGTGTC	GATGATGCCG
TGCTCGCGGG	CCGCACGGAC	GTCGTGGACG
GCTCCGGGCA	GGGCCGGCGA	GGCCCACAGC
AGGCGGCCGG	AAGGATCTGC	GATCACCTGT
ACGTTCATCC	CGTGTTTCTT	GTGCTTGCCC
GAGTAGAAAG	GCCGGTCGGC	GGCGATTCGG
TCGATCGGCA	GCAGCGTCCC	GTCCAGCAGG
ACGAACGCCT	TCATCGACGC	CGCCCGGACC
GCCTCGGCGA	GCGTCGGGGC	AAGGGCGGCC
AGAACCTCAG	CTGCCTCGGT	GACGTAGCGG
TAGGCAGTGG	TGGTGCCCAC	GCCGAACCCG
GCCGCGAGCT	GCACATACGG	ATGACCGTTG
CGGAGATGGG	CGAGGGCGAG	CAGAGCCTGC
CGACCTGCGC	TCAGGCGCCG	CCACCGGGTG
CCGAGACCAC	GGCGGTGTTC	CCGCAGACGG
GCGGAGAGGA	AGCGGAGGGC	AGAACTGGAC
ACGTCCAGCC	CGGAGGGGTA	AACAAGCACG
TGAAGCCTCT	AGTAGAGACG	GATTTCTTGG
TCGAAAACCC	ATCTACCAGG	GGCTTCACCC
CTGTGTCAGG	CCAACCCGCA	AGCTGCCGAA
GCAGAATGAA	GACGCTCCTT	GGCTACCGGT
CTGGCGCATG	CGAACCCCGA	CGTCGTGGGT
CTAGCTGGTT	GTCCTGACGG	GTGCGCTGCT
GCGCCCGTGG	CGTCGACCGC	TGAGCTCGGC
GTCGAGTGTC	TCCTGAGCCA	CGCGCATGGC
CTCGGCGTAT	ACGGGGTCCT	GCAGCCGCTT
CCACATCTCG	CCCTCAGAGA	CGICCTCAAC
GCAGCTGACC	ACCCACCAGA	TATTGCCGAA
GGGGTCCTTG	ATGCGCCCTC	CGCGCTGTCC
GAAGGCGTCG	TCGGCCAGGG	AAGTGACGAC
ATAGCCGCCA	GCTGCGACGG	CCTGGGAAAA
CGCCTCGTCC	GCATCGGCGA	CAAATACGCG
CAGCAGGCTC	GGCATGGCGG	GCCAGTCCGT
GTGTCGGTCG	AAGGCCAACA	CGACGGTGTC
GCCGACTCGG	ATCTCAGCGT	GACCGATCAA
GCCCTCCTCG	GTCGACACCC	GCCCGAGTTC
CTCGCCCCCG	AATGCCTGGG	TGACGAAGTC
GAGGAAAGCC	CCCGTGTCGT	CGGTGACGAC
CCAGGGCGCA	ACGGTGGTGT	AGCCCTCCGG
CTCGGGGCTG	GTCTGCTGGG	GCATCGCGGT
CCTTTCGCTG	ATGTTGCTTG	CCAGCAGCGA
CGGTAGGCGT	GAGCTAGGGT	CAGCTTCTGT
CCTAGACGGC	AGTGAGCTTC	GAGCGCAACC
GGTACTACCT	CACGACCGCT	CGCGCTGATC
CAGACCCCGC	CTCTGACCCC	TGACCCCGTC
AGCCTGAGGT	TGAAAAACGC	T-3'

wherein
A is deoxyadenyl
C is deoxycytidyl
G is deoxyguanyl, and
T is thymidyl.

5,382,528

METHOD OF USING A DISPOSABLE TAMPER EVIDENT LOCKING DEVICE

John R. Scoville, Henrietta, N.Y., assignor to SPS Medical Supply Corporation, W. Henrietta, N.Y.

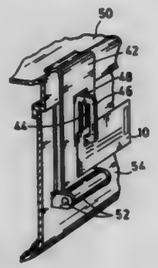
Continuation of Ser. No. 598,946, Oct. 17, 1990, Pat. No. 5,225,162. This application Feb. 10, 1993, Ser. No. 16,092

Int. Cl.[6] G01N *31/00*; B31B *1/90*

U.S. Cl. 436—1 **1 Claim**

1. A method for securing a lock mechanism of a sterilization container to provide evidence of the mechanism being opened which comprises:

(a) providing a locking device for engaging and securing a container lock mechanism which contains a closure means, said device comprising a unitary body made from biodegradable material having a sterilization indicator means contained thereon, said unitary body having a planar configuration which includes an element with at least one free end, said element being formed integral with the said unitary body by appropriate die cuts which result in the formation of an opening or hole within said unitary body, said hole or opening functioning as a means for locating the device on the closure means of said lock mechanism, and means to secure the free end of said element to said unitary body to form a seal, wherein said element fractures upon opening of said container lock mechanism, thereby providing visible evidence of the lock mechanism being opened;



(b) inserting said free end of the device through the closure means of a lock mechanism such that said closure means extends through said opening; and

(c) securing the lock mechanism of the container by mechanically or adhesively contacting said element to said unitary body to form a seal which upon opening of the container lock mechanism said element fractures and provides visible evidence of the lock mechanism having been opened.

5,382,529

ASSAY FOR DIBROMONITRILOPROPIONAMIDE

Martyn W. Hill, Saffron Walden, Great Britain, and Dennis F. Sharman, Oststeiermark, Austria, assignors to CTS Biocides Ltd., Cambridge, Great Britain

PCT No. PCT/GB91/02015, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO92/09890, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 15, 1991, Ser. No. 90,182

Claims priority, application United Kingdom, Nov. 23, 1990, 9025516

Int. Cl.[6] G01N *33/15*

U.S. Cl. 436—109 **7 Claims**

1. A method of testing for the presence of dibromonitrilopropionamide in a sample, which comprises adding to the sample, an alkaline buffer, magnesium ions, and a phenolic or anilinic compound for generating a color; and determining the resultant color.

5,382,530

METHOD FOR THE QUANTITATIVE DETERMINATION OF A FREE FORM OF SUBSTANCES PRESENT IN BIOLOGICAL FLUIDS

Pier B. Romelli, Rho; Giovanni Chiodoni, Vaprio d'Adda, and Roberto Ringhini, Cassina De' Pecchi, all of Italy, assignors to Technogenetics S.R.L., Milan, Italy

Filed Dec. 30, 1992, Ser. No. 997,735

Claims priority, application Italy, Apr. 14, 1992, MI 92A000910

Int. Cl.[6] G01N *33/50, 33/543, 33/566, 33/58*

U.S. Cl. 436—500 **12 Claims**

1. A method for determining the quantity of an analyte present (A) in a free form A_F within a biological fluid, said fluid also containing a bound form A_B of said analyte in equilibrium with said free form, the method comprising the steps of:

(a) contacting said fluid with a predetermined quantity of a first exogenous ligand (L1), said L1 having the property of not binding the bound form A_B, but quantitatively binding the free form A_F and sequestering said A from said biological fluid, whereby an L1/A complex is formed in which the amount of the sequestered analyte A is proportional only to the concentration of the free form A_F;

(b) removing endogenous binding proteins, analyte bound to said endogenous proteins and any unsequestered free analyte present in said fluid;

(c) in the contemporaneous presence of a predetermined quantity of a second exogenous ligand (L2), said L2 having the property of binding to said analyte A as well as to a labelled analyte (M), contacting the L1/A complex with a predetermined quantity of M and a dissociating agent (D), wherein the binding affinity of L1 for A and M is at least 100 times lower in the presence of D than when D is not present, and wherein said D dissociates the sequestered analyte A from L1 without substantially interfering with the binding of A and M to L2, and incubating for about 1 hour so said dissociated A is able to compete with said labelled analyte M for binding to L2; and

(d) determining the concentration of A_F either by measuring the quantity of M bound to L2 or by measuring the quantity of unbound M,

wherein A is selected from the group consisting of thyroxin (T4) and triiodothyronine (T3); and when A is T4, L1 is thyroxin binding globulin protein, L2 is an anti-T4 antibody and D is selected from the group consisting of 8-anilino-1-naphthalenesulphonic acid, sodium salicylate and sodium ethyl-[2-mercaptobenzoate(2-)-O,S]-mercurate(1-); and when A is T3, L1 is a monoclonal anti-T3 antibody, L2 is a polyclonal anti-T3 antibody and D is a solution containing citrate buffer, gelatin and sodium azide.

5,382,531

METHOD FOR CONTINUOUSLY MANUFACTURING A SEMICONDUCTOR DEVICE

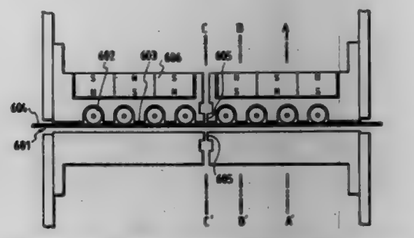
Yasushi Fujioka, Hikone; Takashi Kurokawa, Kawasaki; Masahiro Kanai, Hikone; Masafumi Sano, Nagahama; Takehito Yoshino, Nagahama, and Yuzo Kohda, Nagahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 858,410, Mar. 27, 1992, Pat. No. 5,266,116. This application Jul. 27, 1993, Ser. No. 97,046

Claims priority, application Japan, Mar. 28, 1991, 3-087420

Int. Cl.[6] H01L *31/18, 31/04*; C23C *16/50, 16/54*

U.S. Cl. 437—2 **7 Claims**



1. A method for continuously manufacturing a semiconductor device in a plurality of glow discharge regions on a belt-shaped substrate of magnetic material, comprising the steps of:

connecting a plurality of the glow discharge regions via a gas gate and arranging the belt-shaped substrate of magnetic material along a path sequentially penetrating the glow discharge regions;

supporting a substrate on a plurality of rotatable rollers, disposed into slit-shaped separating passages of the gas gates, by a magnetic force so as to support the back side of the belt-shaped substrate while rotating the rollers, and continuously conveying the belt-shaped substrate in a longitudinal direction;

varying a width of the magnetic field exerted between the rollers and the belt-shaped substrate upon conveyance of the belt-shaped substrate to a value which is equal to or less than ½ of a maximum value of the magnetic force.

5,382,532

METHOD FOR FABRICATING CMOS SEMICONDUCTOR DEVICES

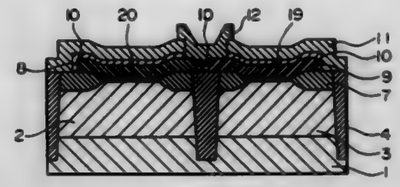
Toshio Kobayashi, Atsugi; Yukio Okazaki, Isehara; Masayasu Miyake, Ebina; Hiroshi Inokawa, Isehara, and Takashi Morimoto, Kawasaki, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 946,080

Claims priority, application Japan, Sep. 17, 1991, 3-265298

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—34 **20 Claims**



20. A method for fabricating metal-insulator-semiconductor devices comprising the steps of:

forming a first gate oxide layer on an active area in a first and a second surface region of a semiconductor substrate;

depositing on said first and second surface regions of the semiconductor substrate a first polysilicon layer having impurities of a first conductivity type so that said first polysilicon layer completely covers said first and second surface regions of the semiconductor substrate;

removing a portion of said first polysilicon layer deposited on said second surface region;

simultaneously forming a second gate oxide layer on said active area in the second surface region where the portion of the first polysilicon layer has been removed, and on said first polysilicon layer, after removing the first gate oxide on the active area in the second surface region;

depositing a second polysilicon layer having impurities of a second conductivity type on said whole surface region, said second conductivity type being different than said first conductivity type;

removing a portion of the second polysilicon layer, at least a part of the portion of the second polysilicon layer being deposited on the first polysilicon layer overlying the first semiconductor surface region; and

simultaneously removing portions of the first and second polysilicon layers to produce a gate electrode pattern.

5,382,533

METHOD OF MANUFACTURING SMALL GEOMETRY MOS FIELD-EFFECT TRANSISTORS HAVING IMPROVED BARRIER LAYER TO HOT ELECTRON INJECTION

Aftab Ahmad, and Randhir P. S. Thakur, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

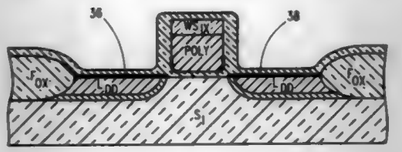
Filed Jun. 18, 1993, Ser. No. 79,322

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—24 **6 Claims**

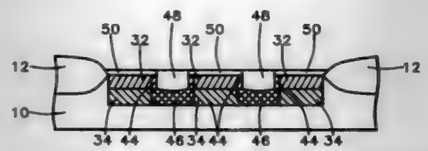
1. A process for manufacturing an insulated-gate, field-effect transistor of the type having a gate oxide layer formed on a silicon substrate, a gate electrode formed on top of the gate oxide layer, and a channel region that was masked by the gate electrode during the implantation of ionic species into the transistor's source and drain regions, said process characterized by the following sequence of steps:

(a) forming a silicon dioxide layer over said gate electrode and over said source and drain regions; and
(b) introducing fluorine, or fluorine in combination with nitrogen into the surface of the silicon substrate, so as to form a barrier layer comprising either silicon fluoride or



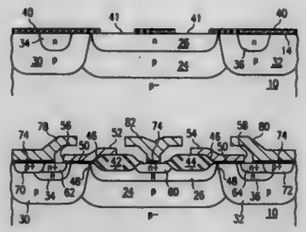
both silicon fluoride and silicon nitride components at an interface between the silicon dioxide layer and the silicon substrate, said fluorine being implanted in ionic form into the surface of the silicon substrate with implantation energies in the range of 15–30 Kev.

5,382,534
FIELD EFFECT TRANSISTOR WITH RECESSED BURIED SOURCE AND DRAIN REGIONS
Shing-Ren Sheu, Tao-Yuan City; Kuan-Cheng Su, Taipei, and Chen-Hui Chung, Hsin-Chu, all of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu,
Filed Jun. 6, 1994, Ser. No. 254,534
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—35 **30 Claims**



1. A method of forming improved spaced buried conductive regions in a semiconductor substrate of a background impurity with a first conductivity type, comprising the steps of:
forming a first gate oxide on the substrate surface;
forming a first lightly doped layer of a first conductivity type in the substrate near the surface;
forming a second lightly doped layer of a first conductivity type at a greater depth than said first lightly doped layer in the substrate;
forming a resist layer over the first gate oxide having a pattern of elongated spaced parallel first openings;
removing the first gate oxide in the first openings;
forming shallow trenches in said substrate through the first openings;
obliquely ion injecting impurity ions of a second conductivity type through the first openings forming buried implanted regions in the trench sidewalls and bottoms;
vertically ion injecting impurity ions of a second conductivity type through the first openings implanting additional impurity ions into the buried implanted regions on the trench bottoms;
removing the thin oxide layer;
annealing the implanted regions in the trench sidewalls and trench bottoms to electrically activate the impurity atoms to form buried conductive lines;
oxidizing the trench surfaces forming a second gate oxide layer so that the surface of the second gate oxide layer is approximately the same height of the oxide on the adjacent substrate surface; and
using conventional semiconductor fabrication techniques forming and completing a semiconductor device.

5,382,535
METHOD OF FABRICATING PERFORMANCE LATERAL DOUBLE-DIFFUSED MOS TRANSISTOR
Satwinder Malhi, Garland, and Wai T. Ng, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 976,713, Nov. 16, 1992, Pat. No. 5,304,827, which is a continuation of Ser. No. 776,102, Oct. 15, 1991, abandoned. This application Mar. 16, 1994, Ser. No. 213,887
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—40 **4 Claims**

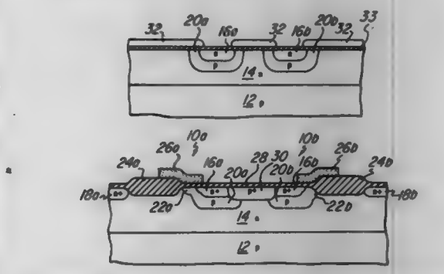


1. A method of fabricating a power transistor at a face of a semiconductor layer having a first conductivity type, comprising the steps of:
forming a mask on the face to define a first implant area;
using the mask, selectively implanting a dopant of a second conductivity type into the implant area;
using the mask, selectively implanting a dopant of the first conductivity type into the implant area, the dopant of the first conductivity type having substantially higher diffusivity in the semiconductor layer than the dopant of the second conductivity type;
driving in the dopants to create a drift region of the second conductivity type and a JFET gate region of the first conductivity type laterally and downwardly surrounding the drift region;
forming a source region to be of the second conductivity type and to be spaced from the drift region;
forming an IGFET body of the first conductivity type, at least a portion of the IGFET body spacing the source region from the drift region;
forming at least one thick insulator layer on a portion of the drift region near a boundary thereof with the IGFET body;
forming a gate insulator on the IGFET body and to extend on the face from the source region at least to the thick insulator region;
forming a conductive gate at least on the gate insulator; and
forming a drain region of the second conductivity type and to be spaced from the IGFET body by the drift region.

5,382,536
METHOD OF FABRICATING LATERAL DMOS STRUCTURE
Satwinder Malhi, Garland; Michael C. Smayling, Missouri City, and Stephen A. Keller, Sugarland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 15, 1993, Ser. No. 31,731
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 **22 Claims**

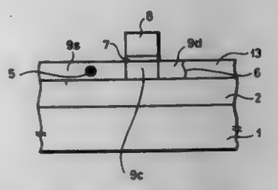
1. A method of forming a lateral DMOS transistor comprising the steps of:
providing a semiconductor layer of a first conductivity type;
forming a field insulating region in said semiconductor layer:
forming a D-well region in said semiconductor layer, said D-well being formed of a second conductivity type opposite said first conductivity type;
forming a shallow, extension region of said second conductivity type extending from said D-well region to a first side of said field insulating region;

forming a first source/drain region in said D-well region and spaced from said field insulating region;
forming a second source/drain region in said semiconductor layer adjacent a second side of said field insulating region opposite said first side; and



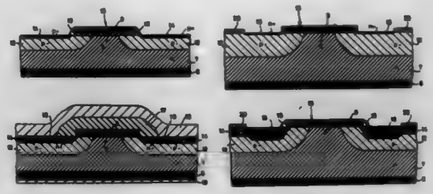
forming a gate electrode overlying the surface of said semiconductor layer and insulated therefrom by a gate dielectric, said gate electrode formed over a portion of said first source/drain region, said D-well region, and a portion of said field insulating region.

5,382,537
METHOD OF MAKING THIN FILM TRANSISTORS
Takashi Noguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 2, 1993, Ser. No. 85,083
Claims priority, application Japan, Jul. 10, 1992, 4-183896
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 **11 Claims**



1. A method of making a thin film transistor, comprising the steps of:
at a position along an amorphous thin film silicon layer, forming a dot-shaped crystallization core in said amorphous thin film silicon layer, which core has a diameter less than the thickness of said thin film silicon layer:
forming in said thin film layer by solid phase epitaxy, a single crystal region about said core:
forming on said thin film silicon layer at a position spaced from said position of said core, a gate electrode of a thin film transistor whose active region lies within said single crystal region, thereby omitting said core from within said active region, and
forming in said thin film silicon layer at opposite sides of said gate electrode, source and drain regions.

5,382,538
METHOD FOR FORMING MOS TRANSISTORS HAVING VERTICAL CURRENT FLOW AND RESULTING STRUCTURE
Raffaele Zambrano, Salerno, and Carmelo Magro, Catania, both of Italy, assignors to Consorzio Per La Ricerca Sulla Microelecttronica Nel, Catania and SGS-Thomson Microelectronics S.R.L., Milan, both of Italy
Continuation of Ser. No. 774,454, Oct. 10, 1991, abandoned. This application May 21, 1993, Ser. No. 66,336
Claims priority, application European Pat. Off., Oct. 16, 1990, 90830462.9
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 **5 Claims**

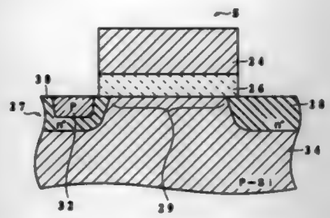


1. A method for forming a field effect transistor, comprising the following succession of steps:
forming a gate electrode over a layer of epitaxial silicon;
forming lightly doped body regions having a first conductivity type, in the epitaxial layer, such regions extending under the gate electrode, and having a selected depth depending on the desired breakdown voltage of the field effect transistor being formed;
forming source regions having a second conductivity type within the epitaxial layer, wherein the source regions are self aligned with the gate electrode;
after formation of the source regions, forming sidewall spacers alongside the gate electrode and covering a portion of the source regions adjacent an edge of the electrode;
after formation of the sidewall spacers, forming heavily doped regions in the epitaxial layer, such heavily doped regions also having the first conductivity type and lying wholly within the lightly doped regions, wherein the heavily doped regions are self aligned with the gate electrode and spaced therefrom by the sidewall spacers which act as a mask, and wherein the heavily doped regions extend under the source regions; and
removing the spacers.

5,382,539
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE INCLUDING NONVOLATILE MEMORIES
Takashi Nakamura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Aug. 26, 1992, Ser. No. 936,094
Claims priority, application Japan, Oct. 31, 1991, 3-286683
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—52 **2 Claims**

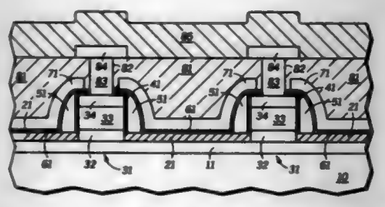
1. A method for manufacturing switch elements of a semiconductor device including nonvolatile memories comprising:
creating a well region in a semiconductor substrate, said well region being of a one-conductivity type;
forming field oxide layers at a boundary of said well region;
forming an insulating layer for holding charges on a surface of said well region;
said insulating layer for holding charges being a ferroelectric layer;

forming a conductive layer on a surface of said insulating layer for holding charges;
etching said insulating layer for holding charges and said conductive layer to form a memory charge storage and a control gate electrode respectively;



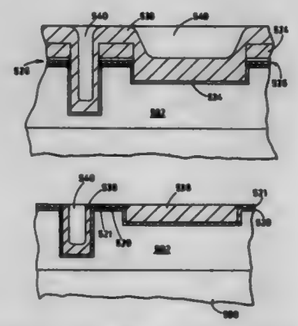
forming a drain and a source in said well region, said drain and said source being of an opposite-conductivity type opposite said one-conductivity type; and
forming a diffusion region of said one-conductivity type within said source.

5,382,540
PROCESS FOR FORMING AN ELECTRICALLY PROGRAMMABLE READ-ONLY MEMORY CELL
Umesh Sharma, and Hisao Kawasaki, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 20, 1993, Ser. No. 124,171
Int. Cl.[6] H01L *21/70, 27/00, 21/265*
U.S. Cl. 437—52 **9 Claims**



1. A process for forming an electrically programmable read-only memory cell comprising the steps of:
providing a substrate having a first conductivity type and a primary surface;
forming a first doped region having a second conductivity type that is opposite the first conductivity type, wherein the first doped region lies at the primary surface of the substrate;
forming a first insulating layer overlying the first doped region and including an opening;
forming a semiconductor pillar overlying the first doped region and extending therefrom, wherein the pillar includes:
a second doped region overlying the first doped region, wherein the second doped region has the second conductivity type;
a central region lying only on the second doped region, wherein the central region has the first conductivity type; and
a third doped region lying on the central region, wherein the third doped region has the second conductivity type;
forming a first dielectric layer having a first side and a second side that is opposite the first side, wherein the first side of the first dielectric layer lies adjacent to the semiconductor pillar;
forming a spacer lying adjacent to the second side of the first dielectric layer, wherein the spacer acts as a floating gate;
forming a second dielectric layer including a first side and a second side that lies opposite the first side, wherein the first side of the second dielectric layer lies adjacent to the spacer and the third doped region;
forming a conductive member that lies adjacent to the second side of the second dielectric layer, wherein the conductive member includes an opening that overlies the third doped region; and
forming an interconnect that is electrically connected to the third doped region.

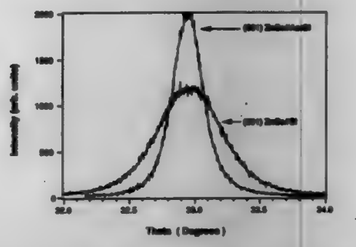
5,382,541
METHOD FOR FORMING RECESSED OXIDE ISOLATION CONTAINING DEEP AND SHALLOW TRENCHES
George Bajor, Melbourne, and Anthony L. Rivoli, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed Aug. 26, 1992, Ser. No. 935,765
Int. Cl.[6] H01L *21/302*
U.S. Cl. 437—67 **9 Claims**



1. A method of trench filling, comprising the steps of:
(a) forming trenches in a semiconductor layer wherein said trenches include first trenches of a first depth and second trenches of a second depth said first layer completely fills said first trenches but only partially fills said second trenches;
(b) forming a first layer of a first material on said semiconductor layer to at least partially fill said trenches;
(c) forming a second layer of a second material on said first layer;
(d) planarizing said second layer to remove said second layer except over said trenches; and
(e) removing a portion of said first layer using the remainder of said second layer from the preceding step as a removal mask;
(f) whereby the remainder of said first layer is located in said trenches and at the periphery of said trenches.

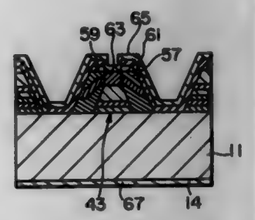
5,382,542
METHOD OF GROWTH OF II-VI MATERIALS ON SILICON USING AS PASSIVATION
Jennifer J. Zinck, Calabasas; Damodaran Rajavel, Los Angeles, and John E. Jensen, Newbury Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 26, 1993, Ser. No. 98,017
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—126 **18 Claims**

1. A method of passivating a surface of a silicon substrate with an arsenic film, comprising:
(a) placing said silicon substrate in a vacuum growth chamber adapted for growth of films from metalorganic compounds and having a ratio of compound pressure to background pressure of at least 100:1; and
(b) exposing said silicon substrate to vapors from an arsenic metalorganic compound having the formula $R_{3-m}AsH_m$, where R is an organic radical selected from the group consisting of C_nH_{2n+1} and C_nH_{2n-1}, where n ranges



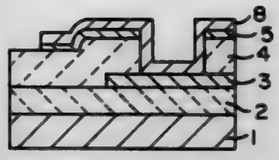
from 1 to 6, and where m is 1 or 2, for a period of time to ensure passivation of said surface by the deposition of a monolayer of arsenic thereon.

5,382,543
SEMICONDUCTOR DEVICE MANUFACTURING METHOD CAPABLE OF CORRECTLY FORMING ACTIVE REGIONS
Takahiro Nakamura, and Tomoji Terakado, both of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Jul. 22, 1993, Ser. No. 95,868
Claims priority, application Japan, Jul. 23, 1992, 4-195720
Int. Cl.[6] H01L *21/205*
U.S. Cl. 437—129 **4 Claims**



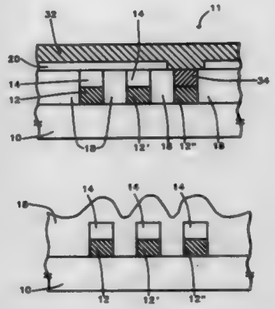
1. A method of manufacturing a semiconductor device, comprising:
a first step of preparing a semiconductor substrate having a principal surface;
a second step of forming a dielectric layer on said principal surface;
a third step of taking a plurality of spaced parallel first strip parts of said dielectric layer away from said principal surface with a distance remaining between said first strip part, said third step being carried out by using a photolithography method to form a plurality of first strip dielectrics and first strip surfaces of said principal surface that are positioned between said first strip dielectrics;
a fourth step of forming a plurality of spaced parallel active regions on said first strip surfaces, respectively, by using a metal organic vapor phase epitaxy method, each of said active regions being covered with lattice planes, each of which is (111)B;
a fifth step of taking a spaced parallel plurality of second principal surface, each of said second strip parts being opposed to one of said active regions, in order to form a plurality of second strip dielectrics and second strip surfaces of said principal surface that are positioned between said active regions and said second strip dielectrics; and
a sixth step of forming a plurality of thin current block regions on said second strip surfaces and said active regions, respectively, by using the metal organic 30 vapor phase epitaxy method.

5,382,544
MANUFACTURING METHOD OF A SEMICONDUCTOR DEVICE UTILIZING THIN METAL FILM
Michikazu Matsumoto, Kyoto, and Kazuhiko Hashimoto, Morigachi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 25, 1993, Ser. No. 66,882
Claims priority, application Japan, May 25, 1992, 4-132177
Int. Cl.[6] H01L *21/283, 21/3205*
U.S. Cl. 437—195 **1 Claim**



1. A method of manufacturing a semiconductor device using electron beam exposure, said method comprising the steps of:
forming a first interlayer dielectric film, a first metal wiring pattern and a second interlayer dielectric film sequentially on a substrate, and further forming a first metal film in a thickness not greater than 100 nm on the second interlayer dielectric film,
applying a photoresist on the first metal film and forming a patterned photoresist by electron beam exposure,
etching the first metal film by using the patterned photoresist as a mask, then etching the second interlayer dielectric film to form a contact hole,
removing the patterned photoresist, and removing a previously formed metal oxide layer from the first metal film surface by etching,
forming a second metal film on the first metal film,
patterning a second patterned photoresist on the second metal film, and
forming a metal wiring pattern by etching the first metal film and the second metal film by using the second patterned photoresist as a further mask.

5,382,545
INTERCONNECTION PROCESS WITH SELF-ALIGNED VIA PLUG
Gary Hong, Hsinchu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China
Filed Nov. 29, 1993, Ser. No. 158,385
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—195 **13 Claims**



1. A method of formation on a substrate of a device with a

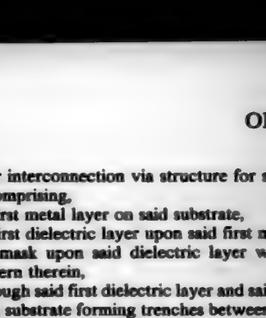
semiconductor interconnection via structure for semiconductor devices, comprising,
a) forming a first metal layer on said substrate,
b) forming a first dielectric layer upon said first metal layer,
c) forming a mask upon said dielectric layer with a metal etching pattern therein,
d) etching through said first dielectric layer and said first metal layer to said substrate forming trenches between metal lines formed from said first metal layer covered with said dielectric layer,
e) forming a first etch stop layer upon the surface of the said first dielectric layer,
f) planarizing said etch stop layer,
g) forming of a second dielectric layer above said etch stop layer,
h) forming a second etch stop layer on said second dielectric layer,
i) patterning with a photolithographic mask through which said second dielectric and said second etch stop layer can be etched to form a via hole,
j) etching said via hole through said photolithographic mask down to a surface of said first metal layer, and
k) forming a second metal layer and a metal plug into said via hole extending into contact with said first metal layer.

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SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING SAME, AS WELL AS LEAD FRAME USED THEREIN AND METHOD OF FABRICATING SAME

Tomio Yamada, Gunma, and Akio Hoshi, Isesaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 31,424, Mar. 15, 1993, abandoned. This application Nov. 10, 1993, Ser. No. 150,344
Claims priority, application Japan, Mar. 23, 1992, 4-095852
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—217 **11 Claims**



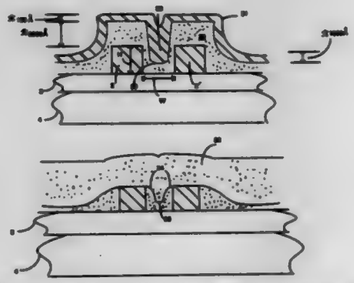
1. A method of fabricating a semiconductor device, comprising the steps of:
providing a laminated lead frame comprising first and second lead frames laminated to each other, said first and second lead frames each comprising a plurality of inner leads and a plurality of outer leads contiguous to said inner leads respectively in an integral manner, said inner leads each including a bonding area defined by the innermost end and side portions of the inner lead, with an insulating layer being interposed at least between the inner leads of said first lead frame and the inner leads of said second lead frame;
providing a semiconductor pellet having an electronic circuitry formed in a main surface thereof and a plurality of electrodes disposed on the main surface;
connecting said plural electrodes with the bonding areas of the inner leads of said first and second lead frames electrically using a plurality of wires; and
sealing the inner leads of said first and second lead frames, said insulating layer and said semiconductor pellet by means of resin;
wherein at least the bonding area of each inner lead of said first lead frame is positioned above two adjacent inner leads of said second lead frame in such a manner that side portions thereof overlap said two adjacent inner leads of the second lead frame.

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VOID FREE OXIDE FILL FOR INTERCONNECT SPACES

Pervaiz Sultan, 7432 Phinney Way, San Jose, Calif. 95139, and Steven C. Avanzino, 7504 Barnhart Pl., Cupertino, Calif. 95014

Filed Jul. 31, 1992, Ser. No. 922,897
Int. Cl.[6] H01L *21/316, 21/443, 21/467*
U.S. Cl. 437—231 **7 Claims**



1. An improved process for void free oxide fill of spaces between metal in a patterned metal interconnect layer of an integrated circuit comprising:
(a) depositing a first plasma enhanced oxide layer of approximately 2500 Å over said metal interconnect layer on said integrated circuit, said interconnect layer having spaces between metal strips, said first oxide layer being thin enough so that deposited oxide on the opposite side walls of said interconnect metal are not connected;
(b) applying an approximately 150 Å thick layer of hardenable sacrificial SOG material over said first plasma enhanced oxide layer, said SOG material forming a partial plug in said space between said metal interconnects, the viscosity of said layer of hardenable sacrificial SOG material selected so that it will flow into said spaces between said metal strips;
(c) simultaneously dry etching said oxide layer and said material plug until all of said SOG is removed and approximately 90% of said first plasma enhanced oxide layer has been removed; and
(d) depositing a second layer of plasma enhanced oxide over said dry etched integrated circuit.

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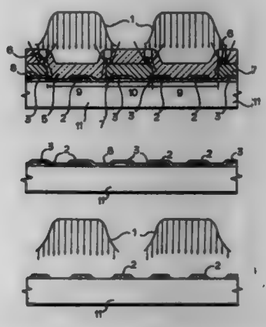
METHOD FOR MAKING POLYSTALLINE SILICON THIN FILM

Jae W. Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 998,683
Claims priority, application Rep. of Korea, Jun. 30, 1992, 11615
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—233 **8 Claims**

1. A method for making a polycrystalline silicon film by heat treating an amorphous silicon film using a laser beam, comprising the steps of:
forming an amorphous silicon film upon a substrate;
forming a metal reflection film over the amorphous silicon film;
partially removing the metal reflection film, to form a plurality of spaced windows in the metal reflection film;

forming a plurality of microlenses at positions above the remaining portions of the metal reflection film, respectively;
annealing first portions of the amorphous silicon film disposed beneath the windows using the laser beam, the positions of the microlenses being such that the regular strong energy portion of the laser beam is scanned at each window and the remaining weak energy portion of the laser beam is scattered;



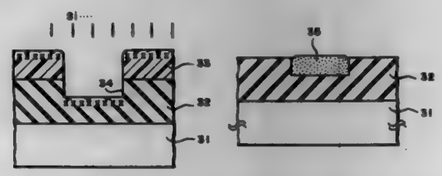
removing the remaining metal reflection film and the microlenses, to expose second portions of the amorphous silicon film disposed beneath where the remaining metal reflection film had been; and
annealing the exposed second portions of the amorphous silicon film using the laser beam such that the regular strong energy portion of the laser beam is scanned at each exposed second portion.

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METHOD OF MANUFACTURING POLYCRYSTALLINE SILICON HAVING COLUMNAR ORIENTATION

Jiro Ohshima, Kitakyushu, and Toshiyo Motozima, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 883,244, May 7, 1992, abandoned, which is a continuation of Ser. No. 610,228, Nov. 9, 1990, abandoned. This application Jul. 2, 1993, Ser. No. 85,139
Claims priority, application Japan, Nov. 10, 1989, 1-293493
Int. Cl.[6] H01L *21/469*
U.S. Cl. 437—233 **2 Claims**



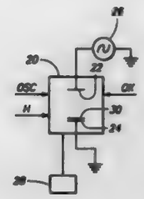
1. A method of manufacturing a semiconductor device, said method comprising the steps of:
forming an insulating film made of a single composition on a semiconductor substrate;
ion-implanting silicon in a given area of said insulating film, thereby forming a silicon nucleus; and
forming a polysilicon film only on the area of the silicon nucleus by means of vapor-phase growth, said polysilicon film having a columnar crystalline orientation vertical to the surface of the semiconductor substrate.

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METHOD OF DEPOSITING SiO_2 ON A SEMICONDUCTOR SUBSTRATE

Ravi Iyer, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Aug. 5, 1993, Ser. No. 103,392
Int. Cl.[6] H01L *21/02*
U.S. Cl. 437—235 **14 Claims**



1. A deposition method of reducing fixed charge in a layer of silicon dioxide comprising the following steps:
providing a gaseous organosilicon compound to a chemical vapor deposition reactor having a semiconductor wafer positioned therein;
providing an oxidizing gas to the reactor for reaction with the organosilicon compound;
feeding a gaseous hydrogen containing source to the reactor; and
reacting the organosilicon compound, oxidizing gas and gaseous hydrogen containing source to deposit a layer of silicon dioxide on the wafer, wherein the hydrogen containing source gas produces hydrogen radicals that are effectively reacting with the organosilicon compound to produce reduced fixed charge in the deposited silicon dioxide layer over that which would be present if no hydrogen containing source gas were fed to the reactor under otherwise identical reacting conditions.

5,382,551

METHOD FOR REDUCING THE EFFECTS OF SEMICONDUCTOR SUBSTRATE DEFORMITIES

Ardhir P. S. Thakur, and Annette L. Martin, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Apr. 9, 1993, Ser. No. 45,398
Int. Cl.[6] H01L *21/324, 21/477*
U.S. Cl. 437—247 **20 Claims**



1. A method for fabricating semiconductors, comprising the steps of:
depositing at least one layer superjacent and at least one layer subjacent a single semiconductor substrate, thereby causing a deformity in said substrate, said deformity comprising at least one of a warp and a bow, said layers being deposited by at least one of Low Pressure Chemical Vapor Deposition ("LPCVD"), Plasma Deposition, and Rapid Thermal Chemical Vapor Deposition ("RTPCVD");
thereafter, heating said deformed substrate; and
removing said at least one layer subjacent said substrate, thereby reducing said deformity.

5,382,552

RARE EARTH-CONTAINING ALKALI SILICATE FRITS AND THEIR USE FOR THE PREPARATION OF PORCELAIN ENAMEL COATINGS WITH IMPROVED CLEANABILITY

Elie E. Saad, Burtonsville, Md., and Stuart W. Ries, St. Joseph, Mich., assignors to Miles Inc., Pittsburgh, Pa. and Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 14, 1993, Ser. No. 121,096
Int. Cl.[6] C03C *8/06*
U.S. Cl. 501—25 **30 Claims**

1. An alkali silicate frit which may be applied to a metal substrate to provide a porcelain enamel coating which has sufficient thermal stability to be suitable as a coating for the interior of oven cavities, has an acid resistance of A on the PEI scale and does not require elevated temperatures or highly alkaline cleaners to remove baked on foods, wherein said frit contains, based on the total weight of the frit:

Oxide	Wt. %
R_2O	10–30
MgO	0–5
B_2O_3	0–5
SiO_2	45–60
TiO_2	0–10
F	0.5–5
CoO	0–2
NiO	0–5
X	12–30

wherein
R represents an alkali metal and
X represents a rare earth oxide having an atomic number of 57–60.

5,382,553

MOLYBDENUM DISILICIDE COMPOSITES REINFORCED WITH ZIRCONIA AND SILICON CARBIDE

John J. Petrovic, Los Alamos, N. Mex., assignor to The Regents of the University of California, Alameda, Calif.

Continuation of Ser. No. 893,511, Jun. 3, 1992, abandoned. This application Feb. 2, 1994, Ser. No. 191,747
Int. Cl.[6] C04B *35/52*
U.S. Cl. 501—92 **2 Claims**

1. A composition consisting essentially of molybdenum disilicide, silicon carbide, and a zirconia component chosen from a group consisting of pure zirconium oxide, partially stabilized zirconium oxide, and fully stabilized zirconium oxide, where molybdenum disilicide is present in an amount of from about 30 to about 90 vol %, silicon carbide is present in an amount of from about 5 to about 35 vol %, and the zirconia component is present in an amount of from about 5 to about 35 vol %.

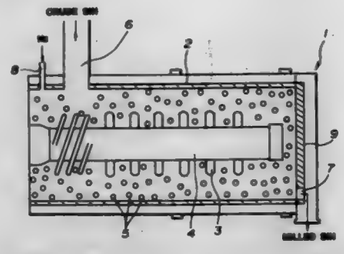
5,382,554

HIGH-PACKING SILICON NITRIDE POWDER AND METHOD FOR MAKING

Haruyoshi Kuwabara; Akio Otsuka, Gunma, and Meguru Kashida, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 852,559, Mar. 17, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,351
Claims priority, application Japan, Mar. 18, 1991, 3-078588
The portion of the term of this patent subsequent to Sep. 20, 2011, has been disclaimed.
Int. Cl.[6] C04B *35/58*
U.S. Cl. 501—97 **2 Claims**

1. A silicon nitride powder having a tap density of at least about 0.9 g/cm^3, said tap density being the value obtained by charging a cylindrical container having a volume of 100 cm^3 with the powder to be measured, repeating 180 gravity drops from a height of 2 cm, and measuring the bulk density of the powder, said powder having a BET specific surface area of at least about 7 m^2/g, being substantially free from acicular particles and containing at least about 95% by weight of particles having an aspect ratio of up to about 3, said silicon nitride powder being obtained by milling a silicon nitride powder having a tap density of less than about 0.9 g/cm^3, containing less than about 50% by weight of particles having an aspect ratio of up to 3 and about 10 to 50% by weight of acicular particles and prepared by reacting a metallic silicon powder



having a BET specific surface area of about 1 to 5 m^2/g with nitrogen, in a dry attritor including a fixed milling shell which is charged with balls as tumbling media and a powder to be milled whereby the contents are forcedly agitated by means of agitating rods or rotating disks for comminution.

5,382,555

HIGH ALUMINA BRICK WITH METALLIC CARBIDE AND ITS PREPARATION

Joseph L. Stein, Pittsburgh, Pa.; Donald A. McIntyre, Aurora, Ohio, and P. Sean McHugh, Duncanville, Pa., assignors to General Acquisition Corporation, Mexico, Mo.

Filed Oct. 22, 1993, Ser. No. 142,501
Int. Cl.[6] C04B *35/10*
U.S. Cl. 501—127 **12 Claims**

1. In a high alumina brick-shaped refractory body adapted to be fired to provide a fired fireclay-bonded high alumina refractory brick and containing an intimate mixture of particulate alumina materials to provide an alumina content of at least 50 percent, by weight, based on the dry weight of said mixture, the improvement wherein: (1) there is also included in the mixture metallic carbide particles in an amount between about 3 and about 25 percent, by weight, based on the total dry weight of the mixture, said particles having a particle size of from −3 mesh to +325 with no more than 1.5 percent, by weight, of metallic carbide particles in the mixture being −325 mesh, and (2) carbonaceous material other than the carbide is substantially excluded from the mixture.

5,382,556

TRANSLUCENT POLYCRYSTALLINE ALUMINA AND PROCESS FOR PRODUCING THE SAME

Hiroshi Takahashi, Osaka; Hiroshi Umezaki, and Yasushi Teshima, both of Ehime, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 21, 1993, Ser. No. 50,564
Claims priority, application Japan, Apr. 22, 1992, 4-102855
Int. Cl.[6] C04B *35/10*
U.S. Cl. 501—153 **6 Claims**

1. Translucent polycrystalline alumina having an in-line transmission at a wavelength of 600 nm of at least 30% comprising aluminum oxide containing magnesium oxide in an amount of larger than 0.01% by weight but not larger than 0.025% by weight, zirconium oxide in an amount of larger than 0.01% by weight and less than 0.06% by weight and calcium oxide in an amount of less than 0.001% by weight, all based on the weight of aluminum oxide, wherein said translucent polycrystalline alumina has a three-point bending strength of at least 25 kg/mm^2.

5,382,557

PROCEDURE FOR THE PREPARATION OF A SOLID COMPONENT OF CATALYST FOR THE (CO)POLYMERIZATION OF ETHYLENE

Francesco Masi, San Donato Milanese; Renzo Invernizzi, Milan; Angelo Moalli, Castelletto Ticino; Cesare Ferrero, Monza; Francesco Menconi, Massa Macinaia, and Lia Barazzoni, Piacenza, all of Italy, assignors to ECP Enichem Polimeri S.r.l., Milan, Italy

Filed Jul. 10, 1992, Ser. No. 911,465
Claims priority, application Italy, Jul. 12, 1991, MI91A/001933
Int. Cl.[6] A01J *31/00, 25/08*
U.S. Cl. 502—107 **12 Claims**

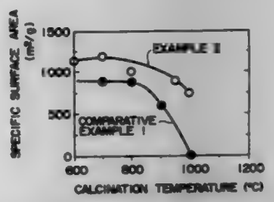
1. Process for the preparation of a solid component of catalyst for the (co)polymerization of ethylene, and containing titanium, magnesium, aluminium, chlorine and alkoxy groups, wherein said process comprises:
(i) obtaining a solid granular support of magnesium chloride by spray-drying an ethanol solution of magnesium chloride, said support having a content of alcoholic —OH groups of 18 to 25% by weight, expressed as a weight of ethanol, suspending the support in a liquid hydrocarbon solvent and adding to the suspension n-butanol and titanium tetra-n-butoxide, with a molar ratio n-butanol/$MgCl_2$ of 0.5:1 to 1.5:1 and with a molar ratio $MgCl_2$/titanium tetra-n-butoxide of 0.3:1 to 3:1,
(ii) heating the suspension of step (i) until a homogeneous solution is obtained and cooling the solution to precipitate a granular solid and form a relative suspension,
(iii) contacting and reacting the granular solid obtained in step (ii), in the relative suspension of step (ii), with an aluminium alkyl chloride selected from the group consisting of aluminium diethyl monochloride, aluminium ethyl dichloride and aluminium ethyl sesquichloride, with a ratio between the chlorine atoms, in the aluminium chloride, and the total alkoxy groups of 0.4:1 to 1.2:1, and
(iv) recovering the solid component of catalyst from the reaction products of step (iii).

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HEAT RESISTANT LAYERED POROUS SILICA AND PROCESS FOR PRODUCING THE SAME

Shinji Inagaki; Yoshiaki Fukushima; Akane Okada; Kazuhiro Fukumoto, all of Aichi, and Kazuyuki Kuroda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Tokyo, Japan

Continuation-in-part of Ser. No. 937,032, Aug. 31, 1992, which is a continuation-in-part of Ser. No. 820,167, Jan. 13, 1992. This application Jul. 2, 1993, Ser. No. 87,440
Claims priority, application Japan, Jul. 3, 1992, 4-200255
Int. Cl.[6] B01J *20/10, 20/28*
U.S. Cl. 502—407 **21 Claims**



5. A process for producing a heat resistant layered porous silica, which comprises:
expanding the interlayer spacings of a crystalline layered silicate containing not less than 10% by weight of water, by exchanging interlayer alkali metal ions being present in said crystalline layered silicate for cations of an organic substance to thereby introduce said cations of the organic substance into the spacings between the layers of said crystalline layered silicate;
rinsing the ion-exchanged crystalline layered silicate to remove free alkali metal ions which were released by the ion exchange step above; and
calcining the ion-exchanged crystalline layered silicate to obtain layered porous silica by calcining said cations of the organic substance.

7. A process for producing a heat resistant layered porous silica as claimed in claim 5, wherein the cation of the organic substance is at least one selected from group consisting of cations of an alkyltrimethylammonium, a dimethyldialkylammonium, an alkylammonium, and benzyltrimethylammonium.

5,382,559

PROCESS FOR PRODUCING ACTIVATED CHARCOAL

Angelo Carugati, Manera; Gastone Del Piero, and Riccardo Rausa, both of Milan, all of Italy, assignors to Enitricerche S.p.A., Milan, Italy

Filed Mar. 22, 1993, Ser. No. 35,207
Claims priority, application Italy, Apr. 2, 1992, MI92A000794
Int. Cl.[6] C01B *31/12;* B01J *20/20*
U.S. Cl. 502—427 **5 Claims**

1. A process for producing activated charcoal, comprising the steps of:
(a) oxidizing coal to form a carbonaceous substance containing humic acids;
(b) separating said humic acids from said carbonaceous substance in the form of potassium humates and/or humic acids;
(c) mixing said potassium humates and/or humic acids with an activating agent selected from the group consisting of KOH and K_2CO_3 or their mixtures in a weight ratio of activating agent to potassium humates and/or humic acids of from 0.1:1 to 10:1 to form a humate/activating agent mixture;
(d) when said mixing (c) is performed in aqueous solution, drying said humate/activating agent mixture;
(e) heat treating said dry humate/activating agent mixture in an inert atmosphere at a temperature within the range of 400° C. to 1200° C.;
(f) recovering from the product of step (e) an activated charcoal, by separating the activating agent, which is then recycled.

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COLOR DEVELOPERS AND SHEETS THEREOF

Nobuo Hisada, Moriyama; Yasushi Nishigakiuchi, Uji; Yoshiyuki Ueno, Kyoto; Yasuo Kotani, Habikino, and Tadao Yagyu, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Dec. 11, 1992, Ser. No. 989,565
Claims priority, application Japan, Dec. 18, 1991, 3-354841; Jul. 1, 1992, 4-199139; Aug. 27, 1992, 4-253754
Int. Cl.[6] B41M *5/135, 5/30;* C07F *3/06;* C09D *11/00*
U.S. Cl. 503—209 **23 Claims**

1. A color developer comprising a polyvalent metal salt of a styrenated salicylic acid derivative comprising 5 to 60% by weight of at least one ring-substituted salicylic compound having one styrene unit, 15 to 60% by weight of at least one ring-substituted salicylic compound having two styrene units and 10 and 40% by weight of at least one ring-substituted salicylic compound having three styrene units, said styrene unit or units having been introduced by reaction with a styrene compound, wherein at least 25% of the ring-substituted salicylic compound having one, two or three styrene units are polyvalent metal salts based on the total amount of ring-substituted salicylic compounds present.

5,382,561
SUBLIMATION TYPE COLOR PRINTING SHEET
Masakuni Mori, and Osamu Sakurai, both of Bisai, Japan, assignors to Tsuyakin Co., Ltd., Aichi, Japan
Filed Jun. 11, 1992, Ser. No. 896,968
Claims priority, application Japan, Jun. 11, 1991, 3-165182; Oct. 9, 1991, 3-289520
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 **11 Claims**

1. A sublimation color thermal printing sheet including a material sheet on which a plurality of color ink layers at least including cyan, magenta and yellow formed from solutions of sublimation dyes in solvents are coated in a given order, wherein both of said cyan and magenta inks are formed by a mixture of a plurality of dyes at least including a plurality of anthraquinone chromophore dyes as base dye respectively, and said yellow ink is formed by a mixture of a plurality of dyes with at least adding a plurality of anthraquinone chromophore dyes to quinophthalone chromophore dye as base dye;

wherein a plurality of solutions of said plurality of anthraquinone chromophore dyes are formed such that each of the anthraquinone chromophore dyes is solved in a soluble amount with respect to each solvent respectively, said plurality of solutions of the anthraquinone chromophore dyes are mixed with each other so that the total amount of said anthraquinone chromophore dyes included in said solutions obtains an OD value equal to or more than 2.0 and high light-proofing durability equal to or higher than that of a silver salt photograph, and said cyan, magenta and yellow inks are formed by mixing the mixture of solutions of the anthraquinone chromophore dyes and other solutions of residual dyes.

5,382,562
ERASABLE MARKER-BOARD HAVING PERMANENT INFORMATION IMMOBILIZED IN ITS ERASABLE POLYMERIC SURFACE AND METHOD OF MAKING
James E. Hutten, Mason, Ohio, assignor to Ghent Manufacturing, Inc., Lebanon, Ohio
Continuation of Ser. No. 760,330, Sep. 16, 1991, abandoned. This application Jan. 3, 1994, Ser. No. 176,317
Int. Cl.[6] B41M *5/20*
U.S. Cl. 503—227 **5 Claims**



1. A method for making and erasing ink images on a markerboard comprising

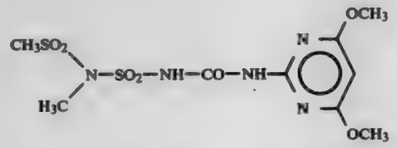
providing an erasable markerboard having a polymeric marking surface for receiving erasable ink images, said polymeric surface having permanent indicia sublimed into and extending below said marking surface,

imaging said marking surface with an erasable ink image,

removing said image with an eraser means without any residual ghost of said ink image remaining on said surface, said permanent indicia unaffected by said ink and eraser means to which said surface has been subjected whereby said markerboard may be reused.

5,382,563
HERBICIDAL AGENTS
Hans Schumacher, Flörsheim am Main; Hans P. Huff, Eppstein/Taunus, and Erwin Hacker, Hochheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Franfurt am Main, Germany
Filed Jun. 1, 1990, Ser. No. 531,940
Claims priority, application Germany, Jun. 5, 1989, 3918287
Int. Cl.[6] A01N *43/54*
U.S. Cl. 504—136 **9 Claims**

1. An herbicidal composition which comprises 3-(4,6-dimethoxy-2-pyrimidinyl)-1-[(N-methyl-N-methylSulfonyl)-aminosulfonyl]-urea of the formula I

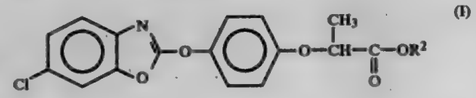


(I)

in combination with a phenylurea herbicide (II) selected from the group consisting of isoproturon and monolinuron in a weight ratio of I:II from 1:10 to 1:240.

5,382,564
HERBICIDAL AGENTS
Hans Schumacher, Flörsheim am Main; Hans P. Huff, Eppstein/Taunus, and Erwin Hacker, Hochheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Franfurt am Main, Germany
Division of Ser. No. 69,132, May 28, 1993, Pat. No. 5,342,822, which is a division of Ser. No. 768,344, Sep. 30, 1991, Pat. No. 5,231,071, which is a continuation of Ser. No. 216,175, Jul. 7, 1988, abandoned. This application Apr. 19, 1994, Ser. No. 229,614
Claims priority, application Germany, Jul. 10, 1987, 3722801
Int. Cl.[6] A01N *43/54, 43/38*
U.S. Cl. 504—136 **5 Claims**

1. A herbicidal composition containing a synergistically effective amount of a combination of a compound of the formula I, a salt or a stereoisomer thereof,



(I)

wherein

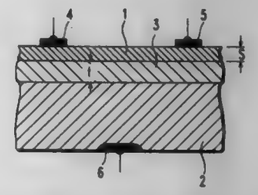
R^2 is hydrogen or (C_1–C_4) alkyl, and a sulfonylurea compound (II) selected from the group consisting of

(IIa) 3-(4,6-dimethoxy-2-pyrimidinyl)-1-[N-methyl-N-methylsulfonyl)-aminosulfonyl]-urea, and

(IIb) 3-(4,6-dimethoxy-2-pyrimidinyl)-1-[(N-methyl-N-ethylsulfonyl)-aminosulfonyl]-urea,

and wherein said compound of formula I and said sulfonyl urea compound (II) are in a ratio by weight of from 10:1 to 2:1.

5,382,565
SUPERCONDUCTING FIELD-EFFECT TRANSISTORS WITH INVERTED MISFET STRUCTURE
Johannes G. Bednorz, Wolfhausen; Jochen D. Mannhart, Au/Zh, and Carl A. Mueller, Hedingen, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 731,821, Jul. 16, 1991, Pat. No. 5,278,136. This application Oct. 20, 1993, Ser. No. 139,958
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[6] H01B *12/00;* **B05D** *5/12;* **H01L** *39/22*
U.S. Cl. 505—193 **10 Claims**



1. A superconductor field-effect transistor comprising:

an electrically conductive substrate of a single crystal of a material of a crystallographic family, said material consisting of niobium-doped strontium titanate $Nb:SrTiO_3$, with a doping factor of between 0.001% and 10% niobium, said crystal having a predetermined crystallographic orientation;

a gate electrode being formed by a contact to said substrate;

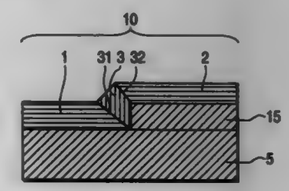
an insulating barrier layer on a top surface of said substrate, said insulating barrier layer being a second material of said crystallographic family and having the same said predetermined crystallographic orientation;

a superconducting thin film layer on a top surface of said insulating barrier layer;

a pair of gold pads on a top surface of said superconducting thin film, a first said gold pad being a source electrode and a second said gold pad being a drain electrode; and,

an electrical-field-controlled current channel in said superconducting thin film layer between said pair of gold pads.

5,382,566
JOSEPHSON JUNCTION DEVICE FORMED OF OXIDE SUPERCONDUCTOR AND PROCESS FOR PREPARING THE SAME
Saburo Tanaka; Takashi Matsuura, and Hideo Itozaki, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jun. 1, 1993, Ser. No. 69,912
Claims priority, application Japan, May 29, 1992, 4-164151
Int. Cl.[6] G11C *11/44;* **H01L** *39/24*
U.S. Cl. 505—329 **18 Claims**



1. A process for manufacturing a Josephson junction device comprising the steps of forming on a portion of a principal surface of the single crystalline substrate a lift-off layer composed of a material which can be easily removed without disturbing the substrate, depositing a layer of the same material as that of the substrate over the principal surface of the substrate, removing the lift-off layer by a water wash with a portion of the layer on it so that a step is formed on the principal surface of the substrate and forming an oxide superconductor thin film on the principal surface of the substrate so that the oxide superconductor thin film includes a first and a second portions respectively positioned above and below the step of the substrate, which are constituted of single crystals of the oxide superconductor, a junction portion between said the first and second superconducting portions, which are constituted of a single crystal of the oxide superconductor having a different crystal orientation from the first and second superconducting portions, and grain boundaries between the first superconducting and the junction portion and between the second superconducting portion and the junction portion, which constitute one weak link of the Josephson junction.

5,382,567
AROMATIC COMPOSITION AND METHOD FOR CONTROLLING AROMA
Toru Fuwa, Takata, and Kaneto Uekama, Kumamoto, both of Japan, assignors to Wakunaga Seiyaku Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 833,452, Feb. 6, 1992, Pat. No. 5,238,915. This application Apr. 27, 1993, Ser. No. 53,187
Claims priority, application Japan, Feb. 8, 1991, 3-39325; Feb. 8, 1991, 3-39326
Int. Cl.[6] A61K *1/46*
U.S. Cl. 512—4 **17 Claims**

1. An aromatic composition, comprising at least one perfume coated with a material whose solubility in a solvent is dependent on the pH of a solution containing the at least one coated perfume, and a pH-adjusting substance, wherein said material is selected from the group consisting of enteric coating materials which are soluble in alkaline conditions and gastric coating materials which are soluble in acidic conditions, and wherein said composition comprises either a solid preparation whereby said at least one coated perfume and said pH-adjusting substance are dissolved when used, or said composition comprises a solid preparation and a separate liquid preparation whereby said at least one coated perfume and said pH-adjusting substance are mixed when used.

5,382,568
DECAPEPTIDE HAVING DOPAMINE STIMULATING ACTIVITY
Byrant Benson, Tucson, Ariz., assignor to Arizona Board of Regents, Tucson, Ariz.
Continuation of Ser. No. 747,782, Aug. 19, 1991, abandoned. This application Sep. 22, 1993, Ser. No. 125,503
Int. Cl.[6] A61K *37/00, 37/02;* **C07K** *5/00, 7/00*
U.S. Cl. 514—15 **10 Claims**

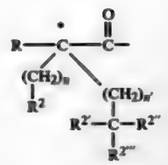
1. A peptide having the sequence NH_2-Ser-Phe-Pro-Thr-Thr-Lys-Thr-Tyr-Phe-Pro-COOH, or a pharmaceutically acceptable nontoxic salt thereof.

5,382,569
ENDOTHERLIN ANTAGONISTS
Wayne L. Cody, Saline; Patricia DePue, Canton; Annette M. Doherty, Ann Arbor; John X. He, Ypsilanti, and Michael D. Taylor, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 809,746, Dec. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 701,274, May 16, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 995,480
Int. Cl.[6] A61K *37/02;* **C07K** *7/06*
U.S. Cl. 514—17 **8 Claims**

1. A compound of Formula I

AA^1-AA^2-AA^3-AA^4-AA^5-AA^6

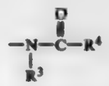
wherein AA^1 is



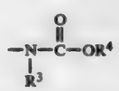
wherein
R is
hydrogen,
alkyl,



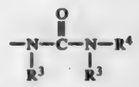
wherein $R^3$and R^4 are each the same or different and each is
hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl,
cycloalkylalkyl,
aryl,
heteroaryl, or
fluorenylmethyl,



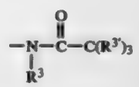
wherein R^3 and R^4 are each the same or different and each is as defined above,



wherein R^3 and R^4 are each the same or different and each is as defined above,

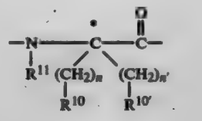


wherein R^3 and R^4 are defined above or



wherein $R^{3'}$ is F, Cl, Br, or I, and R^3 is as defined above,
R^2 is hydrogen or methyl,
$R^{2'}$, $R^{2''}$ and $R^{2'''}$ are each the same or different and each is
hydrogen,
alkyl,
aryl, or
heteroaryl with the proviso that at least one of R^2, $R^{2'}$, and $R^{2''}$ is aryl or heteroaryl and $R^{2'''}$ is hydrogen or methyl,
n is zero, and
n' is zero or an integer of 1, 2, or 3;

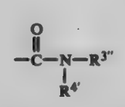
AA^2 is
Apa,
Ahp,
Dip,
D-Phe,
Phe,
HomoArg,
Arg, or



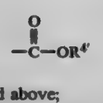
wherein
R^{11} is hydrogen or methyl,
n is zero,
R^{10} is hydrogen or methyl,
n' is zero or an integer of 1, 2, 3, 4, or 5, and
$R^{10'}$ is alkyl,
OH,



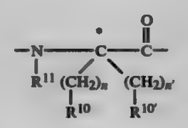
wherein $R^{3''}$ and $R^{4'}$ are each the same or different and each is
hydrogen,
alkyl, or
aryl,



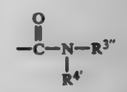
wherein $R^{3''}$ and $R^{4'}$ are as defined above,



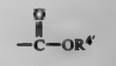
wherein $R^{4'}$ is as defined above;
$-S(O)_mR^{3''}$ wherein m is zero or an integer of 1 of 2 and $R^{3''}$ is as defined above except that $R^{3''}$ is not hydrogen;
AA^3 is
Lys,
Tyr,
Phe, or



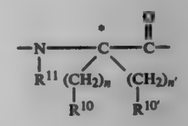
wherein
R^{11} is hydrogen or methyl,
n is zero,
R^{10} is hydrogen or methyl,
n'' is zero or an integer of 1, 2, or 3, and
$R^{10'}$ is
alkyl,
aryl,



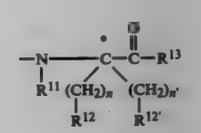
wherein $R^{3''}$ and $R^{4'}$ are as defined above;



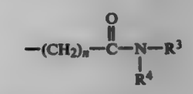
wherein $R^{4'}$ is as defined above;
AA^4 and AA^5 are each
Phe,
Lys,
Glu,
Pro, or



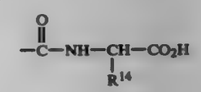
wherein
R^{11} is hydrogen or methyl,
n is zero,
R^{10} is hydrogen or methyl,
n' is zero, and
$R^{10'}$ is alkyl, or cycloalkyl, or
one of AA^2 or AA^4 is absent;
AA^6 is



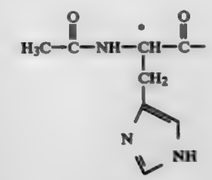
wherein
R^{11} is hydrogen or methyl,
n is zero,
R^{12} is hydrogen, or methyl,
n' is zero or an integer of 1, 2, or 3,
$R^{12'}$ is aryl or heteroaryl,
R^{13} is
$-(CH_2)_n-CO_2H$ wherein n is zero or an integer of 1, 2, 3, 4, 5, or 6,
$-(CH_2)_n-OH$ wherein n is zero or an integer of 1, 2, 3, 4, 5, or 6, or



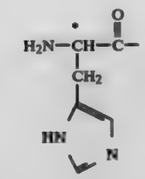
wherein n, R^3, R^4 are defined above,



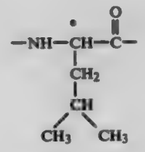
wherein R^{14} is
hydrogen or
$-CH_2CO_2H$,
stereochemistry at C* in AA^1 is D,
stereochemistry at C* in AA^2, AA^3, AA^4 or AA^5 is D or L and stereochemistry at C* in AA^6 is L; with the exclusion of compounds wherein AA^1 is



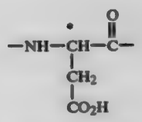
wherein C*H is D or L stereochemistry, or



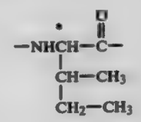
wherein C*H is D or L stereochemistry,
AA^2 is



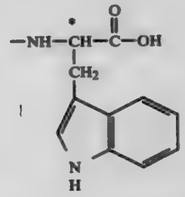
wherein C*H is D or L stereochemistry,
AA^3 is



wherein C*H is D or L stereochemistry,
AA^4 and AA^5 are each



wherein C*H is D or L stereochemistry, and
AA^6 is



wherein C*H is D or L stereochemistry but wherein only one

of AA^1 or AA^2 or AA^3 or AA^4 or AA^5 or AA^6 are of D-stereochemistry; or a pharmaceutically acceptable salt thereof.

5,382,570

SULFATED GLYCOSAMINOGLYCANOID DERIVATIVES OF THE DERMATAN SULFATE AND CHONDROITIN SULFATE TYPE

Maurice Petitou, Paris, France, and Constant A. A. van Boeckel, Lx Oss, Netherlands, assignors to Akzo, N.V., Velperweg and Saofi, S.A., Arnhem, Netherlands

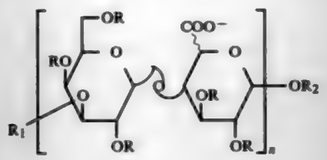
Continuation-in-part of Ser. No. 795,595, Nov. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 690,035, Apr. 23, 1991, abandoned. This application Jul. 27, 1992, Ser. No. 919,683

Claims priority, application European Pat. Off., Apr. 23, 1990, 90101006

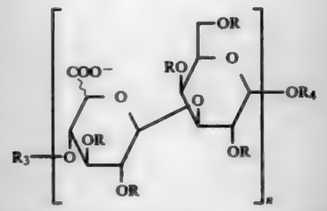
Int. Cl.[6] **A61K** *31/70, 31/715;* **C07H** *13/12, 23/00*

U.S. Cl. 514—53 **5 Claims**

1. A sulfated compound derived from a glycosaminoglycan, comprising the disaccharide unit having the formula I or II

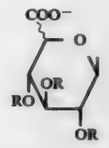


I

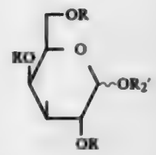


II

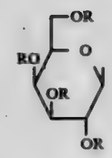
in which the twitched lines denote an α or β bond, n is the number 1 to 4, each of the groups R are independently selected from the group consisting of alkyl and sulfate; R_1 has the same meaning as R or is



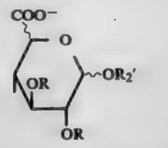
wherein the twitched line and R have the previously given meanings; R_2 is selected from the group consisting of alkyl, aryl, aralkyl and β-



wherein the twitched line and R have the previously given meanings and R_2' is selected from the group consisting of alkyl, aryl and aralkyl; R_3 has the same meaning as R or is



wherein R has the previously given meaning, and R_4 is selected from the group consisting of alkyl, aryl, aralkyl and β-



wherein the twitched lines, R, and R_2' have the previously given meanings; and the charged moieties are compensated by counter-ions.

5,382,571

CLATHRATES OF PEROXYACIDS, THEIR PREPARATION AND THEIR USES

Michel Granger, Chalons Sur Saone; Michel Dupont, Chagny, and Henry Ledon, Versailles, all of France, assignors to Chemoxal S.A., Paris, France

PCT No. PCT/FR91/00628, § 371 Date Mar. 27, 1992, § 102(e) Date Mar. 27, 1992, PCT Pub. No. WO92/02497, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 30, 1991, Ser. No. 844,568

Claims priority, application France, Sep. 30, 1990, 90 09677

Int. Cl.[6] **C07C** *409/24;* **C08B** *37/00;* **A01N** *37/16;* **C11D** *3/39;* **A61K** *31/19, 7/00*

U.S. Cl. 514—58 **24 Claims**

1. Derivatives of peroxyacids, which comprise inclusion compounds or clathrates of a peroxyacid in a hollow molecule which is capable of behaving as a receiving structure with respect to said peroxyacid, wherein the molecule behaving as receiving structure has the structure of a cyclodextrin, a cavitand or a cyclophane.

5,382,572

ALKYL AND ACYL SUBSTITUTED QUINOLINES

Adriano Afonso, West Caldwell; Jay Weinstein, Upper Montclair, and Margaret J. Gentles, Bloomfield, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US91/06251, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993

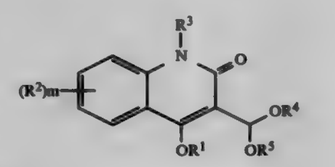
PCT Pub. No.: WO 92/04326, PCT Pub. Date: Mar. 19, 1992

Continuation-in-part of Ser. No. 579,744, Sep. 7, 1990, abandoned. This PCT application Sep. 6, 1991, Ser. No. 30,187

Int. Cl.[6] **C07D** *215/22;* **A61K** *31/37*

U.S. Cl. 514—82 **14 Claims**

1. A compound of Formula 1.0:



(1.0)

wherein:

(B) R^3 is selected from the group consisting of:

(1) alkyl;

(2) $—CH_2—$phenyl;

(3) phenyl:

(4) substituted phenyl;

(7) (2-chloro-4-methoxyphenoxy)propoxymethyl;

(8) $—(CH_2)_aR^{16}$ wherein a is an integer of 1 to 6 and R^{16} is selected from the group consisting of $—C(O)OR^{17}$, $—OR^{17}$, $—R^{17}$, and $—N(R^{17})_2$, wherein each R^{17} can be the same or different and is selected from the group consisting of alkyl, alkenyl and H;

(9) H; and

(10) $—OR^{18}$ wherein R^{18} is selected from the group consisting of H, alkyl—which may be substituted with OH, SH, NH_2 and/or halogen—, alkenyl;

(C) R^1 is selected from the group consisting of:

(1) alkyl;

(2) haloalkenyl wherein the halogen atoms are selected from the group consisting of F, Cl, Br and I;

(3) $—(CH_2)_bNR^6R^7$ wherein a is an integer from 1 to 6, and R^6 and R^7 are the same or different and are selected from the group consisting of H and alkyl; and

(4) acyl having the formula $—C(O)R^8$ wherein R^8 is selected from the group consisting of H, alkyl, phenyl, $—CH_2—$phenyl, alkenyl, and substituted alkyl;

(D) Each R^2 for each m is independently selected from the group consisting of:

(1) alkyl;

(2) alkoxy;

(3) phenyloxy;

(4) phenyl;

(5) phenylalkyloxy

(6) halogen atoms selected from the group consisting of F, Cl, Br and I;

(7) $—O—CO—R^{10}$ wherein R^{10} is alkyl—which may be substituted with OH, SH, NH_2 and/or halogen—, $—CH_2—$phenyl, alkenyl;

(8) $—N(R^{11})_2$ wherein each R^{11} is independently selected from the group consisting of H, alkyl, and $R^{12}C(O)—$ wherein R^{12} is as above defined

(9) —OH;

(10) $—CH_2OH$;

(11) —COOH;

(12) $—COOR^{13}$, wherein R^{13} is alkyl;

(13) $—SO_3H$;

(14) $—SO_2NHR^{14}$, wherein R^{14} is selected from the group consisting of alkyl; and H;

(15) $—PO_3H$;

(16) $—PO(OR^{15})_2$, wherein R^{15} is alkyl;

(17) $—OPO_3H$;

(18) $—OP(OR^{15})_2$ wherein R^{15} is as above defined;

(19) $—CF_3$; and

(20) $CONH_2$;

(E) m is 0 or an integer from 1 to 2; and

(F) R^4 and R^5 are the same and are selected from the group consisting of:

(1) alkyl; and

(2) acyl having the formula $—C(O)R^8$

wherein R^8 is selected from the group consisting of H, alkyl, alkenyl, and substituted alkyl;

and wherein

acyl represents a group having the formula $—C(O)R^8$ wherein R^8 is selected from the group consisting of H, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, and substituted alkyl;

alkenyl represents straight and branched aliphatic hydrocarbon groups having 1 double carbon-to-carbon double bond and having from 2 to 6 carbon atoms;

alkoxy represents an alkyl radical attached to a molecule through an oxygen atom (—O—alkyl);

alkyl represents straight or branched saturated aliphatic hydrocarbon groups having from 1 to 6 carbon atoms;

haloalkenyl represents an alkenyl group, as defined above, wherein one hydrogen atom is replaced by a halogen atom;

alkynyl represents a straight or branched aliphatic hydrocarbon group having one carbon-to-carbon triple bond, and having from 3 to 8 carbon atoms;

cycloalkenyl represents a carbocyclic ring having from 5 to 7 carbon atoms and one carbon-to-carbon double bond in the ring;

cycloalkyl represents a saturated carbocyclic ring having from 3 to 7 carbon atoms;

substituted alkyl represents an alkyl group, as defined above, wherein one of the alkyl H atoms is replaced with a group selected from the group consisting of alkyl, —OH, —O—alkyl, $—NH_2$, $—N(alkyl)_2$ wherein each alkyl group is the same or different, —S—alkyl, —C(O)O—alkyl, —C(O)H, $—NHC(:NH)NH_2$, $—C(O)NH_2$,—OC(O)NH_2, NO_2 and —NHC(O)—alkyl, wherein alkyl, is as above defined; and

substituted phenyl represents a phenyl group, as defined above, wherein one or two of the H atoms attached to the ring carbon atoms is replaced by a group independently selected from the group consisting of halo, alkyl, hydroxy, alkoxy, phenoxy, amino, alkylamino, and dialkylamino;

together with the pharmaceutically acceptable salts of the compounds of Formula 1.0 that are acidic or basic.

5,382,573

HORMONE PREPARATION AND METHOD

Robert F. Casper, Toronto, Canada, assignor to Jencap Research Ltd., Toronto, Canada

Division of Ser. No. 788,259, Nov. 5, 1991, Pat. No. 5,276,022, which is a division of Ser. No. 515,691, Apr. 26, 1990, Pat. No. 5,108,995, which is a continuation of Ser. No. 247,861, Sep. 22, 1988, abandoned. This application Oct. 29, 1993, Ser. No. 143,055

Claims priority, application Canada, Sep. 24, 1987, 547743; Sep. 24, 1987, 547744

Int. Cl.[6] **A61K** *31/56, 31/565, 31/57, 31/58*

U.S. Cl. 514—170 **26 Claims**

1. A pharmaceutical preparation for administration to a female in need of hormone replacement therapy comprising repeating cycles of a pharmaceutical regimen, each cycle comprising a series of from twenty to thirty-five consecutive daily unit doses arranged in alternating estrogen dominant phases and progestin dominant phases, each phase consisting of from one to four consecutive daily unit doses, wherein the daily unit doses of said estrogen dominant phases contain

i) an amount of a substance exhibiting estrogen activity or

ii) an amount of a substance exhibiting estrogen activity and an amount of a substance exhibiting progestin activity, and the daily unit doses of said progestin dominant phases contain an amount of a substance exhibiting estrogen activity and an amount of a substance exhibiting progestin activity, the amount of said substance exhibiting progestin activity being alternately increased in the progestin dominant phases to provide daily unit doses exhibiting progestin dominant activity and decreased in the estrogen dominant phases to provide daily unit doses exhibiting estrogen dominant activity, and wherein the amount of substance exhibiting estrogen activity per unit dose exhibits an estrogen activity equivalent to from about 0.3 to about 2.5 mg of piperazine estrone sulfate, and the amount of substance exhibiting progestin activity per unit dose ranges from 0 to an amount which exhibits a progestin activity equivalent to about 5 mg of norethindrone.

5,382,574

INSULIN PREPARATIONS CONTAINING NICOTINIC ACID OR NICOTINAMIDE

Klavs H. Jørgensen, Virum, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK90/00335, § 371 Date May 20, 1992, § 102(e) Date May 20, 1992, PCT Pub. No. WO91/09617, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 20, 1990, Ser. No. 849,448
Claims priority, application Denmark, Dec. 21, 1989, 6543/89; Jan. 10, 1990, 71/90
Int. Cl.[6] C07K *7/40, 7/42;* A61K *37/26*
U.S. Cl. 514—3 **19 Claims**

1. Insulin preparation formulated for injection or infusion, the preparation comprising insulin or an insulin derivative and nicotinamide or nicotinic acid or a salt thereof.

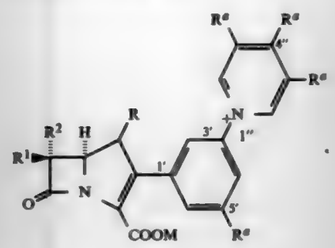
5,382,575

(N-PYRIDINIUMPHENYL)-CARBAPENEMS

Alan D. Adams, Piscataway; Frank DiNinno, Old Bridge, and James V. Heck, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 777,947, Oct. 17, 1991, abandoned. This application Oct. 7, 1992, Ser. No. 957,974
Int. Cl.[6] C07D *487/00;* A01N *43/00;* A61K *31/395*
U.S. Cl. 514—210 **17 Claims**

1. A compound of the formula:



I

wherein:

R is H or CH_3;

R^1 and R^2 are independently H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2—, or $(CH_3)_2C(F)$—;

R^a are independently selected from the group consisting of hydrogen and the radicals set out below:

a) —CF_3;

b) a halogen atom selected from the group consisting of —, —Br, —Cl, —F, or —I;

c) —OC_{1-4} alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^q is a member selected from the group consisting of —OH, —OCH_3, —CN, —$C(O)NH_2$, —$OC(O)NH_2$, CHO, —$OC(O)N(CH_3)_2$, —SO_2NH_2, —$SO_2N(CH_3)_2$, —$SOCH_3$, —SO_2CH_3, —F, —CF_3, —$COOM^a$ (where M^a is hydrogen, alkali metal, methyl or phenyl), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and —SO_3M^b (where M^b is hydrogen or an alkali metal);

d) —OH;

e) —$O(C{=}O)R^z$, where

R^z is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above or tri-substituted with —F;

f) —$O(C{=}O)N(R^y)R^z$ where

R^y and R^z are independently H, $C1_{-4}$ alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or —$S(O)_2$— to form a ring (where the ring is optionally mono-substituted with Rq as defined above);

g) —$S(O)_n$—R^z where n=0–2, and R^z is defined above;

h) —$SO_2N(R^y)R^z$ where R^y and R^z are as defined above;

i) N_3

j) —$N(R^t)(C{=}O)H$, where

R^t is is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

k) —$N(R^t)(C{=}O)C_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

l) —$N(R^t)(C{=}O)OC_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is optionally mono-substituted by R^q as defined above;

m) —$N(R^t)(C{=}O)N(R^y)R^z$ where R^t, R^y and R^z are as defined above;

n) —$N(R^t)SO_2R^z$, where R^z and R^t are as defined above;

o) —CN;

p) —(C=O)H or —$CH(OCH_3)_2$;

q) —$C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

r) —$(C{=}O)R^z$, where R^z is as defined above;

s) —$(C{=}NOR^z)R^y$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

t) —$(C{=}O)OC_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

u) —$(C{=}O)N(R^y)R^z$ where R^y and R^z are as defined above;

v) —$(C{=}O)$—$N(OR^y)R^z$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

w) —$(C{=}S)N(R^y)(R^z)$ where R^y and R^z are as defined above;

x) —$COOM^b$, where M^b is as defined above;

y) —SCN;

z) —SCF_3;

aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;

ab) an anionic function selected from the group consisting of: phosphono [$P{=}O(OM^b)_2$]; alkylphosphono {$P{=}O$-(OM^b)—[$O(C_1$–C_4 alkyl)]}; alkylphosphinyl [$P{=}O$-(OM^b)—(C_1–C_4 alkyl)]; phosphoramido [$P{=}O$-$(OM^b)N(R^y)R^z$ and $P{=}O(OM^b)NHR^x$]; sulfino (SO_2M^b); sulfo (SO_3M^b); acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N$-$(R^y)R^z$, $SO_2NM^bCON(R^y)R^z$; and SO_2NM^bCN, where

R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^y and R^z are as defined above;

ac) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or N(C_1–C_4 alkyl) and in which one additional carbon atom may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;

ad) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents a) to ac) above and phenyl which is optionally substituted by R^q as defined above;

ae) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents a) to ac) above;

af) C_1–C_4 alkyl radical;

ag) C_1–C_4 alkyl mono-substituted by one of the substituents a)–ac) above;

ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— and NR^t (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents a) to ag) above; and

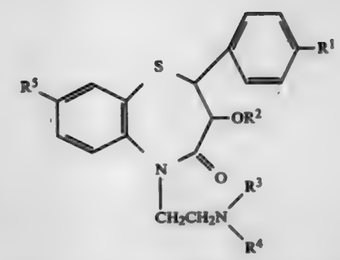
M is selected from:

i) hydrogen;

ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group;

iii) an alkali metal or other pharmaceutically acceptable cation; or

iv) absent, leaving COO— with the proviso that when M is as described in i), ii) or iii), a negatively counterion is present.



(I)

wherein R^1 is a lower alkyl group or a lower alkoxy group, R^2 is a lower alkanoyl group, R^3 and R^4 are a lower alkyl group and R^5 is a hydrogen atom, a lower alkyl group or a halogen atom, or a pharmaceutically acceptable salt thereof, wherein the weight ratio of 5-(2-chlorobenzyl)-4,5,6,7-tetrahydrothieno pyridine or a pharmaceutically acceptable salt thereof to the 1,5-benzothiazepine derivative (1) or a pharmaceutically acceptable salt thereof is 1–3.3:1.

5,382,576

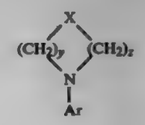
1-AZA-1-ARYLCYCLOALKANES AS TOPICAL GLAUCOMA TREATMENT AGENTS

Ronald D. Schoenwald, and Charles F. Barfknecht, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Oakdale, Iowa

Filed Jul. 26, 1993, Ser. No. 97,364
Int. Cl.[6] A61K *31/395, 31/55, 31/54, 31/535*
U.S. Cl. 514—210 **4 Claims**

1. A method of reducing intraocular eye pressure, said method comprising:

topically applying to an affected eye a small but therapeutically effective intraocular eye pressure reducing amount of compound of the formula:



wherein:

X is oxygen, sulphur or methylene;

Y is 0, 1, 2 or 3;

Z is 1, 2, or 3; and

Ar is a phenyl moiety.

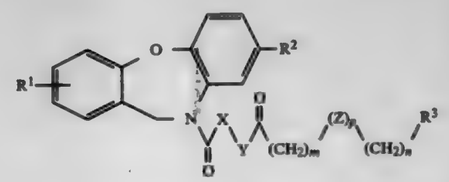
5,382,577

PHARMACEUTICAL COMPOSITION FOR INHIBITING PLATELET AGGREGATION

Akio Odawara, Tokyo; Yasuhiko Sasaki, Urawa; Sakae Murata, Kawagoe, and Hiroshi Narita, Urawa, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Feb. 5, 1993, Ser. No. 14,233
Claims priority, application Japan, Feb. 6, 1992, 4-067901
Int. Cl.[6] A61K *31/55, 31/44*
U.S. Cl. 514—211 **18 Claims**

1. A pharmaceutical composition for inhibiting platelet aggregation, which comprises 5-(2-chlorobenzyl)-4,5,6,7-tetrahydrothieno pyridine or a pharmaceutically acceptable salt thereof and a 1,5-benzothiazepine derivative of the formula:



or a pharmaceutically-acceptable salt thereof, wherein:

X is —NH— or —CH_2—;

Y is (1) —CH_2— when X is —NH—, and (2) —NH— when X is —CH_2—;

R^1 is hydrogen, halogen or —OR^4;

R4 is hydrogen, alkyl or



Z is oxygen, sulfur, —SO—, —SO_2— or —NR^5—;

R^5 is hydrogen or t-butyloxycarbonyl;

R^2 is hydrogen, halogen or trifluoromethyl;

R^3 is hydrogen, halogen, aryl, heteroaryl in which the heteroatoms are selected from oxygen, nitrogen and/or sulfur, or —NR^6R^7;

R^6 and R^7 are each independently hydrogen or alkyl;

R^8 is alkyl, aryl or

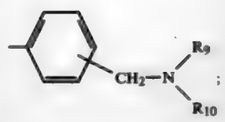
5,382,578

METHODS FOR TREATING CONVULSIONS AND ISCHEMIA WITH SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS

Robert K. Huse, Timothy J. Hagen, both of Gurnee, and E. Ann Hallinan, Evanston, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 6,858, Jan. 21, 1993, Pat. No. 5,288,719, which is a division of Ser. No. 786,161, Oct. 31, 1991, Pat. No. 5,212,169. This application Nov. 19, 1993, Ser. No. 155,613
Int. Cl.[6] A61K *31/55*
U.S. Cl. 514—211 **4 Claims**

1. A method for treating convulsions in a mammal comprising administering to said mammal a therapeutically-effective amount of a compound having the formula:

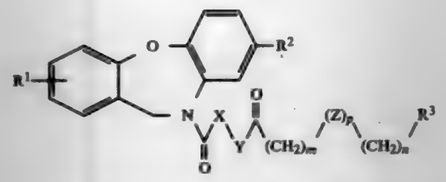


R^9 and R^{10} are each independently hydrogen or alkyl, or when taken together form N-morpholino or 4-methyl-N-piperazinyl;

m and n are each independently integers of from 0 to 3; and

P is 0 or 1, provided that p is not 1 when m is 0.

3. A method for treating ischemia in a mammal comprising administering to said mammal a therapeutically-effective amount of a compound having the formula:



or a pharmaceutically-acceptable salt thereof, wherein:

X is —NH— or —CH_2—;

Y is (1) —CH_2— when X is —NH—, and

(2) —NH— when X is —CH_2—;

R^1 is hydrogen, halogen or —OR_4;

R^4 is hydrogen, alkyl or



Z is oxygen, sulfur, —SO—, —SO_2— or —NR^5—;

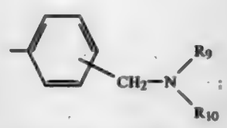
R^5 is hydrogen or t-butyloxycarbonyl;

R^2 is hydrogen, halogen or trifluoromethyl;

R^3 is hydrogen, halogen, aryl, heteroaryl in which the heteroatoms are selected from oxygen, nitrogen and/or sulfur, or —NR^6R^7;

R^6 and R^7 are each independently hydrogen or alkyl;

R^8 is alkyl, aryl or



R^9 and R^8 are each independently hydrogen or alkyl, or when taken together form N-morpholino or 4-methyl-N-piperazinyl;

m and n are each independently integers of from 0 to 3; and

P is 0 or 1, provided that p is not 1 when m is 0.

5,382,579

TRIAZOLO-1,4-DIAZEPINE DERIVATIVES AND THEIR USE IN PHARMACEUTICALS

Kazuo Okano; Shuhei Miyazawa; Richard S. J. Clark; Shinya Abe; Tetsuya Kawahara; Naoyuki Shimomura; Osamu Asano; Hiroyuki Yoshimura; Mitsuaki Miyamoto; Yoshimori Sakuma; Kenzo Muramoto; Hiroshi Obaishi; Koukichi Harada; Hajime Tsunoda; Satoshi Katayama; Kouji Yamada; Shigeru Sonda; Yoshimasa Machida; Kouichi Katayama, and Isao Yamatsu, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

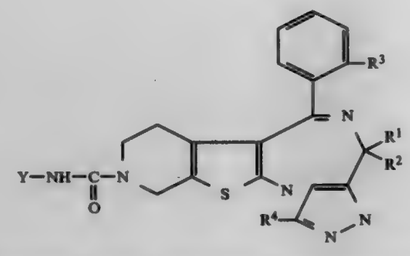
Continuation of Ser. No. 506,928, Apr. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 421,929, Oct. 16, 1989, abandoned. This application Aug. 26, 1991, Ser. No. 751,632

Claims priority, application Japan, Oct. 31, 1988, 63-275460; Nov. 24, 1988, 63-297068; Dec. 16, 1988, 63-318016; Dec. 28, 1988, 63-331622

Int. Cl.[6] A61K *31/55*; **C07D** *495/22*

U.S. Cl. 514—219 **21 Claims**

1. A compound of the formula



wherein Y is cycloalkyl, cycloalkylakyl, arylalkyl, arylalkenyl, cycloalkylalkenyl, or an alkynyl group having 2 to 6 carbon atoms wherein a phenyl group or a cycloalkyl group is joined to any carbon atom;

R^1 is H or a lower alkyl having 1 to 6 carbon atoms;

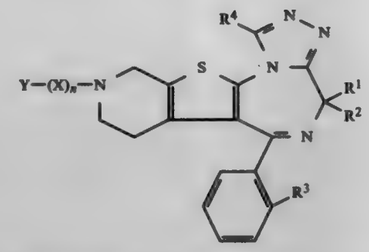
R^2 is H or a lower alkyl having 1 to 6 carbon atoms;

R^3 is H or a halogen atom;

R^4 is H or a lower alkyl having 1 to 6 carbon atoms;

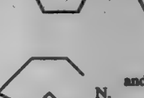
or a pharmaceutically acceptable salt thereof.

2. A triazolo-1,4-diazepine compound of the below given formula



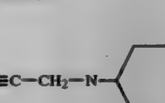
wherein R^1 is hydrogen or a lower alkyl having 1 to 6 carbon atoms; R^2 is a hydrogen or lower alkyl group having 1 to 6 carbon atoms; R^3 represents a hydrogen atom or a halogen atom; R^4 represents a hydrogen atom or a lower alkyl group; X represents

a group of the formula



wherein R^5 represents a hydrogen atom or a lower alkyl group, n is an integer of 0 or 1;

Y represents an alkynyl group, a group of the formula



in which R^7 is hydrogen or methyl and r is zero, 1 or 2,

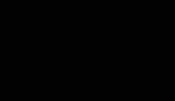
a group of the formula NC—$(CH_2)_p$— wherein p is an integer of from 1 to 6,

a group of the formula A—$(CH_2)_q$— wherein A represents a group selected from a pyridyl group, a pyranyl group and a morpholino group and q is an integer of from 0 to 6,

a group of the formula



a group of the formula



wherein R^8 and R^9 are the same or different and represent a hydrogen atom, a lower alkyl group, a pyridylmethyl group or a cycloalkyl group or R^8 and R^9 may be joined along with a nitrogen atom to form a ring selected from the group consisting of

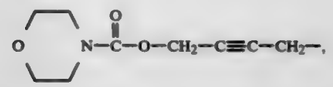
and B represents a phenylene group or a lower alkylene group having from 1 to 3 carbon atoms,

a group of the formula

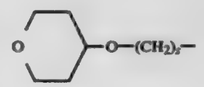
a group of the formula

a group of the formula

a group of the formula

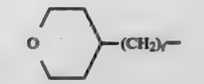


a group of the formula



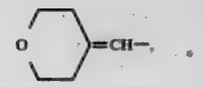
in which s is 1 or 2,

a group of the formula

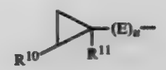


in which t is 1 or 2,

a group of the formula

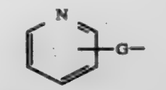


a group of the formula



in which R^{10} is hydrogen or phenyl, R^{12} is hydrogen or a lower alkyl, E is an alkenylene and u is zero or 1 with a proviso that R^{10} and R^{11} are not both hydrogen at the same time, or

a group of the formula



in which G is an alkenylene or —J—$(CH_2)_x$ wherein J is oxygen or sulfur, and k is zero, 1 or 2;

and provided that when N=O, Y is an alkynyl group;

or a pharmacologically acceptable salt thereof.

9. A method for treating a disease against which anti-PAF activity is effective, which comprises administering to a patient in need thereof a pharmacologically effective amount of the compound or the salt thereof as defined in claim **1**.

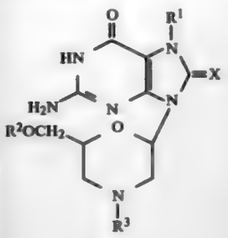
15. A method for treating a disease against which anti-PAF activity is effective, which comprises administering to a patient in need thereof a pharmacologically effective amount of the compound or the salt thereof as defined in claim **2**.

5,382,580
N9 MORPHOLINO DERIVATIVES OF 7,8-DISUBSTITUTED GUANINES

Robert Chen, Belle Mead, N.J.; Michael G. Goodman, Rancho Sante Fe, Calif., and Allen Reitz, Lansdale, Pa., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed May 27, 1994, Ser. No. 250,484
Int. Cl.[6] A61K *31/535*; C07D *473/18*
U.S. Cl. 514—234.2 **11 Claims**

1. A compound of the formula I:



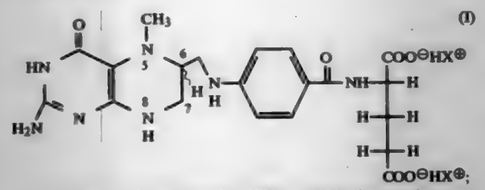
wherein X is O or S;
R^1 is a hydrocarbyl or substituted hydrocarbyl moiety having a length of about one to about seven carbon atoms;
R^2 is hydrogen or C_1–C_8 acyl;
R^3 is selected from the group consisting of hydrogen, C_1–C_5 aliphatic hydrocarbyl, aralkyl, and substituted aralkyl groups; and
the pharmaceutically acceptable base addition salts thereof.

5,382,581
(6R)- AND (6S)-DIASTEREOISOMERS OF AN AMMONIUM SALTS OF N^5-METHYL-5,6,7,8-TETRAHYDROFOLIC ACID

Fabrizio Marazza, Vico Morcote, Switzerland, and Jean Jacques, Paris, France, assignors to Sapec S.A. fine chemicals, Lugano, Switzerland

Division of Ser. No. 683,772, Apr. 11, 1991, Pat. No. 5,194,611. This application Nov. 13, 1992, Ser. No. 974,565
Claims priority, application Switzerland, Apr. 12, 1990, 01255/90-1
Int. Cl.[6] C07D *475/04*
U.S. Cl. 514—249 **13 Claims**

1. An ammonium salt of N^5-methyl-5,6,7,8-tetrahydrofolic acid of formula I:



(I)

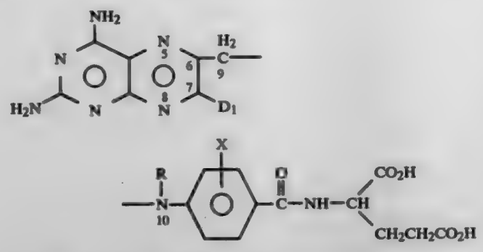
in the form of the single (6R)-or (6S)-diastereoisomers, wherein
X is cyclohexyl amine, diisopropyl amine, benzyl amine, ammonia, ethanol amine, triethanol amine, 2-dimethyl amino-ethanol, tert-butyl amine, lysine, or arginine.

5,382,582
METHOTREXATE ANALOGS AND METHODS OF USING SAME

Carey L. Chan, 4113 Sano St., Los Angeles, Calif. 90065

Filed Mar. 26, 1993, Ser. No. 37,819
Int. Cl.[6] A61K *31/505*
U.S. Cl. 514—249 **21 Claims**

1. A compound having the formula:



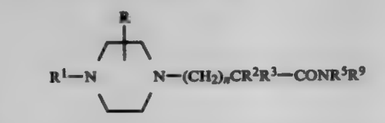
wherein R is methyl or hydro, D_1 is deutero, and X is halo or hydro, and therapeutically acceptable salts thereof.

5,382,583
PIPERAZINE DERIVATIVES

Ian A. Cliffe, Cippenham, England, assignor to John Wyeth & Brother, Limited, Maidenhead, England

Continuation of Ser. No. 748,497, Aug. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 511,150, Apr. 19, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 998,887
Claims priority, application United Kingdom, Apr. 22, 1989, 8909209; Oct. 28, 1989, 8924323
The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.
Int. Cl.[6] A61K *31/495*; C07D *241/04, 295/8*
U.S. Cl. 514—252 **5 Claims**

1. A compound of the formula



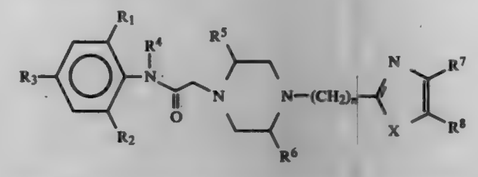
or a pharmaceutically acceptable salt thereof, wherein
n is 1 or 2,
R is hydrogen or lower alkyl,
R^1 is a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents; or a mono or bicyclic heteroaromatic radical containing 5 to 10 ring atoms, the heteroaromatic radical containing, as heteroatoms, one or two nitrogen atoms and optionally a sulphur or oxygen atom and being optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carboalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents,
R^2 is hydrogen or lower alkyl,
R^3 is an aryl radical, or an aryl(lower)alkyl radical, in which the aryl radical is a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents,
R^5 is hydrogen or lower alkyl,
R^9 is hydrogen, an alkyl group of 1 to 8 carbon atoms other than a tertiary alkyl group, cycloalkyl of 3 to 12 carbon atoms, cycloalkyl(lower)alkyl, or aryl(lower)alkyl where aryl is a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents,
with the provisos that when R^9 is hydrogen, alkyl or aryl(lower)alkyl, R^5 is other than a tertiary alkyl group, or that, when n is 2, R^5 and R^9 are not both hydrogen or are not both methyl.

5,382,584
ADENOSINE RE-UPTAKE INHIBITING DERIVATIVES OF DIPHENYL OXAZOLES, THIAZOLES AND IMIDAZOLES

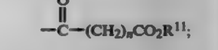
Neelakantan Balasubramanian, Bristol, Conn., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 48,338, Apr. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 923,399, Jul. 31, 1992, abandoned. This application Mar. 4, 1994, Ser. No. 206,572
Int. Cl.[6] A61K *31/495*; C07D *413/06, 417/06*
U.S. Cl. 514—252 **16 Claims**

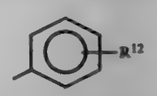
1. A Compound of Formula I



and the pharmaceutically acceptable acid addition salt or hydrate thereof wherein
R^1 and R^2 are independently selected from hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogen and trifluoromethyl;
R^3 is hydrogen, halogen, C_{1-4} alkoxy, nitro or $—NR^9R^{10}$ with R^9 and R^{10} being independently selected from hydrogen or C_{1-4} alkyl, alkanoyl and



R^4 is hydrogen or C_{1-4} alkyl;
R^5 and R^6 are independently selected from hydrogen, $—CONR^6R^{10}$, oxo and $—CO_2R^{11}$ with R^{11} being C_{1-4} alkyl, or R^5 and R^6 can be taken together to form a methylene or ethylene bridge;
R^7 and R^8 taken together is a butylene or are both



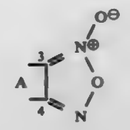
with R^{12} being hydrogen, halogen, trifluoromethyl, C_{1-4} alkyl or C_{2-4} alkyl-$N(R^4)_2$;
n is zero or an integer from 1 to 4; and
X is S, O, or NH.

5,382,585
PYRIMIDOFUROXANS, THEIR PREPARATION AND THEIR USE

Joachim Brendel, Frankfurt am Main; Karl Schönafinger, Alzenau, and Helmut Bohn, Schöneck, all of Germany, assignors to Cassella AG, Frankfurt am Main, Germany

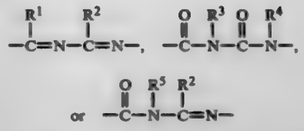
Filed May 25, 1993, Ser. No. 66,904
Claims priority, application Germany, Jun. 10, 1992, 4218979
Int. Cl.[6] A61K *31/495, 31/50*; C07D *413/00, 413/02*
U.S. Cl. 514—253 **10 Claims**

1. Pyrimidofuroxans of the formula I

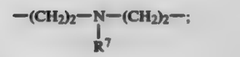


I

in which
A denotes



where in each case the nitrogen atom is bonded via C-4 and the carbon atom is bonded via C-3 of the furoxan ring;
R^1 denotes $—NHR^6$, $—NR^7R^8$, —NX, —NHOH, $—NH(CH_2)_nY$, $—N[(CH_2)_nY]_2$ or $—NH(CH_2)_mZ$;
R^2 denotes hydrogen or $—OR^7$;
R^3 denotes (C_2–C_4)-alkyl;
R^4 denotes hydrogen, (C_1–C_6)-alkyl, (C_5–C_7)-cycloalkyl, $—CH_2Z$, $—CH_2COOR^7$, $—CH_2CONR^7R^8$, $—CH_2CONX$ or $—(CH_2)_nY$;
R^5 has one of the meanings of R^4 with the exception of hydrogen;
R^6 denotes (C_1–C_6)-alkyl or (C_5–C_7)-cycloalkyl;
R^7 and R^8 independently of one another denote (C_1–C_4)-alkyl;
X denotes $—(CH_2)_p—$, $—(CH_2)_2—O—(CH_2)_2—$ or



Y denotes —OH, $—OR^7$ or $—NR^7R^8$;
Z denotes aryl or heteroaryl, each of which can optionally also be substituted;
n represents 2, 3 or 4;
m represents 1 or 2; and
p represents 4, 5 or 6,
and their pharmacologically acceptable acid addition compounds.

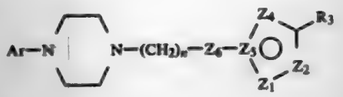
5,382,586

ARYL (OR HETEROARYL)PIPERAZINYLALKYLAZOLE DERIVATIVES, THEIR PREPARATION AND THEIR APPLICATION AS MEDICAMENTS

Ramon Merce-Vidal, Marques de Sentmenat; Jordi Frigola-Constans, Av. Diagonal, and Juan Pares-Coromines, Padilla, all of Spain, assignors to Laboratorios del Dr. Esteve S.A., Barcelona, Spain

Continuation of Ser. No. 825,929, Jan. 27, 1992, Pat. No. 5,292,739. This application Dec. 6, 1993, Ser. No. 163,329
Claims priority, application France, Jan. 28, 1991, 91 00923
Int. Cl.[6] A61K *31/495;* **C07D** *403/00*
U.S. Cl. 514—254 **11 Claims**

1. A heterocyclic compound characterized in that it has the formula I



(I)

in which

Ar represents an aromatic radical, which may or may not contain nitrogen, selected from the group consisting of phenyl, phenyl substituted with a methoxy or a halogen atom, 2-pyrimidine, 2-N-methyl-imidazole, 3-(1,2-benzisotriazole), 3-(1,2-benzisotriazole),

n may have the values of 1 to 6,

Z_1 represents a C—R_1 group,

Z_2 represents a nitrogen atom,

Z_4 represents a C—R_4 group,

Z_5 represents a nitrogen atom,

Z_6 represents a methylene group,

and R_1, R_3 and R_4, which may be identical or different represent a halogen, a lower alkyl radical, a carboxyl radical, a carboxamido radical or an alkyl carboxylate radical, or a pharmaceutically acceptable acid addition salt of said formula I compound.

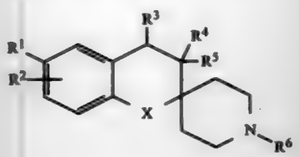
5,382,587

SPIROCYCLES

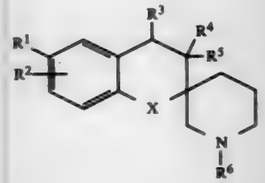
John J. Baldwin, Gwynedd Valley; David A. Claremon, Maple Glen, both of Pa. and Jason M. Elliott, Kent, Great Britain, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 30, 1993, Ser. No. 85,573
Int. Cl.[6] A61K *31/445;* **C07D** *211/06*
U.S. Cl. 514—278 **13 Claims**

1. A compound of the structural formulae:



or



wherein:

X is O, CH_2 or SO_m;

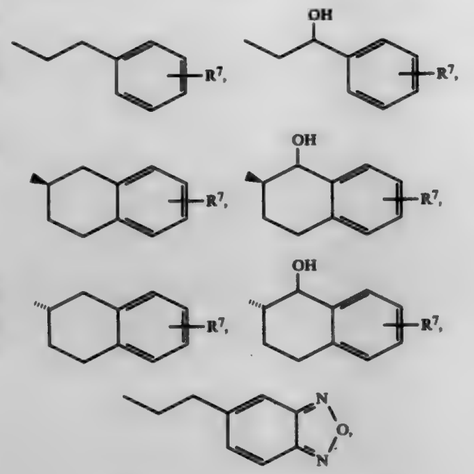
R^1 is $AlkylSO_2NH$—, AlkylO—, $AlkylSO_2$—, AlkylCONH—, or NO_2—;

R^2 is —H, —OAlkyl, or —Alkyl;

R^3 is —$NHCOCH_2SO_m$Phenyl, —$NHCOCH_2SO_m$Alkyl, or $NHSO_2$Alkyl;

R^4 and R^5 are —H, or —Alkyl;

R^6 is



Alkyl—R^8, or Alkyl—SO_m—Alkyl—R^8;

R^7 is —H, —CN, —$NHSO_2$Alkyl, —Br, —OAlkyl, —NH_2, —NO_2, —NHCOAlkyl, or NHCONHAlkyl;

R^8 is —H, —OH, —CN, —OAlkyl, —CONHAlkyl, —$NHSO_2$Alkyl, —NHCOAlkyl, —SO_mAlkyl, or —CO_2Alkyl;

and m is 0–2; or a pharmaceutically acceptable salt, hydrate or crystal form thereof.

5,382,588

METHYL PIPERIDINE DERIVATIVES OF CINNAMIC ACIDS, BENZOIC ACIDS, BENZOAZOLS AND BENZOPHENONES USEFUL AS SKIN ANTI-AGING COMPOUNDS

Giuseppe Raspanti, Bergamo, Italy, assignor to 3V Sigma S.p.A., Milan, Italy

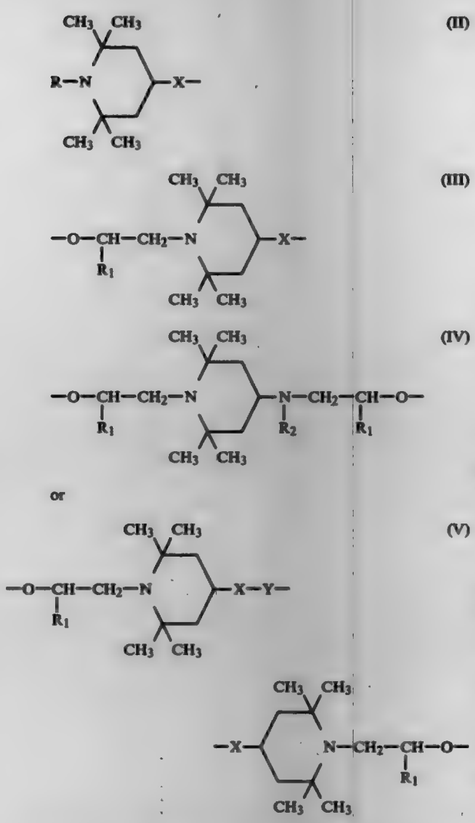
Division of Ser. No. 889,951, May 29, 1992, Pat. No. 5,278,310. This application Oct. 14, 1993, Ser. No. 135,552
Claims priority, application Italy, Jun. 4, 1991, MI91A001520
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.
Int. Cl.[6] A61K *7/42, 31/445*
U.S. Cl. 514—315 **4 Claims**

1. A dermatological or cosmetic composition comprising a dermatological acceptable carrier and at least one of the compounds of the general formula

$(U)_nA$ (I)

in which A is a group of formulae (II)–(V)

-continued



(II)

(III)

(IV)

or

(V)

in which R is hydrogen, C_1–C_{12} alkyl, C_2–C_4 hydroxyalkyl or a polyoxyethylene residue containing from 2 to 20 oxyethylene units,

X is oxygen or



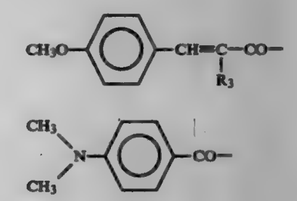
in which R_2 is hydrogen, a C_1–C_{12} alkyl or C_5–C_8 cycloalkyl group,

R_1 is hydrogen, methyl or ethyl,

Y is C_2–C_6 alkylene, a diacyl group deriving from carbonic acid or from a dicarboxylic organic acid or a dicarbamoyl group deriving from a diisocyanate,

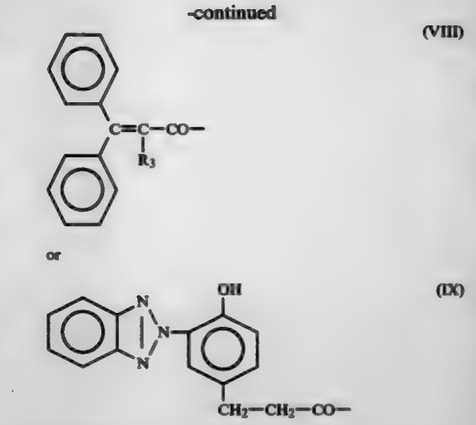
n is 1 or 2,

U is a group of formulae (VI)–(IX)



(VI)

(VII)



(VIII)

or

(IX)

in which R_3 is hydrogen or a —CN group;

the enantiomers or diastereomers thereof, or mixtures thereof, or physiologically acceptable acid addition salts thereof.

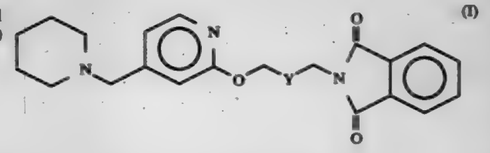
5,382,589

PHTHALIMIDE COMPOUNDS AND METHODS OF PRODUCING SAME

Akihiro Ishii, Urawa; Yasunobu Nishimura, Kawagoe; Hirotsune Kondoh, Kamifukuoka, and Yoshiyuki Kikuchi, Hoya, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jul. 21, 1993, Ser. No. 90,136
Claims priority, application Japan, Jan. 30, 1991, 3-010211
Int. Cl.[6] A61K *31/445;* **C07D** *401/12*
U.S. Cl. 514—1 **8 Claims**

1. Phthalimide compounds which are represented by the following general formula (I) and acid-added salts of the same:



(I)

wherein Y represents —CH_2—CH_2— or —CH=CH—.

5,382,590

N-PHENYL-N-ACETAMIDOGLYCINAMIDES, THEIR PREPARATION AND MEDICAMENTS CONTAINING THEM

Jean-Dominique Bourzat, Vincennes; Marc Capet, Thiais; Claude Cotrel, Paris; Claude Guyon, Saint Maur des Fosses; Franco Manfre, Vitry sur Seine, and Gérard Roussel, Soisy sur Seine, all of France, assignors to Rhone-Poulenc Rorer S.A., France

PCT No. PCT/FR91/00087, § 371 Date Jul. 8, 1992, § 102(e) Date Jul. 8, 1992, PCT Pub. No. WO91/12264, PCT Pub. Date Oct. 22, 1991
PCT Filed Feb. 6, 1991, Ser. No. 867,690
Claims priority, application France, Feb. 9, 1990, 90 01553; Sep. 27, 1990, 90 11916; Oct. 12, 1990, 90 12594
Int. Cl.[6] A61K *31/415, 31/50, 31/505, 31/39;* **C07D** *233/66, 279/12, 265/30, 241/14*
U.S. Cl. 514—396 **10 Claims**

1. Compounds of formula:

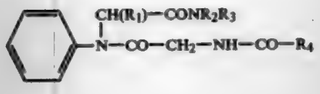
in which

R_1 represents a hydrogen atom, an alkyl alkoxycarbonyl or a phenyl radical, or a phenyl radical substituted by at least one substituent chosen from halogen atoms, alkyl, alkoxy, alkylthio, nitro and amino radicals,

R_2 represents a hydrogen atom or an alkyl radical, or an alkyl radical substituted by an alkoxycarbonyl radical,

R_3 represents an alkyl, phenylalkyl, indanyl, cycloalkylalkyl, phenyl, or phenyl substituted by at least one substituent chosen from halogen atoms, alkyl, alkoxy, alkylthio and dialkylamino radicals, or quinolyl radical, or

R_2 and R_3 form together with the nitrogen atom to which they are attached a saturated or unsaturated monocyclic or polycyclic heterocycle containing 4 to 9 carbon atoms and at least one heteroatom chosen from O, N, and S and which is unsubstituted or substituted by at least one alkyl, alkoxycarbonyl, dialkylcarbamoyl, phenyl or alkoxy radical or, in combination with a carbon atom of the heterocycle, a monocyclic spiro ring having 4 or 5 members and which optionally contains at least one heteroatom, chosen from,



(I)

R_4 represents a phenyl radical, or a phenyl radical substituted by at least one substituent chosen from halogen atoms, alkyl, alkoxy, alkylthio radicals, naphthyl, indolyl, quinolyl radical or a phenylamino and phenylene in which the phenyl ring is substituted by at least one substituent chosen from halogen atoms, alkyl, alkoxy, alkylthio, hydroxyl, nitro, amino, acyl, cyano, sulphamoyl, trifluoromethylsulphonamido, carbamoyl, benzoyl, carboxyl, alkoxycarbonyl, phenylhydroxymethyl, piperidino, hydroxyiminoalkyl, alkoxyiminoalkyl, hydroxyaminocarbonyl, alkoxyaminocarbonyl, 5-tetrazolyl, 5-terazolylalkyl, alkylsulphinyl, monohydroxyalkyl or polyhydroxyalkyl, sulpho, —alk—O—CO—alk, —alk—O—alk, —alk—COOX, —O—alk—COOX, —alk'—COOX, —CH=CH—COOX, —CO—COOX, —alk—SO_3H, —CH=CH—alk', —C(=NOH)—COOX and —S—alk—COOX radicals,

X represents a hydrogen atom or an alkyl radical,

alk represents an alkyl or alkylene radical, and

alk' represents a hydroxyalkylene or hydroxyalkyl radical,

with the exception of compounds in which R_1 represents a hydrogen atom, R_2 and R_3 each represent an alkyl radical or R_2 and R_3 form, with the nitrogen atom to which they are attached, a 1-pyrrolidinyl radical unsubstituted or substituted by an alkyl radical and R_4 represents a naphthyl or indolyl radical or a phenylamino radical in which the phenyl ring is unsubstituted or substituted by an alkyl, alkoxy, nitro, hydroxyl or alkylthio radical or by one or two halogen atoms, with the proviso that the acyl radicals contain 2 to 4 carbon atoms, the alkyl, alkylene and alkoxy radicals and the alkyl, alkylene and alkoxy moieties containing 1 to 4 carbon atoms in a straight or branched chain and the cycloalkyl radicals contain 3 to 6 carbon atoms, as well as the racemates and enantiomers thereof when they contain at least one asymmetric center and the salts thereof.

5,382,591

ANTIPYRETIC AND ANALGESIC METHODS USING OPTICALLY PURE R-KETOROLAC

Timothy J. Barberich, Concord; Stephen L. Matson, Harvard, both of Mass., and William J. Wechter, Redlands, Calif., assignors to Sepracor Inc., Marlborough, Mass.

Continuation of Ser. No. 991,981, Dec. 17, 1992, abandoned.
This application Sep. 8, 1993, Ser. No. 118,160
Int. Cl.[6] A61K *31/40*
U.S. Cl. 514—413 12 Claims

1. A method of eliciting an analgesic effect with reduced gastrointestinal toxicity in a human, comprising administering to said human a therapeutically effective analgesic amount of R-ketorolac, or a pharmaceutically acceptable salt thereof, substantially free of its S-stereoisomer.

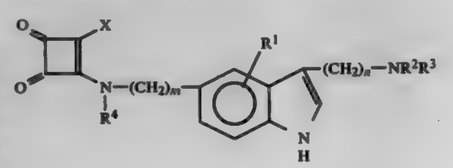
5,382,592

ANTIMIGRAINE CYCLOBUTENEDIONE DERIVATIVES OF TRYPTAMINES

Jonas A. Gylys, Southington, Conn.; Edward H. Ruediger, Quebec, Canada; David W. Smith, Madison, Conn.; Carola Solomon, Quebec, Canada, and Joseph P. Yevich, Southington, Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Sep. 16, 1993, Ser. No. 122,112
Int. Cl.[6] A61K *31/40*; C07D *209/16*
U.S. Cl. 514—415 6 Claims

1. A compound of Formula I or a pharmaceutically acceptable acid addition salt and/or solvate thereof



I

wherein

R^1 is selected from hydrogen, halogen and lower alkyl;

R^2 and R^3 are independently selected from hydrogen and lower alkyl;

R^4 is selected from hydrogen, lower alkyl, lower acyl and lower alkylsulfonyl;

X is selected from $—NR^2R^3$, $—OR^2$, and R^6, wherein R^6 can be hydrogen, lower alkyl, cycloalkyl, phenyl, and phenyl-lower alkyl;

m is selected from zero and the integers 1 to 3; and

n is selected from the integers 1 to 5.

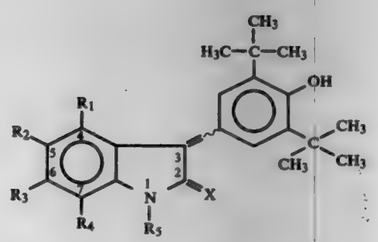
5,382,593

NEW 3-(HYDROXYBENZYLIDENYL)-INDOLIN-2-ONES

Guillaume Le Baut, St Sebastien sur Loire; Marie-Renée Nourrisson, La Chapelle sur Erdre; Jean-Francois Renaud de la Faverie, Le Chesnay; Jean-Guy Bizot Espiard; Daniel-Henri Caignard, both of Paris; Pierre Renard, Versailles, and Gérard Adam, Le Mesnil le Roi, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Jul. 20, 1993, Ser. No. 94,562
Claims priority, application France, Jul. 21, 1992, 92 8951
Int. Cl.[6] C07D *209/34*
U.S. Cl. 514—418 8 Claims

1. A compound selected from those of formula (I):



(I)

wherein:

X represents sulphur or oxygen,

R_1, R_2, R_3 and R_4, which are the same or different, each represents, independently of the others:

hydrogen,

or a radical selected from:

halogen,

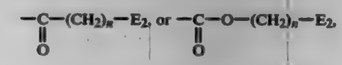
hydroxy,

a group $—E_1$ or



wherein E_1 represents lower alkyl, lower alkenyl, lower alkynyl or lower alkoxy, the group E_1 being unsubstituted or substituted by one or more radicals selected from halogen, lower alkyl, lower alkoxy, lower alkylamino and di-lower alkylamino,

and a group $-(CH_2)_n-E_2$, $—O—(CH_2)_n-E_2$,



wherein n represents 0 or 1 to 4 inclusive and wherein E_2 is selected from:

phenyl and naphthyl, each of which is unsubstituted or substituted by one or more radicals selected from halogen, hydroxy, lower alkyl, lower alkoxy and trifluoromethyl,

and cycloalkyl having 3 to 8 carbon atoms, inclusive, which is unsubstituted or substituted by one or more radicals selected from halogen, oxo, lower alkyl and lower alkoxy,

R_5 represents a radical selected from:

hydroxy,

a group $—E_3$ wherein E_3 represents lower acyl, lower alkoxy, or a $—(CH_2)n—CO—R_6$ group wherein n represents O or 1 to 6 inclusive, and R_6 represents hydroxy or lower alkoxy, E_3 being unsubstituted or substituted by one or more radicals selected from halogen, hydroxy, lower alkyl and lower alkoxy,

phenyl or $—O—(CH_2)_m$-phenyl wherein m represents O or 1 to 4, inclusive, the phenyl nucleus being unsubstituted or substituted by one or more radicals selected from halogen, hydroxy, lower alkyl, lower alkoxy and trifluoromethyl,

and cycloalkyl or cycloalkyl-lower alkyl, wherein the cycloalkyl radical contains 3 to 8 carbon atoms, inclusive, and is unsubstituted or substituted by one or more radicals selected from halogen, oxo, lower alkyl and lower alkoxy,

the terms "lower alkyl", "lower alkoxy" and "lower acyl" mean straight-chain or branched groups containing 1 to 6 carbon atoms inclusive,

and the terms "lower alkenyl" and "lower alkynyl" mean unsaturated groups having 2 to 6 carbon atoms inclusive,

its Z or E isomers, an optical isomers thereof, and an addition salt thereof with a pharmaceutically-acceptable acid or base.

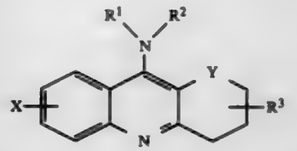
5,382,594

9-AMINOTETRAHYDROACRIDINES AND RELATED COMPOUNDS

Gregory M. Shutske, Flemington; Kevin J. Kapples, Little York, both of N.J., and John D. Toner, Perkasie, Pa., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 654,691, Feb. 13, 1991, Pat. No. 5,210,087.
This application Mar. 1, 1993, Ser. No. 24,037
Int. Cl.[6] C07D *219/10*; A61K *31/44*
U.S. Cl. 514—297 8 Claims

1. A compound of the formula



wherein Y is CHOH; R^1 is hydrogen or loweralkyl; R^2 is hydrogen, loweralkyl, or phenylloweralkyl; R^3 is OR^4 wherein R^4 is hydrogen, COR^5 wherein R^5 is loweralkyl, X is hydrogen, loweralkyl, halogen, loweralkoxy, hydroxy, or trifluoromethyl, the geometric or optical isomers thereof, N-oxides thereof, or the pharmaceutically acceptable acid addition salts thereof.

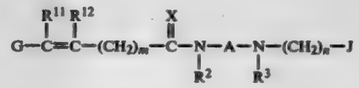
5,382,595

BUTENOIC OR PROPENOIC ACID DERIVATIVE

Norio Minami; Fumihiro Ozaki; Keiji Ishibashi; Yasuhiro Kabasawa; Megumi Ikemori; Toshiaki Ogawa, and Takanori Kawamura, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 557,713, Jul. 25, 1990, Pat. No. 5,177,089, which is a division of Ser. No. 354,306, May 19, 1989, Pat. No. 5,047,417. This application Oct. 13, 1992, Ser. No. 959,654
Claims priority, application Japan, Jun. 1, 1988, 63-134892
Int. Cl.[6] A01N *43/02*; C07C *233/00*
U.S. Cl. 514—450 7 Claims

1. A butenoic or propenoic acid derivative having the formula (II):

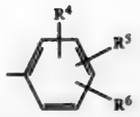


(II)

G is naphthyl or a phenyl having substituents R^{15} and R^{16}:



R^{15} and R^{16} each is hydrogen, a lower alkyl, a lower alkoxy, a halogen, $—NR^7R^8$ wherein R^7 and R^8 each is hydrogen or a lower alkyl, cyano, trifluromethyl, an alkanoylamino, trifluoroalkoxy, an alkylsulfonyl, nitro, hydroxyl, an alkythio, an alkylsulfonylamino, an alkylcarbonylamino or a carbamoyl, or R^{15} and R^{16} may form a cyclic ring together with oxygen and two adjacent carbon atoms; R^{11} and R^{12} each are hydrogen; m is zero or 1; X is oxygen or sulfur; R^2 and R^3 each is hydrogen, a lower alkyl, a lower alkoxy, a cycloalkyl, a trifluoroalkyl or a lower alkenyl; A is an alkylene group having 1 to 6 carbon atoms, wherein said alkylene group may have a lower alkyl group substituted thereon; n is an integer of 1 to 6; J is a phenyl having substituents R^4, R^5 and R^6:



wherein R^4, R^5 and R^6 each is hydrogen, a halogen atom, a lower alkyl, a lower alkoxy, hydroxy, nitro, trifluromethyl, an alkylsulfonyloxy, $—NR^7R^8$ wherein R^7 and R^8 each is hydrogen or a lower alkyl, or an alkanoylamyl; or a pharmacologically acceptable salt thereof.

5,382,596

SUBSTITUTED 2-AMINOTETRALINS

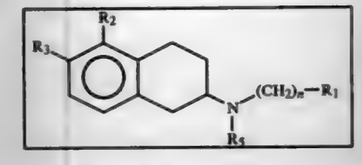
Mark C. Sleevi, Midlothian; Gevork Minaskanian, Richmond, and L. Meredith Moses, Glen Allen, all of Va., assignors to Discovery Therapeutics, Inc., Richmond, Va.

Filed Aug. 5, 1993, Ser. No. 102,436

Int. Cl.[6] A61K *31/35, 31/36, 31/135;* **C07D** *315/00, 317/70, 211/00*

U.S. Cl. 514—459 **21 Claims**

1. Optically active or racemic compounds represented by the formula:

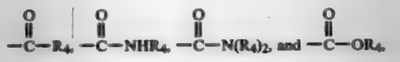


wherein R_1 is alkoxy selected from the group consisting of ethoxy, propoxy, isopropoxy, butoxy, s-butoxy, isobutoxy and t-butoxy; cycloalkoxy; or a cyclic ether of the formula:



where m is an integer from 3 to 5;

R_2 is OA; R_3 is selected from the group consisting of H and OA; where A is H or is selected from the group consisting of hydrocarbyl radicals having from 1 to 3 carbon atoms,



with the proviso that when R_1 is alkoxy, then R_3 cannot be H, and with the further proviso that when both R_2 and R_3 are OA, then R_2 and R_3 may be bonded together to form the group



R_4 is selected from the group consisting of alicyl and aromatic residues having from 1 to 20 carbon atoms; n is an integer from 1 to 4; and R_5 is an unbranched alkyl chain having from 1 to 3 carbon atoms or a cyclopropylmethyl radical.

5,382,597

ORGANO-TIN COMPOUNDS HAVING ANTI-TUMOUR ACTIVITY AND ANTI-TUMOUR COMPOSITIONS

Mohammad Boualam, Brussel; Marcel Gielen, Oppem; Abdelaziz El Khloufi, Brussel, all of Belgium; Dirk De Vos, Oestgeest, Netherlands, and Rudolph Willem, Vilvoorde, Belgium, assignors to Pharmachemie B.V., Haarlem, Netherlands

Filed Oct. 1, 1992, Ser. No. 955,135

Claims priority, application European Pat. Off., Oct. 22, 1991, 91202746

Int. Cl.[6] A61K *31/22;* **C07F** *7/22*

U.S. Cl. 514—493 **5 Claims**

1. A compound of the formula

$$Ar_3Sn—O—C(O)—C_6H_2XYZ$$

wherein Ar is phenyl;

X and Y are each H, OH, halogen or alkyl; and

Z is halogen, amino, alkoxy, acyloxy, sulphonic acid or alkyl,

with the proviso that, when Z is alkoxy, acyloxy or alkyl, X and Y are not both H; when Z is amino, X and Y are both not H or chloro; when Z is halogen, X and Y are not both H, and one of X and Y is not halogen; and when Z is alkyl, and one of X and Y is OH, the other of X and Y is not alkyl or H.

3. A method for the treatment of tumors comprising administering an effective amount of a compound of the formula

$$Ar_3Sn—O—C(O)—C_6H_2XYZ$$

wherein Ar is phenyl;

X and Y are each H, OH, halogen or alkyl; and

Z is a halogen, amino, alkoxy, acyloxy, sulphonic acid or alkyl.

5. In a method for the treatment of tumors which respond to treatment by organo-tin compounds comprising administering to a patient having such a tumor an effective amount of an organo-tin compound, the improvement wherein said organo-tin compound is a compound of the formula

$$Ar_3Sn—O—C(O)—C_6H_2XYZ$$

wherein Ar is phenyl;

X and Y are each H, OH, halogen or alkyl; and

Z is a halogen, amino, alkoxy, acyloxy, sulphonic acid or alkyl.

5,382,598

THERAPEUTIC AMIDES

Russell Keith, Newark; Cyrus J. Ohnmacht, Wilmington, both of Del., and Keith H. Gibson, Macclesfield, England, assignors to Imperial Chemical Industries PLC and Imperial Chemical House, both of London, United Kingdom

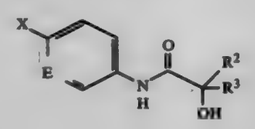
Division of Ser. No. 918,982, Jul. 23, 1992, Pat. No. 5,272,163. This application Sep. 24, 1993, Ser. No. 126,350

Claims priority, application United Kingdom, Jul. 25, 1991, 9116069; Apr. 30, 1992, 9209416

Int. Cl.[6] A61K *31/165;* **C07C** *235/16*

U.S. Cl. 514—522 **16 Claims**

1. An amide of the following formula I,



I

wherein:

E is CZ wherein C is a ring carbon and Z is a substituent defined below, wherein:

X and Z are selected from the group consisting of:

(A) X is ArY wherein Y is a linking group selected from carbonyl, sulfinyl, and sulfonyl and Ar is selected from the group consisting of:

phenyl substituted with 0–2 substituents selected from halo, hydroxy, cyano, (1–4C)alkyl, and (1–4C)alkoxy, provided that the 4-position of said phenyl may be substituted by fluoro only, and that the said phenyl may not be 3,5-disubstituted;

provided that Ar is not 3-chlorophenyl, 3-bromophenyl, 3-iodophenyl or 3-(1–4C)alkylphenyl when Y is carbonyl; and

Z is selected from hydrogen, cyano, halo, hydroxy, (1–4C)alkyl, and (1–4C)alkoxy;

(B) X is cyano and Z is selected from the group consisting of phenylthio, phenylsulfinyl, and phenylsulfonyl the phenyl rings of which are substituted with 0–2 substituents selected from halo, hydroxy, cyano, nitro (1–4C)alkyl, and (1–4)alkoxy;

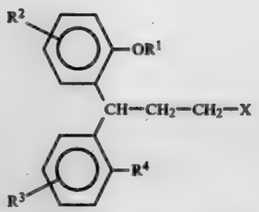
R^2 and R^3

are independently selected from the group consisting of (1–3C)alkyl substituted by from 0 to 2k+1 groups selected from fluoro and chloro wherein k is the number of carbon atoms in the said (1–3C)alkyl, provided that R^2 and R^3 are not both methyl; or

together, with the carbon atom to which both R^2 and R^3 are attached, form a 3–5 membered cycloalkyl ring optionally substituted by from 0 to 2m-2 fluoro groups wherein m is the number of carbon atoms in said ring;

and pharmaceutically acceptable in vivo hydrolyzable esters of said amide;

and pharmaceutically acceptable salts of said amide and said esters.



I

wherein R^1 signifies hydrogen or methyl, R^2, R^3 and R^4 independently signify hydrogen, methyl, methoxy, hydroxy, carbamoyl, sulphamoyl or halogen, and X represents a tertiary amino group of formula II



II

wherein each of R^5 and R^6 independently signifies C_{1-6}alkyl, which may be joined to form a non-aromatic ring having no hetero atom other than the amine nitrogen and each of which may carry a hydroxy substituent, or adamantyl, and wherein R^5 and R^6 together contain at least four carbon atoms, their salts with physiologically acceptable acids and, when the compounds can be in the form of optical isomers, the racemic mixture and the individual enantiomers.

5,382,599

METHOD OF INHIBITING PROTOZOAN GROWTH IN EYE CARE PRODUCTS USING A POLYVALENT CATION CHELATING AGENT

David C. Rupp, San Pedro; Claude Anger, Long Beach; Saroj Kapadia, Irvine, and Mary Totaro, Cypress, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Oct. 13, 1993, Ser. No. 136,517

Int. Cl.[6] A61K *31/225*

U.S. Cl. 514—547 **18 Claims**

1. A method for inhibiting the growth of protozoa in an eye care product which comprises the step of adding to said eye care product an effective protozoan growth-inhibiting amount of a polyvalent cation chelating agent, whereby protozoan growth is inhibited.

5,382,600

3,3-DIPHENYLPROPYLAMINES AND PHARMACEUTICAL COMPOSITIONS THEREOF

Nils A. Jönsson, Södertälje; Bengt A. Sparf, Trängsund; Lembit Mikiver, Järna; Pinchas Moses, Saltsjö-Boo; Lisbet Nilvebrant, Bromma, and Gunilla Glas, Spånga, all of Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Continuation of Ser. No. 543,767, Sep. 24, 1990, abandoned. This application Dec. 19, 1991, Ser. No. 810,185

Claims priority, application Sweden, Jan. 22, 1988, 8800207-6

Int. Cl.[6] A61K *31/135, 31/165, 31/18;* **C07C** *217/62*

U.S. Cl. 514—603 **7 Claims**

1. 3,3-Diphenylpropylamines of formula I

5,382,601

MEMANTINE-CONTAINING SOLID PHARMACEUTICAL DOSAGE FORMS HAVING AN EXTENDED TWO-STAGE RELEASE PROFILE AND PRODUCTION THEREOF

Eberhard Nürnberg, Uttenreuth/Welher; Erhard Seiller, Niderau, and Stefan Ritsert, Eberbach, all of Germany, assignors to Merz + Co. GmbH & Co., Frankfurt am Main, Germany

Filed Jul. 23, 1993, Ser. No. 96,952

Claims priority, application Germany, Aug. 4, 1992, 4225730

Int. Cl.[6] A61K *9/38, 9/64, 37/16*

U.S. Cl. 514—775 **22 Claims**

1. A solid pharmaceutical composition in a dosage form selected from a compressed tablet formed from (a) granules, (b) pellets, or (c) spheronized extruded strands, or in the form of small (a) through (c) themselves, optionally in a capsule filled therewith, having a matrix-controlled extended two-stage release profile having a matrix comprising an effective amount between 0.01 and 90% of the total weight of the pharmaceutical composition of (C) at least one pharmaceutically-active ingredient, wherein the matrix consists essentially of a combination of a water-soluble salt of casein (A) and a water-insoluble salt of casein (B), the total water-soluble casein salt (A) and water-insoluble casein salt (B) content comprising between 5% and 98% of the total weight of the pharmaceutical composition, the water-insoluble casein salt comprising between about 5% and 95% based upon the total casein salt content, all salts and cations being pharmacologically acceptable.

5,382,602

FLEXIBLE SLABSTOCK POLYURETHANE FOAM FORMULATION FOR A RAPID-COOL PROCESS

Robert D. Duffy, 7 Ardrossan Ave., West Chester, Pa. 19382, and George Combs, 1534 Jackson St., Charleston, W. Va. 25311

Filed Jun. 9, 1993, Ser. No. 73,839
Int. Cl.[6] C08G *18/16*
U.S. Cl. 521—55 13 Claims

1. A process for reducing the amount of smoke produced from a flexible slabstock polyurethane foam during a rapid-cool process, said process comprising:

(a) preparing the foam from a polyether polyol, toluene diisocyanate, and water in the presence of a surfactant, an amine catalyst, and a tetravalent tin catalyst; and

(b) rapidly cooling the freshly prepared foam by passing a cooling gas through the foam;

wherein the amount of visible smoke produced from the foam during the rapid-cool process is substantially reduced or eliminated compared with the amount of smoke produced from a conventional flexible slabstock polyurethane foam, which is prepared in the absence of a tetravalent tin catalyst.

5,382,603

PROCESS AND APPARATUS FOR THE PREPARATION OF A POLYURETHANE REACTION MIXTURE

Kurt Krippl, Monheim; Wilfried Ebeling; Jürgen Fletz, both of Cologne; Hans-Michael Sulzbach, Koenigswinter; Reiner Raffel, Siegburg, and Ferdinand Althausen, Neunkirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 9, 1993, Ser. No. 117,047
Claims priority, application Germany, Mar. 14, 1991, 4108186
Int. Cl.[6] C08L *75/00*
U.S. Cl. 521—99 10 Claims

1. A process for the preparation of a polyurethane reaction mixture from a first stream of a first flowable reactant, a second stream of a second flowable reactant and an additive, comprising subdividing said first stream into a main stream and a side stream, introducing said additive into said side stream, reuniting said side stream containing said additive with said main stream, and metering said main stream and said second stream into a mixing zone.

5,382,604

CROSSLINKED EPOXY FUNCTIONALIZED POLYDIENE BLOCK POLYMERS AND ADHESIVES

James R. Erickson, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 7, 1991, Ser. No. 772,172
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[6] C08J *3/28*
U.S. Cl. 522—158 17 Claims

1. A radiation crosslinked epoxidized diolefin block polymer wherein the polymer contains from 0.2 to 1.0 milliequivalents (Meq) of epoxide per gram of polymer before crosslinking and is crosslinked through at least some of the epoxy functionality by exposure to radiation and has sufficient gel content to provide increased resistance to temperature and/or organic solvents.

5,382,605

POLYCONDENSATES WHICH CAN BE STERILIZED BY γ-RADIATION

Douglas G. Powell, Corapolis; Charles E. Lundy, Pittsburgh, both of Pa.; Gerhard Fennhoff, Willich, Germany; Ralf Hufen, Duisburg, Germany, and Klaus Kircher, Leverkusen, Germany, assignors to Miles Inc., Pittsburgh, Pa. and Bayer Aktiengesellschaft, Leverkusen, Germany

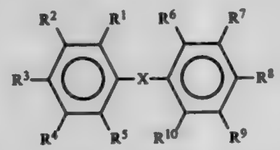
Continuation of Ser. No. 53,927, Apr. 26, 1993, which is a continuation-in-part of Ser. No. 891,875, Jun. 3, 1992, Pat. No. 5,214,078. This application Feb. 15, 1994, Ser. No. 196,323
Int. Cl.[6] C08L *69/00, 5/37, 5/36, 5/18*
U.S. Cl. 523—136 10 Claims

1. A thermoplastic molding composition containing

(i) an aromatic polycondensate selected from the group consisting of polycarbonate, copolycarbonate and polyestercarbonate wherein carbonate are based on at least one diphenol selected from the group consisting of 4,4'-dihydroxydiphenyl, 2,2-bis-(4-hydroxyphenyl)propane, 2,4-bis-(4-hydroxyphenyl)-2-methylbutane, 1,1-bis-(4-hydroxyphenyl)-p-diisopropylbenzene, 2,2-bis-(3-methyl-4-hydroxyphenyl)-propane, 2,2-bis-(3-chloro-4-hydroxyphenyl)-propane, bis-(3,5-dimethyl-4-hydroxyphenyl)-sulphone, 1,1-bis-(3,5-dimethyl-4-hydroxyphenyl)-p-diisopropylbenzene, 2,2-bis-(3,5-dichloro-4-hydroxyphenyl)-propane, 2,2-bis-(3,5-dibromo-4-hydroxyphenyl)-propane and 1,1-bis-)(4-hydroxyphenyl)-3,3,5-trimethyl-cyclohexane, and

(ii) a ionization-radiation stabilizing amount of an agent selected from the group consisting of

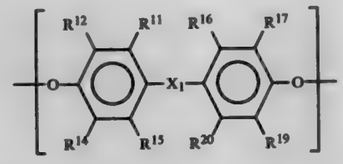
(a) a compound conforming to formula (1)



(I)

wherein R^1 to R^{10} independently one of the others denote H, OH, SH, O-alkyl, S-alkyl, O-aryl, S-aryl, CO-alkyl, CO-aryl, COH, OCOO-alkyl, OCOO-aryl, SO_3H, SO_2H SOH alkyl and aryl and R^1 and R^6 can be linked by a covalent bond and —X—is NH or —S—, and

(b) a member selected from the group consisting of oligocarbonate, polycarbonate, copolycarbonate, polyestercarbonate and polyester which contain structural units conforming to (1a)



wherein R^{11}, R^{12}, R^{14}, R^{15}, R^{16}, R^{17}, R^{19} and R^{20} independently denote H-alkyl, S-alkyl, O-aryl, S-aryl, COO-alkyl, COO-aryl, CO-alkyl, CO-aryl, OCOO-alkyl, OCOO-aryl, SO_3-alkyl, SO_3-aryl, SO_2-alkyl, SO_2-aryl, alkyl and aryl and $—X_1—$ is $—S_2—$ and wherein the relative solution viscosity (measured as 0.500 g of said member in 100 ml of dichloromethane at 25° C.) of said oligocarbonate is about 1.01 to 1.17, and wherein the relative solution viscosity of said polycarbonate, copolycarbonate, polyestercarbonate and polyester is about 1.17 to 1.60.

5,382,606

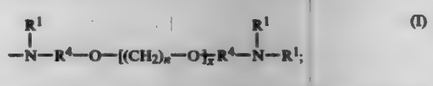
CURING AGENT FOR AQUEOUS EPOXY RESIN DISPERSIONS, PROCESS FOR ITS PREPARATION AND ITS USE

Pierre-André Büttikofer, Hittnau, Switzerland, assignor to Sika AG, vorm. Kaspar Winkler & Co., Zurich, Switzerland

Filed Apr. 28, 1993, Ser. No. 53,426
Claims priority, application Switzerland, Apr. 28, 1992, 1355/92-8
Int. Cl.[6] C08K *3/20;* C08L *63/02*
U.S. Cl. 523—404 19 Claims

1. A curing agent for aqueous epoxy resin dispersions comprising:

(i) about 10 to 80% by weight of at least one emulsifier which includes at least one polyalkylene-polyether-diamine-group represented by the following formula:



(I)

wherein the R^1 groups may be the same or different and each is selected from hydrogen, straight or branched chain alkyl residues having 1–6 carbon atoms, or straight or branched chain alkyl radicals having 1–6 carbon atoms substituted with one or more phenyl residues, the R^4 groups may be the same or different, and each is selected from alkylene groups having 1 to 8 carbon atoms, n is an integer of 1 to 5, and x is an integer of from 8–90,

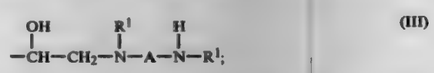
(ii) about 1–80% by weight of a coemulsifier comprising at least one polyalkylene polyamine group of the following formula:



(II)

wherein the R^1 group and n are as defined above, and y is an integer of from 1–6, and

(iii) about 5–80% by weight of at least one bis(diamine)-diepoxide-adduct comprising at least two amino-alcohol groups of the following formula:



(III)

wherein the R^1 groups are as defined above, and A is an alkylene residue, cycloalkylene residue, a polyalkylene-polyether-residue, or a bivalent residue comprising alkyl groups and cycloalkyl and/or aromatic groups.

5,382,607

CATHODIC ELECTRODEPOSITION COATINGS CONTAINING ZINC HYDROXYPHOSPHITE PIGMENT

Robert J. Sikora, Detroit; Allisa Gan, Troy, and Ding Y. Chung, Rochester Hills, all of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 915,874, Jul. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 784,243, Oct. 29, 1991, abandoned. This application Oct. 7, 1993, Ser. No. 133,684
Int. Cl.[6] C08L *63/00, 63/02*
U.S. Cl. 523—415 4 Claims

1. An improved cathodic electrocoating composition comprising an aqueous carrier having dispersed therein a film forming binder comprising an epoxy-amine adduct of a polyglycidyl ether of a polyhydric phenol reacted with an amine selected from the group consisting of a primary amine, secondary amine, ketimine and any mixture thereof and containing a blocked polyisocyanate curing agent; wherein the improvement comprises the addition of zinc hydroxyphosphite pigment of the formula $ZnO[2Zn(OH)_2 . ZnHPO_3]$ in a pigment to binder weight ratio of about 0.001:1 to 0.1:1 to form an electrocoating composition having improved throwing power.

5,382,608

BINDER MIXTURES CONTAINING REACTIVE GROUP CONTAINING LIGNIN AND NOVOLAKS

Arno Gardziella, Witten-Rüdinghause, Germany; Ken Kurple, Casco, Mich.; Achim Hansen; Stephan Schroter, both of Iserlohn, Germany, and Willi Roll, Altenberge, Germany, assignors to Rutgerswerke Aktiengesellschaft, Germany

Division of Ser. No. 162,441, Dec. 3, 1993. This application Aug. 5, 1994, Ser. No. 286,786
Claims priority, application Germany, Dec. 10, 1992, 4241513
Int. Cl.[6] C08L *1/02*
U.S. Cl. 524—14 5 Claims

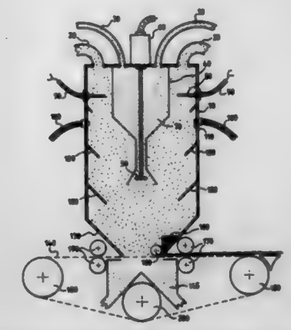
1. A binder mixture consisting essentially of lignin with reactive groups and phenol-novolac in a weight ratio of 95:5 to 50:50 wherein the reactive groups are isocyanate or epoxide groups.

5,382,609

ABSORPTIVE FIBROUS SHEETS AND PROCESSES FOR THEIR MANUFACTURE

Peter M. Lock, 2209 Glenalden East, Germantown, Memphis, Tenn. 38139

Filed Jun. 25, 1992, Ser. No. 903,904
Claims priority, application United Kingdom, Jun. 26, 1991, 9113861
Int. Cl.[6] C08L *1/00;* B32B *31/00*
U.S. Cl. 524—35 21 Claims



1. A process for the production of absorbent materials from an essentially dry preparation of fibers and an essentially dry preparation of a powdered, heat activatable compound, said process comprising the steps:

a) causing at least one of said preparations to carry a net electrical charge, provided that, where both of said preparations are charged, then one preparation is positively charged and the other is negatively charged,

b) bringing said preparations into admixture to form a mixture, and

d) heating and compressing the resulting mixture, in either order or together, to form a pad of said fibers.

5,382,610

WATER ABSORBENT MATTER AND METHOD FOR PRODUCING IT AS WELL AS WATER ABSORBENT AND METHOD FOR PRODUCING IT

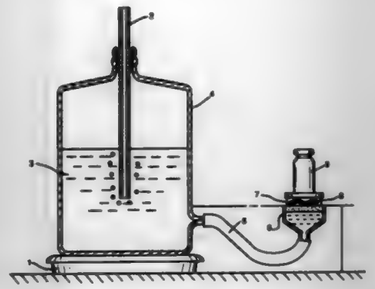
Nobuyuki Harada; Katsuyuki Wada; Hisanori Obara; Tadao Shimomura, all of Osaka, and Yoshinori Sano, Hyogo, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Continuation of Ser. No. 810,083, Dec. 19, 1991, abandoned. This application Oct. 27, 1993, Ser. No. 144,104

Claims priority, application Japan, Dec. 21, 1990, 2-404911; Aug. 1, 1991, 3-193278; Aug. 1, 1991, 3-193279

Int. Cl.[6] C08L *1/00*; A61F *13/15, 13/20*

U.S. Cl. 524—35 29 Claims



1. A water absorbent matter comprising a mat or web of cellulose fibers which contains water-absorbent resin particles, and having a density of from about 0.01 to 0.50 g/cm^3,

said cellulose fibers being treated with a cationic high-molecular compound,

said water-absorbent resin particles being contained in said mat or web of such treated cellulose fibers, being composed of a crosslinked polymer, having an acidic group on the surface and being contained among said cellulose fibers, and

said cationic high-molecular compound having a weight-average molecular weight of 2,000 or more,

wherein falling off of said water absorbent resin particles from said mat or web of said cellulose fibers in the presence of water is decreased by said cationic high-molecular compound.

5,382,611

DESTRUCTURIZED STARCH AND METHOD FOR MAKING SAME

Robert F. T. Stepto, Richen; Ivan Tomka, Lenzburg; Beat Dobler, Basel, all of Switzerland, and Keith Pyrah, Rogerstone, United Kingdom, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 888,693, May 21, 1992, abandoned, which is a continuation of Ser. No. 701,554, May 16, 1991, abandoned, which is a continuation of Ser. No. 356,025, May 23, 1989, abandoned, which is a continuation of Ser. No. 163,340, Mar. 2, 1988, abandoned. This application Feb. 5, 1993, Ser. No. 14,034

Claims priority, application United Kingdom, Mar. 9, 1987, 8705442

Int. Cl.[6] C08L *89/06, 101/00*; C09H *9/02*; B29C *45/00*

U.S. Cl. 524—47 22 Claims

1. A method for producing a composition for use in the manufacture of shaped articles, said method comprising the steps of:

(a) providing a chemically non-modified starch material, with a mass average molar mass and having a water content within the range of from about 10 to about 25% by weight based on the total weight of the composition;

(b) heating the starch material in a closed volume to a temperature within the range of from about 100° C. to about 200° C., and at a pressure within the range of from about zero to about 150×10^5 N/m^2, wherein the starch material is heated in the presence of a chain scission catalyst at a concentration of chain scission catalyst within the range of from about 0.1×10^{-3} to about 5×10^{-3} moles of catalyst per mole of anhydroglucose unit to form a thermoplastic melt; and

(c) heating the thermoplastic melt of step (b) wherein the mass average molar mass of the starch material is reduced by a factor within the range of from about 2 to about 5000, through the action of the chain scission catalyst which cleaves -1,4- glycosidic bonds in starch macromolecules, compared with its original mass average molar mass.

5,382,612

PROCESS FOR PREPARING IN AQUEOUS EMULSION A BITUMEN/POLYMER BINDER WITH CONTINUOUS THREE-DIMENSIONAL POLYMERIC STRUCTURE AND APPLICATION OF THIS BINDER TO THE PRODUCTION OF FACINGS OR BITUMINOUS MIXES

Pierre Chaverot, Oullins, and Francis Demangeon, Dardilly, both of France, assignors to Elf France, Courbevoie, France

PCT No. PCT/FR91/00594, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992, PCT Pub. No. WO92/01752, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 18, 1991, Ser. No. 844,662

Claims priority, application France, Jul. 20, 1990, 90 09276

Int. Cl.[6] C08K *3/20*; C08L *95/00*

U.S. Cl. 524—60 44 Claims

1. The process for preparing in aqueous emulsion a bitumen/polymer binder with a continuous three-dimensional polymeric structure, which comprises the steps of:

a) forming a reaction mixture in an emulsion formation zone by feeding to said zone

(i) a bitumen/polymer component comprising a bitumen containing 0.5% to 15%, by weight of the bitumen, of a sulphur-crosslinkable elastomeric polymer, said bitumen/polymer component being in the form of a melt at a temperature of between 100° C. and 230° C. and having a viscosity of not more than 2 Pa.s at said temperature,

(ii) an aqueous phase containing an effective quantity of an emulsifying system and having a temperature of between 10° C. and 90° C., and

(iii) a crosslinking system donating sulphur in a quantity such as to provide 0.5 to 20% by weight of sulphur relative to the weight of the elastomeric polymer of the bitumen/polymer component,

the weight ratio of the bitumen/polymer component to the aqueous phase ranging from 30:70 to 85:15, and

b) maintaining the reaction mixture thus formed in the emulsion formation zone at a temperature between 50° C. and 160° C. until an aqueous emulsion of bitumen/polymer binder is obtained, in which the polymer of the binder is at least partially crosslinked to a three-dimensional structure.

5,382,613

LIGHT-STABLE POLYPHENYLENE ETHER MOLDING COMPOSITION WITH AN ANTISTATIC FINISH

Klaus-Dieter Bergner, Biberbach, and Gerhard Pfahler, Augsburg, both of Germany, assignors to Hoechst AG, Frankfurt, Germany

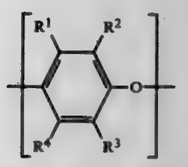
Continuation of Ser. No. 701,222, May 16, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 127,416

Claims priority, application Germany, May 16, 1990, 4015740

Int. Cl.[6] C08K *5/34, 5/41, 5/08*

U.S. Cl. 524—102 6 Claims

1. A polyphenylene ether molding composition essentially comprising a polymer which contains units of the formula I



(I)

in which R^1, R^2, R^3 and R^4 are identical or different and are hydrogen, halogen, straight-chain or branched C_1–C_{20}-alkyl, C_1–C_{20}-alkoxy, phenyl or benzyl, wherein the molding composition contains from 0.05 to 5 parts by weight based on the polymer, of at least one compound of the formula II

$$R^5[(SO_3)_mM]_n \quad \text{(II)}$$

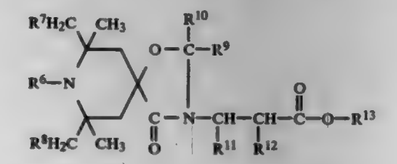
in which

R^5 is a straight-chain or branched, aliphatic hydrocarbon radical having 4 to 30 carbon atoms or a cycloaliphatic hydrocarbon radical having 6 to 30 carbon atoms,

M is an alkali metal or alkane earth metal atom,

m is 1 or 2, and

n is 1, 2, 3 or 4, where each sulfonate group may be pendent or terminal, from 0.05 to 2.0 pans by weight, based on the polymer, of at least one compound of the formula III



(III)

in which

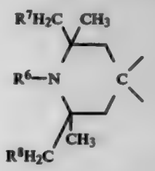
R^6 is hydrogen, C_1–C_8-alkyl, C_1–C_{18}-alkoxy, acyl or hydroxyl,

R^7 and R^8, independently of one another, are hydrogen or C_1–C_4-alkyl,

R^9 is hydrogen, C_1–C_{30}-alkyl or benzyl,

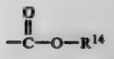
R_{10} is hydrogen, C_1–C_{30}-alkyl, C_1–C_4-alkylphenyl, chlorophenyl, 4-hydroxy-3,5-di-t-butylphenyl, benzyl, phenyl or naphthyl, or

R^9 and R^{10}, together with the carbon atom to which they are bonded, are an optionally C_1–C_4-alkyl-substituted C_5–C_{15}-cycloalkylidene ring or a radical of the formula



in which R^6, R^7 and R^8 are as defined above,

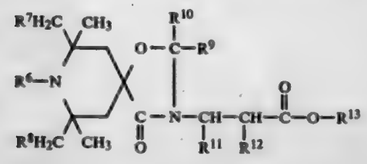
R^{11} is hydrogen, methyl, phenyl or



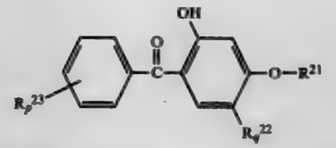
in which R^{14} is C_1–C_{21}-alkyl, and

R^{12} is hydrogen or methyl, and

R^{13} is hydrogen, C_1–C_{30}-alkyl, C_2–C_{30}-alkylene, it being possible for the alkyl group or the alkylene group to be substituted by phenyl or naphthyl and/or to be interrupted by oxygen or C_1–C_4-alkylimine, or is C_5–C_{12}-cycloalkyl, phenyl, C_1–C_{12}-alkylphenyl or an aliphatic hydrocarbon radical having 2 to 20 carbon atoms which may be interrupted by oxygen or C_1–C_4-alkylimine, and carries 1 to 3 further radicals of the formula



and/or C_1–C_{21}-alkylcarboxyl groups, where R^6, R^7, R^8, R^9, R^{10}, R^{11} and R^{12} are as defined above and from 0.3 to 10 parts by weight, based on the polymer, of at least one compound of the formula IV



(IV)

in which R^{21} is hydrogen, C_1–C_{25}-alkyl or C_6–C_{10}-aryl,

R^{22} and R^{23}, independently of one another, are hydrogen, hydroxyl, C_1–C_{10}-alkoxy, C_1–C_{25}-alkyl or C_6–C_{10}-aryl, and

p and q, independently of one another, are zero or an integer from 1 to 5.

5,382,614

PERFLUOROPOLYETHER LUBRICANTS FOR MAGNETIC RECORDINGS

Mario A. Scarati, and Gerardo Caporiccio, both of Milan, Italy, assignors to Ausimont S.p.A., Milan, Italy

Continuation of Ser. No. 993,892, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 677,378, Mar. 27, 1991, abandoned, which is a continuation of Ser. No. 432,310, Nov. 3, 1989, abandoned, which is a continuation of Ser. No. 267,649, Nov. 2, 1988, abandoned, which is a continuation of Ser. No. 29,641, Mar. 24, 1987, abandoned. This application Sep. 17, 1993, Ser. No. 130,144

Claims priority, application Italy, Mar. 27, 1986, 19910 A/86

Int. Cl.[6] C08K *5/15*

U.S. Cl. 524—108 3 Claims

1. A method for preparing magnetic recording media having increased wear resistance, comprising a flexible substrate and a coating thereon comprising a magnetic recording material and a binder, the method comprising:

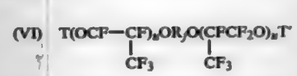
preparing a resin composition in a suitable solvent, said composition comprising (a) the binder comprising a resin selected from the group consisting of polyvinyl, polyurethane, epoxy, phenolepoxy and mixtures thereof, (b) the magnetic recording medium and (c) at least one bifunctional perfluoropolyether compound; said solvent selected from the group consisting of tetrahydrofuran, methylethyl ketone, isopropanol and mixtures thereof, and

applying said composition to the flexible substrate, said bifunctional perfluoropolyether compounds being liquid at a temperature of 25° C. and possessing a solubility at 20° C. in methylethylketone ranging from 0.05% to 2% by weight, the perfluorooxyalkylene chain of said internal lubricants being at least 1000; said bifunctional perfluoropolyether compounds being selected from the group consisting of

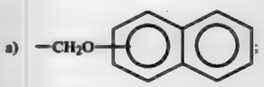
(I) $TO(CF_2CF_2O)_n(CF_2O)_mT'$;

(II) 

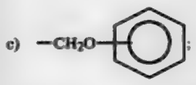
(III) $TO(CH_2CF_2CF_2O)_rT'$;
(IV) $T(OCF_2CF_2CH_2)_sOR_fO(CH_2CF_2CF_2O)_tT'$;
(V) $TO(CF_2CF_2O)_vT'$;

(VI) 

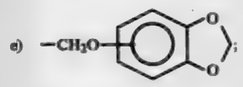
wherein: T and T', which are the same or different are selected from the group consisting of

a)  ;

b) $—CH_2O—(CH_2CH_2O)_zH$, wherein z is an integer from 1 to 3;

c)  ;

d) —COOR, where R is an alkyl radical with 2 to 12 carbon atoms; and

e)  ;

n, m, g, h, p, q, s, t, r and u are integers; R_f is a fluoroalkylene radical, and the perfluoro-oxyalkylene units are statistically distributed along the chain.

5,382,615
MODIFIED POLYETHYLENE BASED HOT-MELT ADHESIVES FOR USE IN PACKAGING
Darryl A. Godfrey, Charlotte, N.C., assignor to Eastman Chemical Company, Kingsport, Tenn.
Filed Oct. 1, 1993, Ser. No. 130,544
Int. Cl.[6] C08L *33/08*
U.S. Cl. 524—271 **18 Claims**

1. A hot-melt adhesive composition comprising a blend of:
(a) about 5 to 20 weight percent of a copolymer of ethylene and alkyl acrylate or alkyl methacrylate, having an alkyl acrylate or alkyl methacrylate content of 4 to 15 mole percent and a melt index of 70 to 500;
(b) about 40 to 70 weight percent of a polyethylene graft copolymer having a saponification number of about 3 to 60 that is grafted with an unsaturated polycarboxylic acid, anhydride, or ester thereof;
(c) about 15 to 35 weight percent of a tackifying resin selected from the group consisting of aliphatic hydrocarbon resins, polyterpene resins, and rosin ester resin; and
(d) about 5 to 20 weight percent of a high melting, low viscosity wax selected from the group consisting of high density polyethylene waxes, Fischer-Tropsch synthetic waxes, and microcrystalline waxes,
wherein the composition has a melt viscosity of about 300 to 4,000 cp at 350° F. (177° C.).

5,382,616
POLYISOCYANATE COMPOSITION
Dirk Stanssens, Lanaken, and Ernst O. Dueber, Tervuren, both of Belgium, assignors to Imperial Chemical Industries plc, London, England
Filed May 29, 1991, Ser. No. 706,828
Claims priority, application United Kingdom, May 30, 1990, 9011992
Int. Cl.[6] C08K *5/09*
U.S. Cl. 524—394 **5 Claims**

1. Dispersion of a polyurea and a metal carboxylate in an organic polyisocyanate, wherein said metal carboxylate is selected from the group consisting of copper, magnesium, calcium, barium, zinc, cadmium, aluminum, chromium, iron, cobalt, nickel, antimony, boron, silicon and mixtures thereof.

5,382,617
STABILIZATION OF POLY(HYDROXY ACID)S DERIVED FROM LACTIC OR GLYCOLIC ACID
William E. Kelly, Jr., and Richard L. Baird, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 20, 1993, Ser. No. 107,646
Int. Cl.[6] C08K *3/38*
U.S. Cl. 524—405 **23 Claims**

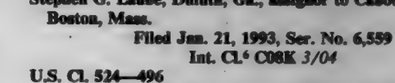
1. A composition with improved thermal stability comprising:
(A) a poly(hydroxy acid) selected from the group of poly(-lactic acid); poly(glycolic acid); copolymers of lactic and glycolic acid; and copolymers containing lactic acid and-/or glycolic acid copolymerized with up to 30% by weight of an additional hydroxy acid; and
(B) an effective amount of a thermal stabilizer, selected from the group consisting of: boron oxide, boric acids and mixtures thereof.

5,382,618
USE OF SULFATED LIME DERIVED FROM DRY DESULFURIZATION OF FLUE GAS AS A POLYMER FILLER
Claude Castel, le Havre, France, assignor to Total Raffinage Distribution, S.A., Levallois-Perret Cedex, France
Filed Nov. 10, 1993, Ser. No. 150,606
Claims priority, application France, Nov. 10, 1992, 92 13532
Int. Cl.[6] C08K *3/30*
U.S. Cl. 524—423 **11 Claims**

1. A vulcanized elastomeric composition, comprising an elastomer and particles of sulfated lime as a dispersed filler, wherein the sulfated lime is derived from the dry desulfurization of flue gas and comprises, in percent by weight, from 40 to 80% of calcium sulfate, from 10 to 50% of quicklime, from 0 to 10% of calcium carbonate and from 0 to 15% of slaked lime.

5,382,619
POLYMERIZABLE COMPOSITIONS AND IN-MOLD CURED PRODUCTS USING SAME
Yuji Takayama, Kanagawa; Hirokazu Matsueda, Aichi; Masato Sugiura, Aichi; Tatsuhiko Ozaki, Aichi; Hirotaka Wada, Aichi; Toshiharu Suzuki, Aichi, and Iwao Komiya, Aichi, all of Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan
Filed Apr. 28, 1993, Ser. No. 54,554
Claims priority, application Japan, Feb. 5, 1993, 5-042003
Int. Cl.[6] C08K *3/22*; C08L *39/00*; C08F *271/00, 226/02*
U.S. Cl. 524—437 **18 Claims**

1. A polymerizable composition comprising unsaturated urethane shown by Formula (1) given below, vinyl monomer which is copolymerizable with said unsaturated urethane, and an inorganic powder filler at weight ratio of (unsaturated urethane)/(vinyl monomer)=10/90–90/10, said inorganic powder filler being 30–300 weight parts with respect to 100 weight parts of the sum of said unsaturated urethane and vinyl monomer:

Formula (1) 

where X is a residual group obtained by removing isocyanate groups from polyisocyanate; Y is a residual group obtained by removing hydroxyl groups from polyol; R^1 is a residual group obtained by removing hydroxyl group from non-radical polymerizable mono-ol having aliphatic hydrocarbon group with 6–22 carbon atoms; R^2 is H or CH_3; and p, q and r are each an integer 1–3 such that $2 \leqq p+q \leqq 4$ and $qr \geqq 2$.

5,382,620
RESIN COMPOSITION
Yasuhi Nagase; Masami Kobayashi, both of Onoda; Tatsuo Kato, and Shinichi Imuta, both of Kuga, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Filed May 20, 1993, Ser. No. 63,762
Claims priority, application Japan, May 20, 1992, 4-127089
Int. Cl.[6] C08L *23/20, 23/18*
U.S. Cl. 524—491 **15 Claims**

1. A resin composition comprising:
(A) 94 to 70 parts by weight of a 4-methyl-1-pentene polymer which is at least one member selected from the group consisting of 4-methyl-1-pentene homopolymer and a copolymer of 4-methyl-1-pentene with an α-olefin other than the 4-methyl-1-pentene in an amount of 1 to 10% by weight of the copolymer;
(B) 3 to 15 parts by weight of a liquid polymer having a kinematic viscosity of 2 to 5000 cSt at 100° C., which is at least one member selected from the group consisting of isobutylene homopolymer and a copolymer of isobutylene with an α-olefin other than the isobutylene in an amount of no more than 40% by mole of the copolymer; and
(C) 3 to 15 parts by weight of a butene-1 solid crystalline polymer having a melt flow rate of 0.01 to 50 g/10 min., which is at least one member selected from the group consisting of butene-1 homopolymer and a copolymer of butene-1 with an α-olefin other than the butene-1 in an amount of no more than 30% by mole of the copolymer;
wherein the sum of (A)+(B)+(C) is 100 parts by weight.

5,382,621
SKIM COMPOUNDS INCORPORATING LOW ASH CARBON BLACKS
Stephen G. Laube, Duluth, Ga., assignor to Cabot Corporation, Boston, Mass.
Filed Jan. 21, 1993, Ser. No. 6,559
Int. Cl.[6] C08K *3/04*
U.S. Cl. 524—496 **13 Claims**

1. A process for using as a skim compound a composition having low moisture absorption properties comprising: rubber and a carbon black having an ash level of less than or equal to 0.2% by weight, a DBP of 50–160 cc/100 g, an I_2No. of 10–180 mg/g and a Tint value of 30–140%.

5,382,622
SEMICONDUCTOR POLYMERIC COMPOUND BASED ON LAMPBLACK, POLYMERIC SEMICONDUCTOR BODY, AND METHODS OF MAKING THE SEMICONDUCTOR POLYMERIC COMPOUND AND THE POLYMERIC SEMICONDUCTOR BODY
Humberto T. Kadooka; Ricardo P. Moreno, and Olavo N. Da Costa, all of no Estado de Sao Paulo, Brazil, assignors to Metagal Industria E Comercio LTDA., Sao Paulo, Brazil
Filed Jun. 29, 1993, Ser. No. 85,015
Int. Cl.[6] C08K *3/00*
U.S. Cl. 524—496 **1 Claim**

1. Method of making a semiconductor polymeric compound comprising an "A" phase consisting of preparing a mixture of a polymeric matrix consisting essentially of about 60% by weight low density polyethylene and about 8.5% by weight ethylene vinyl acetate based on a total amount of said polymeric compound to be prepared with about 20% by weight of a conductive lampblack with a porous structure and about 4.0% by weight of a spreading agent consisting of calcium stearate, about 3 by weight of an antioxidant, and about 0.5% of a coupling agent consisting of calcium titanate; and a "B" phase including the steps of spreading the mixture in "Banbury" intermittent mixers under process conditions to obtain a high rate of lampblack shearing and homogenizing of a sheared lampblack and spreading and coupling agent portion.

5,382,623
HETEROGENEOUS POLYMERIZATION IN CARBON DIOXIDE
Joseph M. DeSimone; Elise E. Maury, both of Chapel Hill; James R. Combes, Carboro, and Yusuf Z. Menceloglu, Chapel Hill, all of N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.
Division of Ser. No. 99,905, Jul. 30, 1993, Pat. No. 5,312,882. This application Feb. 17, 1994, Ser. No. 198,224
Int. Cl.[6] C08L *29/04*; C08K *3/00*
U.S. Cl. 524—557 **22 Claims**

1. A heterogeneous reaction mixture useful for carrying out the heterogeneous polymerization of a monomer that forms a water-insoluble polymer, said reaction mixture comprising:
at least one monomer that forms a water-insoluble polymer;
a carbon dioxide continuous phase; and
a surfactant that stabilizes said monomer and said polymer in said carbon dioxide, wherein said surfactant comprises a carbon dioxide soluble segment.

5,382,624
POLYMER PARTICLES AND METHOD FOR PRODUCING THE SAME
Yasunari Hotta; Satoshi Maeda; Yozo Yamada; Shinichiro Mori; Toshio Tanaka, all of Ootsu; Koji Tanaka, and Hiroshi Ono, both of Okayama, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan
Continuation of Ser. No. 748,763, Aug. 23, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 118,782
Claims priority, application Japan, Aug. 27, 1990, 2-226376
Int. Cl.[6] C08L *67/02, 67/04, 67/06*
U.S. Cl. 525—10 **7 Claims**

1. A method for producing resin particles, which comprises preparing substantially spherical resin particles which have an average particle diameter of 0.1 to 50 μm, at least 70% by weight of said particles having a diameter in the range of 0.5 to 2.0 times the average particle diameter and which comprise a polyester; dispersing the substantially spherical resin particles in an aqueous medium; swelling said resin particles with a polymerizable monomer comprising a vinyl monomer and/or a ring-opening polymerizable monomer wherein the swelling rate of said polyester containing particles is at least 1.08 times; and then polymerizing said monomer to form resin particles having an average particle diameter of 1 to 500 μm, at least 70% by weight of the particles have a sphereness of 0.7 or above, and at least 70% by weight of the particles have a diameter in the range of 0.5 to 2.0 times the average particle diameter and comprising said polyester and a polymer formed from said polymerizable monomer.

5,382,625

THERMOPLASTIC MOULDING COMPOSITIONS WITH HIGH NOTCHED IMPACT STRENGTH

Christian Lindner, Cologne; Walter Uerdingen; Karl-Heinz Ott, both of Leverkusen, and hans-Eberhard Braese, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 12, 1985, Ser. No. 807,965
Claims priority, application Germany, Dec. 22, 1984, 3447249
The portion of the term of this patent subsequent to Oct. 17, 2004, has been disclaimed.
Int. Cl.[6] C08L *51/04;* **C08F** *279/02*
U.S. Cl. 525—81 **6 Claims**

1. A particulate graft polymer comprising a core and three shells wherein the core (a) is a cross-linked diene rubber,

the first shell (b) is a cross-linked acrylate rubber,

the second shell (c) is a copolymer of 99.9 to 90% by weight resin-forming vinyl monomers selected from the group consisting of styrene, alpha methyl styrene, halogenated styrene, p-methyl styrene, acrylonitrile, methacrylonitrile, methyl methacrylate, butyl methacrylate, vinyl chloride, styrene and acrylonitrile or methylmethacrylate and acrylonitrile or alpha methyl styrene and acrylonitrile, and terpolymers of alpha methylstyrene, acrylonitrile and methylmethacrylate, and 0.1 to 10% by weight of polyallyl monomers having at least three allyl groups in each monomer molecule,

and the third shell is a copolymer or homopolymer of resin-forming vinyl monomers selected from the group consisting of styrene, alpha methyl styrene, halogenated styrene, acrylonitrile, methacrylonitrile, and methylmethacrylate.

5,382,626

CROSS-LINKABLE POLYESTER/ISOCYANATE COMPOSITIONS SUITED FOR THE PREPARATION OF COMPOSITE MATERIALS

Lino Credali, Bologna; Paolo Cloni, Novara, both of Italy; Kurt C. Frisch, Grosse Ile, Mich.; Jiri E. Kresta, Warren, Mich., and Fushu Fu, Detroit, Mich., assignors to Montedison s.p.A., Italy

Filed Mar. 8, 1991, Ser. No. 666,311
Claims priority, application Italy, Mar. 9, 1990, 41002 A/90
Int. Cl.[6] C08F *8/30;* **C08L** *75/00, 75/04*
U.S. Cl. 525—126 **23 Claims**

1. Cross-linkable polymeric composition in the form of an interpenetrating polymer network suitable for the manufacture of composite materials endowed with high mechanical properties and prepared in the absence of a foaming agent comprising, by weight:

A) at least one polyisocyanate being in a liquid form when in admixture with the other components, having a functionality of at least 2 but not greater than 5, and a viscosity at 25° C. between 20 and 10,000 cP;

B) at least one polyol having a functionality of at least 2 and not greater than 7, molecular weight of at least 200 but below 10,000, in such a quantity as to get a molar ratio (NCO/OH) of the isocyanate groups of the component (A) to the hydroxyl groups between 2 and 8;

C) at least one vinylester or polyester resin being in admixture with a vinyl or divinyl monomer, said at least one vinyl ester or polyester resin containing vinyl or vinylidene ethylenic unsaturation and representing 30–80% by weight of the admixture and 20% to 80% based on the sum of the weights of (A), (B), and (C);

D) at least one radical polymerization initiator intrinsically stable at temperatures below 70° C., in quantities between 0.1 and 4% based on the sum of the weights of (A), (B), and (C);

E) at least one decomposition promoter of the initiator (D), active at temperatures below 70° C., constituted by a salt of a transition metal, soluble in the mixture (A), (B), and (C), in such a quantity that the metal included in the transition metal salt is between 0.001% and 0.5% based on the sum of the weights of (A), (B), and (C), or an aromatic amine N,N-dialky substituted in a quantity between 0.05 and 1% based on the sum of the weights of (A), (B), and (C), or a mixture comprising said salt and said amine in the quantity above specified for each one;

F) at least one trimerization catalyst of isocyanate (A), in a quantity between 0.01 and 1% based on the sum of the weights of (A), (B), and (C); and

G) from 0% to 20% by weight based on the sum of the weights of (A), (B), and (C) of a mineral charge exerting a dehydrating action,

said components (A)–(G) providing a "pot-life" in excess of 30 minutes.

5,382,627

POLYPHENYLENE ETHER RESIN COMPOSITION

Masaji Yoshimura; Kazuharu Kanezaki; Takashi Satoh; Tomoyuki Nakata, all of Yokohama, and Minoru Takiguchi, Shimonoseki, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Aug. 2, 1993, Ser. No. 100,218
Claims priority, application Japan, Aug. 5, 1992, 4-208843; Dec. 9, 1992, 4-329699
Int. Cl.[6] C08L *25/14, 71/12*
U.S. Cl. 525—132 **2 Claims**

1. A polyphenylene ether resin composition comprising:

(A) 100 parts by weight of a polyphenylene-ether-base resin composed of 100–60 wt. % of a polyphenylene ether resin and 0–40 wt. % of a polystyrene resin; and

(B) 1–40 parts by weight of a dicarboxylic acid ester copolymer obtained from a vinyl monomer and an unsaturated dicarboxylic acid ester as copolymerizable components wherein the proportion of the unsaturated dicarboxylic acid ester in the dicarboxylic acid ester copolymer (B) is in a range of from 10 wt. % to 80 wt. %, said dicarboxylic acid ester copolymer having a weight average molecular weight not greater than 60,000.

5,382,628

HIGH IMPACT STRENGTH ARTICLES FROM POLYESTER BLENDS

Jennifer L. Stewart, Kingsport, and Emily T. Bell, Jonesborough, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Feb. 28, 1994, Ser. No. 203,172
Int. Cl.[6] C08L *67/02*
U.S. Cl. 525—174 **9 Claims**

1. A shaped plastic article prepared from a polyethylene terephthalate/poly (1,4-cyclohexylenedimethylene terephthalate) blend consisting essentially of:

(A) 88 to 99 weight percent of a polyethylene terephthalate resin having an inherent viscosity of 0.4 to 1.2 dl/g comprising

(1) a dicarboxylic acid component comprising repeat units from at least 95 mole percent terephthalic acid; and

(2) a diol component comprising repeat units from at least 95 mole percent ethylene glycol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol; and

(B) 1 to 12 weight percent of a poly(1,4-cyclohexylenedimethylene terephthalate) resin having an inherent viscosity of 0.4 to 1.2 dl/g which comprises

(1) a dicarboxylic acid component comprising repeat units from at least 75 mole percent terephthalic acid or dimethyl terephthalate; and

(2) a diol component comprising repeat units from at least 30 mole percent 1,4-cyclohexanedimethanol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol, wherein the combined weights of (A) and (B) total up to 100 percent.

5,382,629

RUBBER COMPOSITIONS COMPRISING A POLYMERIC AMINE CO-ACTIVATOR

Aubert Y. Coran, Akron, Ohio; Samuel J. Tremont, Manchester, Mo.; Leonard H. Davis, New City, N.Y.; Frederick Ignatz-Hoover, Elyria, Ohio, and Martin P. McGrath, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 18, 1994, Ser. No. 181,937
Int. Cl.[6] C08L *9/00, 15/00, 23/16, 23/26*
U.S. Cl. 525—194 **15 Claims**

1. A rubber composition comprising sulfur-vulcanizable rubber, sulfur or a sulfur donor and an accelerator of vulcanization, also comprising from 0.1 to 10 parts by weight per 100 parts by weight of rubber of a co-activator, which co-activator comprises a hydrocarbon polymer backbone of 700 to 100,000 molecular weight with pendent amine groups thereon of the formula

—RNR'R",

wherein R is a straight-chain, branched-chain or cyclic hydrocarbon di or tri radical of 1–10 carbon atoms and R' and R" are the same or different straight-chain, branched-chain or cyclic alkyl hydrocarbon radicals of 1–12 carbon atoms, or R" can be a hydrogen atom and wherein the hydrocarbon backbone is EPDM rubber or a polymer from butadiene or isoprene, and the pendent amine groups comprise from 2 to 70 weight percent of the co-activator.

5,382,630

LINEAR ETHYLENE INTERPOLYMER BLENDS OF INTERPOLYMERS HAVING NARROW MOLECULAR WEIGHT AND COMPOSITION DISTRIBUTION

Ferdinand C. Stehling, Baytown; Charles S. Speed, Dayton, and Curtis H. Welborn, Jr., Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 490,642, filed as PCT/US89/04299, Sep. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 252,094, Sep. 30, 1988, abandoned. This application Feb. 4, 1993, Ser. No. 14,094
Int. Cl.[6] C08L *23/08, 23/18, 23/16*
U.S. Cl. 525—240 **40 Claims**

1. A polymer blend composition comprising: a plurality of linear ethylene interpolymer components comprising ethylene and at least one alpha-olefin comonomer, each component having a different average molecular weight, a Mw/Mn≦3, a composition distribution breadth index of at least 50% and a density greater than or equal to 0.900 g/cm^3; the composition having a density greater than or equal to 0.900 g/cm^3 and a Mw/Mn>3; wherein the composition is essentially free of components having a higher average molecular weight and a lower average comonomer content than that of any other components.

5,382,631

LINEAR ETHYLENE INTERPOLYMER BLENDS OF INTERPOLYMERS HAVING NARROW MOLECULAR WEIGHT AND COMPOSITION DISTRIBUTIONS

Ferdinand C. Stehling, Baytown; Charles S. Speed, Dayton, and Howard C. Welborn, Jr., deceased, late of Houston, all of Tex. by John L. Zipprich, II, executor , assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 14,094, Feb. 4, 1993, which is a continuation of Ser. No. 490,642, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 252,094, Sep. 30, 1988, abandoned. This application Jun. 4, 1993, Ser. No. 73,362
Int. Cl.[6] C08L *23/08, 23/18, 23/16*
U.S. Cl. 525—240 **35 Claims**

1. A polymer blend comprising:

a plurality of linear at least partially crystalline ethylene interpolymer components comprising ethylene and at least one alpha olefin comonomer, each component having a a different average molecular weight, Mw/Mn≦3, a density in the range of 0.88 to less than 0.940 g/cm^3 and a composition distribution breadth index of at least 50%;

said blend being essentially free of blend components having both a higher average molecular weight and a lower average comonomer content than that of any other components; and

said blend has a density in the range of from about 0.88 g/cm^3 to less than 0.900 g/cm^3 and a Mw/Mn>3.

5,382,632

OIL SOLUBLE AMINO-SUBSTITUTED POLYMERS CONTAINING GRAFT POLYMER SEGMENTS DERIVED FROM AROMATIC NITROGEN-CONTAINING MONOMERS

Abhimanyu O. Patil, Westfield; Sudhin Datta, Matawan, and Robert D. Lundberg, Bridgewater, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 449,998, Dec. 13, 1989, Pat. No. 5,278,240. This application Oct. 1, 1993, Ser. No. 130,611
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[6] C08F *8/32*
U.S. Cl. 525—274 **19 Claims**

1. An oil soluble nitrogen-containing antioxidant polymeric additive which comprises an oil soluble amino-substituted polymer backbone derived from at least one polymer chain monomer and at least one monomer having a general formula of: $R^1(X)_n$ wherein R^1 comprises an ethylenically unsaturated hydrocarbyl radical, n is an integer of at least 1, and X is selected from the group consisting of imino, primary amino, secondary amino, and cyano groups, having grafted thereon graft units derived from at least one aromatic nitrogen-containing monomer wherein said aromatic monomer comprises at least one compound of the formula

$$Ar'[NH(R^b)]_{y'}$$

wherein Ar' is



wherein R^c in each instance in which it appears is independently C_1 to C_{12} alkyl, y' is an integer of from 1 to 4, y'' is an integer of from 0 to 4, y''' is an integer of from 0 to 4, D in each instance in which it appears is independently Cl, Br or I, R^b is hydrogen or C_1 to C_{20} alkyl, and Z' is a branched or straight chain alkylene group which can contain one or more —O— or —S— chain atoms, with the proviso that the sum of y' +y''+y''' is from 1 to 5.

5,382,633

MODIFIED POLYMERS

Gerald Scott, Stokesley, and Saher Al-Malaika, Sutton Coldfield, both of England, assignors to 3i Research Exploitation Limited, London, England

PCT No. PCT/GB89/00909, § 371 Date Apr. 8, 1991, § 102(e) Date Apr. 8, 1991, PCT Pub. No. WO90/01506, PCT Pub. Date Feb. 22, 1990
PCT Filed Aug. 9, 1989, Ser. No. 678,301
Claims priority, application United Kingdom, Aug. 9, 1988, 8818880
Int. Cl.[6] C08F *283/00, 283/02, 283/04, 255/00, 259/04, 279, 02, 265/04;* **C08L** *51/06, 51/08*
U.S. Cl. 525—279 **33 Claims**

1. A method of preparing a modified polymer capable of being blended as a masterbatch with an unmodified polymer comprising reacting together at a temperature of from 70° C. to

300° C. in a melt and in the presence of free radicals while applying shear to the melt, a preformed thermoplastic polymer to be modified and a two component monomer composition comprising (a) at least one polymerizable monomer containing an ethylenically unsaturated polymerizable group and at least one functional polymer-modifying group and (b) at least one comonomer containing no functional polymer-modifying group but at least two ethylenically unsaturated polymerizable groups, thereby to graft said polymerizable monomer to said preformed polymer leaving substantially no unbound monomer, the reaction being continued for a period of time such that the torque used in applying shear to the melt passes through a peak and then falls again, thereby to produce a graft copolymer that is thermoplastic with a gel content of less than 0.5% by weight and that can be blended with an unmodified polymer.

20. A modified polymer produced by a method according to claim 1.

21. A blend of a modified polymer according to claim 20 with an unmodified polymer.

23. A modified polymer capable of being blended as a masterbatch with an unmodified polymer, said modified polymer comprising a thermoplastic polymer composition comprising a graft copolymer between (1) a preformed thermoplastic polymer and (2) a two component monomer composition comprising (a) at least one polymerizable monomer containing an ethylenically unsaturated polymerizable group and at least one functional polymer-modifying group and (b) at least one comonomer containing at least two ethylenically unsaturated polymerizable groups, said preformed thermoplastic polymer and the monomer composition being in proportions such as to form a masterbatch concentrate for blending with unmodified polymer, and said copolymer having a gel content of less than 0.5% by weight and being substantially free of unbound monomer.

5,382,634

TERMINAL-MODIFED POLYOLEFINS

Naomi Koyama; Miyuki Usui; Hiroyuki Furuhashi, and Satoshi Ueki, all of Iruma, Japan, assignors to Tonen Corporation, Tokyo, Japan

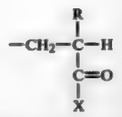
Continuation of Ser. No. 952,759, Nov. 13, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 232,304

Claims priority, application Japan, Mar. 15, 1991, 3-051389; Mar. 18, 1991, 3-52639; Mar. 18, 1991, 3-52640; Mar. 18, 1991, 3-52641; Nov. 8, 1991, 3-293213

Int. Cl.[6] C08F *297/08, 210/06, 210/16*

U.S. Cl. 525—286 **4 Claims**

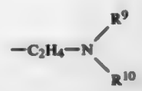
1. A process for the production of a terminal-modified linear polyolefin in which the polyolefin is polypropylene or ethylene-propylene random copolymer and one of the terminals of the polyolefin is modified with a substituent represented by the following General Formula:



wherein R is a hydrogen atom or methyl group, X is a halogen atom or OZ group,

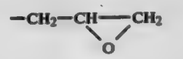
wherein Z is C_mH_{2m}-$OSi(CH_3)_3$ or C_mH_{2m}-OH, where m is 2 or 3, or

Z is a group represented by the following General Formula:

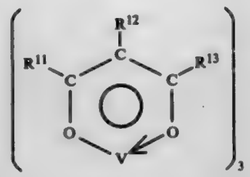


wherein R^9 and R^{10} are independently a methyl group or an ethyl group, or

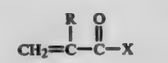
Z is a group represented by the following formula:



which process comprises polymerizing propylene or random-copolymerizing ethylene and propylene in the presence of a catalyst consisting of an organic aluminum compound and a vanadium compound represented by the following General Formula:



wherein R^{11} to R^{13} are hydrogen atoms or hydrocarbon groups of 1 to 8 carbon atoms and at least one of R^{11} to R^{13} must be a hydrogen atom, but all of R^{11} to R^{13} must not be hydrogen atoms, thus obtaining respectively living polypropylene or living ethylene-propylene copolymers, and then reacting the polypropylene or ethylene-propylene copolymer with a methacrylic acid or acrylic acid derivative represented by the following General Formula:



wherein R and X have the same meanings as described above.

5,382,635

HIGHER MODULUS COMPOSITIONS INCORPORATING PARTICULATE RUBBER

Edwin L. McInnis, Allentown, Pa.; Robert P. Scharff, Louisville, Ky.; Bernard D. Bauman, Emmaus, and Mark A. Williams, Souderton, both of Pa., assignors to Composite Particles, Inc., Allentown, Pa.

Continuation of Ser. No. 842,815, Feb. 27, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 129,227

Int. Cl.[6] C08F *8/06*

U.S. Cl. 525—356 **4 Claims**

1. A method for increasing the flexural modulus of vulcanized rubber particles comprising contacting the vulcanized rubber particles in a gas/solid phase reactor with a chlorine-containing gas at a temperature and chlorine gas partial pressure sufficient to increase the bulk chlorine content of the vulcanized rubber particles to between about 0.5% and 10%.

5,382,636

INTERNALLY PLASTICIZED VINYL CHLORIDE POLYMERS AND PROCESS FOR THEIR MANUFACTURE

Frank Schmidt, Essen, and Neidhard Gardiewski, Gelsenkirchen-Buer, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Continuation of Ser. No. 866,578, Apr. 10, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 104,946

Claims priority, application Germany, Apr. 10, 1991, 4111628

Int. Cl.[6] C08F *283/02*

U.S. Cl. 525—412 **7 Claims**

1. An internally plasticized vinyl chloride polymer which can be processed into finished parts having a high transparency and excellent stability to extraction, produced by a process in which vinyl chloride is polymerized in the presence of polycaprolactone and wherein the internally plasticized vinyl chloride polymer has a polycaprolactone content ranging from 32 to 40% by weight, wherein the polycaprolactone consists of lactone units and has a number average molecular weight Mn ranging from 10,000 to 60,000, with a narrow molecular weight distribution.

5,382,637

SOLID STATE CHAIN EXTENSION POLYMERIZATION BETWEEN LEWIS ACID OLIGOMERS AND DEBLOCKED LEWIS BASES

Marie Angelopoulos, Briarcliff Manor; Claudius Feger, Hopewell Junction, both of N.Y.; Jeffrey D. Gelorme, Hartford, and Jane M. Shaw, Ridgefield, both of Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,734

Int. Cl.[6] C08L *77/00, 79/08*

U.S. Cl. 525—436 **11 Claims**

1. A chain extension method comprising the steps of:

providing a substantially solvent-free film comprised of a uniformly intermixed Lewis acid oligomer and a protected Lewis base; and

deblocking said protected Lewis base to form a deblocked Lewis base permitting said deblocked Lewis base to react with said Lewis acid to form a polymer body comprising a chain extended high molecular weight polymer wherein said Lewis acid oligomer contains end groups selected from the group consisting of anhydride, acid chloride, carboxylic acid and sulfonyl chloride.

5,382,638

APPARATUS FOR GAS PHASE POLYMERIZATION OF OLEFINS IN A FLUIDIZED BED REACTOR

Xavier Bontemps; Laszlo Havas; Andre Martens, all of Martigues, and Frederic R. M. M. Morterol, Sausset-Les-Pin, all of France, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 470,174, Jan. 25, 1990, abandoned. This application Feb. 7, 1992, Ser. No. 832,688

Claims priority, application France, Jan. 31, 1989, 89 01378

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—67 **19 Claims**

1. In fluid bed reactor apparatus for polymerizing olefins in a gas-phase fluidized-bed comprising:

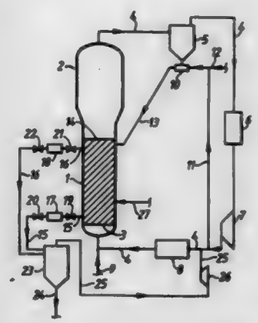
(A) a gas-phase fluidized-bed reactor comprising an upright reactor body (1) having a fluidization grid (3) arranged in its base, a catalyst bed above said grid and comprising an olefin polymerization catalyst, means for supplying an olefin containing gas to said reactor body below said grid for maintaining said bed thereabove fluidized with the base of the bed at the elevation of said fluidization grid (3) and with the top (14) of said bed at an elevation above and spaced from said fluidization grid (3) when said reactor is in use, said reactor body extending vertically above said fluidization grid (3) and having a height above the fluidization grid (3) of H, means for supplying said olefin polymerization catalyst to said reactor body and means for removing polymer from said reactor body

(B) means for externally recycling gas from the top of the fluidized bed reactor to the base of the reactor body (1), below the fluidization grid (3) comprising a dust separator (5), a heat exchanger (6,8) and a compressor (7) and

(C) means for recycling fine particles from the dust separator (5) to the reactor body (1) wherein an improvement which reduces polymer agglomerates in the fluidized bed comprises:

(D) the means for recycling the fine particles returns the fine particles to the upper portion of said reactor body (1) and

(E) said means for removing polymer from said reactor body comprises at least two polymer outlets in said reactor body at different elevations above said fluidization grid but below the top of said fluidized bed for removing



polymer from said bed when the reactor is in use, at least one of said polymer outlets (15), a lower polymer outlet, is at the lower portion of said reactor body (1) and at least one other of said polymer outlets (6), an upper polymer outlet, is at the upper portion of said reactor body (1) at a location at an elevation above and spaced from said lower polymer outlet fluidized bed both through said lower polymer outlet and through said upper polymer outlet; and

(F) there are polymer receiving means for receiving polymer discharged from said polymer outlets and unidirectional control means connected to said polymer outlets and to said receiving means which permit the discharge of polymer from said polymer outlets into said polymer receiving means while preventing the flow of polymer and gases from said receiving means into said reactor body by way of said outlets.

5,382,639

AQUEOUS FLUOROCHEMICAL COMPOSITIONS AND COATINGS THEREFROM

George G. I. Moore, Afton, and Dong-Wei Zhu, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 47,782, Apr. 15, 1993, Pat. No. 5,294,662. This application Dec. 17, 1993, Ser. No. 168,344

Int. Cl.[6] C08F *12/30*

U.S. Cl. 526—243 **3 Claims**

1. A water-soluble or water-dispersible polymer or oligomer having at least one fluoroaliphatic moiety and at least one oxazoline or oxazine moiety comprising interpolymerized units derived from an ethylenically unsaturated monomer containing a fluoroaliphatic moiety and an ethylenically unsaturated monomer containing an oxazoline or oxazine moiety.

5,382,640

POLYMERS CONTAINING LATENT THIOL MONOMERS

William D. Emmons, Huntingdon Valley, and Andrew W. Gross, Hatboro, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 787,272, Nov. 4, 1991, Pat. No. 5,290,956. This application Dec. 9, 1993, Ser. No. 163,646
Int. Cl.[6] C08F *28/04, 120/38*
U.S. Cl. 526—266 2 Claims

1. A polymer comprising polymerized units of at least one latent thiol monomer selected from the group consisting of allyl 3-mercaptopropionate thioacetate, (S-benzoyl-3-mercapto-2-hydroxypropyl)-2-methyl-2-propenoate, (S-2,2-dimethylpropanoyl-3-mercapto-2-hydroxypropyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-acetylpropyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-hydroxypropyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-acetoacetylpropyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-tetrahydropyranyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-(2-methoxy-2-propoxy))-2-methyl-2-propenoate, (S-acetyl-2-mercapto-3-acetylpropyl)-2-methyl-2-propenoate, S-acetyl-(1-allyloxy-3-mercapto-2-hydroxypropane), S-benzoyl-(1-allyloxy-3-mercapto-2-hydroxypropane) and S-2,2-dimethylpropanoyl-(1-allyloxy-3-mercapto-2-hydroxypropane), and, optionally, at least one ethylenically unsaturated monomer.

5,382,641

HEAT-SENSITIVE IMAGING MATERIAL

Kohichiro Kawate, Machida, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 30, 1993, Ser. No. 129,949
Claims priority, application Japan, Oct. 2, 1992, 4-265206
Int. Cl.[6] C08F *26/02*
U.S. Cl. 526—301 6 Claims



1. A heat-sensitive material suitable for use as a layer in an imaging sheet prepared by

a) radiation polymerizing a monomer composition to form a polymer having a glass transition temperature higher than room temperature comprising:

i) from about 30 to about 70 parts by weight of methacrylic acid, and

ii) correspondingly, from about 70 to about 30 parts by weight of a urethane (meth)acrylate compound having a urethane backbone and at least 2 (meth)acryloyl groups in a molecule, and

iii) up to about 40 parts of a viscosity controlling compound having at least one (meth)acryloyl group

wherein the percentage of the urethane (meth)acrylate and the viscosity controlling agent total no more than 70 parts, and

b) stretching said material from at least a yield point to a break point, said material becoming opaque upon stretching, wherein said stretched material has a thickness of from about 0.2 mm to about 2.0 mm.

5,382,642

COPOLYMERS OF ALLYL ALCOHOL PROPOXYLATES AND VINYL AROMATIC MONOMERS

Shao-Hua Guo, West Chester, Pa., assignor to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Jul. 28, 1993, Ser. No. 98,114
Int. Cl.[6] C08F *16/12*
U.S. Cl. 526—333 6 Claims

1. A copolymer which comprises recurring units of:

(a) a vinyl aromatic monomer; and

(b) a propoxylated allyl alcohol of the formula:

$$CH_2{=}CH{-}CH_2{-}(A)_n{-}OH$$

in which A is an oxypropylene group, and n, which is the average number of oxypropylene groups in the propoxylated allyl alcohol, has a value less than or equal to 2;

wherein the copolymer has a hydroxyl number within the range of about 80 mg KOH/g to about 260 mg KOH/g, and a number average molecular weight within the range of about 500 to about 3500; and wherein the mole ratio of vinyl aromatic monomer to propoxylated allyl alcohol recurring units in the copolymer is within the range of about 50:50 to about 75:25.

5,382,643

ANNEALED LINEAR HIGH DENSITY POLYETHYLENE AND PREPARATION THEREOF

Edward G. Howard, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 903,048, Jun. 23, 1992, abandoned. This application Jul. 20, 1993, Ser. No. 95,363
Int. Cl.[6] C08F *110/02*
U.S. Cl. 526—352 5 Claims

1. An annealed folded chain linear polyethylene having a density of at least 0.94 g/cm^{3}and a melt index in the range of about 0.02 to 10, further characterized by having a notched Izod impact resistance at least about 50% to about 152% higher, and a tensile stress at yield at least about 10% to about 15% higher, than that of the non-annealed starting polyethylene.

5,382,644

LINEAR POLYPHOSPHAZENES AND A PROCESS FOR THEIR PRODUCTION

Robert A. Montague, Allison Park, and Krzysztof Matyjaszewski, Pittsburgh, both of Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 533,564, Jun. 5, 1990, Pat. No. 5,138,008. This application Aug. 10, 1992, Ser. No. 927,701
Claims priority, application WIPO, Apr. 6, 1991, 91/03,920
Int. Cl.[6] C08G *77/22*
U.S. Cl. 528—30 20 Claims

1. A polyphosphazene produced by polymerizing a P-tris(-fluoroalkoxy)-N-(silylated) phosphinimine monomer in the presence of a compound capable of cleaving the silyl group of the P-trifluoroalkoxy-N-silylated phosphinimine monomer and of producing a counterion capable of stabilizing the active ends of the monomer and growing chain.

5,382,645

PROCESS FOR THE PREPARATION OF CROSSLINKED POLY(ISOCYANATES)

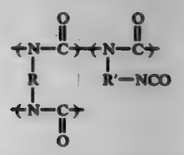
Aaron D. Meltzer, Carnegie, and Harald Pielartzik, Pittsburgh, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Sep. 28, 1993, Ser. No. 127,917
Int. Cl.[6] C08G *18/02*
U.S. Cl. 528—45 18 Claims

1. A process for preparing a film comprising

(A) reacting in an inert organic solvent a highly cross linked nylon-1 which is characterized in that at least 50% of its amide repeat units are cross-linking sites and which contains

(I) structural units conforming to



R and R' independently one of the other denote linear hydrocarbon groups, and

(II) about 1 to 49% of unpolymerized NCO groups, with a monofunctional blocking agent to produce a first product which contains blocked NCO groups, and

(B) reacting said first product with a compound containing two or more isocyanate-reactive functional groups to produce a second product, and

(C) curing said second product

wherein said first product is reacted with said isocyanate-reactive compound such that the molar ratio of the total amide groups, blocked NCO groups and unpolymerized NCO groups to NCO-reactive groups is about 0.5:1 to 20:1.

5,382,646

POLY(URETHANE-UREA) MICROCELLULAR ELASTOMER COMPOSITIONS

Thirumurti Narayan, Grosse Ile; Samuel E. Johnson, Southgate; Michael A. Dimitroff, Riverview, and Dietrich Schlotterbeck, Trenton, all of Mich., assignors to BASF Corporation

Continuation of Ser. No. 100,636, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 13,133, Feb. 3, 1993, abandoned, which is a continuation of Ser. No. 843,328, Feb. 28, 1992, abandoned. This application Aug. 2, 1994, Ser. No. 284,722
Int. Cl.[6] C08G *18/10, 18/30, 18/32*
U.S. Cl. 528—60 16 Claims

1. A composition suitable for the preparation of reaction injection molded poly(urethane-urea) parts, comprising:

a) an isocyanate component consisting of an isocyanate terminated prepolymer prepared by reacting an isocyanate selected from the group consisting of 4,4' -methylenebis(phenylisocyanate), modified 4,4'-methylenebis(phenylisocyanate) or mixtures thereof, with a polyoxypropylene glycol having a molecular weight of from 400 to about 2500, the prepolymer having an isocyanate group content of from about 10 to less than 20 weight percent;

b) a polyether polyol component;

c) a urethane reaction-promoting catalyst which is not a polyester polyol containing tin and/or titanium compounds; and

d) a hindered diamine chain extender.

5,382,647

POLYURETHANE-BASED FRIABLE SEALING COMPOUND

Peter Daute, Essen; Roland Gruetzmacher, Wuelfrath; Rainer Hoefer, Duesseldorf, and Gerhard Stoll, Kerschenbroich, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/01899, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/07017, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 7, 1991, Ser. No. 39,363
Claims priority, application Germany, Oct. 16, 1990, 4032843
Int. Cl.[6] C08G *18/58*
U.S. Cl. 528—73 3 Claims

1. A polyurethane friable sealing compound free of solvent and plasticizer, said sealing compound consisting essentially of a polyol component and an isocyanate component, said polyol component being selected from the group consisting of modified triglycerides obtained by partial ring opening of epoxidized triglycerides of a fatty acid mixture containing olefinically unsaturated fatty acids with monohydric or polyhydric alcohols, said isocyanate component being selected from the group consisting of polyfunctional aromatic and aliphatic isocyanates, wherein the OH:NCO equivalent ratio is from 1:0.1 to 1:1.5 and the OH value of the polyol, and the OH:NCO ratio of said friable sealing compound result in said friable sealing compound having a Shore A hardness value of less than about 40.

5,382,648

TWISTED NEMATIC FILM, A METHOD FOR THE PREPARATION THEREOF, AND A DISPLAY DEVICE COMPRISING SAID FILM

Stephen J. Picken, Arnhem, and Gustaaf R. Möhlmann, Dieren, both of Netherlands, assignors to Akzo Nobel nv, Arnhem, Netherlands

Filed Apr. 1, 1993, Ser. No. 41,637
Claims priority, application Netherlands, Apr. 9, 1992, 9200666
Int. Cl.[6] C08G *18/32*
U.S. Cl. 528—75 12 Claims

1. A twisted nematic film comprising a liquid-crystalline polymer which is a non-crosslinked liquid-crystalline polymer having a Tg above 75° C. and a rotational viscosity (γ) of less than 5000 Pascal.seconds (Pa.s) between Tg and Tni.

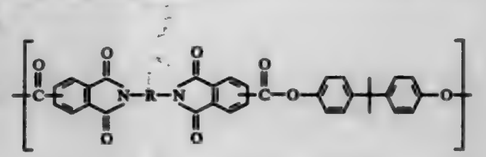
5,382,649

THERMOPLASTIC POLYESTER-IMIDES FROM TRIMELLITIC ACID, PROPANEDIPHENOL AND AN AROMATIC DIAMINE WHICH HAVE IMPROVED MECHANICAL PROPERTIES, THEIR PREPARATION AND THEIR USE

Heinrich Horacek, Puchenau, Austria, assignor to Chemie Linz GmbH, Austria

Filed Nov. 10, 1993, Ser. No. 149,807
Claims priority, application Austria, Nov. 10, 1992, 2210/92
Int. Cl.[6] C08G *73/16*
U.S. Cl. 528—170 4 Claims

1. Thermoplastic polyester-imides having improved mechanical properties, characterized in that they consist of recurring units of the formula I



in which R denotes an 2,4-tolylene, 2,6-tolylene, 2,5-bis(4-phenylenethio)thiadiazole,

or a 1,4-bis(phenylenethio)diphenyl sulfone radical.

5,382,650

CATALYSTS FOR POLYESTER PRODUCTION

Robert V. Kasowski, West Chester, and Robert R. Burch, Jr., Exton, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1993, Ser. No. 170,477
Int. Cl.[6] C08G *63/82*
U.S. Cl. 528—277 24 Claims

1. A process for the production of polyesters by esterification or transesterification or esterification and transesterification, wherein the improvement comprises, a catalyst selected from MoS_2 and WS_2 which is intercalated by one or more alkali metal cations and then contacted with an aliphatic alcohol or aliphatic polyol.

5,382,651

METHOD FOR THE PREPARATION OF POLYESTER FOR A FILM

Kwang T. Kim; Tae H. Kim, and Seung B. Jun, all of Kyungsan, Rep. of Korea, assignors to Cheil Synthetics, Inc., Kyungsan, Rep. of Korea

Filed Aug. 17, 1993, Ser. No. 107,067

Claims priority, application Rep. of Korea, Sep. 3, 1992, 1992-16045

Int. Cl.[6] C08G *63/78*

U.S. Cl. 528—283 **5 Claims**

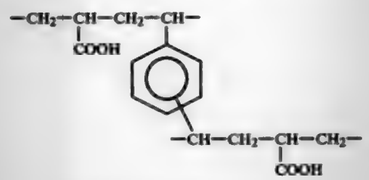
1. A method for the production of polyester having improved surface properties by a reaction comprising a polycondensation, comprising the steps of:

contacting a dispersion-in-water type silica sol having a pH 8 of about to 11, including sodium oxide as a stabilizer and silica particles with average diameters of 0.01 to 0.3 μm, with a cation exchange resin having the following formula 1 and then with a strong basic anion exchange having the following formula 2, under conditions sufficient to adjust the pH value of the water dispersion to about 2 to 4;

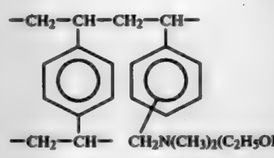
adding an hydrogen bonding agent and ethylene glycol to the pH adjusted water dispersion to form a mixture;

heating the resultant mixture under a reduced pressure under conditions sufficient to remove water and obtain silica sol dispersed in ethylene glycol; and

adding 0.01 to 5% by weight of the silica sol dispersed in ethylene glycol, as based on the weight of polyester to be produced, to a reaction mixture comprising a dicarboxylic acid moiety and a glycol moiety reactive with said dicarboxylic acid moiety prior to said polycondensation



(1)



(2)

5,382,652

POLYESTER RESIN, COMPOSITIONS THEREOF AND SEALANT MADE THEREFROM

Kouji Fukuda; Shigeharu Sagihara; Takeshi Kamoto; Keiji Mori; Seiki Nishihara; Katsuya Emoto; Toshikazu Nishiwaki, and Hiroshi Takeuchi, all of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 30, 1992, Ser. No. 860,044

Claims priority, application Japan, Apr. 1, 1991, 3-096248; Aug. 5, 1991, 3-220990; Oct. 21, 1991, 3-302467

Int. Cl.[6] C08G *63/18*; B32B *31/20*

U.S. Cl. 528—308.6 **12 Claims**

1. A polyester resin having branched chain, a reduction viscosity (η sp/c) of not less than 0.7, a Z average molecular weight (Mz) relative to standard polystyrene of not less than 250×10^3 and not more than 800×10^3, an acid component comprising an aromatic dicarboxylic acid in a proportion of from about 95 mole percent to about 100 mole percent relative to the entire acid component, said aromatic dicarboxylic acid comprising terephthalic acid in an amount ranging from about 60 mole percent to about 90 mole percent, and said polyester resin having a glycol component comprising ethylene glycol in a proportion of from about 90 mole percent to about 100 mole percent relative to the entire glycol component.

5,382,653

PREPARATION OF COPOLYMERS

Johannes C. M. Jordaan; Wilhelmus P. Mul; Abraham A. Smaardijk; Jan Harm Mulder; Eric-Jack Gerard, and Peter W. Lednor, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 23, 1993, Ser. No. 157,783

Claims priority, application European Pat. Off., Nov. 30, 1992, 92203697

Int. Cl.[6] C08G *67/02*

U.S. Cl. 528—392 **14 Claims**

1. A process for the preparation of copolymers of carbon monoxide and one or more ethylenically unsaturated compounds by reacting the monomers under polymerization conditions in the presence of a catalyst system comprising at least one metal of Group VIII of the Periodic Table, one or more components present in the reaction mixture being contaminated with alkali metal and alkaline earth metal impurities, which process involves a treatment by which the said metal impurities content of the copolymerization product is reduced to less than 1 part per million by weight.

5,382,654

RADIOLABELLED PEPTIDE COMPOUNDS

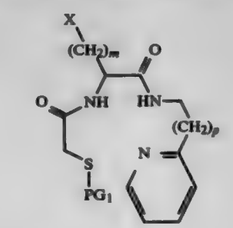
Leon R. Lyle, Webster Groves; Raghavan Rajagopalan, and Karen Deutsch, both of Maryland Heights, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Feb. 5, 1992, Ser. No. 831,724

Int. Cl.[6] C07K *7/26*; A61K *43/00, 49/02*

U.S. Cl. 530—311 **8 Claims**

1. A composition comprising somatostatin or a peptide which retains somatostatin receptor specificity conjugated with a N_3S ligand having the general structure



wherein m is a whole number less than eleven; p is either 0 or 1; PG_1 is a sulfur protecting group selected from the group consisting of $C_{1\text{-}20}$ S-acyl, $C_{1\text{-}20}$ alkyl, $C_{1\text{-}10}$ alkoxyalkyl, carbamoyl and $C_{1\text{-}10}$ alkoxycarbonyl and X is a coupling moiety selected from the group consisting of carboxyl, amino, isocyanate, isothiocyanate, imidate, maleimide, chlorocarbonyl, chlorosulfonyl, succinimidyloxycarbonyl, haloacetyl and $C_{1\text{-}10}$ N-alkoxycarbamoyl.

5,382,655

PROCESS FOR THE PURIFICATION OF CYCLOSPORIN A

Tibor Szánya, Veszprém; László Hanák, Boldogkőújfalu; Gyöngyi Strbka, Veszprém; Edit Nagy, Debrecen; István Melcner, Debrecen; György Deák, Debrecen; Berta Makó, Debrecen; Anita Karczub, Hajdúnánás; János Bálint, Debrecen; Ferenc Radnai, Debrecen; Ernő Karácsony, Debrecen; Csaba Hajdufi, Debrecen; Vilmos Kéri, Debrecen; Gyula Márton, Veszprém; Judit Dencs, Veszprém, and János Kelemen, Veszprém, all of Hungary, assignors to Biogal Gyógyszergyár RT, Debrecen, Hungary

Filed May 25, 1993, Ser. No. 66,857

Claims priority, application Hungary, May 25, 1992, P9201728

Int. Cl.[6] A61K *37/02*; C07K *7/50*; C07C *103/52*

U.S. Cl. 530—317 **10 Claims**

1. A process for the solution chromatographic purification of cyclosporin A from a starting mixture containing cyclosporin A and one or more of cyclosporin B, C, other cyclosporin components that are more polar or more apolar than cyclosporin A, and other like contaminants, which comprises heating the starting mixture or an evaporation residue thereof to form a melt, cooling the melt, and carrying out solution chromatography of the cooled material.

5,382,656

CELLULOSE SYNTHASE ASSOCIATED PROTEINS

Moshe Benziman, Jerusalem, Israel, and Rony Tal, Coral Springs, Fla., assignors to Weyerhaeuser Company, Federal Way, Wash.

Filed Oct. 6, 1992, Ser. No. 958,042

Int. Cl.[6] C07K *15/04*; C12N *9/12*

U.S. Cl. 530—350 **5 Claims**

1. A purified Cellulose synthase Associated Protein isolated from an Acetobacter organism.

5,382,657

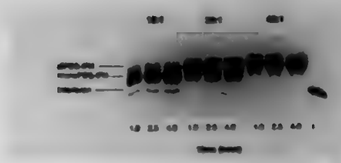
PEG-INTERFERON CONJUGATES

Robert Karasiewicz, Parsippany; Carlo Nalin, Franklin Lakes, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

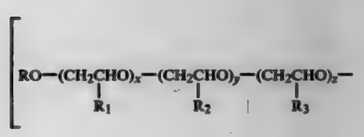
Filed Aug. 26, 1992, Ser. No. 935,770

Int. Cl.[6] C07D *213/89*; C07K *3/08, 15/26*

U.S. Cl. 530—351 **20 Claims**

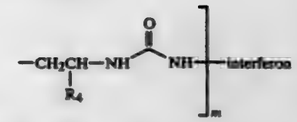


1. A physiologically active interferon conjugate having the formula:



IA

-continued



wherein R is lower alkyl; R_1, R_2, R_3, and R_4 are H or lower alkyl; m is a number up to the number of accessible amino groups in the protein; and x, y and z are selected from any combination of numbers such that the conjugate has at least a portion of the biological activity of the interferons which forms the conjugate, with the proviso that at least one of R_1, R_2, R_3, and R_4 is lower alkyl.

5,382,658

STABILITY-ENHANCED VARIANTS OF PARATHYROID HORMONE

K. Anne Kronis, Toronto, and Richard P. Borrato, Etobicoke, both of Canada, assignors to Allelix Biopharmaceuticals Inc. and Glaxo Canada Inc., Mississauga, Canada

Filed Apr. 3, 1992, Ser. No. 863,014

Int. Cl.[6] C07K *3/00*; A61K *37/02, 37/00*; A01N *37/18*

U.S. Cl. 530—397 **2 Claims**



2. A stability-enhanced variant of a nature parathyroid hormone that has a region of Arg^{25} Lys^{26} Lys^{27} wherein said variant has Arg^{25} Lys^{26} Lys^{27} replaced by His^{25} His^{26} Leu^{27}.

5,382,659

AROMATIC ACIDS

Jui Y. Chang, Bubendorf, Switzerland, assignor to Ciba-Geigy Corp., Ardsley, N.Y.

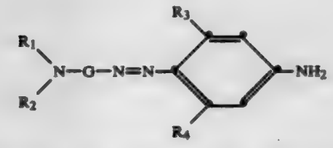
Continuation of Ser. No. 56,725, May 3, 1993, abandoned, which is a division of Ser. No. 758,249, Sep. 11, 1991, Pat. No. 5,229,503, which is a continuation of Ser. No. 368,315, May 5, 1989, abandoned. This application Jun. 7, 1994, Ser. No. 255,298

Claims priority, application Switzerland, May 10, 1988, 1766/88; Mar. 22, 1989, 1065/89

Int. Cl.[6] C09B *29/085*

U.S. Cl. 534—845 **4 Claims**

1. A compound of formula



(II)

wherein R_1 is lower alkyl, R_2 is lower alkyl, R_3 is hydrogen, carboxy or sulfo, R_4 is carboxy or sulfo, and G is an unsubsti-

tuted or substituted 1,4-phenylene group or an unsubstituted or substituted 1,4-naphthylene group, or a salt thereof.

5,382,660

TCPG GENE OF VIBRIO CHOLERAE

Ronald K. Taylor, Cordova, and Joel A. Peck, Memphis, both of Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Oct. 25, 1991, Ser. No. 782,113
Int. Cl.[6] C12N *15/31, 15/52*
U.S. Cl. 536—23.2 **1 Claim**

1. The isolated TcpG gene from *V. cholerae* which comprise the sequence SEQ ID NO:1:

```
ATAAATCCAA TGGAGAAAGT CATGAAAAAG
  CTGTTTGCAC TGGTTGCAAC TCTGATGTTA   60

AGCGTGTCAG CCTATGCGGC TCAATTTAAA
  GAAGGTGAAC ACTACCAAGT GTTAAAAACA  120

CCCGCCTCTT CTTCACCAGT CGTCAGTGAG
  TTTTTCTCAT TCTACTGCCC GCACTGTAAC  180

ACTTTCGAAC CCATTATTGC TCAGTTGAAG
  CAGCAGTTGC CTGAAGGCGC GAAATTCCAG  240

AAAAACCACG TCTCTTTCAT GGGTGGTAAC
  ATGGGTCAAG CGATGAGCAA AGCGTACGCA  300

ACCATGATTG CTCTGGAAGT GGAAGATAAA
  ATGGTACCTG TGATGTTTAA CCGCATCCAC  360

ACTCTGCGTA AACCACCGAA AGATGAACAA
  GAGCTGCGCC AAATCTTCCT AGATGAAGGA  420

ATTGATGCGG CGAAATTTGA TGCGGCTTAC
  AACGGCTTTG CCGTGGATTC TATGGTGCGC  480

CGTTTCGATA AACAGTTCCA AGATAGCGGC
  CTAACCGGTG TACCTGCCGT TGTTGTTAAC  540

AACCGTTATT TGGTACAAGG TCAGTCCGTC
  AAATCCCTCG ACGAATATTT TGACCTAGTG  600

AACTACCTGC TGACGCTGAA GTAA          624.
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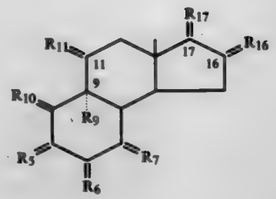
5,382,661

PYRAZINYLPIPERAZINYL STEROIDS

John M. McCall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 749,830, Aug. 26, 1991, Pat. No. 5,175,281, which is a division of Ser. No. 229,675, Aug. 8, 1988, Pat. No. 5,099,019, which is a continuation-in-part of Ser. No. 121,822, May 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 888,231, Jul. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 877,287, Jun. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 811,058, Dec. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 775,204, Sep. 12, 1985, abandoned. This application Dec. 1, 1992, Ser. No. 984,298
Int. Cl.[6] C07J *43/00*; C07D *295/182*
U.S. Cl. 540—111 **16 Claims**

1. An amino substituted steroid of formula XI



(XI)

where:

(A-I) R_6 is α-R_{61}:β-R_{62}, R_{10} is α-R_{101}:β-R_{102} and R_7 is α-H:β-H, where one of R_{61} and R_{62} is —H, and the other is —H, —F, or C_1–C_3 alkyl, R_{102} is —CH_3, R_{101} and R_5 taken together are —$(CH_2)_2$—C(=R_{33})—CH= or —CH=CH—CO—CH=, where R_{33} is =O or α-H:β-OR_{34} or α-OR_{34}:β-H, where R_{34} is —H, —CO—CH_3, —CO—C_2H_5, —CO—C_6H_5, —CO—O—CH_3 or —CO—O—C_2H_5;

(A-II) R_5 is α-R_{53}:β-R_{54}, R_6 is α-R_{63}:β-R_{64}, R_{10} is α-R_{103}:β-R_{104} and R_7 is α-H:β-H, where one of R_{63} and R_{64} is —H, and the other taken together with one of R_{53} and R_{54} forms a second bond between C_5 and C_6, R_{104} is —CH_3, R_{103} and the other of R_{53} and R_{54} taken together is —$(CH_2)_2$—C(H)(OH)—CH_2—;

(A-III) R_{10} and R_5 taken together are =CH—CH=C(OR_3.)—CH= where R_3 is —H, C_1–C_3 alkyl, —CO—H, C_2–C_4 alkanoyl or benzyl, R_6 is α-R_{65}:β-R_{66} where one of R_{65} and R_{66} is —H, and the other is —H, —F, or C_1–C_3 alkyl and R_7 is α-H:β-H;

(A-IV) R_5 is α-R_{57}:β-R_{58}, R_6 is α-R_{67}:β-R_{68}, R_7 is α-H:β-H and R_{10} is α-R_{107}:β-R_{108}, where one of R_{57} and R_{58} is —H, R_{107} and the other of R_{57} and R_{58} taken together are —$(CH_2)_2$—C(=R_{33})—CH_2, where R_{33} is as defined above, R_{108} is —CH_3, where one of R_{67} and R_{68} is —H and the other is —H, —F, or C_1–C_3 alkyl;

(A-V) R_6 is R_{69}:R_{610}, R_7 is R_{79}:R_{710}, R_{10} is α-R_{109}:R_{1010}, where one of R_{69} and R_{610} is —H and the other taken together with one of R_{79} and R_{710} forms a second bond between C_6 and C_7, and the other of R_{79} and R_{710} is —H, R_{1010} is —CH_3, R_{109} and R_5 taken together are —$(CH_2)_2$—C(=R_{33})—CH= or —CH=CH—CO—CH=, where R_{33} is as defined above;

(C-I) R_{11} is α-R_{111}:β-R_{112}, where one of R_{111} and R_{112} is taken together with R_9 to form a second bond between C_9 and C_{11} and the other of R_{111} and R_{112} is —H;

(C-II) R_9 is —Cl and R_{11} is =O or α-H:β-R_{114} where R_{114} is —Cl or —OH;

(C-III) R_9 is —H or —F and R_{11} is =O or α-R_{115}:β-R_{116}, where one of R_{115} and R_{116} is —H, and the other of R_{115} and R_{116} is —H, —OH or C_1–C_{12} alkoxy;

(C-IV) R_9 is —H or —F and R_{11} is α-O—CO—R_{117}:β-H, where R_{117} is

(A) C_1–C_3 alkyl,

(B) C_1–C_{12} alkoxy,

(C) furanyl,

(D) —$NR_{122}R_{123}$, where one of R_{122} and R_{123} is —H, methyl or ethyl and the other is —H, C_1–C_4 alkyl or phenyl,

(E) -X_3-X_1, where X_3 is —O— or a valence bond, where X_1 is phenyl optionally substituted with 1 through 2 —Cl, —Br, C_1–C_3 alkoxy, —COOH, —NH_2, C_1–C_3 alkylamino, di(C_1–C_3)alkylamino, where the alkyl groups are the same or different, 1-pyrrolidinyl-, 1-piperidinyl, 1-hexamethylenimino-, 1-heptamethylenimino-, C_2–C_4 carboxylic acid acylamino and —NH—CHO or with 1 —F or —CF_3;

(D-I) R_{16} is R_{161}:R_{162} and R_{17} is R_{171}:R_{172}, where one of R_{161} and R_{162} is —H or —CH_3 and the other taken together with one of R_{171} and R_{172} forms a second bond between C_{16} and C_{17}, and the other of R_{171} and R_{172} is

—C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, where Z is =O, =CH_2 or R_{179}: —H where R_{179} is —H or —CH_3, where n is 1 through 6, where R_{21} and R_{210} are taken together with the attached nitrogen atom to form (6) 1-piperazinyl substituted in the 4-position with X_2—$(CH_2)_j$— [E]

where j is 0 thru 3 and where X_2 is

(1) pyrazin-2-yl optionally substituted with 1 or 2 R_{212} where the R_{212}'s (7)

are the same or different and are

(i) —F,

(ii) —Cl,

(iii) —Br,

(iv) C_1–C_5 alkyl,

(v) —CH_2—CH=CH_2,

(vi) —X_1, where X_1 is as defined above,

(vii) —$NR_{213}R_{213}$ where the R_{213}'s are the same or different and are —H, C_1–C_3 alkyl or —CH_2—CH=CH_2,

(viiiα) *CH_2—$(CH_2)_q$—CH_2—N*— where the atoms marked with an asterisk (*) are bonded to each other resulting in the formation of a ring, where q is 1 through 5,

(viiiβ) *CH_2—CH_2—$(CH_2)_c$—G—$(CH_2)_d$—CH_2—CH_2—N*— where the atoms marked with an asterisk (*) are bonded to each other resulting in the formation of a ring, where G is —O—, —S—, —SO—, —SO_2— or —NHR_{214}, where R_{214} is —H, C_1–C_3 alkyl, or X_1 as defined above, where c and d are the same or different and are 0 through 2 with the proviso that the total number of ring carbon atoms is 4, 5 or 6, [a]

(ix) 3-pyrrolin-1-yl, [b]

(x) pyrrol-1-yl optionally substituted with C_1–C_3 alkyl, [c]

(xi) piperidin-1-yl optionally substituted with 1 or 2 C_1–C_3 alkyl, [d]

(xii) 1,2,3,6-tetrahydropyridin-1-yl, [e]

(xiii) 1-hexamethyleneimino containing a 3- or 4- double bond or 3- and 5- double bonds, [f]

(xiv) 1,4-dihydro-1-pyridinyl substituted in the 4 position by two C_1–C_3 alkyl being the same or different, [g]

(xv) —OH,

(xvi) C_1–C_3 alkoxy,

(xvii) —NR_{217}—$(CH_2)_e$—Q where Q is 2-pyridinyl where R_{217} is —H or C_1–C_3 alkyl and e is 0 through 3, (1)

(xviii) pyridin-2-, 3- or 4-yl,

(D-II) R_{16} is α-R_{163}:β-R_{164} where one of R_{163} and R_{164} is —H and the other is —H, —F, —CH_3 or —OH, and R_{17} is =CH—$(CH_2)_p$—$NR_{21}R_{210}$, where p is 1 or 2, where R_{21} and R_{210} are as defined above;

(D-III) R_{16} is α-R_{165}:β-R_{166} and R_{17} is α-R_{175}:β-R_{176}, where R_{165} is —H, —OH, —F or —CH_3 and R_{166} is —H, —OH, —F, or —CH_3, with the proviso that at least one of R_{165} and R_{166} is —H, where R_{175} is —H, —OH, —CH_3, —CH_2CH_3, C_2–C_7 alkanoyloxy or —O—CO—X_1, where X_1 is as defined above, and where R_{176} is —C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, where Z, n, R_{21} and R_{210} are as defined above;

(D-IV) the 16,17-acetonide of a compound where R_{165} is —OH, R_{166} is —H, R_{175} is —OH and R_{176} is —C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, where Z, n, R_{21} and R_{210} are as defined above; and pharmaceutically acceptable salts, hydrates and solvates thereof;

with the following overall provisos that:

(I) one of R_{161} or R_{162} is taken together with one of R_{171} or R_{172} to form a second bond between C_{16} and C_{17}, only when R_{10} is α-R_{101}:β-R_{102}, α-R_{103}:β-R_{104}, α-R_{107}:β-R_{108} or α-R_{109}:β-R_{1010},

(II) R_{17} is =CH—$(CH_2)_p$—$NR_{21}R_{210}$, only when R_{10} is α-R_{101}:β-R_{102}, α-R_{103}:β-R_{104}, α-R_{107}:β-R_{108} or α-R_{109}:β-R_{1010},

(III) R_5 and R_{10} taken together are =CH—CH=C(OR_3.)—CH=, only when R_{17} is α-R_{175}:β-R_{176} or the 16,17-acetonide of a compound where R_{16} is α-OH:β-H and R_{17} is α-OH:β-C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, and

(IV) R_5 is α-R_{57}:β-R_{58}, only when R_{17} is α-R_{175}:β-R_{176} or α-OH:β-C—(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, or the 16,17-acetonide thereof.

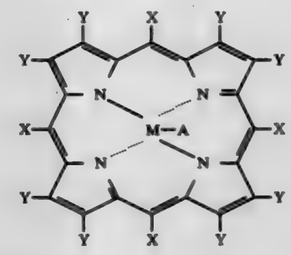
5,382,662

CYANO- AND POLYCYANOMETALLO-PORPHYRINS AS CATALYSTS FOR ALKANE OXIDATION

Paul E. Ellis, Jr., Downingtown, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Division of Ser. No. 892,107, Jun. 2, 1992, Pat. No. 5,212,300, which is a continuation-in-part of Ser. No. 758,148, Sep. 12, 1991, Pat. No. 5,118,886. This application Dec. 29, 1992, Ser. No. 997,815
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[6] C07D *487/22*
U.S. Cl. 540—145 **7 Claims**

1. Compositions of matter, useful as catalysts, having the formula:



where M is iron, chromium, manganese, ruthenium, copper or cobalt, 1 to 4 of said X's are cyano, 0 to 3 of said X's are hydrogen, halogen, hydrocarbon or halocarbon, Y is hydrogen, halogen, nitro, cyano, hydrocarbon or halocarbon, and A is an anion selected from the group consisting of chloride, bromide, fluoride, cyanide, azide, nitride, thiocyanate, cyanate, hydroxy, methoxy, chlorate, carboxylate, or is absent, said compounds including iron complexes of μ oxo dimers comprising two structures as shown in said formula joined through an M—O—M linkage.

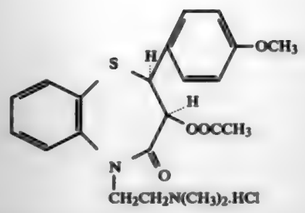
5,382,663

PROCESS FOR THE PREPARATION OF DILTIAZEM

Elso Maughini, and Bruno Perego, both of Lomagna, Italy, assignors to Lusochimica S.p.A., Lomagna, Italy

PCT No. PCT/EP91/02353, § 371 Date Jun. 23, 1993, § 102(e) Date Jun. 23, 1993, PCT Pub. No. WO92/10485, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 9, 1991, Ser. No. 74,841
Claims priority, application Italy, Dec. 11, 1990, 22340 A/90
Int. Cl.[6] C07D *281/10*
U.S. Cl. 540—491 **2 Claims**

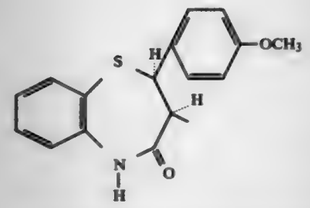
1. A process for the preparation of (+) -cis-3-(acetoxy)-5-[2-(dimethylamino)-ethyl]-2,3-dihydro-2-(4-methoxyphenyl)- 1,5-benzothiazepin-4(5H)-one hydrochloride of formula (I):



I

which consists of the steps of:

1) alkylating the benzothiazephine derivative of formula (II):

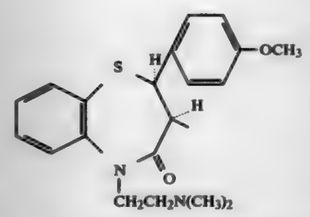


II

with dimethylaminoethyl chloride hydrochloride of formula (III):

$$(CH_3)_2N—CH_2CH_2—Cl,\ HCl \qquad (III)$$

under phase-transfer conditions, in toluene and water and in the presence of one solubilizing agent selected in the group consisting of dimethylformamide, N,N-dimethylacetamide and N-methyl-2-pyrrolidone, potassium carbonate as the base and a quaternary ammonium salt as the catalyst; whereby the intermediate of formula (IV) is obtained:

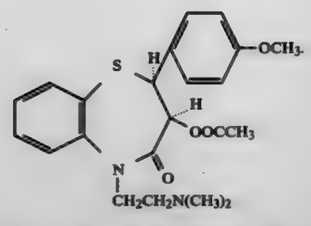


IV

and said compound of formula (IV) is present in the toluene phase,

2) separating the toluene phase from the water phase;

3) and reacting said toluene phase containing said compound of formula (IV) with excess of acetic anhydride to obtain the compound of formula (V):



V

4) concentrating said toluene solution from step 3) to remove excess of acetic anhydride and toluene to obtain a residue;

5) dissolving said residue in acetone; and

6) passing gaseous HCl through said acetone solution from step 5) whereby said compound of formula I precipitates.

5,382,664

BENZODIAZEPINE DERIVATIVES

Yoshinari Sato, Takaishi, and Teruaki Matuo, Ikeda, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

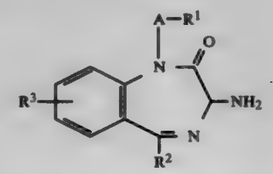
Division of Ser. No. 815,041, Dec. 31, 1991, Pat. No. 5,264,433, which is a continuation-in-part of Ser. No. 553,420, Jul. 17, 1990, abandoned, which is a division of Ser. No. 373,171, Jun. 29, 1989, Pat. No. 4,970,207. This application Aug. 9, 1993, Ser. No. 103,236

Claims priority, application United Kingdom, Jul. 7, 1988, 8816207; Aug. 31, 1988, 8820560; Oct. 7, 1988, 8823660

Int. Cl.[6] A61K *31/55*; C07D *243/24*

U.S. Cl. 540—509 **5 Claims**

1. A compound of the formula:



wherein R^1 is tetrazolyl or imidazolyl, each of which may have an imino protective group,

R^2 is phenyl which may have a halogen atom,

R^3 is hydrogen or halogen, and

A is lower alkylene, or a salt thereof.

5,382,665

SYNTHESIS OF OXAZOLINES AND OXAZINES

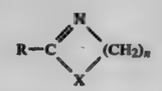
Brian C. Benicewicz, and Michael A. Mitchell, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1993, Ser. No. 32,935

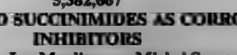
Int. Cl.[6] C07D *233/06*

U.S. Cl. 544—88 **6 Claims**

1. A process of preparing an oxazoline or oxazine compound of the formula



wherein X is selected from the group consisting of oxygen, R is selected from the group consisting of C_{1-10} alkyl, C_{1-10} fluoroalkyl, aryl and substituted-aryl, and n is 2 or 3, comprising ring-closing a compound of the formula



wherein X is selected from the group consisting of oxygen and sulfur, R is selected from the group consisting of C_{1-10} alkyl, C_{1-10} fluoroalkyl, aryl and substituted-aryl, n is 2 or 3, and Y is a bromine or chlorine atom, in the presence of a reagent consisting essentially of a fluoride salt selected from the group consisting of lithium fluoride, sodium fluoride, potassium fluoride, cesium chloride, and tetra-(lower alkyl)-ammonium fluorides supported on an inorganic solid substrate.

5,382,666

HETEROCYCLIC INTERMEDIATES

Jeffrey D. Hsi, Flemington, and William V. Murray, Belle Mead, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 6,093, Jan. 15, 1993, Pat. No. 5,256,658. This application Oct. 20, 1993, Ser. No. 139,253

Int. Cl.[6] C07D *265/30*

U.S. Cl. 544—106 **5 Claims**

1. A compound of the general structure:



where

X^2 is CH_2, O, S, N—R^4 or N—$Si(R^5)(R^6)(R^7)$;

R^1 and R^2 are the same or different and are C_{1-6}alkyl;

R^4 is C_{1-6}alkyl;

R^5, R^6, and R^7 are the same or different and are methyl, ethyl, t-butyl, or phenyl; and

Z is selected from the group consisting of Li, MgCl, MgBr and MgL.

5,382,667

SUBSTITUTED SUCCINIMIDES AS CORROSION INHIBITORS

Didier Wilhelm, Issy Les Moulineaux; Michel Soreau, Barbizon, and Alain Blanc, Saint Denis, all of France, assignors to Societe Francaise Hoechst, Puteaux, France

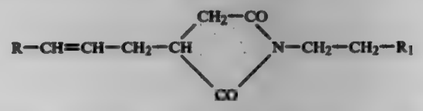
Filed Jan. 5, 1994, Ser. No. 178,532

Claims priority, application France, Jan. 11, 1993, 93 00161

Int. Cl.[6] C07D *413/06*, C23F *11/00*

U.S. Cl. 544—141 **12 Claims**

1. Substituted succinimides of formula (I)



in which R represents an alkyl radical containing 5 to 15 carbon atoms and R_1 represents an oxo-2 morpholino radical or a (carboxymethyl) (hydroxy-2 ethyl) amino radical.

5,382,668

PROCESSES FOR THE PREPARATION OF 5,6-DI-HYDROPYRROLO[2,3-D PYRIMIDINES

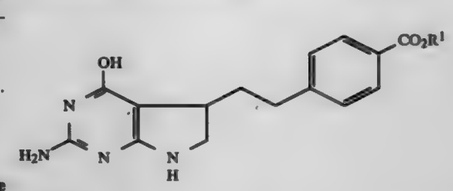
Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 67,204, May 25, 1993, Pat. No. 5,302,722, which is a division of Ser. No. 961,595, Oct. 15, 1992, Pat. No. 5,254,716. This application Nov. 23, 1993, Ser. No. 156,327

Int. Cl.[6] C07D *487/04*

U.S. Cl. 544—280 **10 Claims**

1. A process for preparing a 5,6-dihydropyrrolo-[2,3-d]pyrimidine of the formula

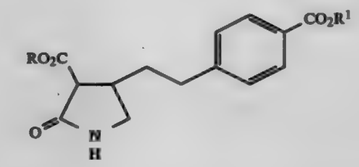


V

wherein

R^1 is H, C_1–C_4 alkyl, phenyl which may be substituted or benzyl; or a salt thereof, which comprises

(a) reacting a compound of formula II



II

wherein

R is C_1–C_4 alkyl or phenyl which may be substituted; and

R^1 is H, C_1–C_4 alkyl, phenyl which may be substituted or benzyl; or a salt thereof, with a sulfurization agent; and

(b) cyclizing the reaction product from step (a) with guanidine.

5,382,669

PROCESS FOR THE PREPARATION OF ERGOLINE DERIVATIVES

Ilaria Candiani, Busto Arsizio; Walter Cabri, Rozzano; Angelo Bedeschi, Milan, and Franco Zarini, Settimo Milanese, all of Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

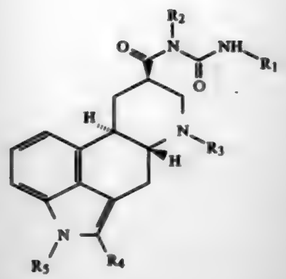
Filed Mar. 9, 1993, Ser. No. 28,286

Claims priority, application United Kingdom, Mar. 12, 1992, 9205439

Int. Cl.[6] C07D *457/04*

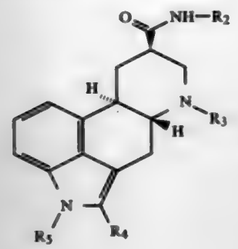
U.S. Cl. 546—69 **18 Claims**

1. A process for the preparation of an ergoline derivative of the formula I

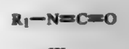


I

wherein R_1 represents an alkyl group having from 1 to 4 carbon atoms, a cyclohexyl group or a phenyl group or a dimethylamino alkyl group $(CH_2)_nN(CH_3)_2$ in which n is an integer, R_2 represents any of the group which R_1 may represent, or a hydrogen atom or a pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, thiazolyl or thiadiazolyl residue, R_3 represents a hydrocarbon group having from 1 to 4 carbon atoms, R_4 represents a hydrogen or a halogen atom or a methylthio or phenylthio group and R_5 represents a hydrogen atom or a methyl group, the process comprising reacting an ergoline amide of the formula II with an isocyanate of formula III.



II



III

wherein R_1, R_2, R_3, R_4 and R_5 have the above given meanings, in presence of a metal catalyst and of a phosphorus compound.

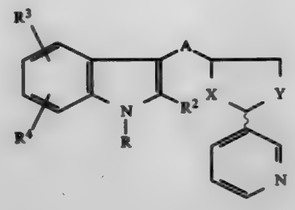
5,382,670

PLATELET ACTIVATING FACTOR ANTAGONISTS

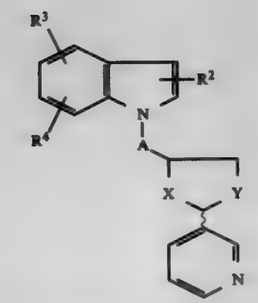
James B. Summers, Libertyville; George S. Sheppard, Wilmette; James G. Phillips, Antioch; Daisy Pirek, Lincolnshire; Douglas H. Steinman, Morton Grove, all of Ill.; Paul D. May, Richland, Mich.; Denise E. Guinn, Grayslake, Ill.; H. Robin Heyman, Chicago, Ill.; George M. Carrera, Jr., Des Plaines, Ill., and Steven K. Davidsen, Mundelein, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

PCT No. PCT/US92/01195, § 371 Date Jul. 7, 1993, § 102(e) Date Jul. 7, 1993
PCT Filed Feb. 14, 1992, Ser. No. 84,257
Int. Cl.[6] C07D *213/04, 209/04, 277/04*
U.S. Cl. 546—273 12 Claims

1. A compound selected from the group consisting of



and



or a pharmaceutically acceptable salt thereof
wherein
A is methylene, hydroxymethyl, or carbonyl, X is sulfur or NR^5
where R^5 is selected from
hydrogen,
alkyl of from one to six carbon atoms,
formyl
alkoyl of from one to six carbon atoms,
alkylsulfonyl of from one to six carbon atoms,
$—C(O)NR^6R^7$
where R^6 and R^7 are independently
selected from hydrogen and alkyl of from one to six carbon atoms;
Y is sulfur or methylene;
R is selected from the group consisting of
(a) $—(CH_2)_nC(O)NR^6R^7$ where R^6 and R^7 are as previously defined and where n is from one to four;
(b) $—(CH_2)_nC(O)OR^8$ where n is as previously defined and R^8 is
alkyl of from one to six carbon atoms;
phenyl, optionally substituted with
alkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen;
phenylalkyl in which the alkyl portion contains from one to four carbon atoms;
phenylalkyl as previously defined substituted on the phenyl portion with
alkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen;
(c) $—(CH_2)_nC(O)R^9$ where n is as previously defined and R^9 is hydrogen or alkyl of from one to six carbon atoms;
(d) $—(CH_2)_mCOOH$ where n is from one to four;
(e) $—(CH_2)_mNR^6R^7$ where m, R^6 and R^7 are as previously defined;
(f) $—(CH_2)_nSO_2R^8$ where n and R^8 are as previously defined;
(g) $—(CH_2)_nSO_2NR^6R^7$ where n, R^6 and R^7 are as previously defined;
R^2 is selected from hydrogen or alkyl of from one to six carbon atoms; and

R^3 and R^4 are independently selected from the group consisting of
(a) hydrogen;
(b) halogen;
(c) alkyl of from one to six carbon atoms;
(d) alkoxy of from one to six carbon atoms;
(e) alkoyl of from one to six carbon atoms;
(f) cyano;
(g) phenylalkoxy in which the alkoxy portion contains from one to six carbon atoms;
(h) phenoxy
(i) benzoyl, optionally substituted with alkyl of from one to six carbon atoms;
(j) $—NR^6R^7$ where R^6 and R^7 are as previously defined;
(k) $—C(O)OR^9$ where R^9 is as previously defined; and
(l) phenyl, optionally substituted with alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or halogen.

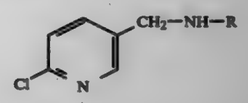
5,382,671

PROCESS FOR THE PREPARATION OF 2-CHLORO-5-ALKYLAMINOMETHYL-PYRIDINES

Hans-Joachim Diehr, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

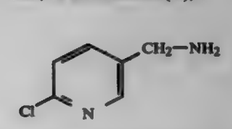
Filed Feb. 9, 1993, Ser. No. 15,507
Claims priority, application Germany, Feb. 19, 1992, 4204919
Int. Cl.[6] C07D *213/26, 213/40, 213/36, 213/56*
U.S. Cl. 546—329 10 Claims

1. Process for the preparation of 2-chloro-5-alkylaminomethyl-pyridines of the general formula (I)



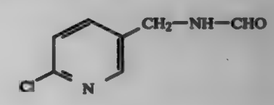
(I)

in which
R represents alkyl, wherein 2-chloro-5-aminomethyl-pyridine, of the formula (II),



(II)

is reacted with formic acid at temperatures between 20° C. and 200° C., if appropriate in the presence of a diluent, the 2-chloro-5-formylaminomethyl-pyridine which has been formed in this process, of the formula (III),

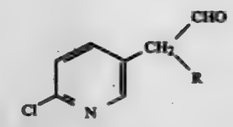


(III)

is reacted without intermediate isolation (in situ) with alkylating agents of the general formula (IV)

R—X (IV)

in which
X represents halogen or the group $—O—SO_2—O—R$ and
R has the abovementioned meaning, at temperatures between 0° C. and 100° C., if appropriate in the presence of an acid acceptor, if appropriate in the presence of a catalyst and if appropriate in the presence of a diluent, and, finally, the 2-chloro-5-(N-alkyl-N-formyl-aminomethyl)-pyridines thus formed of the general formula (V)



(V)

in which
R has the abovementioned meaning, are reacted with aqueous alkali metal hydroxide solution at temperatures between 20° C. and reflux temperature, if appropriate after volatile components have been distilled off.

5,382,672

PREPARATION OF DERIVATIVES OF BENZENEBORINIC ACID

Isaac Chekroun, Epinay; José Ruiz-Montes, Mantes-la-Jolie; Manuel Bedoya-Zurita, Paris, and Guy Rossey, Voisins-le-Bretonneux, all of France, assignors to Synthelabo, Le Plessis Robinson, France

Division of Ser. No. 967,908, Oct. 29, 1992, Pat. No. 5,278,312.
This application Nov. 19, 1993, Ser. No. 155,170
Claims priority, application France, Oct. 12, 1992, 92 12166
Int. Cl.[6] C07D *257/04*
U.S. Cl. 548—110 1 Claim

1. Process for the preparation of bis[2-[2-(1,1-dimethylethyl)-2H-tetrazol-5-yl]phenyl]borinic acid, which process comprises reacting 2-(1,1-dimethylethyl)-5-phenyltetrazole with an alkyllithium in an aprotic solvent at a temperature between −50° C. and +66° C. to obtain an organolithium compound, reacting said organolithium compound with trialkyl borate in an aprotic solvent to obtain an alkyl benzeneborinate and hydrolyzing said alkyl benzeneborinate.

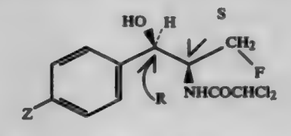
5,382,673

PROCESS FOR PREPARING FLORFENICOL, ITS ANALOGS AND OXAZOLINE INTERMEDIATES THERETO

Jon E. Clark, Highland Park; Doris P. Schumacher, Florham Park, and Guang-Zhong Wu, Somerville, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

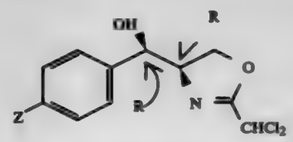
PCT No. PCT/US91/07608, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993
Continuation-in-part of Ser. No. 603,575, Oct. 25, 1990, abandoned. This PCT application Oct. 23, 1991, Ser. No. 39,450
Int. Cl.[6] C07D *263/08*
U.S. Cl. 548—239 14 Claims

1. A process for preparing a compound of formula (IV):



(IV)

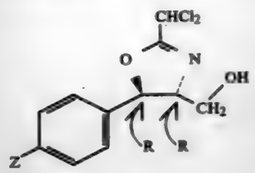
wherein Z represents H, halo, nitro or $H_3CSO_x^-$, wherein x is 0, 1 or 2, comprising
a) contacting an oxazoline compound of formula (I):



(I)

wherein Z is as defined hereinbefore, with sufficient quantity of an equilibrium driving reagent capable of causing an equilib-

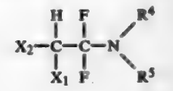
rium between oxazoline compound (I) and an oxazoline compound of formula (II):



(II)

wherein Z is as defined hereinbefore, and the reagent drives the equilibrium toward oxazoline compound (II) by preferential precipitation of oxazoline compound (II) from the equilibrium driving reagent such that the molar ratio of compound (II) to compound (I) is at least 80:20; wherein the equilibrium driving reagent is selected from a protic solvent and ammonia or an ammonium salt, wherein the protic solvent consists essentially of water, a C-1 to C-10 alkanoic acid, a C-1 to C-10 alcohol or mixtures thereof; and recovering the so precipitated oxazoline compound;

b) contacting compound (II) with a fluorinating agent selected from the group consisting of fluorides of alkali and alkaline earth metals, fluorides of ammonia, fluorides of phosphonium, phosphorus fluoride, hydrofluoric acid, FAR (1-diethylamino-1,1-difluoro-2-chloro-2-fluoro-ethane), an alpha, alpha-difluoroalkylamine of the formula:



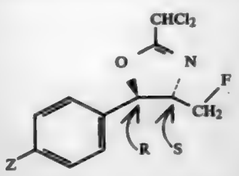
wherein

X_1 is Chlorine or fluorine

X_2 is chlorine, fluorine or trifluoromethyl, R4 and R,5 taken individually are lower alkyl, and

R_4 and R_5 taken together with the attached nitrogen atom represent the residue of a heterocyclic radical having five to seven ring atoms and Ishikawa reagent,

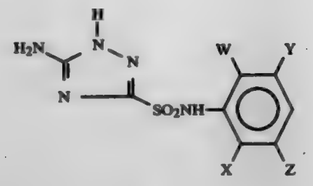
to give a fluorinated oxazoline compound of formula (III):



(III)

wherein Z is as defined hereinbefore; and

c) hydrolyzing compound (III) to compound (IV).



wherein

W represents F, Cl, Br, I, R^1, SR^1, SOR^1, SO_2R^1, CO_2R^2, CN, or NO_2;

X represents H, F, Cl, Br, I, R^1, CH_2OR^1, OR^1, CO_2R^2, NO_2, or a phenyl, phenoxy, or 2-pyridinyloxy group each optionally containing up to 3 compatible substituents selected from F, Cl, Br, CH_3, and CF_3;

Y represents H, F, Cl, Br, I, R^1, CO_2R^2;

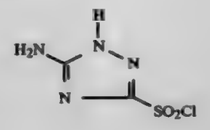
Z represents H, F, Cl, Br, I, or R^1;

R^1 represents C_1–C_4 alkyl optionally containing one or more chloro or fluoro substituents; and

R^2 represents H, C_1–C_4 alkyl, C_3–C_4 alkenyl, or C_3–C_4 alkynyl, each optionally containing up to four compatible substituents selected from chloro, fluoro, OR^1, and phenyl

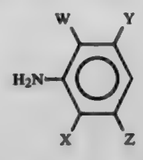
which comprises the consecutive steps of

a) contacting 5-amino-3-mercapto-1,2,4-triazole with chlorine in a medium containing an aqueous acid under conditions conducive to the formation of 5-amino-3-chlorosulfonyl-1,2,4-triazole



and

b) contacting 5-amino-3-chlorosulfonyl-1,2,4-triazole with a substituted aniline of the formula



wherein W, X, Y, and Z are as defined hereinabove under conditions conducive to the formation of said 5-amino-1,2,4-triazole-3-sulfonamide compound.

5,382,674

PREPARATION OF 5-AMINO-1,2,4-TRIAZOLE-3-SULFONAMIDES

Jack C. Little, Lafayette; Mariam G. Kidisti, Pittsburg; Patricia A. Thibos, Concord, and Susan D. Thompson, San Leandro, all of Calif., assignors to DowElanco, Indianapolis, Ind.

Filed Dec. 19, 1988, Ser. No. 287,952

Int. Cl.[6] C07D *249/12*

U.S. Cl. 548—263.8 **24 Claims**

1. A process for preparing a 5-amino-1,2,4-triazole-3-sulfonamide compound of the formula

5,382,675

POLYCYCLIC COMPOUNDS AND PROCESSES FOR THE PREPARATION THEREOF

Oskar Wacker, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

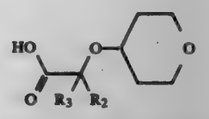
Filed Apr. 28, 1994, Ser. No. 234,763

Claims priority, application Switzerland, May 7, 1993, 1406/93-6; Feb. 4, 1994, 335/94-0

Int. Cl.[6] C07D *309/12*

U.S. Cl. 549—420 **4 Claims**

1. A tetrahydropyran-4-yloxy-alkanoic acid of formula III



(III)

wherein R_2 is C_{1-4}alkyl and R_3 is hydrogen or C_{1-4}alkyl or a salt thereof.

5,382,676

PURIFIED 3,4-EPOXYCYCLOHEXYL METHYL (METH)ACRYLATE, A PROCESS FOR THE PREPARATION THEREOF AND A 3,4-EPOXYCYCLOHEXYL METHYL (METH)ACRYLATE COMPOSITION

Akihiro Kuwana, Otaki; Kimihide Honda, and Kunio Koga, both of Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Continuation-in-part of Ser. No. 866,134, Apr. 9, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 109,320

Claims priority, application Japan, Aug. 28, 1991, 3-216798; Dec. 5, 1991, 3-321724

Int. Cl.[6] C07D *301/12, 301/32, 303/17, 301/36*

U.S. Cl. 549—541 **7 Claims**

6. A process for the preparation of purified 3,4-epoxycyclohexenyl methyl(meth)acrylate from a crude reaction solution obtained by the epoxidation reaction of cyclohexenyl methyl(meth)acrylate with an organic peracid, comprising:

(a) extracting said organic peracid and an organic acid derived from the organic peracid in the crude reaction solution with water using a centrifugal extractor in which retention time of period of extraction is up to about 5 minutes in extracting water to remove the organic peracid and the organic acid derived from the organic peracid and forming an organic solution layer,

(b) neutralizing said organic solution layer after the water extraction with an aqueous alkali solution to form a neutralized organic solution layer and an aqueous solution layer, separating said neutralized organic solution layer from said aqueous solution layer,

(c) evaporating said organic neutralized solution layer at temperatures not more than 100° C. and at reduced pressures to obtain a purified 3,4-epoxycyclohexenyl methyl(meth)acrylate solution including low-boiling ingredients of from 3 to 50% by weight,

and further

(d) evaporating said 3,4-epoxycyclohexenyl methyl(meth)acrylate solution at temperatures not more than 100° C. and at less than ½ of the reduced pressures in the above-mentioned (c) to obtain a purified 3,4-epoxycyclohexenyl methyl(meth)acrylate including the low-boiling ingredients of not more than 1% by weight.

5,382,677

PROCESS FOR THE PRODUCTION OF HIGHLY CONCENTRATED PASTES OF α-SULFOFATTY ACID ALKYL ESTER ALKALI METAL SALTS

Dietmar Colignon, Erkrath; Erich Dorra, Duesseldorf; Guenter Panthel, Haan; Wolfgang Schmidt, Monheim, and Norbert Wrede, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/00939, § 371 Date Nov. 24, 1992, § 102(e) Date Nov. 24, 1992, PCT Pub. No. WO91/18870, PCT Pub. Date Dec. 12, 1991

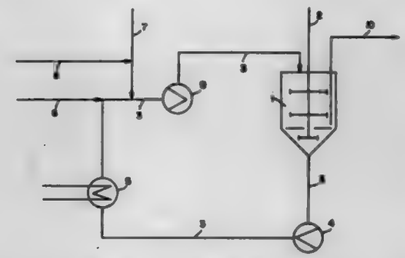
PCT Filed May 21, 1991, Ser. No. 949,511

Claims priority, application Germany, May 30, 1990, 4017468

Int. Cl.[6] C07C *303/32*

U.S. Cl. 554—98 **20 Claims**

1. A process for the production of highly concentrated, readily bleachable paste of an α-sulfofatty acid alkyl ester alkali metal salt which comprises: (1) contacting a fatty acid alkyl ester with gaseous sulfur trioxide to form a partially sulfonated product; (2) maintaining said partially sulfonated product at a temperature of from about 60° C. to about 100° C. for a time to form a sulfonated product having a degree of sulfonation of at least 90%; (3) neutralizing said sulfonated



product by introducing the sulfonated product and an aqueous alkali metal hydroxide solution into an aqueous phase comprising at least 55% by weight washing-active substance while maintaining a pH of from about 2 to about 8 to form a α-sulfofatty acid alkyl ester alkali metal salt paste comprised of from about 60% to about 70% by weight washing-active substance.

5,382,678

BATCH PROCESS FOR FATTY ACID ALKALINE EARTH METAL SALT PRODUCTION

Alfredo Vinci, Dayton; Kenneth R. Cummings, Skillman, and M. Stephen Lajoie, Basking Ridge, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Continuation of Ser. No. 77,090, Jun. 16, 1993, abandoned. This application Aug. 4, 1994, Ser. No. 285,432

Int. Cl.[6] A23K *1/00*

U.S. Cl. 554—156 **7 Claims**

1. A batch process for the preparation of a fatty acid salt product with steps which consist of (1) forming an admixture of reactive ingredients consisting essentially of (a) C_{12}–C_{22} fatty acid, having about 5–40 weight percent of the C_{12}–C_{22} fatty acid content in glyceride form, and (b) between about 1–1.8 equivalents of basic alkaline earth metal compound per equivalent of C_{12}–C_{22} fatty acid; (2) adding between about 10–120 weight percent of water to the admixture, based on the admixture weight, to form an aqueous suspension medium; (3) heating the aqueous suspension medium to a temperature in the range between about 40°–130° C.; (4) maintaining the reaction temperature for a time period between about 0.2–8 hours sufficient to complete the fatty acid salt-forming reaction, and to hydrolyze glyceride to fatty acid salt and glycerol; and (5) recovering the fatty acid salt product as tackless free-flowing granules which have a glyceride content of less than about 5 weight percent.

5,382,679

PROCESS FOR THE PREPARATION OF GLUTATHIONE S-ACYL DERIVATIVES, COMPOUNDS OBTAINED FROM SAID PROCESS AND AN INTERMEDIATE USEFUL FOR THE PREPARATION THEREOF

Lauro Galzigna, Padua, Italy, assignor to Boehringer Mannheim Italia S.p.A., Milan, Italy

Filed Feb. 10, 1993, Ser. No. 958,344

Claims priority, application Italy, Jun. 26, 1990, 20760 A/90

Int. Cl.[6] C07C *321/04, 321/06;* A01N *43/06*

U.S. Cl. 560—16 **7 Claims**

1. A process for the preparation of glutathione S-acyl derivatives, characterized in that glutathione or esters thereof are reacted with carboxylic acid anhydrides or with acyl halides in the presence of trifluoroacetic acid.

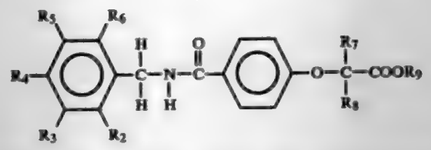
5,382,680

ALLOSTERIC HEMOGLOBIN MODIFIER COMPOUNDS

Donald J. Abraham, Midlothian, Va.; Ahmed Mehanna, Winchester, Mass., and Ramnarayan Randad, Richmond, Va., assignors to The Center for Innovative Technology, Herndon, Va.

Continuation of Ser. No. 623,346, Dec. 7, 1990, abandoned. This application Jun. 26, 1991, Ser. No. 722,382
Int. Cl.[6] C01C *229/34*
U.S. Cl. 562—451 2 Claims

1. A compound having the following structural formula:



wherein the R_2, R_3, R_4, R_5, and R_6 moieties may be hydrogen, halogen, or alkyl groups and may be the same or different, wherein the R_7 and R_8 moieties may be hydrogen or methyl groups and may be the same or different, and wherein the R_9 moiety is hydrogen.

5,382,681

PROCESS FOR THE PRODUCTION OF AN ALKALI METAL CITRATE

Frank G. H. Derez, Sint-Pieters-Leeuw, and Patrick L. J. Vandervondelen, Eppegem, both of Belgium, assignors to Cerestar Holding B.V., Sas Van Gent, Netherlands

Filed Sep. 17, 1993, Ser. No. 122,300
Claims priority, application United Kingdom, Oct. 7, 1992, 9221111
Int. Cl.[6] C07C *51/42, 51/47, 59/265*
U.S. Cl. 562—580 12 Claims

1. A process for the preparation of an alkali metal citrate which comprises:

(a) adjusting the pH of an aqueous solution containing citric acid to a value greater than 5.4,

(b) contacting the aqueous solution with a polymeric adsorbent,

(c) eluting the resulting charged polymeric adsorbent with an eluant comprising an aqueous solution of a soluble alkali metal hydroxide or alkali metal salt in which the alkali metal corresponds to the alkali metal of the alkali metal citrate to be produced, and

(d) recovering an aqueous solution of the alkali metal citrate.

5,382,682

NITROANILIDES AND THEIR PREPARATION

Paul R. Buckland, Pittsford, and Lee H. Latimer, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/02417, § 371 Date Aug. 18, 1992, § 102(e) Date Aug. 18, 1992, PCT Pub. No. WO92/11230, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 16, 1991, Ser. No. 920,573
Claims priority, application United Kingdom, Dec. 18, 1990, 9027428
Int. Cl.[6] C07C *233/15, 233/66*
U.S. Cl. 564—184 3 Claims

1. 2-(4-t-Octylphenoxy)-5-nitroacetanilide.

5,382,683

2-AMINOPROPANAMIDE DERIVATIVES

Ronald C. Griffith, Pittsford, N.Y., assignor to Fisons Corporation, Rochester, N.Y.

Continuation of Ser. No. 610,725, Nov. 7, 1990, abandoned, which is a continuation of Ser. No. 145,943, Jan. 20, 1988, abandoned. This application Apr. 8, 1992, Ser. No. 870,183
The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.
Int. Cl.[6] C07C *233/05*
U.S. Cl. 564—196 1 Claim

1. 2-Amino-N-(1,2-diphenyl-1-methylethyl)propanamide or a pharmaceutically acceptable acid addition salt thereof.

5,382,684

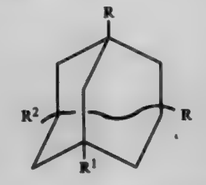
NITROGENOUS 1,3-SUBSTITUTED ADAMANTANES

Ahmad Moini, Lawrenceville, N.J., and Dong-Ming Shen, Langhorne, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 6, 1993, Ser. No. 86,397
Int. Cl.[6] C07C *211/63*
U.S. Cl. 564—281 4 Claims

1. A nitrogenous 1,3-substituted adamantane compound having the formula:

(I)



wherein R is $—(CH_2)_nNR'_3{}^+A^-$, wherein R' is lower alkyl of 1 to 5 carbon atoms, A^- is an anion, n is an integer from 1 to 5, and R^1 and R^2 are each selected from H and alkyl groups of 1 to 3 carbon atoms.

5,382,685

PREPARATION OF O-SUBSTITUTED HYDROXYLAMMONIUM SALTS

Ulrich Klein, Limburgerhof; Ernst Buschmann, Ludwigshafen; Michael Keil, Freinsheim; Norbert Goetz, Worms, and Horst Hartmann, Boehl-Iggelheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

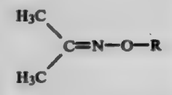
Filed Oct. 5, 1993, Ser. No. 131,615
Claims priority, application Germany, Oct. 5, 1992, 4233333
Int. Cl.[6] C07C *239/20*
U.S. Cl. 564—301 6 Claims

1. A batchwise process for preparing O-substituted hydroxylammonium salts of the formula 1

$$R—O—NH_2·HX \quad (I)$$

wherein R is C_1–C_5-alkyl and X is halogen or hydrogen sulfate, by reacting the corresponding acetone oxime ether of the formula 2

(2)



with water and a mineral acid HX, wherein an inert substance selected from the group consisting of acyclic aliphatic C_5–C_{12}-hydrocarbons, cycloaliphatic C_5–C_{12}-hydrocarbons, and unsubstituted or substituted aromatic hydrocarbons is added to the starting compounds, and the acetone produced in the reaction is removed by distillation without distilling out the acetone oxime ether together with the acetone.

5,382,686

PROCESS FOR PREPARING NITRODIPHENYL (THIO) ETHERS

Ferdinand Hagedorn, and Helmut Fiege, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 762,040, Sep. 18, 1991, abandoned, which is a continuation of Ser. No. 227,859, Aug. 3, 1988, abandoned. This application Jun. 2, 1993, Ser. No. 70,482
Claims priority, application Germany, Aug. 22, 1987, 3728139
Int. Cl.[6] C07C *211/45*
U.S. Cl. 564—307 1 Claim

1. A process for preparing 3-amino-4'-nitrodiphenyl ether, which comprises reacting p-nitrochlorobenzene with sodium-meta-aminophenolate in liquid ammonia under pressure and at a temperature of from 60° C. to 120° C., and separating off the ammonia by distillation after the reaction is completed.

5,382,687

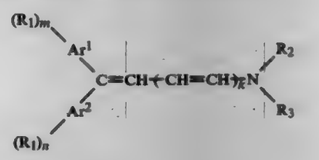
ENAMINE DERIVATIVES

Yoshii Morishita; Shigeru Hayashida; Yasushi Sugimoto, all of Hitachi; Hiroko Ishikawa, Katsuta; Hiroshi Kobayashi, Chikushino, and Takaaki Sonoda, Fukuoka, all of Japan, assignors to Hitachi Chemical Company Ltd., Tokyo, Japan

Division of Ser. No. 672,867, Mar. 20, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,164
Claims priority, application Japan, Mar. 20, 1990, 2-70859; May 21, 1990, 2-130806
Int. Cl.[6] G07C *211/50*; C07C *217/54, 217/80*
U.S. Cl. 564—319 4 Claims

1. An enamine derivative of the formula:

(I)



wherein R_1 is a fluorine-containing substituent of the formula RfO—or $(Rf)_2N$—; Rf is a fluoroalkyl group, a fluoroaryl group or a fluoroaralkyl group; a plurality of R_1 may be the same or different; R_2 and R_3 are independently an alkyl group, an aryl group, an aralkyl group, an alicyclic group, a heterocyclic group, or a residual group necessary for for forming a 5-membered or 6-membered ring by combining R_2 and R_3, these groups of R_2 and R_3 being able to have one or more substituents; Ar^1 and Ar^2 are independently an aryl group or arylene group which may have one or more substituents other than R_1; k is zero or an integer of 1; and m and n are independently zero or an integer of 1 to 3, provided that m and n cannot be zero at the same time.

5,382,688

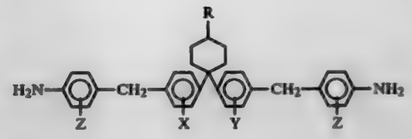
DIAMINO COMPOUNDS AND THEIR PRODUCTION METHOD

Minoru Nakayama, Kumamoto; Toshiya Sawai, Chiba; Masaharu Hayakawa, Chiba; Shizuo Murata, Chiba, and Yukino Abe, Chiba, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 162,318
Claims priority, application Japan, Dec. 7, 1992, 4-351340; Dec. 7, 1992, 4-351341
Int. Cl.[6] C07C *211/54*
U.S. Cl. 564—322 2 Claims

1. A diamino compound represented by a general formula (1):

(I)



wherein R indicates hydrogen or an alkyl group having 1 to 8 carbon atoms, further, X, Y and Z indicate hydrogen, an alkyl group having 1 to 3 carbon atoms or fluorine, respectively, and a part or all of them may be the same or different, and the positions of these substitutive groups may be ortho positions or meta positions.

5,382,689

PROCESS FOR PREPARATION OF BEVANTOLOL HYDROCHLORIDE

Yutaka Nomura, Chiba, Japan, assignor to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,328
Claims priority, application Japan, Oct. 3, 1991, 3-283875
Int. Cl.[6] C07C *209/16*
U.S. Cl. 564—349 5 Claims

1. A process for the preparation of bevantolol hydrochloride comprising the steps of:

reacting 3-(m-tolyloxy)-1,2-epoxypropane with β-(3,4-dimethoxyphenyl)ethylamine in a mole ratio of 1.5 to 5.5 moles of B-(3,4-dimethoxyphenyl)ethylamine per mole of 3-(m-tolyloxy)- 1,2-epoxypropane;

dissolving the reaction mixture in a halogenated hydrocarbon solvent to give a solution;

mixing the solution with hydrochloric acid;

separating an organic layer from the resulting mixture; and

obtaining 1-3-(m-tolyloxy)-2-propanol hydrochloride from the organic layer.

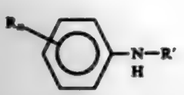
5,382,690

METHOD FOR PREPARING AROMATIC SECONDARY AMINO COMPOUND

Teruyuki Nagata, Ohmuta; Chiyuki Kusuda, Nagasumachi; Masaru Wada, and Kenichi Satou, both of Ohmuta, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

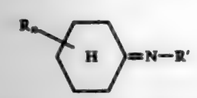
Filed Aug. 2, 1993, Ser. No. 100,149
Claims priority, application Japan, Aug. 11, 1992, 4-214078; Sep. 30, 1992, 4-261505; Oct. 5, 1992, 4-265897; Oct. 5, 1992, 4-265898; Oct. 21, 1992, 4-282940; Oct. 28, 1992, 4-290133; Oct. 29, 1992, 4-291311; Nov. 6, 1992, 4-297096; May 21, 1993, 5-119975; May 24, 1993, 5-121423; May 26, 1993, 5-124062; May 28, 1993, 5-126826; May 28, 1993, 5-126827; Jun. 3, 1993, 5-133273
Int. Cl.[6] C07C *209/28, 209/52, 209/68, 213/02*
U.S. Cl. 564—415 4 Claims

1. A method for preparing an aromatic secondary amino compound represented by the formula (2)



(2)

(wherein each R is a hydrogen atom, alkyl group, alkoxy group, amino group, hydroxyl group or fluorine; n is an integer of from 0 to 5; and R′ is an alkyl group, phenyl group, benzyl group, naphthyl group, furyl group, furfuryl group or cyclohexyl group, and R′ may be substituted by an alkyl group, alkoxy group, phenyl group, phenoxy group, cyclohexyl group, substituted amino group, carboxyl group, hydroxyl group or fluorine) which comprises the step of subjecting, to a dehydrogenation reaction at a temperature of 120° to 250° C., an N-cyclohexylideneamino compound represented by the formula (1)



(1)

(wherein R, R′ and n are defined above)
in the presence of a catalytic amount of a platinum group catalyst and a hydrogen acceptor selected from the group of olefin compounds, nitro compounds and phenols wherein the dehydrogenation reaction is conducted in the presence of a sulfur-free polar solvent.

5,382,691

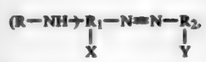
PROCESS FOR PREPARING SUBSTITUTED AROMATIC AMINES

Michael K. Stern, University City, and Brian K-M. Cheng, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 5, 1993, Ser. No. 147,619
Int. Cl.[6] C07C *209/00, 209/24*
U.S. Cl. 564—415 **20 Claims**

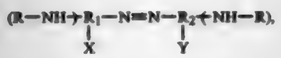
1. A process for preparing a substituted aromatic amine comprising:

(a) reacting a substituted aromatic azo compound or azoxy or hydrazo derivative thereof with an alcohol selected from the group consisted of aliphatic alcohols, cycloaliphatic alcohols, arylalkyl alcohols and mixtures thereof in the presence of a suitable base at a temperature of about 70° C. to about 200° C., wherein the substituted aromatic azo compound is selected from the group consisting of compounds represented by the formula:



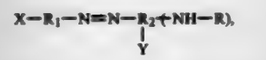
(I)

compounds represented by the formula:



(II)

compounds represented by the formula:



(III)

and mixtures thereof, wherein R—NH— represents a substituent derived from a compound selected from the group consisting of aniline, substituted aniline derivatives, aliphatic amines, substituted aliphatic amine derivatives and amides, R_1 is an aromatic group, R_2 is selected from the group consisting of aliphatic and aromatic groups, and X and Y are independently selected from the group consisting of hydrogen, halides, $—NO_2$, $—NH_2$, aryl groups, alkyl groups, alkoxy groups, sulfonate groups, $—SO_3H$, —OH, —COH, —COOH, and alkyl, aryl, arylalkyl or alkylaryl groups containing at least one $—NH_2$ group, wherein halides are selected from the group consisting of chlorine, bromine and fluorine and R_2 is an aromatic group in substituted aromatic azo compounds (II) and (III).

5,382,692

ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS AND TERTIARY AMINE COMPOUNDS HAVING CONDENSED POLYCYCLIC GROUP FOR USE IN THE SAME

Tomoyuki Shimada, Numazu; Masaomi Sasaki, Susono, and Tamotsu Aruga, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 490,468, Mar. 8, 1990, Pat. No. 5,219,692.
This application Feb. 9, 1993, Ser. No. 15,339
Claims priority, application Japan, Mar. 29, 1989, 1-077839; Jun. 14, 1989, 1-151605; Jul. 25, 1989, 1-191640
Int. Cl.[6] C07C *211/55, 211/58, 211/61*; G03G *15/044*
U.S. Cl. 564—426 **5 Claims**

1. A charge transporting material comprising a tertiary amine compound having a condensed polycyclic hydrocarbon group of formula (I):



(I)

wherein A^1 and A^2 each independently represent an unsubstituted or substituted alkyl group or aryl group, and Ar represents an unsubstituted or substituted condensed polycyclic hydrocarbon group selected from the group consisting of a pentalenyl group, an indenyl group, an azulenyl group, a heptalenyl group, a biphenylenyl group, an as-indacenyl group, an s-indacenyl group, an acenaphthenyl group, an acenaphthenyl group, a phenalenyl group, a phenanthryl group, a 1-anthryl group, a 2-anthryl group, a 2-naphthyl group, a fluoranthenyl group, an acephenanthrylenyl group, an aceanthrylenyl group, a triphenylenyl group, a pyrenyl group, a chrysenyl group and a naphthacenyl group.

5,382,693

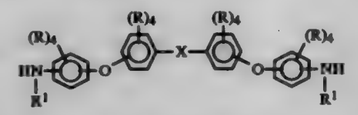
BIS(AMINOPHENOXY)-ALPHA-SUBSTITUTED STILBENES

V. Rao Durvasula; Robert E. Hefner, Jr., and Jimmy D. Earls, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

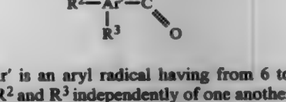
Division of Ser. No. 58,100, May 6, 1993, Pat. No. 5,300,594.
This application Oct. 27, 1993, Ser. No. 144,982
Int. Cl.[6] C07C *217/90*
U.S. Cl. 564—430 **4 Claims**

1. A bis(aminophenoxy)-alpha-substituted stilbene represented by the following Formula I

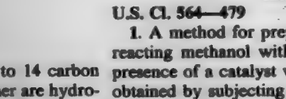
Formula I



wherein each R is independently hydrogen or a hydrocarbyl or hydrocarbyloxy group having from one to about 10 carbon atoms, a halogen atom, a nitro group, a nitrile group or a —CO—R^2 group; each R^1 is independently hydrogen or a hydrocarbyl group having from one to about 10 carbon atoms; X is a



or



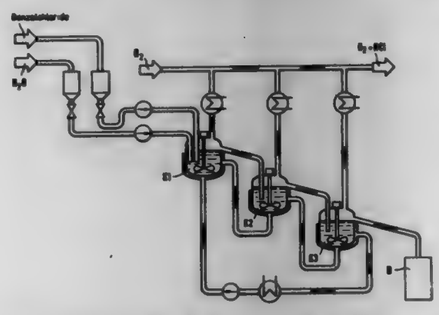
group each R^2 is independently hydrogen or a hydrocarbyl group having from one to abut 10 carbon atoms; R^3 is a hydrocarbyl group having from one to about 10 carbon atoms and may be chlorine or a nitrile group when n has a value of zero; and n has a value of zero or one.

5,382,694

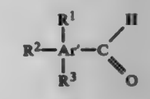
PROCESS FOR THE CONTINUOUS PRODUCTION OF AROMATIC ALDEHYDES

Gilbert Billeb, Kelkheim/Taunus, and Georg Folz, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 23, 1993, Ser. No. 156,601
Claims priority, application Germany, Nov. 26, 1992, 4239736
Int. Cl.[6] C07C *45/43, 45/42*
U.S. Cl. 568—437 **18 Claims**

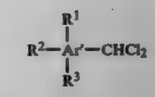


1. A process for the continuous production of aromatic aldehydes of the formula (1)



(1)

in which Ar′ is an aryl radical having from 6 to 14 carbon atoms, R^1, R^2 and R^3 independently of one another are hydrogen, fluorine, chlorine or bromine atoms, which comprises continuously hydrolyzing a dichloromethyl-substituted aromatic starting compound of the formula (2)



(2)

in which Ar′, R^1, R^2, R^3 have the above meanings, with an aqueous solution of at least one catalyst of the formula (3)

MX_n (3)

in which M is a transition metal selected from the group comprising nickel, copper, and zinc, X is F, Cl, Br, I, OH, SO_4, PO_4 or NO_3, and n depending on the oxidation state of the transition metal M is the number 1, 2, 3 or 4, in a concentration of from about 1 to about 50%, based on the weight of water in the catalyst solution, at temperature of from about 70° to about 160° C.

5,382,695

METHOD FOR DMTDA PRODUCTION

E. Earl Atkinson, Jr., Greenwell Springs; Robert A. Schaerfl, Jr., and Edward A. Burt, both of Baton Rouge, all of La., assignors to Albemarle Corporation, Richmond, Va.

Filed May 31, 1991, Ser. No. 708,471
The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.
Int. Cl.[6] C07C *319/14*
U.S. Cl. 564—440 **17 Claims**

1. In a process for producing thioalkylated toluene diamines comprising forming a reaction mixture comprising (a) a toluene diamine having no substituents other than the required amino groups or having one or more substituents which are inert to the reaction conditions, (b) an organic disulfide, and (c) a Lewis acid catalyst or organometallic catalyst, said reaction mixture producing a product mixture from which the desired thioalkylated toluene aliamines are removed by thermal product recovery methods, the improvement comprising adding to said product mixture a heavy, miscible organic base having a molecular weight of between about 200 and about 4,000, the heavy, miscible organic: base being chosen from the group of primary, secondary or tertiary amines, alkyl diamines aryl amines, polyalkylene amines or poly(oxyalkylene)amines, or a combination of said heavy, miscible organic base and an oxygen-containing compound selected from the group consisting of alkylene diol, alkylene ether glycol, alkyl-terminated alkylene ether polymer and aryl-terminated alkylene ether polymer, said oxygen-containing compound having the following properties:

i) it is soluble in the compounds of the reaction and product mixtures, and

ii) it has a boiling point such that the compound will not be removed from the reaction mixture prior to the recovery of the product.

5,382,696

METHOD FOR PREPARING METHYLAMINES

Tadamitsu Kiyoura, and Kazuhiro Terada, both of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Oct. 6, 1993, Ser. No. 132,186
Claims priority, application Japan, Oct. 16, 1992, 4-278743; Dec. 11, 1992, 4-332005; Apr. 23, 1993, 5-097592
Int. Cl.[6] C07C *209/16*
U.S. Cl. 564—479 **10 Claims**

1. A method for preparing methylamines which comprises reacting methanol with ammonia in a gaseous phase in the presence of a catalyst wherein the catalyst is (a) a mordenite obtained by subjecting a dry mordenite of the hydrogen ion type to at least one silylation treatment with a silylating agent in a solvent compatible with water, and then subjecting the silylated mordenite to heat treatment, or (b) a mordenite obtained by subjecting a mordenite of the hydrogen ion type occluding 3 to 40% by weight of water and an acid to at least one silylation treatment with a silylating agent in a solvent for forming a two-liquid layer with water, and then subjecting the silylated mordenite to heat treatment.

5,382,697

PEEPARATION OF TRIARYLBORANE

Albert L. Casalnuovo, and Thomas Foo, both of Wilmington, DE., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 23, 1994, Ser. No. 264,275
Int. Cl.[6] C07E *9/02*
U.S. Cl. 568—1 **4 Claims**

1. A process for the manufacture of a triarylborane having the formula: BAr_3 where Ar is phenyl or phenyl substituted

with an alkyl group having 1 to 4 carbon atoms where the alkyl group may be fluorinated, which comprises heating a complex of the formula: $Ni(NC(CH_2)_4CN)_2(NCBAr_3)_2$ where Ar is as previously defined,in an inert atmosphere at a pressure less than atmospheric to a temperature in the range of 120 degrees C. to 300 degrees C.; thus forming a vapor containing the triarylborane, and condensing triarylborane from the vapor.

5,382,698

BORATED ETHYLENE ALPHA-OLEFIN COPOLYMER SUBSTITUTED MANNICH BASE LUBRICANT DISPERSANT ADDITIVES

Won R. Song, Short Hills; Robert D. Lundberg, Bridgewater; Antonio Gutierrez, Mercerville, and Robert A. Kleist, Bayonne, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 959,021, Oct. 9, 1992, which is a continuation of Ser. No. 788,907, Nov. 7, 1991, abandoned, which is a division of Ser. No. 473,625, Feb. 1, 1990, Pat. No. 5,200,103, which is a continuation-in-part of Ser. No. 226,604, Aug. 1, 1988, Pat. No. 5,017,299. This application May 2, 1994, Ser. No. 236,610

Int. Cl.[6] C07C *5/02, 37/00*

U.S. Cl. 568—3 **19 Claims**

1. A borated lubricating oil dispersant additive useful in oleaginous compositions which comprises a product obtained by .treating with a boron compound a condensation product obtained by the reaction of:

(a) at least one alkyl-substituted hydroxyaromatic compound formed by the alkylation of at least one hydroxy aromatic compound with at least one terminally unsaturated ethylene alpha-olefin polymer of 300 to 20,000 number average molecular weight, at least 30% of said polymer's chains contain terminal ethenylidene unsaturation;

(b) at least one aldehyde reaction; and

(c) at least one nucleophilic reactant.

5,382,699

METHOD FOR THE PREPARATION OF 3,4-DIHYDROXY-5-NITROBENZALDEHYDE

Erkki Houkanen, Espoo, and Stig Liedholm, Helsinki, both of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

PCT No. PCT/FI92/00192, § 371 Date Jan. 6, 1994, § 102(e) Date Jan. 6, 1994, PCT Pub. No. WO93/00323, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 18, 1992, Ser. No. 162,198

Claims priority, application United Kingdom, Jun. 20, 1991, 9113431

Int. Cl.[6] C07C *45/00*

U.S. Cl. 568—436 **6 Claims**

1. A method for the preparation of 3,4-dihydroxy-5-nitrobenzaldehyde comprising the reaction of 4-hydroxy-3-methoxy-5-nitrobenzaldehyde in an aprotic polar solvent at the temperature from 80° to 160° C. with the lithium salt of an aromatic mercapto compound.

5,382,700

OXIDATIVE COUPLING OF ALPHA, BETA UNSATURATED ALDEHYDES

William A. Beavers, Longview, Tex., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed May 24, 1993, Ser. No. 65,557

Int. Cl.[6] C07C *45/00*

U.S. Cl. 568—463 **18 Claims**

1. A process for producing dimeric unsaturated aldehydes comprising:

(a) contacting an alpha, beta unsaturated aldehyde with a copper (II) catalyst and a complexing amine catalyst in a medium with a relatively high dielectric constant in substantially anhydrous and aprotic conditions; and

(b) recovering the oxidatively dimerized product of said alpha, beta unsaturated aldehyde.

5,382,701

USE AS CATALYST IN THE HYDROFORMYLATION OF OLEFINIC FEEDSTOCK TO HIGHER ALDEHYDES AND HIGHER ALCOHOLS

Elena N. Sucia, Bridgewood; Joel R. Livingston, Jr., Basking Ridge, and Edmund J. Mozeleski, Califon, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 6,910, Jan. 21, 1993. This application Nov. 18, 1993, Ser. No. 154,657

Int. Cl.[6] C07C *45/50*

U.S. Cl. 568—454 **11 Claims**

1. A method for producing higher aldehydes and higher alcohols which comprises hydroformylating an olefinic feedstock at elevated temperatures with synthesis gas in the presence of a Group VIII noble metal-ligand complex catalyst to form a crude reaction product comprised of an olefin feed, a hydroformylation reaction product and a Group VIII noble metal-ligand complex catalyst, wherein said Group VIII noble metal-ligand complex catalyst is a Group VIII noble metal complexed with a potassium para-diphenyl phosphino sulfonate ligand.

5,382,702

PROCESS FOR THE PRODUCTION OF 5-ALKOXY-2,4-DINITRO-ALKYLBENZENES

Wolfgang R. Balzer; Thomas Classen, both of Alsbach, and Alexa Weingus, Heidelberg, all of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Germany

PCT No. PCT/EP93/00678, § 371 Date Nov. 19, 1993, § 102(e) Date Nov. 19, 1993, PCT Pub. No. WO93/25512, PCT Pub. Date Dec. 23, 1993

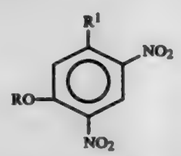
PCT Filed Mar. 20, 1993, Ser. No. 142,383

Claims priority, application Germany, Jun. 17, 1992, 4219755

Int. Cl.[6] C07C *43/205, 205/37*

U.S. Cl. 568—584 **7 Claims**

1. Process for producing 5-alkoxy-2,4-dinitroalkylbenzenes of the formula (I)



(I)

wherein R^1 is a member selected from the group consisting of C_1 to C_4 alkyl groups and R is a member selected from the group consisting of C_1 to C_6 alkyl groups, C_2 to C_4 hydroxylalkyl groups and C_3 to C_4 dihydroxyalkyl groups, said process comprising the steps of:

a) nitrating a 3-fluoroalkylbenzene to form a 2,4-dinitro-5-fluoroalkylbenzene; and then

b) reacting said 2,4-dinitro-5-fluoroalkylbenzene with an alcohol and a hydroxide-containing base selected from the group consisting of sodium hydroxide and potassium hydroxide at −5° C. to +25° C.

5,382,703

ELECTRON BEAM-GRAFTABLE COMPOUND AND PRODUCT FROM ITS USE

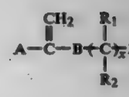
Ronald S. Nohr, Roswell; John G. MacDonald, and Laura E. Herring, both of Decatur, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 6, 1992, Ser. No. 972,656

Int. Cl.[6] C07C *43/11*

U.S. Cl. 568—609 **4 Claims**

1. A compound of the formula:



in which:

(a) each of A and B independently is phenyl which may be unsubstituted or substituted;

(b) each of R_1 and R_2 independently is hydrogen or C_1–C_6 alkyl;

(c) x represents an integer of from 0 to about 18; and

(d) Z is poly(alkyleneoxy) which may be uncapped or capped with a C_1–C_6 alkyl group;

which compound is adapted to be grafted by electron beam radiation to fibers and nonwoven webs in order to render them hydrophilic.

5,382,704

FLUORINATED METHYL ETHERS

Carl G. Krespan, and V. N. Mallikarjuna Rao, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1993, Ser. No. 85,843

Int. Cl.[6] C07C *41/01*

U.S. Cl. 568—683 **12 Claims**

1. A process for producing a fluorinated ether of the formula R_2CHOCF_2A, wherein A is selected from the group consisting of Cl and F and each R is independently selected from the group consisting of H, $(CF_2)_nCl$, $(CF_2)_nF$ and $(CF_2)_nH$ where n is an integer from 1 to 10, comprising the steps of:

reacting (i) a first reactant of the formula R_2CHOY wherein Y is selected from the group consisting of H, COF, COCl, and $COOCHR_2$ and each R is as defined above, (ii) a second reactant selected from the group consisting of CCl_4, CCl_3F, CCl_2F_2, $COCl_2$, COF_2, and COClF, provided that when A is Cl, the second reactant is selected from the group consisting of CCl_4, CCl_3F, and CCl_2F_2, and (iii) HF; and

recovering the fluorinated ether from the reaction products.

5,382,705

PRODUCTION OF TERTIARY ALKYL ETHERS AND TERTIARY ALKYL ALCOHOLS

Harold S. Chung, Princeton; Andrew Jackson, Pennington, and Margaret M. Wu, Skillman, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 769,510, Oct. 1, 1991, abandoned, which is a continuation of Ser. No. 644,698, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 325,742, Mar. 20, 1989, abandoned. This application Nov. 10, 1992, Ser. No. 973,888

Int. Cl.[6] C07C *41/06*

U.S. Cl. 568—697 **10 Claims**

1. An integrated process for the production of lower alkyl tertiary alkyl ether and a higher molecular weight olefin oligomer from lower alkanol and C_4+ olefins containing alpha-olefins and iso-olefins, comprising:

a) contacting a feed stream comprising the C_4+ olefins with reduced chromium oxide on silica support catalyst under oligomerization conditions in an oligomerization zone whereby 1-alkene component of the feedstream is selectively oligomerized to produce an effluent stream containing higher molecular weight olefin oligomer and unreacted C_4+ iso-olefins;

b) separating and recovering the higher molecular weight olefin oligomer;

c) passing the unreacted olefins and a lower alkanol feedstream to an etherification zone in which the unreacted C_4+ iso-olefins from step (a) are etherified with the alkanol in contact with acidic etherification catalyst under etherification conditions whereby an effluent stream is produced containing lower alkyl tertiary alkyl ether;

d) separating and recovering the ether.

5,382,706

PRODUCTION OF ALKYL TERT ALKYL ETHERS AND CATION EXCHANGE RESIN FOR SAME

Jose C. Gonzalez, Austin, Tex.; Leonardo Escalante, San Antonio De Los Altos - Edo Miranda, and Raicelina Ramos, Charallave Edo Miranda, both of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Sep. 29, 1993, Ser. No. 128,383

Int. Cl.[6] C07C *41/06*

U.S. Cl. 568—697 **19 Claims**

1. A process for preparing alkyl tert alkyl ethers, comprising the steps of:

providing a liquid olefinic hydrocarbon feedstock having a sulfur content;

providing an ion exchange resin containing an amount of palladium selected based upon said sulfur content of said liquid olefinic hydrocarbon feedstock;

mixing said liquid olefinic hydrocarbon feedstock with alcohol and hydrogen so as to obtain a reaction feedstock; and

treating said reaction feedstock with said ion exchange resin under etherification conditions so as to obtain an alkyl tert alkyl ether.

5,382,707

INTEGRATED MTBE PROCESS

Jacob N. Rubin, Newton Highs., and Johannes C. Norenburg, Marblehead, both of Mass., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Continuation of Ser. No. 42,477, Apr. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 1,101, Jan. 6, 1993, abandoned. This application May 20, 1994, Ser. No. 246,579

Int. Cl.[6] C07C *41/06*

U.S. Cl. 568—697 **34 Claims**

1. An integrated process for the production of methyl tertiary butyl ether from a mixed C_4 hydrocarbon feedstock comprising ethyl acetylene, vinyl acetylene, 1,3-butadiene, 1,2-butadiene, isobutylene, cis-2-butene, trans-2-butene, 1-butene, isobutane, and n-butane, said process comprising passing said feedstock through zones of hydroisomerization, methyl tertiary butyl ether synthesis, paraffin/olefin separation and skeletal isomerization; wherein:

said hydroisomerization zone comprises catalytically converting most of the ethyl acetylene, vinyl acetylene, 1,3-butadiene and 1,2-butadiene to butenes from said mixed C_4 hydrocarbon feedstock;

and converting at least a portion of the 1-butene from said mixed C_4 hydrocarbon feedstock to 2-butenes in the presence of a catalyst comprising at least one hydrogenating metal and a moderately acidic carrier at a temperature ranging from about 40° C. to about 400° C. and a pressure ranging from about 1 to 100 bars;

said methyl tertiary butyl ether synthesis zone comprises reacting isobutylene from said mixed C_4 hydrocarbon feedstock and the effluent from said skeletal isomerization zone with methanol in the presence of an acid type ion exchange resin catalyst at a temperature ranging from about 60° F. to about 300° F. and a pressure ranging from about 80 to 400 psig and withdrawing a methyl tertiary butyl ether product;

said paraffin/olefin separation zone comprises separating at least a portion of the C_4 paraffins, from said mixed C_4 hydrocarbon feedstock, from the C_4 olefins and withdrawing said separated C_4 paraffins;

said skeletal isomerization zone comprises catalytically converting at least a portion of the 2-butenes from the mixed C_4 hydrocarbon feedstock and the effluent from the hydroisomerization zone to isobutylene in the presence of an acidic catalyst at a pressure of about atmospheric and a

temperature ranging from about 600° F. to about 1100° F. to produce an isobutylene-rich effluent; and

recycling the isobutylene-rich effluent to said hydroisomerization zone or said methyl tertiary butyl ether synthesis zone.

5,382,708

PROCESS FOR INHIBITING DIHYDRIC PHENOL DEGRADATION AND COLOR FORMATION AND COMPOSITION THEREOF

Gaylord M. Kissinger, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Oct. 29, 1993, Ser. No. 146,353
Int. Cl.[6] C07C *37/00, 37/68, 37/16*
U.S. Cl. 568—702 **16 Claims**

1. A process for the purification of bisphenol-A comprising the addition of an effective amount of hypophosphorous acid and a distillation.

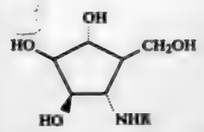
5,382,709

ALPHA-MANNOSIDASE AND FUCOSIDASE INHIBITORS

Robert A. Farr, Loveland, and Norton P. Peet, Cincinnati, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 666,742, Mar. 13, 1991, Pat. No. 5,240,707, which is a continuation-in-part of Ser. No. 508,875, Apr. 12, 1990, abandoned. This application Jun. 11, 1993, Ser. No. 75,984
Int. Cl.[6] C07C *205/00, 35/06*
U.S. Cl. 568—704 **4 Claims**

1. A compound of the formula



wherein R is a (C_1–C_6)alkyl optionally substituted with one or two hydroxy groups, a glycosyl group, a group of the formula —$(CH_2)_n$—Ar, wherein n is an integer of from 1 to 4 and Ar is a phenyl optionally substituted with one or two groups selected from (C_1–C_4)alkyl, (C_1–C_4)alkoxy, fluoro, chloro, bromo, iodo, amino, mono(C_1–C_4)alkylamino or di(C_1–C_4)alkylamino, or a pharmaceutically acceptable salt thereof.

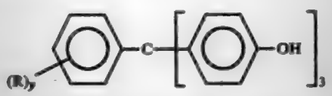
5,382,710

AROMATIC POLYHYDROXY COMPOUNDS AND PROCESS FOR THE PREPARATION THEREOF

Marlin E. Walters, West Columbia; W. Frank Richey, and Emmett L. Tasset, both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 626,597, Dec. 12, 1990, Pat. No. 5,136,110, which is a continuation-in-part of Ser. No. 472,508, Jan. 29, 1990, abandoned. This application Jul. 30, 1992, Ser. No. 922,450
Int. Cl.[6] C07C *37/18, 39/12*
U.S. Cl. 568—720 **7 Claims**

1. A tris-(1,1,1-(4-hydroxyphenyl)) toluene described by formula as follows:



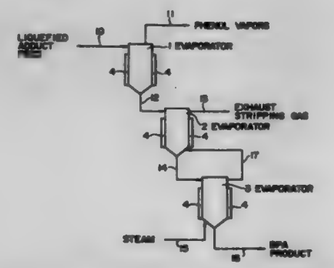
wherein R is independently an inert substituent or an aliphatic or aromatic group, two or more R's are optionally joined to form cycloaliphatic or aromatic groups, and y is an integer of from 0 to 5; which has a mole ratio of isomers in which the hydroxy aromatic rings are bonded at the para position to those isomers in which the hydroxy aromatic rings are bonded at the ortho position of at least about 60:40.

5,382,711

PROCESS FOR THE PRODUCTION OF BISHENOL A

Sachio Asaoka, Yokohama; Tetsuo Maejima, Tokyo; Kouji Sakashita, Tokyo; Noriyuki Yoneda, Tokyo; Makoto Yasui, Yokohama; Nobuhiro Onda, Tokyo; Tsuneo Watanabe, Kawasaki; Nobuo Moriya; Akio Shindo, both of Yokohama; Hiroaki Nishijima, Ebina; Athumi Kukidome, Yokohama; Ryuichi Inaba, Sagamihara; Takashi Imazeki, Ichikawa, and Kaoru Shimogawara, Fujisawa, all of Japan, assignors to Chiyoda Corporation, Yokohama, Japan

Division of Ser. No. 912,487, Jul. 13, 1992, Pat. No. 5,324,867. This application Apr. 18, 1994, Ser. No. 229,349
Claims priority, application Japan, Jul. 16, 1991, 3-201444; Aug. 1, 1991, 3-216364; Aug. 5, 1991, 3-219163; Aug. 20, 1991, 3-232354; Aug. 20, 1991, 3-232355; Aug. 20, 1991, 3-232356; Oct. 25, 1991, 3-306522; Oct. 25, 1991, 3-306523
Int. Cl.[6] C07C *39/16, 37/68*
U.S. Cl. 568—722 **3 Claims**



1. A process for condensing a gaseous mixture of steam, phenol and bisphenol A maintained at a pressure of 30 Torr or less, comprising the steps of:

introducing said gaseous mixture into a first cooling zone maintained at a pressure of 30 Torr or less and such a temperature that said steam is prevented from condensing while a portion of said phenol is condensed, wherein said gas is brought into counter-current contact with a first liquid cooling medium to condense substantially all of said bisphenol A and part of said phenol and thereby obtain a mixed gas containing uncondensed steam and uncondensed phenol, said first liquid cooling medium being phenol or bisphenol A-containing phenol;

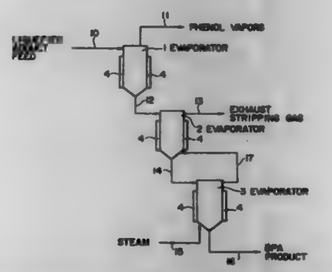
introducing said mixed gas into a second cooling zone maintained at a pressure of 30 Torr or less and such a temperature that substantially all of said mixed gas is condensed, wherein said gas is brought into counter-current contact with a second liquid cooling medium to condense substantially all of said mixed gas and thereby obtain a condensate-containing liquid, said second liquid cooling medium being an aqueous solution of phenol.

5,382,712

PROCESS FOR THE PRODUCTION OF BISPHENOL A

Sachio Asaoka, Yokohama; Tetsuo Maejima, Tokyo; Kouji Sakashita, Tokyo; Noriyuki Yoneda, Tokyo; Makoto Yasui, Yokohama; Nobuhiro Onda, Tokyo; Tsuneo Watanabe, Kawasaki; Nobuo Moriya; Akio Shindo, both of Yokohama; Hiroaki Nishijima, Ebina; Athumi Kukidome, Yokohama; Ryuichi Inaba, Sagamihara; Takashi Imazeki, Ichikawa, and Kaoru Shimogawara, Fujisawa, all of Japan, assignors to Chiyoda Corporation, Yokohama, Japan

Division of Ser. No. 912,487, Jul. 13, 1992, Pat. No. 5,324,867. This application Apr. 18, 1994, Ser. No. 229,348
Claims priority, application Japan, Jul. 16, 1991, 3-201444; Aug. 1, 1991, 3-216364; Aug. 5, 1991, 3-219163; Aug. 20, 1991, 3-232354; Aug. 20, 1991, 3-232355; Aug. 20, 1991, 3-232356; Oct. 25, 1991, 3-306522; Oct. 25, 1991, 3-306523
Int. Cl.[6] C07C *37/68, 37/74*
U.S. Cl. 568—724 **6 Claims**



1. A process of producing bisphenol A, comprising the steps of:

providing a crystalline adduct of bisphenol A and phenol which has an APHA color of not greater than 15 and which shows a pH of 4.9–5.5 when dissolved in an aqueous methanol solution having a pH of 5;

mixing said adduct with an aliphatic carboxylic acid to obtain a mixture containing 1–100 ppm of the aliphatic carboxylic acid based on the weight of said adduct; and

heating said mixture at a temperature of 130°–200° C. under a reduced pressure to vaporize and remove phenol from said mixture and thereby leave bisphenol A.

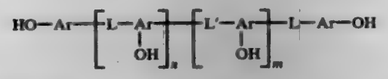
5,382,713

PHENOLIC COMPOUNDS

Pen C. Wang, Houston, and Donald R. Kelsey, Fulshear, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 5, 1993, Ser. No. 13,837
Int. Cl.[6] C07C *39/17*
U.S. Cl. 568—734 **10 Claims**

1. A phenolic compound of the formula



in which each Ar is a $C_{6\text{-}20}$ aromatic moiety, L is a divalent cyclohexanenorbornane moiety, L' is a divalent cycloaliphatic moiety, and each of m and n is a number within the range of 0 to 10.

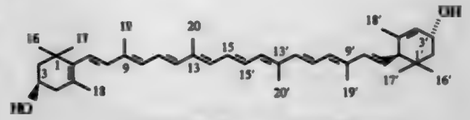
5,382,714

PROCESS FOR ISOLATION, PURIFICATION, AND RECRYSTALLIZATION OF LUTEIN FROM SAPONIFIED MARIGOLD OLEORESIN AND USES THEREOF

Frederick Khachik, Beltsville, Md., assignor to The Catholic University of America, Washington, D.C.

Filed Mar. 17, 1994, Ser. No. 210,009
Int. Cl.[6] C07C *35/08, 35/18*
U.S. Cl. 568—834 **20 Claims**

1. The carotenoid composition consisting essentially of substantially pure lutein crystals derived from plant extracts that contain lutein, said lutein crystals being of the formula:



(3R,3'R,6'R)-β,ε-Carotene-3,3'-diol (Lutein)

wherein the lutein is substantially free from other carotenoids and chemical impurities found in the natural form of lutein in the plant extract.

5,382,715

HYDROGENATION CATALYST WITH LOW PHOSPHOROUS CONTENT FOR OXO ALCOHOL PROCESS

Jose M. Vargas, and Kenneth L. Riley, both of Baton Rouge, La., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Nov. 29, 1993, Ser. No. 159,099
Int. Cl.[6] C07C *29/141, 31/125, 29/16*
U.S. Cl. 568—882 **4 Claims**

1. In the process for preparing oxo alcohols by the cobalt catalyzed hydroformylation of olefins, which process comprises the sequential steps of:

(a) hydroformylating of olefins by reaction with carbon monoxide and hydrogen in the presence of a cobalt hydroformylation catalyst to produce a crude reaction product;

(b) demetalling the crude product of step (a) to recover therefrom homogeneous cobalt catalyst and separate therefrom crude alcohol product, the crude alcohol product containing 20 wt. % or more of carbonyl compounds;

(c) hydrogenating the crude alcohol product at an elevated temperature and pressure to reduce the carbonyl compounds to alcohols;

(d) distilling the product of step (c) and recovery therefrom alcohol products containing very small proportions of carbonyl compounds; and

(e) hydrofinishing the product of step (d) to provide a substantially pure alcohol product, the improvement which comprises conducting step (c) or (e), or both, in the presence of a Ni/Mo hydrogenation catalyst supported on alumina or silica alumina which has been prepared by impregnating the support with phosphomolybdic acid, the catalyst having a phosphorous content of 0.1 to 1.0 wt. %.

5,382,716

DECYL ALCOHOL MIXTURES, PHTHALIC OBTAINABLE THEREFROM, AND THEIR USE AS PLASTICIZERS

Helmut Bahrmann, Hamminkeln; Wolfgang Greb, Dinslaken; Peter Heymanns, Essen; Peter Lappe, Dinslaken; Jürgen Szameitat, Wesel; Thomas Müller, Dinslaken, and Ernst Wiebus, Oberhausen, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Mar. 23, 1993, Ser. No. 36,026
Claims priority, application Germany, Mar. 27, 1992, 4210028
Int. Cl.[6] C07C *29/16*
U.S. Cl. 568—883 **11 Claims**

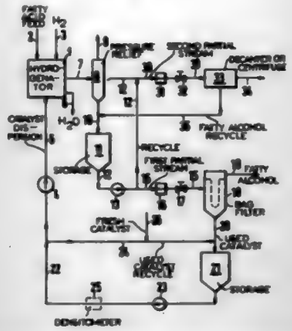
1. A mixture of isomeric decyl alcohols which is the product of hydroformylation of butadiene to form a reaction product containing an aldehyde mixture, separating said aldehyde mixture from said reaction product, condensation of said aldehyde mixture, thereby forming a condensation product containing an aldol mixture, separating said aldol mixture from said condensation product, and hydrogenation of said aldol mixture to said mixture of isomeric decyl alcohols.

5,382,717

PROCESS OF CONTROLLING THE RATE AT WHICH USED CATALYST IS RECYCLED TO HYDROGENATING MEANS FOR PREPARING FATTY ALCOHOLS FROM FATTY ACID DERIVATIVES

Hans-Martin Stümer, Eschborn, and Henning Bschold, Hanau, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 10, 1994, Ser. No. 195,854
Claims priority, application Germany, Feb. 13, 1993, 4304420
Int. Cl.[6] C07C *29/149, 31/125*
U.S. Cl. 568—885 **10 Claims**



1. A process for controlling a rate at which used catalyst is recycled to hydrogenation of a fatty acid component selected from the group which consists of at least one fatty acid, at least one fatty acid derivative and mixtures thereof, comprising the steps of:

(a) deriving from the hydrogenation of said fatty acid component a product stream containing fatty alcohols and used catalyst and produced at a temperature in a range of 100° to 400° C. and a pressure in a range of 20 to 400 bars;

(b) forming a circulating stream of at least part of said product stream;

(c) withdrawing from the circulating stream at a controllable rate a first partial stream;

(d) separating said first partial stream into a product rich in fatty alcohols and a dispersion containing used catalyst;

(e) recycling said dispersion containing used catalyst to said hydrogenation;

(f) withdrawing from the circulating stream a second partial stream;

(g) removing used catalyst from the withdrawn second partial stream and from the process; and

(h) increasing a rate at which used catalyst is supplied to the hydrogenation by decreasing the rate at which said second partial stream is withdrawn from said circulating stream, and decreasing the rate at which used catalyst is supplied to the hydrogenation by increasing the rate at which said second partial stream is withdrawn from said circulating stream.

5,382,718

CYCLOFLUOROALKYLATED FULLERENE COMPOUNDS

Paul G. Bekiarian; Paul J. Fagan, and Phil J. Krusic, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 16, 1993, Ser. No. 122,118
Int. Cl.[6] C07C *17/24, 17/28, 17/32, 22/08*
U.S. Cl. 570—129 **7 Claims**

1. A mixture of cyclofluoroalkylated fullerene compounds of formula (I)

$$(C_{60+2a})(CF_2CR^1R^2)_wR^3_xR^4_yR^5_z \qquad I$$

wherein:

R^1 and R^2 are independently H, F, Cl, Br, CN, a branched or straight chain alkyl, alkylether, alkoxy, alkoxyether, fluoro-alkyl, fluoroalkylether, fluoroalkoxy, fluoroalkoxyether, aryl, aryloxy, fluoro-aryl, or fluoroaryloxy group; optionally substituted with one or more H, Cl, Br, carbinol, carboxylic acid ester, carboxylic acid halide, sulfonyl fluoride, or carbonitrile;

R^3 is F or a branched or straight chain fluoroalkyl or fluoroalkylether group;

R^4 is a branched or straight chain hydrocarbon alkyl or alkyl ether or aromatic hydrocarbon;

R^5 is independently one or more selected from H, F and Cl;

n is an integer from 0 to about 470;

w is an integer from 1 to 16+(n/2) for n=an even integer, or from 1 to 16+((n+1)/2) for n=an odd integer;

x is an integer from 0 to about 24+n;

y is an integer from 0 to about 24+n;

z is an integer from 0 to about 35+n.

5,382,719

FLUOROALKYLATED FULLERENE COMPOUNDS

Paul J. Fagan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 21,395, Feb. 23, 1993. This application Apr. 19, 1994, Ser. No. 230,027
Int. Cl.[6] C07C *17/24, 17/28, 17/32, 22/08*
U.S. Cl. 570—144 **6 Claims**

1. A process for the preparation of a mixture of fluoroalkylated fullerene compounds comprising: heating fullerene compounds of formula II

$$(C_{60+2a})R^1_mZ_y \qquad (II)$$

wherein

n is an integer from 0 to about 470;

R^1 is a branched or straight chain hydrocarbon or aromatic hydrocarbon of from 1 to about 100 carbon atoms;

m is an integer of 0 to about 24+n,

Z is independently one or more selected from H, F and Cl;

y is an integer from 0 to about 35+n;

with compounds of formula III

$$R^2X_q \qquad (III)$$

wherein

R^2 is a branched or straight chain fluoroalkyl group of from 1 to about 100 carbon atoms;

X is independently Cl, Br or I; and

q is an integer of 1 or 2,

at a temperature of from about 160° to 300° C., under a pressure of 0 to about 4.1×10^5 Pascals (0 to about 60 psi) of an inert gas atmosphere, for about 1 hour to about 96 hours; to yield a mixture of fluoroalkylated fullerene compounds comprising formula I

$$(C_{60+2a})R^1_mR^2_bZ_y \qquad (I)$$

wherein b is an integer from 1 to about 24+n.

5,382,720

PREPARATION OF DIMER OF FLUORINE-CONTAINING ETHANE

Tsuneo Ikawa, Kamakura; Yutaka Morikawa, and Wataru Ueda, both of Machida, all of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 835,591, Feb. 14, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 144,546
Claims priority, application Japan, Feb. 16, 1991, 3-022414
Int. Cl.[6] C07C *17/02, 17/28*
U.S. Cl. 570—153 **9 Claims**

1. A method for preparing a dimer of a fluorine-containing ethane, which comprises contacting in the gas phase a fluorine-containing ethane of the formula:

$$CF_3—CCl\,X^1\,X^2 \qquad (I)$$

wherein each of X^1 and X^2 is a fluorine or chlorine atom, with a catalytic amount of a catalyst selected from the group consisting of metallic nickel and metallic nickel supported on a carrier in the presence of hydrogen gas, and obtaining therefrom said fluorine-containing ethane dimer.

5,382,721

PROCESS FOR THE PREPARATION OF 1,1,1,2-TETRAFLUOROETHANE

Pascal Pennetreau, Rixensart; Francine Janssens, Vilvoorde, both of Belgium; Max Braun, Burgwedel, Germany; Johannes Eicher, Garbsen, Germany; Werner Rudolph, Hanover, Germany, and Eckhard Hausmann, Garbsen, Germany, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Jun. 7, 1993, Ser. No. 72,759
Claims priority, application Belgium, Jun. 9, 1992, 09200533
Int. Cl.[6] C07C *17/08, 19/08*
U.S. Cl. 570—166 **11 Claims**

1. A process for the preparation of 1,1,1,2,-tetrafluoroethane consisting essentially of reacting hydrogen fluoride with trifluoroethylene, the reaction being carried out in the liquid phase in the presence of a catalyst consisting essentially of titanium or tin halide, oxide or oxyhalide.

5,382,722

CHEMICAL PROCESS FOR THE MANUFACTURE OF 1,1,1,2-TETRAFLUOROETHANE

John D. Scott, Northwich, and Rachel A. Steven, Manley, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 755,551, Sep. 5, 1991, Pat. No. 5,243,107, which is a continuation-in-part of Ser. No. 676,703, Mar. 29, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 83,691
Claims priority, application United Kingdom, Mar. 29, 1990, 9007029
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[6] C07C *17/08, 17/00*
U.S. Cl. 570—166 **13 Claims**

1. A method for the manufacture of 1,1,1,2-tetrafluoroethane which comprises the steps of:

(A) contacting a mixture of 1,1,1,-trifluoro-2-chloroethane and hydrogen fluoride with a fluorination catalyst at superatmospheric pressure of up to 30 bars and a temperature in the range of about 280° to 450° C. in a first reaction zone to form a product containing 1,1,1,2-tetrafluoroethane and hydrogen chloride together with unreacted starting materials,

(B) passing the total product of step (A) together with trichloroethylene to a second reaction zone containing a fluorination catalyst at superatmospheric pressure of up to 30 bars and a temperature in the range of about 200°–400° C. but lower than the temperature in step (A) to form a product containing 1,1,1,-trifluoro-2-chloroethane, 1,1,1,2-tetrafluoroethane, hydrogen chloride and unreacted trichloroethylene,

(C) treating the product of step (B) to separate 1,1,1,2-tetrafluoroethane and hydrogen chloride from 1,1,1-trifluoro-2-chloroethane, unreacted hydrogen fluoride and trichloroethylene,

(D) feeding the 1,1,1-trifluoro-2-chloroethane mixture obtained from step (C) together with hydrogen fluoride to said first reaction zone (step (A)), and

(E) recovering 1,1,1,2-tetrafuoroethane from the 1,1,1,2-tetrafluoroethane and hydrogen chloride separated out in step (C).

5,382,723

SYNTHESIS OF HYDROGEN PERFLUOROALKANES

Pierre Durual, and André Lantz, both of Vernaison, France, assignors to Elf Atochem S.A., France

Continuation of Ser. No. 834,097, Feb. 12, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 186,493
Claims priority, application France, Feb. 12, 1991, 91 01617
Int. Cl.[6] C07C *19/08*
U.S. Cl. 570—176 **14 Claims**

1. Process for the preparation of a hydrogenperfluoroalkane R_FH, R_F denoting a linear or branched perfluoroalkyl radical containing 2 to 20 carbon atoms and alkali metal iodide, consisting essentially in reacting the corresponding perfluoroalkyl iodide R_FI with methanol and an alkali metal hydroxide or an aqueous solution thereof, whereby tar formation is avoided, and recovering the hydrogen perfluoroalkane formed and the alkali metal iodide by-product from the reaction mixture.

5,382,724

PROCESS FOR PURIFYING 1,1,1,2-TETRAFLUOROETHANE

Hiromoto Ohno; Tatsuharu Arai; Koichi Katamura; Sadayoshi Yuge; Haruyuki Kawai, and Yasuaki Morito, all of Kanagawa, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 56,783, May 4, 1993, abandoned. This application Mar. 23, 1994, Ser. No. 216,780
Claims priority, application Japan, Aug. 20, 1992, 4-221833
Int. Cl.[6] C07C *17/38, 19/08*
U.S. Cl. 570—178 **11 Claims**

1. A process for purifying 1,1,1,2-tetrafluoroethane from an HF-containing 1,1,1,2-tetrafluoroethane-concentrated fraction obtained by reacting trichloroethylene with HF and concentrating a resulting reaction product through a distillation step, the process comprising the step of extracting HF from the HF-containing 1,1,1,2-tetrafluoroethane-concentrated fraction by contacting the HF-containing 1,1,1,2-tetrafluoroethane-concentrated fraction at a low temperature with an extraction solvent comprising hydrofluoric acid to extract the HF of the fraction into the extraction solvent, the extraction solvent having an HF concentration equal to or higher than an HF concentration at a water-HF azeotropic point, and subsequently recovering 1,1,1,2-tetrafluoroethane.

5,382,725

PROCESS FOR THE PURIFICATION OF 1,3-DIHALOBENZENE FROM AN ISOMERIC MIXTURE OF DIHALOBENZENES

Jacob George, Newark; Kantilal B. Desai, New Castle, and Francis M. Schoeffler, Port Penn, all of Del., assignors to Standard Chlorine of Delaware Inc., Delaware City, Del.

Filed Feb. 18, 1994, Ser. No. 198,901
Int. Cl.[6] C07C *22/00, 17/38*
U.S. Cl. 570—211 **26 Claims**

1. A method for separating 1,3-dihalobenzene from a mixture of 1,4-dihalobenzene and 1,3-dihalobenzene, comprising the steps of:

a) adding to said mixture polyethylene glycol so as to form a complex of said polyethylene glycol with said 1.4-dihalobenzene; and

b) separating said complex from said treated mixture.

5,382,726

CATALYST AND PROCESS FOR OXYCHLORINATION OF ETHYLENE TO EDC

George H. Young, League City, Tex.; Joseph A. Cowfer, Medina, and Victor J. Johnston, Silver Lake, both of Ohio, assignors to The Geon Company, Independence, Ohio

Division of Ser. No. 920,721, Jul. 28, 1992, Pat. No. 5,292,703. This application Nov. 22, 1993, Ser. No. 156,142
Int. Cl.[6] C07C *17/156*
U.S. Cl. 570—243 **20 Claims**

1. In the process of oxychlorination of ethylene to produce 1,2-dichloroethane by contacting a mixture of ethylene, oxygen, or oxygen containing gas and hydrogen chloride with a catalyst in a reaction zone and recovering 1,2-dichloroethane from effluents of the reaction zone, the improvement which comprises the use of a catalyst comprising a support having deposited thereon an active metal composition comprising from about 2% to about 8% by weight of copper, from about 0.2% to about 2% by weight alkali metal(s), from about 0.1% to about 9% by weight of rare earth metal(s), and from about 0.05% to about 4% of Group IIA metal(s) selected from the group consisting of magnesium and barium, all weight percents based upon the total weight of said catalyst and wherein said catalyst has a surface area frown about 20 to about 220 m^2g.

5,382,727

CONCURRENT PRODUCTION OF TRICHLOROETHANE ISOMERS

Tommy G. Taylor, Lake Charles; J. Douglas Mansell, Sulphur; John P. Shamburger, Lake Charles, and Mark E. Woodyear, Sulfur, all of La., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 55,498, Apr. 29, 1993, Pat. No. 5,315,052. This application Mar. 1, 1994, Ser. No. 204,573
Int. Cl.[6] C07C *17/02*
U.S. Cl. 570—253 **1 Claim**

1. In a method for conducting liquid phase chlorination wherein:

(a) 1,1-dichloroethane and molecular chlorine are introduced to a reactor containing a liquid phase reaction mixture which comprises free radical initiator; and

(b) organic reaction product comprising 1,1,1-trichloroethane, 1,2-dichloroethane, and 1,1,2-trichloroethane is removed from said reactor;

the improvement comprising:

(c) separating said organic reaction product from said reactor into streams including a first stream comprising chiefly 1,1,1-trichloroethane and a contaminating amount of 1,2-dichloroethane, and a second stream comprising chiefly 1,1,2-trichloroethane; and

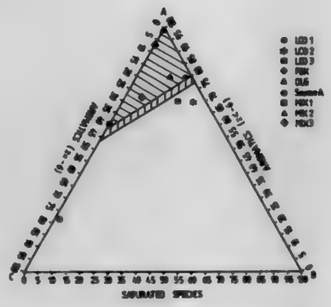
(d) recycling a portion of said first stream to said reactor.

5,382,728

EFFECTIVE HYDROCARBON BLEND FOR REMOVING ASPHALTENES

Alberto Del Bianco, Magenta, and Fabrizio Stroppa, San Giuliano Milanese, both of Italy, assignors to AGIP S.p.A. and Enitecnche S.p.A., both of Milan, Italy

Filed Oct. 15, 1993, Ser. No. 136,755
Claims priority, application Italy, Sep. 17, 1993, MI93 A 002008
Int. Cl.[6] C07C *15/00*
U.S. Cl. 585—24 **6 Claims**



1. A hydrocarbon blend for dissolving asphaltenic residues present in oil wells, consisting essentially of a composition selected from compositions on a ternary chart, in which the vertex (A) represents 100% by weight of polyaromatics with $z<-6$, the vertex (B) represents 100% by weight of saturated species, and the vertex (C) represents 100% by weight of alkylbenzenes with $z=-6$, between points corresponding to:

(i) 100 weight % polyaromatics;

(ii) 77 weight % polyaromatics, and 23 weight % of saturated species; and

(iii) 55 weight % of polyaromatics, and 45 weight % of alkylbenzenes;

wherein the initial boiling point of said hydrocarbon blend is higher than 150° C., and

said hydrocarbon blend comprises at least two members selected from the group consisting of polyaromatics, alkylbenzenes and saturated species.

5,382,729

DIPHOSPHINES CONTAINING SILANE GROUPS, IMMOBILISED DIPHOSPHINES AND THE USE THEREOF AS HYDROGENATION CATALYSTS

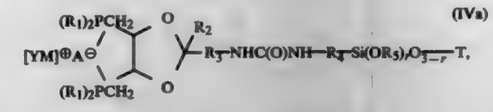
Benoit Pugin, Münchenstein; Felix Spindler, Starrkirch-Wil, and Manfred Müller, Dagmersellen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 91,802, Jul. 14, 1993, Pat. No. 5,308,819, which is a division of Ser. No. 823,516, Jan. 21, 1992, Pat. No. 5,252,751. This application Feb. 16, 1994, Ser. No. 197,095
Claims priority, application Switzerland, Jan. 25, 1991, 218/91
Int. Cl.[6] C07C *2/36, 209/22*
U.S. Cl. 585—277 **9 Claims**

1. A process for the hydrogenation of compounds containing carbon double bonds or carbon/hetero atom double bonds, which comprises hydrogenating said compounds in the temperature range from −20° to +80° C. and under a hydrogen preasure of 10^5 bis 10^7 Pa in the presence of a catalytic amount of a solid carrier material which contains a diphosphine rhodium or iridium complex fixed on the surface thereof, which carrier material has the formula IV or IVa



(IV)



(IVa)

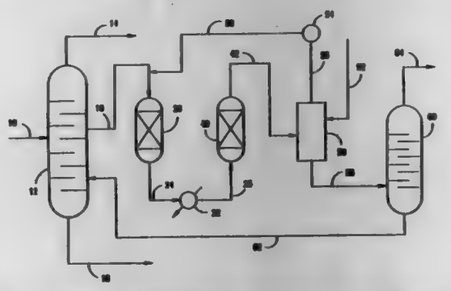
wherein Y denotes two monoolefin ligands or a diene ligand, M is Ir(I) or Rh(I), Z is —Cl, —Br or —I, $A^{\ominus}$ is the anion of an oxyacid or complex acid, T is a solid carrier material, r is 0, 1 or 2, R_1 denotes identical or different radicals and is linear or branched C_1–C_{12}alkyl, unsubstituted C_5–C_6cycloalkyl or C_5–C_6cycloalkyl which is substituted by C_1–C_4alkyl or C_1–C_4alkoxy, or is phenyl or benzyl, or both substituents R_1 of a group $(R_1)_2P$ are o,o'-diphenylene, R_2 is hydrogen, linear or branched C_1–C_{12}alkyl, phenyl or benzyl, R_3 is C_1–C_{12}alkylene, R_4 is C_2–C_{18}alkylene, phenylene or benzylene, and R_5 is C_1–C_6alkyl or phenyl.

5,382,730

COMBINED PARAFFIN ISOMERIZATION/RING OPENING PROCESS

Lloyd L. Breckenridge, Philadelphia, Pa.; Kenneth J. Del Rossi, Woodbury, N.J.; Albin Huss, Jr., Chadds Ford, Pa.; Clinton R. Kennedy, West Chester, Pa., and Garry W. Kirker, Washington Twp., Gloucester County, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 783,014, Oct. 25, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,357
Int. Cl.[6] C07C *5/27*
U.S. Cl. 585—310 **23 Claims**



1. A process for ring opening and isomerization of hydrocarbons, wherein cyclohexane and lower octane C_6 paraffins are converted to high octane C_6 paraffins comprising 2,2-dimethylbutane, said process comprising the steps of:

(a) charging hydrocarbons having 6 or less carbon atoms comprising at least 10 wt. % C_6 cyclic hydrocarbons along with hydrogen to a first reactor, wherein said hydrocarbons and hydrogen are contacted with a catalyst comprising an aluminosilicate zeolite, wherein said zeolite is Zeolite Y or Zeolite Beta, and a hydrogenation component under conditions sufficient to saturate benzene and open cyclic hydrocarbons contained in said hydrocarbons, wherein cyclohexane is converted to branched paraffins, wherein C_7+ hydrocarbons have been removed from the hydrocarbons which are charged to said first reactor, and wherein the hydrocarbons which are charged to said first reactor comprise less than 5 wt. % of C_7 hydrocarbons and less than 2 wt. % of C_8 hydrocarbons; and

(b) charging the hydrocarbon product from said first reactor along with hydrogen to a second reactor, wherein hydrocarbons and hydrogen are contacted with an isomerization catalyst under conditions sufficient to isomerize paraffins, wherein the temperature in said second reactor is less than 343° C., and wherein lower octane C_6 paraffins are converted to high octane C_6 isoparaffins comprising 2,2-dimethylbutane.

5,382,731

COMBINED PARAFFIN ISOMERIZATION/RING OPENING PROCESS

Clarence D. Chang, Princeton, N.J.; Roy D. Bastian, Bethlehem, Pa.; Scott Han, Lawrenceville, N.J., and Jose G. Santiesteban, Yardley, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Jul. 22, 1993, Ser. No. 95,885
Int. Cl.[6] C07C *1/00, 5/13*
U.S. Cl. 585—315 **15 Claims**

11. A process for ring opening and isomerization of hydrocarbons, said process comprising the steps of:

(a) passing hydrocarbons comprising C_6 cyclic hydrocarbons and a hydrocarbon recycle stream to a fractionation zone;

(b) withdrawing a sidecut comprising C_6 hydrocarbons and a majority of the C_6 cyclic hydrocarbons entering said fractionation zone;

(c) charging said sidecut along with hydrogen and a source of chlorine to a first reaction zone, wherein said sidecut and hydrogen are contacted with a ring opening catalyst under conditions sufficient to open cyclic hydrocarbons contained in the sidecut, wherein said catalyst comprises (i) a hydrogenation/dehydrogenation component and (ii) an acidic solid component comprising a Group IVB metal oxide modified with an oxyanion of a Group VIB metal;

(d) removing hydrogen from the effluent of the first reaction zone under conditions so that the effluent has a hydrogen to hydrocarbon mole ratio of less than 0.05;

(e) recycling hydrogen removed in accordance with step (d) to said first reaction zone;

(f) charging a feedstock comprising a source of chlorine and the effluent from step (d) having a hydrogen to hydrocarbon mole ratio of less than 0.05 to a second reaction zone, wherein said feedstock is contacted with an isomerization catalyst under conditions sufficient to isomerize paraffins;

(g) recovering an effluent from the second reaction zone and returning said effluent from the second reaction zone to said fractionation zone as said hydrocarbon recycle stream;

(h) recovering a second stream from said fractionation zone comprising C_7 hydrocarbons; and

(i) recovering a third stream from said fractionation zone comprising 2,2-dimethylbutane and lower boiling hydrocarbons.

5,382,732

2,5-BIS(1,1-DIALKOXY-2-PROPYL)-2,5-DIHYDROFURANS, THE PREPARATION THEREOF AND THE USE THEREOF FOR THE PREPARATION OF CAROTENOIDS

Juergen Frank, Limburgerhof; Udo Rheude, Heidelberg; Bernhard Schulz, Schwetzingen; Joachim Paust, Neuhofen, and Eckhard Hickmann, Darmstadt-Schanernheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

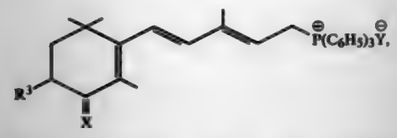
Division of Ser. No. 866,590, Apr. 10, 1992, Pat. No. 5,300,658. This application May 27, 1993, Ser. No. 67,618
Claims priority, application Germany, Apr. 15, 1991, 4112272
Int. Cl.[6] C07C *403/06*
U.S. Cl. 585—351 **1 Claim**

1. A process for preparing symmetric C_{40}-carotenoids of the formula IV'



(IV)

where R^3 is hydrogen or OH, and X is two hydrogens or one oxygen, which comprises adding a C_{15}-triphenylphosphonium salt of the formula V



(V)

where R^3 is hydrogen or OH, X is two hydrogens or one oxygen, and Y is an anion, to a 2,5-bis(1,1-dialkoxy-2-propyl)-2,5-dihydrofuran of the formula I



(I)

where R^1 and R^2 are identical or different and are alkyl of 1 to 4 carbons to form a reaction product containing a diacetal and a triphenylphosphonium salt; adding a strong base to the reaction product to convert the triphenylphosphonium salt to a carbenium ion; hydrolyzing the diacetal to a dialdehyde; subjecting the dialdehyde and the carbenium ion to a Wittig reaction to prepare a Wittig reaction product; and converting the Wittig reaction product to the C_{40}-carotenoid by acid treatment.

5,382,733

PROCESS FOR PREPARING NAPHTHALENE OR DERIVATIVE THEREOF

Masayuki Otake, and Akio Nakanishi, both of Yokohama, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,343
Claims priority, application Japan, Mar. 27, 1992, 4-100196
Int. Cl.[6] C07C *5/31*
U.S. Cl. 585—407 **13 Claims**

1. A process for preparing naphthalene or a derivative thereof, which comprises subjecting a benzene derivative having at least one substituted qr non-substituted aliphatic hydrocarbon group and being capable of forming a naphthalene ring to cyclodehydrogenation in the presence of a catalyst consisting essentially of zirconia and chromium in an oxidized state, said cyclodehydrogenation being carried out in a gaseous phase, under a pressure of 0.1 to 50 Kg/cm^2 and at a temperature of 250° C. to 700° C.

5,382,734

THERMAL REFORMING OF NAPHTHENIC AND HYDRODEALKYLATION OF AROMATIC FEEDSTOCKS TO PRODUCE BENZENE

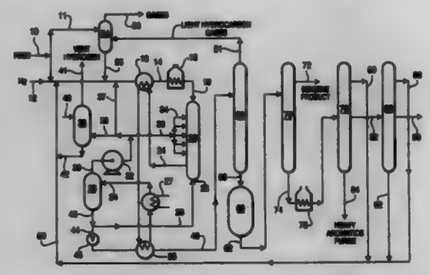
Hashim Sardar, Hamilton Square, and Lawrence M. Abrams, Cherry Hill, both of N.J., assignors to Hydrocarbon Research, Inc., Princeton, N.J.

Filed Jul. 16, 1993, Ser. No. 92,642
Int. Cl.[6] C07C *5/32, 4/12*; C10G *35/00*
U.S. Cl. 585—431 **11 Claims**

5. A process for simultaneous thermal reforming of tetrahydro-dicyclo-penta-diene (THDCPD) and hydrodealkylation of a solvent containing primarily mono-aromatic compounds to produce light aromatic products along with minor amounts of heavy aromatic bottoms fractions, the process comprising:

(a) providing a feedstream containing naphthenic tetrahydro-dicyclo-penta-diene (THDCPD) and C_7–C_{10} alkyl aromatic solvent compounds in which the THDCPD compound is 5–80 wt % of the feedstream, together with sufficient hydrogen to provide a molar ratio of hydrogen-to-THDCPD plus aromatics within a range of 5.0:1–12.0:1;

(b) feeding said naphthenic and aromatic feedstream with hydrogen to a thermal reactor having a length/internal diameter ratio of at least about 10/1 so as to provide substantially plug flow conditions in the reactor;



(c) maintaining the reactor temperature at between 1100° and 1350° F., reactor pressure between 450 and 650 psig, and a combined feedstream residence time of 10–50 seconds, and simultaneouly reforming the naphthenic and hydrodealkylating the aromatic compounds and to produce an aromatic effluent material; and

(d) cooling the reactor effluent material and phase separating it to recover hydrogen, recycling a portion of the recovered hydrogen back to the reactor together with fresh make-up hydrogen to maintain the hydrogen-to-THDCPD plus aromatics ratio therein, and distilling the remaining liquid fractions to recover mainly benzene product together with other minor aromatic materials.

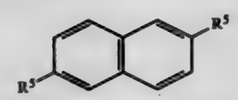
5,382,735

METHOD OF PREPARING ALKYLNAPHTHALENE COMPOUNDS

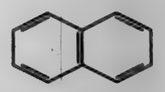
Ren Hasebe, Suita; Norimasa Okuda, Kyoto, and Noboru Saito, Takatsuki, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Company, Limited, Osaka, Japan

Continuation of Ser. No. 981,990, Nov. 24, 1992, abandoned, which is a continuation of Ser. No. 649,070, Feb. 1, 1991, abandoned. This application Sep. 21, 1993, Ser. No. 123,984
Claims priority, application Japan, Feb. 2, 1990, 2-22043; Jan. 29, 1991, 3-009365
Int. Cl.[6] C07C *2/70*
U.S. Cl. 585—467 **6 Claims**

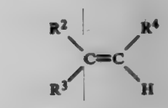
1. A method of preparing a 2,6-dialkylnaphthalene compound of the general formula



by reacting in a reaction zone a naphthalene compound of the general formula



with an olefin of the general formula



in the presence of a catalyst composed of a heteropoly acid, wherein

R^5 is $—(R^2)(R^3)C—CH_2R^4$;

R^2, R^3, R^4 respectively are either a hydrogen atom, a methyl group or an ethyl group; and

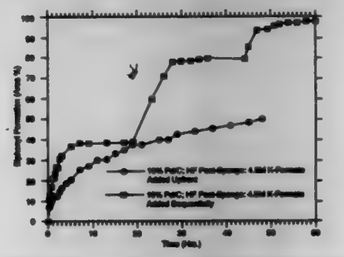
wherein the molar ratio of the naphthalene compound to the olefin is in the range of 1:1.6 to 1:10, and the reaction is performed at a temperature in the range of 180° C. to 300° C. while maintaining a liquid phase in the reaction zone.

5,382,736

METHOD FOR CATALYTIC DECHLORINATION OF POLYCHLORINATED BIPHENYLS

Sunita S. Baghel, Rensselaer, and Deborah A. Haitko, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 3, 1993, Ser. No. 55,092
Int. Cl.[6] C07C *1/20, 7/00*; C10G *17/00, 45/00*
U.S. Cl. 585—469 **10 Claims**



1. A method of dechlorination of polychlorinated biphenyls which comprises the steps of:

admixing said polychlorinated biphenyls with an organic solution selected from the group consisting of an alcohol and water, a dipolar aprotic solvent and water, and an oil and water;

adjusting the pH of said mixture with a base so as to maintain the mixture at a pH of between about 7.0 and 10.0;

contacting said mixture with a catalytic amount of a hydrogenation catalyst; and

adding equal incremental portions portion of an excess molar amount of a non-hydrogen evolving transfer agent selected from the group consisting of sodium formate, potassium formate, cesium formate, and lithium formate, whereby the polychlorinated biphenyls are substantially dechlorinated.

5,382,737

SELECTIVE ETHYLBENZENE DISPROPORTIONATION PROCESS (SEBDP) WITH EX SITU SELECTIVATED ZEOLITE CATALYSTS

Jeffrey S. Beck, Princeton, N.J.; Sharon B. McCullen, Newtown, Pa.; David H. Olson, Pennington, and Chaya R. Venkat, Princeton, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed May 28, 1993, Ser. No. 69,257
Int. Cl.[6] C07C *5/52*
U.S. Cl. 585—475 **30 Claims**

1. A process for enhanced shape selective disproportionation of ethylbenzene comprising:

Contacting a reaction stream comprising ethylbenzene, under disproportionation conditions, with a catalytic molecular sieve which has been modified by being exposed to at least two ex situ selectivation sequences, wherein the ex situ selectivation sequence includes the steps of contacting the catalytic molecular sieve with a water-soluble organoamine silane polymer dissolved in an aqueous carrier and subsequently calcining the catalytic molecular sieve.

5,382,738

CHROMIUM COMPOUNDS AND USES IN TRIMERIZATION OR OLIGOMERIZATION

William K. Reagen, Stillwater, Minn., and Max P. McDaniel, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 807,299, Dec. 13, 1991. This application Feb. 10, 1994, Ser. No. 194,539
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[6] C07C *2/30*
U.S. Cl. 585—512 **20 Claims**

1. A process to oligomerize olefins with a catalyst composition comprising:

a) a metal source which is a chromium compound and

b) a pyrrolide compound;

wherein said metal source and said pyrrolide compound are supported on a modified inorganic oxide composition which comprises an inorganic oxide; a metal alkyl selected from the group consisting of alkyl aluminum compounds, alkyl boron compounds, alkyl magnesium compounds, alkyl zinc compounds, alkyl lithium compounds, and mixtures of two or more thereof; and an unsaturated hydrocarbon.

5,382,739

LUBRICATING OILS

Martin P. Atkins, Ashford, and Mark R. Smith, Sunbury-on-Thames, both of England, assignors to BP Chemicals Limited, London, England

Filed Jul. 12, 1993, Ser. No. 90,287
Claims priority, application United Kingdom, Jul. 28, 1992, 9216014
Int. Cl.[6] C07C *2/26*
U.S. Cl. 585—530 **7 Claims**

1. A process for the production of lubricating oils having a viscosity index of at least 120 and a pour point of at least −45° C., said process comprising:

a. oligomerizing a mixture of C5–C20 1-olefins comprising at least 2.6% w/w of 1-decene and at least 6% w/w of 1-hexene in the presence of an oligomerization catalyst which comprises an alkylaluminum halide and tert-butyl chloride in which the relative mole ratio of tert-butyl chloride to alkylaluminium halide is in the range from 2.0:1 to 20:1 to form a lubricating oil.

b. separating the lubricating oil from the oligomerization catalyst;

c. optionally catalytically hydrogenating the lubricating oil

in the presence of hydrogen to improve the oxidation stability thereof, and

d. recovering the lubricating oil formed in (b) or (c) above.

5,382,740

CONTINUOUS PRODUCTION OF CYCLOHEXENE FROM CYCLOHEXYL ESTERS

Rolf Piakes, Bad Durkheim; Rolf Fischer, Heidelberg, and Roman Dostalek, Roemerberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 18, 1992, Ser. No. 993,053

Claims priority, application Germany, Dec. 18, 1991, 4141762

Int. Cl.[6] C07C *1/213*

U.S. Cl. 585—640 **8 Claims**

1. A process for the continuous production of cyclohexene from a cyclohexyl ester of a carboxylic acid having 1 or 2 carbon atoms, which comprises the following steps:

a) heating a cyclohexyl ester of a carboxylic acid having 1 or 2 carbon atoms in the absence of a solvent for said ester but in the presence of an acid catalyst with the formation of cyclohexene and a carboxylic acid having 1 or 2 carbon atoms;

b) removing, by distillation, cyclohexene and carboxylic acid having 1 or 2 carbon atoms from the reaction mixture from stage a) at the same rate as they are formed;

c) adding a cyclohexyl ester of a carboxylic acid having 1 or 2 carbon atoms to stage a) at the rate cyclohexene and carboxylic acid are distilled off; and

d) separating the mixture comprising cyclohexene and carboxylic acid having 1 or 2 carbon atoms coming from stage b).

5,382,741

PROCESS FOR THE PRODUCTION OF MONO-OLEFINS

Christopher J. Astbury, London; David C. Griffiths, Surrey; Mark J. Howard, North Humberside, and Ian A. B. Reid, London, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Jul. 13, 1992, Ser. No. 912,184

Claims priority, application United Kingdom, Aug. 9, 1991, 9117216

Int. Cl.[6] C07C *5/333*

U.S. Cl. 585—652 **11 Claims**

1. A process for the production of mono-olefins from a paraffin-containing hydrocarbon feed having at least two carbon atoms, the process comprising:

(a) a first step of partially combusting a mixture of the hydrocarbon feed and a molecular oxygen-containing gas in contact with a combustion catalyst, said first step carried out under a total pressure of greater than 5 bar absolute, and at a temperature of greater than 650° C., and

(b) a second step of cooling the mono-olefinic products to 600° C. or less within less than 50 milliseconds of formation.

5,382,742

GALLIUM-CONTAINING ZEOLITE MCM-22

Roger A. Morrison, Lambertville, N.J., and Mae K. Rubin, Bala Cynwyd, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 988,583, Dec. 10, 1992, Pat. No. 5,284,643. This application Sep. 16, 1993, Ser. No. 121,630

Int. Cl.[6] C07C *4/06, 5/333*; C10G *35/04*

U.S. Cl. 585—654 **15 Claims**

1. A process for converting a hydrocarbon compound, said process comprising contacting said hydrocarbon compound under sufficient conversion conditions with a catalayst comprising a gallium-containing MCM-22 zeolite having a composition comprising the molar relationship

$$X_2O_3:(n)YO_2$$

where n is at least about 10, X is at least one trivalent element, and Y is at least one tetravalent element, wherein X comprises gallium, optionally in combination with one or more other trivalent elements selected from the group consisting of aluminum, boron and iron, and Y is silicon and/or germanium.

5,382,743

SKELETAL ISOMERIZATION OF N-PENTENES USING ZSM-35 IN THE PRESENCE OF HYDROGEN

James H. Beech, Jr., Wilmington, Del.; Roland B. Saeger, Runnemede, N.J., and Robert A. Ware, Wyndmoor, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 26, 1993, Ser. No. 51,930

Int. Cl.[6] C07C *5/22, 5/27*

U.S. Cl. 585—671 **13 Claims**

1. A method for conversion of linear C5 olefins in the presence of contaminant diolefins to corresponding iso-olefins of the same carbon number which comprises contacting a linear C5 olefin-containing organic feedstock with a catalyst comprising material having the structure of ZSM-35 under skeletal isomerization conditions, wherein said conversion is carried out at temperatures between about 100° and 750° C., weight hourly space velocities (WHSV) based on linear C5 olefins in said feedstock between 0.1 and 500 WHSV, C5 linear olefin partial pressures between 2 and 2000 kPa, and in the presence of hydrogen added in an amount sufficient to enhance linear C5 olefin conversion activity and extend the catalyst life of the catalyst relative to operation without any hydrogen added.

5,382,744

CONTROL OF SYNTHETIC ISOPENTANE PRODUCTION DURING ALKYLATION OF AMYLENES

Ronald G. Abbott, Kingwood, Tex.; Bruce B. Randolph; Richard L. Anderson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1993, Ser. No. 88,942

Int. Cl.[6] C07C *2/58, 2/62*

U.S. Cl. 585—709 **9 Claims**

1. A method for alkylating amylenes by isobutane thereby controlling synthetic isopentane production, said method comprises the steps of:

contacting within a reaction zone a mixture, comprising amylenes and isobutane, with an alkylation catalyst;

adding isopentane to said mixture in a controlled amount in the range of from about 2:1 to about 10:1 as determined by the ratio of the weight of said controlled amount of isopentane added to the said mixture to the weight of said amylenes in said mixture, thereby producing an amount of synthetic isopentane of less than about 0.8:1 as determined by the ratio of the weight of said synthetic isopentane to the weight of said amylenes in said mixture; and

producing a reactor effluent from said reaction zone which comprises an alkylate product and a synthetic isopentane product.

5,382,745

SEPARATING VINYLCYCLOHEXENE FROM A BUTADIENE EXTRACTING SOLVENT

Ronald F. Spohn, Getzville, and Mohan S. Saran, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,738

Int. Cl.[6] C07C *7/00*

U.S. Cl. 585—800 **17 Claims**

1. A method of separating a butadiene extracting solvent that forms an azeotrope with vinylcyclohexene from a mixture with vinylcyclohexene comprising cooling said mixture to a temperature below 0° C., whereby a vinylcyclohexene phase forms over an extracting solvent phase, and physically separating said phases.

5,382,746

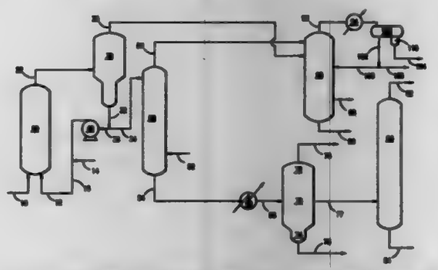
REMOVAL OF LIGHT ASO IN HF ALKYLATION PROCESS

Jonathan E. Child; Tomas R. Melli, both of Sewell, N.J., and Sergei Yurchak, Media, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 991,918, Dec. 17, 1992, Pat. No. 5,262,579, Ser. No. 991,919, Dec. 17, 1992, Pat. No. 5,264,650, Ser. No. 991,920, Dec. 17, 1992, Pat. No. 5,264,651, Ser. No. 991,921, Dec. 17, 1992, Pat. No. 5,264,652, and Ser. No. 991,922, Dec. 17, 1992, Pat. No. 5,276,243, each is a continuation-in-part of Ser. No. 833,684, Feb. 11, 1992, Pat. No. 5,191,150. This application Sep. 7, 1993, Ser. No. 117,274

Int. Cl.[6] C07C *2/62, 7/10*

U.S. Cl. 585—802 **7 Claims**



1. A method for separating conjunct polymers which are formed as byproducts of acid catalyzed isoparaffin-olefin alkylation and sulfolane from a mixture containing conjunct polymers, sulfolane, and hydrofluoric acid comprising the sequential steps of:

(a) alkylating an isoparaffin with an olefin the presence of an alkylation catalyst comprising HF and sulfolane in an alkylation reaction zone whereby ASO byproduct is evolved;

(b) gravitationally separating effluent from said alkylation reaction zone to provide a less-dense stream containing alkylate product and unreacted isoparaffin and a more dense stream containing sulfolane, ASO, and HF;

(c) stripping HF from said more dense stream of step (b) with isoparaffin to provide a stripper bottoms stream containing less than about 30 percent hydrofluoric acid weight and a stripper overhead stream containing HF, isoparaffin, and a fraction of said ASO having a lower end boiling point than the ASO containing in said more dense stream of step (b);

(d) gravitationally separating said stripper bottoms stream into a more dense sulfolane-enriched stream and a less dense conjunct polymer-enriched stream;

(e) charging said stripper overhead stream to an alkylate product fractionator;

(f) recovering an overhead stream containing isoparaffin and HF from said alkylate product fractionator;

(g) recycling said overhead stream of step (f) to said alkylation reaction zone; and

(h) recovering from said alkylate product fractionator an alkylate product stream containing alkylate gasoline and a fraction of said ASO having a lower end boiling point than the ASO containing in said more dense stream of step (b).

5,382,747

PROCESS FOR THE ADSORPTIVE SEPARATION OF METAXYLENE FROM AROMATIC HYDROCARBONS

Santi Kulprathipanja, Inverness, Ill., assignor to UOP, Des Plaines, Ill.

Filed Aug. 23, 1993, Ser. No. 110,528

Int. Cl.[6] C07C *7/12*

U.S. Cl. 585—828 **10 Claims**

1. A process for separating metaxylene from a mixture comprising metaxylene and at least one other C_8 aromatic hydrocarbon, which process comprises contacting said mixture at adsorption conditions including a temperature between about 100° and about 145° C. with an adsorbent comprising a Y zeolite containing sodium and lithium ions and having a hydration level giving a loss on ignition at 500° C. of about 1.5–3.0 wt. %, selectively adsorbing metaxylene on said adsorbent, removing the nonadsorbed portion of said mixture from contact with said adsorbent and recovering metaxylene by desorption with a desorbent at desorption conditions.

5,382,748

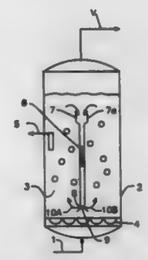
HYDROCARBON SYNTHESIS REACTOR EMPLOYING VERTICAL DOWNCOMER WITH GAS DISENGAGING MEANS

William C. Behrmann; Charles H. Mauldin, and Larry E. Pedrick, all of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 18, 1992, Ser. No. 994,218

Int. Cl.[6] C07C *7/20*; B01J *20/34, 9/08*

U.S. Cl. 585—899 **6 Claims**



1. A method for uniformly redistributing particulate catalyst in a slurry phase reactor, said method comprising using a substantially vertical conduit means open at both ends, fully submerged in the slurry of the slurry phase reactor, the bottom end of the substantially vertical conduit means is near the bottom of the slurry phase reactor and the top of the conduit means is topped by gas disengaging means which are below the top surface of the slurry in the slurry phase reactor and wherein the bottom of the substantially vertical conduit means is shielded by a baffle means which diverts gases rising from the bottom of the slurry phase reactor from entering into the bottom of the substantially vertical conduit whereby catalyst in slurry enters at the top of the substantially vertical conduit and is disengaged from gases present therein thereby becoming a more dense mixture of catalyst in slurry which passes down the substantially vertical conduit and is ejected from the bottom of said conduit near the bottom of the slurry phase reactor.

5,382,749

WAVEFORM DATA PROCESSING SYSTEM AND METHOD OF WAVEFORM DATA PROCESSING FOR ELECTRONIC MUSICAL INSTRUMENT

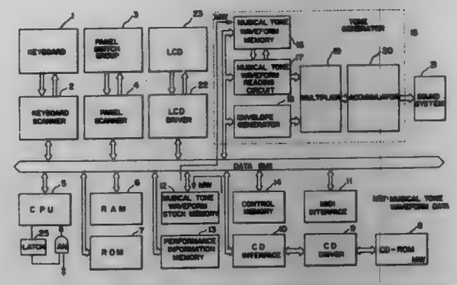
Akihiro Fujita, and Katsushi Ishii, both of Iwata, Japan, assignors to Kawai Musical Inst. Mfg. Co., Ltd., Shizuoka, Japan

Filed Mar. 30, 1993, Ser. No. 39,768

Claims priority, application Japan, Mar. 30, 1992, 4-073698; Mar. 30, 1992, 4-073699

Int. Cl.[6] G10H *7/00*

U.S. Cl. 84—603 **24 Claims**



1. A waveform data reading/writing device for an electronic musical instrument comprising:

first waveform storage means capable of being mounted in and removed from said electronic musical instrument and having storage capacity to store data of musical tone waveforms;

first reading means for reading the data of musical tone waveforms from said first waveform storage means;

third waveform storage means, in said electronic musical instrument, for storing the data of musical tone waveforms read by said first reading means;

third writing means for writing the data of musical tone waveforms read by said first reading means in said third waveform storage means;

third reading means for reading the data of musical tone waveforms from said third waveform storage means;

second waveform storage means, in said electronic musical instrument, including a semiconductor for storing the data of musical tone waveforms read by said third reading means;

second writing means for writing the data of musical tone waveforms read by said third reading means in said second waveform storage means;

automatic performance information storing means for storing automatic performance information;

automatic performance information reading means for reading the automatic performance information in an order of performance from said automatic performance information storing means;

designating means for designating a musical tone according to the automatic performance information read by said automatic performance information reading means;

second reading means for reading the data of musical tone waveforms from said second waveform storage means according to a designation by said designating means;

output means for outputting the data of musical tone waveforms read by said second reading means as data concerning the musical tone designated by said designating means;

checking means for executing a check with respect to the musical tone designated by said designating means as to whether the data of musical tone waveforms corresponding to the musical tone designated is stored in said second waveform storage means;

fourth reading means for reading the data of musical tone waveforms from said third waveform storage means according to the check by said checking means; and

fourth writing means for writing the data of musical tone waveforms read by said fourth reading means in said second waveform storage means.

5,382,750

ELECTRONIC MUSICAL INSTRUMENT WITH AN AUTOMATIC PLAYING FUNCTION

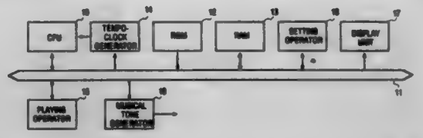
Hasebe Masahiko, and Yasushi Kurakake, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 24, 1992, Ser. No. 996,702

Claims priority, application Japan, Dec. 26, 1991, 3-344918

Int. Cl.[6] G10H *1/42*

U.S. Cl. 84—636 **18 Claims**



6. An electronic musical instrument with an automatic playing function comprising:

storage means for storing automatic playing pattern data;

playing manipulation means responsive to manipulations by a player to register an interval of time between the manipulations;

calculation means responsive to the playing manipulation means for calculating a tempo based on the interval of time between the manipulations of the playing manipulation means prior to starting automatic playing;

tone generation means for generating a specified voice tone relating to a counting for each manipulation of the playing manipulation means; and

automatic playing means for reading the automatic playing pattern data from the storage means and automatically playing the automatic playing pattern data at the tempo calculated by the calculation means.

5,382,751

ELECTRONIC MUSICAL INSTRUMENT INCLUDING A CONFIGURABLE TONE SYNTHESIZING SYSTEM

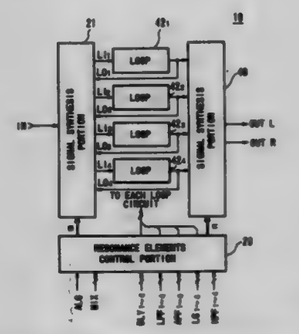
Toru Kitayama, and Iwao Higashi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 1, 1992, Ser. No. 983,874

Claims priority, application Japan, Dec. 27, 1991, 3-358910

Int. Cl.[6] G10H *1/12*

U.S. Cl. 84—661 **6 Claims**



1. An electronic musical instrument comprising:

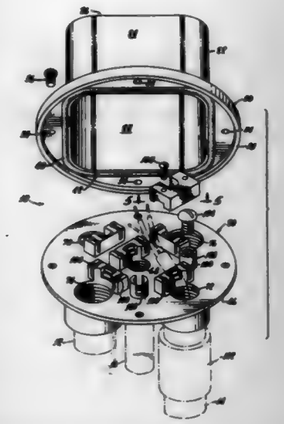
musical tone designation means for generating musical tone designating information;

excitation signal generating means for generating an excitation signal in accordance with said musical tone designating information;
a plurality of loop means for circulating an input signal therein, each loop means including an independently controllable delay means for delaying said circulating input signal in response to a pitch of a musical tone to be generated, wherein said excitation signal is supplied to at least one of said plurality of loop means;
coupling designation means for generating coupling designation data in accordance with a tone color of the musical tone to be generated; and
coupling means for coupling said plurality of loop means in accordance with said coupling designation data, wherein a signal circulated in at least one of said plurality of loop means is output as a musical tone signal.

5,382,752
ELECTRICAL JUNCTION BOX AND METHOD OF MAKING

Frederick B. Reyhan, Diamond Bar; Gary H. Kermoian, Corona; Richard J. Keal, Yorba Linda, and Gary K. Weise, Irvine, all of Calif., assignors to Thermocraft Industries, Inc., Corona, Calif.

Filed Nov. 16, 1992, Ser. No. 976,909
Int. Cl.[6] H05K *5/00*
U.S. Cl. 174—50 **17 Claims**

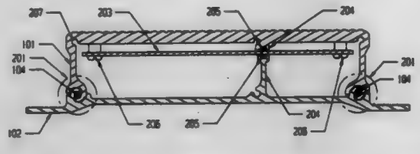


1. An electrical junction box comprising:
a generally planar horizontal base member including plural depending bosses each defining a vertical through bore for upward passage of electrical wires into said junction box;
cover means defining a downwardly open cavity and sealingly cooperable with said bore member to define a volume within which said electrical wires may be interconnected;
said base member being generally circular in plan view and said bosses and through bores being arranged in circular array, whereby said junction box allows adaptable installation with respect to rotational position thereof in a horizontal plane;
further including strain relief means cooperable with said base member adjacent a through bore thereof to clamp an electrical wire thereto in strain relieving relation;
wherein said base member further includes a pair of upright spaced apart stanchion portions adjacent a through bore thereof, and an inclined arcuate wall portion extending between said stanchions;
said strain relief means including a strain relief member which in cross section is of inverted U-shape, said strain relief member being receivable over said stanchions and wall portion at said U-shape to oppose an arcuate inclined surface portion of said strain relief member with said arcuate wall portion.

5,382,753
HOUSING MODULE WITH SEMI-INTERLOCKING JOINTS

Mark H. Farley, Braselton, Ga., assignor to Mitsubishi Consumer Electronics America, Inc., Braselton, Ga.

Filed Apr. 9, 1993, Ser. No. 44,498
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—52.1 **11 Claims**

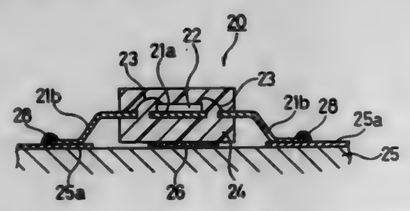


1. An edge joint for joining two mating planar elements, comprising:
a substantially C-shaped flange extending along an edge of each of said planar elements;
each substantially C-shaped flange having an inner curving member and an outer curving member;
said inner curving member including first and second flat outer surfaces perpendicular to each other;
said outer curving member including first and second flat inner surfaces perpendicular to each other;
first and second flat outer surfaces of the inner curving member of the flange of one of said planar elements contacting the first and second flat inner surfaces of the outer curving member of the flange of the other of said planar elements; and
first and second flat inner surfaces of the outer curving member of the flange of said one of said planar elements contacting the first and second flat outer surfaces of the inner curving member of the flange of said other of said planar elements.

5,382,754
ELECTRONIC PART OF SURFACE MOUNTED TYPE AND ITS MOUNTING METHOD

Shigemasa Sunada, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 18, 1993, Ser. No. 34,371
Claims priority, application Japan, Mar. 19, 1992, 4-063240
Int. Cl.[6] H05K *5/06*
U.S. Cl. 174—52.3 **1 Claim**

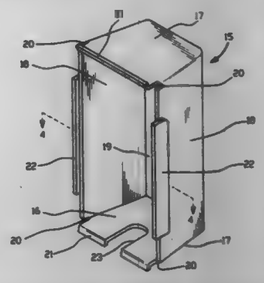


1. An electronic part of surface mounted type, comprising:
a chip which is an electronic part device;
a plurality of lead terminals electrically connected to said chip; and
a resin in which said chip and a base end portion of each of said lead terminals are molded, said resin having a fixing surface thereof, said fixing surface having a laser burning-treated surface, wherein said fixing surface provides enhanced adhesive properties,
wherein for mounting said electronic part onto a circuit board, at least a part of said fixing surface includes an adhesive agent applied thereto.

5,382,755
PROTECTIVE COVER FOR ELECTRICAL WALL OUTLET

Giuseppe A. Correnti, Little Ferry, N.J., assignor to G & G New Idea Corporation, Little Ferry, N.J.

Continuation-in-part of Ser. No. 769,462, Oct. 1, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,503
Int. Cl.[6] H01R *13/44*
U.S. Cl. 174—67 **4 Claims**



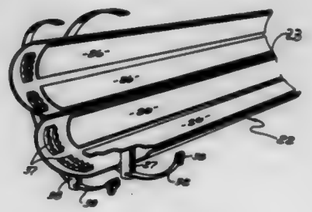
1. A protective cover for electrical wall outlets comprising:
(a) a face plate having four sides and at least one electrical plug receiving opening, said face plate being adapted to be detachably mounted to an electrical wall plug outlet, for detachably receiving a box-like cover;
(b) an upstanding flange formed on the four sides of said face plate;
(c) cavities formed between said face plate and said upstanding flange at the two horizontal sides of said face plate;
(d) a box-like cover having one open end for positioning over said face plate; and
(e) said box-like cover having flanges formed on the exterior horizontal sides thereof adjacent said open end, said flanges extending the width of said box-like cover whereby when said box-like cover is positioned over said face plate said flanges engage said cavities thereby holding said box-like cover in locking engagement with said face plate and wherein slits are formed at the four corners of said box-like cover to provide flexability to said box-like cover when said box-like cover is engaging or becoming disengaged from said face plate.

5,382,756
ENCAPSULATION CLOSURE FOR CABLES

Gideon B. Dagan, 986 Vernon Ave., Venice, Calif. 90291

Filed Jan. 22, 1993, Ser. No. 8,343
Int. Cl.[6] H02G *15/113*
U.S. Cl. 174—92 **15 Claims**

1. An enclosure for a cable splice having a sealing compound inside a wrap, comprising:
a housing for positioning around said splice;
a plurality of presser arms in said housing and positioned between said housing and splice, each of said arms having a boss projecting outward through said housing; and



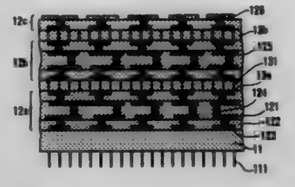


compression means engaging said bosses for urging said presser arms inward to engage said wrap and apply pressure to said sealing compound.

5,382,757
MULTILAYER PRINTED WIRING BOARD AND PROCESS FOR MANUFACTURING THE SAME

Hisashi Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 778,242
Claims priority, application Japan, Oct. 17, 1990, 2-278110
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—262 **3 Claims**



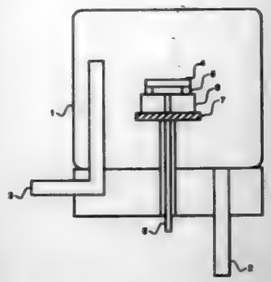
1. A multilayer printed wiring board comprising:
(A) a first block, comprising, in order,
(a) a base substrate,
(b) a first polyamide insulating layer,
(c) a first signal wiring layer, and
(d) a first bump electrically connected to said signal wiring layer; and
(B) a plurality of second blocks, each comprising,
(e) a ceramic substrate,
(f) second polyamide insulating layers, respectively provided on opposite sides of said ceramic substrate,
(g) second signal wiring layers, respectively provided on a side of said second polyamide insulating layers,
(h) second bumps electrically connected to said second signal wiring layers,
(i) a through hole provided in said ceramic substrate, connecting said second signal wiring layers;
wherein said second blocks are laminated,
wherein said second bump of said second block is connected to the adjacent second bump of another second block; and
wherein the second bump of one second block is connected to the first bump of the first block.

5,382,758

DIAMOND SUBSTRATES HAVING METALLIZED VIAS

Charles D. Iacovangelo, Schenectady; Elihu C. Jerabek, Glenmont; Ronald H. Wilson, Schenectady, and Peter C. Schaefer, Saratoga Springs, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 16,367, Feb. 11, 1993. This application Jan. 31, 1994, Ser. No. 188,877
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—262 5 Claims



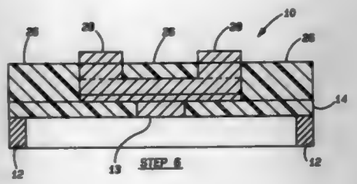
1. A diamond substrate for an integrated circuit chip comprising a substantially planar sheet of diamond having two major faces and at least one substantially void-free via metallized with tungsten extending through said sheet to provide a tungsten pathway from one of said faces to the other of said faces.

5,382,759

MASSIVE PARALLEL INTERCONNECTION ATTACHMENT USING FLEXIBLE CIRCUIT

James C. Kei Lau, Torrance; Richard P. Malmgren, Castaic, both of Calif., and Michael Roush, Farmington Hills, Mich., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 28, 1993, Ser. No. 127,912
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—264 3 Claims



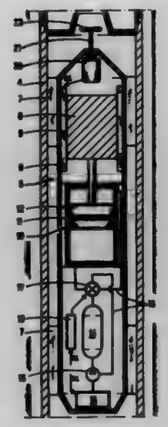
1. An electrical interconnect circuit comprising:
a rigid support layer having an open portion removed therefrom;
a first layer of flexible transparent dielectric material disposed on top of said support layer and above said open portion;
a conductive circuit layer formed on top of said first layer of dielectric material;
a conductive pad electrically connected to said conductive circuit layer and extending through said first layer of dielectric material and having an exposed surface within the open portion of said support layer;
a plurality of electroplated conductive vias disposed on top of said conductive circuit layer;
a second layer of flexible transparent dielectric material disposed above said first layer of dielectric material and substantially surrounding the sides of said conductive circuit layer and said conductive vias; and
conductive contact tips electrically contacting the top surface of said conductive vias and extending above said second layer of dielectric material to provide electrical contact with external contact points.

5,382,760

SEISMIC WELL SOURCE

Philippe Staron, Bardin, and Jean Laurent, Moralnvilliers, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 19, 1993, Ser. No. 5,333
Claims priority, application France, Jan. 20, 1992, 92 00631
Int. Cl.[6] G01V *1/36*; B21B *47/02*
U.S. Cl. 181—121 16 Claims



1. A seismic well source for applying an alternating force of controlled frequency to a drill bit at an end of a tubular drill string connected to a surface installation, which comprises an elongate closed enclosure fastened inside a drill collar of the drill string and arranged close to the drill bit, said enclosure having a cross-section smaller than an inner cross-section of the drill string to allow circulation of drilling fluid around the enclosure to the drill bit, a reactive mass displaceable inside said enclosure and along the direction of elongation thereof, motor means arranged in said enclosure for applying to the reactive mass a reciprocating force of controlled amplitude and frequency, said enclosure being spaced from said drill collar and said motor means including an energy converter for conversion of energy received from flow of the drilling fluid flowing outside said enclosure to energy for application to said reactive mass and absorbing means interposed on said drill string above said enclosure for dampening vibrations transmitted along the drill string.

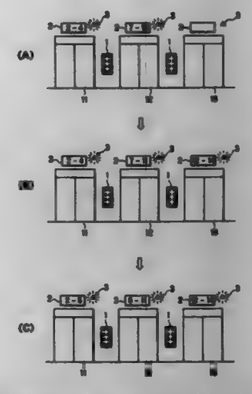
5,382,761

ELEVATOR GROUP CONTROL DEVICE

Masaaki Amano, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,365
Claims priority, application Japan, Jan. 30, 1992, 4-038410
Int. Cl.[6] B66B *1/18*
U.S. Cl. 187—383 4 Claims

1. An elevator group control device for controlling a plurality of elevator cages installed in a building, on at least one floor of which are provided destination button means for selecting a destination floor and service schedule display means for displaying service schedules indicative of floors that can be served by respective elevator cages, said elevator group control device comprising:
destination floor registration means for registering a destination floor in response to a selection of said destination floor by a passenger by means of said destination button means;
call allotment judgment means for determining a cage allotted to a destination floor registered by said destination floor registration means, wherein:
(a) said call allotment judgment means judges whether or not there exist a cage with a service schedule extending to a floor within a predetermined range above or below said destination floor;
(b) if the judgment is affirmative at (a), said call allotment judgment means extends said service schedule of said cage to include said destination floor;



(c) if the judgment is negative at (a), said call allotment judgment means selects a cage hitherto without a service schedule and allots said destination floor to said selected cage, creating a new service schedule including said destination floor for said selected cage; and
(d) said call allotment judgment means transmits information upon said service schedule of said cage to said service schedule display means such that said service schedule of said cage is displayed immediately by said service schedule display means; and
means for dispatching the cage determined by said call allotment judgment means to the destination floor.

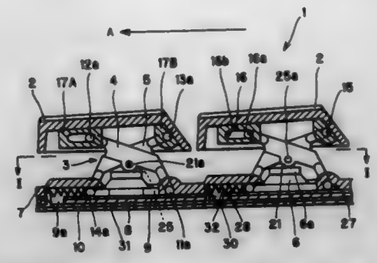
5,382,762

KEYSWITCH ASSEMBLY HAVING MECHANISM FOR CONTROLLING TOUCH OF KEYS

Isao Mochizuki, Gifu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 2, 1993, Ser. No. 70,252
Claims priority, application Japan, Jun. 9, 1992, 4-046375[U]; May 14, 1993, 5-025135[U]
Int. Cl.[6] H01H *3/12*
U.S. Cl. 200—5 A 20 Claims

1. A keyswitch assembly comprising:
a plurality of keys each having a lower surface;
a holder member positioned below the keys and having an upper surface, the holder member being formed with a plurality of openings;
a plurality of key support assemblies in equal numbers to the plurality of keys, each key support assembly being provided between each key and the holder member for guiding vertical movement of the key;
a plurality of switch portions in equal numbers to the plurality of keys for performing switching operation in accordance with the vertical movement of the key;
each key support assembly comprising a first link and a second link intersecting with the first link and pivotally connected thereto at their intersecting portion, the first link having a first end pivotally connected to the lower surface of each key and a second end slidably movable in a first horizontal direction and opposite horizontal direction and pivotally connected to the upper surface of the holder member, and the second link having a first end pivotally connected to the upper surface of the holder member and a second end slidably movable in the first and opposite horizontal direction and pivotally connected to the lower surface of the key; and



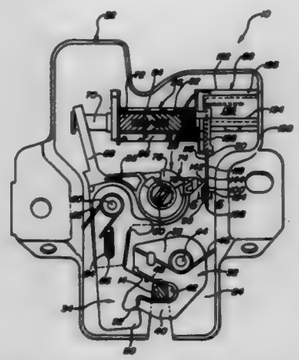
means for simultaneously controlling touch of the plurality of the keys, the controlling means being associated with each second end of the first link and being movable in a horizontal direction for changing urging force thereagainst in response to a change in a position of the controlling means relative to the holder member.

5,382,763

ELECTRICAL SWITCH FOR AUTOMOTIVE VEHICLE DECK LID LATCHES

Charles R. Martus, Troy, and Charles A. Detweiler, Durand, both of Mich., assignors to Lectron Products, Inc., Rochester Hills, Mich.

Filed Sep. 27, 1993, Ser. No. 127,752
Int. Cl.[6] H01H *3/00*
U.S. Cl. 200—61.62 15 Claims



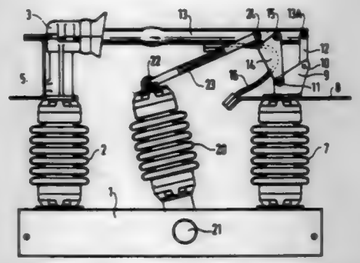
1. An electrical switch for use in an automotive vehicle in combination with a latching device, said electrical switch comprising:
an electrically insulative connector casing;
a first electrical terminal blade extending from said casing;
a second electrical terminal blade extending from said casing and having its distal end portion overlapping and offset from a distal end portion of said first terminal blade to establish a clearance therebetween for defining an open switch position; and
an electrically insulative actuator that is movable between a first position engaging an intermediate portion of both of

said first and second terminal blade to maintain said clearance therebetween, and a second position acting on said offset distal end of said second terminal blade to resiliently deflect it into engagement with said distal end of said first terminal blade for defining a closed switch position.

5,382,764
VERTICALLY-OPENING SECTION SWTICH HAVING A ROCKING COLUMN

Daniel Demissy, Montreal, Canada, assignor to GEC Alsthom Energie, Inc., Quebec, Canada

Filed May 7, 1993, Ser. No. 57,852
Claims priority, application France, May 11, 1992, 92 05691
Int. Cl.[6] H01H *33/02, 31/02*
U.S. Cl. 200—146 R **1 Claim**

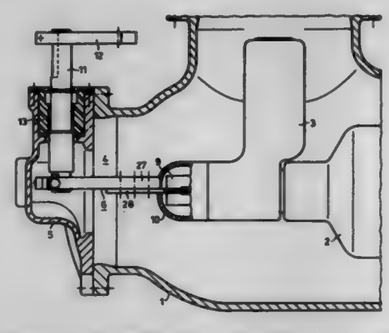


1. A high voltage section switch of the type comprising a female current terminal comprising a female contact, said female current terminal being situated at one end of a first vertical insulating column, a control blade which is hinged at one end of a second vertical insulating column and which carries at its first end a male contact intended to co-operate with said female contact, movement of said blade being provided by a mechanism connected to a rocking insulating column, wherein the hinge between said blade and said second insulating column is provided by means of two levers of different lengths, each lever having a first end connected to a part integral with said second insulating column and a second end connected to a respective separate point on said blade, said levers and said blade being in a common vertical plane so as to communicate to said blade a movement in said vertical plane, said mechanism which connects the rocking column and said blade being formed by an arm hinged at one end to said rocking column and at its other end to said blade, said female contact being constituted by a substantially horizontal tube which is longitudinally split over part of its length to form contact fingers, said female contact being protected by a hood provided with ice-breaking barbs, said male contact having an enlarged portion which can engage between said fingers, the length and relative arrangement of said levers being chosen to ensure that when the section switch is opened, the initial blade movement has a horizontal component tending to separate the male and female contacts as well as a component tending to bring the end of the blade down to a level below that which it occupies when the section switch is closed, said movement being followed by rotation of the blade about the end of the second insulating column.

5,382,765
GROUNDING SWITCH FOR A COMPRESSED-GAS-INSULATED, METAL-ENCASED HIGH-VOLTAGE SWITCHING SYSTEM

Dieter Lorenz; Christian Pircher; Petra Geier; Helmut Holler, and Dietrich Pfaff, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE90/00632, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO91/05356, PCT Pub. Date Apr. 18, 1991
PCT Filed Aug. 14, 1990, Ser. No. 844,579
Claims priority, application Germany, Sep. 27, 1989, 3932775; Jun. 18, 1990, 4019686
Int. Cl.[6] H01H *33/54, 33/50*
U.S. Cl. 200—148 R **20 Claims**



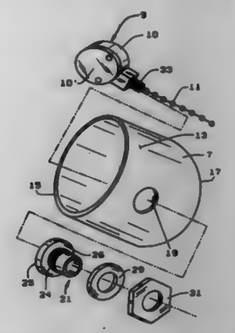
1. A grounding switch for a compressed-gas-insulated, metal-encased high-voltage switching system, comprising:
a) a casing being applied to ground potential;
b) a housing being applied to ground potential;
c) a conductor having a counter-contact to which ground potential is to be applied;
d) a movable switching piece comprising a switch blade, being insulated in said housing either by gas or insulation material, having a first end being rigid and having a second end being elastically movable in a direction perpendicular with respect to a plane of rotation of said switching piece;
e) a rotating drive shaft moving said movable switching piece, making a disconnectable connection between said movable switching piece and said counter-contact for transferring ground potential to the conductor, having an insulation bushing enabling said drive shaft to pass through said housing in an insulated manner, and being comprised of an electrically conductive material, wherein the first end of said switch blade is rigidly coupled at a fixed angle to said drive shaft; and
f) means for transferring ground potential outside of said housing, said ground potential transferring means being coupled with said drive shaft, whereby ground potential is transferred outside of the housing to the drive shaft.

5,382,766
SHOCK RESISTANT SWITCH MOUNTING

Jeffrey Sherman, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 29, 1993, Ser. No. 98,849
Int. Cl.[6] A01H *13/04*
U.S. Cl. 200—296 **11 Claims**

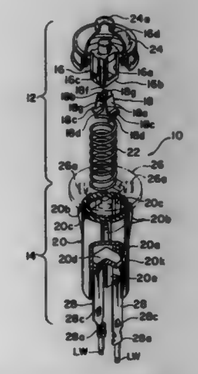
1. A shock resistant switch mounting for a product having a switch housing defining an opening; the mounting including a hollow bushing secured to said housing and a switch having a switch body and a pull cord extending from said body; said bushing being coaxial with and extending through said housing opening, said bushing having a cap formed at an end of said bushing to be positioned against an inner surface of said housing around said opening; said body being at least partially received in and secured to said bushing, said pull cord passing through said bushing to be positioned to operate said switch; whereby said bushing isolates said switch from potentially damaging impacts.



5,382,767
PUSH-BUTTON SWITCHES

Tsunesuke Takano, and Kouichi Sinzawa, both of Tokyo, Japan, assignors to Daiichi Denso Buhin Co., Ltd., Japan

Filed Nov. 1, 1993, Ser. No. 144,027
Claims priority, application Japan, Nov. 12, 1992, 4-084254[U]; May 14, 1993, 5-030504[U]
Int. Cl.[6] H01M *13/12*
U.S. Cl. 200—531 **20 Claims**

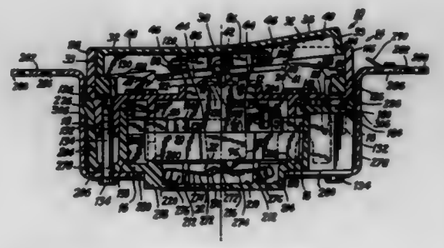


1. A push-button switch comprising:
a housing defining an interior space and an opposed pair of longitudinally oriented recessed channels, at least an upper region of said recessed channels being open to said defined interior space;
a pair of elongate fixed contact strips positioned within a respective one of said defined recessed channels, said fixed contact strips being of a sufficient length so that a terminal end portion thereof is disposed in said open upper region of said recessed channel to thereby be exposed to said interior space of said housing;
a push-button assembly which is received within said interior space of said housing for reciprocal movements between extended and retracted positions; and
a spring for urging said push-button assembly into said extended position; wherein
said push button assembly includes a slide contact member which is movable with said push-button assembly between said extended and retracted positions thereof, said slide contact member having a pair of resilient contact legs each contacting a respective one of said exposed terminal end portions of said fixed contact strips when said push-button assembly is in said extended position, whereby an electrical circuit is made, and being spaced from said respective one of said fixed contact strips when said push-button assembly is in said retracted position, whereby an electrical circuit is broken, wherein
each of said fixed contacts having a protruding boss formed on an upper end thereof, and wherein said resilient arms of said slide contact member have curved contact regions which contact a respective one of said bosses when said push-button assembly is in said extended position thereof, and wherein
said push-button assembly includes a push-button member defining a pair of windows through which a respective one of said curved contact regions extends, and having bridge walls for establishing a lower extent of said windows, and wherein said resilient arms of said slide contact member includes terminal end flanges which contact said bridge walls to limit the extent of outward displacement of said resilient arms and thereby prevent contact between said curved contact regions and said fixed contact strips below said bosses when said push-button assembly is in said retracted position thereof.

5,382,768
ROCKER-TYPE ELECTRICAL SWITCH

Stephen R. Kurek, Rego Park, N.Y., and David Schroeder, El Paso, Tex., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,073
Int. Cl.[6] H01H *3/20*
U.S. Cl. 200—556 **18 Claims**



1. An electrical rocker switch comprising:
a switch housing;
a manually movable rocker cover mounted on said housing;
actuator means having a first end and a second end, said actuator means attached to said rocker cover at said first end and movable in response to the movement of said rocker cover:
said housing comprising a support means adjacent to and spaced apart from said second end of said actuator means;
slider means comprised wholly of insulating material, coupled to and adjacent said second end of said actuator means and responsive to movement of said actuator means to move in one of two opposite directions along a common linear axis;
a fixed terminal assembly mounted in said housing and having a contact thereon and a movable brush assembly comprising a resilient brush arm fixed to said housing at a first end and having a first contact on said resilient brush arm at a second end, said resilient brush arm biased to bring said first contact on said resilient brush arm into mating position with said contact of said fixed terminal assembly to thereby electrically close said switch and said resilient

brush arm being movable by said slider means to disengage said first contact on said resilient brush arm from said contact of said fixed terminal assembly to thereby electrically open said switch; and

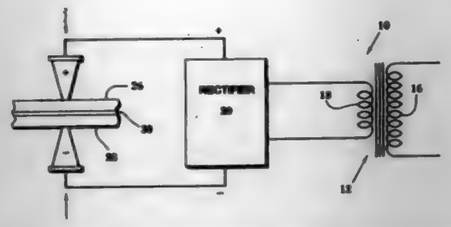
a cam spring positioned adjacent to said second end of said actuator means and upon said support means; said second end of said actuator means engaging said cam spring to aid in the control of the movement of said actuator means.

5,382,769

RESISTANCE BRAZED JOINTS FOR CARBON/CARBON STRUCTURES

Jack E. Jensen, San Diego, Calif., assignor to Lockheed Corporation, Fort Worth, Tex.

Filed Apr. 3, 1990, Ser. No. 503,584
Int. Cl.[6] B23K *31/02*
U.S. Cl. 219—85.15 **3 Claims**



1. A method of resistance braze bonding carbon/carbon parts together to form a unitary structure comprising the steps of:

providing parts consisting essentially of carbon/carbon material;

placing a foil of a metal selected from the group selected from zirconium, vanadium and mixtures thereof between the surfaces of said carbon/carbon parts to be bonded together;

clamping said carbon/carbon parts together under pressure with said foil therebetween;

passing electrical current between said parts and through said foil whereby said parts and foil are resistance heated to the melting temperature of said foil; and

terminating said electrical current and allowing said molten foil harden;

whereby said carbon/carbon parts are brazed together.

5,382,770

MIRROR-BASED LASER-PROCESSING SYSTEM WITH VISUAL TRACKING AND POSITION CONTROL OF A MOVING LASER SPOT

Michael Black, Foster City, and Vladimir Kupershmidt, Pleasanton, both of Calif., assignors to Reliant Laser Corporation, Foster City, Calif.

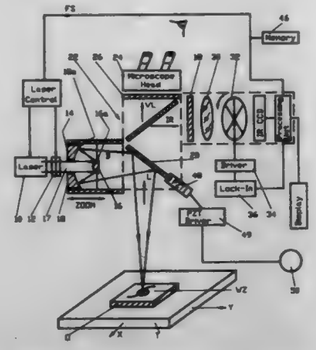
Filed Jan. 14, 1993, Ser. No. 4,709
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.63 **10 Claims**

1. A mirror-based laser processing system with visual tracking and controlling positions of a moving laser spot on an object, comprising:

a laser source generating a laser beam capable of treating said object;

a mirror-based micromanipulator which consists of a concave mirror and a convex mirror facing each other and spaced at a distance from each other, said concave mirror having a central hole for passing said laser beam, said convex mirror being located on the way of said beam passing through said concave mirror and reflecting said beam in a diverging manner onto said concave mirror, said concave mirror reflecting said beam in a converging manner;

a laser beam splitter which is located on the path of said beam reflected from said concave mirror add which is inclined with respect to the direction of said reflected beam, said laser beam splitter having a coating capable of passing visible and infrared light, but reflecting said laser beam onto said object, said object being located in a focusing position of said laser beam reflected from said laser



beam splitter, said laser beam splitter having means for controlling its movement with respect to said beam thus moving said laser spot over said object;

an imaging beam splitter located on the side of said laser beam splitter opposite to said object and capable of transmitting a visible light but reflecting an infrared light generated by an area of said object heated by said laser spot; and

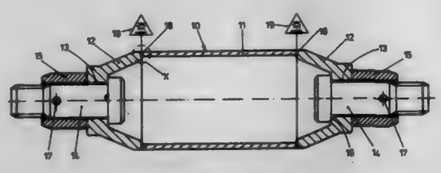
an infrared tracking system for converting said infrared light into thermal information and into a visible image.

5,382,771

METHOD FOR MANUFACTURING GALVANIZED BAR SEGMENTS, IN PARTICULAR FOR LATTICEWORKS OR THREE-DIMENSIONAL FRAMEWORKS

Helmut Eberlein, Wurzburg; Gunther Bruckner, Abtswind, and Reinhard Schmidek, Elbelstadt, all of Germany, assignors to MERO-Raumstruktur GmbH & Co., Wurzburg, Germany

Filed Feb. 9, 1994, Ser. No. 193,598
Claims priority, application Germany, Feb. 10, 1993, 4303826
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.64 **2 Claims**



1. A method for manufacturing galvanized bar segments, in particular for latticeworks or three-dimensional frameworks, preferably frustoconical end pieces being affixed by ring welds to the ends-of a hollow bar segment, the ring welding being carried out while rotating the hollow bar and the end pieces in axially fixed (clamped) and mutually centered positions,

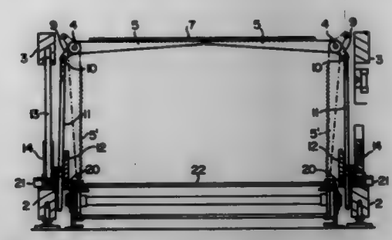
characterized in that the hollow bar **11** and the end pieces **12** for each bar segment **10** are galvanized individually and that thereupon the ring welds **18** between the galvanized hollow bar **11** and the galvanized end pieces **12** are implemented by laser welding in such a way that during welding a zinc coating **24** supplied from the fused zinc coats **22** of the adjacent components **11, 12** to be joined will be automatically formed over each surface **25** of the ring-weld seams.

5,382,772

INSTALLATION FOR CUTTING A WORKPIECE

Ernst Zumstein, Burgdorf, Switzerland, assignor to Bystronic Laser AG, Niederonz, Switzerland

Filed May 25, 1993, Ser. No. 66,431
Claims priority, application European Pat. Off., May 26, 1992, 92810394.4
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.67 **11 Claims**



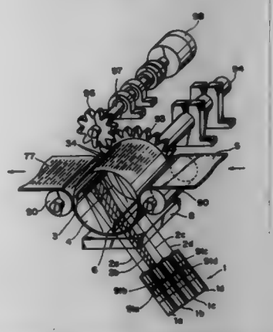
1. In an installation for cutting a workpiece, in particular flat stock, comprising a grate of supporting elements for said workpiece, means for moving said supporting elements out of a supporting position, the improvement that, at least one common driving member for a plurality of supporting elements is provided to which individual supporting elements can be coupled.

5,382,773

APPARATUS AND METHOD FOR FABRICATING A PERFORATED WEB BY LIGHT

Kazuhiko Kurihara, Tokyo; Hiroshi Yazawa, Kunitachi; Shoichi Yazawa, Kamiina; Yuki Kuroiwa, Nizza, and Shuichi Murakami, Tokyo, all of Japan, assignors to Nippon Petrochemicals Company, Limited and Polymer Processing Research Institute, Ltd., Tokyo, Japan

Filed Dec. 24, 1992, Ser. No. 996,562
Claims priority, application Japan, Dec. 27, 1991, 3-361472; Sep. 1, 1992, 4-274777
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.7 **26 Claims**



1. An apparatus for fabricating a perforated web comprising:

conveying means for conveying a web along a predetermined path and in a predetermined direction, the web having a longitudinal direction in correspondance with the conveying direction and a width;

an endless masking plate arranged along the predetermined path and having a plurality of apertures arranged in a predetermined pattern, the masking plate being adapted so as to be continuously circulated around a fixed point;

a source of light; and

an optical means for directing the light from the source to the masking plate to form apertures in the web, wherein the optical means includes first optical means for diverging the light from the source transversely about the web.

5,382,774

ELECTRICALLY HEATABLE HONEYCOMB BODY

Rolf Brück, Bergisch, and Hans-Jürgen Breuer, Overath, both of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbh, Lohmar, Germany

Filed Oct. 12, 1993, Ser. No. 135,265
Claims priority, application Germany, Apr. 10, 1991, 4111712
Int. Cl.[6] H05B *3/10*
U.S. Cl. 219—553 **16 Claims**



1. An electrically heatable honeycomb body, comprising:

a) an axis, an inner region surrounding the axis, and an outer region spaced apart from the axis;

b) at least one stack having at least one sheet metal layer and being disposed between said inner region and said outer region, said stack being wound in the form of a spiral with a multiplicity of windings around said inner region, said windings including a plurality of windings being adjacent one another and spaced apart from one another and electrically insulated, in pairs;

c) a multiplicity of bridges each mechanically and electrically connecting together a respective two of said adjacent and spaced-apart windings;

d) said windings and said bridges forming a multiply branched current path for an electrical current flowing between said inner region and said outer region, and each of said windings being completely part of said current path.

5,382,775

METHOD AND APPARATUS FOR AUTOMATIC COOKING IN A MICROWAVE OVEN

In K. Lee, Kyungsangnam-Do, Rep. of Korea, assignor to Goldstar, Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 27, 1991, Ser. No. 813,823
Claims priority, application Rep. of Korea, Dec. 28, 1990, 22306/1990
Int. Cl.[6] H05B *6/66*
U.S. Cl. 219—702 **8 Claims**

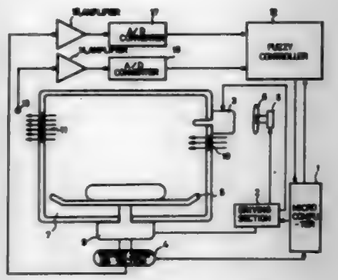
1. A method of automatic cooking in a microwave oven, comprising the steps of:

storing a weight sensing signal of food positioned on a turntable of heating chamber and an overflow air temperature sensing signal of the heating chamber in an initial stage of automatic cooking;

calculating an outflow air temperature difference between a

newly input outflow air temperature sensing signal and a previously stored outflow air temperature sensing signal wherein the newly input outflow air temperature sensing signal is detected after a cooking operation for a predetermined time;

calculating an additional value by generating a fuzzy membership function with respect to a weight of the food and the outflow air temperature difference and calculating a



first stage heating time from the additional value and a fuzzy rule;

calculating second, third, fourth and fifth stage heating times by multiplying the first stage heating time by second, third, and fourth predetermined values respectively; and

executing a cooking operating for the first stage heating time and then for second, third, fourth, and fifth stage heating times, consecutively.

5,382,776

COMBINATION OF AN OPTICAL-DISK AND BARCODE MEMORY MEDIUM FOR USE WITH AN OPTICAL DISK PLAYBACK APPARATUS, HAVING CONTROL PROGRAMS STORED IN THE OPTICAL-DISK AND SPECIFIED BY BARCODES STORED IN THE BARCODE MEMORY MEDIUM

Kouji Arii, Takatsuki; Testuo Maeda, Neyagawa; Tetsuo Tomimoto, Ibaraki, and Ryo Akiyama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

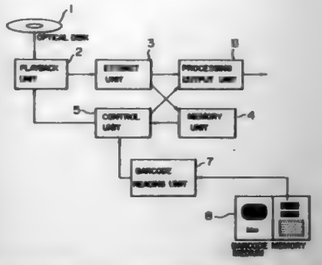
Continuation of Ser. No. 406,281, Sep. 12, 1989, Pat. No. 5,250,787. This application Apr. 30, 1993, Ser. No. 54,272

Claims priority, application Japan, Sep. 14, 1988, 63-230413; Mar. 29, 1989, 1-078842

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[6] G11B *27/28;* **G06K** *7/10*

U.S. Cl. 235—375 **1 Claim**



1. A combination of an optical-disk, a barcode memory medium, a barcode reader and an optical-disk playback apparatus,

said optical-disk for being set in the optical-disk playback apparatus and having information recorded thereon including data and plural control programs specifying playback operations of said optical-disk playback apparatus for playing back said data recorded on said optical-disk;

said barcode memory medium having barcodes recorded thereon for being read-out by said barcode reader which is electrically connectable to said optical-disk playback apparatus, each of said barcodes including an operation code correaponding to one of said plural control programs specifying one of said playback operations of said optical-disk playback apparatus; and

said optical-disk playback apparatus comprising means, responsive to selection of one of said barcodes via said barcode reader, for selecting a corresponding playback operation among said playback operations that corresponds to said one of said barcodes and playing back said data recorded on said optical-disk in accordance with said corresponding playback operation.

5,382,777

AUTOMATED TELLER MACHINE

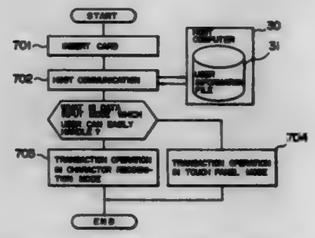
Tazuru Yuhara; Hiroya Onimaru, both of Owariasahi; Kanzen Gotou, Aichi, and Ikuyo Oda, Owariasahi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 850,526

Claims priority, application Japan, Mar. 13, 1991, 3-073820

Int. Cl.[6] G06F *3/00, 15/30*

U.S. Cl. 235—379 **9 Claims**



1. An automatic teller machine (ATM) comprising:

a display;

first input means partially or wholly superposed on said display, said first input means outputting a first signal on the basis of whether a first area previously registered in accordance with the contents displayed on said display has been touched by a user;

second input means partially or wholly superposed on said display, said second input means recognizing symbols such as characters drawn on a second area previously registered thereby to produce a second signal;

processing means for processing a transaction on the basis of said first or second signal; and

selecting means for selecting one of said first and said second input means to supply the signal from the selected input means to said processing means in accordance with a direction for selecting one of said first and said second input means input by an individual user.

5,382,778

NON-CONTACT IC CARD

Kenichi Takahira, and Toshiyuki Matsubara, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 966,005

Claims priority, application Japan, Nov. 26, 1991, 3-310801

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—380 **6 Claims**

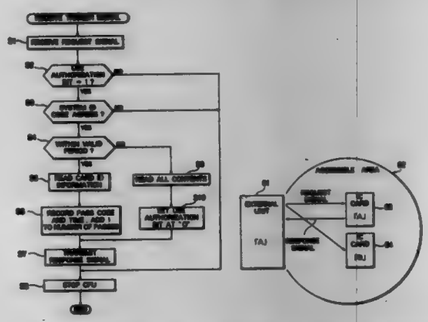
1. A non-contact IC card comprising:

data transmitting/receiving means for exchanging data with an external unit without direct contact;

a memory storing system identification information identifying a system including said IC card and the external unit intended exchange data without direct contact and use authorization information indicating whether use of said IC card is authorized;

data processing means connected to said data transmitting/receiving means and said memory for processing a request signal received by said data transmitting/receiving means and for generating a response signal for transmission to the external unit through said data transmitting/receiving means;

first determining means connected to said data transmitting/receiving means and said memory for determining, when said data transmitting/receiving means receives a request signal, whether the system identification information stored in said memory agrees with system identification information in the request signal identifying the system;



second determining means connected to said data transmitting/receiving means and said memory for determining, when said data transmitting/receiving means receives a request signal, whether the use authorization information stored in said memory indicates that use of said IC card is authorized; and

stopping means connected to said data processing means and said first and second determining means for stopping, when at least one of said first determining means determines that the system identification information in said memory does not agree with the system identification information in a request signal and said second determining means determines that use of said IC card is not authorized, operation of said data processing means until said data transmitting/receiving means receives another request signal.

5,382,779

SHELF PRICE LABEL VERIFICATION APPARATUS AND METHOD

Om P. Gupta, Ithaca, N.Y., assignor to Digicomp Research Corporation, Ithaca, N.Y.

Filed May 7, 1993, Ser. No. 58,426

Int. Cl.[6] G06K *15/00*

U.S. Cl. 235—383 **19 Claims**

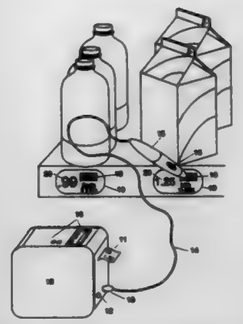
1. A method of shelf price verification for a store of the type utilizing checkout scanners and shelf pricing, comprising the steps of:

a) placing shelf price labels for each of a plurality of items in the store, each label having at least an item identification printed in barcoded form, and a price presented in both barcoded and human-readable form;

b) scanning the shelf label, reading at least the item identification and shelf price;

c) looking up an item record from a store checkout scanner price database using the item identification, the item record containing at least the price for the item which would be used by the store checkout scanner;

d) comparing the shelf price from the scanned label to the price from the store checkout scanner price database;



e) if the shelf price from the scanned label is not equal to the price from the store checkout scanner price database, presenting an indication of a price error to an operator.

5,382,780

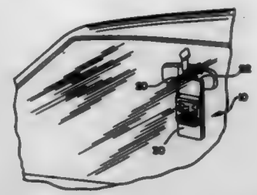
PORTABLE TIME METERING DEVICE

Ralph H. Carmen, Merritt Island, Fla., assignor to Duncan Industries Parking Control Systems Corp., Harrison, Ark.

Filed Oct. 1, 1993, Ser. No. 130,587

Int. Cl.[6] G07B *15/02*

U.S. Cl. 235—384 **20 Claims**



1. A time metering device useful as an in-car parking meter for metering parking time in any one of a plurality of zones, the device comprising:

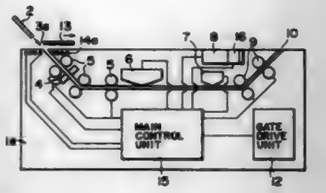
a plurality of bank registers, each bank register having stored therein a monetary value and each of the plurality of zones corresponding to a one bank register;

means for selectively determining whether a sufficient monetary value is stored in a corresponding bank register of a selected zone to allow parking in the selected zone for a specified amount of time;

means for selectively determining a total amount of the specified amount of time parked in the selected zone; and,

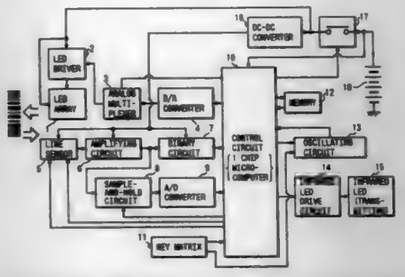
means for deducting from the monetary value of the corresponding bank register in accordance with the total amount of the time parked.

5,382,781
DATA READER FOR NON-CONTACT AND CONTACT IC CARDS
Takeshi Inoue, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 26, 1993, Ser. No. 141,021
Claims priority, application Japan, Oct. 27, 1992, 4-289014
Int. Cl.[6] G07B *15/02*
U.S. Cl. 235—384 **4 Claims**



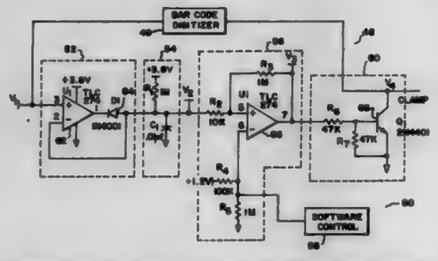
1. A data processing apparatus commonly using a contact type card and a non-contact type card comprising:
a loop-shaped antenna for transmitting data to and receiving data from a non-contact type card;
a card inserting port for receiving a contact type card and located within said loop-shaped antenna;
card fetching and discharging means for fetching and discharging a contact type card inserted into said card inserting port;
data reading and writing means for reading and writing data into a contact type card; and
control means connected to said data reading and writing means and said antenna for processing data and to said card fetching and discharging means to control the fetching and discharging of contact type card.

5,382,782
CIRCUIT FOR ADJUSTING SENSITIVITY OF OPTICAL CHARACTER READER AND METHOD THEREOF
Kazuo Hasegawa, and Junichi Ouchi, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1993, Ser. No. 157,757
Claims priority, application Japan, Dec. 3, 1992, 4-324252
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—455 **6 Claims**



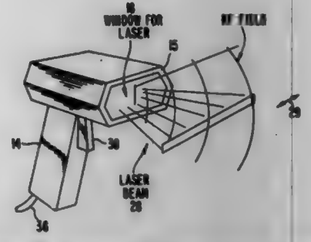
1. A circuit for adjusting the sensitivity of an optical character reader feeding light emitted from a light source formed of a plurality of light emitting materials to an information-recorded medium in which information is optically recorded; said optical character reader reading said information by sensing the reflected light from said information-recorded medium by a line sensor; said circuit comprising:
means for starting to adjust sensitivity by operating said light source and said line sensor in order to read a reference material to which sensitivity adjustment is made, said reference material having uniform optical reflectivity on the surface, so that said light source emits light and said line sensor reads the reflected light from the surface of said reference material;
analog-digital converting means for converting an analog signal from said line sensor into a digital signal;
means for determining the amount of light by determining the discrepancy between the amounts of light depending on the different portions of said line sensor by said digital signal from said analog-digital converting means;
means for creating a current corrected value indicative of a driving current flowing to each said light emitting material based upon determination of the amount of light-determination means in order to adjust the amount of light emitted from each said light emitting material forming said light source in accordance with said discrepancy between the amounts of light depending on the different portions of said line sensor;
memory means for storing said current corrected value; and
means for adjusting a driving current flowing to each said light emitting material; said means calling said current corrected value from said memory means so as to feed said current being corrected on the basis of said current corrected value to each said light emitting material.

5,382,783
FALSE BAR CODE INHIBITOR CIRCUIT
Edward C. Bremer, Rochester, N.Y., assignor to PSC Inc., Webster, N.Y.
Filed May 10, 1993, Ser. No. 59,797
Int. Cl.[6] G06K *7/10, 7/14*
U.S. Cl. 235—462 **9 Claims**



1. A false bar code inhibitor circuit for a bar code reader, the bar code reader generating an electric signal in response to light detected by the reader which is returned from a bar code, the bar code reader having a digitizer for generating a first derivative signal of the electrical signal, said inhibitor circuit comprising;
a detector for outputting a detection signal having either a first or a second detection state, said detector set to output the detection signal having the first detection state when a transition from either a low to a high or high to low state in the first derivative signal is detected;
a signal restorer including a capacitor set to output a restorer signal by when said capacitor is charged to a preset level, said signal restorer triggered to discharge the capacitor from the preset level each time the detection signal is in the first detection state and to recharge the restorer signal to the preset level within a predetermined time after the detector is set to output the detection signal in the second detection state;
a comparator for comparing the restorer signal against a limit and providing a comparator signal having a first comparator state when the restorer signal is below said limit and having a second comparator state when the restorer signal is above said limit;
an adjuster for adjusting the value of said limit; and
a clamp for inhibiting the digitizer from outputting the electric signal when the comparator signal is in the first comparator state.

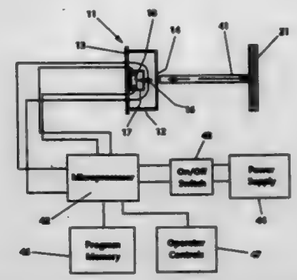
5,382,784
HAND-HELD DUAL TECHNOLOGY IDENTIFICATION TAG READING HEAD
Noel H. Eberhardt, Capertino, Calif., assignor to Indala Corporation, San Jose, Calif.
Filed Feb. 8, 1993, Ser. No. 14,523
Int. Cl.[6] G06F *7/10*
U.S. Cl. 235—472 **11 Claims**



1. A hand-held dual code reading head comprising:
a hand-held housing having a light transmissive window at one end thereof;
an actuatable bar code reader disposed in said housing and including a light source for producing a beam of light directed along a path to exit said housing via said window toward a bar-code tag, scanning means for scanning said light beam along a scan line across the bar code tag and a light sensor for detecting the intensity of light from said light beam reflected from a bar code and for producing an electrical signal corresponding thereto;
an actuatable radio frequency tag reader for producing a radio frequency signal of a first frequency for energizing a radio frequency identification tag and for detecting a radio frequency identifying signal of a second frequency produced by an energized tag and producing a corresponding output signal, said tag reader being disposed in said housing and including a coil which is mounted within the housing at said one end of said housing so as to avoid said light path and circuit means connected to said coil for producing said corresponding output signal; and,
means, which are manually actuatable by a user of said reading head, for selectively actuating one of said bar code reader and said radio frequency tag reader.

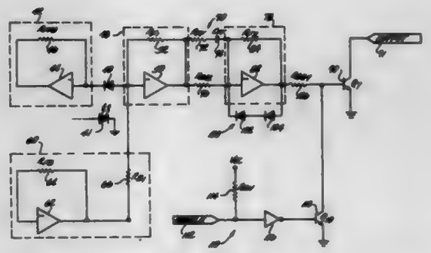
5,382,785
LASER BEAM DELIVERY PATH AND TARGET PROXIMITY SENSOR
John L. Rink, San Francisco, Calif., assignor to Diolase Corporation, Berkeley, Calif.
Continuation-in-part of Ser. No. 877,746, May 4, 1992, Pat. No. 5,262,636. This application Nov. 15, 1993, Ser. No. 153,310
Int. Cl.[6] G01J *1/32*
U.S. Cl. 250—205 **9 Claims**

1. An operating system for a laser diode device, including;
a laser diode for emitting a laser beam along a beam delivery path;
photosensor means disposed proximate to said laser diode to receive laser diode light reflected retrograde in said beam delivery path and generate a photodiode signal;
sampling pulse means for driving said laser diode to emit a brief sampling pulse upon power-up of said operating system;
means for comparing said photodiode signal during said brief sampling pulse to a predetermined beam path threshold level; and,



means for warning of an occluded beam delivery path if said photodiode signal exceeds said predetermined beam path threshold level.

5,382,786
INTEGRATED PHOTODETECTOR WITH MOVING DESTINATION CIRCUIT
Ralph E. Lovelace, Los Gatos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 6, 1993, Ser. No. 43,661
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214 A **12 Claims**

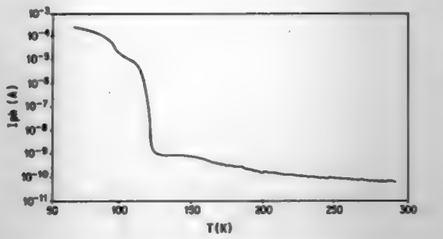


1. A photodetector circuit comprising:
a photodetector for generating an input current pulse in response to light;
an amplifier coupled to the photodetector for converting the input current pulse to an amplifier output signal that trends from an initial value to a final value; and
shifting means coupled to the amplifier for temporarily shifting the trend of the amplifier output signal to an intermediate destination value different from the final value of the amplifier output signal.

5,382,787
PHOTOCONDUCTIVE MATERIAL
Jun Takada; Akihiko Nakajima, and Yoshihisa Tawada, all of Hyogo, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan
Filed Jul. 7, 1992, Ser. No. 909,901
Claims priority, application Japan, Jul. 9, 1991, 3-193960; Feb. 18, 1992, 4-081347
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214.1 **4 Claims**

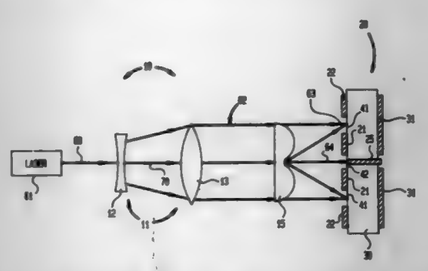
1. A photoconductive method comprising irradiating a substance having a perovakite structure, whose crystal structure can undergo phase transition, with a light beam having an energy in a range of 3eV to 5eV; and varying a light intensity of the light beam at an ambient temperature in a range lower

than 150 K. and around a structural phase transition temperature of said substance, thereby varying a structural phase tran-



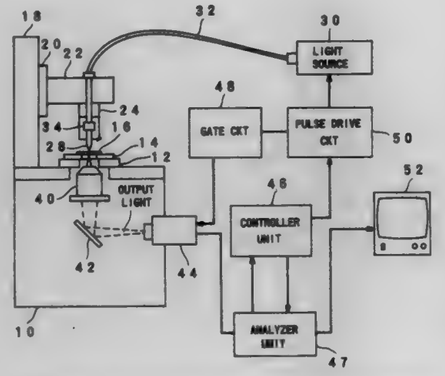
sition temperature of said substance and changing photoconductivity of said substance.

5,382,788
MONOLITHIC PHOTOCONDUCTIVE BIPOLAR PULSAR UTILIZING A RADIAL TRANSMISSION LINE
Anderson H. Kim, Toms River; Robert J. Youmans, Brick; Maurice Weiner, Ocean, and Lawrence E. Kingsley, Shrewsbury, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 16, 1993, Ser. No. 105,314
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214.1 **1 Claim**



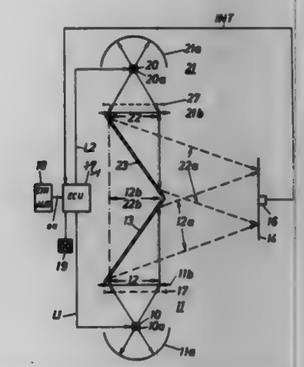
1. A photoconductive ultra-wideband impulse generating device, comprising:
a radial transmission line impulse generator comprising an outer and an inner cylindrical storage medium, said mediums are concentric to each other but separated by a first photoconductive gap, said mediums having a concentric circle positioned within said inner storage medium but separated from said inner medium by a second photoconductive gap, said first and second gaps comprising switches for triggering and terminating the discharge of said storage mediums, said inner and outer mediums charged to a predetermined +Vo and −Vo, respectively; and
an optical means for illuminating said first and second photoconductive gaps to trigger and terminate the discharge of said mediums such that a high voltage gain bipolar pulse is radiated from said impulse generator, said optical means comprising a galilean expander and a toroidal lens positioned in series with a laser beam such that an annulus of light is directed at said first gap to trigger said discharge and a center beam is directed at said second gap to terminate said discharge.

5,382,789
NEAR FIELD SCANNING OPTICAL MICROSCOPE
Shinichiro Aoshima, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan
Filed Apr. 6, 1992, Ser. No. 864,238
Claims priority, application Japan, Apr. 5, 1991, 3-073054
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—216 **18 Claims**



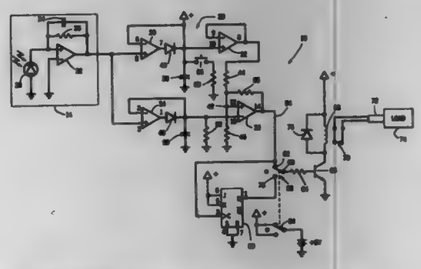
1. A near field scanning optical microscope comprising:
a light source for generating light to be radiated on a sample which is positioned in a sample set position, where the intensity of said light is changed in a pulse-like manner;
near filed optical means for outputting light corresponding to said sample, where said near field optical means has an aperture through which said light passes facing said sample set position, said aperture being movable in a direction substantially perpendicular to a surface of said sample;
receiving means for receiving light from said sample;
scanning means for two-directionally scanning said sample on a plane perpendicular to a moving direction of said aperture;
supplying means for supplying said light from said light source to said sample set position through said aperture;
detecting means for detecting said light from said near field optical means after a predetermined time has elapsed from when a light pulse generated by said light source rises, for converting said detected light into an electrical signal in synchronization with said intensity of said pulse-like light, and for outputting said electrical signal; and
sub-probe means for determining a difference between said light supplied by said supply means and said light output from said near field optical means using said detecting means electrical signal output,
wherein a time interval between a time when said light pulse generated by said light source rises and a time when said detecting means detects said light output from said near field optical means is adjustable,
said detecting means isolates and detects light having a predetermined wavelength different from that of a light pulse generated by said light source,
said sub-probe means detects data on a surface configuration of said sample at said sample position, and
said optical probe means moves said aperture corresponding to an output from said sub-probe means to maintain a predetermined distance between said surface of said sample and said aperture.

5,382,790
ILLUMINATION DEVICE HAVING BEAM SPLITTING POLARIZATION MEANS
Christophe Robillard, Marly-le-Roi, France; Susan Ayari, Kehl-Goldscheuer, Germany, and Eric Marcellin-Dibon, Strasbourg, France, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany
Filed Mar. 23, 1993, Ser. No. 35,397
Claims priority, application Germany, Jul. 24, 1990, 4023452
Int. Cl.[6] G02F *1/00*
U.S. Cl. 250—216 **7 Claims**



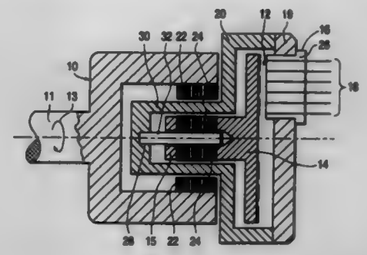
1. A device for illuminating a rough surface area comprising:
means for focussing a light ray from a first light source into a beam;
polarization means for splitting said beam into an effective beam having a first polarization direction and a complimentary beam having a second polarization direction, said polarization means reflecting said effective beam toward said rough surface and transmitting said complementary beam;
said rough surface having a roughness at least an order of magnitude greater than the wavelength of said light for diffusing and reflecting at least a portion of said complementary beam back to said means for focussing and for reflecting another portion to said area.

5,382,791
DUAL MODE SWITCH FOR HANDICAPPED
Ruth B. Leff, and Aaron N. Leff, both of 6589 N. Crestwood Dr., Milwaukee, Wis. 53209
Filed Mar. 15, 1994, Ser. No. 213,098
Int. Cl.[6] G01V *9/04*
U.S. Cl. 250—221 **11 Claims**



1. A light responsive control switch comprising:
a photosensor;
detection circuitry responsive to said photosensor and outputting a trigger signal when light impinging said photosensor changes from a first condition to a second condition;
a selection switch having a first condition comprising a momentary mode, and a second condition comprising a latching mode;
an output switch actuated by said trigger signal between first and second states for controlling energization of a load,
such that when said selection switch is in said first condition, said output switch is actuated to said first state by said trigger signal, and is actuated to said second state in response to removal of said trigger signal due to said impinging light changing from said second condition to said first condition,
and when said selection switch is in said second condition, said output switch is actuated to said first state by said trigger signal and remains in said first state upon removal of said trigger signal due to said impinging light changing from said second condition to said first condition, and is actuated to said second state in response to another trigger signal due to said impinging light changing from said first condition to said second condition.

5,382,792
ANGLE SENSOR WITH HERMETIC SEALING AND MAGNETIC COUPLING
Kurt Hurst, Stuttgart; Klaus Brill, Korntal-Muenchingen, and Hans Braun, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE91/00721, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993
PCT Filed Sep. 10, 1991, Ser. No. 30,401
Claims priority, application Germany, Sep. 25, 1990, 4030229
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—231.13 **15 Claims**



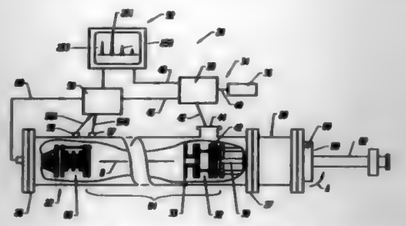
1. A no-contact angle sensor for monitoring the rotational displacement angle of a rotatably mounted device, said sensor comprising: a first component mounted for rotation together with the device to be monitored; an optical measuring device for determining the rotational displacement angle of said first component and including a second component which carries a coding disc having markings related to angular displacement, which is mounted within a hermetically sealed housing for rotation coaxially with said first component, and which has a portion which extends radially adjacent said first component; and a magnetic coupling arrangement between said first component and said portion of said second component of said measuring device, with said magnetic coupling arrangement including at least one pair of magnets with one magnet of each said pair of magnets being provided on said first component and a further magnet of each said pair of magnets being provided on said portion of said second component of said measuring device opposite said one magnet such that said measuring device is actuated by the magnetic field of said one magnet moving with the device to be monitored of each said pair of magnets.

5,382,793

LASER DESORPTION IONIZATION MASS MONITOR (LDIM)

Scot R. Weinberger; Robert W. Egan; Thomas W. Hoppe, all of Reno, Nev.; Ernst Gassmann, Hofstetten; Martin M. Schar, Spiegel, both of Switzerland; Klaus O. Bornsen, Staufen, Germany, and E. Rocco Tarantino, Reno, Nev., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 6, 1992, Ser. No. 847,450
Int. Cl.[5] H01J *49/00*
U.S. Cl. 250—288 **21 Claims**



1. An apparatus for measuring the mass of desorbed and ionized organic molecules which are desorbed and ionized by laser irradiation of a homogeneous mixture of a host matrix and said organic molecules, said apparatus comprising:

a detector for detecting said desorbed ionized molecules;

ion optics for directing said desorbed ionized molecules to said detector;

said detector and said ion optics located in a first vacuum chamber having a vacuum therein; and

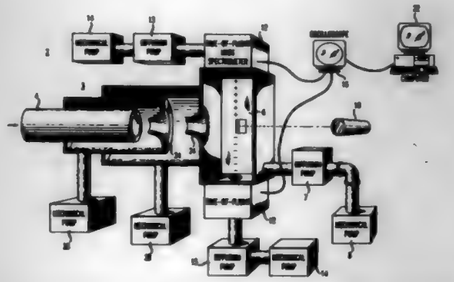
a second vacuum chamber mounted on said first vacuum chamber, said second chamber including means for holding a plurality of probe tips each having a tip face covered with a layer of said mixture, and means for removably inserting a predetermined one of said probe tips into said ion optics without breaking said vacuum in said first vacuum chamber.

5,382,794

LASER INDUCED MASS SPECTROMETRY

Stephen W. Downey, Chatham; Adrian B. Emerson, Piscataway; Anthony M. Mujace, Berkeley Heights; Amy J. Muller, Warren; William D. Reents, Jr., Middlesex; James D. Sinclair, Summit, and Alka Swanson, New Providence, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 944,133, Sep. 11, 1992, abandoned. This application Dec. 29, 1993, Ser. No. 175,164
Int. Cl.[6] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—288 **18 Claims**



1. An apparatus for simultaneously determining the size, number concentration and composition of particles spanning the size range of at least 0.01–1.0 micron in a gas stream, the apparatus comprising:

a) an evacuable chamber;

b) means for introducing particle laden gas into said chamber, said means comprising an inlet port;

c) laser means for fragmenting at least some of the particles in said gas, and for ionizing at least some of the fragments;

Characterized in That

d) the laser means provides a laser beam comprising a sequence of pulses of width less than 50 ns;

e) said apparatus comprises a detector means to simultaneously

(i) detect the number of ionized fragments thereby facilitating the determination of the particle size;

(ii) the mass and charge of the ionized fragments thereby facilitating the determination of the particle composition; and

(iii) the frequency of fragmentation incidents thereby facilitating the determination of the particle concentration in the gas stream; and

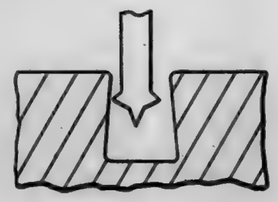
f) said apparatus comprises a means capable of bringing said beam to a focus at a point in close proximity to said inlet port along a path taken by said particles.

5,382,795

ULTRAFINE SILICON TIPS FOR AFM/STM PROFILOMETRY

Thomas Bayer, Sindelfingen; Johann Greschner, Pliezhausen, both of Germany; Yves Martin, Briarcliff Manor, N.Y.; Helga Weiss, Boeblingen, Germany; Hemantha K. Wickramasinghe, Chappaqua, N.Y., and Olaf Wolter, Aidlingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 72,898, Jun. 7, 1993, abandoned, which is a division of Ser. No. 568,451, Aug. 16, 1990, Pat. No. 5,242,541. This application Mar. 10, 1994, Ser. No. 209,682
Claims priority, application Germany, Aug. 16, 1989, P3915097
Int. Cl.[6] G01B *7/34*
U.S. Cl. 250—306 **13 Claims**



1. An ultrafine tip for AFM/STM profilometry of trenches having sidewalls, comprising:

a shaft portion having a length sufficient for said ultrafine tip to reach into a trench to be profiled; and

a tip portion at the end of said shaft portion and integral therewith;

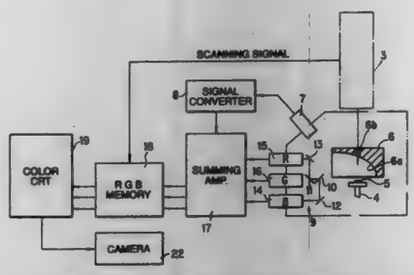
said tip portion including a region of increasing cross-section forming a circumferential edge protruding from said shaft portion for approaching an undercut trench sidewall without having said shaft portion approach said undercut sidewall more closely.

5,382,796

APPARATUS FOR MORPHOLOGICAL OBSERVATION OF A SAMPLE

Hirotami Koike, Tokyo, Japan, assignor to Kabushiki Kaisha TOPCON, Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,270
Claims priority, application Japan, May 22, 1992, 4-130966
Int. Cl.[6] H01J *37/256*
U.S. Cl. 250—310 **3 Claims**



1. An apparatus for morphological observing of a sample comprising:

an illumination system for bombarding said sample with charged particles;

a photon detection system for detecting cathodoluminescence emitted from a part of said sample due to bombardment with said charged particles;

an electron detector for detecting electrons from said part of said sample surface upon bombardment with the charged particles; and

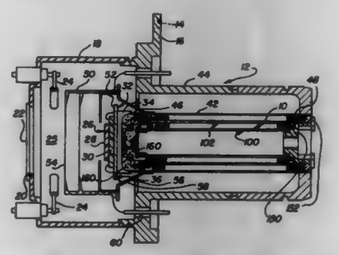
a signal processing unit for superimposing a morphological image signal from said electron detector, and a cathodoluminescence signal from said photon detection system, and a display unit for displaying a cathodoluminescence image and a morphological image of said part of said sample in a superimposed condition relative to each other in accordance with said superimposed signal.

5,382,797

FAST COOLDOWN CRYOSTAT FOR LARGE INFRARED FOCAL PLANE ARRAYS

Wallace Y. Kunimoto, and Arthur A. Eneim, both of Goleta, Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Dec. 21, 1990, Ser. No. 632,196
Int. Cl.[6] G01J *5/06*
U.S. Cl. 250—352 **23 Claims**



1. A cryostat apparatus for use in a detector assembly of the type having an evacuated dewar for simultaneously cooling a detector and a coldshield supported on a focal platform, the focal plane being in thermal communication with a cold end portion of a cold finger tube for defining an expansion chamber within the detector assembly, comprising:

an outer cryostat axially disposed with the cold finger tube, said outer cryostat having a first tubular mandrel and a first end-cap configured to enclose said first mandrel, said first end cup having a raised central portion positioned so that there is provided a relatively high thermal conductivity path to said cold end portion;

a first supply tube wrapped around an outer peripheral wall surface of said first mandrel for supplying a pressurized cryogen for cooling a first region located adjacent the focal platform and proximate the cold end of the cold finger tube around said raised central portion of said first end cap;

first orifice means associated with said first supply tube for discharging said pressurized cryogen within said first region for cooling the focal platform and the detector;

second orifice means associated with said first supply tube for discharging said pressurized cryogen for cooling the coldshield;

an inner cryostat axially disposed within said first mandrel, said inner cryostat having a second tubular mandrel and a second end-cap configured to enclose said second mandrel, said second end-cap displaced from said first end-cap to define a second region to be cooled;

a second supply tube wrapped around an outer peripheral wall surface of said second mandrel for supplying a pressurized cryogen to said second region to be cooled;

third orifice means associated with said second supply tube for discharging said pressurized cryogen within said second region for cooling the focal platform and the detector; and

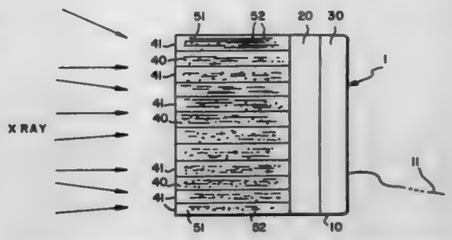
fourth orifice means associated with said second supply tube for discharging said pressurized cryogen for cooling said outer cryostat.

5,382,798

IONIZING RADIATION SENSOR USED IN A SYSTEM OF RADIOGRAPHIC IMAGING

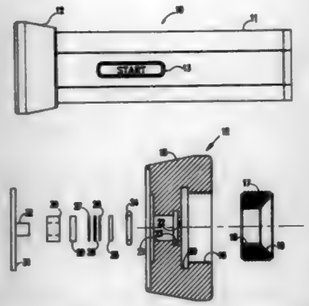
Francis Mouyen, Chemin de Gojousse, Vielle-Toulouse, France F-31320

PCT No. PCT/FR92/00118, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO92/13492, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 11, 1992, Ser. No. 941,082
Claims priority, application France, Feb. 11, 1991, 91 01971
Int. Cl.[6] G01T *1/20*
U.S. Cl. 250—370.11 **10 Claims**



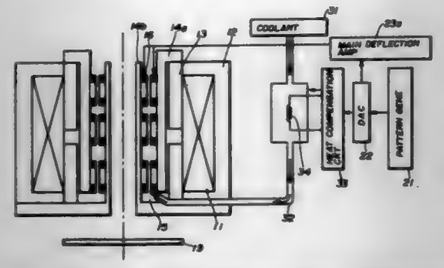
1. Ionizing radiation sensor usable in a radiographic imaging system, said sensor comprising a charge-coupled device coupled to a scintillator element and a filter means for impeding the passage of ionizing radiation not transformed by said scintillator element, characterized in that said filter means is formed by the combination of a non-optical element comprising a group of tubular guides, wholly or partly metallic, and of said scintillator element, said tubular guides having common walls, said scintillator element being housed in said non-optical element, said scintillator element being a scintillating material charged with absorbant particles.

5,382,799
ULTRAVIOLET INTENSITY METER
Joe T. May, Leesburg, Va., assignor to Electronic Instrumentation and Technology, Inc., Sterling, Va.
Filed Dec. 14, 1993, Ser. No. 170,083
Int. Cl.[6] G01J *1/00*
U.S. Cl. 250—372 16 Claims



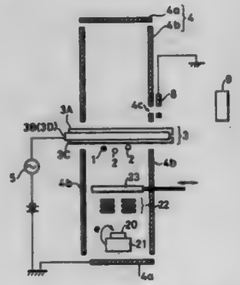
1. An ultraviolet intensity meter comprising a generally cylindrical body and a measuring head secured to one end of the cylindrical body, said measuring head having a recess, an adapter within said recess for receiving a light guide which emits a spot of ultraviolet energy, said communicating said ultraviolet energy to an ultraviolet detector within the meter body through a diffuser window and an attenuator plate said body containing an electronic circuit responsive to an output of said ultraviolet detector and a battery for powering the electronic circuit, said body having a switch, on an exterior surface thereof and connected to the electronic circuit for turning the circuit on for making a measurement, and a numerical display, also on an exterior surface thereof and connected to the electronic circuit for displaying a measured level of ultraviolet intensity.

5,382,800
CHARGED PARTICLE BEAM EXPOSURE METHOD AND APPARATUS
Hisayasu Nishino; Akio Yamada; Yoshihisa Ose, and Hiroshi Yasuda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Jan. 4, 1993, Ser. No. 39
Claims priority, application Japan, Jan. 13, 1992, 4-004195
Int. Cl.[6] H01J *3/32*
U.S. Cl. 250—396 ML 20 Claims



1. A charged particle beam exposure method for deflecting a charged particle beam in a deflection system which includes electromagnetic deflection coils, said charged particle beam exposure method comprising the steps of:
(a) controlling the deflection system based on deflection data including currents applied to the electromagnetic deflection coils; and
(b) generating heat based on deflection data including said currents applied to the electromagnetic deflection coils in at least a vicinity of the electromagnetic deflection coils so as to compensate for a change in heat generated from the electromagnetic deflection coils.

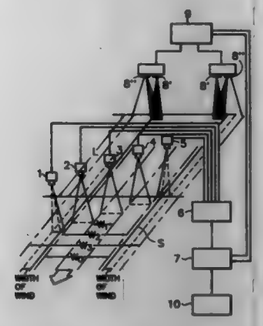
5,382,801
METHOD FOR PRODUCING MINUTE PARTICLES AND APPARATUS THEREFOR
Toshihiko Kanayama, Tsukuba, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan
Filed Mar. 23, 1993, Ser. No. 35,688
Claims priority, application Japan, Apr. 15, 1992, 4-121189
Int. Cl.[6] B01D *59/44*
U.S. Cl. 250—423 R 19 Claims



1. A method for producing minute particles, comprising the steps of:
forming a region defined by establishment of an electric field so that particles with electric charges are maintained therein;
supplying nucleating particles with electric charges to said region;
holding said nucleating particles within said region;
supplying at least one kind of source particles to said region;
uniting the source particles or a constituent thereof with said nucleating particles to form minute particles with electric charges; and
holding said minute particles with electric charges within said region until said minute particles grow by said uniting step to have a desired particle size.

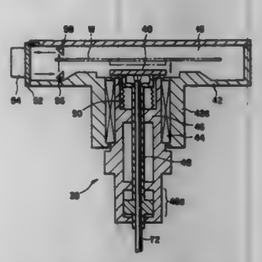
5,382,802
METHOD OF IRRADIATING RUNNING STRIP WITH ENERGY BEAMS
Yoshinori Anabuki, and Eiji Hina, both of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan
Filed Aug. 19, 1993, Ser. No. 109,180
Claims priority, application Japan, Aug. 20, 1992, 4-221499
Int. Cl.[6] B41L *3/02*
U.S. Cl. 250—492.1 4 Claims

1. In a method of irradiating a continuously-running strip with a plurality of energy-beam irradiating devices positioned along the width of said strip, each said device being oriented to a designated scanning region on said strip, said method comprising the steps of:
(a) allocating selected scanning regions along the width of said strip, each to receive the energy-beam from a corresponding one of said respective energy-beam irradiating devices; and
(b) detecting, at a location upstream of said energy-beam irradiating devices, the amount of a deviation of the position of a strip edge in real time; and
(c) modifying said selected regions scanned by said respective energy-beam irradiating devices in response to the amount of said deviation of said position of said strip,



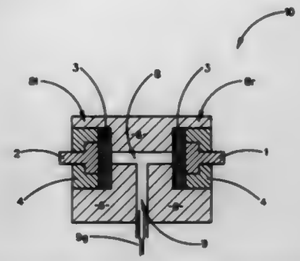
thereby continuously scanning said selected regions on said strip by said scanned energy-beam irradiating devices.

5,382,803
ION INJECTION DEVICE
Teruo Asakawa, Yamanashi, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Filed May 28, 1992, Ser. No. 889,195
Claims priority, application Japan, May 28, 1991, 3-153860; Jun. 20, 1991, 3-175979
Int. Cl.[6] H02N *13/00*
U.S. Cl. 250—492.21 7 Claims



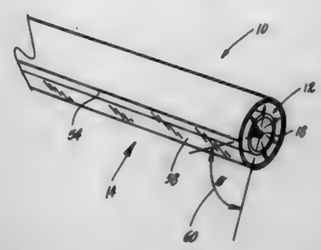
1. A position detecting device comprising:
a vacuum chamber in which an atmosphere is evacuated;
a rotatable holding table provided in the vacuum chamber for holding a semiconductor wafer thereon;
rotary driving means for rotating the holding table;
detection means for detecting the position of the wafer;
a holding portion provided on the holding table for electrostatically holding the wafer, the holding portion being made of a dielectric member;
an electrode unit located below the holding portion substantially in parallel with an upper surface of the holding portion, the electrode unit having a plurality of electrodes separated from one another, the electrode unit including terminals;
voltage application means for applying voltage between the electrodes through the terminals;
control means for controlling the application and interruption of voltage between the electrodes; and
means for isolating the terminals from the vacuum in the vacuum chamber to maintain the terminals at a pressure greater than that in the vacuum chamber and thereby prevent vacuum discharge across the terminals.

5,382,804
COMPACT PHOTOINIZATION SYSTEMS
Arthur P. D'Silva, Ames, Iowa, assignor to CETAC Technologies Inc., Omaha, Nebr.
Filed Jul. 15, 1993, Ser. No. 91,253
Int. Cl.[6] G21G *4/00*
U.S. Cl. 250—493.1 7 Claims



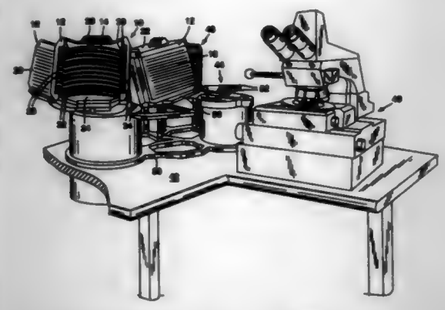
1. A photoionization lamp of the type including a contained gas and electrodes for providing electrical excitation thereto, in which the improvement comprises fabrication thereof in a block of machinable photon radiation transparent material such that said contained gas and electrodes are contained directly within a hole machined thereinto without the need for additional gas containing elements in said machined hole other than gas entry sealing means, and such that during use, radiation produced therein by application or electrical energy to said electrodes can escape therefrom in essentially any direction not blocked by said electrodes.

5,382,805
DOUBLE WALL INFRARED EMITTER
Mark G. Fannon, 14462 Grenwich, 213-B, Shelby Township, Macomb County, Mich. 48315, and John J. Fannon, III, 725 Westchester, Grosse Pointe Park, Mich. 48230
Filed Nov. 1, 1993, Ser. No. 146,480
Int. Cl.[6] H01K *1/28*
U.S. Cl. 250—504 R 18 Claims



1. An infrared energy emitter comprising:
a longitudinally extending energy emitting filament;
a longitudinally extending tubular enclosure of infrared energy transmitting material enclosing the filament;
a longitudinally extending outer tubular sheath of infrared energy transmitting material having two ends and a central longitudinal section therebetween;
a reflector comprising a reflective coating on a surface of the sheath extending partially circumferentially with the sheath; and
the central longitudinal section of the sheath being spaced apart from the enclosure about the entire circumference of the enclosure sufficiently to protect the reflective coating from the infrared energy being emitted by the filament.

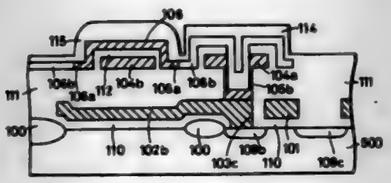
5,382,806
SPECIMEN CARRIER PLATFORM AND SCANNING ASSEMBLY
Paul E. Bacchi, Novato; Manuel J. Robalino, San Francisco, and Paul S. Filipski, Greenbrae, all of Calif., assignors to Kensington Laboratories, Inc., Richmond, Calif.
Continuation-in-part of Ser. No. 697,319, May 7, 1991, abandoned. This application Nov. 4, 1992, Ser. No. 972,183
Int. Cl.[6] G01V *9/04*
U.S. Cl. 250—561 **33 Claims**



1. A specimen carrier carousel comprising:
a plurality of tiltable carrier platforms arranged in a radial configuration, each carrier platform adapted to support a specimen carrier having specimens positioned therein in a first orientation wherein the specimens are aligned on a first plane and a second, tilted orientation wherein the specimens are aligned on a second plane tilted from the first plane; and
means for adjusting the carrier platforms between the first and second orientations.

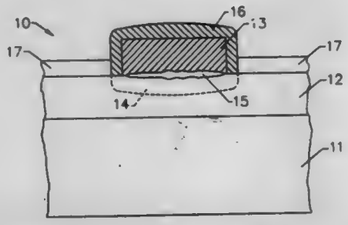
9. A specimen carrier carousel according to claim 1, additionally comprising a scanning assembly having a signal source and a corresponding signal sensor adapted to scan specimens arranged in a stacked relationship in a specimen carrier supported on a carrier platform and detect the presence and location of specimens in the carrier.

5,382,807
FIELD EFFECT THIN FILM TRANSISTOR AND STATIC-TYPE SEMICONDUCTOR MEMORY DEVICE PROVIDED WITH MEMORY CELL HAVING COMPLEMENTARY FIELD EFFECT TRANSISTOR AND METHOD OF MANUFACTURING THE SAME
Kazuhito Tsutsumi; Motoi Ashida, and Yasuo Inoue, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 878,830, May 5, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 192,761
Claims priority, application Japan, May 9, 1991, 3-104516
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—69 **17 Claims**



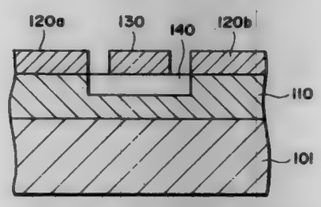
8. A semiconductor device, comprising:
a first conductivity-type semiconductor substrate having a main surface;
a second conductivity-type field effect transistor formed on the main surface of said semiconductor substrate; and
a first conductivity-type field effect transistor electrically connected to said second conductivity-type field effect transistor,
wherein said first conductivity-type field effect transistor includes:
a gate electrode above said second conductivity-type field effect transistor,
a gate insulating film on said gate electrode,
a thin semiconductor film on said gate insulating film and surrounding said gate electrode, a portion of said thin semiconductor film forming a channel region, and
first conductivity-type source and drain impurity regions having upper surfaces formed entirely in coplanar portions of said thin semiconductor film separated by the channel region and beneath the plane defined by the upper surface of said gate electrode,
wherein at least one of said impurity regions includes:
(i) a first impurity region close to said gate electrode having impurities of the first conductivity type of a first concentration and
(ii) a second impurity region adjacent said first impurity region having impurities of the first conductivity type of a second concentration higher than said first concentration.

5,382,808
METAL BORIDE OHMIC CONTACT ON DIAMOND AND METHOD FOR MAKING SAME
David L. Dreifus, Cary, and Gary A. Ruggles, Raleigh, both of N.C., assignors to Kobe Steel, USA Inc., Research Triangle Park, N.C.
Filed May 14, 1993, Ser. No. 62,350
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—77 **18 Claims**



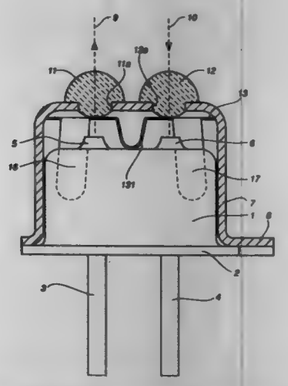
1. A semiconductor device comprising:
a first layer comprising semiconducting diamond, said first layer including a highly boron-doped surface portion, said highly boron-doped surface portion having a dopant level of at least about 10^{19} cm^{-3}; and
a second layer on the highly boron-doped surface portion of said first layer, said second layer comprising a metal boride and forming an ohmic contact with said first layer, the metal of said metal boride being capable of forming a carbide, said metal boride layer having substantially stoichiometric relative proportions of a metal and boron.

5,381,809
SEMICONDUCTOR DEVICE INCLUDING SEMICONDUCTOR DIAMOND
Yoshiki Nishibayashi; Tadashi Tomikawa, and Shinichi Shikata, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Sep. 9, 1993, Ser. No. 118,940
Claims priority, application Japan, Sep. 14, 1992, 4-244723; Aug. 30, 1993, 5-214192; Aug. 31, 1993, 5-216286
Int. Cl.[6] H01L *29/78, 29/16, 29/167*
U.S. Cl. 257—77 **21 Claims**



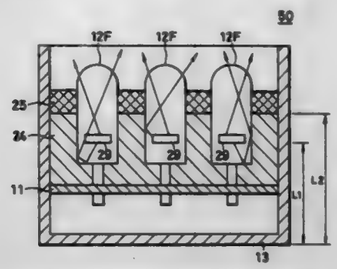
1. A semiconductor device, comprising: a source electrode and a drain electrode disposed on a substrate; a channel region located between the source and drain electrodes, which comprises p-type diamond as a main component; a gate electrode disposed on the channel region; and an intermediate region formed between the channel region and the gate electrode, which comprises diamond doped with at least an n-type dopant.

5,382,810
OPTOELECTRONIC COMPONENT
Jan Isaksson, Täby, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden
PCT No. PCT/SE93/00064, § 371 Date Aug. 16, 1993, § 102(e) Date Aug. 16, 1993, PCT Pub. No. WO92/16021, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 4, 1992, Ser. No. 104,127
Claims priority, application Sweden, Feb. 27, 1991, 9100560
Int. Cl.[6] H01L *23/02, 23/12*
U.S. Cl. 257—81 **16 Claims**



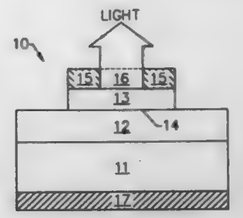
1. An optoelectronic component comprising at least one light-emitting or light-receiving semiconductor element which is arranged on a base, and a housing surrounding the base and forming together therewith a closed casing for said at least one semiconductor element, wherein the component comprises a building block having a plurality of legs shaped such that, when fitting the housing on the base, the legs are clamped between the base and the housing for centering and locking the housing in relation to the base.

5,382,811
HIGH CONTRAST LED MATRIX
Nozomu Takahashi, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 894,759, Jun. 5, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 215,971
Claims priority, application Japan, Jun. 7, 1991, 3-136832; May 11, 1992, 4-117489
Int. Cl.[6] H01L *33/00, 31/12, 31/16*
U.S. Cl. 257—88 **7 Claims**



1. An optical semiconductor device comprising:
a substrate;
a plurality of light emitting diodes arrayed in a matrix on said substrate;
a peripheral member for housing said substrate and said plurality of light emitting diodes;
a first layer formed of a white resin having a high reflection factor which can reflect light irradiated from said plurality of light emitting diodes, said first layer being disposed on an area of said substrate within said peripheral member and being penetrated by said plurality of light emitting diodes, for securing said plurality of light emitting diodes between said substrate and said peripheral member; and
a second layer formed of a black resin, said second layer being disposed on said first layer and being penetrated by said plurality of light emitting diodes.

5,382,812
DIAMOND AND II-VI HETEROJUNCTION SEMICONDUCTOR LIGHT EMITTING DEVICE
David L. Dreifus, Cary, N.C., assignor to Kobe Development Corporation, Research Triangle Park, N.C.
Filed Apr. 14, 1993, Ser. No. 47,709
Int. Cl.[6] H01L *33/00, 29/00, 49/00, 29/161*
U.S. Cl. 257—94 **29 Claims**



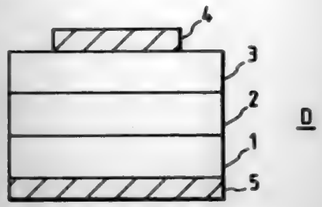
1. A light emitting semiconductor device comprising:
a first layer comprising an n-type semiconducting Group II-VI material; and
a second layer on said first layer, said second layer comprising p-type semiconducting diamond thereby forming a light emitting heterojunction with said first layer.

5,382,813

LIGHT EMISSION DIODE COMPRISING A PN JUNCTION OF P-TYPE AND N-TYPE A1-CONTAINING ZNS COMPOUND SEMICONDUCTOR LAYERS

Yoshio Morita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 9, 1993, Ser. No. 149,359
Claims priority, application Japan, Dec. 17, 1992, 4-336507
Int. Cl.[6] H01L *29/22, 29/227, 31/0296, 27/14*
U.S. Cl. 257—101 **7 Claims**



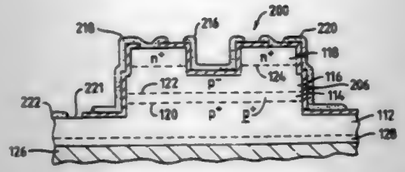
1. A pn junction-type light emission diode which comprises a semiconductor substrate of one conductivity type, and a ZnS compound semiconductor layer of the one conductivity type and a ZnS compound semiconductor layer of the other conductivity type formed on the semiconductor substrate in this order, at least one of the semiconductor layers containing aluminum in an amount ranging from 1 to 10 wt % of the total of ZnS and Al whereby the ZnS compound has a zincblende crystal structure in the at least one layer.

5,382,814

SEMICONDUCTOR DEVICE WITH LOW THERMALLY GENERATED LEAKAGE CURRENT

Timothy Ashley; Charles T. Elliott, and Colin R. Whitehouse, all of Worcester, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Nothern Ireland, United Kingdom

PCT No. PCT/GB91/02270, § 371 Date Aug. 12, 1993, § 102(e) Date Aug. 12, 1993, PCT Pub. No. WO92/12540, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 19, 1991, Ser. No. 84,280
Claims priority, application United Kingdom, Jan. 8, 1991, 9100351
Int. Cl.[6] H01L *27/14*
U.S. Cl. 257—197 **19 Claims**



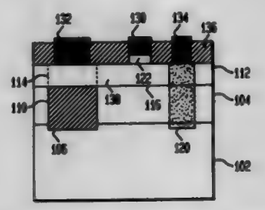
1. A semiconductor device having first, second and third semiconducting region connected in series for current input, current control and current output respectively and each arranged to be biased by a respective biasing means, wherein the device includes an extracting contact comprising a means for extracting minority carriers from the second region and the second region is of low doping and has a common interface with a fourth semiconducting region, said fourth semiconducting region having a common interface with a fifth semiconducting region, and wherein the fourth region:
(a) has like majority carrier type to that of the fifth region,
(b) is biasable through the fifth region and comprises an excluding contact means for excluding minority carriers from at least parts of the second region adjacent the third region and thereby to reduce the intrinsic contribution to current reaching the third region,
(c) has a bandgap sufficiently large to provide a potential energy barrier to minority carrier flow from the fifth region to the second region,
(d) has sufficiently high doping to counteract potential barrier impediment to majority carrier flow from the second region to the fifth region, and
(e) is less wide than a critical thickness associated with dislocation formation but sufficiently wide to inhibit tunnelling of minority carriers from the fifth region to the second region.

5,382,815

CARRIER CONDUCTION CONDUCTOR-INSULATOR SEMICONDUCTOR (CIS) TRANSISTOR

Shaikh N. Mohammad, Hopewell Junction; Robert B. Renbeck, Staatsburg, and Keith M. Walter, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1993, Ser. No. 173,388
Int. Cl.[6] H01L *31/072, 31/109, 29/00, 27/082*
U.S. Cl. 257—197 **20 Claims**



1. A Conductor Insulator Semiconductor (CIS) transistor comprising:
a substrate;
a first conduction layer of a first semiconductor material on said substrate layer;
a second conduction layer of a second semiconductor material on said first conduction layer;
a thin insulating pad on said second conduction layer;
a first electrode on said thin insulating pad; and
a second electrode and a third electrode on said second conduction layer,
wherein the second conduction layer includes a region of a first conduction type and a region of a second conduction type, said second conduction type region extending from said third electrode downward through said second conduction layer.

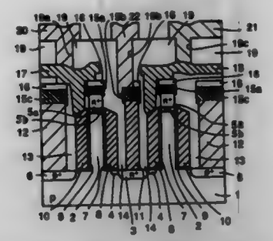
5,382,816

SEMICONDUCTOR DEVICE HAVING VERTICAL TRANSISTOR WITH TUBULAR DOUBLE-GATE

Katsuyoshi Mitsui, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1993, Ser. No. 69,036
Claims priority, application Japan, Jul. 3, 1992, 4-176791
Int. Cl.[6] H01L *29/10, 29/68, 29/78*
U.S. Cl. 257—266 **14 Claims**

1. A semiconductor device, comprising:
a semiconductor substrate of first type conductivity having a standing wall portion with inner and outer surfaces and extending in a tubular manner;
a first tubular gate electrode formed on the inner surface of said standing wall portion with a first gate insulating film therebetween;
a second tubular gate electrode formed on the outer surface of said standing wall portion with a second gate insulating film therebetween;
a first source/drain region of second type conductivity formed on the top end of said standing wall portion; and



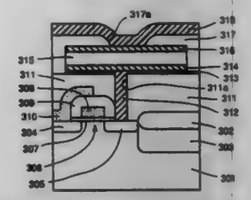
a second source/drain region of the second type conductivity formed on the bottom surface of said semiconductor substrate surrounded by the inner surface of said standing wall portion.

5,382,817

SEMICONDUCTOR DEVICE HAVING A FERROELECTRIC CAPACITOR WITH A PLANARIZED LOWER ELECTRODE

Keiichiro Kashihara, and Hiromi Itoh, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 20,082
Claims priority, application Japan, Feb. 20, 1992, 4-033577; Jan. 18, 1993, 5-006061
Int. Cl.[6] H01L *29/92*
U.S. Cl. 257—295 **8 Claims**



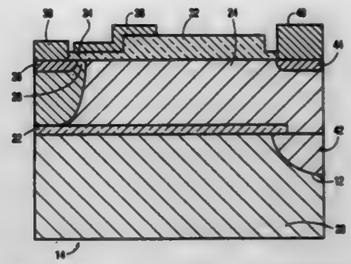
1. A semiconductor device, comprising:
a semiconductor substrate;
an insulating layer formed on said semiconductor substrate, and having its upper surface planarized with an aperture portion reaching said semiconductor substrate on a predetermined region;
a plug electrode layer formed as one body of at least one material selected from the group consisting of high melting point metals and high melting point metal nitrides, formed filling said aperture portion in contact with said semiconductor substrate in said aperture portion and extending on and along the upper surface of said insulating layer;
a capacitor lower electrode of high melting point noble metal formed on said plug electrode layer;
a ferroelectric layer formed on said capacitor lower electrode; and
a capacitor upper electrode formed on said ferroelectric layer.

5,382,818

LATERAL SEMICONDUCTOR-ON-INSULATOR (SOI) SEMICONDUCTOR DEVICE HAVING A BURIED DIODE

Howard B. Pein, Briarcliff Manor, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 8, 1993, Ser. No. 164,230
Int. Cl.[6] H01L *27/01, 27/13, 29/78*
U.S. Cl. 257—347 **5 Claims**



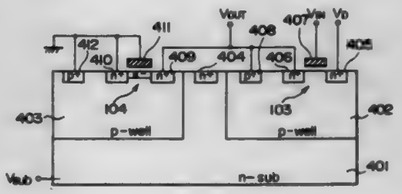
1. A lateral Semiconductor-on-Insulator (SOI) device comprising a substrate, a buried insulating layer on said substrate, and a lateral semiconductor device on said insulating layer, said semiconductor device comprising a source region of a first conductivity type, a channel region of a second conductivity type opposite to that of the first, an insulated gate electrode over said channel region, a lateral drift region of said first conductivity type at least partly on said buried insulating layer, and a drain contact region of said first conductivity type, laterally spaced apart from said channel region and connected thereto by said drift region, said substrate being of the second conductivity type, and a buried region of the first conductivity type in said substrate, adjacent a surface thereof, and beneath said drain contact region, said buried region forming a buried diode with said substrate, characterized in that said drift region comprises a continuous layer of substantially constantly and lightly-doped monocrystalline semiconductor material which also extends laterally into a region between said drain contact region and said buried region and electrically couples said buried region to said drain contact region.

5,382,819

SEMICONDUCTOR DEVICE HAVING MOS SOURCE FOLLOWER CIRCUIT

Atsushi Houjo, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

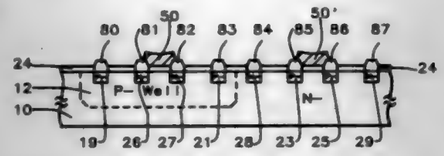
Filed Nov. 12, 1992, Ser. No. 974,471
Claims priority, application Japan, Nov. 12, 1991, 3-295816
Int. Cl.[6] H01L *27/02*
U.S. Cl. 257—371 **2 Claims**



1. A semiconductor device comprising:
a specific conducting type semiconductor substrate;
first and second wells of conducting type opposite to the conducting type of the semiconductor substrate, formed on the semiconductor substrate;

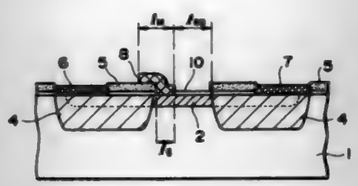
a first transistor formed on the first well to act as a driver transistor of a source follower circuit;
a second transistor having the same semiconductor type as that of the first transistor, formed on the second well to act as a load transistor of the source follower circuit; and
connection means for connecting the first well and a source of the first transistor to each other.

5,382,820
HIGH VOLTAGE CMOS DEVICE TO INTEGRATE LOW VOLTAGE CONTROLLING DEVICE
Sheng-Hsing Yang, Hsinchu, and Nai-Jen Yeh, Hsin Chu County, both of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China
Filed Dec. 8, 1993, Ser. No. 162,955
Int. Cl.[6] H01L *27/02, 21/265*
U.S. Cl. 257—371 **31 Claims**



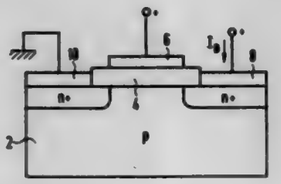
1. A semiconductor device comprising
a) a N—silicon substrate with an N— impurity,
b) a P—well with a P— impurity,
c) dopant ions of P— polarity in the surface of said substrate in a set of P— regions selected in said substrate and said well,
d) dopant ions of an N— polarity implanted in N— regions between said P— regions in said well and on either side of said P— regions in said N—silicon substrate,
e) field oxide structures over said P— and N— regions,
f) gate oxide layers above the exposed portions of said N—silicon substrate and said P—well,
g) conductive gate structures over said gate oxide layers between said N— regions in said well and between said P—regions in said N— substrate, and
h) an implanted P— isolation region in said P—well and an implant of an N— isolation region in said N—substrate.

5,382,821
HIGH POWER FIELD EFFECT TRANSISTOR
Shigeru Nakajima, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Dec. 14, 1992, Ser. No. 988,258
Int. Cl.[6] H01L *27/085, 27/088, 27/105*
U.S. Cl. 257—401 **6 Claims**



1. A field effect transistor comprising:
an active layer formed in a surface layer of a semiconductor substrate;
a highly doped impurity source region and a highly doped impurity drain region formed in a surface portion of said semiconductor substrate, said active layer being interposed between said source region and said drain region;
a gate electrode formed on said semiconductor substrate, said gate electrode having
a source side edge portion which overlaps said highly doped impurity source region, an insulation film being interposed between said source side edge portion and said highly doped impurity source region, and
a drain side edge portion which physically contacts said active layer and which does not extend to said highly doped impurity drain region;
a source electrode formed on said highly doped impurity source region; and
a drain electrode formed on said highly doped impurity drain region.

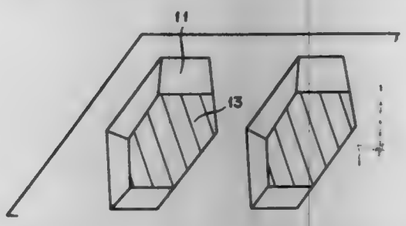
5,382,822
METAL-INSULATOR SEMICONDUCTOR FIELD-EFFECT TRANSISTOR
René Stein, Roettenbach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 27, 1993, Ser. No. 127,861
Claims priority, application Germany, Sep. 25, 1992, 4232248; Sep. 25, 1992, 4232249
Int. Cl.[6] H01L *29/78, 29/161*
U.S. Cl. 257—410 **3 Claims**



1. A metal-insulator semiconductor field-effect transistor comprising:
a gate electrode;
a semiconductor; and
an insulating layer of diamond arranged between the gate electrode and the semiconductor;
wherein a material from the group of the following materials is provided as the semiconductor: gallium phosphide (GaP), gallium arsenide (GaAs), gallium nitride (GaN), aluminum nitride (AlN), an aluminum phosphide (AlP), boron nitride (BN), and silicon carbide (SiC).

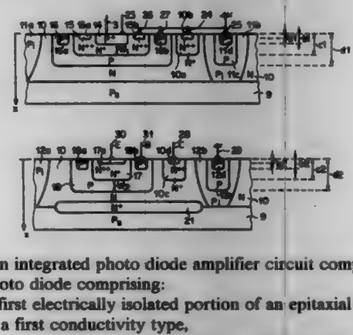
5,382,823
SEMICONDUCTOR DEVICE AND METHOD FOR PRODUCTION THEREOF
Kiyoshi Komatsu, and Takeshi Kudo, both of Kanagawa, Japan, assignors to Terumo Kabushiki Kaisha, Tokye, Japan
Continuation-in-part of Ser. No. 798,289, Nov. 25, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,311
Claims priority, application Japan, Nov. 27, 1990, 2-323729
Int. Cl.[6] H01L *29/84, 29/96*
U.S. Cl. 257—419 **3 Claims**

1. A semiconductor device comprising:
a supporting portion made of a semiconductor material;
a cavity portion formed in said supporting portion so as to be surrounded by said supporting portion; and
a silicon oxynitride film supported on one surface of said supporting portion so as to cover said cavity portion on a side of said one surface, wherein said silicon oxynitride has



a composition expressed by the following formula Si-OxNy, wherein x is 1 to 1.4, y is 0.56 to 0.77 and $x+y<2$.

5,382,824
INTEGRATED CIRCUIT WITH AN INTEGRATED COLOR-SELECTIVE PHOTO DIODE AND AN AMPLIFIER FOLLOWING THE PHOTO-DIODE
Radivoje Popovic, Zug, Switzerland, assignor to Landis & Gyr Business Support AG, Zug, Switzerland
Filed Jul. 13, 1993, Ser. No. 91,663
Claims priority, application Switzerland, Jul. 16, 1992, 020269/92
Int. Cl.[6] H01L *27/14, 31/00*
U.S. Cl. 257—464 **5 Claims**

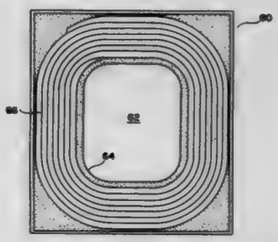


1. An integrated photo diode amplifier circuit comprising:
a photo diode comprising:
a first electrically isolated portion of an epitaxial layer of a first conductivity type,
a first semiconductor layer of a second conductivity type disposed in said electrically isolated epitaxial layer portion at a surface of said integrated circuit,
a second semiconductor layer of said first conductivity type disposed in said first semiconductor layer at said integrated circuit surface, and
a third semiconductor layer of said second conductivity type disposed in said second semiconductor layer at said integrated circuit surface, and
a vertical bipolar transistor connected downstream from said photo diode comprising:
a collector layer comprising a second electrically isolated portion of said epitaxial layer of said first conductivity type,
a base layer of said second conductivity type, disposed in said second electrically isolated portion of said epitaxial layer at said surface of said integrated circuit, said base layer being approximately as thick, in a direction X perpendicular to said integrated circuit surface, and being doped with an approximately equal concentration of impurities, as said first semiconductor layer,
an emitter layer of said first conductivity type disposed in said base layer at said integrated circuit surface, said emitter layer being approximately as thick, in said direction X, and being doped with an approximately equal concentration of impurities, as said second semiconductor layer,
wherein said second semiconductor layer is doped with a concentration Y of impurities and has an active region located below said third semiconductor layer with a thickness W_1 in said direction X, and wherein said base layer is doped with a concentration Z of impurities and has an active region with a thickness W_2 in said direction X such that

$$\int_{W_1} Y \cdot dx > \int_{W_2} Z \cdot dx$$

where x is measured in said direction X.

5,382,825
SPIRAL EDGE PASSIVATION STRUCTURE FOR SEMICONDUCTOR DEVICES
John M. S. Neilson, Norristown, Pa., assignor to Harris Corporation, Melbourne, Fla.
Filed Jan. 7, 1993, Ser. No. 1,752
Int. Cl.[6] H01L *23/58, 29/74, 29/76, 29/00*
U.S. Cl. 257—489 **29 Claims**



1. An edge passivation region for a semiconductor device comprising an electrically resistive ribbon that spirals around an active area of the device and has a cross-sectional area that varies as a function of distance from the active area.

5,382,826
STACKED HIGH VOLTAGE TRANSISTOR UNIT
Mohamad M. Mojaradi, Los Angeles, and Tuan A. Vo, Hawthorne, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 21, 1993, Ser. No. 170,848
Int. Cl.[6] H01L *23/58, 29/76;* **H03K** *17/687*
U.S. Cl. 257—489 **3 Claims**



1. A high voltage cascaded network circuit comprising:
a) an electrical circuit of two four terminal high voltage transistors, one of the two transistors being a first transistor in the electrical circuit and the other transistor being a

second transistor in the electrical circuit, each transistor comprising:

i) a source region, a drain region, a gate region, and a resistor region,

ii) said drain region, said resistor region, said gate region, and said source region being arranged in a concentric configuration with said drain region being the innermost region, said resistor region surrounding said drain region, said gate region surrounding said resistor region, and said source region surrounding said gate region,

iii) a source having a source terminal, said source being located in said source region,

iv) a drain having a drain terminal, said drain being located in said drain region,

v) a gate having a gate terminal, said gate being located in said gate region,

vi) a resistor terminal, and

vii) a resistor means having two ends, said resistor means being located in said resistor region, one end of said resistor means being electrically connected to said gate terminal and the other end of said resistor means being electrically connected to said resistor terminal,

b) a positive node,

c) a negative node,

d) said source terminal of said first transistor being electrically connected to said negative node,

e) said resistor terminal and said drain terminal of said second transistor being electrically connected to said positive node,

f) said drain terminal of said first transistor being electrically connected to said source terminal of said second transistor, and

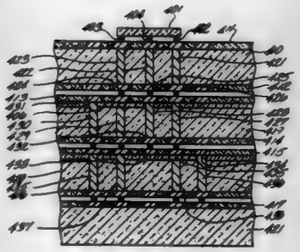
g) said resistor terminal of said first transistor being electrically connected to said gate terminal of said second transistor.

5,382,827

FUNCTIONAL SUBSTRATES FOR PACKAGING SEMICONDUCTOR CHIPS

Wen-chou V. Wang, and William T. Chou, both of Cupertino, Calif., assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 7, 1992, Ser. No. 927,151
Int. Cl.[6] H01L *27/02, 23/48, 23/16, 29/44*
U.S. Cl. 257—528 **9 Claims**



1. A semiconductor chip carrier comprising:

a first substrate for carrying at least one semiconductor chip of integrated circuits and having a single type of predetermined passive electrical functional elements connected to said integrated circuits of said at least one semiconductor chip, wherein the passive electrical functional elements are selected from the group consisting of electrical signal conductors, capacitors, and resistors; and

at least one second substrate directly coupled to said first substrate, said second substrate capable of being independently created and having a single type of predetermined passive electrical functional elements connected to said integrated circuits of said at least one semiconductor chip, the electrical functional elements of such a second substrate being selected from the group consisting of electrical signal conductors, capacitors, and resistors and being of a type different than the electrical functional elements of the first substrate; and wherein

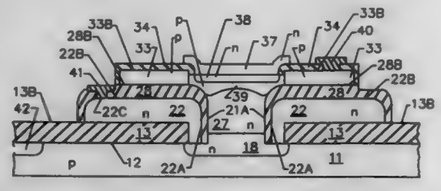
said second substrate comprises a top interconnect layer, a bottom interconnect layer and a plurality of intra-substrate connectors, said top interconnect layer and said bottom interconnect layer have substantially identical patterns of electrical contacts.

5,382,828

TRIPLE SELF-ALIGNED BIPOLAR JUNCTION TRANSISTOR

Gerold W. Neudeck, West Lafayette, Ind., and Rashid Bashir, Lubbock, Tex., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation of Ser. No. 815,708, Dec. 31, 1991, Pat. No. 5,286,996. This application Jan. 4, 1994, Ser. No. 177,869
Int. Cl.[6] H01L *29/73, 29/04*
U.S. Cl. 257—586 **7 Claims**



1. A bipolar transistor comprising:

a semiconductor substrate;

a buried collector region of first conductivity type in said substrate at a face thereof;

a first insulating layer on said substrate, at said face, said first insulating layer having a top surface opposite said substrate and an opening therethrough, for exposing said buried collector region and defining a first sidewall in said first insulating layer;

a conductive collector contact layer of said first conductivity type on said first sidewall, electrically contacting said buried collector region;

a monocrystalline region on said face, said monocrystalline region including a monocrystalline intrinsic collector region of first conductivity type therein which electrically contacts said buried collector region in said opening;

an insulating region disposed between said monocrystalline intrinsic collector region and said conductive collector contact layer so as to prevent electrical conduction between adjacent portions of said monocrystalline intrinsic collector region and said conductive collector contact layer, but allowing electrical conduction between said monocrystalline intrinsic collector region and said conductive collector contact layer via said buried collector region;

a monocrystalline emitter region of first conductivity type in said monocrystalline region;

a monocrystalline intrinsic base region of second conductivity type in said monocrystalline region, between said monocrystalline intrinsic collector region and said monocrystalline emitter region;

a monocrystalline extrinsic base region of second conductivity type in said monocrystalline region, electrically contacting said monocrystalline intrinsic base region; and

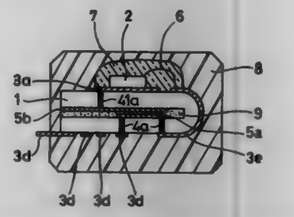
a base contact ohmically contacting said monocrystalline extrinsic base region.

5,382,829

PACKAGED MICROWAVE SEMICONDUCTOR DEVICE

Akira Inoue, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,633
Claims priority, application Japan, Jul. 21, 1992, 4-217254
Int. Cl.[6] H01L *49/00, 23/48, 27/04, 29/34*
U.S. Cl. 257—659 **10 Claims**



1. A packaged semiconductor device comprising:

a folded flexible insulating film substrate having a front surface and a rear surface and including a fold so that a first part of said rear surface faces a second part of said rear surface;

a high frequency semiconductor chip disposed on said front surface;

circuit elements disposed on said front surface and connected to said semiconductor chip;

an insulating adhesive layer disposed between and bonding the first and second parts of said rear surface; and

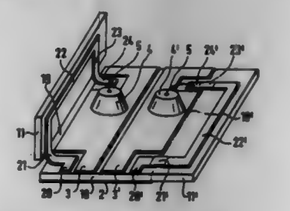
a resin encapsulating said folded flexible insulating film substrate, said high frequency semiconductor chip, said circuit elements, and said insulating adhesive layer.

5,382,830

SEMICONDUCTOR MODULE WITH MULTI-PLANE CONDUCTIVE PATH

Altan Akyürek, Eichenhain 32/12; Peter Maier, Hugo-Dietz-Str. 19, both of 8560 Lauf, and Jürgen Schulz-Harder, Am Stadtwald 2, 8489 Eschenbach, all of Germany

Filed Dec. 18, 1991, Ser. No. 810,726
Claims priority, application Germany, Dec. 18, 1990, 9017041
Int. Cl.[6] H01L *23/02*
U.S. Cl. 257—701 **15 Claims**



1. A semiconductor module comprising:

a base board;

a contact plate supported on the base board;

a semiconductor chip fastened to the contact plate on the base board;

a side board disposed at an angle relative to the base board and being separated therefrom by a space located between the side board and the base board; and

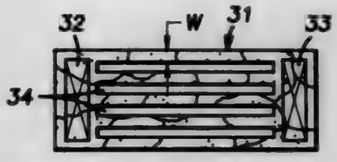
a conductor located on the base board and the side board for defining a conductive path, the conductive path being connected with the semiconductor chip, the conductor extending from the base board, across the space to the side board, the space between the base board and the side board having a predetermined size so as to maintain a predetermined dielectric strength between the base board and the side board.

5,382,831

INTEGRATED CIRCUIT METAL FILM INTERCONNECT HAVING ENHANCED RESISTANCE TO ELECTROMIGRATION

Eugenia M. Atakov, Acton; John J. Clement, Westboro, and Brian C. Lee, Northboro, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 14, 1992, Ser. No. 990,222
Int. Cl.[6] H01L *23/48, 29/40*
U.S. Cl. 257—767 **15 Claims**



1. An integrated circuit comprising:

(a) a planar substrate, and

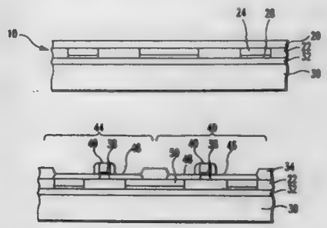
(b) thin metal film deposited on said substrate and connecting a source terminal to a sink terminal for conveying a high density of current from said source terminal to said sink terminal, said thin metal film having metal grains of a mean metal grain size, said thin metal film connecting said source terminal to said sink terminal being subdivided into a plurality of elongated and parallel-spaced neighboring strips extending from said source terminal to said sink terminal, each of said strips having a width of less than one and one-half times said mean metal grain size, whereby said thin metal film has enhanced resistance to electromigration failure when conducting said high density of said electrical current from said source terminal to said sink terminal.

5,382,832

SEMICONDUCTOR DEVICE AND WAFER STRUCTURE HAVING A PLANAR BURIED INTERCONNECT BY WAFER BONDING

Taqi N. Buti, Millbrook; Louis L. Hsu, Fishkill; Rajiv V. Joshi, Yorktown Heights, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 973,131, Nov. 6, 1992, Pat. No. 5,260,233. This application Oct. 4, 1993, Ser. No. 131,344
Int. Cl.[6] H01L *23/48, 27/01*
U.S. Cl. 257—773 **3 Claims**



1. A wafer structure suitable for the formation of semiconductor devices thereon and having a buried local planar interconnect structure for interconnection of desired semiconductor devices according to an interconnection pattern, said structure comprising:

a) a primary substrate having a first thickness;
b) conductive interconnection pads of a second thickness formed on a bottom surface of said primary substrate according to the interconnection pattern, wherein said conductive interconnection pads comprise refractory metal silicide, said refractory metal silicide comprising silicon rich tungsten silicide;
c) first isolation pads of a third thickness formed on the bottom surface of said primary substrate between said conductive interconnection pads;
d) interconnection pad caps of a fourth thickness formed upon the surface of said interconnection pads opposite from said primary substrate, wherein the total thickness of the second thickness and the fourth thickness equals the third thickness;
e) a secondary substrate wafer bonded to said interconnection pad caps and said first isolation pads;
f) second isolation pads formed in the primary substrate according to the interconnection pattern; and
g) semiconductor devices formed in the primary substrate between corresponding second isolation pads according to the interconnection pattern, whereby said conductive material provides a local planar interconnect between desired semiconductor devices.

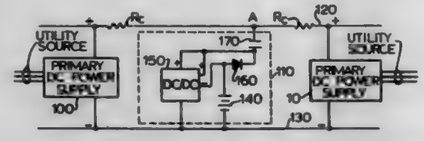
5,382,833
CURRENT GENERATOR WITH CORE COOLING
Gerhard O. Wirges, Hamburg, Germany, assignor to Kaethe Hagemeier, Moormerland-Neermoor and Chandrakanthi Wirges, Hamburg, both of Germany
Filed Sep. 1, 1993, Ser. No. 108,729
Claims priority, application Germany, Mar. 1, 1991, 4106497
Int. Cl.[6] F01P *5/10*; H02K *9/19, 7/18*
U.S. Cl. 290—1 A **5 Claims**



1. A current generator, particularly for vehicles, comprising a shaft; a liquid cooled generator; a liquid cooled internal combustion engine forming a drive motor for said generator; a pump for supplying a liquid coolant, said generator, said internal combustion engine and said pump being arranged coaxially on said shaft, said pump for a liquid coolant being located on said shaft between said generator and said drive motor, said pump for a liquid coolant being formed as a magnetic impeller pump, said magnetic impeller pump having a blade impeller which is formed as a magnetic impeller, and a stationary pump housing with a coolant suction line and a coolant delivery line; and a sliding bush for conducting heat from said shaft into said pump housing, said sliding bush being arranged between said pump housing and said shaft.

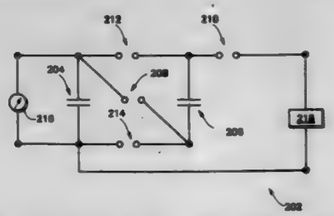
5,382,834
ELECTRICAL TRANSIT POWER SUPPLY SYSTEM
Thomas A. Young, Mount Olive, N.C., assignor to Impulse NC, Inc., Mount Olive, N.C.
Filed Mar. 8, 1993, Ser. No. 27,367
Int. Cl.[6] H02J *7/34*
U.S. Cl. 307—9.1 **15 Claims**

1. In a transit system having a plurality of utility powered spaced-apart primary DC power supplies connected to a pair of DC feeding lines providing power at the systems traction power voltage including locations within the system associated with high impedance and subjected to normal demand, surge demand, and continuous peak demand power requirements, an improved transit-power supply system comprising:
(a) a plurality of spaced-apart utility powered primary DC power supplies forming part of the system and connected to its DC feeding lines;
(b) a vehicular load on said system powered by its DC feeding lines and disposed between selected of said primary DC power supplies and capable of generating at various times dependent on the extent and location of the load with respect to the DC feeding lines, normal demand, surge demand, and continuous peak demand power requirements; and
(c) a selected number and at least one low impedance secondary DC power supply continuously connected to and powered solely by said DC feeding lines at either or both



a location where said DC feeding lines have high impedance and a location where said surge demand occurs, each said secondary power supply having:
(i) battery means which can be charged and discharged; and
(ii) regulating means powered solely from said DC feeding lines for charging said battery means solely from said DC feeding lines in the condition of low vehicular load demand at the location of said DC secondary power supply and alternatingly discharging said battery means solely into said DC feeding lines under the condition of relatively high load demand at the location of said secondary DC power supply for assisting said primary DC power supplies in handling both surge demand and continuous peak demand.

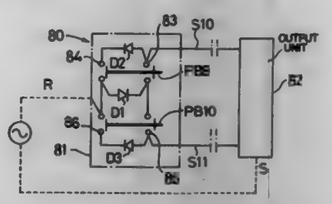
5,382,835
INTEGRATED MARX GENERATOR
Everett G. Brandt, Peoria, Ill.; George Codina, North Hollywood, Calif., and Thomas J. Richards, Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Nov. 16, 1993, Ser. No. 152,641
Int. Cl.[6] H02M *3/18*
U.S. Cl. 307—106 **15 Claims**



1. A Marx generator integrated into a single package, comprising:
a housing forming first and second cavities, said first and second cavities being filled with oil;
a first capacitor having inner and outer capacitor plates and being connected to said housing, said inner and outer capacitor plates being spaced apart in said first cavity, the space between said inner and outer capacitor plates being filled with dielectric material;
a first switch having first and second electrodes, said first electrode being electrically coupled to said inner capacitor plate of said first capacitor;

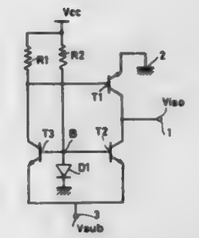
a second capacitor having inner and outer capacitor plates and being connected to said housing, said inner and outer capacitor plates of said second capacitor being spaced apart in said second cavity, the space between said inner and outer plates being filled with said oil, wherein said second electrode of said first switch is electrically coupled to said outer capacitor plate of said second capacitor;
a second switch having a first electrode, said first electrode being electrically coupled to said inner capacitor plate of said second capacitor;
a third switch having first and second electrodes, said first electrode of said third switch being electrically coupled to said inner capacitor plate of said second capacitor, said second electrode of said third switch being electrically coupled to said inner capacitor plate of said first capacitor; and
a fourth switch having first and second electrodes, said first electrode of said fourth switch being electrically coupled to said outer capacitor plate of said second capacitor, said second electrode of said fourth switch being electrically coupled to said outer capacitor plate of said first capacitor.

5,382,836
PUSH-BUTTON SWITCH DEVICE
Heihachiro Umemura, Sakai, Japan, assignor to Shinkoh Electric Co., Ltd., Osaka, Japan
Filed Dec. 21, 1992, Ser. No. 994,339
Claims priority, application Japan, Sep. 28, 1992, 4-283677
Int. Cl.[6] H01H *13/64*
U.S. Cl. 307—127 **1 Claim**



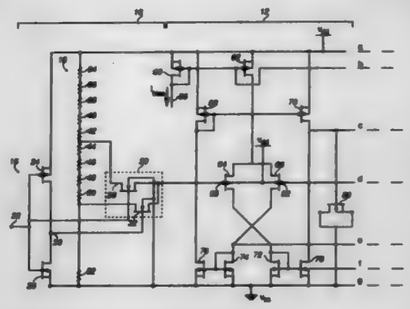
1. A push-button switch device comprising:
a switch unit, having first and second outputs, which receives an AC signal and includes first and second push-button switches and at least three rectifying diodes coupled to said first and second push-button switches, wherein each of said first and second push-button switches is a 3-stage switch, and wherein said first and second push-button switches and said at least three rectifying diodes of said switch unit are configured such that said switch unit selectively generates any one of a null-signal, a positive half-wave rectified signal, a negative half-wave rectified signal and a full-wave alternating signal to each of the first and second outputs according to a switching state of each of said first and second push-button switches;
first and second transmission wires coupled to said first and second outputs of said switch unit, respectively; and,
an output unit, having respective first and second inputs coupled to said first and second transmission wires, for discriminating the switching state of each of said first and second push-button switches according to the signals received from said switch unit via said first and second transmission wires, and for generating operating signals which are indicative of the discriminated switching state of the first and second push-button switches.

5,382,837
SWITCHING CIRCUIT FOR SEMICONDUCTOR DEVICE
Natale Aiello, Catania, and Sergio Palara, Acicastello, both of Italy, assignors to Consorzio per la Ricerca Sulla Microelettronica nel Mezzogiorno, Catania, Italy
Filed Jun. 23, 1992, Ser. No. 902,385
Claims priority, application European Pat. Off., Jun. 27, 1991, 91830287.8
Int. Cl.[6] H03K *17/735*
U.S. Cl. 327—417 **13 Claims**



1. Switching circuit for connecting a first circuit node to a second or to a third circuit node in response to a voltage on the third node, comprising a first bipolar transistor of the NPN type with the base connected to a positive power supply voltage, the collector connected to said first node and the emitter connected to said second node, a second bipolar transistor of the NPN type with the collector connected to said first node and the emitter connected to said third node, and means suitable for maintaining the base of said second transistor at a constant pre-set bias voltage, wherein said means for maintaining the base of the second transistor at a constant pre-set bias voltage includes a further bipolar transistor of the NPN type, with its emitter connected to the base of said second bipolar transistor, and with its collector connected to the positive power supply voltage, and wherein the emitter is connected to ground through a resistor means, wherein said further transistor is suitable for driving said second transistor so as to increase its gain.

5,382,838
DIGITAL DRIVER WITH CLASS AB OUTPUT STAGE
Lawrence H. Sasaki, Manotick, and Anthony K. D. Brown, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Mar. 18, 1993, Ser. No. 33,221
Int. Cl.[6] H03K *3/01, 5/01, 17/60, 19/08*
U.S. Cl. 327—108 **8 Claims**



1. A digital driver circuit comprising:
an input for receiving an input signal;
an output for providing an output signal;

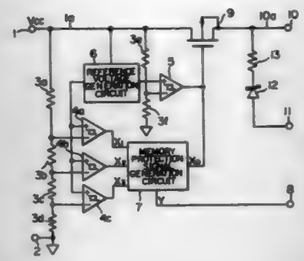
first and second supply potential terminals;
an input stage connected to the input for level shifting the input signal value to a predetermined value;
a transconductance operational amplifier having a slew-rate limited output for shaping the level shifted signal;
a Class AB amplifier output stage for buffering the shaped, level-shifted signal;
the input stage includes a resistor chain connected between first and second supply potential terminals and selector means having first and second taps along the resistor chain for providing two predetermined values for level shifting in dependence upon the input signal; and
the selector means includes a CMOS inverter connected to the input for receiving the input signal and first and second NMOS switches connected to the first and second taps, respectively and the CMOS inverter input and output, respectively for control thereof.

5,382,839

POWER SUPPLY CONTROL CIRCUIT FOR USE IN IC MEMORY CARD

Takayuki Shinohara, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 121,189
Claims priority, application Japan, Sep. 16, 1992, 4-246675
Int. Cl.[6] H02H *3/24, 3/20*
U.S. Cl. 327—545 5 Claims



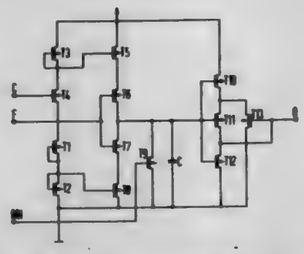
1. A power control circuit for an IC memory card used in a dual voltage operation system having the operation-ensured voltage ranges which are higher and lower voltage ranges separate from each other, the memory card having a backup battery for an internal circuit, said power supply control circuit comprising:
an external power supply line to which an external power source is detachably connected;
an internal power supply line to which the internal circuit and the backup battery are connected;
power supply voltage detection means for generating a plurality of output signals each signal being indicative of a voltage level within either one of the two operation-ensured voltage ranges and for generating a signal indicative or a power supply changing voltage;
power supply changing means for connecting said external power supply line to said internal power supply based on the operation of said power supply voltage detection means when the voltage level of said external power supply line is equal to a predetermined voltage level before reaching each of the two operation-ensured voltage ranges; and
protection control means for releasing the internal circuit from a protected state based on the operation of said power supply voltage detection means when the voltage level of said external power supply line is within one of the two operation-ensured voltage ranges.

5,382,840

ANALOG DELAY CIRCUIT CONFIGURATION

Johann Massoner, Villach, Austria, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 30, 1992, Ser. No. 954,377
Claims priority, application Germany, Sep. 30, 1991, 4132517
Int. Cl.[6] H03H *11/26*
U.S. Cl. 327—206 6 Claims



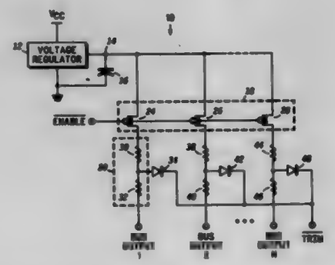
1. An analog delay circuit configuration, comprising a switching stage, a capacitor connected upstream of said switching stage, a controlled current source having a current being definitive for a charging state of said capacitor, said current source being clocked with a pulse-to-interval ratio of less than 1, a current mirror configuration reducing the current of said current source, and an inverter stage being coupled to said current mirror configuration and having an output side connected to said capacitor.

5,382,841

SWITCHABLE ACTIVE BUS TERMINATION CIRCUIT

David W. Feldbaumer, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1991, Ser. No. 812,146
Int. Cl.[6] H03K *17/16, 5/00*
U.S. Cl. 326—30 3 Claims



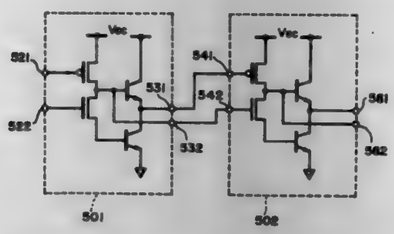
1. A switchable active bus termination circuit coupled to a bus conductor, consisting essentially of:
a first transistor having a control electrode and first and second conduction electrodes, said control electrode being coupled for receiving a first control signal, said first conduction electrode receiving a reference voltage;
first and second resistors serially coupled between said second conduction electrode of said first transistor and the bus conductor;
unilateral conduction means coupled to the interconnection of said first and second resistors and operating in response to a second control signal for passing high current pulses to trim the value of said second resistor; and
a voltage regulator having an output for providing said reference voltage.

5,382,842

COMPOSITE LOGIC CIRCUIT WITH BIPOLAR TRANSISTOR-COMPLEMENTARY FIELD EFFECT TRANSISTOR

Takashi Oguri, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 28, 1993, Ser. No. 68,940
Claims priority, application Japan, May 29, 1992, 4-138133
Int. Cl.[6] H03K *19/0175, 19/02*
U.S. Cl. 326—110 7 Claims



1. A BiMIS logic circuit arrangement comprising a plurality of BiMIS logic circuits connected in cascade so as to constitute a multi-stage logic circuit, each BiMIS logic circuit comprising:
a first and a second input terminal;
a first and a second output terminal;
a first bipolar transistor having a collector connected to a power supply terminal and an emitter connected to said first output terminal;
a second bipolar transistor having a collector connected to said first output terminal and an emitter connected to a reference potential;
a first MIS transistor having a drain connected to a base of said first bipolar transistor and further connected to said second output terminal, a gate connected to said first input terminal, and a source connected to the power supply terminal; and
a second MIS transistor having a drain connected to the base of the first bipolar transistor, a gate connected to said second input terminal, and a source connected to a base of said second bipolar transistor,
wherein the first and second output terminals of one of said plurality of BiMIS logic circuits are respectively connected to the first and second input terminals of a next stage BiMIS logic circuit.

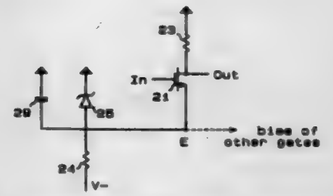
5,382,843

ONE OR TWO TRANSISTOR LOGIC WITH TEMPERATURE COMPENSATION AND MINIMIZED SUPPLY VOLTAGE

Jeff Gucyski, P.O. Box 11633, Costa Mesa, Calif. 92627

Continuation of Ser. No. 818,922, Jan. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 474,489, Feb. 2, 1990, abandoned. This application Apr. 6, 1994, Ser. No. 224,127
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—109 23 Claims

1. Logic apparatus providing a binary output signal in response to a binary input signal, comprising:
a reference means for providing a variable reference voltage;
a transistor having a control electrode, a first current electrode coupled to the reference voltage, and a second current electrode with the binary output signal appearing thereat; and
a biasing means coupled between the second current electrode and ground for biasing the transistor,
wherein the binary input signal is applied exclusively to the control electrode and a current conducted between the first and second current electrodes is substantially equal to zero when a voltage between the control electrode and first current electrode is equal to zero, and



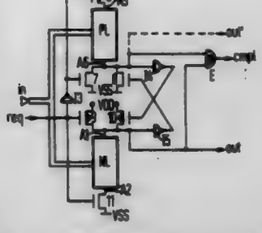
further wherein the reference voltage is substantially independent of the current.

5,382,844

LOGIC CIRCUIT FOR ASYNCHRONOUS CIRCUITS WITH N-CHANNEL LOGIC BLOCK AND P-CHANNEL LOGIC BLOCK INVERSE THERETO

Karl Knauer, Grafing, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE92/00366, § 371 Date Nov. 3, 1993, § 102(e) Date Nov. 3, 1993, PCT Pub. No. WO92/20156, PCT Pub. Date Nov. 12, 1992
PCT Filed May 5, 1992, Ser. No. 146,061
Claims priority, application Germany, May 8, 1991, 4115081
Int. Cl.[6] H03K *19/20*
U.S. Cl. 326—95 4 Claims



1. A logic circuit with differential cascode voltage logic in which a plurality of input lines are connected to a first logic block and also to a second logic block, wherein depending on signals on the input lines, either a first output of the first logic block is switched through to a second output of the first logic block, in this case a first output of the second logic block being separated from a second output of the second logic block, or the first output of the first logic block is separated from the second output of the first logic block, in this case the first output of the second logic block being switched through to the second output of the second logic block, comprising:
the first output of the first logic block connected to each first connection of a first transistor and a second transistor of a first pair of precharging transistors and the second output of the first logic block connected to a first connection of a charging transistor;
the first output of the second logic block connected to each first connection of a first transistor and a second transistor of a second pair of precharging transistors and the second output of the second logic block connected to a first connection of a charging transistor;
a gate of the first transistor of the first pair of precharging transistors and a gate of the charging transistor connected to the first logic block each directly connected to a request input;
wherein at a first logic level at the request input only the transistors of the pairs of precharging transistors are con-

ductive and all charging transistors are non-conductive and at a second logic level at the request input only all charging transistors are conductive and the transistors of the pairs of precharging transistors are non-conductive;

a gate of the second transistor of the first pair of precharging transistors connected to an output of a first feedback invertor;

a gate of the second transistor of the second pair of precharging transistors connected to an output of a second feedback invertor;

the first output of the first logic block connected to a first input of a logic link and the first output of the second logic block connected to a second input of the logic link, and an output of the logic link being a complete message output;

each second connection of the first transistor and the second transistor of the first pair of precharging transistors having applied thereto a supply voltage and a second connection of the charging transistor that is connected to the first logic block being set to a reference potential;

the first logic block having transistors of a first channel type, the charging transistor that is connected to the first logic block also being of a first channel type, and the first transistor and also the second transistor of the first pair of precharging transistors being of a second channel type;

the second logic block having transistors, the channel type of which is the same as the channel type of the charging transistor that is connected to the second logic block and differs both from the channel type of the first transistor and also of the second transistor of the second pair of precharging transistors;

an input of the first feedback invertor connected to the first output of the second logic block;

an input of the second feedback invertor connected to the first output of the first logic block;

a gate of the charging transistor that is connected to the second logic block and a gate of the first transistor of the second pair of precharging transistors connected via an invertor to the request input;

the second logic block having a second channel type that is different from the first channel type of the first logic section;

a second connection of the charging transistor that is connected to the second logic block connected to the supply voltage and each second connection of the first and second precharging transistor of the second pair of precharging transistors connected to the reference potential.

5,382,845

ECL TO CMOS LEVEL CONVERTER

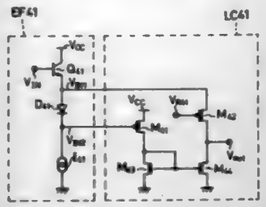
Hiroyuki Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,865

Claims priority, application Japan, Oct. 25, 1991, 3-305684

Int. Cl.[6] H03K *9/0175*

U.S. Cl. 326—66 **20 Claims**



1. A semiconductor circuit for receiving an input signal of a first amplitude and amplifying the input signal into an output signal of a second amplitude that is approximately as high as a power supply voltage powering the semiconductor circuit, comprising:

a first field effect transistor for receiving a first input signal at the source thereof,

a second field effect transistor for receiving at the gate thereof a second input signal which is level-shifted from the first input signal; and

an output circuit electrically connected to the first and second field effect transistors for outputting an output signal in accordance with a difference between the specific conductances of said first and second field effect transistors which vary in accordance with the input signals.

5,382,846

LEVEL SHIFTING CIRCUIT FOR SUPPRESSING OUTPUT AMPLITUDE

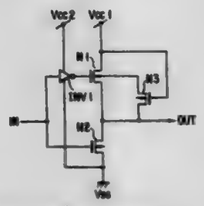
Hiroshi Shigehara, Tokyo, and Masanori Kinugasa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 10, 1992, Ser. No. 988,971

Claims priority, application Japan, Dec. 13, 1991, 3-329305

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—68 **9 Claims**



1. A level shifting circuit comprising:

a first MOS transistor which has a current path connected between a first power source node supplied with a first power source voltage and an output terminal and whose conduction state is controlled according to a first signal;

a second MOS transistor which has a current path connected between a second power source node supplied with a second power source voltage and said output terminal, which is of the same channel type as said first MOS transistor and whose conduction state is controlled according to a second signal;

logic means supplied with one of the first and second power source voltages as one power source voltage and a third power source voltage independent from the first and second voltages as the other power source voltage, for creating the second signal based on the first signal; and

a third MOS transistor having a current path connected at one end to said output terminal and connected at the other end to the back gate of said second MOS transistor and having the same channel type as said second MOS transistor.

5,382,847

OUTPUT BUFFER CIRCUITS INCLUDING VOLTAGE COMPENSATION

Kenichi Yasuda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,647

Claims priority, application Japan, Feb. 27, 1992, 4-041042

Int. Cl.[6] H03K *19/0175, 19/003*

U.S. Cl. 326—68 **17 Claims**

1. An output buffer device, comprising:

an output terminal for outputting data;

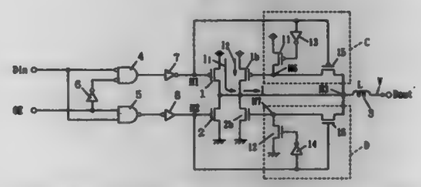
an input terminal for receiving a binary logic signal;

first and second power supply terminals set respectively at high and low potentials;

a first switching element connected between said output terminal and said first power supply terminal;

a second switching element connected between said output terminal and said second power supply terminal;

switching control means for turning on and off said first and second switching elements in a complementary manner in response to said binary logic signal; and



compensating means for increasing output impedance to said output terminal in response to the voltage at said output terminal approaching a voltage level corresponding to the data to be output upon a change in level of said binary logic signal whereby excessive shooting effects of inherent inductance at said output terminal are mitigated.

5,382,848

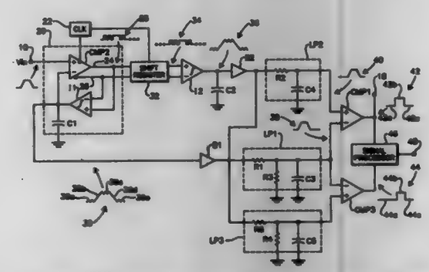
DIGITAL INTEGRATED TIME OF ARRIVAL DETECTOR

Lawrence M. Burns, El Segundo, and Robert Tso, South San Gabriel, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 11, 1992, Ser. No. 943,632

Int. Cl.[6] H03K *5/153*

U.S. Cl. 327—18 **19 Claims**



1. A time of arrival detector for an analog input signal, comprising:

analog-to-digital converter (ADC) means for converting said input analog signal to a digitized format,

digital delay means for delaying said digitized input signal by a predetermined time delay,

digital-to-analog converter means for converting said delayed digitized input signal to an analog format,

means for providing an undelayed analog version of said input signal,

means for establishing a first scaling offset between said delayed and undelayed signals so that said delayed analog signal is scaled larger than said undelayed signal, and

first means for comparing said delayed and undelayed signals after said first scaling offset to establish a time of arrival for said analog input signal.

5,382,849

CIRCUIT CONFIGURATION FOR SIGNAL LIMITATION AND FIELD INTENSITY DETECTION

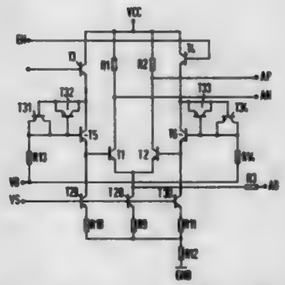
Josef Fenk, Eching/Ottenburg, and Werner Veit, München, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 23, 1992, Ser. No. 872,885

Claims priority, application European Pat. Off., Apr. 24, 1991, 91106616

Int. Cl.[6] H03K *5/08*

U.S. Cl. 327—310 **8 Claims**



1. A circuit configuration, comprising a limiter amplifier including n series-connected limiter stages, where n is an integer, said limiter stages being alternatingly direct-current coupled and alternating-current coupled to one another in said series, and a detector circuit connected to said limiter amplifier for sensing a field strength in said limiter stages, each of the alternating-current coupled stages of said limiter stages including capacitor means for alternating-current coupling; each of said limiter stages including a first and a second transistor of one conduction type having bases, having collectors and having coupled emitters, a current source connected between the coupled emitters of said transistors and a first supply potential, and resistors each being connected between the collector of a respective one of said transistors and a second supply potential; said limiter stages including a third and a fourth transistor of the one conduction type having collectors connected to the second supply potential and bases forming signal inputs of said limiter stages; a fifth and a sixth transistor of the one conduction type having collectors each being connected to the emitter of a respective one of said third and fourth transistors, having emitters each being connected to the base of a respective one of said first and second transistors, and having bases; and current sources each being connected between the emitter of a respective one of said fifth and sixth transistors and the first supply potential.

5,382,850

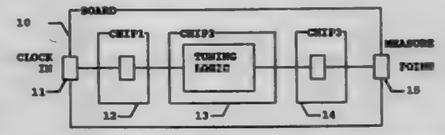
SELECTABLE TIMING DELAY SYSTEM

Greg Aldrich, San Jose; Stephen S. Si, Sunnyvale, and Eugene Wang, Fremont, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Sep. 23, 1992, Ser. No. 949,718

Int. Cl.[6] H03K *5/159, 7/00*; **H01L** *25/00*; **H04L** *7/00*

U.S. Cl. 327—161 **2 Claims**



1. A clock tuning system of integrated circuit chips for receiving a clock and providing a delayed clock at a specified

point within said system where said clock is delayed a specified delay of Ts within a tolerance of ± ts from a clock reference point outside of said system, the manufacturer of each said chip specifying a nominal delay of N, an absolute process variation of V and a chip process variation of D such that each said chip has a delay within the range of N*(1−V) to N*(1+V), said system comprising:

a plurality of integrated circuit chips connected in series for providing a path for said clock from said reference point to said specified point, said path having a delay in the range of Tmin to Tmax such that Tmin≦Ts≦Tmax where Tmin is the sum of said minimum delay for each said chip in said system and Tmax is the sum of said maximum delay for each said chip in said system; and

a tuning apparatus within one of said chips for providing a tuned clock which will cause said delayed clock at said specified point in said system to be said clock delayed by a delay within a range of (Ts−ts) to (Ts+ts), said chip containing said tuning apparatus having a minimum delay of Nmin*(1+V) where Nmin is the nominal delay with said tuning apparatus set to a minimum delay and a maximum delay of Nmax*(1−V) where Nmax is the nominal delay with said tuning apparatus set to a maximum delay, said tuning apparatus comprising;

n course delay means connected in series for receiving and delaying said clock where each said course delay means provides a course delayed clock and has a delay within the range of Tc*(1−V+2D) to Tc*(1+V) where Tc is the nominal delay of said course delay means;

course selection means receiving said clock and all said course delayed clocks for selectively providing a course clock of either said clock or one of said course delayed clocks;

m fine delay means connected in series for receiving and delaying said course clock, said series of fine delay means having a maximum delay within the range of m*Tf*(1−V) to m*Tf*(1+V−2D) such that m*Tf*(1+V−2D)≦Tc*(1−V+2D) where Tf is the nominal delay of said fine delay means, each said fine delay means providing a fine delayed clock and has a delay within the range of Tf(1−V) to Tf(1+V) such that Tf(1−V)≦2*ts; and

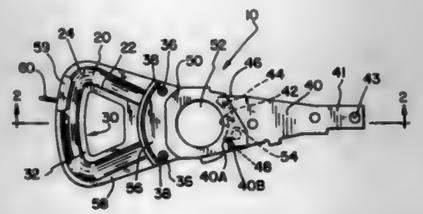
fine selection means receiving said course clock and all said fine delayed clocks for selectively providing said tuned clock of either said course selected clock or one of said fine delayed clocks.

5,382,851

SWING-TYPE ACTUATOR

Robert J. Loubier, Roanoke, Ind., assignor to Xolox Corporation, Fort Wayne, Ind.

Filed May 4, 1994, Ser. No. 237,687
Int. Cl.[6] H02K *33/00*
U.S. Cl. 310—13 **49 Claims**



1. A swing-type actuator, comprising:

a coil;

an arm for carrying a read/write head, said arm being formed from metal and having a first end and a second end; and

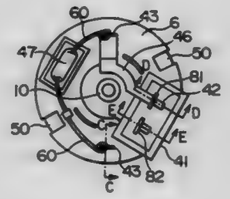
a molded thermoplastic body, said body including a journal disposed between said first end of said arm and said coil, wherein said body is molded about a portion of said first end of said arm and at least a portion of said coil so as to secure said arm and said coil to said body.

5,382,852

MINIATURE MOTOR

Toshiya Yuhi; Takahiro Ohtake; Masahiko Kato, and Ryouichi Someya, all of Chiba, Japan, assignors to Mabuchi Motor Co., Ltd., Chiba, Japan

Filed Jul. 21, 1993, Ser. No. 95,608
Claims priority, application Japan, May 31, 1993, 5-128611
Int. Cl.[6] H02K *5/04*
U.S. Cl. 310—40 MM **4 Claims**



1. A miniature motor, comprising: a case formed of a metallic material into a bottomed hollow tubular shape;

a permanent magnet fixedly fitted to an inner circumferential surface of said case;

a rotor including an armature and a commutator, said rotor being positioned in said case;

a case cap fitted to an open end of said case and having brushes making sliding contact with said commutator;

terminals electrically connected to said brushes;

bearings including a bearing provided on a bottom of said case and a bearing provided on said case cap, said bearings rotatably supporting said rotor, said case cap being formed of resin material and defining through holes having a T shape in cross section, said terminals each having a lower end with a stopper formed thereon and a central part with a lanced and raised piece, said terminals being inserted into said through holes, said lanced and raised piece being bent to substantially a right angle with respect to a surface of a corresponding terminal to fixedly fit each of said terminals to said case cap.

5,382,853

BRUSHLESS DC DRIVE MOTOR WITH EXTERNAL ROTOR FOR USE IN DISC DRIVES AND LIKE DEVICES

Johann von der Heide, Schramberg; Rolf Müller, and Alfred Merkle, both of St. Georgen, all of Germany, assignors to Papst Licencing GmbH, Germany

Continuation of Ser. No. 319,996, Mar. 7, 1989, abandoned, which is a continuation of Ser. No. 72,901, Jul. 14, 1987, abandoned, which is a continuation of Ser. No. 635,468, Jul. 27, 1984, abandoned, which is a continuation of Ser. No. 461,972, Jan. 26, 1983, abandoned, which is a continuation of Ser. No. 210,768, Nov. 26, 1980, abandoned. This application Oct. 3, 1990, Ser. No. 594,274
Claims priority, application Germany, Jun. 6, 1980, 3031328
Int. Cl.[6] H02K *7/00*
U.S. Cl. 310—67 R **28 Claims**

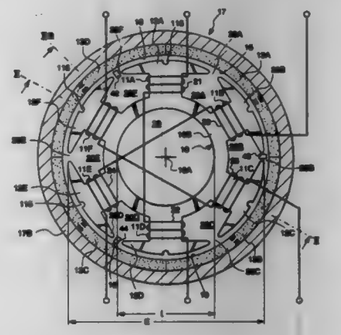
1. A brushless DC drive motor of the type having a total number of phases divisible by three, comprising, in combination,

a stator;

a permanent-magnet rotor mounted on said stator for rotation relative thereto about a rotation axis, said rotor having a total of four rotor poles of which two are of a first magnetic polarity and the other two of an opposite magnetic polarity, the rotor poles of first polarity alternating circumferentially with the rotor poles of second polarity;

a stator winding mounted on said stator and consisting of three pairs of non-overlapping stator coils; and

rotor-position-dependent control means connected to the three pairs of non-overlapping stator coils for controlling energization of said three pairs of non-overlapping stator coils in dependence upon angular position of the rotor,



and including rotor-position-detecting means located stationary with respect to said stator and operative for detecting the angular position of the rotor,

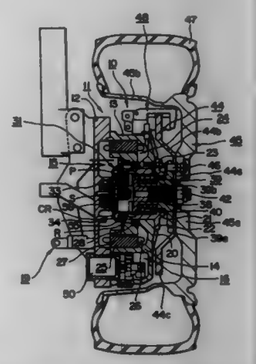
wherein each pair of stator coils consists of two coils which are located diametrically opposite to each other and which are so wound and electrically connected that both are energized substantially simultaneously with identical magnetic polarity.

5,382,854

ELECTRICAL MOTOR DRIVE APPARATUS WITH PLANETARY GEARING

Mutsumi Kawamoto; Satoru Tanaka, both of Aichi, and Mitsugi Yamashita, Tokyo, all of Japan, assignors to Kabushikikaisha Equos Research, Japan

Filed Jul. 22, 1993, Ser. No. 94,902
Claims priority, application Japan, Jul. 29, 1992, 4-202673; Jul. 29, 1992, 4-202674
Int. Cl.[6] H02K *51/00*; B60K *7/00*
U.S. Cl. 310—67 R **9 Claims**



1. A motor drive apparatus for a vehicle, comprising:

a casing attached to the body of the vehicle;

an output axle rotatably supported by said casing for rotation relative to said casing;

an electric motor including a magneto stator secured to an inside wall of said casing and a rotor concentric with the magneto stator with a predetermined clearance therebetween;

first support means, within said casing, for rotatably supporting said rotor for rotation relative to said casing and attached between said casing and said rotor;

a planetary gear unit provided inside of the rotor and comprising a sun gear, a ring gear and a carrier, said ring gear being fixed to said casing, said carrier engaging said ring gear and said sun gear, revolving around the sun gear and connected to and driving said output axle;

a connecting member, attached to both said sun gear and said rotor, for fixing said sun gear relative to said rotor; and

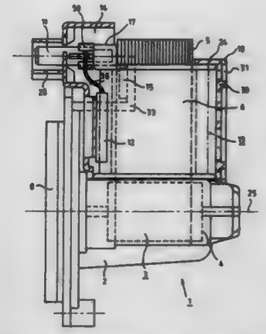
second support means, within said casing, for rotatably supporting said sun gear for rotation relative to said casing and attached between said casing and said sun gear.

5,382,855

ELECTRIC DRIVE MOTOR WITH INTERCHANGEABLY-MOUNTED CONNECTOR

Joël Cousin, Nevers, France, assignor to Societe Electromecanique du Nivernais-Selni, Nevers, France

PCT No. PCT/FR91/01022, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO92/11683, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 17, 1991, Ser. No. 923,890
Claims priority, application France, Dec. 12, 1990, 90 16133
Int. Cl.[6] H02K *5/22, 5/26*
U.S. Cl. 310—71 **18 Claims**



1. A device equipped with a body and an electric drive motor, said electric drive motor having a stator and a rotor, wherein said rotor is housed in said body, and said stator forms an integral stator assembly, said assembly comprising:

at least one cheek on which a wire is wound,

an electric winding formed by at least one coil of said wound wire having two ends,

a plurality of pins, wherein said cheek has a plurality of projections at one end for supporting said plurality of pins, whereby the electrical winding is connected to at least two of said plurality of pins,

a magnetic core positioned at least partially in said winding,

an envelope made of an electrically insulative material for mechanically protecting and electrically insulating said stator assembly, wherein said envelope encloses said cheek and said winding, and

a connector formed from a part of said envelope, which connector surrounds said plurality of pins and said plurality of projections, wherein said envelope has a shape which allows said stator assembly to be selectively mounted on said body in either of two different directions, one direction wherein said connector faces a forward

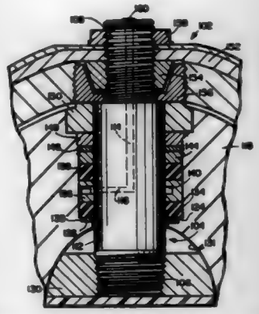
section of the device and another direction wherein said connector faces a rear section of the device.

5,382,856

GENERATOR ROTOR COLLECTOR TERMINAL STUD HYDROGEN SEAL

Richard J. Keck; Kirk G. O'Brien, and Michael J. Bigelow, all of Schenectady, N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Dec. 9, 1992, Ser. No. 987,802
Int. Cl.[6] H02K *11/00*; H01B *17/26, 17/58*
U.S. Cl. 310—71 **20 Claims**



1. A collector terminal stud for insertion within an at least partially threaded bore in a generator rotor, and which prevents escape of gas from within the rotor through the bore comprising:

a substantially cylindrical terminal stud portion having threaded upper and lower sections and a smooth intermediate section;

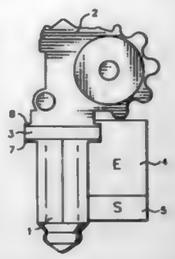
a pair of compressible seal elements received over said insulation, said compressible seal elements in engagement with and separated by a relatively rigid spacer block; and means on either side of said compressible seal elements for exerting a compressive force on said pair of compressible seal elements.

5,382,857

ELECTRIC DRIVE UNIT FOR ADJUSTMENT SYSTEMS IN MOTOR VEHICLES

Gerhard Schellhorn, Coburg, and Helmut Sesselmann, Steinach, both of Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG, Coburg, Germany

Filed Jul. 30, 1993, Ser. No. 100,489
Claims priority, application Germany, Aug. 1, 1992, 4225496
Int. Cl.[6] H02K *5/00, 11/00*
U.S. Cl. 310—83 **17 Claims**



1. Electric drive unit for adjustment systems in motor vehicles comprising:

an electric motor having an extended motor shaft;

a gear unit coupled to said extended motor shaft;

a gear housing housing said gear unit; and

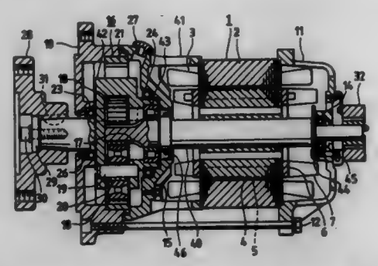
a current bearing intermediate rail connecting the electric motor and the gear housing whereby the intermediate rail serves as a current unit for the electric motor and comprises a plug or solder spots.

5,382,858

DRIVING MOTOR FOR AN ELECTRIC CAR

Takeshi Sugiyama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 85,034
Claims priority, application Japan, Jul. 7, 1992, 4-204358
Int. Cl.[6] H02K *5/16*
U.S. Cl. 310—90 **4 Claims**



1. A driving motor for an electric car having an electric induction section which has a stator and a rotor including a rotating shaft, said driving motor comprising:

a rear bracket for supporting said stator and one end portion of said rotating shaft through a first bearing, an outer ring of said first bearing being fixed on said rear bracket;

a front bracket being disposed at a work side of said rotating shaft and covering said electric induction section together with said rear bracket;

an output carrier, disposed inside a ring gear of an epicyclic reduction gear, secured at a front side thereof by said front bracket through a second bearing, and connected with said one end portion of said rotating shaft, for reducing rotation of said rotating shaft;

a cylindrical roller bearing securing said rotating shaft to said output carrier, an inner ring of said cylindrical roller bearing being secured to said rotating shaft, an outer inner ring of said cylindrical roller bearing being fixed to said output carrier; and

an intermediate bracket, disposed between said front bracket and said rear bracket, for securing a rear side of said output carrier through a third bearing.

5,382,859

STATOR AND METHOD OF CONSTRUCTING SAME FOR HIGH POWER DENSITY ELECTRIC MOTORS AND GENERATORS

Hao Huang, Aurora; Michael S. DeBruzzi, Golden, and Thomas A. Riso, Elizabeth, all of Colo., assignors to Unique Mobility, Englewood, Colo.

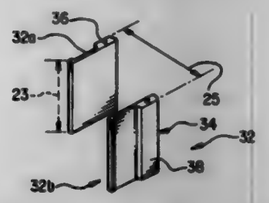
Filed Sep. 1, 1992, Ser. No. 937,311
Int. Cl.[6] H02K *1/00*
U.S. Cl. 310—216 **9 Claims**

1. An annular stator for a rotary electro-mechanical transducer comprising:

a plurality of segments, at least some of said segments being identical,

individual ones of said segments comprising an axially elongated body having a radical outer portion and radial inner teeth portions, said radial outer portion having an axially extending side surface;

said radial outer portion being circumferentially wider than said radial inner teeth portions so that when said plurality of said segments are assembled in an annular configuration a plurality of slots are defined between said radial inner



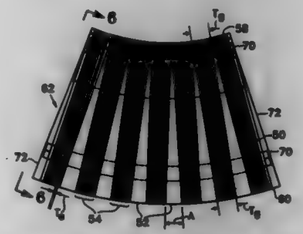
teeth portions and a return path is defined by direct contact between an axially extending side surface of a first segment and an axially extending side surface of a second segment adjacent to said first segment.

5,382,860

ELECTROMAGNETIC PUMP STATOR CORE

Alan W. Fanning, San Jose; Eugene E. Olich, Aptos, and Leslie R. Dahl, Livermore, all of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation-in-part of Ser. No. 836,475, Feb. 18, 1992, Pat. No. 5,195,231. This application Jan. 15, 1993, Ser. No. 3,994
Int. Cl.[6] H02K *1/00*
U.S. Cl. 310—216 **14 Claims**



1. A stator core for supporting an electrical coil and channeling magnetic flux therefrom comprising:

a plurality of groups of circumferentially abutting flat elements extending radially outwardly from a common centerline axis to collectively define a radially inner bore and a radially outer perimeter; and

a plurality of wedges interposed between said groups, each wedge having a radially inner edge, and a radially outer edge being thicker than said inner edge, with said outer edges abutting adjacent ones of said groups to provide a continuous path around said perimeter.

5,382,861

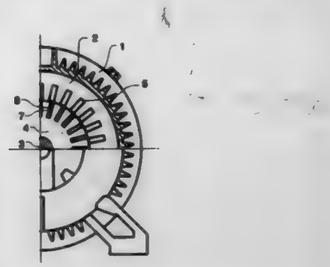
ASYNCHRONOUS MOTOR AND A PROCEDURE FOR THE MANUFACTURING OF THE STATOR AND/OR ROTOR OF AN ASYNCHRONOUS MOTOR

Klaus Uuskoski, Hyvinkaa, Finland, assignor to Kone OY, Helsinki, Finland

Continuation of Ser. No. 833,447, Feb. 6, 1992, abandoned. This application Mar. 31, 1993, Ser. No. 40,581
Claims priority, application Finland, Feb. 7, 1991, 910589
Int. Cl.[6] H02K *1/00, 15/00*
U.S. Cl. 310—216 **8 Claims**

1. An asynchronous motor comprising a rotor having respective rotor winding disposed in grooves of said rotor, and a stator having respective stator windings disposed in grooves of said stator, said rotor windings being cast rotor windings, wherein;

the grooves of said rotor are inclined with respect to the grooves of said stator so that a groove inclination of the motor is in the range of 60% to 90% of a pole pitch of the motor; and



said cast rotor windings are suitably detached from walls of the rotor grooves;

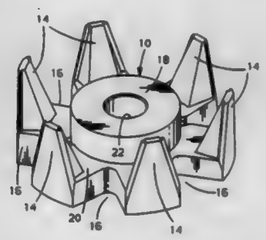
such that said motor displays a substantially lower generator torque and a substantially unaffected motor slip, in comparison to a conventional motor of equivalent capacity.

5,382,862

ALTERNATING CURRENT GENERATOR ROTOR

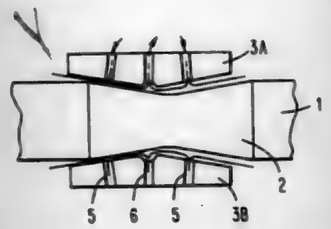
Robert W. Ward; Sam B. Parker, and William E. Boys, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 915,584, Jul. 20, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 157,452
Int. Cl.[6] H02K *15/03*; H01F *1/22, 27/24*
U.S. Cl. 310—263 **4 Claims**



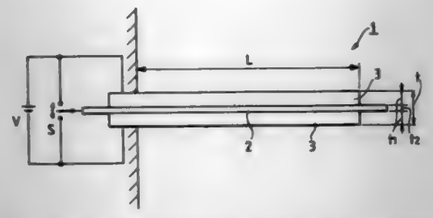
1. A rotor for an alternating current generator comprising, a shaft, first and second segments carried by said shaft each formed of magnetic material, said first segment having a plurality of circumferentially spaced and axially extending first pole teeth, said second segment having a plurality of circumferentially spaced and axially extending second pole teeth, said first and second pole teeth being interleaved, and a core disposed between said segments having opposed end surfaces that respectively engage said first and second segments, said core being formed of compacted iron powder particles that have a particle size in a range of about 10 to 250 microns, said core being formed by compacting iron powder particles that have been coated with a thermoplastic material and then heating the compacted core at a temperature that is high enough to burn-off substantially all the thermoplastic material thereby allowing the compacted iron powder particles to sinter.

5,382,863
METHOD AND DEVICE IN A MOTOR
Carl Tyrén, Antibes, France, assignor to DSP Holdings Ltd., Nicosia, Cyprus
PCT No. PCT/SE91/00916, § 371 Date Jul. 7, 1993, § 102(e) Date Jul. 7, 1993, PCT Pub. No. WO92/12569, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 27, 1991, Ser. No. 84,252
Claims priority, application Sweden, Jan. 7, 1991, 9100034-9
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—328 12 Claims



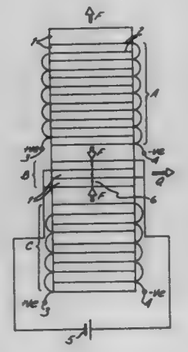
1. Method of causing a first body (3, 7, 14), which is held in engagement with a second body (1, 8, 12), to move therealong, said second body comprising material which may be caused to undergo a dimensional change across the intended movement direction due to magnetostrictive, electrostrictive or piezoelectrical action, characterized in that said first body (3, 7, 14) is continuously held in cooperation through interlocking shape engagement with a zone (2, 10A, 10B, 15) of the second body, which is caused to undergo a dimensional change across the intended movement direction under the influence of a magnetic or electric field, said zone (2, 10A, 10B, 15) by displacement of said magnetic or electric field in the intended movement direction, being caused to move in said direction during simultaneous driving action by interlocking shape engagement on said first body (3, 7, 14) for coupled movement together with said zone (2, 10A, 10B, 15).

5,382,864
PIEZOELECTRIC BIMORPH TYPE ACTUATOR
Atsushi Morikawa; Jiro Inoue, and Jun Tabota, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan
Filed Feb. 8, 1993, Ser. No. 14,895
Claims priority, application Japan, Feb. 6, 1992, 4-021156
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—332 13 Claims



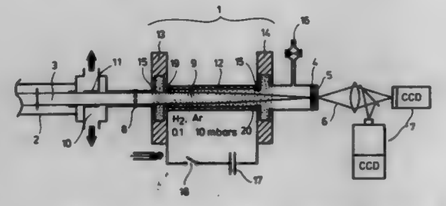
1. A piezoelectric bimorph type actuator which is cantilevered, comprising an electrode plate, a pair of piezoelectric plates provided on both sides of said electrode plate, and means for applying a voltage between each piezoelectric plate and said electrode plate so as to displace a free end thereof, wherein a ratio t_2/t_1 between the thickness t_2 of said electrode plate and the thickness t_1 of each piezoelectric plate is set to be 0.42–1.11 times as much as a ratio E_2/E_1 between the Young's modulus E_2 of said electrode plate and the Young's modulus E_1 of each piezoelectric plate.

5,382,865
COMPOSITE MULTILAYER CERAMIC STRUCTURE
Steven J. Butcher, Yarnton; James D. Hobby, Didcot, and David H. M. Kings, Bicester, all of United Kingdom, assignors to Cookson Group PLC, London, United Kingdom
PCT No. PCT/GB91/01674, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/06509, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 30,222
Claims priority, application United Kingdom, Sep. 28, 1990, 9021122
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—366 10 Claims



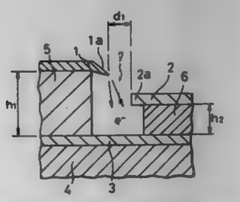
1. A composite multilayer ceramic structure which comprises in a single device a plurality of layers of an electrostrictive dielectric material separated by a plurality of electrode layers in which a first portion is adapted to operate as an electrostrictive actuator and a second portion is adapted to operate as a sensor, the second portion, which is adjacent to the first portion and which is not inherently piezoelectric, comprises means to apply a bias voltage thereto, whereby the second portion is adapted to operate in the same way as a piezoelectric sensor, there being substantially no macroscopic remnant polarization in the second portion when the bias voltage is removed therefrom.

5,382,866
METHOD OF FOCUSING A CHARGED PARTICLE BEAM AND PLASMA LENS THEREFOR
Ekkehard Boggasch, Grosszimmern, and Andreas Tauschwitz, Wiesbaden, both of Germany, assignors to Gesellschaft für Schwerionenforschung mbH, Darmstadt, Germany
Filed May 5, 1993, Ser. No. 57,741
Claims priority, application Germany, May 6, 1992, 4214417
Int. Cl.[6] H01J *25/00, 23/00;* H05H *7/00, 1/24*
U.S. Cl. 313—231.31 4 Claims



1. A method of focusing a beam of charged particles by means of a magnetic field which is generated by a current flowing through a cylindrical volume of plasma which is contained between two electrodes by an insulating wall and in which a magnetic field is generated between the electrodes by a pulsed discharge current, wherein said magnetic field extends into the cylindrical plasma volume to a certain penetration depth defining a limit and the insulating wall is, with regard to a cross-section of said beam, specially so arranged that it is disposed adjacent the limit of the penetration depth of the magnetic field into the plasma when constricted only by the magnetic field, said discharge current providing a discharge having a start-up phase with a plasma pinch being generated only during the start-up phase of the discharge.

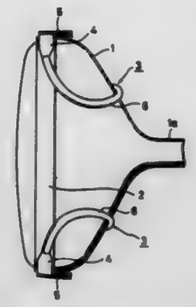
5,382,867
FIELD-EMISSION TYPE ELECTRONIC DEVICE
Yuji Maruo, Abiko; Yutaka Akagi, Kashiwa; Tomokazu Ise, Abiko, and Masao Urayama, Misato, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 30, 1992, Ser. No. 954,396
Claims priority, application Japan, Oct. 2, 1991, 3-255240; Dec. 3, 1991, 3-319251; Sep. 3, 1992, 4-235597
Int. Cl.[6] H01J *1/02*
U.S. Cl. 313—309 22 Claims



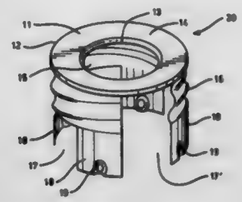
1. A field-emission electronic device comprising:
an anode electrode layer;
a first insulating layer disposed on one surface of said anode electrode layer;
a cathode electrode layer disposed on said first insulating layer and provided with a plurality of tips each emitting electrons;
a second insulating layer disposed on the surface of said anode electrode layer at a distance from said first insulating layer relative to a horizontal direction parallel with the surface of said anode electrode layer;
a gate electrode layer disposed on said second insulating layer opposite to said tips; and
a portion of said anode electrode layer, which serves to collect electrons emitted by said tips, being located between said tips of said cathode electrode layer and said gate electrode layer relative to the horizontal direction.

5,382,868
CATHODE-RAY TUBE HAVING DEGAUSSING COILS WITH FLAT PORTIONS ON AN IMPLOSION-RESISTANT BAND
Akira Fukaishi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 7, 1992, Ser. No. 925,752
Claims priority, application Japan, Aug. 7, 1991, 3-198026
The portion of the term of this patent subsequent to Aug. 30, 2011, has been disclaimed.
Int. Cl.[6] H01F *13/00*
U.S. Cl. 313—313 7 Claims

1. A cathode-ray tube comprising:
a tube body with an internal magnetic shield housed therein, said tube body having side walls, a neck portion, and a tapered transition portion connecting said side walls and said neck portion;
an implosion-resistant band disposed on said side walls of said tube body; and
a degaussing coil attached to said implosion-resistant band, said degaussing coil having a flat portion attached to said implosion-resistant band and a tubular portion extending over said tapered transition portion of said tube body.



5,382,869
LAMP BASE INNER SHELL
Glen P. Williamson, Manchester, and Donald W. Lilljedahl, Pittsfield, both of N.H., assignors to Osram Sylvania Inc., Danvers, Mass.
Filed Nov. 24, 1992, Ser. No. 980,861
Int. Cl.[6] H01J *5/50*
U.S. Cl. 313—318 6 Claims

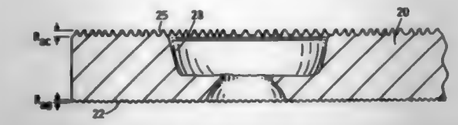


6. A lamp assembly, comprising:
a lamp tube comprising a neck portion having a plurality of molded depressions, a bottom and a pair of lead wires extending from said bottom;
an inner shell attached to said lamp tube, said inner shell comprising a base having a central opening therein, a cylindrical wall attached at a first end to an outer periphery of the base, said cylindrical wall including a threaded portion and a plurality of tabs extending therefrom separated by a like plurality of cut-out portions, each tab having an inwardly-extending indentation seated in one of said molded depressions in said lamp neck portion, and a welding electrode receiving aperture formed in said cylindrical wall adjacent said base, one of said pair of lead wires being welded to said base; and
a lamp base outer shell attached to said inner shell, said outer shell comprising a threaded, cylindrically shaped wall mated with said threaded portion of said inner shell.

5,382,870
STACKABLE APERTURE MASKS
Roland H. Thoms, Cortland, N.Y., assignor to BMC Industries, Inc., Bloomington, Minn.
Filed Sep. 21, 1992, Ser. No. 947,382
Int. Cl.[6] H01J *29/07*
U.S. Cl. 313—402 7 Claims

7. A shadow mask for use in forming a television tube comprising: a sheet of metal having a plurality of openings therein,

said sheet of metal having a cone side on one side of said sheet of metal and a grade side on the opposite side of said sheet of metal, said grade side having an average centerline roughness R_{cg}, said cone side having an average centerline roughness R_{cc} which is greater than the average centerline roughness R_{cg} so



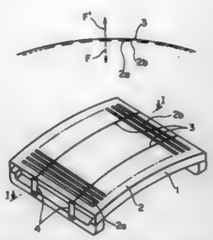
that when a plurality of aperture masks are stacked on top of one another, the grade side of one mask contacts the cone side of an adjacent mask to enable the roughness of the cone side R_{cc} and the roughness R_{cg} to form a passage way between stacked masks to allow gasses to enter between the stacked masks so one can batch anneal a stack of high acuity masks.

5,382,871

COLOR SELECTING STRUCTURE FOR A CATHODE-RAY TUBE

Hiroko Funahashi, Aichi; Mitsuo Kato, Gifu; Hidemi Miyamura, and Jun Yamazaki, both of Aichi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 963,849, Oct. 20, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,629
Claims priority, application Japan, Oct. 24, 1991, 3-277867
Int. Cl.[6] H01J *29/80*
U.S. Cl. 313—402 **2 Claims**



1. A color selecting structure for a cathode-ray tube, comprising:
a thin aperture grille plate having a plurality of tape-shaped grid elements; and
a plurality of fine wires extended across an outer surface of the aperture grille plate arranged perpendicular to an outer surface of each of the plurality of grid elements, said plurality of fine wires being tensioned to apply a force to each of the plurality of grid elements in the range of 6.73×10^{-6}lbf. to 2.24×10^{-5}lbf. to attenuate vibration of said grid elements.

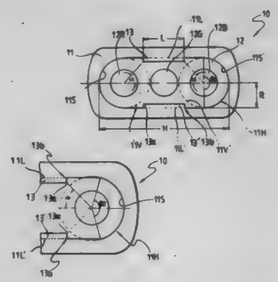
5,382,872

ELECTRON GUN FOR A COLOR CATHODE RAY TUBE

Kyung-Nam Kim; Seong-Woo Lee; Jae-Yul Hwang, and Jong-Kwan Kim, all of Kyungki, Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyungki, Rep. of Korea

Filed Sep. 15, 1992, Ser. No. 944,971
Claims priority, application Rep. of Korea, Dec. 18, 1991, 91-23390
Int. Cl.[6] H01J *29/50*
U.S. Cl. 313—414 **10 Claims**

1. An electron gun comprising:
a triode having a plurality of in-line cathodes to generate a plurality of electron beams, and including control and screen electrodes each having a plurality of in-line electron beam passing holes; and
a major lens having a focus electrode and an accelerating electrode for focusing and accelerating the plurality of electron beams, the accelerating electrode including a first member having first, second and third electron beam passing holes aligned along an axis, a second member spaced apart from said first member having an elongated electron beam passing hole which comprises first and second opposing circular arc portions, a neck portion disposed between the first and second circular arc portions and first and second connecting members which are



connected to the neck portion at first and second apices, respectively, the distance between the first and second apices satisfying the following inequality:

$$L<H-2R(1+\cos\alpha)$$

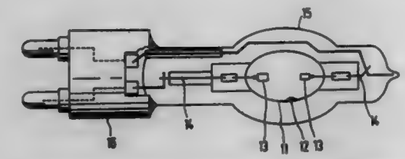
where H represents a horizontal dimension of the elongated electron beam passing hole measured along a central axis which passes through the center of the first and second circular arc portions, R represents the radius of the first circular arc portion and α represents an angle formed between the central axis and a line which interconnects the center of the first circular arc portion with the first apex.

5,382,873

HIGH-PRESSURE DISCHARGE LAMP WITH INCANDESCING METAL DROPLETS

Robert P. Scholl, Aachen, and Bernhard R. Weber, Düsseldorf, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1992, Ser. No. 975,174
Claims priority, application European Pat. Off., Dec. 4, 1991, 91203169; Mar. 25, 1992, 92200849
Int. Cl.[6] H01J *61/12, 61/82*
U.S. Cl. 313—570 **16 Claims**



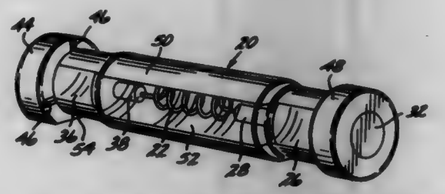
1. A high-pressure discharge lamp comprising a light transmitting discharge vessel sealed in a gas-tight manner and a filling in said discharge vessel comprising a metal compound and a rare gas, wherein said metal compound evaporates during normal operation and decomposes to form condensed metal particles which generate light by incandescent emission, characterized in that:
the metal compound is chosen from the group consisting of halides of hafnium and halides of zirconium.

5,382,874

SELF-ALIGNING LIGHT DIRECTING SURFACE MOUNTABLE MINIATURE INCANDESCENT LAMP

Ralph E. Johnson, Los Alamitos, Calif., assignor to Illumination Technology, Inc., Los Alamitos, Calif.

Filed Nov. 3, 1992, Ser. No. 970,767
Int. Cl.[6] H01K *1/42*
U.S. Cl. 313—578 **18 Claims**



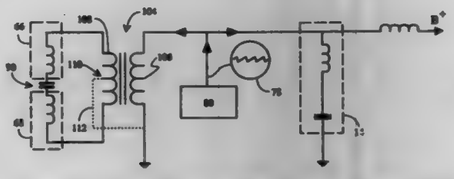
1. A surface mountable miniature incandescent lamp assembly, comprising:
an elongated substantially cylindrical glass envelope having a first end and a second end, and having a light reflective coating disposed on a portion of its outer surface, the portion of the surface where there is no reflective coating forming a window transparent to light;
a substantially cylindrical first metal end piece which seals the first end of the glass envelope in a first air-tight glass-to-metal seal of substantially cylindrical configuration, and second end piece which seals a second ead of the glass envelope in a second air-tight glass-to-metal seal of substantially cylindrical configuration whereby there is no wire-to-glass seal in the lamp assembly;
a filament disposed between the first and second metal end pieces within the interior of the glass envelope and in electrical contact with the first and second metal end pieces;
alignment means included in at least one of the end pieces which is directionally coupled to the position of the light-transparent window on the glass envelope for rotationally aligning the lamp assembly relative to a reference surface with the window positioned in a predetermined direction, said alignment means configured to be disposed in contact with the reference surface when the lamp assembly is mounted to the reference surface.

5,382,875

STRAY MAGNETIC FIELD SUPPRESSER FOR CRT IMAGE DISPLAYS

Wayne D. Grocki, Libertyville, and Christopher S. DeWaal, Oak Park, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 10, 1992, Ser. No. 927,705
Int. Cl.[6] H01J *29/06*
U.S. Cl. 315—8 **13 Claims**



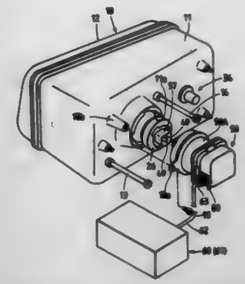
1. For use in a CRT image display, a stray magnetic field suppression system for suppressing a stray magnetic field that emanates from the horizontal deflection coil of a beam-deflecting yoke energized by sawtooth waveform pulses from a horizontal oscillator, comprising:
a) a first magnetic coil assembly and a second magnetic coil assembly electrically connected in series with a capacitor therebetween, and energized by the sawtooth waveform pulses of the horizontal oscillator, the first and second magnetic coil assemblies being in parallel with the yoke;
b) the capacitor serving to integrate the sawtooth waveform pulses into a waveshape effective in suppressing stray magnetic fields;
whereby the stray magnetic field suppression system effectively suppresses the stray magnetic field of the horizontal deflection coil when the first magnetic coil assembly and the second magnetic coil assembly are interposed in the path of the stray magnetic field on opposite sides of the yoke.

5,382,876

CORD CONNECTION STRUCTURE FOR CONNECTING A BALLAST CIRCUIT AND A STARTER CIRCUIT

Masatoshi Sugasawa; Atsushi Toda; Masaru Sasaki; Masayasu Yamashita; Akihiro Matsumoto; Akiyoshi Ozaki, and Goichi Oda, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,503
Claims priority, application Japan, Aug. 5, 1991, 3-195549; Jul. 7, 1992, 4-179640
Int. Cl.[6] B60Q *1/34*
U.S. Cl. 315—82 **6 Claims**



1. A cord connection structure for connecting a ballast circuit to a starter circuit in which an output cord deriving from a starter circuit unit mounted on a lamp body is connected to a discharge bulb inserted into a bulb insertion hole, and a connector of an output cord derived from a ballast circuit unit disposed in the vicinity of a starter circuit unit is removably connected to a connector connection part provided in the starter circuit unit, comprising means provided around said connector connection part for preventing said output cord from slipping-off, said cord slipping-off preventing means covering said connector coupled into said connector connection part.

5,382,877

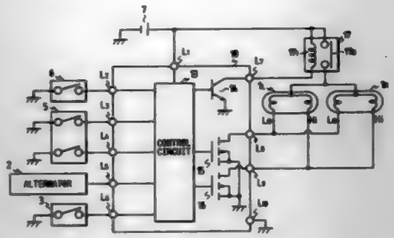
VEHICLE HEADLAMP CONTROL SYSTEM

Shuichi Katsumata; Akira Kawabata, and Hironori Matsumoto, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 15, 1993, Ser. No. 31,473
Claims priority, application Japan, Mar. 19, 1992, 4-063574
Int. Cl.[6] B60Q *1/02*
U.S. Cl. 315—82 **6 Claims**

1. A vehicle headlamp control device for controlling operation of a headlamp on a vehicle, said control device comprising:
a control circuit for controlling an intensity of illumination of said vehicle headlamp by applying a driving pulse

current to said headlamp through a transistor, said control circuit including:



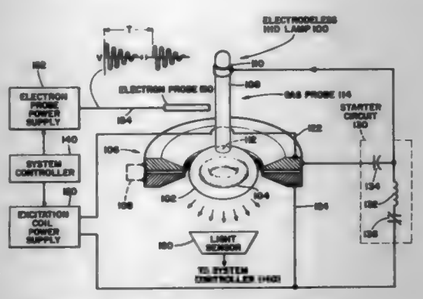
a frequency division counter for adjusting a duty ratio of said driving pulse current in response to a control signal to change said intensity of illumination of said head lamp.

5,382,878

AUTO-STARTING SYSTEM FOR AN ELECTRODELESS HIGH INTENSITY DISCHARGE LAMP

Michael M. Secen, Mentor; Edward J. Thomas, Streetsboro, both of Ohio, and Sayed-Amr A. El-Hamamsy, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,272
Int. Cl.[6] H05B *41/24, 41/36*
U.S. Cl. 315—248 **23 Claims**



1. An auto-starting lamp system, comprising:
(a) an electrodeless high intensity discharge lamp including:
(i) an arc tube containing an ionizable fill;
(ii) an excitation coil surrounding said arc tube for exciting a discharge in said ionizable fill at least during steady state lamp operation; and
(iii) a starter circuit for facilitating discharge of said ionizable fill;
(b) a controllable radio frequency power source for powering said lamp excitation coil;
(c) an electrical network for matching the impedance of said excitation coil to the impedance of the radio frequency power source, said impedance-matching network providing a single impedance matched value present during both lamp start-up and steady state lamp operation;
(d) control means for causing said radio frequency power source, during lamp start-up, to ramp up in power to a peak level in excess of a steady state lamp operating power level, and then to decrease from the peak level.

5,382,879

RF FLUORESCENT LIGHTING SYSTEM

William J. Council, Newbury Park; Robert F. McClanahan, Valencia, and Robert D. Washburn, Malibu, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 983,106, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 649,644, Feb. 1, 1991, abandoned. This application Feb. 15, 1994, Ser. No. 196,883
Int. Cl.[6] H05B *41/16*
U.S. Cl. 315—248 **11 Claims**



1. A fluorescent light system comprising:
a gas containment tube having an internal phosphor coating and containing an ionizable gas;
RF drive means for producing a power RF signal;
first and second elongated electric field concentrating electrodes secured to said gas containment tube and responsive to said RF signal for producing an ionizing electric field within said gas containment tube, said elongated electrodes extending along the longitudinal direction of said gas containment tube and being parallel to each other so as to be adjacent each other along a portion of the longitudinal extent of said gas containment tube; and
an ignition tab connected to said first elongated electric field concentrating electrode extending laterally therefrom toward said second elongated electric field concentrating electrode.

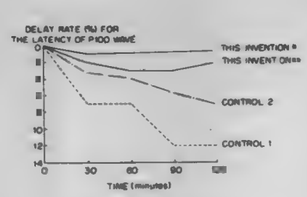
5,382,880

METHOD FOR EMITTING LIGHT WHICH DOES NOT SUBSTANTIALLY DELAY THE LATENCY OF P100 WAVE IN HUMAN VEP

Masakazu Mitsuhashi, and Osamu Matsuda, both of Okayama, Japan, assignors to Ken Hayashibara, Okayama, Japan

Continuation of Ser. No. 848,436, Mar. 9, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 139,061
Claims priority, application Japan, Mar. 8, 1991, 3-067539
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—291 **10 Claims**





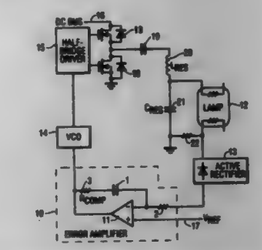
1. A lighting device for healthy eyes comprising:
a luminous source means for emitting a light which substantially does not delay the latency of P100 wave in human VEP when energized at a dc voltage of about 105–140% of its rated voltage, said luminous source means comprising at least one incandescent lamp which has a rated wattage of 40–100 W and emits a light which has a general color rendering index (Ra) of 100; and
a power source means for energizing said incandescent lamp with a dc voltage of about 105–140% of the rated voltage of said incandescent lamp, said dc voltage being obtainable by rectifying and smoothing a standard ac line with a rectifier circuit bearing a smoothing means.

5,382,881

BALLAST STABILIZATION CIRCUITRY FOR ELIMINATING MODING OR OSCILLATION OF THE CURRENT ENVELOPE IN GAS DISCHARGE LAMPS AND METHOD OF OPERATING

Thomas Farkas, and Sreeraman Venkitasubrahmanian, both of Ossining, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 28, 1992, Ser. No. 997,989
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—307 **10 Claims**



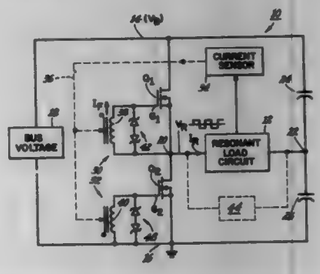
1. Ballast stabilization circuitry for gas discharge tubes comprising:
(a) at least one low pressure gas discharge lamp, and
(b) control circuit means for controlling current through said at least one gas discharge lamp,
said control circuit means including:
feedback network means having a resistance value that introduces a zero in frequency response of said control circuit means and for eliminating oscillation to the lamp current envelope.

5,382,882

POWER SUPPLY CIRCUIT FOR A GAS DISCHARGE LAMP

Louis R. Nerone, Brecksville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 20, 1993, Ser. No. 49,911
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—307 **14 Claims**



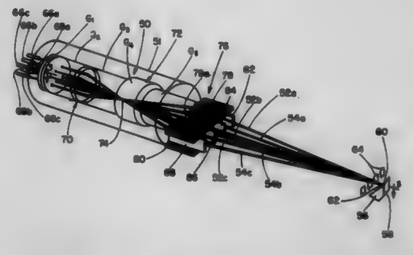
1. A power supply circuit for a gas discharge lamp, comprising:
(a) means for providing a d.c. bus voltage on a bus conductor;
(b) a resonant load circuit including a gas discharge lamp, a first resonant impedance in series with said gas discharge lamp, and a second resonant impedance in parallel with said discharge lamp; said resonant load circuit operating at a resonant frequency determined by the values of said first and second resonant impedances;
(c) a series half-bridge converter for impressing across said resonant load circuit a bidirectional voltage, and thereby inducing a bidirectional current in said resonant load circuit; said converter comprising first and second switches serially connected between said bus conductor and a ground conductor, having a common node coupled to a first end of said resonant load circuit and through which said bidirectional current flows, and having respective control terminals for controlling the conduction states of said switches;
(d) means for generating a feedback signal as a function of at least a portion of the current in said second resonant impedance of said resonant load circuit;
(e) feedback means, responsive to said feedback signal, for providing respective control signals on said control terminals of said first and second switches; said feedback means being effective for controlling the switching of said switches in such a manner as to reduce a phase angle between said bidirectional voltage and said bidirectional current when said feedback signal increases, and vice-versa; and,
(f) wherein said means for generating said feedback current comprises a first inductor winding serially connected to said second resonant impedance, with said gas discharge lamp connected in parallel with the series combination of said second resonant impedance and said gas discharge lamp.

5,382,883

MULTI-BEAM GROUP ELECTRON GUN WITH COMMON LENS FOR COLOR CRT

Hsing-Yao Chen, Barrington, Ill., and Chun-Hsien Yeh, Taipei, Taiwan, Prov. of China, assignors to Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan, Prov. of China

Filed Jul. 28, 1993, Ser. No. 98,072
Int. Cl.[6] H01J *29/51*
U.S. Cl. 315—368.15 **27 Claims**



1. An electron gun for a multi-beam color cathode ray tube (CRT) including a display screen whereon a video image is formed by sweeping a plurality of horizontally aligned electron beams over a plurality of vertically spaced, horizontal scan lines in a raster-like manner, wherein each electron beam provides one of the three primary colors of red, green or blue of the video image, said electron gun including a high voltage common focus lens for focusing the electron beams on said display screen, the electron gun comprising:
cathode means for providing energetic electrons;
beam forming means disposed intermediate the cathode means and said common focus lens for forming said energetic electrons into a plurality of beams, said beam forming means including first and second spaced, charged grids respectively having first and second arrays of spaced apertures for forming the energetic electrons into a plurality of beams, wherein each of said first and second arrays of apertures include upper and lower horizontally aligned apertures for passing horizontally aligned electron beams

providing the three primary colors of red, green and blue for upper and lower horizontal scan lines, respectively, and wherein the apertures in said first and second arrays are further grouped in vertical alignment so as to form vertically grouped electron beams with the electron beams in each vertical group providing one of the primary colors on a respective horizontal scan line; and

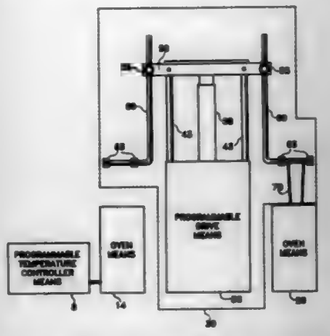
convergence means disposed intermediate said common focus lens and the display screen for converging the electron beams into an upper and a lower spot on the display screen, wherein the upper and lower spots are swept over adjacent upper and lower horizontal scan lines, respectively.

5,382,884

MEANS AND METHOD FOR TESTING VOLATILE MATERIAL

Imran S. Hussami, Wichita, Kans., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 30, 1992, Ser. No. 875,949
Int. Cl.[6] G05B *19/04*; F27B *14/10*; G01N *25/00*
U.S. Cl. 318—567 **3 Claims**



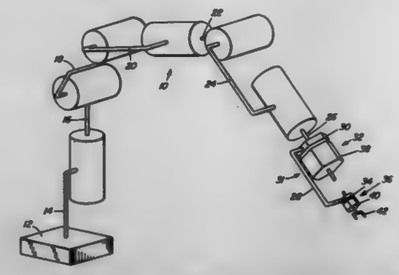
1. An apparatus for testing volatile material comprising:
(a) a crucible for holding volatile material;
(b) a crucible holder means for holding the crucible;
(c) an oven having an open chamber for heating the volatile material;
(d) a means for controlling the temperature of the oven;
(e) a moving means for causing the crucible to enter the oven and withdraw from the oven in a predetermined manner, said moving means comprising:
a reversible drive motor having an up input and a down input;
a drive member cooperating with the drive motor to be driven either in an upward direction or a downward direction by the drive motor; and
a header means affixed to the drive member and to the crucible holder means in a manner so that as the drive motor drives the drive member in an upward or downward direction, the drive member causes the crucible to move into and out of the oven chamber; and
(f) a programmable means for controlling the drive motor so as to control the movement of the crucible,
said programmable means comprising:
a start means for providing clock pulses;
a first switch means receiving a drive voltage for blocking or passing the drive voltage in accordance with a first control signal;
means connected to the start means and to the first switch means for utilizing the clock pulses to provide a series of pulses to the first switch means as the first control signal; and
a down limit means connected to the first switch means and to the down input of the drive motor for allowing the drive voltage from the first switch means to be applied to the down input of the drive motor and preventing the drive voltage from being applied to the drive motor's down input when the crucible is at a lowest desired position within the oven.

5,382,885

MOTION SCALING TELE-OPERATING SYSTEM WITH FORCE FEEDBACK SUITABLE FOR MICROSURGERY

Septimiu E. Salcudean, and Joseph Yan, both of Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Aug. 9, 1993, Ser. No. 103,653
Int. Cl.[6] G05B *11/00*
U.S. Cl. 318—568.11 **19 Claims**



1. A robotic system comprising an arm having a position adjustable-free end, said arm having joint connections constructed for macro-adjustments of said free end, an extension mounted on said free end, a micro teleoperation system mounted on said extension, said micro teleoperation system including a slave stator and a master stator mounted in fixed relationship on said extension, a slave floater cooperating with said slave stator and a master floater cooperating with said master stator, means for sensing the position of each of said master and said slave floaters relative to their respective said master and said slave stators, coupling means coupling said master floater and said slave floater so that movement of said master floater produces a scaled moment of said slave floater and movement of said slave floater produces a scaled movement of said master floater, said movement of said master resulting in a smaller corresponding scaled movement of said slave floater and said movement of said slave resulting in larger corresponding scaled movement of said master floater.

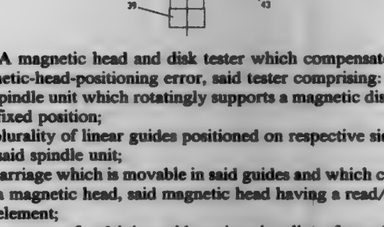
5,382,886

ELECTRIC WAVEFORM GENERATING CIRCUIT FOR BRUSHLESS MOTOR

Yasuo Mizuide, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 14, 1993, Ser. No. 61,002
Claims priority, application Japan, May 18, 1992, 4-124454
Int. Cl.[6] H02P *5/40*; H03K *5/00*
U.S. Cl. 318—807 **9 Claims**

1. An electric waveform generating circuit for a brushless motor, comprising:
frequency generating means for generating a triangular wave;
inverting means for generating an inverted triangular wave obtained by inverting the triangular wave from the frequency generating means;
analog switch means for operatively combining the triangular wave from the frequency generating means and the inverted triangular wave from the inverting means based on a specified timing signal synchronized with an oscillating cycle of the triangular wave from the frequency generating means; and



synthesizing means for synthesizing the input from the analog switch means and outputting a synthesized wave form.

5,382,887

METHOD AND APPARATUS FOR COMPENSATING POSITIONING ERROR IN MAGNETIC-HEAD AND MAGNETIC-DISK TESTER

Nahum Guzik, Palo Alto; Ufuk Karaaslan, Sunnyvale, and Boris Slutsky, Los Altos, all of Calif., assignors to Guzik Technical Enterprises, Inc., San Jose, Calif.

Filed Mar. 25, 1993, Ser. No. 36,975
Int. Cl.[6] G11B *5/54*
U.S. Cl. 318—652 **15 Claims**

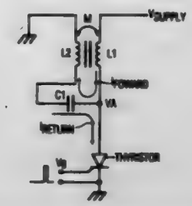
7. A magnetic head and disk tester which compensates for magnetic-head-positioning error, said tester comprising:
a spindle unit which rotatingly supports a magnetic disk in a fixed position;
a plurality of linear guides positioned on respective sides of said spindle unit;
a carriage which is movable in said guides and which carries a magnetic head, said magnetic head having a read/write element;
drive means for driving said carriage in a line of travel, said drive means being capable of imparting a displacement to said magnetic head with respect to said magnetic disk; and
a measurement system for measuring a position of said magnetic head with respect to said magnetic disk, said system comprising:
a first measurement member located at a first point of said carriage;
a second measurement member located at a second point of said carriage, said first measurement member being capable of measuring a displacement of said first point and said second measurement member being capable of measuring a displacement of said second point, said displacement occurring in part under the effect of yawing of said carriage in said guides because of instability factors including asymmetrical friction;
an arithmetic unit arranged to calculate a displacement of said head on the basis of outputs of said measurement members; and
a feedback line from said arithmetic unit to said drive means, thereby to eliminate said magnetic-head-positioning error and to return said magnetic head to a correct position with respect to said magnetic disk.

5,382,888

FOCUSING DEVICE WITH TWO DYNAMIC WINDINGS FOR ENERGY RECOVERY

Jean M. Perreaut, Dijon, and Bruno F. Roussel, Genlis, both of France, assignors to Thomson Tubes & Displays, S.A., Paris, France

Continuation of Ser. No. 1,105, Jan. 6, 1993, abandoned. This application Nov. 18, 1993, Ser. No. 154,382
Claims priority, application European Pat. Off., Jan. 10, 1992, 92400068.0
Int. Cl.[6] G09G *1/04*; H01J *29/58*
U.S. Cl. 315—382 **16 Claims**



1. A focusing device for a scanning electron beam, comprising:
means for producing a static focusing field for converging said beam;
means for producing a dynamic focusing field for said beam, said dynamic focus means having a first winding coupled to a current supply for providing a dynamic magnetic focus field during trace intervals of said beam and a second winding magnetically coupled to said first winding; and,
means coupled to said first winding and to said second winding for storing energy during said trace intervals and for releasing energy during retrace intervals, said second winding inducing a reverse current in said first winding for returning current to a power supply during said retrace intervals.

5,382,889

SELF-COMMUTATING, BACK-EMF SENSING, BRUSHLESS DC MOTOR CONTROLLER

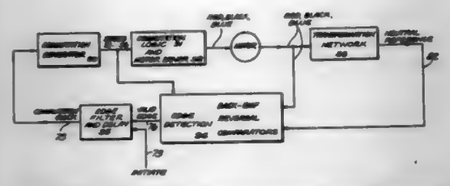
David H. Peters, Westminster, and Jeff Harth, Tustin, both of Calif., assignors to Silicon Systems, Inc., Tustin, Calif.

Continuation of Ser. No. 411,712, Sep. 25, 1989, Pat. No. 5,202,614. This application Dec. 3, 1992, Ser. No. 985,620
Int. Cl.[6] H02P *6/02*
U.S. Cl. 318—254 **4 Claims**

1. A circuit for commutating the voltage supply for a polyphase brushless DC motor having a plurality of commutation states and a plurality of windings comprising:
a plurality of comparators simultaneously coupled to said motor for detecting back-EMF associated with a plurality of windings of said motor, wherein each of said windings is individually coupled to an associated one of said comparators, said comparators providing separate detection signals for each of said plurality of windings;
detection signal qualification means coupled to said comparators for selecting from said detection signals to provide

an output signal based on said detection signals and a commutation state signal corresponding to a commutation state of said motor;

commutation state generating means coupled to said detection signal qualification means for providing said commutation state signal; and



commutation state signal transformation means coupled to said commutation state generating means for transforming said commutation state signal into motor drive signals, said motor drive signals coupled to said motor for advancing said motor to a next commutation state.

5,382,890

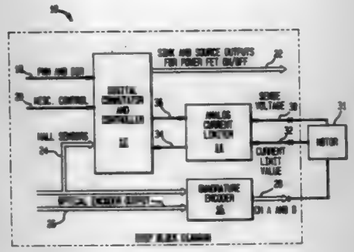
INTEGRATED CIRCUIT DRIVER HAVING CURRENT LIMITER FOR BRUSHLESS MOTOR

Sungwon R. Moh, Wilton; Scott T. Potter, Fairfield; Frank D. Ramirez, Stamford, and Edilberto I. Salazar, Brookfield, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 17, 1993, Ser. No. 18,597

Int. Cl.[6] H02P *6/00*

U.S. Cl. 318—254 **11 Claims**



1. An integrated circuit driver for a brushless motor having encoder means comprising a plurality of Hall-effect sensors operative for providing commutation information to a motor controller, the integrated circuit comprising means for decoding the commutation information from the Hall-effect sensors, output means connected to said decoding means, said output means being operative for providing switching signals in accordance with the decoded commutation information, an analog current limiter, said current limiter including means for dynamically switching the current limit values for current in the motor between a high current limit value and a low current limit value, wherein the decoder means receives a PWM signal for providing commutation switching information and wherein the output of the pulse-by-pulse comparator is released at a rising edge of the PWM signal and is thereafter latched to prevent motor current for the remainder of the active PWM signal, and timing means for providing clock pulses wherein if the next rising edge of the PWM signal is not detected, output of the pulse-by-pulse comparator cannot be unlatched for a predetermined number of clock cycles.

5,382,891

MAN/MACHINE INTERFACE

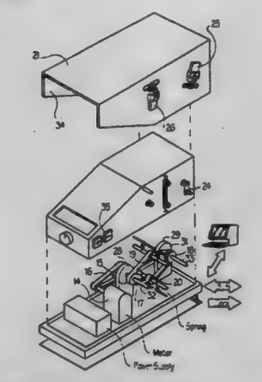
Guy S. Huffener, Krelttmayr Str. 28, D-8000 Munchen 2, Germany

PCT No. PCT/EP90/01894, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/09069, PCT Pub. Date May 29, 1992

PCT Filed Nov. 13, 1990, Ser. No. 910,253

Int. Cl.[6] H02P *1/00*

U.S. Cl. 318—269 **9 Claims**



1. Man/machine interface comprising:

pedal means for setting a driving speed of a means for generating a sequence of electrical timing pulses;

means for maintaining the set driving speed of said generating means;

said pedal means including a first rotating shaft;

said generating means including an encoder attached to said shaft;

said maintaining means including a motor operatively connected to said shaft and a motor control circuit for controlling the speed of said motor, said motor control circuit including differentiating means for determining a rate of change in the rotational speed of said first shaft and outputting a signal in accordance therewith, said motor control circuit driving said motor in accordance with said signal; and

said differentiating means including a second shaft connected to the pedal means and operatively connected to the first shaft via elastic transmission means, and a potentiometer connected to said elastic transmission means so that the potentiometer outputs said signal in accordance with relative positions of the first and second shafts.

5,382,892

Patent Not Issued For This Number

5,382,893

MAXIMUM POWER REGULATED BATTERY CHARGER

Kris P. Dehnel, Cypress, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

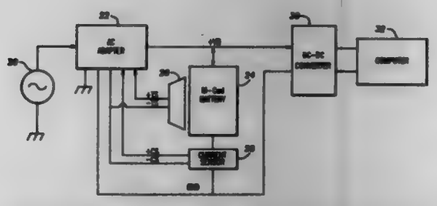
Filed May 16, 1991, Ser. No. 701,657

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—32 **30 Claims**

1. An AC adapter having an output for providing DC power to a substantially constant power load which can be selectively enabled or disabled, having a maximum load value and being substantially constant above a lower voltage level and to charge a battery, where the load and the battery are each electrically coupled to the output, and the battery is removably connected to the circuit and has a fully charged voltage level, comprising:

power regulated source means having an output power control input, an output power sense output and a voltage output having a positive terminal and a negative terminal, wherein the positive terminal of the battery and the load are connected to said positive terminal of said voltage output, the negative terminal of the load is connected to said negative terminal of said voltage output, and the negative terminal of the battery is coupled to said negative terminal of said voltage output, wherein said voltage output provides the AC adapter output, for providing up to a predetermined maximum power level to the substantially constant load and the battery, said power regulated source means predetermined maximum power level exceeding the maximum load provided by the substantially constant load, such that the battery absorbs the remaining power supplied by said power regulated source means and said predetermined maximum power level being less than



the battery fully charged voltage level times the current drawn by the substantially constant power load at the lower voltage level; and

means having a sense input and a control output, said control output connected to said output power control input and said sense input connected to said output power sense output, for controlling the voltage output of said power regulated source means, said control means including means for limiting the output power provided by said power regulated source means to said predetermined maximum power level when the battery is in a condition for rapid charging and the total load presented to said power regulated source means by the battery and the substantially constant power load would otherwise cause the power output by said power regulated source means to exceed said predetermined maximum power level.

5,382,894

METHOD AND APPARATUS FOR THE MEASUREMENT OF CONTAMINANTS IN TEXTILES DURING CONTINUOUS PROCESSING

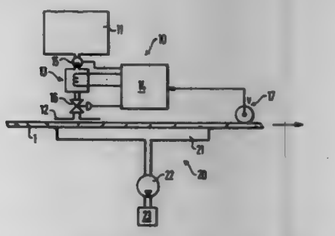
Hellmut Beckstein, Bad Abbach, Germany, and Hans Bors, Fällanden/Zurich, Switzerland, assignors to Mahlo GmbH & Co. KG, Saal, Germany

Filed Aug. 27, 1992, Ser. No. 936,607

Claims priority, application Germany, Aug. 27, 1991, 4128344; Sep. 23, 1991, 4131616

Int. Cl.[6] G01N *27/00*

U.S. Cl. 324—71.1 **13 Claims**



1. A method of measuring extraneous organic and inorganic substances in a cloth treated by a wet process, comprising the steps of:

squeezing the cloth;

generating a vapor of solvent adapted for solving said extraneous organic and inorganic substances;

applying said vapor to a predetermined area of said cloth in a direction perpendicular to a first surface of said cloth;

controlling a volume flow of said vapor applied to said cloth;

leaving said solvent in said cloth after application for a predetermined period of time;

collecting said solvent from said cloth in a direction perpendicular to a second surface of said cloth opposite to said first surface for passing said solvent through said cloth and extracting said extraneous substances by said solvent from an interior of said cloth between said first and said second surface; and

feeding said collected solvent to an analyzer system for measuring said extraneous substances extracted from said cloth by said solvent.

5,382,895

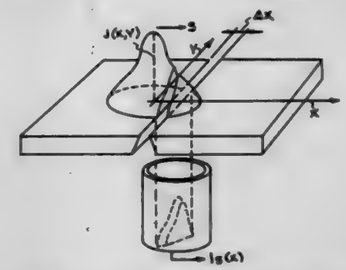
SYSTEM FOR TOMOGRAPHIC DETERMINATION OF THE POWER DISTRIBUTION IN ELECTRON BEAMS

John W. Elmer, Pleasanton; Alan T. Teruya, and Dennis W. O'Brien, both of Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Dec. 28, 1992, Ser. No. 996,892

Int. Cl.[6] G01R *13/00*; G01T *1/29*

U.S. Cl. 324—71.3 **15 Claims**



1. A computer tomographic process for determining the power distribution in a beam of energy, comprising the steps of:

obtaining beam profile data by sweeping a beam of energy a plurality of times at different angles across a slit in a modified Faraday cup assembly at the same angle with respect to the slit on each sweep; and

reconstructing the power distribution in the beam by processing the thus obtained beam profile data via computer tomography.

5,382,896

MEASURING ASSEMBLY WITH CURRENT SENSOR AND SUPPLY TRANSFORMER

Pierre Schueller, Grenoble; Pierre Laffont, Sassenage, and Pascal Houbre, St. Martin d'heres, all of France, assignors to Merlin Gerin, France

Filed Mar. 5, 1993, Ser. No. 27,099

Claims priority, application France, Mar. 19, 1992, 92 03435

Int. Cl.[6] G01R *1/04*

U.S. Cl. 324—127 **5 Claims**

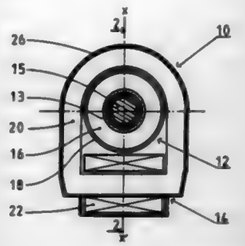
1. A measuring assembly for an electronic trip device, said assembly comprising:

a common primary conductor passing through an orifice of the assembly;

a current sensor comprising a closed non-magnetic toroid, of Rogowski type, through which said primary conductor

passes, and a first secondary winding for delivering a measuring signal that is proportional to the derivative of the current flowing in said primary conductor;

a supply transformer comprising a magnetic circuit made of ferromagnetic material, and formed by a closed frame, surrounding said current sensor, and a second secondary winding wound upon said magnetic circuit in a low magnetic field zone for applying a power supply voltage to said trip device;



wherein the current sensor is arranged inside said magnetic circuit, and coaxially around said orifice, and wherein the first secondary winding of the current sensor is located nearer to the primary conductor than a second secondary winding of the supply transformer, said primary conductor being common to both said current sensor and said supply transformer.

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CROSS-COIL TYPE MEASURING INSTRUMENT WITH CORRECTION MEANS FOR VARYING A SUPPLY VOLTAGE

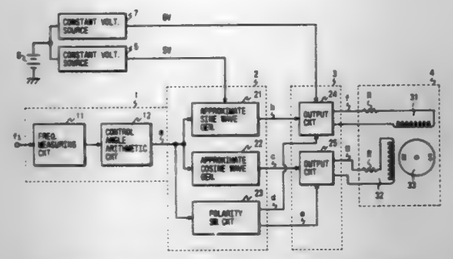
Masafumi Nagumi, Saitama, Japan, assignor to Kansei Corporation, Saitama, Japan

Filed Oct. 23, 1992, Ser. No. 965,925

Claims priority, application Japan, Oct. 24, 1991, 3-094944[U]; Nov. 28, 1991, 3-105345[U]

Int. Cl.[6] G01R *11/36;* **G01P** *3/48*

U.S. Cl. 324—143 **14 Claims**



1. A cross-coil type measuring instrument comprising:

a cross-coil type measuring means including a pair of coils arranged crossed forming a predetermined angle with each other, and a movable magnet magnetized bi-polar which is set rotatable by a magnetic action of said pair of coil;

an arithmetic circuit means for receiving and converting values to be measured into control signals;

a driving means for producing polarized drive signals which are different from each other in phase and change in response to variation in said values to be measured; and

a constant voltage source for supplying a constant voltage to said driving means, the first constant voltage being switched to a second constant voltage periodically in response to a switching signal, said switching signal being controlled by said arithmetic circuit means.

5,382,898

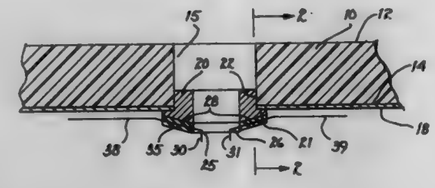
HIGH DENSITY PROBE CARD FOR TESTING ELECTRICAL CIRCUITS

Eswar Subramanian, Phoenix, Ariz., assignor to Cerprobe Corporation, Tempe, Ariz.

Filed Sep. 21, 1992, Ser. No. 947,935

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **13 Claims**



1. A probe card comprising:

(a) a planar printed circuit board having upper and lower substantially parallel surfaces, and having an opening extending therethrough;

(b) said lower surface having a ground plane formed thereon;

(c) a ground strip secured to said printed circuit board and positioned in said opening adjacent said ground plane and having a support surface;

(d) means electrically connecting said ground strip to said ground plane;

(e) a plurality of probes, each extending into said opening for making temporary electrical contact with a circuit to be tested, each probe extending along and parallel to said support surface and positioned a predetermined distance therefrom; and

(f) electrical insulating means securing said probes to said support surface to electrically insulate said probes from said ground strip and to maintain said predetermined distance.

5,382,899

POSITION DETECTING AND TIME MEASURING DEVICE PROVIDING MEASUREMENT FINER THAN A CLOCK SIGNAL PERIOD

Mitsuhiro Funatsu, Nagareyama, and Kazuya Sakamoto, Hamura, both of Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan

Filed Nov. 19, 1992, Ser. No. 978,782

Claims priority, application Japan, Nov. 22, 1991, 3-332880

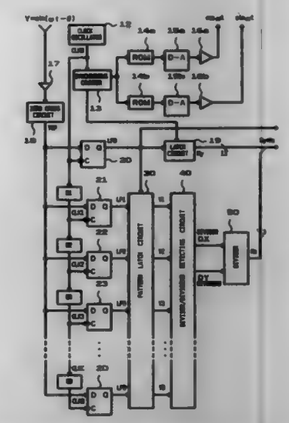
Int. Cl.[6] G01B *7/14;* **G08C** *19/06*

U.S. Cl. 324—207.18 **15 Claims**

1. A position detecting device which comprises:

a first absolute position detecting means for generating an A.C. output signal having a phase electrically shifted in accordance with a position of a moving object, sampling a counted value of a counter circuit in response to an electrical phase change at a zero cross time point of the A.C. output signal, and outputting the sampled counted value of the counter circuit as absolute position data of the moving object, and

a second absolute position detecting means for generating one or more delayed clock signals delayed from a clock signal on the basis of which said counter circuit counts by an amount of time smaller than one period of the clock signal, for utilizing the one or more delayed clock signals to measure the zero cross time point of the A.C. output signal in accordance with a unit time smaller than the one period of the clock signal, and for outputting, as said absolute position data, the measured time point after having been added to said sampled counted value.



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MULTI-DISPLACEMENT DETECTING APPARATUS FOR DETECTING ROTARY AND RADIAL DISPLACEMENT WITH TWO PAIR OF SENSORS

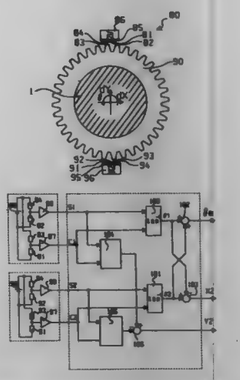
Yasukazu Hayashi, Niwa, Japan, assignor to Okuma Corporation, Aichi, Japan

Division of Ser. No. 948,309, Sep. 22, 1992. This application Dec. 22, 1993, Ser. No. 171,619

Claims priority, application Japan, Sep. 25, 1991, 3-273176

Int. Cl.[6] G01B *7/14, 7/30;* **G06F** *15/20*

U.S. Cl. 324—207.23 **2 Claims**



1. A multi-displacement detecting apparatus, comprising:

a moving section whose surface is continuously irregular in the moving direction;

a stationary section including a plurality of sensors each outputting a signal that contains an output component whose level is proportional to a sine-wave value of a displacement in said moving direction and has an amplitude modulated in proportion to a variation in a gap from said irregular surface; and

an arithmetic logic circuit for receiving output signals from said plurality of sensors and for outputting signals indicative of a displacement in said moving direction and another at least one displacement of said moving section;

wherein said moving section is a cylindrical rotor made of a magnetic substance;

and wherein said plurality of sensors include two pairs of sensors arranged point-symmetrically across a rotation center of said moving section, wherein said arithmetic logic circuit includes means for converting output signals of said two pairs of sensors into two respective sine-wave value signals whose levels are proportional to a sine-wave value of a rotary displacement of said moving section and two corresponding respective cosine-wave value signals whose respective phases differ 90° from said two sine-wave value signals, and wherein said arithmetic logic circuit also includes means for performing additions and subtractions using two inverse tangent values respectively calculated with one of said sine-wave value signals and a respective one of said cosine-wave value signals and for providing signals indicative of a rotary displacement and a displacement perpendicular to a straight line linking said two pairs of sensors.

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OPTICAL MAGNETIC FIELD SENSOR CAPABLE OF PRECISE MEASUREMENT WITHOUT TEMPERATURE INDUCED ERRORS

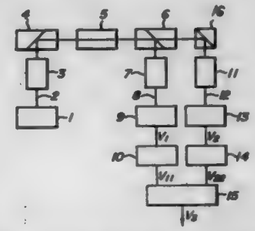
Hisakazu Okajima, Nishikasugai, and Masaki Noda, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Feb. 2, 1993, Ser. No. 12,843

Claims priority, application Japan, Aug. 29, 1991, 3-242386; Feb. 21, 1992, 4-035037

Int. Cl.[6] G01R *31/00, 33/02;* **G02B** *5/30*

U.S. Cl. 324—244.1 **2 Claims**



1. An optical magnetic field sensor, comprising a light source, a polarizer which changes a light beam emanated from the light source through an optical fiber transmission path into a linear polarized light beam, a Faraday's element which gives a Faraday's effect to the linear polarized beam depending on an applied magnetic field, an analyzer which separates the linear polarized light beam given with the Faraday's effect into a S polarized light beam and a P polarized light beam, a first light beam-receiving element which receives and changes the S polarized light beam into an electric signal V_1 depending on the beam intensity, a second light beam receiving element which receives and changes the P polarized light beam into an electric signal V_2 depending on the beam intensity, a first calculation circuit which is supplied with the electric signal V_1 having a direct current component DC1 from the first light beam-receiving element to obtain an output V_{11} based on an equation $V_{11}=(V_1-DC1)/DC1$, a second calculation circuit which is supplied with the electric signal V_2 having a direct current component DC2 from the second light beam-receiving element to obtain an output V_{22} based on an equation $V_{22}=(V_2-DC2)/DC2$, and a third calculation circuit for providing compensation for temperature changes, wherein the third calculation circuit is supplied with the outputs V_{11} and V_{22} to generate an output V_3 based on an equation $V_3=1/(\alpha/V_{11}+\beta/V_{22})$ when the product of $V_{11}\times V_{22}$ is a positive value or an equation $V_3=1(\alpha/V_{11}-\beta/V_{22})$ when the

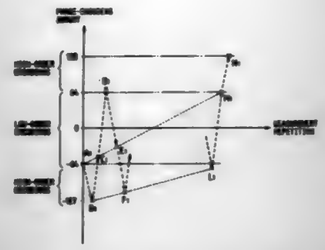
product of $V_{11} \times V_{22}$ is a negative value, wherein α and β are constants and $\alpha+\beta=1$, the output V_3 of the third calculation circuit being a decisive value for obtaining a magnetic field strength.

5,382,902

METHOD FOR ELIMINATING MOTIONAL ARTIFACTS IN MAGNETIC RESONANCE IMAGING

Yo Taniguchi, Kokubunji, and Etsuji Yamamoto, Akishima, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 985,645
Claims priority, application Japan, Dec. 6, 1991, 3-322211
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—309 **19 Claims**



1. Magnetic resonance imaging method for obtaining an image of an object laid in a space in which a static magnetic field is applied, the method comprising the steps of:

A) sequentially measuring a plurality of magnetic resonance views with a plurality of encodings by repeating a measurement sequence including substeps of:

a) exciting nuclear spins in said object,

b) applying a phase-encoding field gradient along a first direction with programmed time integral to encode the excited spins, and

c) detecting the encoded spins in the presence of a readout field gradient along a second direction to generate a magnetic resonance view,

wherein measurements of magnetic resonance views with at least low-order encodings are obtained during the repetition of the measurement sequence;

B) subjecting respective magnetic resonance views to a first Fourier transformation so as to generate a plurality of projection views with a plurality of encodings forming a data matrix of a hybrid domain;

C) correcting displacements in respective projection views due to motion of the object using displacement information obtained from projection views with low-order encodings so as to generate a corrected data matrix in the hybrid domain for generating the image of the object based on the corrected projection views including low-order encodings; and

D) subjecting the corrected data matrix to a second Fourier transformation so as to generate the image of the object.

5,382,903

MAGNETIC RESONANCE APPARATUS

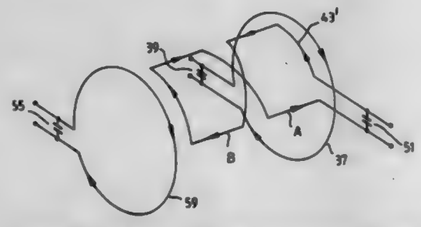
Ian R. Young, Nr. Marlborough, England, assignor to Picker International, Inc., Cleveland, Ohio

Filed May 4, 1993, Ser. No. 56,751
Claims priority, application United Kingdom, May 5, 1992, 9209625
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—318 **14 Claims**

1. A magnetic resonance apparatus radio frequency receiver coil comprising:

a substantially planar radio frequency sensitive coil having an axis disposed substantially perpendicular to the plane thereof; and

a generally annular magnetic flux rejecting means disposed



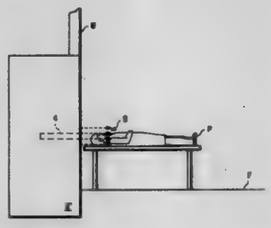
coaxially with the planar coil axis on one side of the plane of said planar coil whereby the sensitivity of the planar coil to radio frequency signals emanating from a source remote from the axis of the coil is decreased.

5,382,904

STRUCTURED COIL ELECTROMAGNETS FOR MAGNETIC RESONANCE IMAGING AND METHOD FOR FABRICATING THE SAME

Sergio Pissanetzky, The Woodlands, Tex., assignor to Houston Advanced Research Center, The Woodlands, Tex.

Continuation-in-part of Ser. No. 869,544, Apr. 15, 1992. This application Aug. 6, 1992, Ser. No. 926,667
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—319 **28 Claims**



1. A method of fabricating an electromagnet, comprising the steps of:

defining a volume of interest;

selecting a magnetic field magnitude to be produced in said volume of interest;

defining a region near said volume of interest within which non-zero zero current density is allowable, and represented as a two-dimensional array of elemental areas;

determining the magnitude and polarity of the current density for each of the elemental areas within the defined region in order to produce the selected magnetic field magnitude in the volume of interest, in such a manner that substantially the same magnitude and polarity of current density is determined for at least one cluster of elemental areas; and

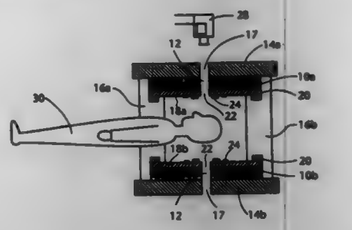
constructing at least one coil for carrying current at locations and at magnitudes corresponding to the result of the determining step.

5,382,905

MAGNET APPARATUS FOR MAGNETIC RESONANCE IMAGING

Koji Miyata, Fukui, and Yuji Inoue, Tokyo, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd. and Yokogawa Medical Systems, Ltd., both of Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,334
Claims priority, application Japan, Apr. 1, 1993, 5-098475
Int. Cl.[6] G01V *3/00*; G03G *21/00*
U.S. Cl. 324—319 **7 Claims**



1. A magnet apparatus for producing a magnetic field for use in magnetic resonance imaging, the apparatus having a pair of permanent magnet discs each of which is magnetized in the direction of thickness and has a hole in a central region, a yoke structure which holds therein said pair of permanent magnet discs parallel and opposite to each other and for each permanent magnet disc has an aperture which is in alignment with said hole in each permanent magnet disc, and a pair of pole plates which are placed on the opposite faces of said pair of permanent magnet discs, respectively, so as to produce a uniform magnetic field within a space between the two permanent magnet discs,

characterized in that each of said pair of pole plates is formed with a hole which is in alignment with said hole in each permanent magnet disc so that an object of imaging placed in said space can be visually observed through the hole in one of the pole plates.

5,382,906

METHOD FOR DETERMINING AN ACTUAL TRIPPING CHARACTERISTIC OF A RELAY

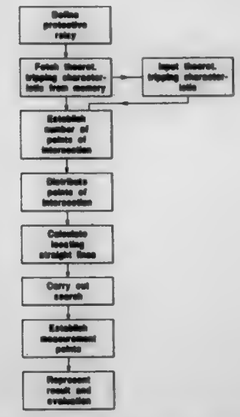
Jan Schutter, Untersiggenthal, and Martin Wiederkehr, Elken, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Feb. 16, 1993, Ser. No. 18,260
Claims priority, application Germany, Mar. 18, 1992, 4208613
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—418 **8 Claims**

1. A method for determining an actual tripping characteristic of a protective relay by means of a test apparatus in which test parameters are input into the test apparatus by means of an input unit, said method comprising the steps of:

storing a theoretical tripping characteristic of the protective relay in the test apparatus; and

determining at least one measurement point of the actual tripping characteristic on a locating straight line starting from a point of intersection of the locating straight line with the theoretical tripping characteristic, wherein



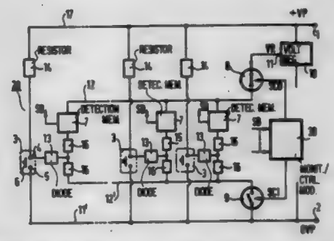
the locating straight line is selected to intersect the theoretical tripping characteristic at an angle which is situated in a range from 60° to 120°.

5,382,907

DATA INPUT MODULE FOR INPUTTING DATA BY MEANS OF ELECTRICAL CONTACT FOR A MONITORING/CONTROL INSTALLATION

Patrick Debussche, Montrouge, and Thomas Fisch, Clayes sous Bois, both of France, assignors to Cegelec, Levallois Perret, France

Filed Mar. 25, 1993, Ser. No. 36,833
Claims priority, application France, Mar. 26, 1992, 92 03649
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—418 **5 Claims**



1. A data input module for inputting data signals (SD) by means of electrical contact to a monitoring/control module, the data input module comprising:

a) a first voltage feed input (1) and a second voltage feed input (2), which inputs are adapted to be subjected to a variable potential difference;

b) a plurality of contacts (3) each of which has a first terminal (4) electrically connected to said first input via a first resistor (14), and a second terminal (5) electrically connected to said second input (2), each contact, when actuated, functioning to open or to close an electric current path between said first and second terminals;

c) a plurality of detection members (7) respectively associated with said contacts (3), each detection member detecting the presence or the absence of an electric current flowing between the terminals of the contact with which the detection member is associated, and responding to the

contact being actuated by producing a data signal (SD) representing said electric current;

d) a voltage regulator (10) electrically connected to the two feed inputs (1, 2) and having an output (11) which supplies a regulated voltage to the detection members, each detection member being electrically connected to the first terminal (4) of the contact with which the detection member is associated; and

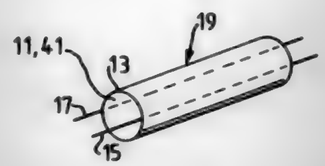
e) a test circuit (8, 9) for testing the detection members by simulating operation thereof, which circuit is interposed firstly between the output (11) of the regulator and each detection member (7), and secondly between each detection member (7) and the second feed input (2), the test circuit functioning both to teed current to said contacts via the detection members, and also to short-circuit said contacts.

5,382,908

CONDUCTIVITY OR CAPACITY CELL AND A METHOD FOR PRODUCING THE SAME AND A PROBE INCLUDING SUCH A CELL AND A METHOD FOR MEASURING OF RELATIVE HUMIDITY WITH SUCH A PROBE

Bo G. Forström, Stockholm; Per E. Wikefeldt, Järfälla, and Leif A. Unruh, Malmö , all of Sweden, assignors to Bo Gosta Forström, Stockholm, Sweden

PCT No. PCT/SE90/00178, § 371 Date Sep. 11, 1991, § 102(e) Date Sep. 11, 1991, PCT Pub. No. WO90/11513, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 20, 1990, Ser. No. 761,870
Claims priority, application Sweden, Mar. 20, 1989, 8900979
Int. Cl.[6] G01N *27/07*
U.S. Cl. 324—439 12 Claims



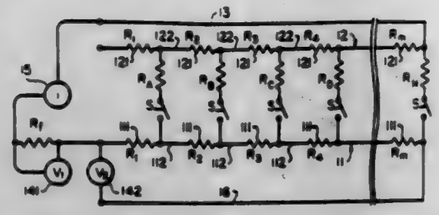
1. Cell (19) for measuring moisture content of a material, comprising a sock (13) which is comprised of a plurality of braided threads, each thread consisting of a plurality of fibers comprised of an electrically non-conductive material, said sock being perfused with a moisture absorbing fluid, said sock comprising at least two electrodes (15, 17) in the form of wires comprised of a conducting material, said electrodes being braided as longitudinal threads in the sock (13), wherein the electrodes are spaced from each other and extend essentially parallel to each other, the sock (13) being braided around a cylindrical core (11) comprised of an electrically non-conducting material, wherein the axis of the core is essentially parallel to the electrodes (15, 17) and the threads in the sock (13) are permanently under tension to achieve contact between the threads and the electrodes (15, 17).

5,382,909

METHOD FOR DETECTING AND OBTAINING INFORMATION ABOUT CHANGES IN VARIABLES

Michael Masia, Redwood City; James P. Reed, San Francisco; Robert S. Wasley, San Carlos; Larry R. Reeder, San Jose; Peter L. Brooks, Los Altos; Thomas W. Tolles, San Francisco; Louis M. Frank, Sunnyvale; Mauro Bonomi, Palo Alto; Ray F. Stewart, Redwood City; John Lahlough, San Jose, and Laurence Welsh, Palo Alto, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 698,012, May 9, 1991, Pat. No. 5,235,286, which is a continuation of Ser. No. 372,179, Jun. 27, 1989, Pat. No. 5,015,958, which is a continuation of Ser. No. 306,237, Feb. 2, 1989, abandoned, which is a continuation of Ser. No. 832,562, Feb. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 599,047, Apr. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 509,897, Jun. 30, 1983, abandoned, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 599,048, Apr. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 509,897, Apr. 11, 1984, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 556,740, Nov. 30, 1983, abandoned, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 556,829, Dec. 1, 1983, abandoned, which is a continuation-in-part of Ser. No. 556,740, Aug. 20, 1984, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 618,106, Jun. 7, 1984, abandoned, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 618,109, Jun. 7, 1984, abandoned, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 618,108, Jun. 7, 1984, which is a continuation-in-part of Ser. No. 603,485, Apr. 24, 1984, abandoned, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 603,484, Apr. 24, 1984, abandoned, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 691,291, Jan. 14, 1985, abandoned, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 809,321, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 691,291, Dec. 17, 1985, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 744,170, Jun. 12, 1985, abandoned, said Ser. No. 832,562, is a continuation-in-part of Ser. No. 787,278, Oct. 15, 1985, abandoned. This application Jul. 30, 1993, Ser. No. 100,710
The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.
Int. Cl.[6] G01R *31/08;* H01B *7/32*
U.S. Cl. 324—522 13 Claims



1. A method for monitoring for the occurrence of an event, and for detecting and obtaining information about the event upon its occurrence, which method comprises

(1) providing a system

(a) which comprises a power source, a voltage-measuring device, an elongate electrically conductive locating member and an elongate electrically conductive source member, the locating member comprising a plurality of available connection points and having an impedance Z_{total} between the most widely separated available connection points, and

(b) in which, upon occurrence of the event,

electrical connection is made between the locating member and the source member;

the connection to the locating member being effective at a first point whose location is defined by at least one characteristic of the event;

the making of the connection enabling the formation of a test circuit which comprises (i) that part of the locating member which lies between the first point and a second point having a known location on the locating member, (ii) the connection, (iii) the power source, and (iv) a balancing component which is connected in series with said part (i) and which has an impedance substantially equal to the difference between Z_{total} and the impedance of said part (i), the power source causing an electrical current of known size to be transmitted between the first and second points on the locating member; and the current and the locating member being such that, by measuring the voltage drop between the first and second points, the spatial relationship between the first and second points can be determined;

(2) monitoring the system to determine when a said connection has been made, said test circuit being in existence while said monitoring is taking place if a said connection has been made; and

(3) when it is determined that a said connection has been made, using the voltage-measuring device to determine the voltage drop between the first and second points; and

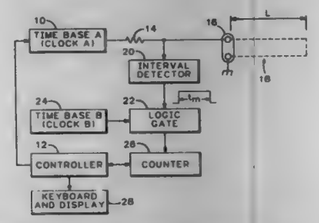
(4) obtaining information concerning the event from the measurement made in step (3).

5,382,910

DUAL TIME BASE ZERO DEAD ZONE TIME DOMAIN REFLECTOMETER

Joseph F. Walsh, Lynnwood, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Apr. 6, 1993, Ser. No. 43,512
Int. Cl.[6] G04F *8/00*
U.S. Cl. 324—533 13 Claims



1. A time domain reflectometer, comprising:

a controller which repetitively launches stimulus pulses into a transmission system in synchronism with Nth cycles of first clock signals from a first time base, wherein each stimulus pulse has a time duration that is at least twice the time required for propagation through said transmission system, and further wherein a predetermined number of stimulus pulses defines a measurement cycle;

a measurement time interval detector which repetitively produces gate enable signals, each of which have a time interval substantially equal to a time that elapses between each stimulus pulse and its reflection;

a second time base having a frequency different from said first time base and producing second clock signals whose period defines a measurement period having a number of equal sub-periods equal to said predetermined number of stimulus pulses;

a gate circuit responsive to said gate enable signals and said second clock signals and passing transitions of said second clock signals which occur while gate enable signals are present; and

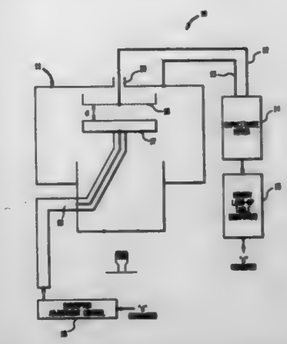
a counter for counting said transitions during said measurement cycle.

5,382,911

REACTION CHAMBER INTERELECTRODE GAP MONITORING BY CAPACITANCE MEASUREMENT

Tina J. Cotler, Ramsey, N.J.; John C. Forster, Poughkeepsie, N.Y.; Lawrence A. Kropp, Pleasant Valley, N.Y., and Jyothi Singh, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1993, Ser. No. 37,879
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—662 5 Claims



1. Apparatus for monitoring the interelectrode gap in a reaction chamber containing a pair of variably spaced nominally parallel reaction-sustaining electrodes, said apparatus comprising:

means connected to said electrodes for measuring the effective capacitance therebetween, said capacitance measuring means comprising a capacitance meter;

memory look-up table means connected to said capacitance measuring means for providing a signal representing the value of said gap corresponding to said measured effective capacitance, said table means storing a calibrating set of measured values of capacitance corresponding to measured values of gaps,

said memory look-up table means further provides a signal representing an amount of parallelism between said electrodes, said table means providing a comparison of multiple commanded gap "d"s with measured gap "d"s wherein a difference between commanded and measured "d" greater than a preestablished amount is indicative of the amount of parallelism.

5,382,912

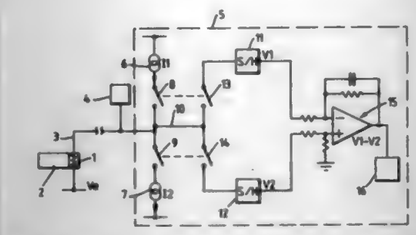
RESISTANCE MONITORS

David I. Blain, Cheltenham, England, assignor to Smiths Industries Public Limited Company, London, England

Continuation of Ser. No. 949,976, Sep. 24, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 108,939
Claims priority, application United Kingdom, Oct. 10, 1991, 9121506
Int. Cl.[6] G01K *27/02;* B60R *21/32;* B60Q *1/00*
U.S. Cl. 324—713 5 Claims

1. A fire extinguisher system for an aircraft comprising: a fire extinguisher bottle located in an aircraft; a resistive explosive squib attached to said fire extinguisher bottle; means connecting one side of said squib to ground; a firing circuit; a firing cable connecting the other side of said squib to said firing circuit; and a test circuit connected to said other side of said squib via said firing cable for testing said squib and associated circuitry in the fire extinguisher system, said test circuit comprising a first current source connected via a first switch to said firing cable for supplying a first current to said squib via said firing cable in a first direction relative to ground, said first current being insufficient to cause firing of the squib, a second

current source connected via a second switch to said firing cable for supplying a second current via said firing cable to said squib in a second direction relative to ground opposite from said first direction, said second current being substantially equal in magnitude to said first current and being insufficient to cause firing of the squib, said first and second switches being so arranged that only one of said switches may be closed at any given time to connect one of said current sources to said squib via said firing cable, first and second sample-and-hold circuits having inputs that are connected respectively via third and



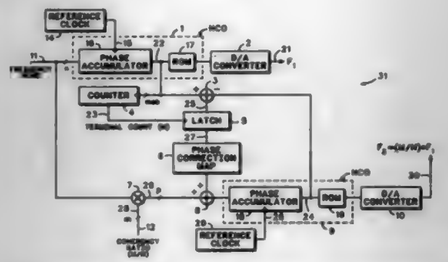
fourth switches to a junction between said first and second switches, said first and third switches being ganged together as a switch pair for simultaneous opening and closing, said second and fourth switches being ganged together as a switch pair for simultaneous opening and closing, means for alternately closing one and thereafter the other of said ganged switch pairs, a differential amplifier having a pair of inputs that are connected respectively to outputs of said first and second sample-and-hold circuits, and utilization means connected to an output of said differential amplifier for indicating the presence of a fault in said squib, in said firing cable, or in said ground connection.

5,382,913

METHOD AND APPARATUS FOR GENERATING TWO PHASE-COHERENT SIGNALS WITH ARBITRARY FREQUENCY RATIO

Lansing M. Carson, and Dean J. Boman, both of Chandler, Ariz., assignors to Motorola, Inc.

Filed Mar. 29, 1993, Ser. No. 43,042
Int. Cl.[6] H03K *5/00, 6/00*
U.S. Cl. 327—141 **26 Claims**



1. A method for generating phase-coherent first and second signals with an arbitrary frequency ratio, the method comprising the steps of:

programming a first numerically controlled oscillator (NCO) with a first frequency word to produce a first NCO output;

processing the first NCO output to produce the first signal;

multiplying the first frequency word in a multiplier to produce a second frequency word;

correcting the second frequency word for error in phase relative to the first frequency word, producing a corrected second frequency word;

programming a second NCO with the corrected second frequency word to produce a second NCO output; and

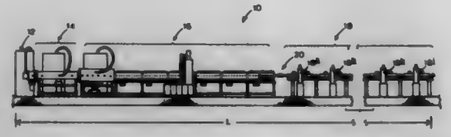
processing the second NCO output to produce the second signal.

5,382,914

PROTON-BEAM THERAPY LINAC

Robert W. Hamm, Pleasanton, Calif.; Kenneth R. Crandall, Corrales, and James M. Potter, Los Alamos, both of N. Mex., assignors to AccSys Technology, Inc., Pleasanton, Calif.

Filed May 5, 1992, Ser. No. 879,966
Int. Cl.[6] H01J *25/10*
U.S. Cl. 315—505 **13 Claims**



1. A compact proton-beam medical therapy linac (PTL) comprising

a proton source,

a radio-frequency quadrupole linear accelerator (RFQ) operatively coupled to said source for forming an accelerated beam of protons furnished by the source,

a stepped-frequency drift-tube linear accelerator (DTL) having a lower-frequency first tank structure operatively coupled to the output of said RFQ for receiving an injection from the latter of a proton beam formed and accelerated by the same, and a higher-frequency main tank structure coupled to said first tank structure, and

a side-coupled, S-band linear accelerator (SCL) operatively coupled to the main tank structure of said DTL for receiving an injection from the latter of a proton beam accelerated by the same, and for producing an output proton therapy beam,

interposition of said stepped-frequency DTL between said RFQ and SCL enabling viable employment of said SCL for accelerating such a proton beam.

5,382,915

PULSEWIDTH-MODULATED AMPLIFIER HAVING ANALOG MODE

David L. Muri, Sunrise, and Robert E. Stengel, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1993, Ser. No. 85,900
Int. Cl.[6] H03K *11/00, 7/00*; H03C *7/00*
U.S. Cl. 330—10 **21 Claims**

1. An audio pulsewidth-modulated (PWM) amplifier comprising:

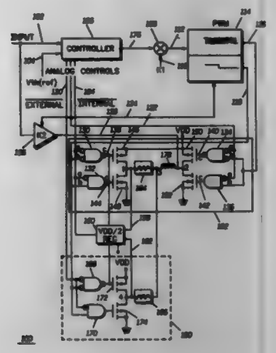
an input terminal for receiving an input signal having a variable level;

a controller coupled to the input terminal and responsive to the input signal for comparing the level of the input signal to a threshold range;

a pulsewidth-modulator responsive to the controller for receiving the input signal and generating a pulsewidth-modulated signal corresponding to the input signal;

first and second load terminals coupled to the pulsewidth modulator; and

said controller providing the pulsewidth-modulated signal to the second load terminal when the level of the input signal is outside of the threshold range, and proving the input



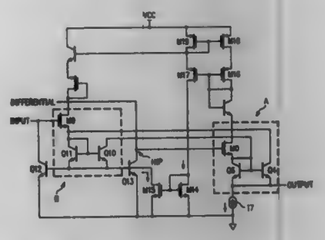
signal to the second load terminal when the level of the input signal is within the threshold range.

5,382,916

DIFFERENTIAL VOLTAGE FOLLOWER

Ken R. King, Palm Bay; David W. Riemer, Melbourne Beach, and Gerald M. Cotreau, Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Oct. 30, 1991, Ser. No. 785,395
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—253 **6 Claims**



1. A differential voltage follower, comprising:

(a) a first input node connected to a first load;

(b) a second input node connected to a second load, said second load matched to said first load;

(c) a first follower with input connected to said first input node and with output connected to a control input of both said first and second loads;

(d) a second follower with input connected to said second input node and with output connected to an output node;

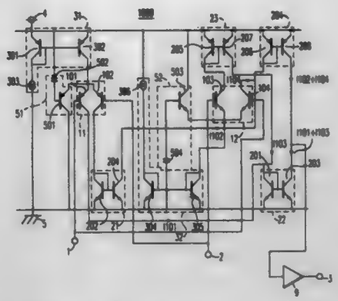
(e) wherein said first follower includes a first current mirror and said second follower includes a second current mirror, said first and second current mirrors cross-coupled to tie the currents through said followers.

5,382,917

AMPLIFIER CIRCUIT

Hideki Miyake, and Tsutomu Kamifuji, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1993, Ser. No. 117,687
Claims priority, application Japan, Nov. 30, 1992, 4-319881
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—255 **23 Claims**



1. An amplifier circuit comprising:

(a) a first input terminal receiving a first signal which varies from a first value to a second value which is larger than said first value;

(b) a second input terminal receiving a second signal which varies from said first value to said second value;

(c) an output terminal;

(d) a first amplifier which includes;

(d-1) first input/output means which includes:

(d-1-1) first and second inputs which are connected to said first and said second input terminals, respectively;

(d-1-2) first and second outputs; and

(d-1-3) a first connecting point,

in order to operate, said first input/output means requiring a first bias between said first input thereof and said first connecting point and between said second input thereof and said first connecting point, and

(d-2) a first constant-current source connected to said first input/output means at said first connecting point for supplying a first predetermined current to said first input/output means, said first constant-current source requiring for its operation that the value at said first connecting point is not more than the value obtained by subtracting a second bias from said second value,

said first amplifier dividing and outputting said first predetermined current in response to said first and second signals when at least one of said first and second signals falls in a first range, said first range not including a third value which is more than said first value and not more than said second value but including a fourth value which is not less than said first value and less than said third value and a fifth value which is less than said third value and more than said fourth value,

(e) a second amplifier which includes:

(e-1) second input/output means which includes:

(e-1-1) first and second inputs connected to said first and second input terminals, respectively;

(e-1-2) first and second outputs; and

(e-1-3) a second connecting point in order to operate, said second input/output means requiring a third bias between said first input thereof and said second connecting point and between said second input thereof and said second connecting point

(e-2) a second constant-current source connected to said second input/output means at said second connecting point for supplying a second predetermined current to

said second input/output means, said second constant-current source for its operation requiring that the value at said second connecting point be not less than the sum of a fourth bias and said first value,

said second amplifier dividing and outputting said second predetermined current in response to said first and second signals when at least one of said first and second signals falls in a second range, said second range not including said fourth value but including said third and fifth values,

(f) first control means which includes:

(f-1) a first transistor having a first current electrode for receiving said first value, a second current electrode connected to said first connecting point, and a control electrode, said first transistor for its operation requiring said first bias between said control electrode thereof and said second current electrode thereof, and

(f-2) a first power source having a negative electrode connected to said control electrode of said first transistor and a positive electrode receiving said second value, a potential difference between said positive electrode and said negative electrode being equal to the sum of said first bias and said second bias,

said first control means disabling said first amplifier when both said first and said second signals exceed an upper limit of said first range,

(g) second control means which includes:

(g-1) a second transistor having a first current electrode receiving said second value, a second current electrode connected to said second connecting point, and a control electrode, said second transistor for its operation requiring said third bias between said control electrode thereof and said second current electrode thereof, and

(g-2) a second power source having a positive electrode connected to said control electrode of said second transistor and a negative electrode receiving said first value, a potential difference between said positive electrode and said negative electrode being equal to the sum of said third bias and said fourth bias,

said second control means disabling said second amplifier when both said first and said second signals do not reach a lower limit of said second range, and

(h) output synthesizing means for synthesizing an output of said first amplifier and an output of said second amplifier and providing a synthesized signal to said output terminal.

5,382,918

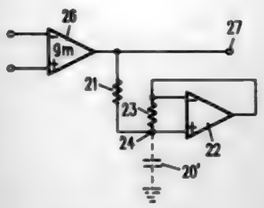
CAPACITANCE MULTIPLIER FOR THE INTERNAL FREQUENCY COMPENSATION OF SWITCHING REGULATOR INTEGRATED CIRCUITS

Mineo Yamatake, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 4, 1993, Ser. No. 13,508

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—260 **6 Claims**



1. A capacitance multiplying circuit for use on an integrated circuit chip for providing a relatively large on chip capacitance useful in loop frequency compensation functions, said circuit comprising:

an op-amp having inverting and noninverting inputs, a single ended output and a unity gain frequency;

a first resistor connected between said inverting and noninverting inputs;

means for coupling said op-amp output to its inverting input; and

means for driving said op-amp noninverting input at a frequency that is below the op-amp unity gain frequency whereby a relatively large equivalent shunt capacitance is present at said noninverting input.

5,382,919

WIDEBAND CONSTANT IMPEDANCE AMPLIFIERS

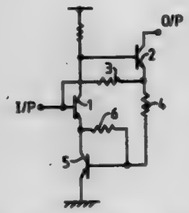
Rodney J. Lawton, Swindon, England, assignor to Plessey Semiconductors Limited, England

Filed Oct. 20, 1993, Ser. No. 139,437

Claims priority, application United Kingdom, Oct. 28, 1992, 9222665

Int. Cl.[6] H03F *1/34, 3/45*

U.S. Cl. 330—260 **8 Claims**



1. A wideband constant impedance amplifier comprising first, second and third transistors each having a control electrode and an output current path between first and second output electrodes, the control electrode of the first transistor being connected to an input terminal of the amplifier, the first output electrode of the first transistor being connected by way of the output current path of the second transistor to a point of reference potential and by way of a first resistive element to the control electrode of the second transistor, the second output electrode of the first transistor being connected to load means and to the control electrode of the third transistor, and the first output electrode of the third transistor being connected to the control electrode of the first transistor by way of a second resistive element and to the control electrode of the second transistor by way of a third resistive element, the second output electrode of the third transistor being connected to an output terminal of the amplifier.

5,382,920

CIRCUIT ARRANGEMENT FOR AN OPTICAL RECEIVER

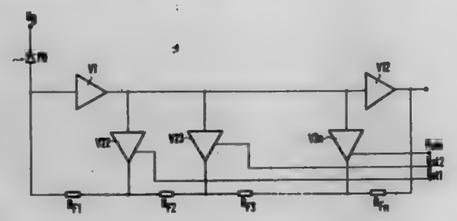
Reinhold Jung, Böblingen, Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Apr. 13, 1993, Ser. No. 46,768

Claims priority, application Germany, Apr. 18, 1992, 4212933

Int. Cl.[6] H03F *3/08*

U.S. Cl. 330—308 **12 Claims**



1. A circuit arrangement for an optical receiver having a

negative feedback path comprising a photodiode (PD) and a transimpedance amplifier (TIV), with the photodiode (PD) connected between a supply voltage source (U_B) and an input of the transimpedance amplifier (TIV) or between the input of the transimpedance amplifier (TIV) and ground, and the transimpedance amplifier (TIV) comprising a first amplifier stage (V1), a second amplifier stage (V12) and a negative-feedback resistor forming the negative feedback path, an input of the first amplifier stage (V1) being connected to the input of the transimpedance amplifier (TIV), and an output of the second amplifier stage (V12) being connected to an output of the transimpedance amplifier (TIV), characterized in

that the negative-feedback resistor is connected as a series combination of two resistors (R_{F1}, R_{F2}) between the input and output of the transimpedance amplifier (TIV), and

that between a junction of the first and second amplifier stages (V1, V12) and a junction of the two feedback resistors (R_{F1}, R_{F2}), an amplifier (V22) is connected which has essentially a same transfer function as the second amplifier stage (V12) and includes means for switching the amplifier (V22) to an active state or a blocked state.

5,382,921

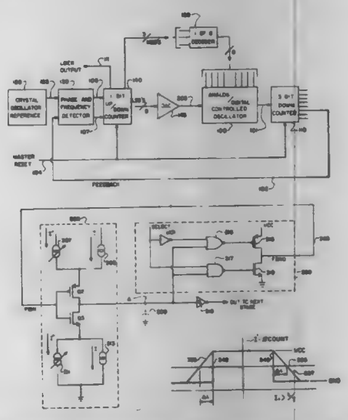
AUTOMATIC SELECTION OF AN OPERATING FREQUENCY IN A LOW-GAIN BROADBAND PHASE LOCK LOOP SYSTEM

Julio R. Estrada, South Portland, and Ray A. Mentzer, Portland, both of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 23, 1992, Ser. No. 984,172

Int. Cl.[6] H03L *7/00*

U.S. Cl. 331—1 A **13 Claims**



1. A phase-lock loop system for automatically frequency-locking a signal in phase with a reference signal, said system comprising:

a. a reference source for providing a reference signal;

b. a phase and frequency detector for comparing said reference signal to said signal, said phase and frequency detector coupled to said reference source;

c. an up/down counter coupled to said phase and frequency detector;

d. a digital-to-analog converter for providing an analog control signal, said digital-to-analog converter coupled to said up/down counter;

e. a decoder for providing a digital control signal, said decoder coupled to said up/down counter; and

f. a ring oscillator having a plurality of stages connected in tandem, said ring oscillator coupled to said digital-to-analog converter and to said decoder, said ring oscillator having a digital input for receiving said digital control signal and an analog input for receiving said analog control signal, wherein each of said plurality of stages of said ring oscillator includes an anti-high gain circuit.

5,382,922

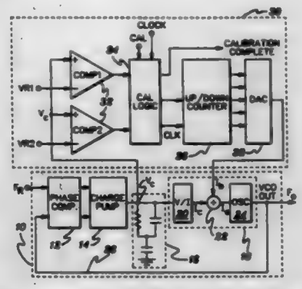
CALIBRATION SYSTEMS AND METHODS FOR SETTING PLL GAIN CHARACTERISTICS AND CENTER FREQUENCY

John E. Gersbach, Burlington, and Masayuki Hayashi, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1993, Ser. No. 173,454

Int. Cl.[6] H03L *7/085*

U.S. Cl. 331—1 A **43 Claims**



1. A calibration system for a phase-locked loop (PLL) circuit having a phase comparator coupled through a charge pump, a filter, and a voltage to current converter, to a current controlled oscillator having a current input and a frequency output, said calibration system comprising:

means for setting the frequency output of the current controlled oscillator to a selected frequency such that the current input to the current controlled oscillator receives a constant current I_0, wherein constant current I_c comprises a summation of a counter current I_c from the voltage to current converter and a bias current I_b, the output current I_c from the voltage to current converter being proportional to a control voltage V_c across the filter; and

adjustable means, coupled between the filter and the current input to the current controlled oscillator, for providing said bias current I_b to the current input of the current controlled oscillator such that when the frequency output of the current controlled oscillator is set to the selected frequency, the control voltage across the filter is driven to a predefined, steady state voltage indicative of PLL circuit calibration, and wherein when said PLL circuit performs under stable operation, the frequency output of the current controlled oscillator will equal the selected frequency when the control voltage across the filter equals the predefined, steady state voltage.

5,382,923

CHARGE-PUMP CIRCUIT FOR USE IN PHASE LOCKED LOOP

Toshizi Shimada; Yasunori Kanai, both of Nagano, and Yoshio Watanabe, Kawasaki, all of Japan, assignaors to Shinko Electric Industries Co., Ltd., Nagano and Fujitsu Limited, Kawasaki, both of Japan

Continuation of Ser. No. 75,324, Jun. 11, 1993, abandoned. This application Apr. 5, 1994, Ser. No. 223,320

Claims priority, application Japan, Jun. 12, 1992, 4-179222

Int. Cl.[6] H03L *7/089, 7/093*

U.S. Cl. 331—8 **5 Claims**

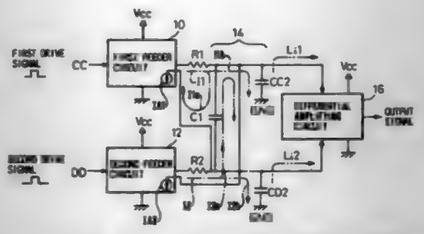
1. A charge-pump circuit which converts a phase difference between first and second drive signals into a voltage comprising:

a first feeder circuit including bipolar transistors, an input for

receiving the first drive signal and an output terminal, the first feeder circuit producing an output current at the output terminal when the first drive signal is received;

a second feeder circuit including bipolar transistors, an input for receiving the second drive signal and an output terminal, the second feeder circuit producing an output current at the output terminal when the second drive signal is received;

a capacitor circuit comprising a first capacitor having a first end and a second end, a second capacitor, and a third capacitor, the output terminal of the first feeder circuit being connected to the first end of the first capacitor and the output terminal of the second feeder circuit being



connected to the second end of the first capacitor, the second capacitor being connected between the second end of the first capacitor and a reference electrical potential, and the third capacitor being connected between the first end of the first capacitor and the reference electrical potential, the respective output currents of the first and second feeder circuits charging the capacitor circuit and producing a voltage across the first capacitor; and

a main differential amplifying circuit, including bipolar transistors, which receives the voltage produced across the first capacitor and amplifies the received voltage to a selected, amplified voltage and then outputs the amplified voltage.

5,382,924

CONTINUOUS PHASE FREQUENCY SHIFT KEYING MODULATOR

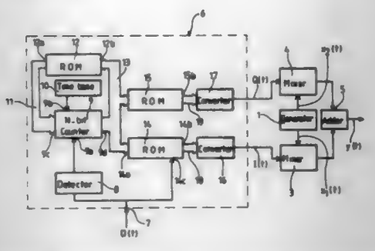
Matthijs D. Pardoen, Marin-Epagnier, and John F. M. Gerrits, Cortaillod, both of Switzerland, assignors to CSEM Centre Suisse d'Electronique et de Microtechnique SA, Neuchatel, Switzerland

Filed Oct. 1, 1993, Ser. No. 130,232

Claims priority, application France, Oct. 2, 1992, 92 11939

Int. Cl.[6] H04L *27/12*

U.S. Cl. 332—100 **6 Claims**



1. Modulator intended for use in a transmitter of an information transmission carrier signal in which binary information to be transmitted (D(t)) is in the form of frequency shift key code, said carrier signal being centered on a fictional frequency f_c on either side of which are respectively emitted two real frequencies separated from the fictional frequency f_c by a frequency Δf, according to whether the binary information has a high value (+1) or a low value (−1), said modulator comprising:

first generator means for creating a first carrier signal of the form $\sin(2\pi f_c t)$, and a second carrier signal of the form $\cos(2\pi f_c t)$,

second generator means for creating, respectively as a function of the level of the binary information to be transmitted (D(t)), a first modulation signal (I(t)) of the form $\sin(2\pi\Delta ft)$ and a second modulation signal (Q(t)) of the form $\cos(2\pi\Delta ft)$,

first multiplication means for mixing the first carrier signal and the first modulation signal,

second multiplication means for mixing the second carrier signal and the second modulation signal, and

means for adding the output signals of said first and second multiplication means and thus creating said signal to be transmitted (y(t)),

said second generator means comprising:

first phase shifting means for, at each transition of said binary information, modifying by a value kπ the phase of said first modulation signal (I(t)), k being any odd number, and

second phase shifting means for, simultaneously with the action of said first phase shifting means and at each transition of said binary information (D(t)), changing the signs of the arguments of said first and second modulation signals (I(t), Q(t)).

5,382,925

HYBRID COUPLER

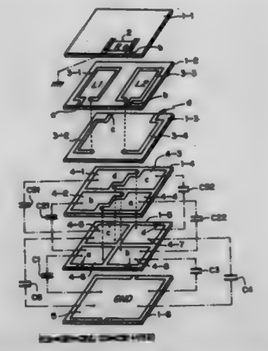
Katuhiko Hayashi, Chiba; Hiroshi Ikeda, Tokyo, and Akira Aotani, Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 117,139

Claims priority, application Japan, Mar. 19, 1992, 4-063015; Nov. 26, 1992, 4-317056; Nov. 27, 1992, 4-318092; Dec. 18, 1992, 4-338452; WIPO, Mar. 18, 1993, PCT/JP93/00321

Int. Cl.[6] H01P *5/16*

U.S. Cl. 333—112 **11 Claims**



1. A hybrid coupler including a hybrid circuit, comprising:

a multilayer wiring board having at least first, second, third and fourth dielectric layers laminated to each other;

a plurality of inductors comprising conductor patterns formed on said first and second dielectric layers, at least two of said inductors having the same inductance value as each other; and

a plurality of capacitors comprising conductor patterns formed on said third and fourth dielectric layers, at least two of said capacitors having the same capacitance value as each other,

wherein said conductor patterns, corresponding to said inductors with the same inductance value, comprise first symmetrically shaped conductor patterns formed on said first dielectric layer and second symmetrically shaped

conductor patterns formed on said second dielectric layer, and wherein said conductor patterns, corresponding to said capacitors with the same capacitance value, comprise third symmetrically shaped conductor patterns formed on said third dielectric layer and fourth symmetrically shaped conductor patterns formed on said fourth dielectric layer.

5,382,926

MULTIPLE BIT LOADED LINE PHASE SHIFTER

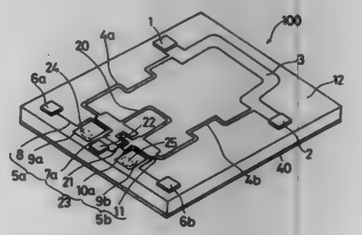
Kazuhiko Nakahara, and Shinji Aono, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 72,956

Claims priority, application Japan, Jun. 19, 1992, 4-186084; May 10, 1993, 5-107918

Int. Cl.[6] H01P *1/185*

U.S. Cl. 333—161 **5 Claims**



1. A loaded line phase shifter comprising:

a semiconductor substrate;

a main transmission line one-quarter wavelength long between opposite ends and disposed on said semiconductor substrate;

first and second loaded lines, each loaded line having first and second ends, the first ends of said first and second loaded lines being respectively connected to opposite ends of said main line;

first and second FETs, each FET having a drain electrode, a source electrode, and a gate electrode, said drain electrodes of said first and second FETs being connected to the second ends of said first and second loaded lines, respectively, and said source electrodes of said first and second FETs being grounded; and

a resonant circuit comprising a third FET and an inductor connected in parallel and connected to said drain electrodes of said first and second FETs.

5,382,927

BAND-PASS FILTER HAVING TWO LOOPED-SHAPED ELECTRODES

Hisatake Okamura; Masahiro Kasahara; Teruhisa Tsuru, and Tetsuo Taniguchi, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 833,095, Feb. 10, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,628

Claims priority, application Japan, Feb. 15, 1991, 3-021875; Jun. 11, 1991, 3-138837; Jan. 10, 1992, 4-021749; Jan. 10, 1992, 4-021750

Int. Cl.[6] H03H *7/00*

U.S. Cl. 333—175 **15 Claims**

1. A band-pass filter comprising:

two first electrodes formed in a non-spiral loop shape and disposed so as to be magnetically coupled with each other;

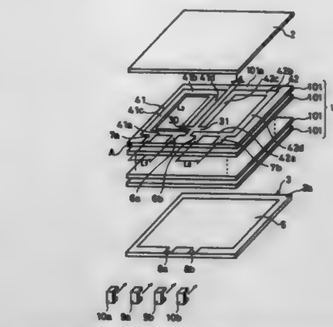
a second electrode formed in a plane shape opposite said first electrodes;

a plate comprising a dielectric material between said first electrodes and said second electrode;

two earth terminals drawn out respectively from said two first electrodes toward an edge portion of said plate;

two input/output terminals drawn out respectively from said two first electrodes toward the same said edge portion of said plate with a distance between said earth terminals and said input/output terminals providing a predetermined impedance; and

a pair of second earth terminals drawn out from said second electrode toward the same said edge portion of said plate.



5,382,928

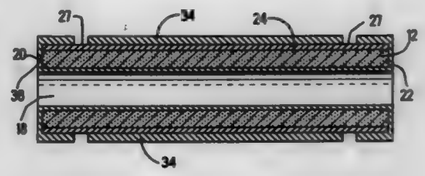
RF FILTER HAVING COMPOSITE DIELECTRIC LAYER AND METHOD OF MANUFACTURE

Thomas F. Davis, Camp Hill, and James F. Iannella, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 22, 1993, Ser. No. 8,277

Int. Cl.[6] H03H *7/01*

U.S. Cl. 333—182 **14 Claims**



1. A distributed element filter member comprising:

a semi-conductive member for receiving an electrical terminal therein, said member having opposed first and second major surfaces;

a composite dielectric layer disposed on and secured to said first major surface and in intimate contact therewith, said layer being comprised of polymerized dielectric material mixed with particles selected from the group consisting of barium titanate and strontium titanate, said particles being present in the range of about 40 to 60 percent by weight and dispersed throughout said dielectric material to yield a layer having a capacitance for said filter greater than 200 picofarads per square centimeter and an insulation resistance greater than 1×10^9 ohms per centimeter at 50 volts DC with a dielectric withstanding voltage greater than 100 volts DC per centimeter;

a conductive layer disposed on and secured to at least a portion of an outer surface of said composite dielectric layer, said conductive layer defining a ground conductor for said filter; and

a further conductive layer disposed on and secured to at least a portion of said second major surface of said semi-conductive member, said further conductive layer defin-

ing a signal conductor adapted to be connected to said electrical terminal upon said terminal being received in said semi-conductive member of said filter, said signal conductor being isolated from said ground conductor; whereby

upon disposing said terminal in said semi-conductive member of said filter and electrically connecting said terminal to said signal conductor of said filter and said ground conductor to ground, said filter provides filtering for electrical signals transmitted through said terminal.

5,382,929

MONOLITHIC CRYSTAL FILTER

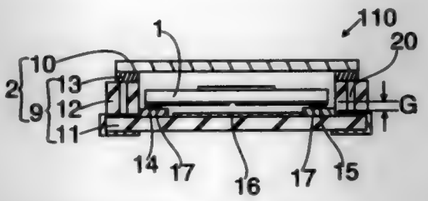
Kiyohisa Inao; Koji Mizuki; Masaki Kumagai, and Takeo Seki, all of Saitama, Japan, assignors to NDK, Nihon Dempa Kogyo Company, Ltd., Tokyo, Japan

Filed Aug. 2, 1993, Ser. No. 101,476

Claims priority, application Japan, Jul. 31, 1992, 4-225313; Aug. 31, 1992, 4-257344; Aug. 31, 1992, 4-257345

Int. Cl.[6] H03H *9/17*

U.S. Cl. 333—187 **12 Claims**



1. A monolithic crystal filter comprising:

a crystal plate;

a vessel;

said crystal plate arranged airtight in said vessel;

said crystal plate having a first input electrode and a first output electrode at a first surface;

said crystal plate having a common electrode at a second surface;

said vessel consisting of a main body and a metal lid;

said main body consisting of an insulating substrate, an insulating support, and a welding ring;

said insulating substrate having a shield electrode, a second input electrode and a second output electrode at a surface;

means for electrically connecting said metal lid to said shield electrode; and

an electric conductive adhesive between said crystal plate and said insulating substrate.

5,382,930

MONOLITHIC MULTIPOLE FILTERS MADE OF THIN FILM STACKED CRYSTAL FILTERS

Robert B. Stokes, Torrance; Edward M. Garber, Los Angeles; Jay D. Crawford, Long Beach, and Drew Cashman, Lomita, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

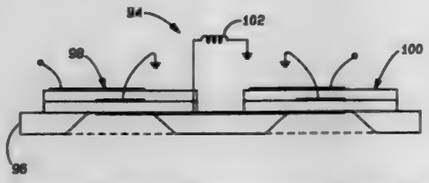
Filed Dec. 21, 1992, Ser. No. 993,575

Int. Cl.[6] H03H *9/56, 9/58*

U.S. Cl. 333—191 **18 Claims**

1. A multipole stacked crystal filter comprising:

a plurality of cascaded 2-port semiconductor bulk acoustic resonator (SBAR) stacked crystal filters (SCFs) electrically connected on a common semiconductor substrate, each 2-port SBAR SCF including at least two piezoelectric layers and three electrodes, a first one of the electrodes being positioned in contact with a first surface of a first piezoelectric layer, a second one of the electrodes being positioned in contact with a second surface of the first piezoelectric layer and a first surface of a second piezoelectric layer, and a third one of the electrodes being positioned in contact with a second surface of the second piezoelectric layer opposite to the first surface of the second piezoelectric layer, wherein a respective third one of the electrodes of a particular 2-port SBAR SCF is connected to a respective first one of the electrodes of a



next 2-port SBAR SCF of the cascade of SBAR SCFs; and

at least one inductor electrically connected in shunt between a respective third one of the electrodes of a corresponding 2-port SBAR SCF and ground.

5,382,931

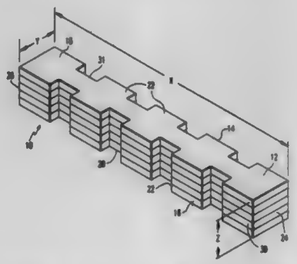
WAVEGUIDE FILTERS HAVING A LAYERED DIELECTRIC STRUCTURE

Andrew J. Piloto, Columbia; Kevin A. Leahy, Eldersburg; Bruce A. Flanick, Columbia, and Kawthar A. Zaki, Potomac, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1993, Ser. No. 168,502

Int. Cl.[6] H01P *1/207, 3/16*

U.S. Cl. 333—208 **15 Claims**



1. A waveguide filter, comprising a monolithic structure having a series of coupled resonators, the monolithic structure including:

a selected number of laminated dielectric layers, each of the laminated layers having means for defining a perimeter of the series of coupled resonators of a selected dimension;

the number of dielectric layers and the dimension of the perimeter being selected in accordance with a predetermined resonant frequency for the monolithic structure; and

a plating of conductive material covering the monolithic structure.

5,382,932

ELECTRONIC COMPONENTS AND SYSTEMS USING COAXIAL CABLE

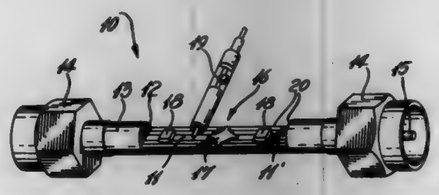
Osvaldo Monti, Montreal, Canada, assignor to Canadian Marconi Company, Montreal, Canada

Filed Sep. 2, 1993, Ser. No. 114,902

Int. Cl.[6] H01P *1/00*

U.S. Cl. 333—245 **15 Claims**

1. A coaxial cable based electronic component or circuit comprising one or more coaxial cables each having an inner conductor surrounded by an insulating material and an outer conductive electrical shielding sleeve about said insulating material, and open section or sections of predetermined size in said outer conductive shielding sleeve, said insulating material in said open section or sections being partly removed to expose said inner conductor to connect thereto an electronic component or electronic circuit, said inner conductor also providing



an interconnection from said electronic component or circuit to a further electrical element, said insulating material and said outer conductive electrical shielding sleeve forming at least part of an electrically insulating support and electrical shield for said electronic component or electronic circuit, said conductor having opposed terminal ends for electrical connection.

5,382,933

SOLENOID VALVE DEVICE

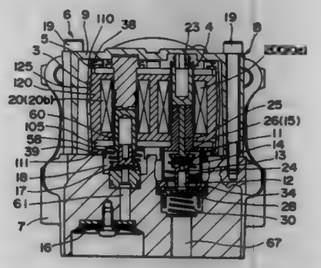
Hirotaka Nakamura; Astushi Nishijoh, both of Tokyo; Shigeki Tsuchiya, Kasukabe, and Yoshiaki Hirobe, Minamisaitama, all of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 966,089

Claims priority, application Japan, Oct. 25, 1991, 3-087851[U]

Int. Cl.[6] H01F *7/00*

U.S. Cl. 335—278 **15 Claims**



1. A solenoid valve device, comprising a bobbin assembly mounted within an outer cover, said bobbin assembly comprising a solenoid coil and an outer yoke forming a magnetic circuit with said coil, said coil and said yoke being integrally molded together with an inner resin section and defining a central hollow throughbore having opposed open ends, said bobbin assembly further comprising an outer resin section covering said inner resin section and having different physical properties from said inner resin section, said solenoid valve device further including at least one seal between said outer resin section and said outer cover, said seal being positioned around one of said open ends of said throughbore to form an air barrier, wherein transient dimensional variations of said coil or said yoke are substantially absorbed by said outer resin section leaving said outer resin section undeformed so as to maintain the integrity of said air barrier.

5,382,934

ELECTROMAGNETIC CHANGEOVER RELAY

Horst Hendel; Josef Kern, and Bernhard Kleine-Onnebrink, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

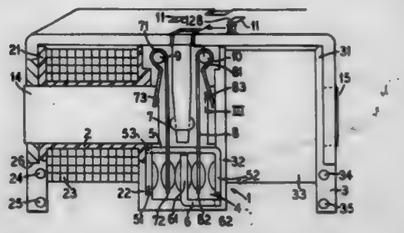
PCT No. PCT/EP92/01529, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO93/01609, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 7, 1992, Ser. No. 178,282

Claims priority, application Germany, Jul. 9, 1991, 91111423; Jun. 17, 1992, 4219933; Jun. 24, 1992, 9208452[U]

Int. Cl.[6] H01H *9/00*

U.S. Cl. 335—159 **29 Claims**



1. An electromagnetic changeover relay, comprising:

an insulating base body;

two coils, each having a winding and a core, on said base body, and having the capability of being driven separately are aligned essentially axially with respect to one another, forming an air gap between mutually facing inner core ends;

a yoke connecting outer core ends;

at least one armature displaced in said air gap between said inner core ends supported on a central region of said yoke;

at least two contact springs arranged between said armature and coil and mounted in the vicinity of a armature supporting point, and whose free, contact-making ends can each be changed over, by said at least one armature, between a quiescent position and an operating position; and

at least two stationary, mating contact elements anchored in said base body and making contact with at least one contact spring in at least one of their switching positions.

5,382,935

PERMANENT-MAGNET GRAB

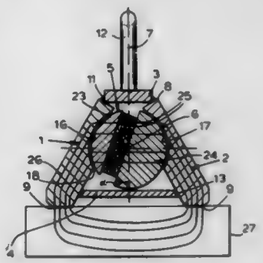
Pierre Doyelle, Montmelian, France, assignor to Braillon Magnetique, Montmelian, France

Filed Jun. 16, 1994, Ser. No. 261,349

Claims priority, application France, Jun. 24, 1993, 93 07940

Int. Cl.[6] H01F *7/02, 7/04;* B66C *1/04*

U.S. Cl. 335—288 **10 Claims**



1. A magnetic grab comprising:

a pair of vertically elongated magnetic pole pieces each having an upper end and a lower end, the pole pieces

diverging downwardly symmetrically with respect to a vertical symmetry plane with the upper ends substantially more closely spaced than the lower ends;

a plurality of nonmagnetic elements fixed to the pole pieces and securing same together;

a generally cylindrical rotor engaged between the pole pieces, centered on and rotatable about a rotor axis extending horizontally parallel to and between the pole pieces, and formed by

a pair of soft-iron bodies one of which is substantially thicker in a direction transverse to the rotor axis than the other, and

a permanent magnet sandwiched between the bodies and polarized generally diametrically of the rotor axis; and

means for rotating the rotor between an active position with one of the bodies juxtaposed with one of the pole pieces and the other body juxtaposed with the other pole piece and one of the bodies lying mainly to one side of the plane and the other body lying mainly to the other side of the plane, and an inactive position with the plane generally bisecting both bodies and each body closely juxtaposed with both pole pieces.

5,382,936

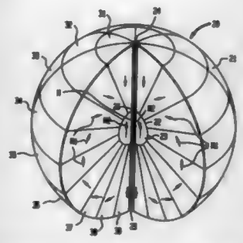
FIELD AUGMENTED PERMANENT MAGNET STRUCTURES

Herbert A. Leupold, Eatontown, and Anup Tilak, Bridgewater, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 892,093, Jun. 2, 1992. This application Dec. 23, 1992, Ser. No. 996,281

Int. Cl.[6] H01F *7/02*

U.S. Cl. 335—306 **5 Claims**



1. A permanent magnet structure with an augmented magnetic field comprising:

a spherical shell of permanent magnet material forming a hollow spherical concentric cavity in which said shell produces a magnetic field having a predetermined magnitude and a direction aligned with said shell's polar axis, said structure having an access port that passes through said shell along said polar axis and communicating with said cavity; and

a spherical field-enhancing insert permanently magnetized in a predetermined direction located in said cavity adjacent to and concentric with the inner-surface of said shell, said insert having a tunnel communicating with said access port, said insert positioned within said cavity so as to enhance said cavity magnetic field without obstructing said access port communicating with said cavity.

5,382,937

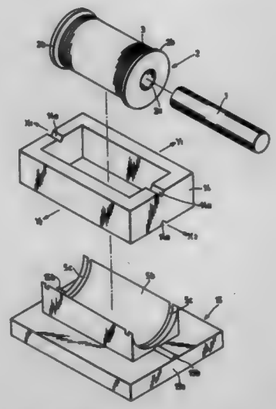
COIL DEVICE

Yutaka Saitoh; Shinichirre Stro, and Yukiharu Kimoshita, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 922,676

Int. Cl.[6] H01F *15/02*

U.S. Cl. 336—178 **10 Claims**



1. A coil device comprising:

an outside magnetic substance forming an endless loop;

an inside magnetic substance having a first end and a second end formed inside of said outside magnetic substance;

a coil wound on said inside magnetic substance;

a first gap provided between said outside magnetic substance and said first end of said inside magnetic substance;

a second gap provided between said outside magnetic substance and said second end of said inside magnetic substance;

a holding device for supporting said inside magnetic substance in a first position relative to said outside magnetic substance and for supporting said inside magnetic substance in a second position relative to said outside magnetic substance, wherein said first position corresponds to a first inductance value and said second position corresponds to a second inductance value.

5,382,938

PTC ELEMENT

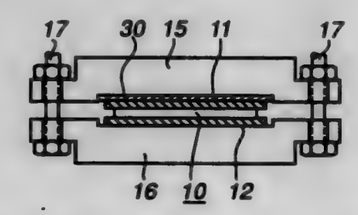
Tomas Hansson, Enköping, and Per-Olof Karlström, Västerås, both of Sweden, assignors to Asea Boveri Brown AB, Västerås, Sweden

Filed Oct. 25, 1991, Ser. No. 783,118

Claims priority, application Sweden, Oct. 30, 1990, 9003448-9; Nov. 30, 1990, 9003814-2

Int. Cl.[6] H01C *7/10, 10/10*

U.S. Cl. 338—22 R **47 Claims**



1. A PTC element comprising a body of an electrically conductive polymer composition having a positive temperature coefficient, said body defining two parallel surfaces; a plurality of electrodes for carrying current through said body, one of said plurality of electrodes being in free contact with one of said parallel surfaces of said body; and a pressure device which presses said electrodes against said body in a direction perpendicular to said parallel surfaces of said body, said pressure device applying a pressure of at least 14.5 psi on said electrodes.

5,382,939

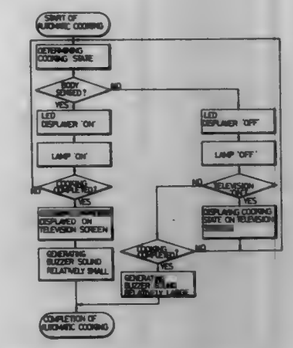
COOKING STATE DISPLAYING APPARATUS AND METHOD FOR A MICROWAVE OVEN COMBINED WITH A TELEVISION

Yeong K. Hong, Kyungsangnam, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 23, 1993, Ser. No. 96,777

Int. Cl.[6] G08B *1/00*

U.S. Cl. 340—309.15 **6 Claims**



1. A cooking state displaying apparatus for a microwave oven combined with a television set, comprising:

first sensing means for sensing the current cooking state and completion;

displaying means, built in said microwave oven, for displaying the current cooking state and completion;

second sensing means for sensing if there is a person near said microwave oven during cooking, and providing a body sensing signal;

second control means for controlling display of the current cooking state and completion on a television screen;

means for generating a buzzer sound for indicating the completion of cooking when cooking is completed; and

first control means for controlling said second control means to display the current cooking state and completion on said television screen if body sensing signal is not provided from said second sensing means, and controlling said displaying means to display the current cooking state and completion of the current cooking state and completion on said displaying means if the body sensing signal is provided.

5,382,940

ALARM SYSTEM FOR AMUSEMENT ARCADE

Takatoshi Takemoto, and Koji Yanagisawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 30,979

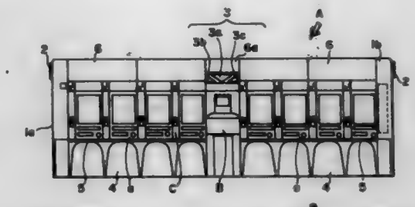
Claims priority, application Japan, Mar. 25, 1992, 4-015642[U]

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—323 R **16 Claims**

1. An alarm system for warning of the occurrence of events at a certain island in an amusement arcade where a plurality of islands of game machines are installed, each island having one or two rows of game machines, said alarm system comprising:

(a) a plurality of indicators for each island, said plurality of indicators being disposed at both side ends of each of a plurality of islands of game machines; and



(b) a plurality of event detectors for each of said gaming machine, each for detecting the occurrence of one of the events to activate the corresponding one of said plurality of indicators so that an arcade attendant is notified of one of said events upon detection of one of said events.

5,382,941

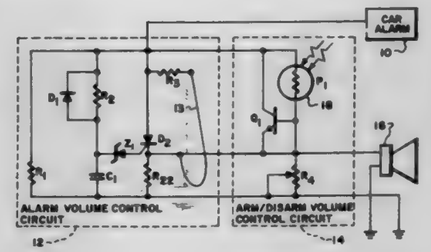
VEHICLE ALARM SET SIGNAL LEVEL CONTROL

S. Allen Arzoumanian, Woodland Hills, Calif., assignor to Accele Electronics, Cerritos, Calif.

Filed Nov. 13, 1992, Ser. No. 975,374

Int. Cl.[6] B60R *25/00*

U.S. Cl. 340—426 **20 Claims**



1. A vehicle alarm control system comprising; vehicle alarm means;

audio alarm means receiving an output from said vehicle alarm means;

alarm volume control means;

arming signal volume control means for controlling the volume produced by an arming set signal, said arming signal volume control means comprising;

transistor means receiving an output from said vehicle alarm means;

photodetecting means connected so as to vary biasing current to said transistor means;

level control means for controlling the volume produced by said arming set signal;

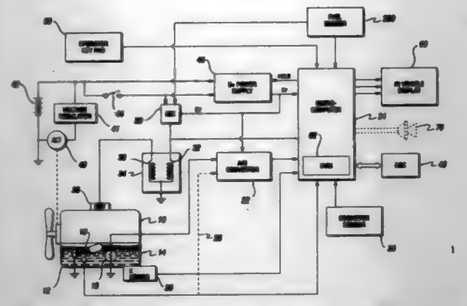
whereby the volume of said arming set signal is varied according to light detected by said photodetecting means.

5,382,942

ENGINE OIL MONITORING SYSTEM HAVING AN IN-VEHICLE DISPLAY OF THE CURRENT STATUS OF THE OIL

James M. Raffa, Rochester; Terry T. Cwik, Livonia; Michael F. Aronow, Southfield; Winston A. Little, Plymouth; Allen H. Meitzler, Ann Arbor; Peter W. Misangyi, Novi, all of Mich.; Jane A. Nix-Gomez, Bristol, England; George S. Saloka, Dearborn, and Noel A. Walker, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 86,073
Int. Cl.[6] F01M *11/10*
U.S. Cl. 340—457.4 27 Claims



14. An oil monitoring system for an internal combustion engine mounted in a vehicle, said engine having a rotary output member and an oil sump storing oil for lubricating said engine, said system comprising;

means for generating tachometer pulse increments corresponding to the rotation of said rotary output member, said tachometer pulse increments being proportional to the number of revolutions of said rotary output member;

means for generating a weighting factor as a function of the temperature of said oil in said oil sump;

an oil sensor for generating an oil level signal having a value indicative of the level of said oil in said oil sump;

means for multiplying said weighting factor by a predetermined quantity in response to said oil level signal having a value signifying the level of said oil in said oil sump is below a predetermined level to generate a corrected weight factor;

means for multiplying said tachometer pulse increments by said corrected weighting factor to generate a weighted tachometer pulse increment;

means for storing a remaining percent tachometer oil life indicative of the remaining number of revolutions of said rotary output member before said oil is to be changed;

means for detecting the generation of a predetermined number of weighted tachometer pulse increments to decrement said remaining percent tachometer oil life by a first preselected percentage;

means for storing a remaining percent time oil life indicative of the actual time remaining before said oil is to be changed;

means for detecting the passing of a predetermined time interval to decrement said remaining percent time oil life by a second preselected percentage;

means for storing a remaining percent odometer oil life indicative of the number of miles remaining to be driven by said vehicle before said oil is to be changed;

means for detecting each time said vehicle has been driven a predetermined distance to decrement said remaining percent odometer oil life by a third preselected percentage;

means for selecting the smallest of said remaining percent tachometer oil life, said remaining percent time oil life and said remaining percent odometer oil life to generate a smallest remaining percent oil life;

an in-vehicle display for generating a visualdisplay; and

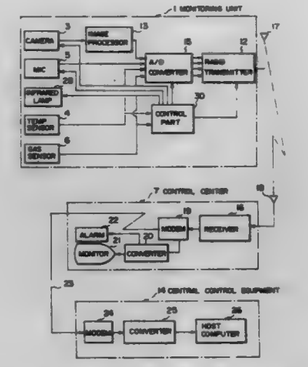
first means for activating said in-vehicle display in response to said smallest remaining percent oil life time being decremented to zero to display a first message signifying it is time to change the oil.

5,382,943

REMOTE MONITORING UNIT

Mutuo Tanaka, No. 5-24-19, Sakaecho, Tachikawa-shi, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,671
Int. Cl.[6] G08B *1/08*; H04N *7/18*
U.S. Cl. 340—539 6 Claims



1. A remote monitoring apparatus for monitoring security of a remote site location from a central control equipment via radio transmission, said remote monitoring apparatus comprising:

camera means for producing a video signal from a picture of a remote site location being monitored;

an image processor for outputting an image signal, through an image processing process, for said video signal produced by said camera means;

a microphone for producing a sound signal from a sound at said location;

a temperature sensor for outputting a detection signal when a temperature change higher than a predetermined level is detected at said location;

a gas sensor for outputting a detection signal when a concentration of oxygen gas smaller than a predetermined first level or a concentration of hydrogen gas greater than a predetermined second level is detected in said location;

a converter for outputting digital signals by converting said image signal of said image processor, said sound signal of said microphone, said detection signal of said temperature sensor, and said detection signal of said gas sensor;

a radio transmitter for transmitting said output digital signals of said converter to a radio receiver of a control equipment via radio transmission, said control equipment being capable of telecommunications of said output digital signals with a central control equipment via a public line and

an enclosure case that houses said camera means, said image processor, said microphone, said temperature sensor, said gas sensor, said converter, and said radio transmitter;

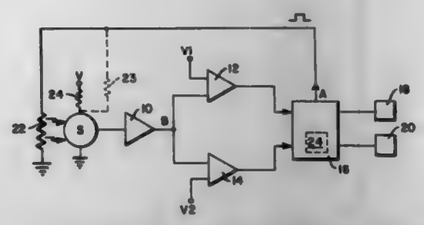
wherein the security of said remote site location is monitored from said central control equipment by using said remote monitoring apparatus placed at said remote site location.

5,382,944

SUPERVISED PIR MOTION-DETECTION SYSTEM

William S. Dipoala, Fairport, and David B. Lederer, Sodus Point, both of N.Y., assignors to Detection Systems, Inc., Fairport, N.Y.

Filed Aug. 5, 1992, Ser. No. 924,958
Int. Cl.[6] G08B *13/18*
U.S. Cl. 340—567 7 Claims



1. In a passive infrared radiation detection system comprising a pyroelectric sensor for producing an output signal in response to being irradiated with infrared radiation, the improvement comprising:

means for detecting a change in sensitivity of said pyroelectric sensor by a predetermined fraction of a nominal sensitivity level, said detecting means comprising a resistor positioned in close proximity to said sensor, and means for sequentially applying current pulses of different amplitudes to said resistor, said current pulse applying means comprising logic means having first and second output terminals on which said current pulses are produced in the form of binary signals, said terminals being connected to said resistor through a voltage dividing network, whereby the amplitude of said current pulses is controlled; and

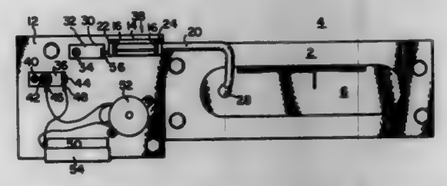
means responsive to said detecting means for providing an indication that said change has been detected.

5,382,945

MAIL SLOT ALARM

Peter J. Novak, 344 Rural Ave., Chester, Pa. 19013

Filed Jan. 26, 1993, Ser. No. 9,329
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—569 3 Claims



2. In combination with a mail slot of the type wherein a receptacle is provided for the receipt of mail, said receptacle having a swinging door hingedly attached to the upper edge of said receptacle, and alarm device comprising:

(a) a mounting plate mounted adjacent to said receptacle;

(b) a bracket mounted to said mounting plate;

(c) an actuation lever rotatably mounted through said bracket and secured by one or more fasteners such that axial displacement of said actuation lever is prevented;

(d) a contact switch pivotally mounted to said mounting plate;

(e) a pin connected to one of said one or more fasteners and capable of supporting said contact switch in an upright position; and

(f) an alarm assembly, comprising a power source, an alarm and a terminal block in series circuit,

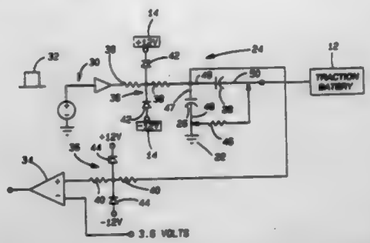
whereby said actuation lever is engaged by said door upon insertion of mail through said slot, said actuation lever causing said pin to release said contact switch and contact said terminal block to complete the circuit and activate said alarm.

5,382,946

METHOD AND APPARATUS FOR DETECTING LEAKAGE RESISTANCE IN AN ELECTRIC VEHICLE

Allan R. Gale, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 8, 1993, Ser. No. 1,957
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—650 13 Claims



1. A leakage path detection circuit for detecting leakage current in an electric vehicle having an isolated high voltage traction battery and an auxiliary battery grounded to the vehicle, the circuit comprising:

excitation means for periodically applying an excitation signal to the circuit;

first energy storage means having an input terminal in electrical contact with said excitation means and a grounded output terminal for storing a voltage induced thereon by said excitation means;

second energy storage means having an input terminal in electrical contact with said excitation means and an output terminal in electrical contact with the traction battery for storing a voltage induced thereon by said excitation means;

comparator means in electrical contact with said first and second energy storage means for comparing said induced voltage to a DC reference voltage during a predetermined time period and generating an output signal indicating whether said induced voltage exceeds said reference voltage; and

protect means in electrical contact with said excitation means, comparator means and the respective input terminals of said first and second energy storage means for protecting said comparator means from voltage spikes, wherein said output signal is used to determine the resistance of the leakage path.

5,382,947

REMOTE-CONTROLLED OPERATION SYSTEM FOR ELECTRICAL CONSUMERS

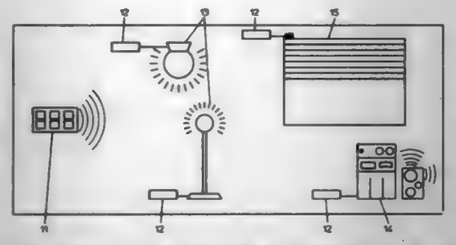
Markus Thaler, Hirzel, and Peter Schmid, Horgen, both of Switzerland, assignors to Feller AG, Horgen, Switzerland

PCT No. PCT/CH92/00099, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/22047, PCT Pub. Date Dec. 10, 1992
PCT Filed May 26, 1992, Ser. No. 961,682
Claims priority, application Switzerland, May 30, 1991, 01598/91
Int. Cl.[6] H04B *1/00, 10/02*
U.S. Cl. 340—825.22 6 Claims

1. A remote-controlled operation system for controlling a plurality of electrical consumer devices, the system comprising:

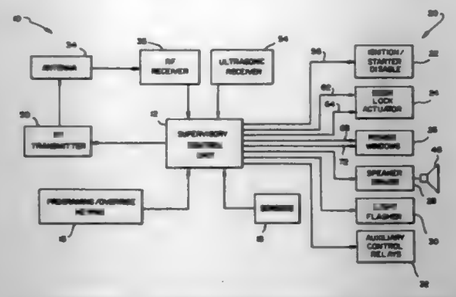
an operating device with a transmitter for transmitting con-

trol signals including store command and retrieve command signals;
each said consumer device including a receiver for receiving said control signals and a control device including an evaluation unit for evaluating signals received by said receiver;
said consumer device further including a control unit for controlling the associated consumer device, each said evaluation unit including storage means for storing at least one state of an associated control unit and for driving said associated control unit;
each said storage means including a state register for storing a current state of the control unit and a state table;



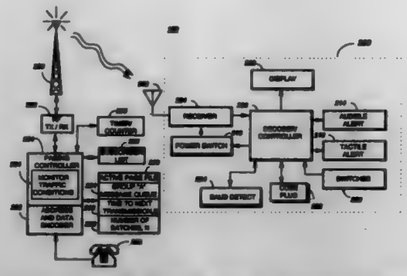
said evaluation unit transferring the current state of the control unit used for controlling the control unit from said state register into said state table upon receipt of said store command signal;
said state table including a plurality of memory locations with corresponding memory location designations, and wherein a store command is transmitted from said state table with a scenario number corresponding to a memory location designation, the current state of said control unit being transferred into the corresponding memory location of said state table; and
each of said consumer devices transferring the corresponding memory location of said state table into said state register upon receipt of a retrieve command.

5,382,948
VEHICULAR SECURITY SYSTEM WITH REMOTE SIGNALLING FOR AUTO CARJACKING FUNCTIONS
Henry Richmond, 55 Church St., White Plains, N.Y. 10601
Filed Jun. 3, 1993, Ser. No. 72,325
Int. Cl.[6] G08B *5/22*; B60R *25/10, 25/00*; H01H *47/00*
U.S. Cl. 340—825.36 12 Claims



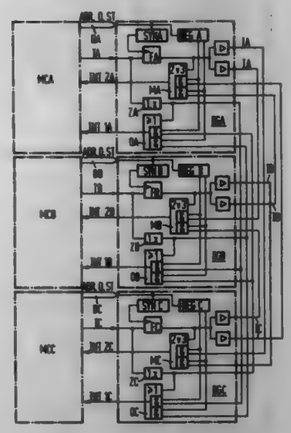
1. A vehicular security system-for recovery of a vehicle from an unauthorized person who has obtained possession of the vehicle by removing an authorized operator from the vehicle, the security system comprising a supervisory control unit carried within the vehicle, a remote signalling unit, the remote signalling unit being dimensioned so as to be and being inconspicuously carried by the authorized operator, the remote signalling unit and the supervisory control unit having means for effecting wireless communication therebetween, the vehicle having power door locks including a locking mechanism associated with each door and a control switch connected to each door locking mechanism, whereby each door locking mechanism is actuatable from a door unlocked positioned to a door locked position and from a door locked position to a door unlocked position responsive to actuation of the control switch, the vehicle having power windows including at least one power window motor operably connected to a movable window and at least one window control switch connected to each power window motor, whereby each movable window operably connected to a power window motor is actuated from a window open position to a window closed position or positions therebetween and from a window closed position to a window open position or positions therebetween in response to actuation of the window control switch, the security system further including power door lock interface means in communication with the supervisory control unit, the power door lock interface means for interrupting ,the connection between the power door lock control switch and each door locking mechanism, the power door lock interface means including means for actuating all power door locking mechanisms to the door locked position, the security system further including power window interface means in communication with the supervisory control unit, the power window interface means for interrupting the connection between each window control switch and its associated power window motor, the power window interface means including means for actuating the power window motor to move its associated operably connected window to the window closed position, the supervisory control unit being programmed to actuate the power window interface and the power door lock interface in response to wireless communication signalling between the supervisory control unit and the remote signalling unit after the authorized operator carrying the remote signalling unit has been removed from the vehicle.

5,382,949
METHOD FOR INCREASING BATTERY LIFE FOR SELECTIVE CALL RECEIVERS
Von A. Mock, Lantana, and Eric T. Eaton, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 1, 1993, Ser. No. 11,614
Int. Cl.[6] H04Q *7/00*; H04B *7/00*
U.S. Cl. 340—825.44 20 Claims



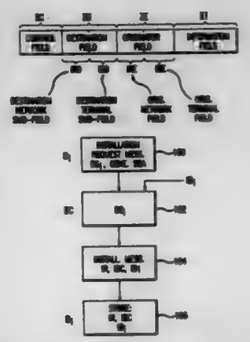
1. A selective call receiver system including a base site capable of transmitting paging information having a plurality of batches in a paging transmission wherein successive paging transmissions being transmitted within a fixed time period, the base site comprising:
means for counting the plurality of batches to be transmitted in a first of at least two successive paging transmissions and assigning a number thereto;
means, coupled to the means for counting, for calculating a time between an end of the plurality of batches to be transmitted in the first of the at least two paging transmissions to a start of a next successive paging transmission;
base site processing means, coupled to the calculating means and the counting means, for processing the paging information, said base site processing means comprising:
means for encoding a portion of at least the first of the at least two successive paging transmissions with the calculated time and the number to be transmitted in the first paging transmission; and
base site transmitting means, coupled to the base site processing means, for transmitting the at least two successive paging transmissions according to the fixed time period to a plurality of selective call receivers; the selective call receivers, comprising:
means for receiving the paging transmissions;
means, coupled to the receiving means, for decoding the number being transmitted therein and the calculated time indicating the time after the transmission of the plurality of batches to the next successive paging transmission; and
means, coupled the decoding means, for disabling and enabling a power supply to said receiving means for receiving an assigned frame of the plurality of batches;
said disabling and enabling means, being further responsive to the plurality of batches being decoded, for disabling said power supply to said receiving means for the calculated time until the next successive paging transmission.

5,382,950
DEVICE FOR IMPLEMENTING AN INTERRUPT DISTRIBUTION IN A MULTI-COMPUTER SYSTEM
Michael Gronemeyer, Weddel, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/EP91/01021, § 371 Date Apr. 6, 1993, § 102(e) Date Apr. 6, 1993, PCT Pub. No. WO92/03786, PCT Pub. Date Mar. 5, 1992
PCT Filed Jun. 3, 1991, Ser. No. 975,537
Claims priority, application European Pat. Off., Aug. 14, 1990, 90115584
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.5 29 Claims



1. A device for distributing interrupts for updating messages and commands to the individual computers of a secure multi-computer system having n-parallel-working individual computers, comprising a module capable of receiving timer signals in specified time intervals allocated to each of the individual computers of the multi-computer system for outputting interrupt-request signals derived from the timer signals, each of said modules comprising:
a hardware-majority element for carrying out an m-of-n evaluation of an interrupt-request signal produced by its own module and of interrupt-request signals produced by the other modules, and for outputting an interrupt signal to the corresponding computer when the m-of-n condition is fulfilled;
one counter for outputting an output signal after the supplying of a specified number of timer signals; and
an OR-element having inputs connected to the outputs of the counter of their own module and to the outputs of the other modules, and an output which leads to an interrupt input of the corresponding computer to initiate a testing program to reveal different contents of the counters.

5,382,951
INITIALIZATION METHOD AND A SYSTEM FOR TRANSMITTING MESSAGES BETWEEN A CONTROL TERMINAL AND CONTROLLED TERMINALS
Trevor White, Dunwoody, Ga.; Tibor Somogyi, Verrieres le Buisson, and Arnaud Fausse, Paris, both of France, assignors to Schlumberger Industries, S.A., Montrouge, France
Filed Jun. 15, 1992, Ser. No. 898,277
Claims priority, application France, Jun. 21, 1991, 91 07684
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.52 6 Claims



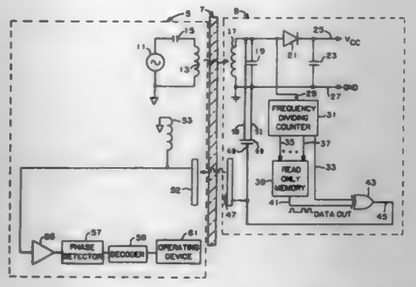
1. A method of transmitting messages between a control terminal and controlled terminals interconnected by a network to allow transfer of said messages, the network being identified by data specific thereto, each controlled terminal being adapted to be installed on said network, wherein:
the messages transmitted between a control terminal and controlled terminals installed on the same network include a destination data field comprising a first sub-field for data identifying the destination network and a second sub-field for data specific to the destination station, and include an originator data field comprising a first sub-field for second data identifying the network and a second sub-field for data specific to the originating terminal
an identifying data item is allocated to each controlled terminal to be installed on the network, whereby this terminal transmits an installation request message on the network including in its destination field first and second general data in said first and second sub-fields and including in its originator field said first general data and said data item specific to the originating terminal in said first and second sub-fields;
said control terminal is responsive to said installation request message to transmit a message including in said destination field said first general data and data specific to the terminal to be installed and related to said specific data item, and including in said originator field said data specific to the network and data specific to the control terminal; and
on receipt of said installation message, said terminal to be installed stores said data which is specific thereto, said

data specific to the control terminal and said data specific to the network, whereby said controlled terminal is installed.

5,382,952
TRANSPONDER FOR PROXIMITY IDENTIFICATION SYSTEM

Kevin D. Miller, San Jose, Calif., assignor to Indala Corporation, San Jose, Calif.

Filed Jan. 22, 1992, Ser. No. 823,784
Int. Cl.[6] G06K *7/00*
U.S. Cl. 340—825.54 **14 Claims**



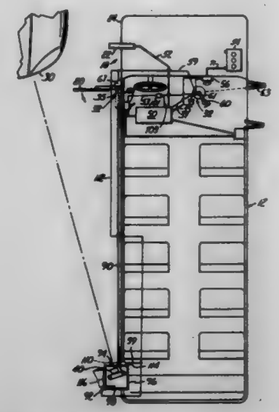
1. A transponder for use in an object identification system including an interrogator which transmits a continuous interrogation signal and detects a responsive identification signal transmitted by the transponder, said transponder comprising:
means for receiving and detecting said interrogation signal;
means, responsive to receipt of said interrogation signal, for continuously producing an identification signal having a frame with a fixed number of binary bits including a start bit corresponding to a first binary value, an identification data portion of a specified number of bits less than one half of said fixed number of bits, and a following synchronization portion including first, second and third consecutive bits of alternating binary values, with said first and said third bits being of said first binary value and said second bit being of a second binary value, followed by a sequence of bits which are all of said second binary value to complete said frame;
means for producing a carrier signal; and
means for modulating said carrier signal with said identification signal and for transmitting the modulated carrier signal.

5,382,953
DEVICE FOR DETECTING SCHOOL BUS STOP ARM VIOLATIONS

Wayne L. Hauptli, 4519 110th St., Gleaco, Minn. 55336

Filed Apr. 14, 1994, Ser. No. 227,508
Int. Cl.[6] G08G *1/017*
U.S. Cl. 340—937 **16 Claims**

1. A device for detecting and identifying school bus stop arm violations comprising:
a sensor positionable on a school bus for detecting the presence of a moving vehicle in a violation zone adjacent to the school bus;
stop arm detecting means for detecting the extension of the stop arm on the school bus;
a control unit operable with the sensor and the stop arm detecting means for providing a control signal indicating the presence of a vehicle in the violation zone when the stop arm is extended; and

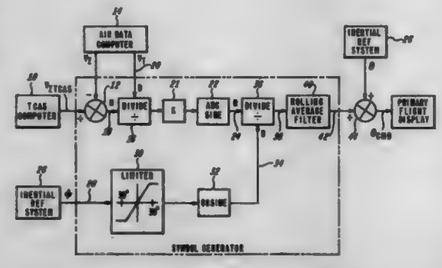


a camera responsive to the control signal for photographing the moving vehicle in the violation zone.

5,382,954
RESOLUTION ADVISORY DISPLAY INSTRUMENT FOR TCAS GUIDANCE

Thomas W. Kennedy, Jr., Phoenix, and Donald F. Fenstermaker, Glendale, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 27, 1993, Ser. No. 68,337
Int. Cl.[6] G08G *5/04*
U.S. Cl. 340—961 **11 Claims**

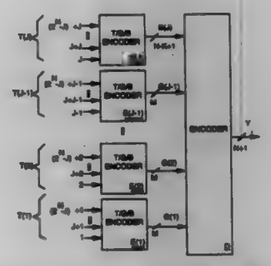


1. An aircraft indicating system for displaying a resolution advisory signal for avoiding a collision between first and second aircraft, comprising:
means for receiving a TCAS resolution advisory signal in the form of a vertical speed command for determining the evasive action to be taken by the pilot of the first aircraft to avoid collision with the second aircraft,
means for receiving signals corresponding to the aircraft roll angle and current pitch angle,
means for receiving signals corresponding to the current vertical speed and true airspeed,
means for applying said TCAS signal, said current vertical speed signal, and said true airspeed signal to generate a signal corresponding to a first trigonometric function,
means for deriving a second trigonometric function representative of aircraft roll angle and for generating a corresponding signal thereof,
means for combining said first and second trigonometric function signals to derive a further signal representative of a desired change in aircraft pitch angle,
means for combining said current pitch angle signal and said desired change in pitch angle signal to provide a signal corresponding to a commanded pitch angle for avoiding said collision, and
means for applying said commanded pitch angle signal to electronic display means for providing a symbolic representation thereof.

5,382,955
ERROR TOLERANT THERMOMETER-TO-BINARY ENCODER

Daniel G. Knierim, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Nov. 4, 1993, Ser. No. 148,802
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—64 **18 Claims**



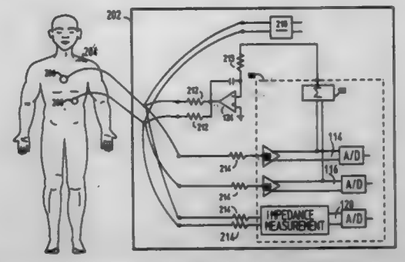
1. A method for converting a set of digital input signals forming a thermometer code T into a plurality of digital output signals forming a binary code Y representing thermometer code T, the method comprising the steps of:
partitioning said set of digital input signals into J subsets such that each subset forms a separate one of a set of thermometer codes T(1) through T(J), where J is an integer greater than 1;
processing the thermometer code T(J) to produce a binary code B(J) representing thermometer code T(J) and a code G(J) consisting of a least significant portion of code B(J);
processing thermometer codes T(1) through T(J−1) to produce binary codes G(1) through G(J−1), respectively, where each binary code G(1) through G(J−1) consists of a least significant portion of a binary code representing thermometer code T(1) through T(J−1), respectively; and
processing codes B(J) and G(1) through G(J) to produce said plurality of digital output signals forming said binary code Y.

5,382,956
INTEGRATED CIRCUIT FOR PHYSIOLOGICAL SIGNAL MEASUREMENT

Richard A. Baumgartner, 1860 Newell Rd., Palo Alto, Calif. 94303; Charles E. Moore, 425 W. 10th St., Loveland, Colo. 80537, and Earl C. Herleikson, 13650 Paddy Gulch Rd., Yamhill, Oreg. 97148

Filed Apr. 30, 1992, Ser. No. 876,645
Int. Cl.[6] H03M *1/00, 1/12*
U.S. Cl. 341—155 **19 Claims**

1. An integrated circuit comprising:
a plurality of analog signal amplifiers, each said analog signal amplifier having an amplifier input connected to an external input voltage and a signal amplifier output; and
wherein each said signal amplifier output is resistively connected to an input of an analog to digital converter means for receiving said signal amplifier output and for converting said signal amplifier output to a digital output; and
an averaging amplifier means for receiving a plurality of analog averaging inputs, for generating a sum of said plurality of analog averaging inputs, and for generating an external analog averaging output by amplifying said sum; and
wherein there is a one-to-one correspondence between said analog averaging inputs and said signal amplifier outputs; and wherein each analog averaging input is switchably connected to one corresponding signal amplifier output; and

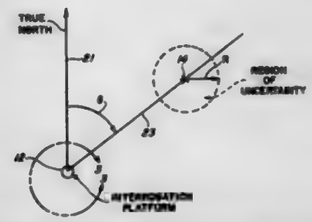


averaging switching means for receiving digital averaging selection bits and for selecting which of said analog averaging inputs is switched to a corresponding signal amplifier output, in response to said digital averaging selection bits; and digital control means for generating said averaging selection bits in response to an external digital command input.

5,382,957
SYSTEM AND METHOD

Richard J. Blume, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 19, 1989, Ser. No. 456,828
Int. Cl.[6] G01S *13/87, 13/78*
U.S. Cl. 342—43 **21 Claims**



1. A system for identifying a detectable object by use of the plurality of satellites of the global positioning system GPS, said system comprising:
platform means having survey means for surveying outwardly of and about the platform means and in any direction relative thereto for detecting an object to be identified, the platform means also having GPS receiver means, the GPS receiver means for receiving signals from a plurality of three satellites for determining the geoposition of the platform means in terms of latitude and longitude, all in real time; the platform means and a detected object to be identified being encompassed by the satellites of the GPS, and
the platform means upon the survey means detecting an object including first means for determining the estimated position of the detected object and a predetermined region of uncertainty thereabout, the platform means having second means for transmitting an interrogation signal

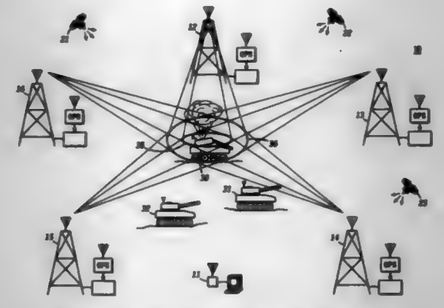
incorporating the estimated position of the detected object and the region of uncertainty thereabout to the detected object so that the detected object after being interrogated by the interrogation signal can respond with a signal for clearly identifying same to the platform means.

5,382,958

TIME TRANSFER POSITION LOCATION METHOD AND APPARATUS

Mark R. FitzGerald, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 991,936, Dec. 17, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,900
Int. Cl.[6] G01S *1/08, 5/02;* F41G *3/26*
U.S. Cl. 342—386 **12 Claims**



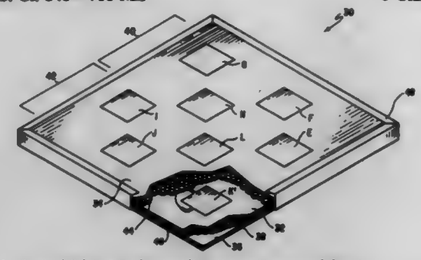
1. A position location arrangement for self location of an object, said position location arrangement comprising:
means for transmitting time information;
relay means coupled by radio signals to said means for transmitting, said relay means for receiving said time information, said relay means for retransmitting said time information in a repeated plurality of time slots;
control means coupled by radio signals to said relay means, said control means for transmitting fire mission information to selected ones of said relay means;
said relay means for re-transmitting said fire mission information in a plurality of second time slots;
said object including location determining means coupled by radio signals to said relay means, said location determining means for self-determining its location from said repeatedly transmitted time information in said plurality of time slots;
said means for transmitting time information includes at least one global positioning system (GPS) satellite for transmitting said time information;
said relay means includes a plurality of GPS receiver means for receiving said time information and converting said time information for use by said GPS receives means; and
said relay means further includes a plurality of relay devices corresponding on a one-for-one basis to said plurality of GPS receiver means, each of said plurality of relay devices for receiving said time information and re-transmitting an indication of said time information in a predetermined time slot.

5,382,959

BROADBAND CIRCULAR POLARIZATION ANTENNA

Todd A. Pett, Longmont; Steven C. Olson, Broomfield, and Ajay I. Sreenivas, Longmont, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 681,100, Apr. 5, 1991, Pat. No. 5,231,406. This application Apr. 10, 1992, Ser. No. 866,868
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS **5 Claims**



1. A multi-layer microstrip antenna comprising:
a plurality of stacks of resonantly-dimensioned radiator patches, each stack including a plurality of electromagnetically coupled radiator patches which are formed on corresponding dielectric substrates and stacked above one another with interleaved dielectric spacing material over an electrically conductive ground surface, said dielectric spacing material having a dielectric constant of approximately 1; and
a dielectric layer having a relative dielectric constant of approximately 1 being disposed between said ground surface and the lowermost of said radiator patches, wherein the thickness of the dielectric layer is at least approximately ten times greater than the thickness of the adjacent, overlying dielectric substrate, and wherein the effective relative dielectric constant of the resonant cavities underlying all of said patches is approximately 1;
a microstrip RF feed network formed on a dielectric substrate which also carries said lowermost of said radiator patches;
wherein said patches are of approximately square resonant dimensions and wherein said microstrip RF feed network emanates from a coaxial feed pin through impedance matching and phase-shifting microstrip feedlines to plural feed points on said lowermost of said radiator patches to achieve approximately circular polarization of RF signals radiating to/from said patches.

5,382,960

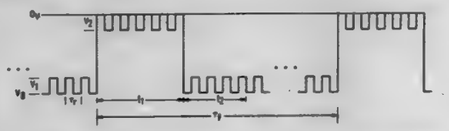
Patent Not Issued For This Number

5,382,961

BISTABLE DMD ADDRESSING METHOD

Richard O. Gale, Jr., Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 961,997, Oct. 15, 1992, Pat. No. 5,285,196. This application Nov. 5, 1993, Ser. No. 148,127
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[6] G09G *3/34*
U.S. Cl. 345—108 **19 Claims**



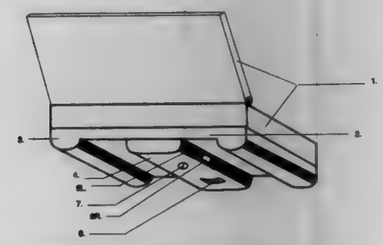
1. A method of addressing an array of electromechanical pixels, said method comprising the step of applying a bias voltage with an AC and a DC component to said array of pixels.

5,382,962

DUAL PURPOSE HANDLE AND CONTROLLER FOR HANDHELD COMPUTER

Edgar D. Young, Channel Island Harbour #191; 3600 S. Harbour Blvd., Oxnard, Calif. 93035

Filed Jan. 11, 1993, Ser. No. 2,666
Int. Cl.[6] G09G *3/02*
U.S. Cl. 345—167 **2 Claims**



1. A handheld computer comprising:
a computer section including a top and a bottom,
a base section located on the bottom of said computer section, said base section for supporting said computer section;
a separate display section secured to the top of said computer section;
a handle located on the bottom of said base section, said handle fashioned to be operated by either hand of a user;
a first and second controller means located on said handle to be used by a respective left or right hand of said user, said first and second controller means each including: a rotatable ball to be rotated by the thumb of a respective hand of said user, a pressure-activated action switch to be operated by a finger of said respective hand, and information generating means for generating first information regarding amount and direction of rotation of said ball, said information generating means is further able to generate second information regarding the position of said action switch;
recording means for recording said first information and said second information;
a conductor for connecting information generating means of said first and second controller means to said recording means to record said first information and said second information.

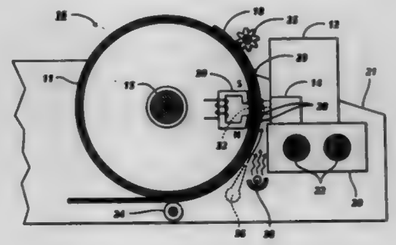
5,382,963

INK JET PRINTER FOR MAGNETIC IMAGE CHARACTER RECOGNITION PRINTING

Stephen F. Poad, and Ivan Rezanka, both of Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1992, Ser. No. 948,046
Int. Cl.[6] B41J *2/01;* G01D *15/16*
U.S. Cl. 346—25 **7 Claims**

1. An ink jet printer for printing images capable of being read by a magnetic image character recognition device, comprising:
a printhead having a plurality of nozzles in communication of a reservoir therein;
means for supplying liquid ink having magnetic particles dispersed therein to said printhead reservoir;
means for ejecting droplets of the liquid ink from the printhead nozzles onto a recording medium in response to electrical signals representative of data to form printed data images of liquid ink on said recording medium;
means for generating a magnetic field having magnetic lines of force in a predetermined direction, said means for generating a magnetic field producing magnetic lines of force in a predetermined arrangement relative to the recording medium, so that the recording medium is influenced by the magnetic lines of force only at a printing zone, and so that the liquid ink droplets are not under the influence of said magnetic lines of force until after the ink droplets impact the recording medium at said printing zone; and
means for drying the liquid ink droplets on the recording medium which form the printed data images on the recording medium, while said liquid ink droplets are under the influence of the magnetic lanes of force at said printing zone, so that the magnetic particles in the liquid ink are oriented according to the predetermined direction of said magnetic lines of force while the magnetic particles in the liquid ink forming the printed data images are mobile in the liquid ink, and so that the oriented magnetic particles are permanently preserved in the printed data images after said printed data images formed by liquid ink droplets are dried.

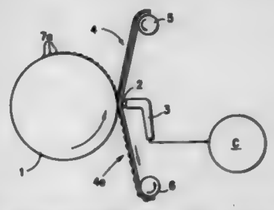


5,382,964

PRINTING APPARATUS WITH THERMO TRANSFER FOIL CAPABLE OF COMPENSATING VARIATIONS IN SPACING OR PRESSURE BETWEEN A PRINTER FORME CARRIER AND A RECORDING HEAD

Josef Schneider, Doedorf-Lettenbach, Germany, assignor to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Continuation of Ser. No. 598,112, Oct. 16, 1990, abandoned. This application Sep. 11, 1992, Ser. No. 949,271
Claims priority, application Germany, Dec. 14, 1989, 3941303
Int. Cl.[6] B41C *1/005, 1/06;* B41J *2/325*
U.S. Cl. 346—76 PH **12 Claims**



1. Printing apparatus comprising, in combination:
a printing forme carrier (1) having a hard hydrophobic particle-accepting surface,
a thermal recording head (2, 3) providing heated points or spots, and
a thermal transfer foil for transferring image-carrying hydrophobic particles from the foil on the printing forme carrier (1) by spotted application of heat to said foil by said thermal recording head,
wherein said foil is formed by a substrate (9, 9') and a layer (7, 7') of a meltable hydrophobic substance, and

said thermal recording head (2, 3) is positioned with respect to the printing forme carrier (1) with spacing to permit passage of said thermal transfer foil (4) therebetween, optionally under pressure and, upon application of heat by said recording head, causing melting of the meltable substance for transfers to and adhesion on the particle-accepting surface of the printing forme carrier (1), and

wherein, in accordance with the invention,

means are provided for compensating for variations in spacing or pressure between the printing forme carrier (1) and said recording head (2, 3), with the foil (4) therebetween, said compensating means comprising

an intermediate layer (8, 8') located between the substrate (9, 9') and the meltable substance layer (7, 7') of the foil (4), which intermediate layer (8, 8') includes a material which is thermally volume-expandable and which has a volume expansion threshold temperature which is higher than the melting point of the meltable substance.

5,382,965

WAX TRANSFER TYPE THERMAL PRINTING METHOD AND THERMAL PRINTER

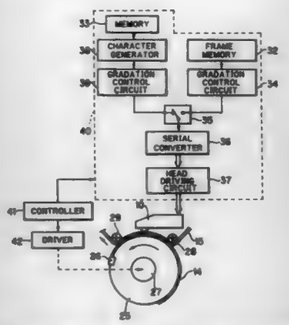
Kenji Yamakawa; Hitoshi Saito, and Masamichi Sato, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 4, 1992, Ser. No. 986,076

Claims priority, application Japan, Dec. 4, 1991, 3-320522

Int. Cl.[6] B41J *2/325*

U.S. Cl. 346—76 PH 10 Claims



7. A wax transfer type thermal printer for printing characters and a half-tone image by transferring ink of an ink film on a receiving paper, comprising:

a thermal head for heating a rear side of the ink film;

a plurality of heating elements arranged in said thermal head in a main scanning direction, each of said heating elements recording an ink dot from said ink film and a length of each of said ink dots in a sub scanning direction perpendicular to the main scanning direction is changed in accordance with gradation levels; and

control means for selecting a size of a single pixel so as to record either the characters or the half-tone image, a unit pixel being used as said single pixel for the characters and N×M unit pixels being used as said single pixel for the half-tone image, wherein N, which is an integer of 2 or more, is a number of said unit pixels in said main scanning direction and M, which is an integer of 2 or more, is a number of said unit pixels in said sub scanning direction.

5,382,966

EXPOSURE HEAD FOR IMAGE RECORDING APPARATUS

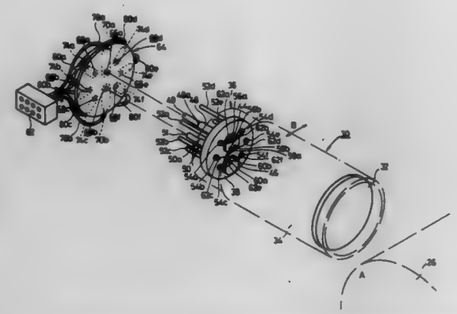
Atsuhiro Doi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 323,909, Mar. 15, 1989, Pat. No. 5,170,180. This application Jun. 5, 1992, Ser. No. 894,740

Claims priority, application Japan, Mar. 15, 1988, 63-061612; Mar. 15, 1988, 63-061613; Mar. 16, 1988, 63-035358[U]; Mar. 16, 1988, 63-035359[U]; Mar. 16, 1988, 63-064034

Int. Cl.[6] B41T *2/45;* G01D *15/14*

U.S. Cl. 346—107 R 1 Claim



1. An exposure head for use in an image recording apparatus, comprising:

a plurality of light-emitting elements for emitting respective light beams;

a single support for supporting and accommodating said light-emitting elements, wherein said support is made of an electrically insulating material, further including first and second electrically conductive base plates mounted on said support in mutually electrically insulated relation, said light-emitting elements being provided in different polarity groups which are fixedly mounted on said first and second base plates, respectively,

said light-emitting elements being disposed in a side-by-side relationship on said single support and said light-emitting elements are provided in three groups, and the light emitting elements in each of the groups are at spaced intervals in a main scanning direction, wherein said light beams emitted by each of said groups of light-emitting elements have a different wavelength, said exposure head further including means for selectively superposing the light beams having different wavelengths from said light-emitting elements on a recording medium to form a color image thereon; and

a single optical system for simultaneously focusing said light beams onto said recording medium, said single optical system including only one condenser lens, said condenser lens focusing each of said light beams emitted by the light-emitting elements,

said single support and said single optical system being mechanically coupled to each other in a relative fixed position thereof and allow said single support and said single optical system to move in unison in an auxiliary scanning direction relative to an image recording drum which is rotatable in said main scanning direction transverse to said auxiliary scanning direction, wherein said drum carries the recording medium wound therearound.

5,382,967

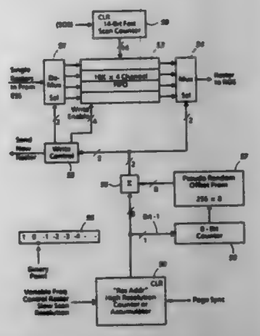
CONTINUOUSLY TUNABLE RASTER RESOLUTION PRINTING

Douglas N. Curry, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 11, 1990, Ser. No. 535,629

Int. Cl.[6] H04N *1/21*

U.S. Cl. 346—108 2 Claims



1. In a raster output scanner, apparatus for using m scanning beams, numbered from 0 to m−1 from top to bottom, to scan a beam receptor n rasters long in the process direction comprising,

means for generating m evenly spaced scanning beams at the same time and for scanning said m beams across said receptor at the same time,

means for moving said receptor in the process direction,

means measuring the distance traveled by said receptor and for generating a signal each time said receptor has advanced a distance equal to 1/nm times the receptor length, and

means for switching the video data to each of said beams, one at a time, from the last raster to the next raster as each signal is generated, in the following order, from beam m−1 to beam 0.

5,382,968

RASTER IMAGE SERIAL PRINTER HAVING VARIABLE BUFFER MEMORY AND METHOD FOR OPERATING SAME

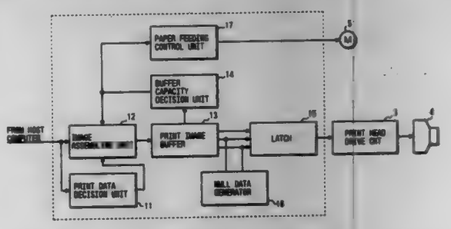
Masakatsu Endoh, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 98

Claims priority, application Japan, Jan. 7, 1992, 4-018517; Nov. 2, 1992, 4-317913

Int. Cl.[6] G01D *15/06*

U.S. Cl. 346—153.1 5 Claims



1. A raster image serial printer, comprising:

a print head having a plurality of print elements arrayed in a columnar direction;

print data decision means for determining whether input data is raster image data;

buffer capacity decision means for determining the capacity of a buffer in which image data is assembled;

image assembling means coupled to said print data decision means for assembling image data in said buffer by determining a number of bits of said image data to be assembled in said columnar direction corresponding to said print elements based on a result obtained by said print data decision means; and

null data generating means for generating null data corresponding to portions of said buffer not filled by said image data.

5,382,969

INK-EXPELLING RESTORING DEVICE AND METHOD FOR INK JET PRINTER

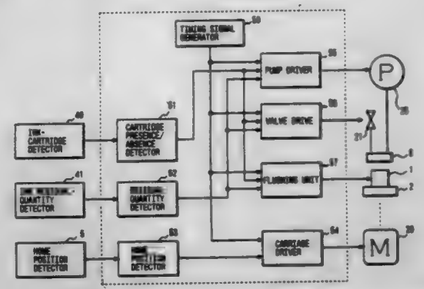
Seiji Mochizuki; Hitoshi Hayakawa, and Kazuhisa Kawakami, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 991,541

Claims priority, application Japan, Dec. 24, 1991, 3-356243

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—23 9 Claims



1. An ink-expelling restoring device for an ink jet printer comprising:

a capping member capping a front face of a recording head;

ink-residual quantity detector detecting a residual quantity of ink in an ink container supplying ink to said recording head;

a wiping device wiping said front face of said recording head;

a pump sucking excess ink within said capping member when said recording head is capped, by said capping member;

a flushing unit driving said recording head for idle discharge when said recording head is at a flushing position; and

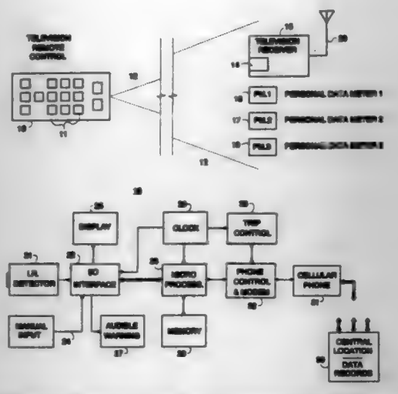
a control device restoring the ink-expelling capability of said recording head by controlling operations of said capping member, said ink-residual quantity detector, said wiping device, said pump, and said flushing unit by a sequence of a wiping operation by said wiping device, and ink-suction operation by said pump, and a flushing operation by said flushing unit, said control device checking a residual quantity of ink with said ink-residual quantity detector while restoring said ink-expelling capability, and stopping said ink suction operation by said pump when the residual quantity of ink is smaller than a preset quantity of ink, said control device controlling said capping member to cap said recording head with said capping member after said flushing and wiping operations.

5,382,970

TELEVISION VIEWER MONITORING SYSTEM INCLUDING PORTABLE DATA METER FOR EACH VIEWER

John B. Kiefl, 17 Castlethorpe Crescent, Nepean, Ontario, Canada K2G 5P6

Filed Jul. 19, 1991, Ser. No. 732,929
Int. Cl.[6] H04H *9/00*
U.S. Cl. 348—1 **22 Claims**



1. A system for monitoring audience attention to receivers for receiving broadcast signals from a number of broadcast stations, comprising

a portable personal data meter for each person to be monitored attending to one of said receivers,

each portable personal data meter being a wireless single unit capable of being carried upon the person and comprising, a cellular telephone module for communicating with a central location, a control for said cellular telephone module, a clock providing a signal representing time, a memory for storing data, a detector means for providing a station identifier identifying the particular one of said broadcast stations being received by said receiver, and a processor means,

said processor means being responsive to said signal representing the time and to said station identifier for storing in said memory data comprising the time at the beginning and end of receiving signals from said particular one of said broadcast stations, and the station identification,

said control serving to control operation of said cellular telephone module to transmit to said central location the said data stored in said memory.

5,382,971

TELEVISION SIGNAL CABLE DISTRIBUTION SYSTEM AND ASSEMBLY OF ELEMENTS FOR CONSTITUTING SUCH A SYSTEM

Pierre Chanteau, La Haye, Malherbe, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1993, Ser. No. 107,499
Claims priority, application France, Aug. 19, 1992, 92 10126
Int. Cl.[6] H04N *7/10*
U.S. Cl. 348—6 **9 Claims**

1. A system for distributing television signals to a plurality of user installations, said system comprising:

a. a plurality of sources of respective satellite television signals;

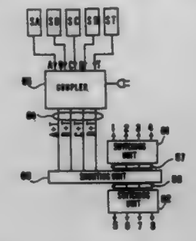
b. a source of a terrestrial television signal;

c. a multiple coupler having inputs coupled to the satellite television signal sources and to the terrestrial television signal source and having outputs for each producing a respective one of the satellite television signals in combination with the terrestrial television signal;

d. a distribution network comprising a number of distribution cables, each being coupled to a respective one of the outputs of the multiple coupler;

e. branching means for coupling the distribution network to the user installations, said branching means including:

i. a shunting unit having inputs coupled to respective ones of the distribution cables, having a group of outputs, and including means for transferring a portion of the



signal power on each of said distribution cables to a corresponding one of the outputs in said group; and

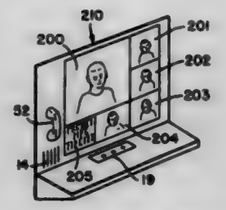
ii. at least one switching unit having a plurality of inputs, each being coupled to one of the outputs in said group, and having at least one output coupled to a respective one of said user installations, said switching unit including means for selectively connecting said at least one output to one of said plurality of inputs in response to a control signal from said respective one of said user installations.

5,382,972

VIDEO CONFERENCING SYSTEM FOR COURTROOM AND OTHER APPLICATIONS

Deno Kannes, 2000 Broadway, Suite 119, San Francisco, Calif. 94115

Continuation-in-part of Ser. No. 561,448, Aug. 1, 1990, which is a continuation-in-part of Ser. No. 247,904, Sep. 22, 1988, Pat. No. 4,965,819. This application Sep. 8, 1992, Ser. No. 942,147
The portion of the term of this patent subsequent to Oct. 23, 2007, has been disclaimed.
Int. Cl.[6] H04M *11/00*; H04N *7/14*
U.S. Cl. 348—15 **11 Claims**



1. An interactive video conferencing system for use by at least a first conferee and a second conferee in a local module and a third conferee in a remote module, including:

a first video camera in the local module and aimed at the first conferee, for generating a first video signal representing an image of the first conferee;

a second video camera in the local module and aimed at the second for generating a second video signal representing an image of the second conferee;

a video monitor having six discrete screen display areas in the remote module;

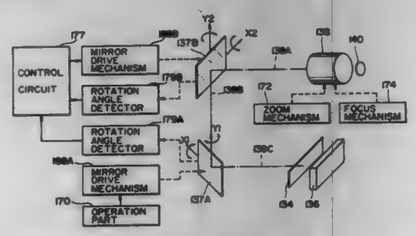
a composite video signal generation unit connected to the first video camera, the second video camera, and the monitor for receiving the first and the second video signals, generating a composite video signal from the first and the second video signals, and sending the composite video signal to the monitor for display, with the first video signal displayed on the monitor as a full video image in a large picture area, and the second video signal displayed on the monitor as a full video image in a small picture area.

5,382,973

FILM IMAGED INPUT SYSTEM

Kazuo Ikari, and Ryo Imai, both of Minato, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 755,472, Sep. 5, 1991. This application Mar. 31, 1993, Ser. No. 40,906
Claims priority, application Japan, Sep. 14, 1990, 2-245113; Jan. 18, 1991, 3-4638; Jan. 18, 1991, 3-4639; Mar. 8, 1991, 3-43780; Mar. 11, 1991, 3-44918; Mar. 11, 1991, 3-44919; Mar. 11, 1991, 3-44920; Aug. 22, 1991, 3-211171
Int. Cl.[6] H04N *5/253*
U.S. Cl. 348—98 **5 Claims**



1. A film image input system, comprising:

setting means for setting a developed still photo film at a predetermined taking position;

lighting means for lighting said developed still photo film set by said setting means;

an image pickup element having a light-receiving surface;

a zoom lens for forming a film image of at least a portion of a frame of said developed still photo film lighted by said lighting means on said light-receiving surface of said image pickup element by zooming in or out, said image pickup element outputting image signals corresponding to said film image;

signal process means for processing said image signals outputted from said image pickup element and outputting said processed image signals to a monitor TV;

first and second mirrors respectively interposed between said photo film and said zoom lens for bending the optical axis of said zoom lens;

first mirror drive means for inclining said first mirror about at least two axes;

second mirror drive means for inclining said second mirror about at least two axes; and,

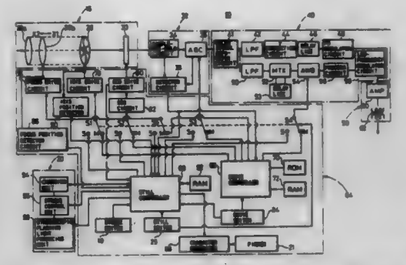
means for driving said first and second mirror drive means in order to execute a desired scanning operation, said driving means driving and controlling said first and second mirror drive means to incline said first and second mirrors at a given relationship so that the optical axis of said zoom lens intersects the surface of said photo film at a right angle.

5,382,974

MOVIE CAMERA HAVING STILL PICTURE PHOTOGRAPHING FUNCTION AND METHOD OF PHOTOGRAPHING STILL PICTURE THEREWITH

Haruo Soeda, and Makoto Tsugita, both of Tokyo, Japan, assignors to Fuji Photo Film Company, Limited, Kanagawa, Japan

Division of Ser. No. 868,530, Apr. 15, 1992, abandoned. This application Oct. 1, 1993, Ser. No. 107,973
Claims priority, application Japan, Apr. 18, 1991, 3-86720; Apr. 18, 1991, 3-86820
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—221 **28 Claims**



1. A movie camera capable of producing a still photograph during a movie-photography operation, said camera comprising:

strobe means for illuminating objects to be photographed with stroboscopic flashes of light;

solid-state image sensing means for electrically converting image information from light incident thereon into movie and still image signals;

gain control means for controlling the gain of image signals output from the solid-state image sensing means;

video processing and recording means for processing said image signals into movie and still video signals and recording said video signals on the same video recording medium;

movie-photography initiation means for starting a movie-photography operation in which a plurality of movie video signals are successively recorded on the video signal recording medium;

still-photography initiation means for starting a still-photography operation in which still-photography video signals are recorded on the video recording medium, said still-photography initiation means being capable of starting the still-photography operation during the movie-photography operation;

electronic shutter speed control means for setting the shutter speed of said solid-state image sensing means to desired values to control exposure times during the movie and still photography operations;

shutter speed switching means responsive to the starting of a still-photography operation by the still-photography initiation means for automatically changing the shutter speed set by the shutter speed control means to a shutter speed that is faster than the shutter speed set for a concurrently proceeding movie-photography operation to thereby decrease the exposure time of still image signals in the solid-state image sensing means as compared to exposure times of the movie image signals;

still-photography controller means for determining the gains set by said gain control means and for instructing said gain control means to increase the gain of output image signals to gains which compensate for the decrease in exposure time caused by the increased shutter speed during the still-photography operation, and for activating the strobe means to illuminate the objects with stroboscopic flashes of light to supplement the effects of the increased gain in

order to further compensate for the decrease in exposure time; and

means for automatically returning the movie camera to the movie-photography operation upon completion of the still-photography operation;

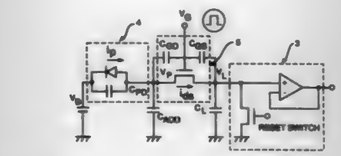
whereby the movie-photography operation is not perceptively interrupted by the still-photography operation.

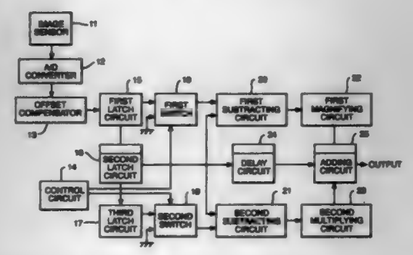
5,382,975

IMAGE READING APPARATUS

Kazuhiro Sakai; Hiroyuki Miyake, and Tsutomu Abe, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 935,256
Claims priority, application Japan, Aug. 30, 1991, 3-244169
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—241 **16 Claims**





1. An image reading apparatus comprising:

a plurality of photoreceptor elements aligned in a fast scan direction;

a plurality of switching elements each connected to one of said photoreceptor elements, said switching elements transferring electric charge generated in said photoreceptor elements;

a plurality of wiring conductors each connected to one of said switching elements having corresponding wiring capacitances for storing electric charges; and

correcting means for correcting spatiotemporal capacitance-related errors in outputs from said wiring conductors, said correcting means correcting the output from each of said wiring conductors according to an output previously supplied from the same wiring conductor,

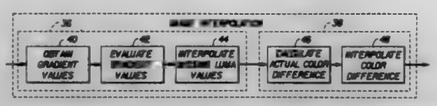
said correcting means evaluating $V2=V2'+\beta(V2'-V1')$ for an output value V2, where V2' is the output from each of said wiring conductors to be corrected, V1' is the output previously supplied from the same wiring conductor, and β is a ratio between a capacitance of said photoreceptor elements (CP) and a capacitance of said wiring conductors (CL), the ratio β being equal to CP/CL.

5,382,976

APPARATUS AND METHOD FOR ADAPTIVELY INTERPOLATING A FULL COLOR IMAGE UTILIZING LUMINANCE GRADIENTS

Robert H. Hibbard, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1993, Ser. No. 85,520
Int. Cl.[6] H04N *9/07*
U.S. Cl. 348—273 **8 Claims**



1. Apparatus for processing a digitized image signal obtained from an image sensor having color photosites that generate a plurality of color values, but only one color value for each photosite location, said apparatus comprising:

means for storing the digitized image signal as a pattern of luminance and chrominance values, wherein some photosite locations lack luminance values;

a processor operative with said storing means for generating an additional luminance value missing from a photosite location by the interpolation of the additional luminance value for such locations from luminance values at nearby photosite locations, said processor including

means for generating gradient values from the differences between luminance values in at least two image directions;

means for comparing the gradient values to one or more thresholds;

means responsive to the threshold comparison for selecting one of said at least two image directions as a preferred orientation for the interpolation of the additional luminance value; and

means for interpolating the additional luminance value from luminance values selected to agree with the preferred orientation.

5,382,977

ELECTRONICALLY SCANNED BUFFERED DIRECT INJECTION CIRCUIT FOR STARING IR FOCAL PLANE ARRAY

Lester J. Kozlowski, Simi Valley; William E. Tennant, Thousand Oaks, and William A. Kleinhans, Westlake Village, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 825,480, Jan. 24, 1992, abandoned. This application Sep. 21, 1993, Ser. No. 124,845
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—300 **8 Claims**

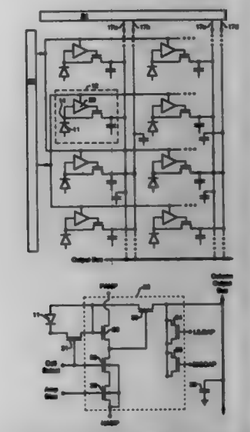
1. An electronic circuit for readout of an IR focal plane array having a plurality of IR detector cells, comprising:

a plurality of inverter amplifiers, said inverter amplifiers comprising integrated circuits fabricated on a neutron transmutation doped (NTD) silicon wafer using a p-well CMOS process to provide threshold uniformity and low power dissipation;

each of said amplifiers having an input, an output, a driver FET, a bias FET, a cascode FET, and a charge storage capacitor connected to said amplifier output, each of said FETs having a gate, a source, and a drain, said amplifier input connected to the gate of said driver FET, the drain of said driver FET connected to the drain of said cascode FET, the source of said cascode FET connected to the drain of said bias FET, the source of said bias FET connected to a power supply, and the drains of said driver FET and said cascode FET further connected to a means for controlling said amplifier output;

a plurality of FET switches, each of said FET switches connecting one of said IR detector cells to said input of one of said amplifiers;

a first shift register connected for providing cell select clock signals to the gates of said cascode FETs and FET switches for accessing said detector cells and clamping



idle ones of said detector cells to normal operating bias to eliminate excess detector noise and crosstalk;

a second shift register for multiplexing said amplifiers to an output bus connected to said amplifier outputs; and

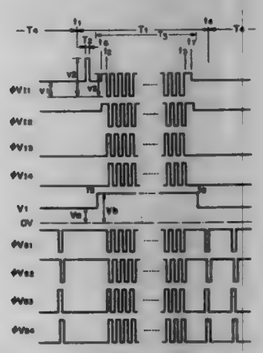
said output bus having distributed capacitance for providing additional detector-generated charge storage capacity.

5,382,978

METHOD FOR DRIVING TWO-DIMENSIONAL CCD IMAGING DEVICE

Takanori Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 92,070
Claims priority, application Japan, Jul. 16, 1992, 4-188513
Int. Cl.[6] H04N *3/14*
U.S. Cl. 348—312 **3 Claims**



1. A method for driving a two-dimensional CCD solid state imaging device comprising: a substrate; an image section including a plurality of light-receiving pixels arranged in a vertical and a horizontal directions on said substrate, said light-receiving pixels each having a radiation sensor responsive to incident light for generating electric charges, a transfer gate having a first gate electrode for reading out the electric charges from said radiation sensor, a drain member for discharging the electric charges from said radiation sensor, and a first vertical CCD having second gate electrodes and a vertical channel driven by said first and second gate electrodes for transferring the electric charges read out by said transfer gate, said first vertical CCD of each of said light-receiving pixels arranged in each column of the vertical direction being coupled together to form a vertical CCD shift register; a storage section including second vertical CCDs each for storing for a while and transferring the signal charges transferred by each of said CCD shift registers; a horizontal CCD shift register for transferring the electric charges transferred by said second vertical CCDs; and an output section responsive to the electric charges transferred by said horizontal CCD shift register for outputting a two-dimensional image signal, said method comprising steps of:

applying a first bias voltage to said drain member of each of said light-receiving pixels relative to said radiation sensor of said each of said light-receiving pixels during an effective picture interval;

applying a second bias voltage higher than the first bias voltage to said drain member of each of said light-receiving pixels relative to said radiation sensor of said each of said light-receiving pixels during a frame shift transfer period;

applying a first driving voltage to said first gate electrode of each of said light-receiving pixels for reading out the electric charges from said radiation sensor of said each of said light-receiving pixels during a charge read-out period;

applying a second driving voltage lower than the first driving voltage to said first gate electrode of each of said light-receiving pixels thereby enabling said radiation sensor of said each of said light-receiving pixels to accumulate a certain amount of electric charges during the effective picture interval; and

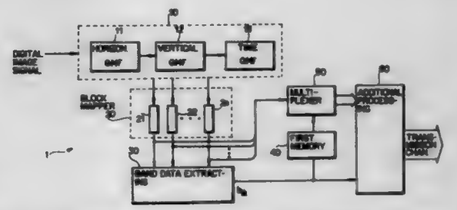
applying transfer driving signals to said first and second gate electrodes for shifting the electric charges within said vertical channel of each said first vertical CCD during the frame shift transfer period, said transfer driving signals each having a peak voltage higher than the second driving voltage.

5,382,979

METHOD AND CIRCUIT FOR ADAPTIVELY SELECTING THREE-DIMENSIONAL SUB-BAND IMAGE SIGNAL

Hen-Hee Mun, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggki-Do, Rep. of Korea

Filed Jul. 27, 1992, Ser. No. 918,616
Claims priority, application Rep. of Korea, Jul. 26, 1991, 91-12925
Int. Cl.[6] H04N *7/130*
U.S. Cl. 348—398 **9 Claims**



1. In an image processing system, an apparatus for adaptively selecting three-dimensional sub-band signals, said apparatus comprising:

an encoder, said encoder further comprising:

a filter bank for dividing a digital image signal into sub-band

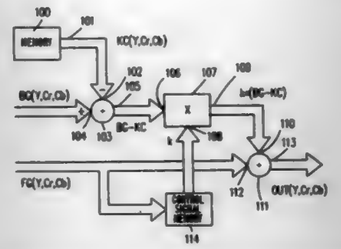
signals with respect to a horizontal direction, a vertical direction and time;
a block mapper for mapping the sub-band signals into blocks to produce sub-band block signals, wherein each of said blocks has a relatively small size;
a band data extracting circuit for extracting sub-band data according to energy and activity of the sub-band block signals and producing filter bank selection data for predicting properties of the sub band signals on the basis of extracted sub-band information;
a first memory storing a first look-up table for providing a first control signal enabling selection of a predetermined number of the sub-band signals depending upon the filter bank selection data output from the band data extracting circuit;
a multiplexer transmitting the sub-band block signals from the block mapper as selected sub-band block signals on the basis of the first control signal from the first memory; and
an additional processing circuit for processing the selected sub-band block signals from the multiplexer so as to optimize efficiency of the image processing system and for transferring processed sub-band block signals;
a decoder, said decoder further comprising:
an inverse processing circuit for inversely processing the processed sub-band block signals from the encoder and detecting the selected sub-band block signals and said filter bank selection data;
a second memory storing a look-up table for producing a second control signal on the basis of the filter bank selection data detected by the inverse processing circuit;
a demultiplexer for demultiplexing the selected sub-band block signals to produce deselected sub-band block signals in response to the second control signal provided by the second memory;
a block demapper for generating restored sub-band signals based on the deselected sub-band block signals output by the demultiplexer; and
a three-dimensional filter bank for generating a restored image signal based on the restored sub-band signals output from the block demapper.

5,382,980

METHOD OF AND ARRANGEMENT FOR INSERTING A BACKGROUND SIGNAL INTO PARTS OF A FOREGROUND SIGNAL FIXED BY A PREDETERMINED KEY COLOR

Rainer Gehrmann, Aisbach-Hähnlein, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 986,329, Dec. 7, 1992. This application Feb. 16, 1994, Ser. No. 197,034
Claims priority, application Germany, Dec. 30, 1991, 4143180; Jun. 24, 1993, 4321010
The portion of the term of this patent subsequent to Jan. 10, 2012, has been disclaimed.
Int. Cl.[6] H04N *9/74*
U.S. Cl. 348—586 **5 Claims**



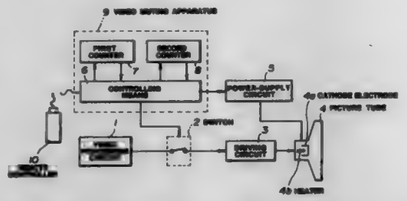
1. A method of inserting a background signal (BG) into parts of a foreground signal (FG), said parts being fixed by a predetermined key color, said method including the step of deriving a control signal (k) from the foreground signal, said control signal having a first value when the foreground signal (FG) represents a color in the region of the key color, and a second value when the foreground signal (FG) represents a different color, in which the control signal (k) has a transition range between the first and the second values, and in which a difference, influenced by the control signal (k), between a vector of the background signal (BG) and a vector of a signal (KC) representing the key color is vectorially added to the foreground signal (FG), characterized in that the background signal (BG), the signal (KC) representing the key color and the foreground signal (FG) each comprise components representing a blue component (Cb), a red component (Cr) and a luminance component (Y), and said components are combined, respectively, in accordance with said method.

5,382,981

VIDEO MUTING APPARATUS

Hitoshi Inaba, and Hidenobu Kimura, both of Saitama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 10, 1993, Ser. No. 74,442
Claims priority, application Japan, Jun. 15, 1992, 4-154924
Int. Cl.[6] H04N *3/24*
U.S. Cl. 348—634 **2 Claims**



1. A video muting apparatus which is used in a television receiver having a picture tube in which a cathode electrode begins heating upon receipt of a power source signal input to when a video signal is input into said picture tube, comprising:
a first counting means for determining an amount of input time between when said power source signal is input into said television received and a power source signal interruption:
a second counting means for determining an amount of interrupt time between when said power source signal interruption in said television receiver occurs and when another power source signal is input; and
a controlling means for calculating a video muting time based on a correlation between said amount of input time determined by said first counting means and said amount of interrupt time determined by said second counting means, and for controlling said video signal input operation so that input of said video signal to said picture tube may be stopped from when said power source signal is initially input into said television receiver until when said video muting time elapses.

5,382,982

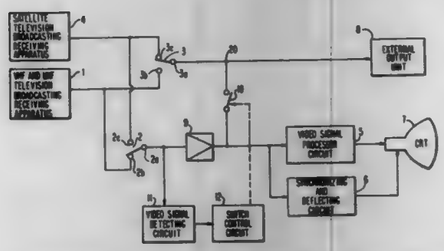
TELEVISION RECEIVER WITH MULTIPLE INPUTS AND OUTPUTS FOR AUTOMATICALLY SWITCHING BETWEEN INPUTS

Keiji Enomoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 984,669, Dec. 2, 1992. This application May 23, 1994, Ser. No. 247,509
Claims priority, application Japan, Dec. 6, 1991, 3-322989
Int. Cl.[6] H04N *5/44, 5/268*
U.S. Cl. 348—706 **4 Claims**

1. A television receiver comprising:

first video signal receiving means for producing a first video output signal;
second video signal receiving means for producing a second video output signal;
an image display unit including a synchronizing and deflecting circuit;
a first change-over switch having first and second states for supplying, in the first, said first video output signal to an external output and, in the second state, said second video output signal to the external output;
a second change-over switch having first and second states for supplying, independently of the state of the first change-over switch, said first video output signal to said image display unit in the first state and said second video output signal to the image display unit in the second state;



a connection switch provided between an output of said second change-over switch and an output of said first change-over switch;
a video signal detecting circuit connected to an output of said second change-over switch; and
a switch control circuit controlling said connection switch in response to a control signal output from said video signal detecting circuit;
wherein when an output video signal from said second change-over switch is not detected by said video signal detecting circuit said switch control circuit causes said connection switch to connect said image display unit and said output of said first change-over switch.

5,382,983

APPARATUS AND METHOD FOR TOTAL PARENTAL CONTROL OF TELEVISION USE

Daniel S. Kwoh, 3975 Hampstead Rd., La Canada/Flintridge, Calif. 91011, and Roy J. Mankovitz, 18057 Medley Dr., Encino, Calif. 91316

Continuation of Ser. No. 100,616, Jul. 29, 1993, abandoned. This application Sep. 8, 1993, Ser. No. 118,001
Int. Cl.[6] H04N *5/44*
U.S. Cl. 348—716 **17 Claims**

1. An apparatus for parental control of television use comprising:
a television receiver having a display monitor;
parental control circuitry in the television receiver including a command controller comprising a microprocessor coupled to a memory for storing authorized identification numbers, and a memory for storing titles of selected programs, channels, and times;
means for entering an identification number into the command controller and for entering said titles of selected programs, channels, and times into the command controller, the entered selected programs being stored into the memory for storing titles of selected programs channels, and times;
means for verifying that an entered identification number compares with a stored authorized identification number;
means for the command controller to display on the display monitor a listing of the selected programs, channels, dates, and times;
means for reordering of said selected programs, dates, and times into temporal order when each selected program date and time are entered so that the selected dates and times are ordered in time from earliest in time to latest in time; and
means for storing the temporally ordered selected dates and times.

13. A method of controlling the programs, channels, dates, and times available for viewing on a television receiver, the method comprising the steps of:
entering a user identification code;
verifying that the entered user identification code is an authorized code;
displaying a menu from which programs, channels, dates, and times may be selected for inclusion in a list of programs, channels, dates, and times available for viewing on the television receiver;
selecting one or more of the programs, channels, dates, and times for establishing each of the programs, channels, dates, and times for which the television receiver is available;
entering the titles of selected programs with their channel and time into temporary storage;
comparing the entered dates and times of entered programs and dates and times for any inconsistencies in the selected programs, channels, dates, and times;

removing any inconsistencies; and
storing the selected programs, channels, dates, and times for controlling the availability of the television receiver.

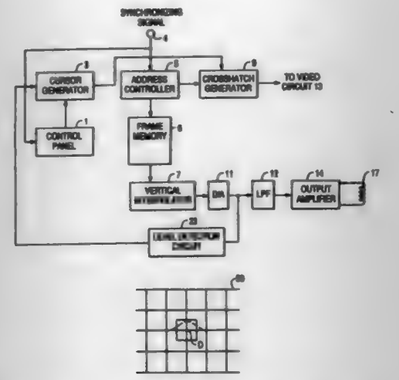
16. A system for parental control of television use comprising:
a television receiver having a controllable input select switch and first and a second input terminals;
a video cassette recorder having a device output coupled to the first input terminal and a device input coupled to a signal source;
a coaxial cable connected to the second input terminal and connected to the signal source bypassing the video cassette video cassette recorder;
locking connectors at the two ends of the coaxial cable to prevent removal;
a locking connector coupling the video cassette recorder to the signal source; and
means for controlling the input select switch in response to a user command to select the first input terminal coupled to the video cassette recorder or the second input terminal that bypasses the video cassette recorder;
wherein upon a user command the video cassette recorder is bypassed.

5,382,984

DIGITAL CONVERGENCE CORRECTION APPARATUS FOR COLOR TELEVISION RECEIVER WITH CURSOR ON SCREEN

Susumu Tsujihara, Neyagawa, and Yasuaki Sakanishi, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 587,802, Sep. 25, 1990, Pat. No. 5,216,497.
This application Dec. 11, 1992, Ser. No. 989,562
Claims priority, application Japan, Sep. 28, 1989, 1-253314; Oct. 12, 1989, 1-266905
Int. Cl.[6] H04N *9/28*
U.S. Cl. 346—746 2 Claims



1. A digital convergence apparatus comprising:
a generator, said generator generating a plurality of convergence adjusting points in horizontal and vertical directions on a screen of a color television receiver to perform cursor display;
a memory, said memory digitally storing a convergence correction quantity for said adjusting points;
a digital to analog converter, said converter converting the digital convergence correction quantity to an analog quantity;
a means for inputting correction data for each adjusting point within said screen; and
a cursor display area means for displaying a cursor having an area indicating a possible range of correction corresponding to quantized bits stored in said memory.

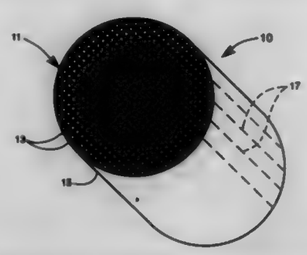
5,382,985

THERMOREFRACTIVE OPTICAL SWITCH

Roger J. Becker, Kettering, Ohio, and Mark K. Kullen, Detroit, Mich., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 14, 1991, Ser. No. 720,575
Int. Cl.[6] G02B *5/23, 5/20*
U.S. Cl. 359—289 3 Claims

1. An optical device, comprising:
(a) a substrate of substantially light absorbent material;
(b) means defining a plurality of holes of preselected size through said substrate, said holes being defined in a selected array; and
(c) a liquid material disposed within said holes, said liquid material having an index of refraction which is substantially temperature dependent over a selected temperature range of operation for said device.

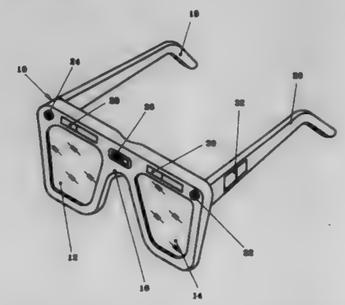


5,382,986

LIQUID-CRYSTAL SUNGLASSES INDICATING OVEREXPOSURE TO UV-RADIATION

Michael Black, Foster City, and Vladimir Kupershmidt, Pleasanton, both of Calif., assignors to Reliant Laser Corporation, Foster City, Calif.

Filed Nov. 4, 1992, Ser. No. 971,892
Int. Cl.[6] G02C *7/10*
U.S. Cl. 351—158 11 Claims



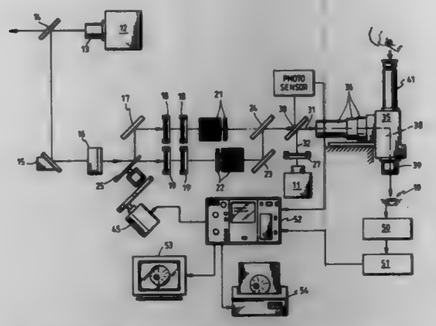
1. Liquid crystal sunglasses indicating overexposure of a subject to UV-radiation comprising:
a pair of liquid-crystal lenses;
a rim and a bridge portion which support said lenses;
a pair of temples supported by said rim;
a solar-cell power source;
a dual-photodetector sensor supported by said rim for measuring incident UV-radiation and converting said radiation to electric signals; and
a microcontroller connected to said solar-cell power source;
each of said lenses comprising a laminated structure composed of a at least one color cell, an input polarizing plate, a liquid crystal cell sandwiched between a pair of voltage-controlled active matrices, and an output polarized plate, each said active matrix consisting of at least one pixel which controls the transmission of light through said at least one cell;
said input polarizing plate, said liquid crystal cell with said active matrices, and said output polarizing plate being arranged sequentially in the direction of incident light;
said active matrices being electrically connected to said microcontroller;
said microcontroller having input means, output means, memory means for storing a dose information, a first-threshold value, and a second threshold value, a frequency generator which may generate signals with different parameters, a liquid crystal display driver connected to said lenses, and a microprocessor connected to said liquid crystal display driver, said memory means, said frequency generator, and said dual photodetector for receiving said electric signals.

5,382,987

DEVICE FOR ERG SPECTRAL PERIMETRY

Harry G. Sperling, Houston, Tex., assignor to Board of Regents, University of Texas System, Austin, Tex.

Filed May 22, 1992, Ser. No. 887,303
Int. Cl.[6] A61B *3/14*
U.S. Cl. 351—206 4 Claims



1. A spectral perimetry stimulation apparatus having:
a) an ophthalmoscopy assembly to adjustably project a stimulus test target onto a portion of the retina of an eye, said optical system having: (i) a first light source which provides a neutral background light, and (ii) a second light source, said second light source producing a light beam which passes through a condenser lens and is reflected by one or more cold mirrors toward the eye, said light beam from said second light source being alternately reflected and transmitted by a motorized, pivotally mounted butterfly mirror to split said light beam into separate parallel beam paths, each parallel beam being made to pass through a reticle containing a stimulus test pattern so that a stimulus test target is projected along said beam paths, each of said reticles being moveable with respect to each other along the parallel beam paths so that the patterns are in spatial phase with each other with the reticles in one location and out of spatial phase with each other with the reticles in the other position, said light beams in said separate, parallel beam paths encountering one or more spectral and neutral interference filters, and one or more yoked neutral wedges and ultimately projecting said stimulus test target onto a portion of the retina of the eye;
b) a spectral perimetry assembly interconnected with said ophthalmoscopy assembly to provide continuous feedback to the position of a stimulus test target on the retina of an eye having a coordinate diaphragm placed adjacent the stimulus test patterns in each parallel beam path which may be adjusted to change the diameter of the stimulus test target, a stimulus positioning assembly to move the diaphragms together so that the test target may be located at positions throughout the ophthalmoscopically visible field, a radial potentiometer for each X–Y drive which senses the location of the stimulus tests patterns, a recording means for recording the stimulus test pattern locations and means for transmitting said locations from the sensors to the recording means, and
c) a measurement assembly interconnected with said spectral perimetry assembly having a means for collecting and transmitting electroretinogram data from the eye, a differential preamplifier to accentuate electroretinogram waveform components, a waveform filter, means for determining a time-base average waveform, means for determining spectral sensitivity using electroretinogram component amplitudes as criteria, specialized computer which displays the electroretinogram waveform data, and means for storing signal traces.

5,382,988

STEREOSCOPIC RETINAL CAMERA WITH FOCUS DETECTION SYSTEM

Tsuguo Nanjo, Toyohashi, Japan, assignor to Nidek Co., Ltd., Japan

Filed Jul. 23, 1993, Ser. No. 95,763
Claims priority, application Japan, Jul. 31, 1992, 4-224894; Oct. 30, 1992, 4-316405; Apr. 15, 1993, 5-114057
Int. Cl.[6] A61B *3/14, 1/04*
U.S. Cl. 351—206 17 Claims

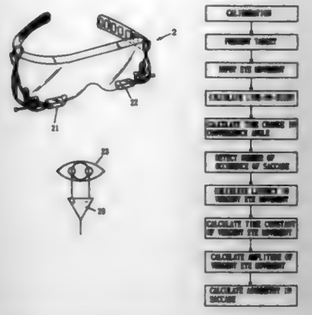
1. A stereoscopic retinal camera comprising:
an illumination optical system for illuminating the fundus of an examinee's eye;
an observing/photographing optical system for observing and photographing an image of the fundus of the eye in a stereoscopic picture, and comprising,
(a) a light beam splitting optical system for splitting the light beam of the illumination optical system reflected by the fundus into a right light beam and a left light beam, and
(b) a pair of image forming optical systems for forming respective images of the fundus by the two light beams;
an index projecting optical system for projecting a focusing index on the examinee's eye;
an index detecting optical system for detecting the focusing condition of the focusing index projected on the fundus of the eye;
a judging means for judging a focusing condition by processing signals provided by said index detecting optical system;
wherein one of said index projecting optical system and the index detecting optical system comprises a pair of right and left optical systems, said right and left optical systems are each disposed on a light path branched from a light path of said image forming optical systems by a reflecting mirror for reflecting a light beam of the focusing index.

5,382,989

APPARATUS FOR EXAMINING GAZE SHIFT IN DEPTH DIRECTION

Kenya Uomori; Mitsuho Yamada; Hitoshi Hongo; Hiroshi Yoshimatsu; Keiichi Ueno, all of Kyoto; Shinji Murakami, Hokkaido; Mitsuru Fujii, Hokkaido; Norihito Nakano, Hokkaido; Jiro Miyazawa, Hokkaido; Ryo Fukatsu, Hokkaido, and Naohiko Takahata, Hokkaido, all of Japan, assignors to ATR Auditory and Visual Perception Research Laboratories, Kyoto, Japan

Filed Mar. 16, 1993, Ser. No. 31,973
Claims priority, application Japan, Sep. 17, 1992, 4-247780
Int. Cl.[6] A61B *3/10, 3/14*
U.S. Cl. 351—209 **6 Claims**



1. An apparatus for examining gaze shift for detecting movement of line-of-sight in depth direction for a subject, comprising:

eye movement detecting means for detecting movement of left and right eyes of said subject;

target presenting means for presenting a target for depth perception to said subject;

target control means for controlling said target presenting means; and

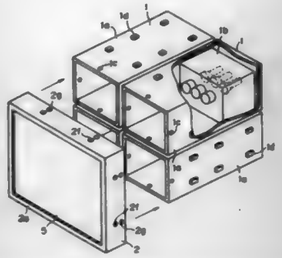
determining means responsive to a detection output from said eye movement detecting means when said subject is gazing at the target presented by said target presenting means, for determining whether there is a disorder in gaze shift in depth direction of said subject.

5,382,990

PROJECTOR OF A REAR PROJECTION TYPE

Mitsuo Hata, and Shigeo Matsumoto, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 11, 1993, Ser. No. 2,733
Claims priority, application Japan, Jan. 10, 1992, 4-020648
Int. Cl.[6] G03B *21/56, 21/10*
U.S. Cl. 353—94 **3 Claims**



1. A projector of a rear projection type comprising:

a plurality of projector units attached together to form a rectangular projection area;

a screen assembly commonly used for said plurality of projector units attached together and having substantially the same size as said rectangular projection area, said screen assembly including two sheets overlapped one with another and being fitted into a screen holder in the form of a frame having a front portion bent inwardly to form a support for supporting said two overlapped sheets and having a metal support element attached to a rear portion of said screen holder holding said two overlapped sheets against said support; and

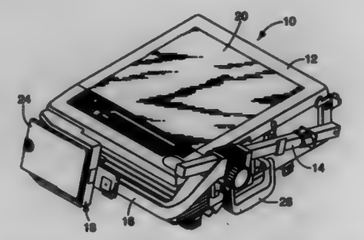
means for attaching said screen holder of said screen assembly to said plurality of projector units attached together in front of said rectangular projection area.

5,382,991

PIVOTING PROJECTION HEAD FOR OVERHEAD PROJECTOR

Ernesto M. Rodriguez, Jr., Round Rock, and Ronald K. Bender, Austin, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 13, 1994, Ser. No. 242,291
Int. Cl.[6] G03B *21/00*
U.S. Cl. 353—119 **2 Claims**



1. An improved overhead projector of the type including a base having a substantially flat surface for supporting an object the image of which is to be projected, a support arm extending from the base and moveable between a storage position and operational position, a lateral arm extending from the support arm and having at least a portion extending substantially parallel to the base surface when the support arm is in the operational position, and a projection head supported by the lateral arm, the improvement comprising a pivot rotatably mounting said projection head to said lateral arm to allow rotation of said projection head, when said support arm is in the operational position, in a plane substantially parallel to said base surface between a storage position and an operational position.

5,382,992

FILM CARTRIDGE ACCOMMODATING DEVICE WHICH PREVENTS PREVIOUSLY USED CARTRIDGES FROM BEING EMPLOYED IN A CAMERA OR THE LIKE

Kunio Kawamura, Kawachinagano; Shuji Izumi; Hiroyuki Okada, both of Sakai; Masaaki Chikasaki, Toyonaka; Michihiro Iwata, Sakai, and Sadafusa Tsuji, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

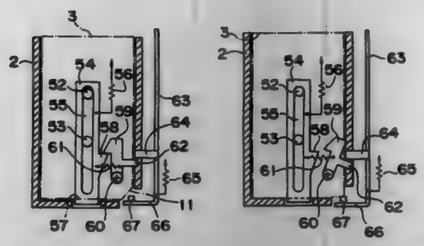
Division of Ser. No. 797,947, Nov. 26, 1991, Pat. No. 5,307,099.
This application Nov. 26, 1993, Ser. No. 157,283
Claims priority, application Japan, Nov. 30, 1990, 2-338973; Dec. 26, 1990, 2-414774; Dec. 27, 1990, 2-416833
Int. Cl.[6] G03B *17/02, 17/26*
U.S. Cl. 354—21 **11 Claims**

1. A camera for use with a film cartridge of the type including a state indicator which is set at different indications to distinguish between an unused state and a used state of the film cartridge, the camera comprising;

a film cartridge accommodating portion for removably accommodating a film cartridge therein, the film cartridge accommodating portion being movable into and out of a main body of the camera,

an ejector, the ejector ejecting a film cartridge accommodated in the film cartridge accommodating portion,

a detector, the detector detecting whether a film cartridge accommodated in the film cartridge accommodating portion is used or unused based on an indication of the state



indicator, the detector detecting whether a film cartridge accommodated in the film cartridge accommodating portion is used or unused prior to movement of the film cartridge accommodating portion into the main body, and

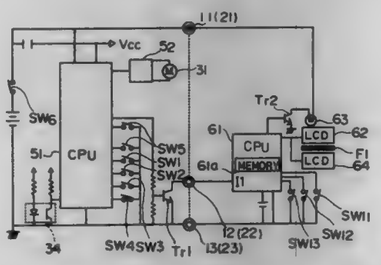
an ejector lock, the ejector lock locking the ejector when a film cartridge accommodated in the film cartridge accommodating portion is detected to be unused by the detector, and not locking the ejector as a film cartridge accommodated in the film cartridge accommodating portion is detected to be used by the detector.

5,382,993

IMPRINTING CAMERA SYSTEM WITH DATA CHANGEOVER CAPABILITY

Toshiaki Hozumi, Tokyo, and Hidehiro Ogawa, Funabashi, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 17, 1993, Ser. No. 107,168
Claims priority, application Japan, Aug. 19, 1992, 4-220454
Int. Cl.[6] G03B *17/24*
U.S. Cl. 354—106 **19 Claims**



1. A camera system capable of imprinting data on film, comprising:

(a) an imprint data setting means for selecting one of imprint data from film specific imprint data and frame specific imprint data as selected imprint data;

(b) a commanding means for commanding a first imprinting operation in which the selected imprint data is imprinted in a predetermined imprinting position for each film frame, and for commanding a second imprinting operation in which the selected imprint data is imprinted in another position differing from all said imprinting positions for said film frames;

(c) an imprinting means for performing said first imprinting operation and for performing said second imprinting operation according to the command of said commanding means;

(d) a determining means for determining whether the selected imprint data set by said setting means is frame specific imprint data; and

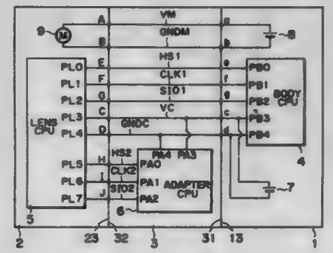
(e) a data changeover signal output means for, when said second imprinting operation is commanded, outputting a data changeover signal before said second imprinting operation, if said determining means determines that frame specific imprint data is set by said setting means.

5,382,994

CAMERA INFORMATION TRANSMISSION SYSTEM INCLUDING BODY, LENS, AND ADAPTER COMPONENTS

Hideshi Naito, Tokyo; Yoshiharu Shiokama, Chiba, and Shinichi Ushio, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 840,520, Feb. 25, 1992, abandoned.
This application Apr. 11, 1994, Ser. No. 226,119
Claims priority, application Japan, Mar. 6, 1991, 3-039870
Int. Cl.[6] G03B *7/20*
U.S. Cl. 354—286 **6 Claims**



1. A camera system comprising:

a camera body including first information processing means;

a lens barrel including second information processing means and mountable on said camera body;

an adapter including third information processing means and mountable at least on said lens barrel;

first information transmission means provided between said camera body and said lens barrel for connecting said first and second information processing means, and adapted to transmit at least a part of information specific to said lens barrel to said camera body; and

second information transmission means provided between said lens barrel and said adapter for connecting said second and third information processing means;

wherein said third information processing means is constructed to correct at least a part of information, transmitted from said second information processing means through said second information transmission means, based on information specific to said adapter, and to transmit said corrected information to said second information processing means through said second information transmission means.

5,382,995

PHOTOGRAPHIC PROCESSING APPARATUS

Edward C. T. S. Glover, London, and Peter D. Marsden, North Harrow, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

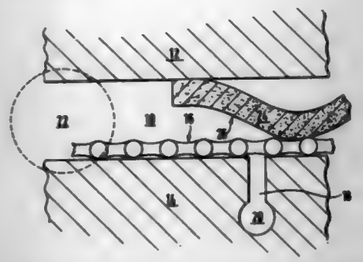
PCT No. PCT/EP92/01398, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993, PCT Pub. No. WO93/00612, PCT Pub. Date Jan. 2, 1993

PCT Filed Jun. 22, 1992, Ser. No. 30,030

Claims priority, application United Kingdom, Jun. 29, 1991, 9114090

Int. Cl.[6] G03D *13/02*

U.S. Cl. 354—331 **9 Claims**



1. Photographic processing apparatus for processing photographic material (24, 26), the apparatus comprising:

a processing tank (10, 12, 14);

at least one feed aperture (18) through which processing solution is added to the processing tank (10, 12, 14); and

at least one exit aperture (22) through which solution is extracted from the tank (10, 12, 14) for recirculation and replenishment;

characterized in that spacing means (16) are provided along a wall (14) of the tank (10, 12, 14) over each of the feed apertures (18) to keep the material (24, 26) away from the tank wall (14).

5,382,996

AUTO-FOCUS APPARATUS HAVING DIFFERENT LEVELS FOR EMITTING FOCUSING LIGHT AND FOR INHIBITING A FOCUS OPERATION

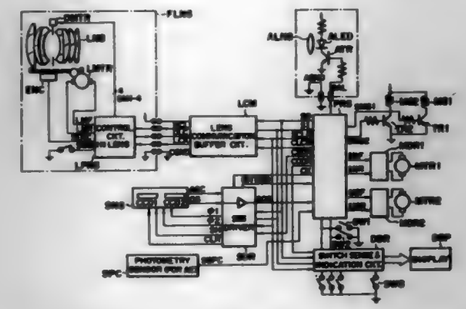
Terutake Kadohara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 731,532, Jul. 17, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 107,036

Claims priority, application Japan, Jul. 20, 1990, 2-192675

Int. Cl.[6] G03B *13/36*

U.S. Cl. 354—403 **18 Claims**



1. An auto-focus apparatus which includes a light-receiving sensor for receiving light from an object, and which performs a focusing operation on the basis of an output from said sensor, comprising:

a processing circuit for executing signal processing on the basis of the output from said sensor, said processing circuit outputting an instruction signal for operating a light projection means when a characteristic value for focusing, based on the output from said sensor in a state without light protection by the light projection means, falls within a first range, said processing circuit detecting the output from said sensor in a light projection state by said light projection means, and inhibiting the focusing operation based on the output from said sensor when the characteristic value falls within a second range which is within the first range, said first range having a predetermined value which is different than a predetermined value of said second range.

5,382,997

EXPOSURE CONTROL APPARATUS OF CAMERA

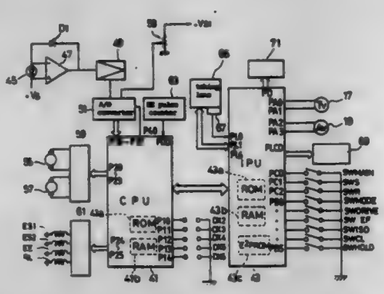
Osamu Sato; Satoshi Nakano; Isamu Hirai; Toshiyuki Kitazawa; Takayuki Sensui; Masato Yamamoto; Toshimasa Yamanaka; Takenao Shishikura; Akio Takahashi, and Nobuhiko Matsudo, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 868,433, Apr. 15, 1992, abandoned. This application Oct. 7, 1993, Ser. No. 133,269

Claims priority, application Japan, Apr. 15, 1991, 3-173495; May 21, 1991, 3-214834; Nov. 28, 1991, 3-361198

Int. Cl.[6] G03B *7/08*

U.S. Cl. 354—441 **20 Claims**



1. An exposure control apparatus of a camera, comprising:

means for setting a manual setting mode in which a diaphragm value and a shutter speed are manually settable, said diaphragm value and said shutter speed being settable independently of a luminance of an object to be photographed with said camera;

means for locking an exposure value determined in accordance with said diaphragm value and said shutter speed value set in said manual setting mode; and

means for varying one of said diaphragm value and said shutter speed based on said locked exposure value, when the other of said diaphragm value and said shutter speed is varied in said manual setting mode so as to maintain constant said locked exposure value.

5,382,998

IMAGE FORMING APPARATUS OF A CLAMSHELL TYPE

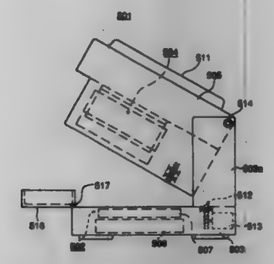
Toshio Shida; Hisao Satoh; Naoko Otomo; Takeshi Sakabe; Shigeru Okazaki; Tadayoshi Ikeda, and Atsushi Ogane, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 1, 1993, Ser. No. 40,462

Claims priority, application Japan, Apr. 8, 1992, 4-115518; Apr. 8, 1992, 4-115519; Apr. 10, 1992, 4-118130; Apr. 13, 1992, 4-119646

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—50 **16 Claims**



1. An image forming apparatus, comprising:

a body including a lower half body and an upper half body;

a sheet conveyance means provided in said lower half body and having a sheet passage having a width to convey a recording sheet, said sheet passage being arranged between a first side of said body and a second side of said body opposite to said first side so that said recording sheet is conveyed from said first side to said second side or from said second side to said first side;

an image forming means provided in said upper half body;

said upper half body being mounted on said lower half body and having an axis arranged on a third side of said body in parallel to said sheet passage so that said upper half body is pivotable relative to said lower half body around said axis; and

a platen cover provided on said upper half body and having an axis arranged on said third side of said body and being in parallel to said axis of said upper half body so as to pivotally open or close in the same direction as that of said upper half body;

wherein a sum of a pivot angle of said upper half body relative to the lower half body plus a pivot angle between said platen cover and said upper half body is smaller than 90 degrees for all positions of said upper half body and for all positions of said platen cover.

5,381,999

OPTICAL PATTERN PROJECTING APPARATUS

Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1993, Ser. No. 164,959

Claims priority, application Japan, Dec. 11, 1992, 4-331902

Int. Cl.[6] G03B *27/00*

U.S. Cl. 355—53 **11 Claims**

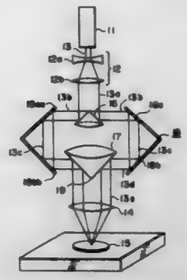
1. An optical pattern projecting apparatus comprising:

a light source for emitting a light beam along an axis for projecting a pattern onto a work piece;

a divergent mirror for reflecting and converting the light beam emitted from said light source into a divergent light beam diverging with a radially outward component relative to the axis of the light beam;

a convergent mirror for reflecting and converting the divergent light beam into a convergent light beam converging with a radially inward component relative to the axis of the light beam;

a parallelizing mirror for reflecting and converting the convergent light beam into a parallel zonal ringed light beam along the axis of the light beam; and



a condenser lens for condensing and focusing the parallel zonal ringed light beam onto a surface of the work piece.

5,383,000

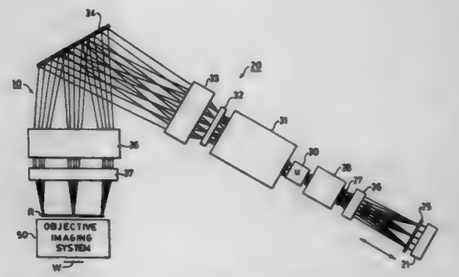
PARTIAL COHERENCE VARIER FOR MICROLITHOGRAPHIC SYSTEM

Paul F. Michaloski, Rochester, and William N. Partlo, Fairport, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 24, 1992, Ser. No. 981,051

Int. Cl.[6] G03B *27/54*

U.S. Cl. 355—67 **17 Claims**



1. A partial coherence varier for a microlithographic projection imaging system including an illuminator having an illuminator optical system directing illumination to an objective imaging system, said partial coherence varier comprising:

a. an illumination energy distributor arranged in said illuminator optical system;

b. said energy distributor being structured for imposing a predetermined angular profile on each of a multitude of fragments of said illumination;

c. said energy distributor being arranged for movement axially of said illuminator optical system upstream of a reference plane of said illuminator optical system;

d. a uniformizer arranged downstream of the energy distributor and the reference plane;

e. the illuminator optical system having a pupil downstream of the uniformizer;

f. the optical system of the illuminator being arranged so that the reference plane is conjugate with the pupil; and

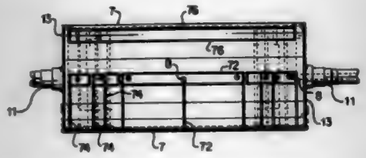
g. axial movement of said energy distributor being arranged for varying the area of the energy distribution of said illumination at said pupil for varying the numerical aperture of said illuminator optical system and thereby varying said partial coherence without varying illumination uniformity or field size.

5,383,001

VACUUM DRUM FOR MOUNTING MEDIA OF DIFFERENT SIZES

Brian Bosy, Framingham, Mass., assignor to Intergraph Corporation, Huntsville, Ala.

Filed Feb. 22, 1993, Ser. No. 23,780
Int. Cl.[6] G03B *27/60*
U.S. Cl. 355—73 **7 Claims**



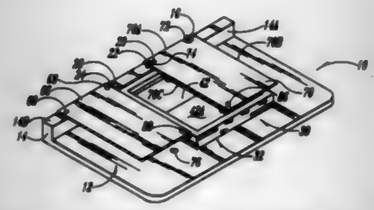
1. A rotatable drum for mounting media having first and second standard sizes, the drum comprising:
first and second journals having a circumference, the first journal having defined on its circumference a covered circumferential channel;
a plate mounted on the circumference of the first and second journals, the plate having interior and exterior sides, such that the journals touch the interior side and such that the covered circumferential channel is covered by the plate, the first and second journals and a portion of the plate's interior side defining a chamber, the plate's exterior side having defined thereon first and second sets of exposed grooves,
wherein the first set of exposed grooves has means for providing fluid communication with the chamber, and
wherein the second set of exposed grooves has one circumferential groove disposed over the covered channel and one axial groove passing over the chamber, the axial and circumferential grooves being in fluid communication with each other,
wherein the circumferential groove has means for providing fluid communication with the covered channel and the axial groove has means for preventing fluid communication with the chamber;
means for supplying a vacuum to the chamber; and
a valve for controlling fluid communication between the covered channel and the chamber.

5,383,002

PHOTOGRAPHIC MULTI-FORMAT EASEL

Gilbert Lea, 4108 14th St., Des Moines, Iowa 50313

Filed Feb. 1, 1993, Ser. No. 11,958
Int. Cl.[6] G03B *27/58*
U.S. Cl. 355—74 **21 Claims**



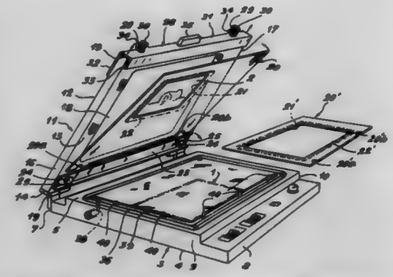
1. A photographic developing easel, comprising:
a generally planar platform with an upper surface and perimeter edges;
an upstanding wall along one of said platform edges, said wall having a guide surface perpendicular to the platform upper surface and an upper surface parallel and spaced above the platform upper surface;
a carrier slidably supported on said platform, said carrier including a generally rectangular frame and a panel mounted within the frame for supporting a sheet of photographic paper;
said carrier frame having an upper surface, a lower surface, an inner surface to which said panel is mounted, and an outer surface extending around the periphery of the frame;
stationary masking means connected to said wall upper surface and extending over said platform in spaced and stationary relation to the upper surface, for masking downwardly directed light from predetermined areas of the platform upper surface;
said carrier selectively slidable on the upper surface of the platform so as to be positionable under said stationary masking means to mask a plurality of predetermined areas of a sheet of photographic paper supported on said carrier panel from downwardly directed light as the carrier is slid to different positions beneath the masking means so as to produce a plurality of single exposure prints on the paper.

5,383,003

DEVICE FOR THE REPRODUCTION OF IMAGES ON A PHOTOSENSITIVE FILM FROM A TRANSPARENT ORIGINAL, IN PARTICULAR FROM THE NEGATIVE OF A PHOTOGRAPH OR FROM A SLIDE

Albert B. Visage, Saint-Germain-des-Prés, Chateaurenard, France 45220

Filed Dec. 21, 1993, Ser. No. 170,872
Claims priority, application France, Dec. 28, 1992, 92 15794
Int. Cl.[6] G03B *27/20*
U.S. Cl. 355—93 **8 Claims**



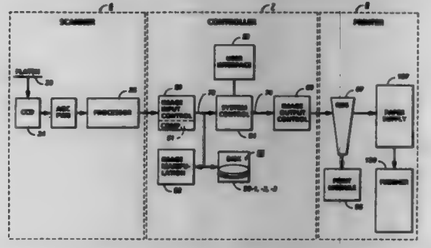
1. Device for the reproduction of images on a photosensitive film (1) from a transparent original (2), in particular from the negative of a photograph or from a slide, characterized in that it includes a chassis (3) comprising a working surface (6) designed to support the photosensitive film (1); a frame (11) connected to the chassis by a hinge pin (19) and comprising an upper face (12), a lower face (13) and a first side (14) adjacent to the hinge pin (19), a second side (15) parallel to the first side and a central opening (18); a removable plate (20) which can be immobilized against the lower face (13) of the frame (11) and comprising a window (21) designed to be blocked by an original (2), this window being located in front of the central opening (18) when the plate (20) is in place on the frame; an annular seal (36) mounted on the chassis (3) in such a way as to face the portion of the removable plate (20) that is outside the central opening (18), a chamber (37) delimited by the seal (36), as well as by the working surface (6) of the chassis (6) and by the removable plate (20) bearing the original (2), when the frame (11) presses the said plate against the chassis; vacuum-creating means for creating a negative pressure in the chamber (37); and a light source (S) directed towards the central opening (18) in the frame for printing the film (1) through the original (2).

5,383,004

NORMALIZING SHEET COUNT TO PREDICT HARDWARE REPLACEMENT INTERVALS

Donald L. Miller, Penfield; William M. Ouyang, Pittsford, and Phillip E. Chapman, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 13, 1993, Ser. No. 119,553
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—206 **15 Claims**



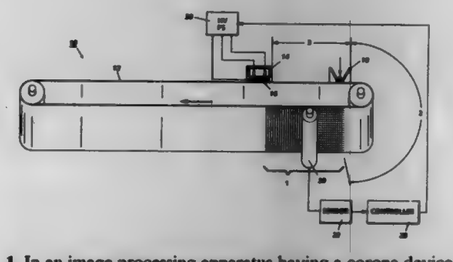
1. In an electronic image processing machine having a plurality of image processing components including a controller for producing images on copy sheets of varying size, one of the processing components being a photosensitive member for supporting latent images of varying sizes, the size of the latent image being defined as the machine pitch, the controller including a device for counting the number of copy sheets processed, the method of normalizing the count in the device depending upon the pitch of the machine comprising the steps of:
determining the pitch of images in process,
recording a count in the counter in response to the pitch of images in process, and
normalizing the count in the counter as a function of the change in pitch of the images in process.

5,383,005

XEROGRAPHIC PROCESS CONTROL USING PERIODIC ELECTROSTATIC SET UP TO AUTOMATICALLY ADJUST CHARGING POTENTIAL

David M. Thompson, Fairport; Carol J. Panepinto, Rochester; Edward C. Savage, and John M. Magde, Jr., both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1994, Ser. No. 192,216
Int. Cl.[6] G03G *21/00, 15/02*
U.S. Cl. 355—208 **17 Claims**



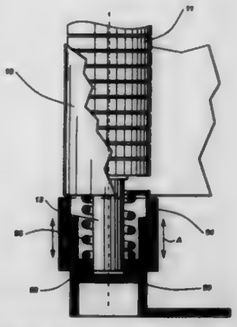
1. In an image processing apparatus having a corona device with a charging grid for charging a photoreceptor to voltage levels, a developer for applying toner to the photoreceptor, a sensor for providing a signal in relation to current flow between the photoreceptor and the developer, and a corona control responsive to said signal for adjusting the corona device for charging the photoreceptor, a method of adjusting the photoreceptor voltage levels comprising the steps of;
initiating a first plurality of charge and erase photoreceptor cycles,
stepping the voltage on the charging grid to obtain a predetermined reading on the sensor,
providing signals from the sensor in response to developing a series of test patches on the photoreceptor,
adjusting the charging grid in response to said signals,
initiating a second plurality of charge and erase photoreceptor cycles to measure cycle down change in photoreceptor voltage, and
determining a short term photoreceptor rest recovery factor.

5,383,006

COMPLIANT EDGE GUIDE BELT LOOPS

Vittorio R. Castelli, Yorktown Heights, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1993, Ser. No. 160,647
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—212 **14 Claims**



1. An apparatus for controlling a web moving along a predetermined path comprising:
a non-pivoting member rotatably supporting the web;
an edge guide adjacent one end of said support member, said edge guide positioned to contact an edge of the web so as to maintain the web along the predetermined path; and
a biasing device for resiliently urging said edge guide into contact with the edge of the web so as to maintain a steering force on the web to maintain the web along the predetermined path, said biasing device absorbing a portion of a force exerted on said edge guide by the web to minimize movement of the web in a direction normal to the predetermined path while minimizing buckling of the web.

5,383,007

APPARATUS FOR MEASURING DEVELOPER DENSITY BY REFLECTED LIGHT FROM THE DEVELOPER ILLUMINATED THROUGH A DETECTION WINDOW

Naoyoshi Kinoshita, Hoi, and Kouichi Etou, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

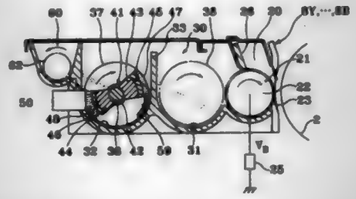
Continuation-in-part of Ser. No. 699,948, May 14, 1991. This application Jan. 17, 1992, Ser. No. 822,635
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—246 **33 Claims**

1. Apparatus for detecting magnetic developer comprising:
an electrostatic latent image carrier;
a developing member for supplying the developer to the image carrier;
magnetic means, fixed in the developing member, for forming magnetic brush onto the developing member;

a developer agitating section accommodating developer and supplying the developer to the developing member;

a rotation agitating member provided in the developer agitating section for agitating the developer in accordance with its rotation prior to said developer being supplied from said developer agitating section to said developing member;

a detection window facing said developer agitating section in the vicinity of said rotational agitating member;



a cleaning magnet portion having at least a pair of magnets and being fixed on said rotational agitating member for causing developer to be brought into contact with said detection window with a rotation of said rotational agitating member and for scraping off developer from the surface of the window, the distance between one of the magnets and the detection window being set so as to be smaller than a distance between the other magnets; and

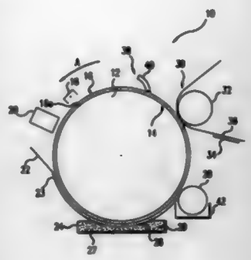
detecting means for detecting the developer accommodated in the developer agitating section by monitoring the developer agitation section through the window.

5,383,008

LIQUID INK ELECTROSTATIC IMAGE DEVELOPMENT SYSTEM

Nicholas K. Sheridon, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1993, Ser. No. 174,916
Int. Cl.[6] G03G *15/10, 15/14*
U.S. Cl. 355—256 **28 Claims**



22. An apparatus for forming a toned image on an image receiving member comprising:

applying means for applying a transfer layer over a latent electrostatic image formed on a surface of an image member;

developing means for developing a latent image;

removing means for removing a portion of the transfer layer subsequent to developing the toned image and before transferring the toned image to an image receiving member; and

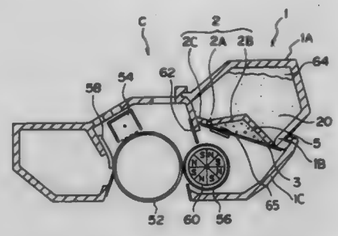
transferring means for transferring the toned image to an image receiving member.

5,383,009

DEVELOPING DEVICE OF ELECTROSTATIC APPARATUS HAVING SEPARATE SEALED INITIAL DEVELOPER AND MAGNETIC TONER STORAGE SPACES

Shusaku Tsusaka, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 11, 1993, Ser. No. 59,296
Claims priority, application Japan, Aug. 31, 1992, 4-230843
Int. Cl.[6] G03G *15/06*
U.S. Cl. 355—260 **24 Claims**



1. A process cartridge for use in an electro-static developing device including a developer sleeve surrounding a conductive roller, and containing developer therein including magnetic toner and magnetic carrier, the process cartridge comprising:

a lower unit having side walls and an access opening for receiving the developer sleeve;

an upper unit detachably coupled to and in communication with said lower unit; and

a partition assembly extending within and across said cartridge, including a partition wall coupled to one of said lower unit and said upper unit, wherein a toner supply path is defined between said partition wall and one of said side walls of said lower unit during operation, and including a removable seal extending adjacent said partition wall across said toner supply path to said one side wall of said lower unit and removably sealing said toner supply path,

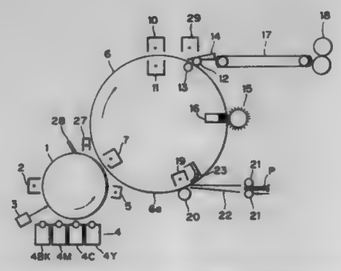
wherein said partition wall and said upper unit define a toner holding space and said partition wall and said removable seal define an initial developer holding space.

5,383,010

COLOR IMAGE FORMING APPARATUS WITH TRANSFER SHEET SHIFTING COMPENSATION MEANS

Masaaki Sakurai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 79,914
Claims priority, application Japan, Jun. 24, 1992, 4-166208
Int. Cl.[6] G03G *15/01*
U.S. Cl. 355—271 **8 Claims**



1. An image forming apparatus wherein color toner images formed on an image bearing member are successively transferred onto a transfer sheet superimposedly to form a color image, comprising:

an image bearing member shiftable endlessly;

electrostatic latent image forming means for forming color toner images including a yellow color on said image bearing member, said electrostatic latent image forming means forming the electrostatic latent image on said image bearing member;

image forming means for forming color toner images by developing the electrostatic latent image with the plurality of color toners;

transfer sheet conveying means supporting a transfer sheet on which the toner images are to be transferred for shifting endlessly; and

transfer means for transferring the color toner images formed on said image bearing member onto the transfer sheet supported by said transfer sheet conveying means,

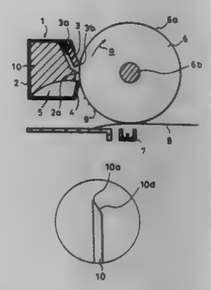
wherein said transfer sheet conveying means supports the transfer sheet only by an electrostatic attraction force, and the transfer sheet passes through a transfer position of said image bearing member as said transfer sheet conveying means is shifted, and wherein, when plural color toner images are successively transferred onto the transfer sheet, the color toner image firstly transferred at said transfer position is a yellow color toner image and wherein upon formation of the latent image of yellow color, scanning lines for the latent image of yellow color are coarser than for other color toners.

5,383,011

CLEANING DEVICE, PROCESS CARTRIDGE INCORPORATING THE CLEANING DEVICE, AND IMAGE FORMING APPARATUS USING THE CLEANING DEVICE

Atsushi Numagami, Hadano; Hiroyuki Shirai, Tokyo, and Takeo Shoji, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,343
Claims priority, application Japan, Jul. 19, 1991, 3-179541; Jun. 1, 1992, 4-140572
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—298 **22 Claims**



19. A cleaning device, comprising:

a collecting reservoir for receiving matter collected from an object to be cleaned; and

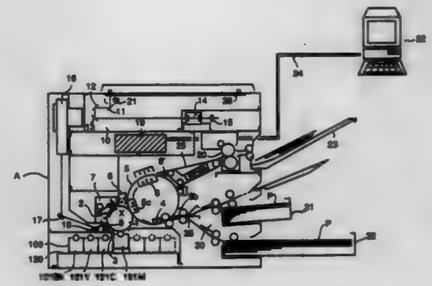
at least one movement limiting member provided in said collecting reservoir, partitioning a space inside said collecting reservoir, and being capable of suppressing movement of the received matter in said collecting reservoir, said movement limiting member having a cross-sectional area progressively decreasing towards the object to be cleaned.

5,383,012

COLOR IMAGE FORMING APPARATUS HAVING MEANS FOR DETERMINING THE NUMBER OF TRANSFER MEMBERS SUPPORTED ON THE TRANSFER MEMBER RETAINING MEANS

Masanori Yamada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1992, Ser. No. 891,206
Claims priority, application Japan, Jun. 3, 1991, 3-131204
Int. Cl.[6] G03G *15/01*
U.S. Cl. 355—326 **33 Claims**



4. A color image forming apparatus for forming a multicolor image by forming an image of each color, comprising:

transfer member holding means for retaining a plurality of transfer members;

image forming means for forming the image on said transfer member, based on an image signal from an external apparatus;

detecting means for detecting information relating to a status of transfer members retained on said transfer member holding means and sending said information to said external apparatus; and

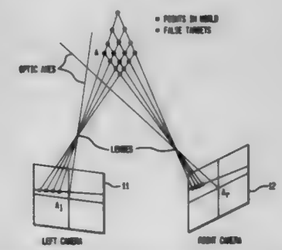
controlling means for controlling the number of transfer members to be retained on said transfer member retaining means, based on an image formation mode designated from said external apparatus or set on the color image forming apparatus.

5,383,013

STEREOSCOPIC COMPUTER VISION SYSTEM

Ingemar J. Cox, Lawrenceville, N.J., assignor to NEC Research Institute, Inc., Princeton, N.J.

Filed Sep. 18, 1992, Ser. No. 947,493
Int. Cl.[6] H04N *13/00*
U.S. Cl. 356—2 **5 Claims**



1. A system for determining the distance of an object in a picture scene comprising:

a pair of cameras spaced apart a known distance for converting left and right images of a picture scene including an object whose distance is to be found into left and right sets of pixel values along scan lines, and

first signal processing means supplied with the pixel values of epipolar scan lines from each camera of said pair of cameras for finding a best match of pixels in the left image to pixels in the right image based on lowest global cost function of corresponding features along corresponding epipolar lines in each image subject to uniqueness, ordering and cohesivity constraints and for obtaining the disparity between the corresponding object in the scene in the left and right images along the pair of epipolar lines, and

second signal processing means supplied with the disparity and with the known separation distance of said pair of cameras for providing a measurement of the distance of the object from said pair of cameras.

5,383,014

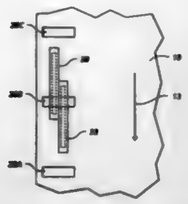
PHOTORECEPTOR BELT MOTION SENSOR USING LINEAR POSITION SENSORS

William J. Nowak; Daniel W. Costanza, both of Webster, and Edward A. Powers, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 20, 1993, Ser. No. 63,796

Int. Cl.[6] G01P *3/36*; G01N *21/86*; G03G *21/00*; B65G *43/00*

U.S. Cl. 356—28 **7 Claims**



1. In a machine incorporating a component which moves at a velocity V_f in a process direction, said component having a series of apertures aligned in a row which is parallel to the process direction, the combination of:

sensing means adjacent to said component for sensing light passing through said apertures and for generating signals representing said velocity V_p, said sensing means including a first and second linear position sensor mechanically connected in a staggered orientation so that said first sensor is illuminated through a first moving aperture to provide a first output and said second sensor views said first aperture to produce a second output,

means for switching between said first output and said second output, and

means for differentiating said first and second output signal to provide a continuous signal representing the velocity V_p.

5,383,015

OPTICAL TIME DOMAIN REFLECTOMETRY MEASUREMENTS ON A MULTI-BRANCH OPTICAL NETWORK USING MULTIWAVELENGTH PASS FILTERS

Gary J. Grimes, Thornton, Colo., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 22, 1992, Ser. No. 995,103

Int. Cl.[6] G01N *21/88*

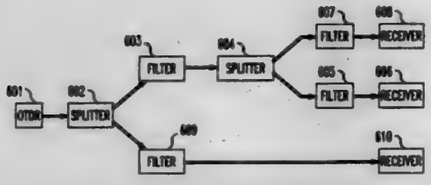
U.S. Cl. 356—73.1 **1 Claim**

1. An apparatus for testing an optical circuit having a first and second plurality of optical subcircuits, a plurality of optical filters and a plurality optical splitters, comprising:

a first one of the plurality optical splitters for dividing the optical circuit into the first plurality of optical subcircuits with each of the first plurality of optical subcircuits having one of a first set of the optical filters immediately connected to the first one of the plurality of optical splitters;

each of the first set of the optical filters capable of communicating a data optical wavelength and a set of test optical wavelengths unique to each of the first set of the optical filters;

a second one of the plurality of optical splitters for dividing one of the first plurality of optical subcircuits into a set of the second plurality of optical subcircuits each having one of a second set of the optical filters immediately connected to the second one of the plurality of optical splitters and each of the set of the second plurality of optical subcircuits terminated by an individual optical receiver; and



each of the second set of the optical filters capable of communicating the data optical wavelength and one of the set of test optical wavelengths unique to the one of the first set of the optical filters that immediately follows the first one of the plurality of optical splitters so that the data optical wavelength and the one of the set of test optical wavelengths unique to each of the second set of the optical filters upon being launched at a start of the optical circuit are received by the optical receiver terminating the one of the set of the second plurality of optical subcircuits including the each of the second set of the optical filters for allowing the testing from the start of the optical circuit the one of the set of the second plurality of optical subcircuits without other optical receivers receiving the one of the set of test optical wavelengths.

5,383,016

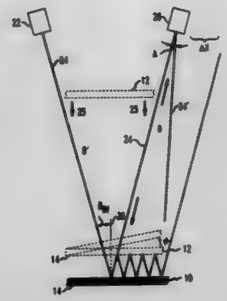
METHOD FOR ALIGNING TWO REFLECTIVE SURFACES

Israel Amir, Princeton, and Ralph A. Treder, Ewing, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 15, 1993, Ser. No. 91,711

Int. Cl.[6] G01B *11/26*

U.S. Cl. 356—150 **3 Claims**



1. A method for aligning a first and a second light-reflecting surface to obtain substantial parallelism between the light-reflecting surfaces, comprising the steps of:

temporarily separating the first surface from the second surface;

directing a collimated beam at the second surface at an acute angle so that the beam is reflected from said surface along a first path;

positioning a light detector so that the collimated beam, upon reflection along the first path, lies in the field of view of the light detector; and

positioning the first surface relative to the second surface so that the collimated beam reflected by the second surface strikes the first surface and is reflected therefrom back onto the second surface reflection by the second surface into the light detector so as to appear at the same position as the beam reflected by the second surface when the first surface was temporarily separated from the second surface.

5,383,017

APPARATUS AND METHOD FOR DETECTING CONTAMINANTS IN TEXTILE PRODUCTS INDEPENDENTLY OF THE DIAMETER OF THE TEXTILE PRODUCTS

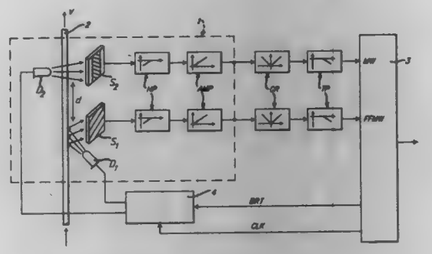
Georg Schürch, Pfäffikon, Switzerland, assignor to Gebruder Loepfe AG, Kepten, Switzerland

Filed Jan. 13, 1993, Ser. No. 3,572

Claims priority, application Switzerland, Jan. 31, 1992, 284/92

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—238 **13 Claims**



7. An apparatus for the detection of contaminants in an elongated textile product comprising at least one light sensitive detector, at least two sources of light and an evaluation circuit, wherein

at least one of said sources of light is positioned to illuminate said textile product such that light reflected from said textile product is detected by said at least one detector to generate a first signal,

at least one of said sources of light is positioned to illuminate said textile product such that a shadow of said textile product is projected onto said at least one detector to generate a second signal, and

wherein said evaluation circuit comprises a calculator adapted to mathematically combine said first and said second signals for eliminating a contribution of the diameter of said textile product to said first signal.

5,383,018

APPARATUS AND METHOD FOR CALIBRATION OF PATTERNED WAFER SCANNERS

S. M. Reza Sadjadi, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

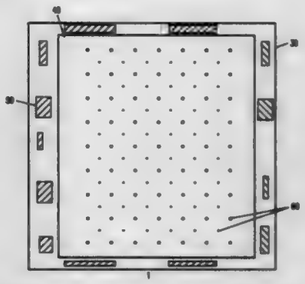
Filed Dec. 28, 1992, Ser. No. 997,226

Int. Cl.[6] G01J *1/02*; G01N *21/88*

U.S. Cl. 356—243 **12 Claims**

1. A calibration wafer for use in calibrating patterned wafer scanners which focus onto a wafer, detect defects in the wafer, and step across regions of the wafer, where the scanner is used to detect defects in wafers of semiconductor material during the semiconductor device fabrication process, the calibration wafer comprising:

an unpatterned wafer having an interior region and a periphery region onto which has been deposited a layer of material, wherein such material is representative of a material which is deposited on a wafer during a step or steps performed during the fabrication process;



a pattern of features formed on the material layer and limited to the periphery region of the wafer, wherein such pattern covers sufficient area to permit the scanner to operate on the calibration wafer and to perform its stepping and focusing operations, and to detect known defects deposited on the calibration wafer with a desired degree of confidence; and

a substantially uniform distribution of particles deposited onto the layer of material.

5,383,019

INDUCTIVELY COUPLED PLASMA SPECTROMETERS AND RADIO-FREQUENCY POWER SUPPLY THEREFOR

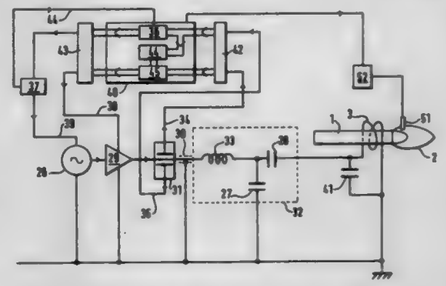
Regis C. Farrell, Anaheim; James J. Hornsby, Camarillo, both of Calif., assignors to Fisons plc, Ipswich, United Kingdom

Continuation-in-part of Ser. No. 497,598, Mar. 23, 1990, abandoned. This application Apr. 19, 1993, Ser. No. 49,149

Claims priority, application United Kingdom, Dec. 17, 1992, 9226335

Int. Cl.[6] G01J *3/30*; G01N *21/73*

U.S. Cl. 356—316 **21 Claims**



1. An inductively-coupled plasma mass or emission spectrometer having a plasma induction coil, a radio-frequency power generator whose frequency is determined by an analogue frequency control signal and a matching network comprising only fixed-value electrical components for efficiently transferring power from said generator to said plasma induction coil, said spectrometer characterized by reflectometer means disposed between said generator and said matching network for generating a signal indicative of the reflected power at the output of said generator and frequency control loop means for generating said control signal in response to

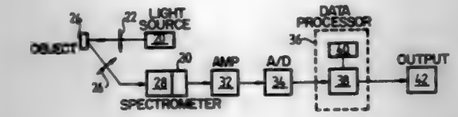
said signal indicative of the reflected power whereby the frequency of said RF power generator is adjusted to maintain said reflected power at a minimum.

5,383,020

METHOD AND APPARATUS FOR DETERMINING THE COLOR OF A TRANSLUCENT OBJECT SUCH AS A TOOTH

Michel Vieillefosse, Aix En Provence, France, assignor to Bertin & Cie, Plaisir, France

Filed Dec. 15, 1992, Ser. No. 991,201
Claims priority, application France, Dec. 23, 1991, 9115984
Int. Cl.[6] G01J *3/50*
U.S. Cl. 356—326 **4 Claims**



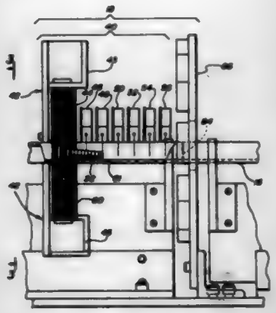
1. Apparatus for determining the color of a translucent object, the apparatus comprising a source of polychromatic light associated with an optical system for illuminating the object, an optical system for picking up light diffused by the object, a spectrometer receiving said light, photodetectors disposed at the output from the spectrometer, and an analog-to-digital converter connecting the photodetectors to a data processor system, wherein the spectrometer and the photodetectors are designed to obtain reflectance measurements of the object at wavelengths corresponding essentially to the maxima in the sensitivity of the human eye to hue and to saturation, and wherein the data processor system is programmed to determine, on the basis of said reflectance measurements, a transparency restitution indicator for the object together with a saturation percentage of its color as seen by the human eye and the pigmentations of said color relative to white over predetermined wavelength ranges.

5,383,021

OPTICAL PART INSPECTION SYSTEM

James L. Hanna, Ann Arbor, Mich., assignor to Mectron Engineering Company, Ann Arbor, Mich.

Filed Apr. 19, 1993, Ser. No. 49,172
Int. Cl.[6] G01B *11/04, 11/10*
U.S. Cl. 356—383 **29 Claims**



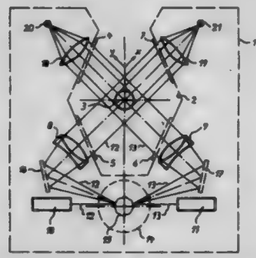
1. An inspection system for evaluating workpieces for conformance to configuration criteria, comprising:
track means for causing said workpieces to translate through a test section,
said test section including a light source for producing a sheet of light having a length greater than its thickness, said light source oriented with respect to said track means such that said workpieces pass through said sheet of light upon passing through said test section, said sheet of light oriented such that said length is parallel to the direction of translation of said workpieces through said test section, said test section further having a photodetector for receiving said sheet of light and providing an output signal related to the intensity of said sheet of light incident on said photodetector, whereby said intensity is related to the degree to which said sheet of light is occluded by said workpieces as said workpieces translate through said test section, and
signal processing means for receiving said photodetector output signal and for producing a value related to the length of said workpieces as measured in the direction of said translation.

5,383,022

METHOD AND APPARATUS FOR MEASURING THE DIMENSIONS OF AN OBJECT

Beda Kiser, Brügg, Switzerland, assignor to Zumbach Electronic AG, Orpund, Switzerland

Filed Apr. 6, 1993, Ser. No. 44,571
Claims priority, application Switzerland, Apr. 10, 1992, 01189/92
Int. Cl.[6] G01B *11/08*
U.S. Cl. 356—387 **17 Claims**



1. A method of measuring the dimensions of an object in two orthogonal directions, the method comprising:
providing a first light beam by means of a first light source;
providing a second light beam by means of a second light source;
deflecting the first light beam over the object in a first one of the two orthogonal directions to be measured through a first objective lens; and
deflecting the second light beam over the object in a second one of the two orthogonal directions to be measured through a second objective lens;
wherein respective measuring signals are produced for determining the dimensions of the object based on the duration of the interruption of the respective light beams by the objects.

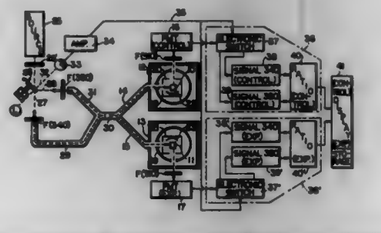
5,383,023

METHOD AND APPARATUS FOR PERFORMING DUAL-BEAM DUAL-WAVELENGTH FLUORESCENCE SPECTROPHOTOMETRIC EVALUATION OF A BIOLOGICAL SPECIMEN

Jan Wallecsek, 1318 Mills Ave., Redlands, Calif. 92373

Filed Mar. 1, 1993, Ser. No. 18,301
Int. Cl.[6] G01N *21/64*
U.S. Cl. 356—417 **33 Claims**

14. Apparatus for simultaneous measurement of fluorescent changes in two identical cuvette samples, each of which contains an equal quantity of a single ratiometric dye, wherein the measured changes are in response to exposure of one to the exclusion of the other of said samples to a chemical, biological or physical agent, said apparatus comprising:
(a) a dual-wavelength spectral source having an optical output in which light of one wavelength is in time-interlace with light of another wavelength;
(b) a first chamber for containing one of said cuvette samples and having a window through which said one sample can be exposed to at least a fraction of the time-interlaced output of said source, said first chamber including optical means and first photon-detection means responsive to a fluorescent wavelength of photons emitted by said one sample;
(c) a second chamber identical to said first chamber for containing the other of said cuvette samples, said second chamber additionally including means for subjecting said other cuvette sample to a chemical, biological or physical agent, whereby the photon-detection means of said second chamber will respond to said fluorescent wavelength for photons emitted by the agent-affected sample;



(d) optical means for concurrently delivering equally shared fractions of the time-interlaced output of said source to each of said chambers, whereby to enable for one of said chambers development of a first ratio of fluorescent-emission response to one with respect to the other of said shared fractions, and also concurrently to enable for the other of said chambers development of a second ratio of fluorescent-emission response to said one with respect to said other of said shared fractions;
(e) separate signal-processing means synchronized with the time-interlace of the output of said source for continuously developing (i) a first signal which is the ratio of first cuvette-sample response to the respective time-interlaced wavelengths, and (ii) a second signal which is the ratio of second cuvette-sample response to the respective time-interlaced wavelengths; and
(f) utilization means responsive to said first and second signals for concurrently using said first and second signals as a function of a single time scale.

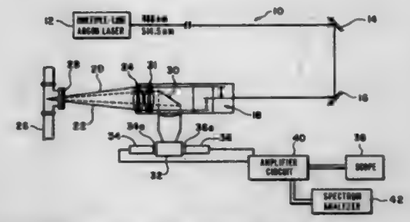
5,383,024

OPTICAL WET STEAM MONITOR

Lonnie C. Maxey, Powell, and Marc L. Simpson, Knoxville, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation of Ser. No. 928,340, Aug. 12, 1992, abandoned.
This application Jul. 6, 1994, Ser. No. 267,919
Int. Cl.[6] G01N *15/02*
U.S. Cl. 356—336 **14 Claims**

1. An optical wet steam monitor comprising:
a laser source having a laser output;
a beam splitter receiving the laser output and generating therefrom two equal power, coherent beams, each beam having at least one spectral line;
means for focusing the two beams at a point of intersection within a steam environment, optical path length differences in the two beams at the point of intersection forming a fringe pattern, and a single particle of steam passing through the fringe pattern producing backscattered light;
means for converting the backscattered light into an electrical signal;
signal processing means, receiving the electrical signal from the converting means, for producing a frequency domain waveform having a primary frequency peak and a plurality of sidebands associated with the primary frequency peak; and



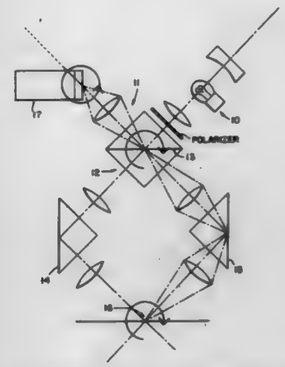
means for correlating a bandwidth of the primary peak and the plurality of sidebands to a specific particle size.

5,383,025

OPTICAL SURFACE FLATNESS MEASUREMENT APPARATUS

Andrew Forrest, London, England, assignor to European Vision Systems Centre Limited, London, England

PCT No. PCT/GB91/00648, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO91/16602, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 23, 1991, Ser. No. 958,111
Claims priority, application United Kingdom, Apr. 23, 1990, 9009110
Int. Cl.[6] G01B *11/30*
U.S. Cl. 356—371 **17 Claims**



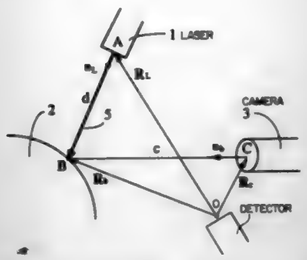
11. An apparatus for measuring deviations from the plane of a substantially planar surface, the apparatus comprising a light source, a grid, projection optics associated with said light source for illuminating said planar surface through said grid such that an image of the grid is projected onto the surface, a sensor, and imaging optics associated with said sensor for viewing through the grid said image of the grid that is protected onto said surface by said projection optics, whereby the sensor views only a proportion of the image that is projected onto said surface, such proportion being representative of the deviation of the surface from the plane.

5,383,026

METHOD AND APPARATUS FOR DETERMINING THE POSITION AND THE CONFIGURATION OF AN OBJECT UNDER OBSERVATION

Naotake Mouri, 661-51 Ishizaka, Yagoto, Tenpaku-ku, Nagoya-shi, Aichi-ken; Koji Akamatsu, and Akihiro Goto, both of Aichi, all of Japan, assignors to Naotake Mouri, Aichi and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Apr. 23, 1992, Ser. No. 872,305
Claims priority, application Japan, Aug. 7, 1991, 3-198126
Int. Cl.[6] G01B *11/24*
U.S. Cl. 356—376 **17 Claims**



1. A method for determining a position of a point on an object, comprising steps of:

impinging on said object an incident laser beam emitted from a laser, said object directing said incident beam as a reflected beam which is received by a camera, said incident and reflected beams defining a laser beam path;

providing a light scattering medium into the laser beam path so as to produce visible scattered light;

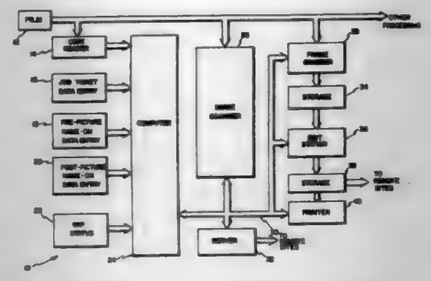
detecting the visible scattered light by at least one detection means located at a position not on said laser beam path extending from said laser to said camera in order to determine a locus of said laser beam.

5,383,027

PORTRAIT PRINTER SYSTEM WITH DIGITAL IMAGE PROCESSING EDITING

Ronald B. Harvey, Eden Prairie; Jon A. Holmes, St. Louis Park, and Keith A. Benson, Brooklyn Park, all of Minn., assignors to Lifetouch National School Studios Inc., Minneapolis, Minn.

Filed Feb. 27, 1992, Ser. No. 842,569
Int. Cl.[6] H04N *1/23, 1/387;* **G03B** *7/00, 27/52;* **G06F** *15/00*
U.S. Cl. 358—296 **18 Claims**



1. A system for printing developed portrait film previously exposed by a portrait camera, said film having digitally encoded information adjacent each frame, comprising:

a light source for projecting light through the developed portrait film;

an image input device adjacent the film positioned to receive light from the light source which has passed through the developed portrait film for providing an image output representative of an image on the developed portrait film;

an image convertor circuit including an input connected to the image input device and a digital output wherein the image output from the image input device is converted into a digital format comprising a digitized image provided on the digital output;

code reader means for reading said digitally encoded information from said film and providing an output;

edit station means coupled to the digital output for receiving digitized images, determining a sequence for the digitized images in accordance with a predetermined order defined by said output of said code reader means and providing an edit station output; and

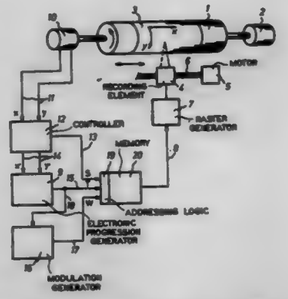
printer means, coupled to the edit station means, for receiving the edit station output, converting the edit station output into an analog format and transferring the edit station output to an image recording medium whereby images transferred to the image recording medium are in the predetermined order.

5,383,028

METHOD AND APPARATUS FOR RECORDING RASTERED IMAGES

Fahim Becker, Kiel, Germany, assignor to Linotype-Hell AG, Eschborn, Germany

PCT No. PCT/DE92/00172, § 371 Date Sep. 2, 1993, § 102(e) Date Sep. 2, 1993, PCT Pub. No. WO92/16070, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 3, 1992, Ser. No. 108,702
Claims priority, application Germany, Mar. 9, 1991, 4107703
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—401 **9 Claims**



1. A method for point-by-point and line-by-line recording of rastered images wherein image signal values define raster densities or raster point sizes to be respectively recorded, comprising the steps of:

providing a first modulation value for raising a raster density to be recorded and providing a second modulation value for lowering a raster density to be recorded;

superimposing the first and second modulation values on the image signal values in alternating fashion at least in a direction of an image coordinate on at least one image signal value that lies between image signal values that define unmodified raster densities to be recorded; and

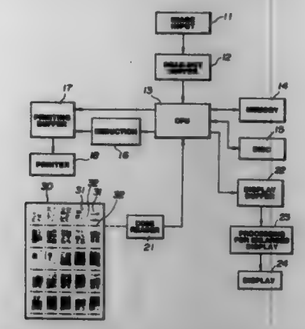
as a result thereof recording in alternating fashion at least one reduced or one enlarged raster point in at least one expanse of the raster between the raster points that reproduce the raster densities to be recorded, the superimposing of the first and second modulation values on the image signal values resulting in avoidance of discontinuous changes of the raster densities being recorded.

5,383,029

INFORMATION RETRIEVAL SYSTEM

Kiyoaobu Kojima, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Apr. 28, 1992, Ser. No. 875,264
Claims priority, application Japan, May 14, 1991, 3-138185
Int. Cl.[6] H04N *1/00;* **G06K** *9/80;* **G06F** *15/64*
U.S. Cl. 358—403 **13 Claims**



1. An information retrieval system for retrieving information from a file comprising;

image inputting means for inputting image information,

storage means for storing the image information inputted by said image inputting means and identification codes for retrieving said image information, said identification codes being associated with said image information in a one-to-one relation,

printing means for printing said input image information along with said identification codes, after an image-reducing operation,

code reading means for reading said identification codes,

retrieval means for retrieving the image information associated with the identification code in conformity to said identification codes read out by said code reading means from said storage means;

wherein said printing means prints a plurality of reduced images and associated identification codes in the vicinity of the associated reduced images on one printing sheet; and

wherein said file comprises a plurality of sheets; each sheet having at least one of said reduced images and the associated identification codes printed thereon; whereby, a target image information is found by high-speed retrieval by turning over pages of said file, and the identification code in the vicinity of the printed image information thus found is read by said code reading means to read out the image information from said storage means.

3. A system for retrieving information on at least one original image comprising:

image inputting means for providing an image signal representative of information on said original image to a processing means;

code generating means for generating a unique, identification code corresponding to said original image and for providing an identification code output signal representative of said identification code to said processing means;

storage means coupled to said processing means for storing said image signal and said corresponding identification code output signal;

reducing means connected to said processing means to receive said image signal from at least one of said image inputting means or said storage means;

said reducing means for providing a reduced image output signal representing a reduced image of said original image having a smaller area than the area of said original image;

printing means connected to said reducing means for receiving said reduced image output signal and for printing said reduced image;

said printing means being connected to said processing means for receiving said identification code output signal from at least one of said code generating means or said storage means, and for printing the identification code corresponding to said original image to produce a printed identification code, whereby, the original image may be identified from said printed reduced image;

code reading means connected to said processing means for reading a printed identification code and for providing an output signal relating to said identification code to said processing means; and

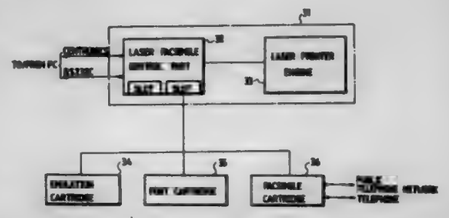
retrieval means connected to said processing means for retrieving from said storage means said original image information associated with said printed identification code read by said code reading means.

5,383,030

MULTIPLE USE SYSTEM HAVING A LASER CARTRIDGE FOR A LASER PRINTER AND LASER FACSIMILE

Ho I. Seo, Ichon-Kun, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Mar. 19, 1992, Ser. No. 854,440
Claims priority, application Rep. of Korea, Mar. 20, 1991, 1991-4373
Int. Cl.[6] H04N *1/00, 1/23*
U.S. Cl. 358—442 **7 Claims**



1. A multiple use system for laser printing and laser facsimile printing, comprising:

main control means for performing data transformation between video image data and facsimile file format, accessing a cartridge memory and processing a plurality of interrupt signals;

first and second slot means for receiving any one of a facsimile cartridge, a font cartridge or an emulation cartridge such that said facsimile cartridge may be connected in parallel to said main control means with another of said cartridges;

memory access control means connected to said main control means, for selecting one of said cartridges received in one of said slot means and controlling said accessing of the cartridge memory;

facsimile interface means connected to said main control means, for controlling a facsimile cartridge and processing a plurality of interrupt signals;

a laser printer engine means connected to said main control means for printing image data;

wherein said facsimile cartridge comprises:

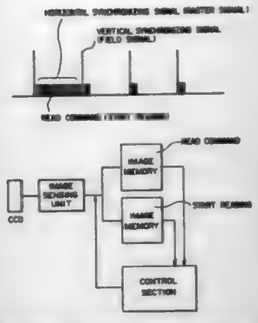
cartridge memory control means for receiving a cartridge selection signal and address signal from said facsimile interface means and outputting a memory control signal and a bank memory signal;

cartridge memory means connected to said cartridge memory control means, for supplying facsimile modem software and a software related to T.4 image compression/-decompression and a T.30 protocol;

front end means for processing an analog signal from the facsimile equipment and an analog signal of 9600 bps;

and data access arrangement means for interfacing a public telephone network with said front end means and for detecting a ring signal.

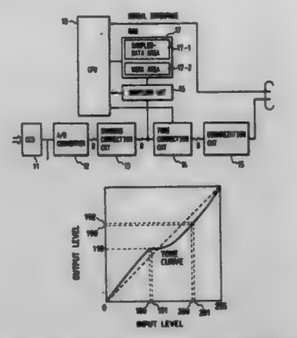
5,383,031
IMAGE READING APPARATUS
Akira Kida, and Yasuaki Satoh, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Sep. 2, 1992, Ser. No. 939,164
Claims priority, application Japan, Sep. 17, 1991, 3-236619
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—444 **6 Claims**



1. An image reading apparatus comprising:
image sensing means for repeatedly scanning an original image with a predetermined time interval between scans so as to obtain a set of image information data that represents the original image with each scan, the set of image information data including a plurality of line data which corresponds to a horizontal scanning line in the original image;
memory means coupled to said image sensing means for storing the image information data, said memory means having a memory area adapted to store one set of the image information data and which updates a stored set of the image information data stored in the memory area by writing newly obtained image information data from the image sensing means, line data by line data, over the stored set of image information data; and
control means for issuing a command to the memory means to read out the set of image information data from the memory area, wherein the memory means starts to read out an image information data from the memory area at a time when both:
a horizontal synchronizing signal is sent from the control means, after completion of a currently occurring writing of a line of image information data into the memory area; and
after the command from the control means has been issued.

5,383,032
IMAGE PROCESSING SYSTEM
Kazuhiro Eguchi, Kasuga, and Hiroshi Imabayashi, Fukuoka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 27, 1992, Ser. No. 888,711
Claims priority, application Japan, May 28, 1991, 3-123631; May 28, 1991, 3-123633
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—448 **7 Claims**

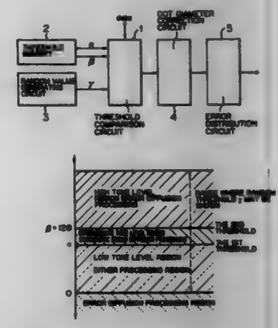
1. An image processing system comprising:
input means for receiving image data representing an input image;
converting means, coupled to said input means, for partitioning said input image data into pixel density data representing a density of each of pixels of the input image;
storage means, coupled to said converting means, for storing said pixel density data;
density distribution computing means, coupled to said storage means, for computing a pixel density distribution of said image by counting pixels of each density represented by said pixel density data stored in said storage means;
graphing means, coupled to said density distribution computing means for generating accumulation data corresponding to each density represented by said pixel density data, and generating and outputting a data curve representing accumulation data; and



correction means, coupled to said graphing means and said storage means, for reading said data curve representing accumulation data corresponding to each density represented by said pixel density data obtained from said input image data and for correcting said pixel density data converted by said converting means, by employing said data curve as a density correction curve indicating a relation between said pixel density data and a density data output,
wherein the accumulation data corresponding to each density represented by said pixel density data represents a value proportional to the number of pixels having densities ranging from the lowest density to a density corresponding thereto.

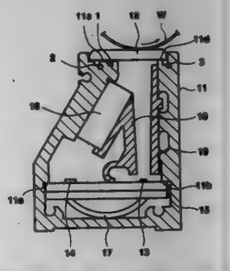
5,383,033
IMAGE PROCESSOR FOR AN IMPROVED TONE LEVEL EXPRESSION
Yasuhiko Takahashi, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan
Filed Oct. 23, 1992, Ser. No. 965,791
Claims priority, application Japan, Oct. 25, 1991, 3-306694
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—456 **13 Claims**

9. An image processor for presenting tone level expression on the basis of continuous-tone image data applied thereto, said processor, comprising:
means for determining generation of a dot by a dither method when said image data is in a low gray level region not larger than a first threshold;
means for generating a dot and distributing an error in a peripheral area when said image data is in a high gray level region larger than a second threshold, which is larger than said first threshold; and
means for comparing said first threshold with a third threshold which is generated by a predetermined process when said image data is in an intermediate gray level region larger than said first threshold and not larger than said second threshold, and generating a dot and distributing an error in a peripheral area when said third threshold is in a region higher than said intermediate gray level region, and for generating no dot and distributing an error portion



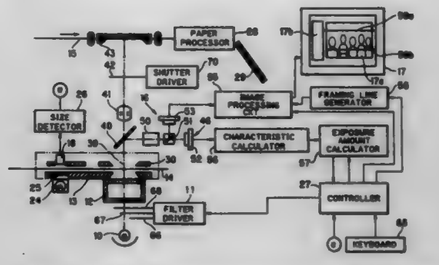
by which said image data exceeds said first threshold when said third threshold is in said low gray level region.

5,383,034
IMAGE SENSOR WITH IMPROVED MOUNT FOR TRANSPARENT COVER
Masaya Imamura; Kensuke Sawase, and Seiji Koshikawa, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Sep. 15, 1992, Ser. No. 945,212
Claims priority, application Japan, Sep. 30, 1991, 3-250037
Int. Cl.[6] H04N *1/024*
U.S. Cl. 358—474 **9 Claims**



1. An image sensor for reading an image on an object by irradiating light onto said object, said image sensor comprising
a frame;
a transparent covering mounted on said frame to close a reading window formed in the top of said frame, said transparent covering for contacting said object;
a light emitting section mounted within said frame for irradiating light onto said object through said transparent covering;
an optical system for condensing the light reflected by said object;
a light receiving section for receiving the light from said optical system;
a first groove formed in said frame along one side of said reading window for receiving an adhesive; and
a second groove formed in said frame adjacent and spaced parallel to said first groove, said second groove being adapted to receive and hold overflow adhesive from the first groove when said transparent covering is adhered to said frame by the use of said adhesive.

5,383,035
PHOTOGRAPHIC FILM ANALYZER WITH SIMULATOR AND FILM INSPECTING METHOD
Kenji Suzuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 20, 1993, Ser. No. 93,697
Claims priority, application Japan, Jul. 20, 1992, 4-192284
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—500 **29 Claims**



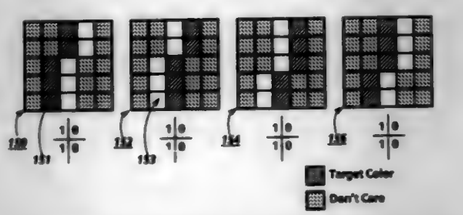
1. A film analyzer for inspecting developed photographic film on which a first size frame and a second size frame, which is smaller than said first size frame are recorded, said film analyzer comprising:
photometric means, provided with a measuring area range covering said first size frame, for performing photometry of an inspection-designated frame set in a first position;
exposure calculating means for calculating exposure information according to a photometric value from said photometric means;
pick-up means, provided with a pick-up area range covering said first size frame, for detecting an image formed in said inspection-designated frame set in said first position and outputting first image data which represents said image;
image processor mean for processing said first image data according to said exposure information to generate second image data, which represents a simulated printing-finished image of said image formed in said inspection-designated frame;
display means for displaying said printing-finished image according to said second image data;
size detecting means for detecting a size of said inspection-designated frame;
masking means for masking said inspection-designated frame so as to define a perimeter of said inspection-designated frame, during an inspection mode, when said size detecting means detects that said inspection-designated frame is of said second size frame, said photometry being performed by said photometric means while said inspection-designated frame is masked by said masking mean, said pick-up means, detecting said image formed in said inspection-designated frame as masked during an inspection mode, and, picking up said image formed in said inspection-designated frame in an unmasked state in a checking mode, in order to check an automatic size inspection performed by said size detecting means.

5,383,036

ENHANCEMENT OF MULTIPLE COLOR IMAGES WITHOUT COLOR SEPARATION ERROR BY INVERSE SYMMETRICAL TEMPLATE MATCHING

Louis D. Mailloux, Mountain View, and Sofia Filshtinsky, Saratoga, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1993, Ser. No. 128,509
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—518 **9 Claims**



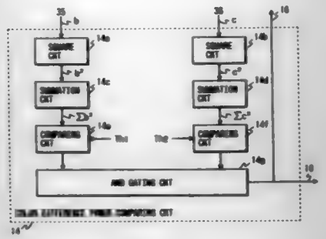
1. A method for enhancing the contour fidelity of printed images including first and second colors, the method comprising:
obtaining a digital representation of a portion of an image including pixels of a first color and pixels of a second color;
obtaining a first separation comprising said first color pixels in said image portion;
enhancing said first separation according to a first set of templates;
obtaining a second separation comprising said second color pixels in said image portion;
enhancing said second separation according to a second set of templates, each template in said second set being inverse to one of said first set of templates, wherein enhancements for each inverse pair of templates are symmetrical;
combining said first and second enhanced color separations.

5,383,037

APPARATUS FOR IMAGE CODING AND DECODING BASED ON COLOR COMPONENTS IN AN IMAGE SIGNAL

Shunichi Kimura, and Koh Kamizawa, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1992, Ser. No. 970,393
Claims priority, application Japan, Nov. 6, 1991, 3-290242
Int. Cl.[6] H04N *1/415, 1/46*
U.S. Cl. 358—539 **4 Claims**



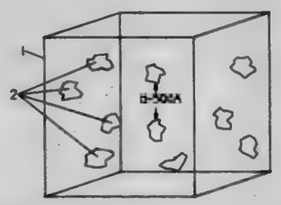
1. An image coding apparatus, comprising:
means for inputting an image signal;
subdividing means for subdividing the image signal inputted by said input means into predetermined pixel regions of a plurality of pixels;
recognizing means for recognizing a color component with respect to each of the pixel regions subdivided by said subdividing means, the recognizing means including:
means for obtaining power of the respective color components of the inputted image signal for each of the subdivided pixel regions; and
means for comparing the obtained power with a predetermined threshold value;
coding decision means for determining whether or not a coding operation of a predetermined color component in said pixel regions is carried out according to a recognition result made by the recognizing means, wherein said coding decision means makes such a decision for not performing the coding operation of the color component in case that said obtained power is less than said predetermined threshold value; and
coding means for coding the predetermined color component in said pixel regions according to a decision made by the coding decision means.

5,383,038

HOLOGRAPHIC OPTICAL MEMORY USING SEMICONDUCTOR MICROCRYSTALLITE DOPED GLASSES AND METHOD USING SAME

Nabil M. Lawandy, Providence, R.I., assignor to Intellectual Property Development Associates of Connecticut, Inc., Trumbull, Conn.

Division of Ser. No. 778,593, Oct. 17, 1991, Pat. No. 5,253,258.
This application Jul. 13, 1993, Ser. No. 90,818
Int. Cl.[6] G02B *27/00*
U.S. Cl. 359—7 **6 Claims**



1. A volume holographic medium comprising a bulk glass having semiconductor microcrystallites embedded within.
2. A method of operating a holographic memory, comprising the steps of:
providing a holographic medium comprising a bulk glass having semiconductor microcrystallites contained within;
recording information within the volume holographic medium by irradiating a region of the holographic medium with radiation having a first wavelength and a second wavelength, the second wavelength being one half of the first wavelength; and
reading out the information by irradiating the region with the first wavelength, the information being read-out at the second wavelength.

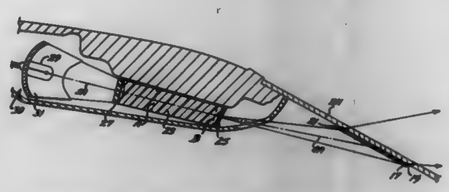
5,383,039

FOCUSED ILLUMINATION, REDUCED LIGHT LEAKAGE FLOODLIT CENTER HIGH MOUNTED STOPLIGHT

Ronald T. Smith, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 995,238
Int. Cl.[6] G03H *1/00*
U.S. Cl. 359—13 **4 Claims**

1. A holographic stoplight system for a vehicle having a rear window, comprising:
a stoplight hologram secured adjacent the rear window;
a playback illumination source for providing light to said stoplight hologram along a source optical axis by way of a vertically converging beam that converges to a horizontal line focus; and
a lens for controlling said vertically converging beam to converge to a line focus that is within said lens and further from the illumination source than such line focus would be without said lens, and for providing an output beam along an output axis.

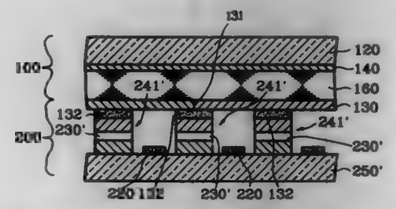


5,383,040

PLASMA ADDRESSED LIQUID CRYSTAL DISPLAY WITH CENTER SUBSTRATE DIVIDED INTO SEPARATE SECTIONS

Dae-Il Kim, Kyungki, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 6, 1992, Ser. No. 956,998
Claims priority, application Rep. of Korea, Nov. 27, 1991, 91-21453
Int. Cl.[6] G02F *1/1343, 1/137, 1/1333*
U.S. Cl. 359—54 **10 Claims**



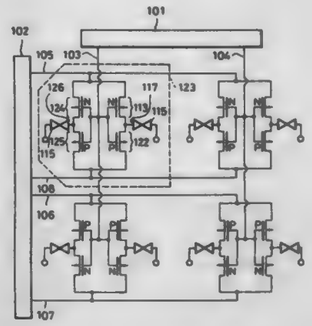
1. A plasma addressed liquid crystal display comprising:
a first substrate;
a plurality of striped data electrodes disposed on an inner side of said first substrate;
a second substrate of a predetermined thickness spaced from said first substrate to make a liquid crystal space;
a third substrate spaced from said second substrate;
partition barriers of a predetermined height and width positioned between said second and third substrates creating a plurality of parallel linear plasma discharge spaces and providing to said second substrate a potential for activating liquid crystal in cooperation with said data electrodes; and
first and second electrodes for creating a linear discharge in each linear plasma discharge space,
wherein said second substrate is composed of a plurality of substrate members which are connected to each other at selected joints, the joints overlaying and being fixed by paste on a top surface of said partition barriers.

5,383,041

ELECTRO-OPTICAL DEVICE

Shunpei Yamazaki, Tokyo, and Akira Mase, Aichi, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 805,521, Dec. 13, 1991, abandoned.
This application Aug. 12, 1993, Ser. No. 104,935
Claims priority, application Japan, Dec. 20, 1990, 2-418291; Dec. 29, 1990, 2-418664
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 359—59 **18 Claims**



1. An electro-optical device comprising:
a pair of substrates at least one of which is transparent;
an electro-optical modulating layer disposed between said substrates; and
at least two pixels,
wherein one of said two pixels is provided with complementary transistors comprising an n-channel transistor and a p-channel transistor provided on an inside of one of said substrates;
an electrode provided on said inside of one of said substrates and connected to one of drain and source terminals of said n-channel transistor and one of drain and source terminals of said p-channel transistor;
a pair of row control lines one of which is connected to the other one of the drain and source terminals of said n-channel transistor and the other one of which is connected to the other one of the drain and source terminals of said p-channel transistor; and
a column control line connected to gate terminals of said n-channel transistor and said p-channel transistor,
wherein another one of said two pixels is provided with other complementary transistors comprising another n-channel transistor and another p-channel transistor provided on said inside of one of said substrates;
another electrode provided on said inside of one of said substrates and connected to one of drain and source terminals of said another n-channel transistor and one of drain and source terminals of said another p-channel transistor; and
another pair of row control lines one of which is connected to the other one of the drain and source terminals of said another n-channel transistor and the other one of which is connected to the other one of the drain and source terminals of said another p-channel transistor,
wherein gate terminals of said another n-channel transistor and said another p-channel transistor are connected to said column control line and the row control line connected to the other one of the drain and source terminals of said n-channel transistor of said one of said two pixels is adjacent to the row control line connected to the other one of the drain and source terminals of said another n-channel transistor.

5,383,042

3 LAYER LIQUID CRYSTAL NEURAL NETWORK WITH OUTPUT LAYER DISPLAYING ERROR VALUE FOR OPTICAL WEIGHT UPDATING

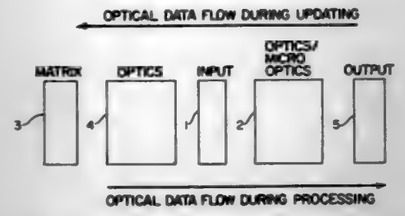
Michael G. Robinson, Oxfordshire, United Kingdom, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 11, 1993, Ser. No. 60,353

Claims priority, application United Kingdom, May 11, 1992, 9210080

Int. Cl.[6] G06E *3/00*; G02F *1/133, 1/135*

U.S. Cl. 359—72 **18 Claims**



1. An optical information processor comprising a first spatial light modulator (3, 23) for containing interconnection weight data, a second spatial light modulator (1, 21) for containing input data, and a third spatial light modulator (5, 25), the first spatial light modulator (3, 23) being optically addressable, the first, second, and third spatial light modulators (1, 3, 5, 21, 23, 25) defining an optical update path for updating of weight data from the third spatial light modulator (5, 25) via the second spatial light modulator (1, 21) to the first spatial light modulator (3, 23), characterised in that the third spatial light modulator (5, 25) further comprises optoelectric transducer means co-operating with the first and second spatial light modulators (1, 3, 21, 23) to define an optical processing path from the first spatial light modulator (3, 23) via the second spatial light modulator (1, 21) to the optoelectric transducer means, processing means for processing output data from the optoelectric transducer means and predetermined target output data to form error data, and control means for controlling the third spatial light modulator to contain the error data during weight updating.

5,383,043

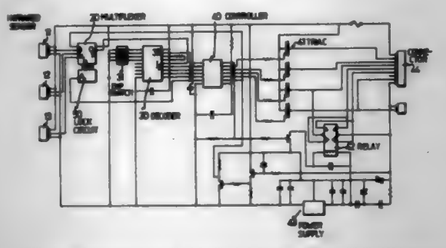
OMNI-DIRECTIONAL INFRARED SENSING CIRCUIT

Chih-Hai Su, No. 88-1, Nin Chuang Li, Shan Hua Chen, Tainan Hsien, Taiwan, Prov. of China

Filed Mar. 26, 1993, Ser. No. 37,293

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—142 **1 Claim**



1. An omni-directional infrared sensing circuit comprising

a plurality of infrared sensors arranged in different directions for sensing an external remote control signal from any direction;

a decoder including an input terminal for detecting whether the remote control signal is effective, such that if positive, said decoder changes its output signal at an output terminal;

multiplexer means electrically connected to said infrared sensors and having a corresponding number of switches, each of which has an input terminal connected to a corresponding sensor, an output terminal, and a trigger terminal which when triggered will turn on the switch, each output terminal of each of said switch as being connected together to form an output terminal of the multiplexer means, said output terminal of said multiplexer means being connected to said input terminal of said decoder;

a circular counter with lock function having a number of output terminals, each of which being connected to said trigger terminal of a said corresponding switch via a corresponding one of first AND gates, each of said first AND gates alternately outputting a triggering signal to trigger the corresponding switch in response to counting operation of the circular counter, a control terminal connected to said output terminal of said decoder, a clock terminal receiving external clock signal, and a second AND gate connected to the clock terminal and the control terminal via a NOT gate, such that when any one of said sensors is triggered by an effective remote control signal, said decoder changes its output signal causing said control terminal to change from a normal status to a triggered status thus cutting off the path of the clock to the circular counter and stopping the counting of the circular counter, such that after the remote control signal disappears, the control terminal returns to the normal status thus enabling the counting of the circular counter.

5,383,044

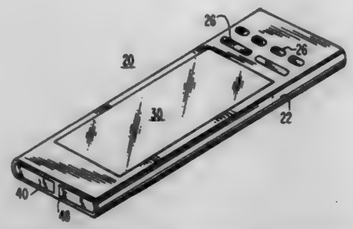
SYSTEMS, METHODS AND APPARATUS FOR TRANSMITTING RADIO FREQUENCY REMOTE CONTROL SIGNALS

Robert L. Borchardt, New York; William T. McGreevy, Babylon, and Efrain Rodriguez, Brooklyn, all of N.Y., assignors to Recoton Corporation, Long Island City, N.Y.

Filed Sep. 18, 1992, Ser. No. 947,705

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—145 **41 Claims**



1. A method of remotely transmitting a control command to a device having a light sensor for receiving the control command in the form of a light energy signal, comprising the steps of:

providing a remote control unit having a user operable control signal input on an enclosure thereof for receiving a control signal from a user representing a control command for the device, the remote control unit including a radio frequency generator within its enclosure coupled electrically with the user operable control signal input;

actuating the user operable control signal input to input a control signal to the remote control unit representing the control command;

producing a corresponding radio frequency remote control signal within said enclosure with the use of the radio frequency generator in response to the input control signal;

radiating the radio frequency remote control signal from the remote control unit;

receiving the radiated radio frequency remote control signal; and

transmitting the control command in the form of a light energy signal to the light sensor of the device in response to the received radio frequency remote control signal to provide the command thereto.

5,383,045

CODE WORD RECOGNITION UNIT AND USE THEREOF

Paul Vogel, Steffisburg, and Thomas Martinson, Fribourg, both of Switzerland, assignors to Acsom Tech AG, Bern, Switzerland

PCT No. PCT/CH91/00122, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO91/18485, PCT Pub. Date Nov. 28, 1991

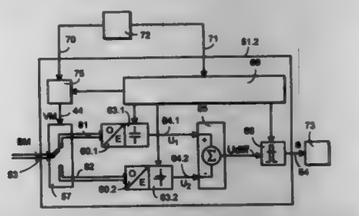
PCT Filed May 21, 1991, Ser. No. 778,221

Claims priority, application Switzerland, May 23, 1990, 01 769/90-0

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[6] H04B *10/14*; H04J *14/08*

U.S. Cl. 359—158 **5 Claims**



1. A code word recognition unit for an access node of optical transmission equipment, wherein the transmission equipment comprises an optical transmission line on which an uninterrupted, directed bit stream flows in the form of a brightness/darkness sequence and with a given bit and frame clock, wherein signal information is regularly contained in the bit stream in the form of optical patterns, wherein the access node is equipped for receiving and reading these optical patterns, said code word recognition unit comprising: a switching element comprising an optical input, at least one optical output and an electrical control input whose optical input and outputs are connected by optics paths which can be switched so as to be electrically blocked or unblocked, and whose optical input is connected to the transmission line, a sequence generator which is connected to the control input of the switching element and transmits an electrical comparison pattern to the control input in phase with an optical pattern at the optical input of the switching element, optoelectrical transducers, each of which being individually connected subsequent to an optical output of the switching element and constructed for generating an electrical charge proportional to the received light quantity, electrical integrators which are connected subsequent to the transducers for the purpose of forming voltage pulses as a function of the charge occurring at the transducers, and a threshold circuit connected subsequent to the integrators for evaluating voltage pulses transmitted by the integrators and the threshold circuit.

5,383,046

SUPERVISORY AND CONTROL SIGNAL TRANSMITTING SYSTEM FOR USE IN OPTICALLY AMPLIFYING REPEATERS SYSTEM

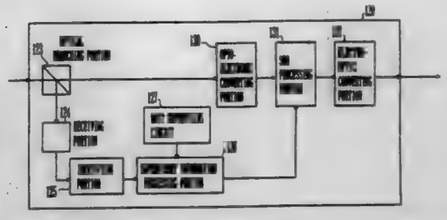
Hiroaki Tomofuji; Akihiko Sugata, and Hiroshi Nishimoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 1, 1993, Ser. No. 74,021

Claims priority, application Japan, May 29, 1992, 4-139126; Jun. 4, 1992, 4-144092

Int. Cl.[6] H04B *10/02*

U.S. Cl. 339—176 **24 Claims**



17. A supervisory and control signal transmitting system for use in an optically amplifying repeater system for converting an optical signal received from a preceding optically amplifying repeater into an electric signal, comprising:

supervisory signal placing means for identifying a supervisory signal generated in a preceding optically amplifying repeater and for placing said supervisory signal in a main signal of transmission data, which comprises:

optical branching means for branching part of an optical signal received from a transmission line,

receiving means for receiving an optical signal branched by said optical branching means,

identifying means for identifying a supervisory signal from an output of said receiving means,

supervisory information processing means for processing supervisory information according to an output of said identifying means,

section overhead processing means for placing said supervisory signal in said main signal according to an output of said supervisory information processing means, and

a unit supervisory circuit for detecting a defect which takes place in said reproducing repeater and for supplying the detected result for said supervising information processing means;

opto-electric converting means for converting an optical signal other than the optical signal branched by said optical branching means into an electric signal and for supplying the electric signal to said section overhead processing means; and

electro-optical converting means for converting an output of said section overhead processing means into an optical signal and for supplying the optical signal to a transmission line.

5,383,047

ROS BOW COMPENSATION

Jean-Michel Guerin, Glendale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 22, 1993, Ser. No. 79,577

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—209 **4 Claims**

1. A raster output scanner comprising:

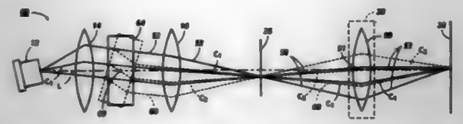
a light source emitting a light beam;

collimating means located in the path of the light beam from said light source and being so constructed and arranged to collimate the light beam;

a medium;

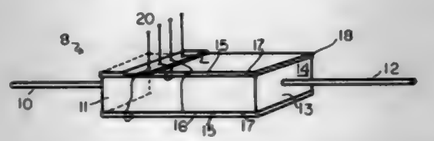
scanning means located in the path of the light beam and

being so constructed and arranged to scan the light beam in a tangential plane across said medium;
imaging means located in the path of the light beam directed from said scanning means for receiving the light beam and relaying the light beam on said medium;
shifting means located in the path of the light beam;
said shifting means being rotatable about an axis which extends generally perpendicular to a sagittal plane for shifting the light beam in the sagittal plane;
said collimating means being optically located between said light source and said shifting means;



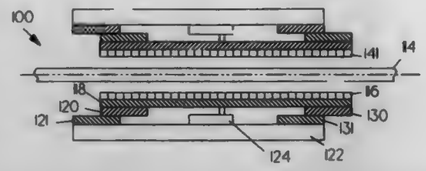
said shifting means being optically located between said collimating means and said scanning means;
the light beam having a center ray;
said imaging means having an effective optical axis perpendicular to the sagittal plane, and
said shifting means is so constructed and arranged to shift the light beam in such a manner that the center ray of the light beam scans said imaging means along said effective optical axis of said imaging means.

5,383,048
STRESS-OPTICAL PHASE MODULATOR AND MODULATION SYSTEM AND METHOD OF USE
George Seaver, P.O. Box 401, Catasmet, Mass. 02534
Filed Feb. 3, 1993, Ser. No. 12,576
Int. Cl.[6] G02B *5/14*; H04B *9/00*
U.S. Cl. 359—279 19 Claims



1. A method for phase modulation of an optical beam, which method comprises:
a) providing an optical beam;
b) providing a transparent, stress-optical material having an inlet window and an outlet window, the material chosen so as to change uniformly its index of refraction in response to a homogeneous stress field;
c) introducing the optical beam into the inlet window of the optical material for receiving the beam through the optical material;
d) applying a predetermined force to the optical material to create uniform stress within and throughout the optical material sufficient to form a substantially uniform change in an index of refraction throughout the optical material to a selected index of refraction to effect a change in the velocity of the optical beam through the optical material; and
e) recovering a stress-induced, phase modulated optical beam from an outlet window of an optical material.

5,383,049
ELLIPTICALLY POLARIZING ADJUSTABLE PHASE INSERTION DEVICE
Roger Carr, Redwood City, Calif., assignor to The Board of Trustees of Leland Stanford University, Stanford, Calif.
Filed Feb. 10, 1993, Ser. No. 16,064
Int. Cl.[6] G02B *1/08*
U.S. Cl. 359—283 5 Claims



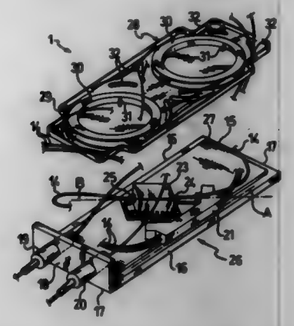
1. An insertion device for extracting electromagnetic energy from a beam of charged particles, said electromagnetic energy being characterized by its polarization and energy said insertion device comprising:
a first, second, third, and fourth linear array of magnets, each said linear array comprising a plurality of magnets;
means for supporting said first and second linear arrays on the opposite side of said beam of charged particles from said third and fourth linear arrays, said first, second, third, and fourth linear arrays being substantially aligned with said beam of particles; and
means for moving at least two of said linear arrays in a direction parallel to said beam of charged particles so as to change the polarization or energy of said extracted electromagnetic energy.

5,383,050
ORGANIC NONLINEAR OPTICAL MATERIAL
Hironobu Yamamoto, Yokohama, Japan; Robert Johnson, Hoboken, N.J., and Satoru Funato, Kawagoe, Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Oct. 5, 1993, Ser. No. 132,040
Claims priority, application Japan, Oct. 7, 1992, 4-268283
Int. Cl.[6] G02F *1/35*
U.S. Cl. 359—326 3 Claims

1. An organic nonlinear optical material comprising the crystal of a compound selected from the group consisting of 4-chloro-4'-hydroxybenzophenone, methyl 3,4-diaminobenzoate, N-(4-aminobenzenesulfonyl)-acetamide, methyl 4-hydroxy-3,5-dimethoxybenzoate, 2-chloro-4-cyano-6-methylaniline, 4'-hydroxy-2-phenylacetophenone and methyl 3,4-dihydroxybenzoate.

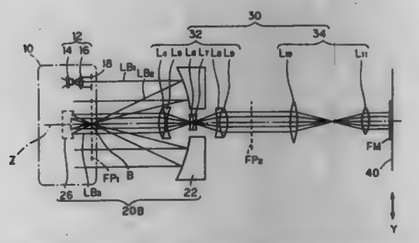
5,383,051
COMPACT-SIZE OPTICAL AMPLIFIER
Giovanni Delrosso, Caltignaga; Stefano Vanoli, Verdellino, and Massimo Armiraglio, Bottanuco, all of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy
Filed Oct. 28, 1993, Ser. No. 145,472
Int. Cl.[6] G02B *6/40*
U.S. Cl. 359—341 9 Claims

1. An apparatus for organizing the components of an optical amplifier, comprising an active light guide section (7,10), a dichroic coupler (5,8), a pump laser source (6,9) acting on the active light guide section (7,10) through the dichroic coupler (5,8), a directional coupler (3,11) associated with a respective optical meter (4,12), and connection light guide sections (14) between the various components, characterized in that said apparatus comprises:
an auxiliary frame (21) accommodating both the dichroic (5,8) and directional (3,11) couplers as laid parallel to one another and to a longitudinal axis (A) of the auxiliary frame (21), and the optical meter (4,12);
a organizer frame (28);
two winding drums (30) provided on the organizer frame



(28) side-by-side in spaced relationship, the active (7,10) and connection (14) light guide sections being wound on the drums (30); and
a main frame (15) having the organizer frame (28), auxiliary frame (21), and pump laser source (6,9) mounted thereon.

5,383,052
AFOCAL OPTICAL SYSTEM AND MULTIBEAM RECORDING APPARATUS COMPRISING THE SAME
Masahide Okazaki; Kenji Ueyama, and Takahisa Hayashi, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan
Filed May 21, 1993, Ser. No. 65,866
Claims priority, application Japan, May 27, 1992, 4-162202; May 27, 1992, 4-162209
Int. Cl.[6] G02B *17/06, 26/10*
U.S. Cl. 359—364 10 Claims

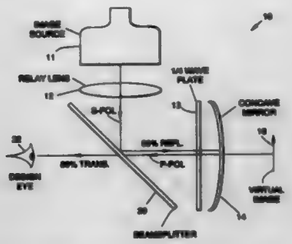


1. An afocal optical system having an optical axis, comprising:
a first paraboroid mirror, disposed on the optical axis, having a finite focal length; and
an optical element, disposed on the optical axis, having a stereographic projection characteristics which is defined by the following equation:

$$hi' = 2 \cdot f \cdot \tan(\theta i/2)$$

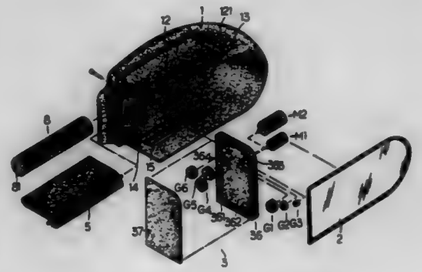
where hi' is a height of a light beam, leaving said optical element, taken from the optical axis or a heigh of an image taken from the optical axis, f is a focal length of said optical element and θi is an angle of incidence with respect to said optical element, the focal point of said optical element substantially coinciding with that of said first paraboroid mirror.

5,383,053
VIRTUAL IMAGE DISPLAY HAVING A HIGH EFFICIENCY GRID BEAMSPLITTER
Ronald G. Hegg, Los Angeles; Mao-Jin Chern, Rancho Palos Verdes, and Anson Au, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Apr. 7, 1992, Ser. No. 864,864
Int. Cl.[6] G02B *5/30*
U.S. Cl. 359—486 20 Claims



1. A virtual image display system comprising:
an image source for providing polarized light disposed at one end an optical path;
a relay lens disposed along the optical path for transmitting the polarized light provided by the image source;
a concave mirror disposed at an opposite end of the optical path;
a quarter-wave plate disposed along the optical path between the relay lens and the concave mirror, and
a grid beamsplitter disposed along the optical path between the relay lens and the quarter-wave plate;
and wherein the concave mirror produces a virtual magnified image of the image source at the location of a user.

5,383,054
AUTOMOBILE REAR-VIEW MIRROR
Shih-Pan Chang, No. 29, Wan Lien Lane, Wan Lien Li, Yuan Lin Town, Changhua, Taiwan, Prov. of China
Continuation-in-part of Ser. No. 114,624, Sep. 2, 1993, Pat. No. 5,343,328. This application Mar. 3, 1994, Ser. No. 205,403
Int. Cl.[6] G02B *5/08, 7/18*; B60R *1/06*
U.S. Cl. 359—507 1 Claim



1. An automobile rear-view mirror comprising:
a casing defining a top recess at a top of the casing, an elongated opening defined horizontally in front of said top recess above a front mirror held by said casing, an angle flange spaced below said top recess and spaced behind said mirror, and pairs of elongated vent holes defined on a bottom wall of said casing;
a flow guide member pivotally mounted on said casing at the top and covered over said top recess;
a rotary vane disposed inside said casing; and
a gear box vertically disposed at one side of said casing, said

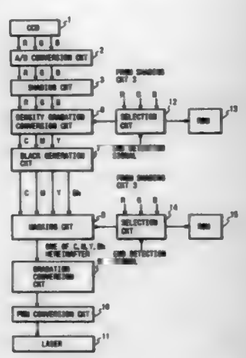
gear box including a first motor, a first transmission gear driven by said first motor to turn said flow guide member in either direction for allowing outside currents of air to be guided by said flow guide member to flow through said elongated opening defined in said casing toward said mirror to remove moisture from said mirror; said gear box further including a second motor, and a second transmission gear driven by said second motor to turn said rotary vane causing it to induce currents of air through said vent holes into said casing and permitting the induced currents of air to be guided by said angle flange to flow through said elongated opening defined in said casing toward said mirror to remove moisture from said mirror.

5,383,055

IMAGE FORMING APPARATUS INCLUDING MEANS FOR SETTING IMAGE FORMING CONDITION IN ACCORDANCE WITH A JUDGEMENT RESULT

Nobuatsu Sasanuma, Yokohama; Hisashi Fukushima, Kawasaki, and Tetsuya Atsumi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 73,391
Claims priority, application Japan, Jun. 12, 1992, 4-153523
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—521 **10 Claims**



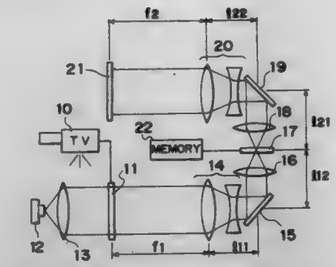
1. An image forming apparatus comprising:
input means for inputting repeatedly a same plurality of color component signals representing a frame of an image;
image forming means for generating respective reproduction signals for a plurality of color components frame-sequentially and forming a plurality of color component images in accordance with the reproduction signals to form a reproduction image;
judging means for judging whether the image represented by said plural color component signals input by said input means consists of colors within a predetermined color region in a defined color space; and
setting means for setting an image forming condition for said image forming means in accordance with a result of judgment of said judging means after image formation of an n-th color ($n \geqq 1$) but prior to image formation of an $(n+1)$-th color.

5,383,056

FOURIER TRANSFORM LENS ASSEMBLY AND OPTICAL INFORMATION PROCESSOR EMPLOYING SAME

Kanji Nishii, Osaka; Masami Ito, Moriguchi, and Atsushi Fukui, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 28, 1992, Ser. No. 952,269
Claims priority, application Japan, Sep. 30, 1991, 3-251106
Int. Cl.[6] G02B *27/46*
U.S. Cl. 359—561 **3 Claims**



1. An optical information processor comprising:
a light source:
a collimator lens for converting a beam emitted from said light source into a parallel beam;
an afocal lens system for receiving the parallel beam from said collimator lens;
a first spatial modulation element, disposed on one side of said afocal lens system, for displaying an input image;
a mirror, disposed on the other side of said afocal lens system, for bending an optical path;
a focal lens system disposed on the optical path bent by said mirror; and
a second spatial modulation element for displaying spatial filters, said mirror, said focal lens system, and said second spatial modulation element being disposed in order along said optical path;
wherein a Fourier transform optical system is constituted by said afocal lens system, said mirror, and said focal lens system;
wherein said first spatial modulation element is located on a front focal plane of said Fourier transform optical system; and
wherein said second spatial modulation element is located on a back focal plane of said Fourier transform optical system.

5,383,057

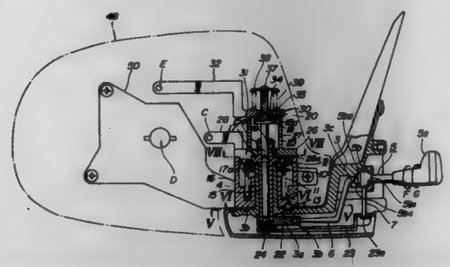
REARVIEW MIRROR ASSEMBLY FOR MOTOR VEHICLES

Sakae Kimura, and Michio Hamada, both of Saitama, Japan, assignors to Kabushiki Kaisha Matsuyama Seisakusho

Continuation of Ser. No. 599,483, Oct. 18, 1990, abandoned.
This application Jun. 4, 1992, Ser. No. 893,881
Claims priority, application Japan, Oct. 19, 1989, 1-122563[U]
Int. Cl.[6] G02B *7/18*; B60R *1/06*
U.S. Cl. 359—841 **13 Claims**

1. An automotive rearview mirror assembly for use on an automobile having a passenger's compartment, comprising:
a mirror housing adapted to be mounted on a fixed member of the automobile outside of the passenger's compartment;
a mirror swingably disposed in said mirror housing;
a control mechanism including a control lever adapted to project from said housing into the passenger's compartment;
a rotatable shaft mechanism including first and second arms and pivotally coupled through the two arms to a rear surface of said mirror at first and second positions thereon,

said rotatable shaft mechanism further including therein coaxially disposed first and second shafts which are independently rotatable, respectively, in response to control movements of said control lever and are capable of through the two arms vertically and laterally adjusting the angle of said mirror with respect to said mirror housing, respectively;



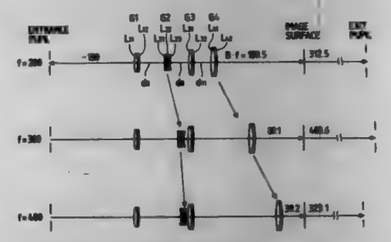
said first and second shafts constrained to remain coaxial for all positions of the mirror, and
said rotatable shaft mechanism being disposed within said mirror housing and rotatable about an axis extending vertically to a fixed member, and said mirror housing being angularly movable in unison with said mirror about the vertical axis, independently of the rotation of said rotatable shaft mechanism.

5,383,058

ZOOM LENS

Yasuo Yonezawa, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 849,459, Mar. 11, 1992, abandoned.
This application Jul. 20, 1993, Ser. No. 93,723
Claims priority, application Japan, Apr. 1, 1992, 3-092635
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—687 **27 Claims**



1. A zoom lens of a four-group structure, comprising the following sequentially from the object side:
a first lens group having positive refracting power;
a second lens group having negative refracting power, which is capable of being driven along the optical axis to increase the space between said first lens group and said second lens group when a variable power takes place from the wide angle end to the telescopic end;
a third lens group having positive refracting power; and
a fourth lens group having positive refracting power, which is capable of being driven to the image side when a variable power takes place from the wide angle end to the telescopic end to increase the space between said third lens group and said fourth lens group; wherein
given the lens group spaces on the axis between said first lens group and said second lens group at the wide angle end and telescopic end as d_{12W} and d_{12T} respectively and the back focuses at the wide angle end and telescopic end as Bf_W and Bf_T respectively, said first lens group and said second lens group are structured to satisfy the following conditions:

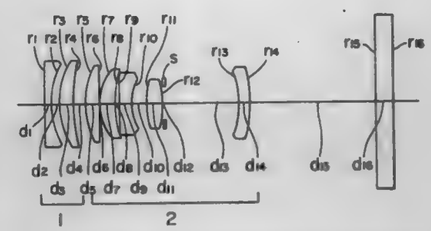
$$0<(d_{12T}-d_{12W})/(Bf_W-Bf_T)\leqq 1,\ Bf_W>Bf_T.$$

5,383,059

NONVARIABLE TRANSVERSE MAGNIFICATION FOCUSSING METHOD AND LENS SYSTEMS

Toshihiko Ueda, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Jun. 8, 1993, Ser. No. 73,716
Claims priority, application Japan, Jun. 11, 1992, 4-175957
Int. Cl.[6] G02B *9/64*
U.S. Cl. 359—754 **4 Claims**



1. An nonvariable transverse magnification focussing lens system comprising:
a first lens group and a second lens group each having limited focal lengths, wherein the first lens group and the second lens group are movable independently while maintaining the following equations in accordance with the movement of the object point:

$$x = a - f_1\left(\frac{1}{\beta 2A} - \frac{1}{\beta 1A}\right)$$

$$y = f_2(\beta 2B - \beta 1B)$$

wherein

$$\beta 2A = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

$$\beta 2B = \frac{\beta 1A\beta 1B}{\beta 2A}$$

$$A = f_1 + \frac{f_2}{\beta 1A\beta 1B}$$

$$B = -\left(f_1\left(\beta 1A + \frac{1}{\beta 1A}\right) + f_2\left(\beta 1B + \frac{1}{\beta 1B}\right) + a\right)$$

$$C = f_1 + f_2\beta 1A\beta 1B$$

[a] is the amount of movement of the object point (upon the movement to an image side of object point: $a>0$, upon the movement to an object side of object point: $a<0$),
f_1 is a focal length of the first lens group,
f_2 is a focal length of the second lens group,
$\beta 1A$ is a transverse magnification around the first lens group in the state before movement of object point ($a=0$),
$\beta 1B$ is a transverse magnification around the second lens group in the state before movement of object point ($a=0$),
$\beta 2A$ is a transverse magnification around the first lens group in the state before movement of object point ($a=a$),

$\beta 2B$ is a transverse magnification around the second lens group in the state before movement of object point (a=a),

[x] is the amount of movement of the first lens group when changing from the state before movement of object point to the state after movement of object point (upon the movement to an image side of the first lens group: x>0, upon the movement to an object side of the first lens group: x<0), and

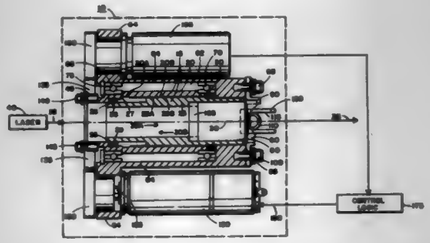
[y] is the amount of movement of the second lens group when changing from the state before movement of object point to the state after movement of object point (upon the movement to an image side of the second lens group: y>0, upon the movement to an object side of the second lens group: y<0).

5,383,060

DYNAMIC COMPENSATING LASER TELESCOPE APPARATUS

Stephen E. Davis, Apopka, Fla., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 20, 1992, Ser. No. 979,337
Int. Cl.[6] G02B *7/02, 15/14, 23/00*
U.S. Cl. 359—820 **15 Claims**



1. A laser telescope apparatus for reducing laser thermal lensing effects comprising:

a housing including a chamber with opposed ends;

an outer barrel having two opposed ends situated in said chamber and including a threaded inner surface, said outer barrel exhibiting a longitudinal axis;

mounting means, connected to said housing and said outer barrel, for mounting said outer barrel in said chamber to permit rotation of said outer barrel about said longitudinal axis while holding said outer barrel fixed with respect to motion parallel with said longitudinal axis;

an inner barrel movably positioned within said outer barrel and including a threaded outer surface threaded into the threaded inner surface of said outer barrel, said outer barrel and said inner barrel being coaxially located about said longitudinal axis;

a first lens mounted adjacent one end of said chamber;

a second lens mounted in said inner barrel;

a laser light source for generating a laser beam which is directed along said longitudinal axis, and

a motor mechanically coupled to said outer barrel to rotate said outer barrel in response to a signal to cause said inner barrel to move longitudinally by the threading action of said outer barrel with respect to said inner barrel,

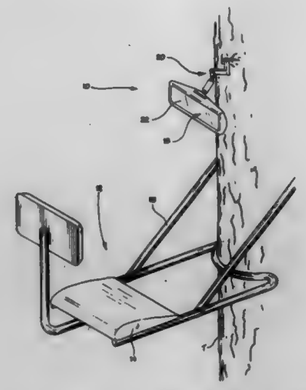
whereby the distance between said first and second lenses is varied to adjust the focus of said laser beam in response to said signal.

5,383,061

REARVIEW MIRROR APPARATUS FOR HUNTERS

John T. Lanier, P.O. Box 773, Blowing Rock, N.C. 28605

Filed Apr. 20, 1993, Ser. No. 50,505
Int. Cl.[6] G02B *7/18;* **A47G** *1/24*
U.S. Cl. 359—872 **2 Claims**



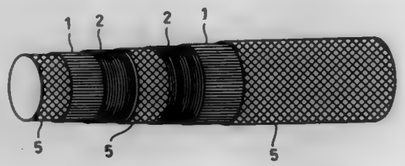
1. A rearview mirror apparatus for use by hunters while seated in a tree stand disposed in an elevated disposition on a tree trunk wherein the tree stand has a seat facing the tree trunk, the mirror apparatus comprising a mirror and a mounting arm assembly attached to said mirror, said mounting arm assembly including a threaded spike and a handle portion attached to said spike for driving manual rotational penetration of the tree trunk by said spike and rotational withdrawal from the tree trunk of said spike for selective mounting to and demounting from the tree trunk in a viewing position forwardly of the tree stand seat to provide a hunter with a reflected field of view rearwardly of the seat from a stationary position seated in the seat facing the tree trunk, and a joint device pivotably connecting said handle portion to said mirror for selective adjusting movement of said mirror relative to said handle, wherein said mirror and said joint device are selectively detachable as a unit from said handle portion to facilitate mounting and demounting of said handle portion and said spike as a unit to and from the tree trunk.

5,383,062

CFRP-MADE OPTICAL CYLINDER

Kunihiko Sato; Kazuo Morohashi, and Hidetoshi Takahashi, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 136,933
Int. Cl.[6] G02B *5/00*
U.S. Cl. 359—894 **15 Claims**



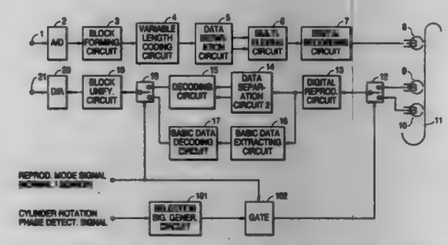
1. A CFRP-made optical cylinder comprising, as the main CFRP layers, (a) CFRP layers containing a carbon fiber arranged in a direction substantially parallel to the cylinder axial direction and (b) CFRP layers containing a carbon fiber arranged in a direction making an angle of substantially ±(40–50) degree to the cylinder axial direction, in which cylinder at least 50% by weight of the carbon fiber arranged in a direction substantially parallel to the cylinder axial direction has a linear expansion coefficient of -1×10^{-6}/°C. or less and at least 50% by weight of the carbon fiber arranged in a direction making an angle of substantially ±(40~50) degree to the cylinder axial direction has a linear expansion coefficient of -1×10^{-6}/°C. or less, and which cylinder has a linear expansion coefficient of -0.5×10^{-6}/°C. to 0.5×10^{-6}/°C. in the axial direction.

5,383,063

VIDEO SIGNAL DIGITAL RECORDING/REPRODUCING APPARATUS

Tatsushi Bannai, Sakai; Hideaki Shibata, Osaka; Masamitsu Ohtsu, Moriguchi, and Hiroshi Okamoto, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 26, 1991, Ser. No. 736,058
Claims priority, application Japan, Jul. 30, 1990, 2-202122
Int. Cl.[6] G11B *5/02, 5/09*
U.S. Cl. 360—18 **1 Claim**



1. A video signal digital recording/reproducing apparatus comprising:

an encoding means for subjecting an input video signal to bit rate reduction including variable length processing to obtain coded data;

a separating means for extracting and separating, from said coded data, basic data which represents rough basic construction of a whole image and which comprises data of a fixed data length and additional data which represents details of the whole image and which comprises data of a variable data length;

a recording means for recording said basic data and said additional data on a recording tape mounted on a rotary cylinder over a specific angle such that a whole area of the recording tape is divided into a first continuous region in which only the basic data is continuously and collectively recorded and a second continuous region in which only the additional data is continuously and collectively recorded, said recording means comprising rotary heads of P (P=1, 2, 3, . . .) channels mounted on the rotary cylinder for scanning the recording tape to record the basic data and the additional data on the recording tape in the form of parallel tracks each being formed by one scan of one of the rotary heads such that the basic data is recorded on a part of each track by a part of each scan and the additional data is recorded on a remaining part of each track by a remaining part of each scan;

first reproducing heads of P (P=1, 2, 3, . . .) channels mounted on the rotary cylinder;

second reproducing heads of Q (Q=1, 2, 3, . . .) channels mounted at a specified angle with respect to the first reproducing heads, respectively; and

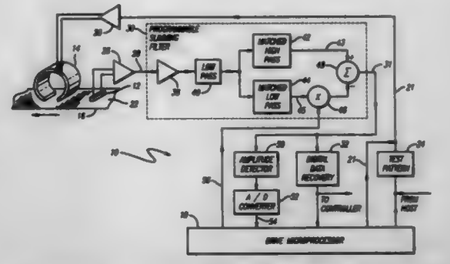
a means for selecting said first reproducing heads and second reproducing heads alternately at specified intervals in a searching mode for obtaining reproduced signals of P channels.

5,383,064

AUTOMATIC CLOSED LOOP ADJUSTMENT OF ANALOG READ SIGNALS UNDER MICROPROCESSOR CONTROL

Jefferson H. Harman, Thousand Oaks, Calif., assignor to Wangtek, Inc., Simi Valley, Calif.

Filed Apr. 13, 1993, Ser. No. 46,687
Int. Cl.[6] G11B *5/09, 5/02*
U.S. Cl. 360—45 **30 Claims**



1. A method of recovering digital data stored on magnetic medium, comprising the steps of:

reading data from the magnetic medium with a read head to recover an analog signal having high frequency and low frequency components;

processing the analog signal through a programmable slimming filter;

analyzing the output of the slimming filter; and then

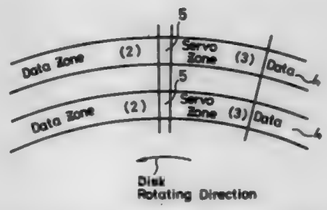
utilizing closed loop control to adjust the characteristics of the slimming filter to improve the ratio of the high frequency components relative to the low frequency components until a preferred resolution is achieved.

5,383,065

MAGNETIC DISK RECORDER

Nobuhiro Hayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 896,832
Claims priority, application Japan, Jun. 24, 1991, 3-151909
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—67 **2 Claims**



1. A magnetic disk recorder for recording a signal on and reproducing a signal from a magnetic disk which includes a servo zone for reproducing signals for control therefrom, the servo zone including at least header portion constituted by recognizable information including a predetermined bit having a given magnetized direction, and a data zone for recording and reproducing a data signal, wherein the servo zone and the data zone are alternately and repeatedly provided on each of annular tracks, comprising:

a recording amplifier for supplying a signal to the magnetic head to thereby record the signal on the magnetic disk; and

means for turning off said recording amplifier while simultaneously applying to said recording amplifier a predeter-

mined signal to cause the recording amplifier to supply a signal to the magnetic head to generate a magnetic field from the magnetic head directed to the same direction as the magnetized direction of the predetermined bit of the header portion of the servo zone.

5,383,066

COMPENSATION FOR THE DROPOUT OF A DRUM FREQUENCY GENERATOR SIGNAL IN A DRUM SERVO SYSTEM

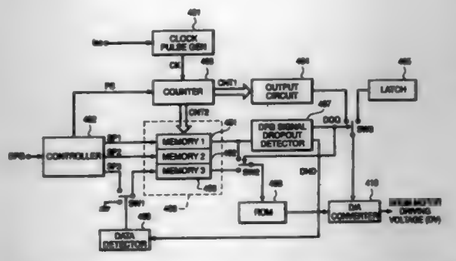
Kyoung-Hwan Kim, Boocheon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 2, 1993, Ser. No. 101,242

Claims priority, application Rep. of Korea, Jul. 31, 1993, 13822

Int. Cl.[6] G11B *21/04*

U.S. Cl. 360—70 **7 Claims**



1. A drum servo system having a drum motor, comprising:

controlling means for generating a count control signal and memory control signals according to a drum frequency generator signal generated in accordance to rotation of the drum motor;

counting means for counting a clock pulse generated according to rotation of the drum motor to generate a count value, said counting means being enabled upon receipt of the count control signal; memory means for receiving said count value according to said memory control signals to store the count value as current data and store a count value of current data as previous data; detecting means connected to receive said current data, for detecting a voltage range to generate a first switching signal according to the voltage range, wherein said first switching signal becomes a first logic state when said drum frequency generator signal is determined to be in a normal speed range and a second logic state when said drum frequency generator signal is determined to be in an abnormal speed range;

first data output means for receiving the count value and storing the count value received, to generate the count value as first output data when the first switching signal is at the first logic state and generate the stored count value as the first output data when the first switching signal is at the second logic state;

second data output means for receiving the current and previous data from said memory means, to selectively output a selected one of the current and previous data according to the first switching signal from said detecting means, wherein the current data is output as second output data when the first switching signal is at the first logic state, and the previous data is output as the second output data when the first switching signal is at the second logic state; and

digital-to-analog converter means receiving said first and second output data, for generating a drum motor driving voltage, wherein said drum motor driving voltage is determined by the first output data when said drum frequency generator signal is in the normal state and said drum motor driving voltage is determined by the second output data when said drum frequency generator signal is in the abnormal state.

5,383,067

CONTROL SIGNAL REPRODUCING CIRCUIT

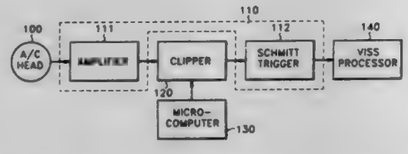
Nag-eui Choi, Ansan-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Apr. 30, 1992, Ser. No. 876,376

Claims priority, application Rep. of Korea, Jul. 15, 1991, 91-12330

Int. Cl.[6] G11B *15/18*

U.S. Cl. 360—72.2 **5 Claims**



1. A control signal reproducing circuit in a magnetic recording and reproducing apparatus having a video search function which varies a duty cycle of a control signal recorded on a control track of a magnetic tape via a control head to record video search information and, during a video search mode, checks the duty cycle of the control signal to read out the recorded video search information, said control signal reproducing circuit comprising:

amplifier means for amplifying a reproduced control signal picked up by said control head;

waveform-shaping means for comparing the reproduced control signal amplified by said amplifier means with a reference signal to wave-shape the reproduced amplified control signal; and

clipping means operable during the video search mode for clipping the reproduced amplified control signal at a certain signal level which is higher than that of a residual signal remaining on the control track, thereby eliminating the residual signal, and for supplying the clipped signal to said waveform-shaping means so that a faulty operation due to the residual signal is prevented during the video search mode;

wherein said clipping means comprises:

first and second diodes connected in parallel and oriented in opposite directions to each other, each of said first and second diodes being connected between an output of said amplifier means and an input of said waveform-shaping means;

a first transistor whose base receives a control signal during the video search mode, whose collector is connected to one end of a first bias resistor, and whose emitter is grounded; and

a second transistor having a second bias resistor connected between the other end of said first bias resistor and its emitter, whose base is connected to said other end of said first bias resistor, and whose collector and emitter are connected to said output of said amplifier means and said input of said waveform-shaping means, respectively.

5,383,068

HEAD POSITION RECOGNITION METHOD, A SPEED CALCULATION METHOD, AND A HEAD MOVEMENT SPEED CONTROL DEVICE

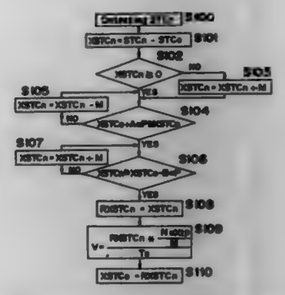
Ryosuke Shimizu, Hirakata, and Tetsurou Takaoka, Uwajima, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 14, 1992, Ser. No. 883,209

Claims priority, application Japan, May 14, 1991, 3-107799; Dec. 10, 1991, 3-325953

Int. Cl.[6] G11B *5/596, 7/00*

U.S. Cl. 360—78.06 **2 Claims**



1. A speed calculation method for calculating a moving speed of a data head comprising:

defining servo sectors discretely and circumferentially on each surface of a rotary recording medium having at least two recording surfaces,

providing an N tracks/cycle servo pattern consisting of track codes (where N is an integer) in each of said servo sectors,

dividing an N-tracks/cycle servo pattern signal by demodulation processing into M subtrack codes (where M is a product of N with a positive integer),

discriminating the track code, which is detected time sequentially each time the data head passes the servo sector, as subtrack codes by demodulation processing,

utilizing speed control for accessing the head toward a target track, obtaining a distance of head travel from a distance between a subtrack code demodulated from the track code detected when the head has passed P-previous servo sector (where P is an integer) and a subtrack code demodulated from the track code detected from a current track code,

calculating a seek speed of said data head in a radial direction of the recording medium based on said distance of head travel,

upon calculating said seek speed of said data head, calculating an upper limit distance of head travel by adding a positive first offset value to a latest distance of head travel which is a difference between a subtrack code demodulated from the track code detected when the data head has passed 2×P-previous servo sector and the subtrack code demodulated from the track code detected when the data head has passed P-previous servo sector and a lower limit of distance of head travel by subtracting a positive second offset value from said latest distance of head travel, and

calculating the head seek speed from a distance of head travel obtained by subtracting M from the distance of head travel calculated with respect to the current servo sector when it is larger than said upper limit distance of head travel and, when it is smaller than said lower limit distance of head travel, calculating the head seek speed from a distance of head travel obtained by adding M to the distance of head travel calculated with respect to a current servo sector.

5,383,069

DATA REPRODUCING DEVICE WITH DROP OUT DETECTION OF POSITION INFORMATION AND MEANS FOR COMPENSATING WITH TAPE SPEED DETECTING

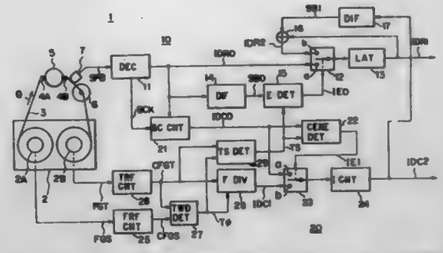
Shinya Morita, and Fumiyoshi Abe, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 826,395

Claims priority, application Japan, Jan. 31, 1991, 3-032078

Int. Cl.[6] G11B *15/52*

U.S. Cl. 360—73.11 **4 Claims**



1. A data reproducing device for reproducing a position information track formed in the longitudinal direction of a magnetic tape driven from one of first and second tape reels to the other and for producing position information of said magnetic tape, comprising;

magnetic head means for obtaining a regeneration signal from said position information track in sliding contact thereto;

detecting means for outputting regeneration position information decoded from said position information in response to said regeneration signal;

first clock generating means for generating a first clock signal as a function of said regeneration position information;.

second clock generating means for generating a second clock signal as a function of tape reel rotation frequency signals derived from one of said tape reels;

first error state detecting means for detecting that the output of said first clock generating means is either in a normal state wherein a frequency of said first clock signal is within a predetermined range determined by said rotation frequency signals or is in an error state wherein said frequency of said first clock signal is not within said predetermined range;

clock signal selecting means for selectively outputting said first clock signal when said normal state is detected and for outputting said second clock signal when said error state is detected;

count data generating means for generating count data corresponding to said output of said clock signal selecting means;

second error state detecting means for detecting a normal state or an error state in said regeneration position information outputted by said detecting means;

input selecting means having a first input supplied with said regeneration position information and having a second input, said input selecting means being operable for selecting said first input or said second input as a function of the state detected by said second error state detecting means so as to select said first input if the normal state is detected and to select said second input if the error state is detected;

first difference detecting means for detecting a difference between present count data obtained from said count data generating means and prior count data previously obtained from said count data generating means; and

an adding means for adding the output of said first difference detecting means to the output of said input selecting means and supplying a sum resulting from said addition to said second input of said input selecting means;

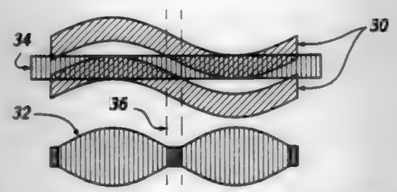
wherein position information corrected for a defect in said regeneration signal is obtained from the output of said input selecting means when the error state in said regeneration position information is detected.

5,383,070

METHOD AND DEVICE FOR MEASURING DISK DRIVE ALIGNMENT

Charles R. Bond, 502 Sark Ct., Milpitas, Calif. 95035

Filed Nov. 21, 1990, Ser. No. 616,350
Int. Cl.[6] G11B *5/596, 27/36, 5/82*
U.S. Cl. 360—77.04 **4 Claims**



1. A rotary alignment measurement disk for placement in a disk drive of an operational computer system which enables user of the computer system to measure a disk drive alignment, said measurement disk comprising:

at least a pair of adjacent prerecorded tracks, consisting of a known pattern of equally spaced data bits, and having continuously variable radius, precisely positioned on said measurement disk with respect to a center of said disk and a reference index mark;

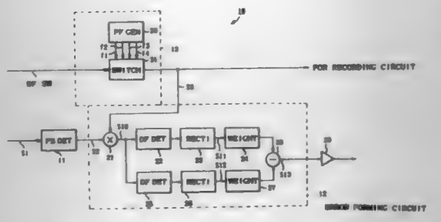
said pair of the prerecorded tracks are continuously separated by a gap of about 8 mils which is less than a track width, and formatted with one or, more sectors such that prerecorded equally spaced data bits are readable by a read head without any errors when said read head is positioned directly over one of said prerecorded tracks; and during rotation of the disk the continuously variable radius causes the second one of the tracks to appear under said head, interfering with a data recovery and producing read errors; a location at which said read errors are produced is an indication of an amount of a head misalignment.

5,383,071

APPARATUS FOR TRACKING CONTROL USING RECORDED PILOT SIGNALS

Ichitaro Sato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,915
Claims priority, application Japan, Dec. 30, 1991, 3-360690
Int. Cl.[6] G11B *5/584*
U.S. Cl. 360—77.14 **12 Claims**



1. A tracking control apparatus for controlling a tracking position of a reproducing head which reproduces signals recorded as a series of oblique parallel tracks on a recording medium, each of said tracks containing a pilot signal recorded therein having mutually different frequencies in adjacent tracks, said frequencies changing in cyclic sequence from track to track, said reproducing head having a sufficient length to extend across a target track to be reproduced and to overlap portions of adjacent tracks which are in preceding and following relations, respectively, to said target track, said tracking control apparatus comprising:

means for producing first and second control signals which are respectively indicative of opposite displacements of said reproducing head from a track to be traced;

first and second weighting circuits exhibiting first and second weighting coefficients K1 and K2, respectively, K1 and K2 being variable values;

means for calculating the values of said first and second weighting coefficients K1 and K2, respectively, such that the values of K1 and K2 selectively vary within a range of '0' to '1', where $(K1+K2=1)$, and such that the relationship $(\theta \cdot X_2/\lambda)$ approaches 1 and $X_2:X_1=K1:K2$, where θ is an azimuth angle of first and second recording heads that recorded said oblique parallel tracks, λ is the recording wavelength, X_2 is the length by which said reproducing head overlaps said preceding track and X_1 is the length by which said reproducing head overlaps said following track;

means for multiplying said first and second control signals by said first and second weighting coefficients, respectively, to produce first and second weighted control signals, respectively; and

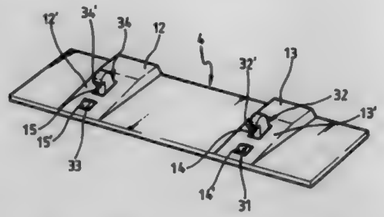
means for generating a tracking error signal from said first and second weighted control signals so that said reproducing head is disposed in a tracking position according to said tracking error signal.

5,383,072

DOOR LOCK APPARATUS FOR USE IN A TAPE RECORDER

Chang-woo Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Aug. 25, 1993, Ser. No. 111,502
Int. Cl.[6] G11B *5/008*
U.S. Cl. 360—96.5 **3 Claims**



1. A door lock apparatus for use in a tape recorder in which a door is rotatably installed in an insertion hole, through which a tape cassette is inserted, so as to open and close the insertion hole, said door lock apparatus comprising:

a tape cassette guide, installed at a lower end of said insertion hole, which guides said tape cassette by slidingly contacting against a lower surface of said tape cassette; and

door locking means, installed on said tape cassette guide, which blocks or releases rotation of the door when said door rotates, wherein said tape cassette guide includes first and second through-holes each having an axis, said axes of said first and second through-holes being in alignment with a direction of insertion of said tape cassette against said tape cassette guide; and

further wherein said door locking means includes a release protrusion which extends through and withdraws into said first though-hole, a stopper fixed to said release protrusion below said tape cassette guide and which extends through and withdraws into said second through-hole, a rotational shaft connected to a lower side of said tape cassette guide, and a torsion spring connected to said rotational shaft for elastically biasing said release protrusion and said stopper toward said tape cassette guide,

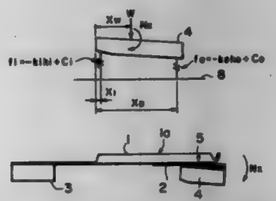
whereby said door is operative to open by the pressing of said release protrusion.

5,383,073

MAGNETIC HEAD SUPPORTING APPARATUS HAVING A FULCRUM POINT OF LOAD SUPPORT OFFSET FROM A SLIDER CENTER IN AN AIR UPSTREAM DIRECTION

Tetsuo Masukawa, Odawara; Masaaki Matsumoto, Higashiyamato; Yokuo Saitoh, Kanagawa; Yasuo Kojima, Odawara; Toshio Suzuki, Chigasaki; Yukimori Umakoshi, and Kiyoji Morita, both of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,699
Claims priority, application Japan, Jul. 23, 1991, 3-205609
Int. Cl.[6] G11B *5/596, 5/60, 21/20*
U.S. Cl. 360—104 **7 Claims**



1. A magnetic head including a head slider having a magnetic transducer element and opposed to a surface of a magnetic recording medium and a retainer member for retaining thereon at least said head slider, thereby said head slider being lifted above said surface of said magnetic recording medium by an air flow generated in accordance with a rotation of said magnetic recording medium, achieving read and write operations of information on said magnetic recording medium, said head comprising: a fulcrum point of load support of said head slider is displaced from a center of said head slider with respect to a longitudinal length thereof toward an air upstream side; and a static moment means is provided to generate a static moment about said fulcrum point of said head slider, wherein during an operation of said magnetic head in said air flow of said magnetic recording medium, a downstream moment imparted to an air downstream side of said head slider by said air flow is greater than an upstream moment imparted to said air upstream side of said head slider by said air flow, and wherein an excess of said downstream moment over said upstream moment is an opposing and offsetting relationship with said static moment such that an angular variation of a surface of said head slider with respect to said surface of said magnetic recording medium is compensated, said angular variation being caused by a position of said fulcrum point.

5,383,074

AUTO-REVERSE MAGNETIC-HEAD UNIT HAVING A FLEXIBLE CONDUCTOR BOARD

Franz Biedermann, and Johann Veigl, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 19, 1992, Ser. No. 963,953
Claims priority, application Austria, Dec. 11, 1991, A 2466/91
Int. Cl.[6] G11B *5/55, 21/08*
U.S. Cl. 360—106 **11 Claims**

1. A magnetic tape apparatus, comprising:

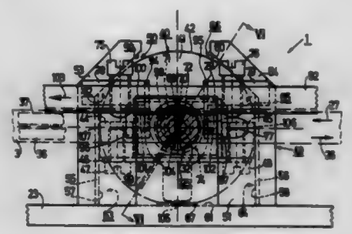
a) a magnetic head unit for scanning a magnetic tape;

b) a head support for carrying said magnetic head-unit;

c) mounting means for rotatably mounting said head support such that said head support is rotatable about an axis of rotation, said head support having a head-end portion carrying said magnetic head unit, said head support extending through said mounting means and terminating at a distal end opposite said head-end, said head support having a duct extending from said magnetic head unit along the length of said support to said distal end; and

d) a flat flexible conductor board extending through said duct along the entire length of said head support, said flexible conductor board having conductor tracks connected at one end to said magnetic head unit, at an opposing end said conductor board having a widened portion having a dimension larger than the diameter of said duct, and

said head support including a slot which axially extends over the entire length of said head support and permits said widened portion of said conductor board to be passed through said slot and duct in a flat, unfolded condition from said head-end portion to said distal end.

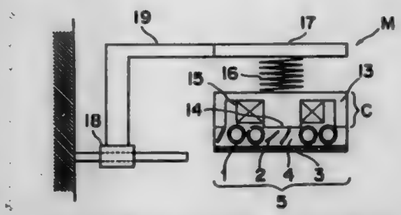


5,383,075

SLIDER BODY WITH EMBEDDED LUBRICANTS AND MAGNETIC BIASING APPARATUS

Kiyoshi Uchida, Yamatotakada, and Norio Miyataka, Kobe, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 28, 1993, Ser. No. 83,924
Claims priority, application Japan, Jun. 29, 1992, 4-170412; Jun. 29, 1992, 4-170413
Int. Cl.[6] G11B *5/187, 5/02*
U.S. Cl. 360—122 **6 Claims**



1. A magnetic biasing apparatus for generating a magnetic field required to record or erase information signals on or from a magneto-optic recording medium, said magnetic biasing apparatus comprising:

a magnetic circuit capable of recording or erasing the information signals on or from the magneto-optical recording medium, said magnetic circuit comprising a magnetic member having a high permeability and a winding wound around said magnetic member, both of said magnetic member and said winding being disposed on an open end of said magnetic circuit; and

a slide member bonded to the open end of said magnetic circuit and comprising a crosslinked setting resin, a first lubricant contained in said setting resin, and a filler embedded in said setting resin, said slide member sliding

relative to said magneto-optical recording medium during recording or reading.

5,383,076

MAGNETIC HEAD DEVICE WITH CLEANING MEANS FOR CLEANING SLIDING SURFACE THEREOF

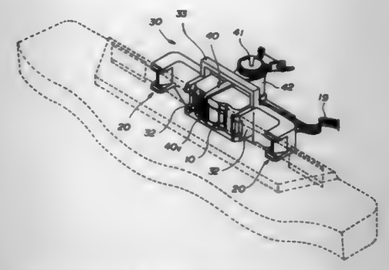
Akio Saito, Kawagoe, and Hideyuki Ikeda, Yamagata, both of Japan, assignors to Pioneer Electronic Corp. and Mitsumi Electric Co., Ltd., Japan

Filed Aug. 26, 1992, Ser. No. 936,093

Claims priority, application Japan, Sep. 6, 1991, 3-254440; Dec. 5, 1991, 3-100037[U]; Dec. 5, 1991, 3-100355[U]; Dec. 5, 1991, 3-100493[U]; Dec. 5, 1991, 3-100494[U]; Dec. 5, 1991, 3-100495[U]

Int. Cl.[6] G11B *5/41*

U.S. Cl. 360—128 9 Claims



1. A magnetic head device comprising:

a magnetic head having an exposed surface with a portion on which a magnetic recording medium slides;

a head holder having a head holding portion for fixing said magnetic head in said head holder so that it does not move with respect thereto, said head holder having at least one guiding portion located at a side of, and spaced apart from, said magnetic head fixed by said head holding portion, said guiding portion guiding a running course of said magnetic recording medium, said head holding portion and guiding portion being formed as integral portions of said head holder;

cleaning means mounted on said head holder for pivotal movement with respect to said head holder about an axis normal to the running course of the magnetic recording medium, said cleaning means being appliable to said magnetic head surface portion on which the magnetic tape slides by said pivotal movement to clean said surface portion; and

said magnetic head having stowage means along said exposed surface in which said cleaning means may be located to remove said cleaning means from the running course of the magnetic tape.

5,383,077

TAPE CASSETTE HAVING TAPE GUIDES MADE OF POLYETHYLENE

Shinya Sato, Miyagi, and Kazuhiko Hatakawa, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 22, 1990, Ser. No. 602,215

Claims priority, application Japan, Nov. 24, 1989, 1-305603; Nov. 29, 1989, 1-310453; Nov. 29, 1989, 1-310454

Int. Cl.[6] G11B *15/60, 23/02;* C08K *3/04*

U.S. Cl. 360—132 12 Claims

	Super Macromolecular Weight Polyethylene Resin Plus Carbon Black	Super Macromolecular Weight Polyethylene Resin Plus PPS Resin Plus Carbon Black
Movement Friction Coefficient	◎	◎
Wear Proof Property	◎	◎
Rigidity	△	○
Molding Dimension Accuracy	△	○
Heat Resistant Property	△	○

1. A tape cassette having tape guides comprised of a mixture of polyethylene-based resin whose molecular weight falls in a range of from 500,000 to 1,000,000 and polyphenyl sulfide resin.

5,383,078

MAGNETIC DISK ASSEMBLY HAVING A HUB WITH A CIRCULAR RECESS EXTENDING CIRCUMFERENTIALLY ALONG AN OUTER PERIPHERAL EDGE THEREOF

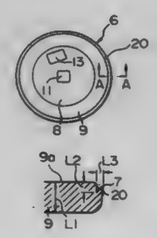
Yoshitake Kato, Mitsukaido; Kazuya Fukunaga, Ibaraki, and Yoshihisa Hitomi, Mitsukaido, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 865,185, Apr. 8, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,604

Claims priority, application Japan, Apr. 10, 1991, 3-103536

Int. Cl.[6] G11B *23/033, 5/82*

U.S. Cl. 360—133 6 Claims



6. A magnetic disk cartridge comprising a cartridge case made of a synthetic resin, and a magnetic disk rotatably accommodated in said case, said magnetic disk comprising a flexible disk-shaped magnetic sheet having a substrate film coated with a magnetic layer formed on at least one side thereof, having therein a central hole and a center hub of a punched metal sheen having generally a cylindrical main body portion fitted in said central hole and an annular flange extending radially outward from one end of said cylindrical main body portion having an upper face and a lower face, said upper face of said flange of said center hub being adhered directly to an inner peripheral portion of a side of said magnetic sheet faced to said upper face of said flange, said center hub having a circular recessed portion in and extending circumferentially along a radially outer peripheral edge of said upper face of said flange, a radically outermost edge of said circular recessed portion being inclusive of a burr of said metal sheet which does not extend beyond said upper face of said flange.

5,383,079

PORTABLE INFORMATION REPRODUCING AND VOICE AMPLIFYING APPARATUS

Hideo Takao, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

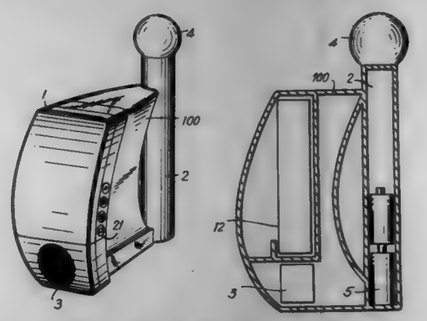
Continuation of Ser. No. 11,620, Jan. 28, 1993, Pat. No. 5,303,109, which is a continuation of Ser. No. 900,523, Jun. 17, 1992, Pat. No. 5,208,717, which is a continuation of Ser. No. 827,544, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 445,655, Nov. 29, 1989, abandoned. This application Apr. 11, 1994, Ser. No. 226,208

Claims priority, application Japan, Mar. 31, 1988, 63-044135; Mar. 31, 1988, 63-044136; Jun. 10, 1988, 63-077497

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[6] G11B *33/12;* H04B *1/20, 1/00;* H04R *27/00*

U.S. Cl. 360—137 9 Claims



1. A portable music information reproducing and voice amplifying apparatus for outputting information from a recording medium and an external voice sound suitable for use as a karaoke device which can be held as a unit in one hand of a user with a microphone thereof facing the user's head, comprising:

a housing having a first side facing in a first direction, a second side facing in a second direction, said first and second sides facing in different directions, a first end between said first and second sides facing a third direction and a second end opposed to said first end;

said microphone for detecting the external voice sound;

means for coupling said microphone to said housing in the region of said first end so that the microphone is joined to the housing to form a unitary structure for movement therewith and is faced essentially in the direction faced by said first end;

recording medium receiving and reproducing means positioned in the housing for receiving the recording medium and reproducing the information on the recording medium;

speaker means for outputting the information from the recording medium receiving and reproducing means and the external voice sound received by the microphone, said speaker means essentially positioned on the second side of the housing so as to be spaced from the microphone so that essentially no feedback occurs a so as to face essentially in a direction away from the directions faced by said first end and said first side; and

a handle essentially mounted on the first side of the housing so that a space is formed between the housing and the handle, said handle being adapted to support the housing and microphone as a unitary structure for karaoke, said handle having at least a first width, said housing having at least a second width, said first width being narrower than said second width, said housing supporting said microphone, said recording medium receiving and reproducing means, said speaker means and said handle to form said unitary structure supportable solely by said handle;

whereby when the entire apparatus is supported solely by the handle, the microphone can face essentially upwardly toward the head of the user and the speaker means can face essentially forwardly away from the user.

5,383,080

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING VOLTAGE LIMITER CIRCUIT

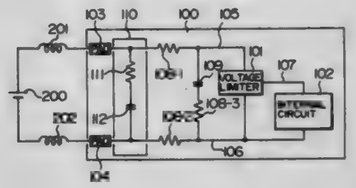
Jun Etoh, Hachioji; Masakazu Aoki, Tokorozawa; Masashi Horiguchi, Kawasaki; Shigeki Ueda, Hachioji; Hitoshi Tanaka, Tachikawa; Kazuhiko Kajigaya, Iruma; Tsugio Takahashi, Ome, and Hiroshi Kawamoto, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corporation, both of Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 917,995

Claims priority, application Japan, Jul. 25, 1991, 3-186100

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—56 25 Claims



1. A semiconductor integrated circuit comprising:

a high-potential input terminal and a low-potential input terminal;

a voltage limiter circuit adapted to be supplied with a supply voltage between said high-potential input terminal and said low-potential input terminal to generate a limited operating voltage smaller than the supply voltage;

an inner circuit adapted to be supplied with said limited operating voltage;

a capacitance connected between said high-potential input terminal and said low-potential input terminal so as to suppress a large variation of a supply current; and

a resistance connected in series to said capacitance, wherein said capacitance is formed by a PN junction in a semiconductor chip.

5,383,081

LIVE INSERTION CIRCUIT

Naofumi Nishikawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1994, Ser. No. 185,413

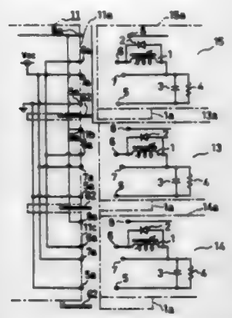
Claims priority, application Japan, Jan. 26, 1993, 5-029755

Int. Cl.[6] H02H *9/06*

U.S. Cl. 361—58 14 Claims

1. A live insertion circuit capable of connecting a load to a power circuit by inserting a connector of a package having the load for carrying out a predetermined operation into a connector of a unit having the power circuit and inserting an inductor between the power circuit and the load at the time of connection, wherein said inductor is a variable inductor and operation means is provided to maintain a high inductance of said vari-

able inductor when the connector of said unit is initially connected with the connector of said package and said operation



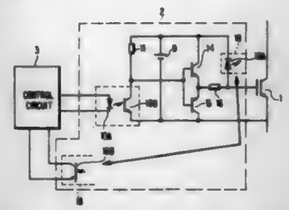
means reduces an inductance of said variable inductor until connection is complete.

5,383,082

OVERCURRENT PROTECTOR FOR POWER ELEMENT

Yuji Nishizawa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,381
Claims priority, application Japan, May 15, 1991, 3-110260
Int. Cl.[6] H03K *17/08*
U.S. Cl. 361—93 **17 Claims**



1. An overcurrent protector for a power element, having a gate, emitter and collector and being connected in a circuit between a power supply and a load circuit, comprising:

a control circuit for outputting a control signal for providing an ON/OFF control of said power element, and

control signal amplifier means for receiving said control signal and supplying said control signal to the gate of said power element, said amplifier means being isolated from said control circuit and said power supply.

5,383,083

PROTECTIVE APPARATUS FOR POWER TRANSISTOR

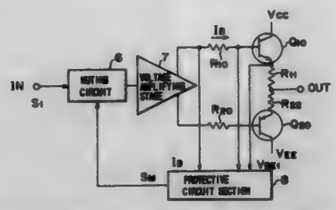
Ryuichi Shinoda; Jun Honda, and Kunihiro Miyata, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,873
Claims priority, application Japan, May 19, 1992, 4-126185; May 19, 1992, 4-126186
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—103 **18 Claims**

1. A protective apparatus for a power transistor, comprising:

a detecting circuit for directly detecting a base-emitter voltage of said power transistor;

a protective circuit for producing an output signal when an output voltage of said detecting circuit is lower than a predetermined level; and



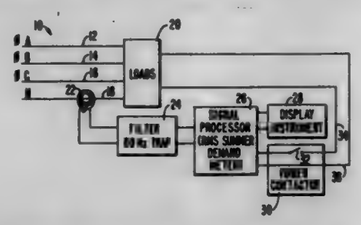
a muting circuit for muting an input signal to said power transistor in response to the output signal of said protective circuit.

5,383,084

CIRCUIT ANALYZING SYSTEM

Bernard Gershen, Centerport; Alfred J. Lombardi, LaGrangeville, both of N.Y.; James E. Meehan, Ste. Veronique, Canada, and Saul Rosenbaum, East Meadow, N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Jan. 8, 1993, Ser. No. 1,885
Int. Cl.[6] H02H *3/26*
U.S. Cl. 361—113 **19 Claims**



1. A circuit analyzing system comprising:

means for extracting current from one of the phase or neutral conductors of a 3 phase line;

filter means connected to said means for extracting current and functioning to substantially block the passage of fundamental frequency current, and to substantially pass harmonic frequency currents therethrough; and

signal processing means connected to an output of said filter means and functioning to add said harmonic frequency currents together and to generate a signal representative of the total amount of harmonic frequency current.

5,383,085

ASSEMBLY FOR THE DISCHARGE OF ELECTRIC OVERVOLTAGES

Jürgen Boy, and Axel Hahndorff, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

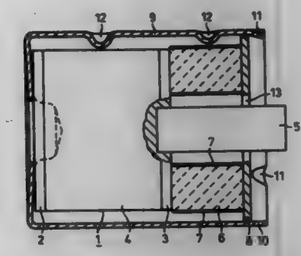
Filed Sep. 28, 1993, Ser. No. 128,421
Claims priority, application Germany, Sep. 28, 1992, 4232917; Apr. 21, 1993, 4313655; May 28, 1993, 4318363; Sep. 10, 1993, 4331215
Int. Cl.[6] H02H *9/06*
U.S. Cl. 361—119 **12 Claims**

1. An assembly for the discharge of electric voltages comprising:

a housing, including a spacer along an inside diameter;

an over-voltage arrester including a tubular ceramic insulator and first and second electrodes arranged at opposite ends of said tubular ceramic insulator, said second electrode having an axially extending cylindrical connecting pin; and

a voltage-limiting device being electrically connected in parallel with said over-voltage arrester and having a response voltage greater than a response voltage of said over-voltage arrester, said voltage-limiting device being placed on said second electrode of said over-voltage arrester and comprising a metal oxide varistor in the form of a hollow cylinder having metallized end sides;



wherein said over-voltage arrester and said voltage emitting device are arranged concentrically in the housing with said spacer centering said over-voltage arrester, and

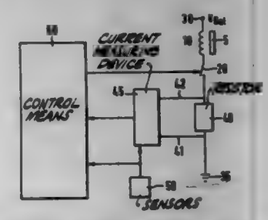
wherein said ceramic insulator, said first and second electrodes and said hollow-cylindrical varistor having approximately the same outside diameter which is less than said inside diameter of said container.

5,383,086

SYSTEM AND METHOD FOR TRIGGERING AN INDUCTIVE CONSUMER

Juergen Wietelmann, Ditzingen; Thomas Rueping, Lenningen; Norbert Mueller, Tamm, and Wolfgang Duehlmeyer, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 2, 1992, Ser. No. 984,161
Claims priority, application Germany, Dec. 5, 1991, 4140043
Int. Cl.[6] H01H *47/32*
U.S. Cl. 361—152 **14 Claims**



1. A system for triggering an inductive consumer and for determining an effective current flowing through the inductive consumer, comprising:

a switching circuit element, the switching circuit element coupling the inductive consumer to a voltage source;

means for selectively triggering the switching circuit element to switch the switching circuit element between a closing operation and an opening operation;

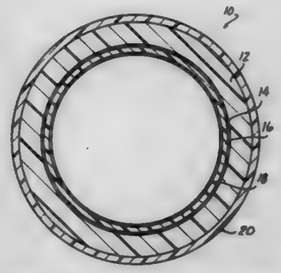
means for determining a first current flow through the inductive consumer a predetermined time period after the closing operation, for determining a second current flow through the inductive consumer a predetermined time period before the opening operation, and for determining an effective current flow through the inductive consumer based upon the first and second current flows.

5,383,087

MULTI-LAYER FUEL AND VAPOR TUBE

David L. Noone, Southfield, and Frank L. Mitchell, Rochester, both of Mich., assignors to ITT Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 868,754, Apr. 14, 1992. This application Jun. 11, 1992, Ser. No. 896,824
Int. Cl.[6] F16L *11/04, 11/127*
U.S. Cl. 361—215 **18 Claims**



1. A layered tubing for use in a motor vehicle, the tubing comprising:

a thick flexible outer tubing layer having a given thickness and an inner and an outer face, the outer tubing consisting essentially of an extrudable thermoplastic having an elongation value of at least 150% and an ability to withstand impacts of at least 2 foot-pounds at temperatures below about −20° C.;

an intermediate bonding layer bonded to the inner face of the thick outer layer, the bonding layer consisting essentially of an extrudable melt processible thermoplastic capable of sufficiently permanent laminar adhesion to the inner face of the outer tubing;

an interior layer bonded to the intermediate bonding layer, the interior layer consisting essentially of an extrudable, melt-processible thermoplastic material capable of sufficiently permanent laminar adhesion with the intermediate bonding layer, the melt-processible thermoplastic which is chemically dissimilar to the thermoplastic employed in the thick outer layer, the chemically dissimilar thermoplastic being resistant to permeation by and interaction with short-chain aliphatic and aromatic hydrocarbon compounds; and

an innermost electrostatic dissipation layer integrally bonded to the interior layer, the electrostatic dissipation layer consisting of an extrudable, melt-processible thermoplastic material capable of sufficiently permanent laminar adhesion with the intermediate bonding layer and of dissipating electrostatic energy, the electrostatic dissipation capacity being in a range between about 10^{-4} to 10^{-9} ohm/cm^2.

5,383,088

STORAGE CAPACITOR WITH A CONDUCTING OXIDE ELECTRODE FOR METAL-OXIDE DIELECTRICS

Jonathan D. Chapple-Sokol, Poughkeepsie; Richard A. Conti, Mt. Kisco, both of N.Y., and Jeffrey P. Gambino, Gaylordsville, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

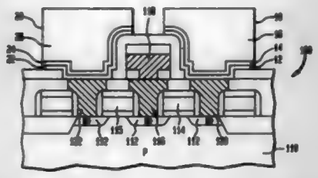
Filed Aug. 9, 1993, Ser. No. 103,620
Int. Cl.[6] H01G *1/01*
U.S. Cl. 361—305 **4 Claims**

3. A capacitor comprising:

a) a bottom electrode comprising a conductive oxide deposited upon a substrate by chemical vapor deposition, the conductive oxide consisting of zinc oxide (ZnO), said conductive oxide further comprising a conductive oxide selected from the group consisting of boron (B) doped zinc oxide (ZnO) and fluorine (F) doped zinc oxide (ZnO);

b) a dielectric layer deposited upon said conductive oxide by

chemical vapor deposition, said dielectric layer having a high dielectric constant and being selected from the group



consisting of tantalum oxide (Ta_2O_5), strontium titanium oxide ($SrTiO_3$), and barium titanium oxide ($BaTiO_3$); and

c) a counter electrode formed upon said dielectric layer.

5,383,089

MIXED-VALENCE COMPLEX ELECTRODES FOR A RECHARGEABLE ELECTRICAL ENERGY STORAGE DEVICE

Melanie Williams, Deerfield Beach, and James L. Davis, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 10, 1993, Ser. No. 58,849
Int. Cl.[6] H01G *9/00*
U.S. Cl. 361—502 **19 Claims**

18. An electrical energy storage device comprising:

a rechargeable electrochemical cell having two electrodes and an electrolyte, at least one of the electrodes having a surface comprising an electrochemically active material that provides electron delocalization or transfer between the electrolyte and the electrochemically active material;

the electrodes separated by a barrier that passes ions but not electrons; and

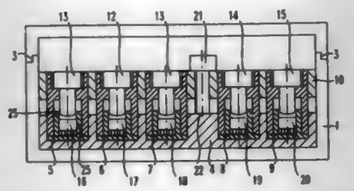
the electrochemically active material comprising one or more mixed-valence complexes containing at least two metal atoms and at least one ligand attached to the metal atoms, and having metal-to-metal bonds where the metals exist in multiple oxidation states such that electron transfer between atoms in the complex or between discrete complexes can occur.

5,383,090

ELECTRICAL ENERGY DISTRIBUTION SYSTEM

Hasso Freundner, Halver, and Walter Grabowski, deceased, late of Olpe, Germany by Erika Grabowski, Thomas Grabowski, Michael Grabowski, heirs , assignors to Dorma GmbH & Co. KG, Ennepetal, Germany

Filed Sep. 28, 1993, Ser. No. 127,957
Claims priority, application Germany, Mar. 28, 1991, 4110251; WIPO, Feb. 5, 1992, PCT/DE92/00092
Int. Cl.[6] H02B *1/20*
U.S. Cl. 361—624 **4 Claims**



1. A busbar system for distributing electrical energy, said busbar system comprising:

busbar conductor means for conducting electrical energy;

said busbar conductor means having a first surface thereon, and a second surface thereon opposite to said first surface;

tap means for providing a branch electrical pathway from said busbar conductor means, said tap means being engagable and disengagable with said busbar conductor means;

said tap means comprising:

a first projection extending therefrom;

said first projection having a first surface thereon, said first surface of said first projection being adjacent to and in contact with said first surface of said busbar conductor means;

means for pressing said first surface of said busbar conductor means into engagement with said first surface of said first projection of said tap means, said means for pressing being spaced apart from said first projection of said tap means, and said means for pressing being disposed adjacent said second surface of said busbar conductor means;

said means for pressing comprising a rotatable portion;

said rotatable portion comprising:

a first position adjacent said second surface of said conductor means, said rotatable portion in said first position comprising a first surface portion for being spaced apart from said second surface of said conductor means; and

a second position adjacent said second surface of said conductor means, said rotatable portion in said second position comprising a second surface portion movably pressing said first surface of said conductor means into engagement with said first surface of said first projection of said tap means upon rotation of said rotatable portion;

means for rotating said rotatable portion between said first and second positions;

said busbar conductor means having a first end and a second end;

said second end of said busbar conductor means comprises a base portion extending substantially perpendicularly away from said first surface of said busbar conductor means;

said first end of said busbar conductor means comprises a projection extending substantially perpendicularly away from said second surface of said busbar conductor means;

said first projection of said tap means has a first end and a second end;

said first end of said first projection of said tap means being disposed adjacent said base portion of said second end of said busbar conductor means;

said rotatable portion comprises a third surface portion movably engaging and pressing against said projection of said first end of said busbar conductor means upon said rotating of said rotatable portion from said first position to said second position to pull said base portion of said second end of said busbar conductor means into tight engagement with said first end of said first projection of said tap means;

said busbar conductor means comprises first and second leg portions disposed substantially parallel to one another;

said first leg portion and said second leg portion each comprise a first surface of said busbar conductor means, a second surface of said busbar conductor means, a first end of said busbar conductor means and a second end of said busbar conductor means;

said second surfaces of said first and second leg portions are disposed towards one another;

said tap means comprises a second projection extending therefrom, said second projection being substantially parallel to and spaced apart from said first projection;

said first surface of said first projection of said tap means being disposed adjacent said first surface of one of said first and second leg portions of said busbar conductor means;

said second projection of said tap means comprises a first surface thereon, said first surface of said second projection of said tap means being disposed adjacent said first surface of the other of said first and second leg portion;

said means for pressing being disposed between said second surfaces of said first and second leg portions of said busbar conductor means;

said rotatable portion of said means for pressing movably pressing both of said first surfaces of said first and second leg portions into engagement with said first surfaces of said first and second projections of said tap means upon rotation of said rotatable portion from said first position to said second position;

said first end of said first and second leg portions of said busbar conductor means each comprise said projection extending substantially perpendicularly away from said second surface of said busbar conductor means;

said second end of each of said first and second leg portions is rigidly fixed with respect to said second end of the other of said first and second leg portions;

said second end of each of said first and second leg portions is rigidly disposed in an insulating material;

said tap means comprises a U-shaped portion, said U-shaped portion having a base means with said first and second projections extending therefrom;

said busbar conductor means comprises a U-shaped portion, said base portion at said second end of said first and second leg portions extends substantially perpendicularly between said first surfaces to connect said first and second leg portions;

said first and second leg portions are disposed within and substantially surrounded by said insulating material, said first surfaces of said first and second leg portions being spaced apart from said insulating material to form a space between said first and second leg portions and said insulating material;

said first and second projections of said tap means being disposed in said space between said first and second leg portions and said insulating material;

said means for pressing comprises shaft means extending from said means for rotating said rotatable portion through said base means of said U-shaped portion of said tap means to said rotatable portion;

said first and second leg portions of said busbar conductor means are disposed spaced apart a first distance from one another;

said first and second leg portions of said busbar conductor means are disposed spaced apart a first distance from one another;

said rotatable portion comprises two first surface portions disposed substantially parallel to and opposite one another, said two first surface portions being parallel to and spaced apart from said second surfaces of said first and second leg portions in said first position of said rotatable portion;

said rotatable portion has a width between said first surface portions, said width being less than said first distance;

said rotatable portion comprises two second surface portions disposed opposite to one another, said two second surface portions movably pressing on said second surfaces of said first and second leg portions to press said first surfaces of said first and second leg portions into engagement with said first surfaces said first and second projections of said tap means;

each of said second surface portions of said rotatable portion being outwardly curved away from the other of said second surfaces;

said rotatable portion has a first end disposed adjacent said base portion of said busbar conductor means, and a second end disposed adjacent said projections of said first end of said first and second leg portions, said second end comprising said third surface portion, said third surface portion comprises a curvilinear surface disposed about said shaft means;

said third surface portion being curved convexly along said first surface portion and concavely along said said second surface portion;

said rotatable portion has a first height from said first end to said second end along first surface portion, and a second height from said first, end to said second end along said second surface portion, said second height being greater than said first height to engage said third surface with said projections of said leg portions and pull said first end of said first and second projections of said tap means into engagement with said base portion of said busbar conductor means upon rotation of said rotatable portion from said first position to said second position;

said insulating material comprises a thermosetting plastic molded about said base portion of said busbar conductor means;

said means for rotating said rotatable portion comprises a recessed configuration configured for receiving at least one of:

a screwdriver, and

a hexagonal driver

therein for rotating said means for rotating;

said system further comprises:

at least three of said busbar conductor means;

each of said at least three busbar conductor means being spaced apart a distance from one another and rigidly affixed within the insulating material;

said at least three busbar conductor means comprising:

a power conductor;

a neutral conductor; and

an equipment grounding conductor;

at least three of said tap means, one each of said tap means corresponding to one each of said conductor means;

said at least three tap means being rigidly disposed within a plug-in module at a fixed spacing therebetween, said at least three tap means being molded into an insulating material to provide the fixed spacing between ones of said at least three tap means;

said fixed spacing between said at least three tap means substantially corresponding to said spacing distance of said at least three busbar conductor means;

a housing at least partially enclosing said at least three conductors, said housing having an open side thereof;

said plug-in module being disposable within said housing through said housing open side to substantially simultaneously contact said at least three tap means with said at least three busbar conductor means;

said plug-in module comprising spacing means for spacing said plug-in module a predetermined fixed distance from said at least three busbar conductor means;

said plug-in module comprising means for attaching a corresponding electrical device to said at least three tap means;

said corresponding electrical device comprising at least one of:

an electrical wire;

an electrical switch device;

a fault interrupt device;

outlet means for providing a further electrical connection;

a branch busbar conductor system;

said rotatable portion is rigidly connected to said shaft means of said means for pressing to rotate with said shaft means;

said tap means is H-shaped, said U-shaped portion of said tap means comprises a portion of said H-shaped tap means, and said tap means further comprises at least two additional projecting portions extending from said base portion thereof in a direction opposite to said first and second projections;

said means for rotating being disposed between said at least two additional projections; and

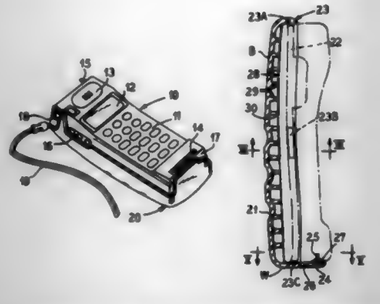
said first end of said rotatable portion is conical about said shaft means for guiding said first end of said rotatable portion into position between said second surfaces of said first and second leg portions of said busbar conductor means upon insertion of said plug-in module into said housing.

5,383,091

GRIP AND PROTECTIVE CASING FOR CELLULAR TELEPHONE

Rusty B. Snell, Hawthorne, N.J., assignor to Sony Electronics, Inc., Park Ridge, N.J.

Filed Feb. 22, 1993, Ser. No. 20,418
Int. Cl.[6] H05K 5/00
U.S. Cl. 361—679 **18 Claims**



9. A combined hand-held electronic telecommunications device and grip therefor, comprising:

telecommunications device housing having a front operational face with sensorial features with which the operator interfaces, an opposed back face, and transversely extending side walls between said front and back faces;

casing having a base, a continuous wall surface surrounding said base and upstanding from said base and an open top into which said back face is received; and

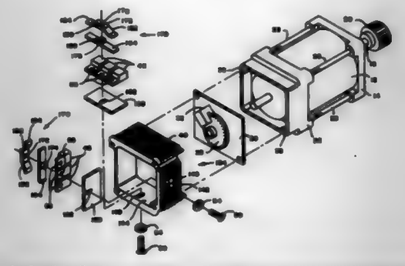
a securement member projecting inwardly from said casing wall surface for frictionally engaging at least one side wall of said telecommunications device housing, such that said casing overlies said back face and all side walls but avoids contact with said front face.

5,383,092

DEVICE FOR MOUNTING A PLURALITY OF TRANSISTORS

Daniel J. Liberati, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 990,136, Dec. 14, 1992. This application Mar. 21, 1994, Ser. No. 210,660
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—704 **4 Claims**



1. A device for connecting a plurality of transistors (46) to a flat surface (144) of a supporting member (134) in side-by-side relationship on said flat surface, said flat surface of said supporting member having an aperture (148), each of the transistors having a flat mounting tab (56), the plurality of transistors having a first transistor and a plurality of second transistors, the first transistor having an aperture (58) in the mounting tab, the first transistor located central relative to the second transistors and the aperture in the first transistor in axial alignment with said aperture in said supporting member, said device comprising:

a screw (50) having a free end,

a single connecting means (170) for connecting the plurality of transistors to said supporting member, said single connecting means having:

a central flat portion (178) having an aperture (172) adapted to receive said free end of said screw in threaded engagement therewith,

opposed laterally extending transition portions (182) connected to said central flat portion, said transition portions are bent inward slightly toward said flat surface of said supporting member, and

opposed laterally extending outer flat portions (184) connected to said transition portions, respectively, said outer flat portions being positioned to bias the mounting tabs of the plurality of second transistors toward said supporting member,

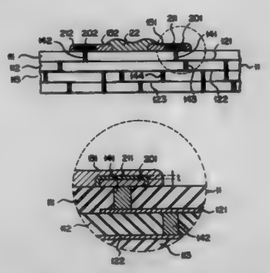
said free end of said screw passing through said aperture in said supporting member and adapted to pass through the aperture in the first transistor and in threaded engagement with said single connecting means, whereby said single connecting means functions as a nut for retaining said first transistor and as a spring hold down clip for retaining said plurality of second transistors.

5,383,093

HYBRID INTEGRATED CIRCUIT APPARATUS

Takashi Nagasaka, Anjo, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 275,710, Nov. 28, 1988, abandoned, which is a continuation of Ser. No. 50,033, May 15, 1987, abandoned. This application Jul. 12, 1993, Ser. No. 89,606
Claims priority, application Japan, May 19, 1986, 61-114415; Mar. 26, 1987, 62-72856
Int. Cl.[6] H05K 7/10
U.S. Cl. 361—771 **15 Claims**



1. A hybrid integrated circuit apparatus, comprising:

a sintered substrate having a circuit portion formed on a surface thereof;

porous conductive material layers formed on said surface of said substrate, each said layer being connected to said circuit portion, said porous conductive material layers being formed of a conductive material having a melting point higher than a sintering temperature of said substrate, said porous conductive material layers covering portions of said sintered substrate;

plated layers made of copper and formed directly on a surface of said porous conductive material layers, said plated layers having a thickness in the range of from 2 to 4 μm and covering said surface of said porous conductive material layer to thereby prevent exposure of said surface, wherein particles of copper enter said porous conductive layer, and said plated layers extend to the surface of said sintered substrate; and

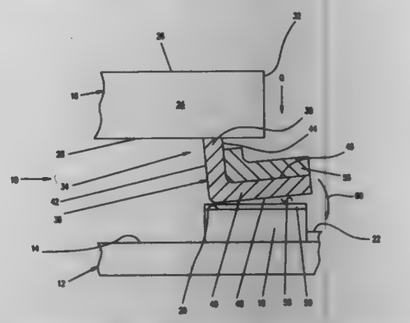
conductor layers formed on said copper-plated layers to serve as connecting terminals for circuit elements.

5,383,094

CONNECTION LEAD STUCTURE FOR SURFACE MOUNTABLE PRINTED CIRCUIT BOARD COMPONENTS

Howard S. Estes, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Oct. 28, 1993, Ser. No. 144,454
Int. Cl.[6] H01R 9/00
U.S. Cl. 361—773 **14 Claims**



1. An electronic component conductively connected to spaced apart portions of surface circuitry on a side of a generally planar printed circuit board substrate portion, said electronic component comprising:

a body portion;

a spaced plurality of elongated, electrically conductive lead members secured to said body portion, projecting outwardly therefrom, and having longitudinal portions positionable in aligned, closely adjacent relationships with said spaced apart surface circuitry portions and being solderable thereto, each of said longitudinal portions having opposite first and second sides and a first coefficient of thermal expansion; and

a deflection material fixedly secured to said first sides of said longitudinal portions of said lead members and having a second coefficient of thermal expansion substantially different than said first coefficient of thermal expansion,

said deflection material, when said longitudinal portions of said lead members are placed in said closely adjacent relationships with said surface circuitry portions and receive soldering heat, being operative to thermally deflect said longitudinal portions of said lead members toward said surface circuitry portions.

5,383,095

CIRCUIT BOARD AND EDGE-MOUNTABLE CONNECTOR THEREFOR, AND METHOD OF PREPARING A CIRCUIT BOARD EDGE

Iosif Korsunsky, Harrisburg; Dimitry G. Grabbe, Middletown, and Robert C. Klotz, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 29, 1993, Ser. No. 145,017
Int. Cl.[6] H01R 23/68, 29/00; H05K 3/30
U.S. Cl. 361—785 **23 Claims**

1. A circuit board arranged to receive an electrical collector mounted to an edge thereof, said connector at least including contacts having posts adapted to be interconnected to circuitry on said circuit board, said circuit board comprising:

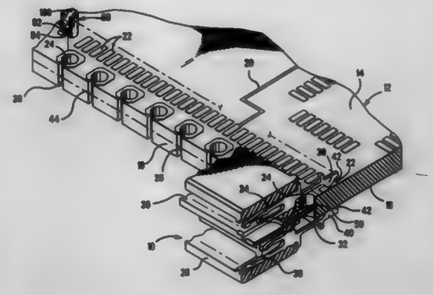
(a) an edge having an edge surface;

(b) two opposite major surfaces extending from said edge surface at least one on which circuitry is defined;

(c) a plurality of plated through holes of selected radius adjacent and spaced inwardly from said edge surface, substantially perpendicular to said major surfaces and in electrical engagement with circuitry on said circuit board, with centers spaced from said edge surface a distance greater than the radius thereof; and

(d) a plurality of board openings formed in said edge of said circuit board extending from one of said two major surfaces at least toward the other major surface, wherein each said board opening intersects a respective one of said through holes, with each said board opening having a dimension along the edge surface and parallel to the major surfaces an least less than the diameter of said plated through holes,

wherein each of said board openings is adapted to receive a respective one of said pests so than the axis of said one post is generally parallel with and between said two major surfaces and in electrical engagement with its respective plated through hole.

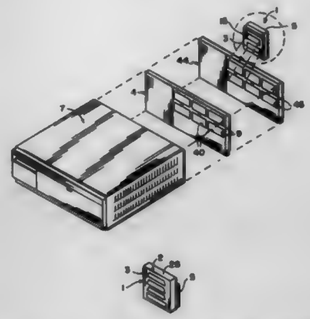


5,383,096

I/O EXPANSION BOX

Matthew C. Benson, Fitchburg, and Laurence M. Mazzone, Tewksbury, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 3, 1993, Ser. No. 56,552
Int. Cl.[6] H05K 9/00
U.S. Cl. 361—816 **11 Claims**



1. An I/O expansion box for increasing the number of electrical I/O ports to an existing computer chassis comprising:

a bottom including a base plate having side walls that extend laterally away from the base plate to form a recess, the base plate having openings for cables from the computer chassis to pass therethrough, the base plate further having lips at the opening to attach the bottom at an I/O port on the chassis, the lips extending outwardly of the base plate away from the recess and shaped for clipped attachment to the I/O port on the chassis, one of said side walls having slots therein, a multiplicity of said side walls having tabs thereon, some of said multiplicity of side walls having tabs further having clips thereon;

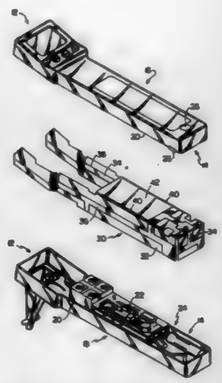
a cover sized to fit on the bottom and including a top having side walls that extend laterally away from the top to form a recess, the top having openings therein for placement of electrical cable connectors, the number of openings in the top being greater than the number of openings in the base plate, one of said side walls of the cover having pivot points at an edge thereon for mating with the slots of the one of said side walls of the base plate, another of said side walls of the cover having openings for mating with the clips of the another side wall of the base plate to hold the bottom and the cover together when they are brought together to close the I/O expansion box.

5,383,097

CONDUCTIVE PATH ESD SHIELD

Paul DeLucia, Baldwinsville, and Brian D. Stout, Homer, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Oct. 27, 1993, Ser. No. 141,572
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—816 **11 Claims**



11. Conductive path ESD shield for protecting components sensitive to high voltage discharge that are located within a housing that has predetermined electrostatic leakage regions, the shield comprising:

a thin sheet of insulative barrier material of high electrical strength and dimensioned to fit within said housing, including a first portion that corresponds in location to said components and a second portion that corresponds in location to said predetermined leakage regions, but with said first portion being free of said conductive material so that electrostatic discharge entering said housing passes harmlessly along said conductive path and is kept clear of said first portion and avoids said components;

wherein said sheet of barrier material is creased at a predetermined fold line to fit inside said housing, and said conductive path is disposed midway between the fold line and an edge of the sheet to define a zone without said conductive material between said conductive path and said edge.

5,383,098

SHIELD ASSEMBLY

Scott T. Ma, Margate, and William C. Phelps, III, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 762,129, Sep. 19, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 959,501
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—818 **8 Claims**

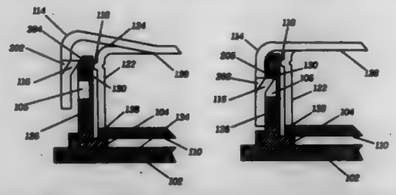
1. A shielded electronic assembly, comprising:

a chassis having side walls selectively along its perimeter, the side walls having a plurality of recess locations and bottom portions;

a shield member having a first surface, the shield member further having side walls substantially along the perimeter of the first surface;

a printed circuit board disposed between the chassis and shield member; and

the chassis side walls having inner and outer surfaces, the chassis side walls further defining a cavity area upon which the printed circuit board is placed and the chassis further including support ledges located within the cavity



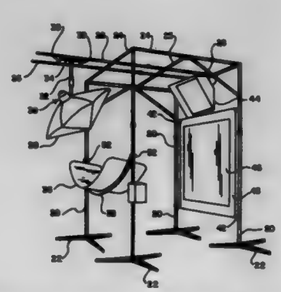
area for supporting the printed circuit board, the shield member further including a plurality of "L-shaped" cantilevered spring finger catches, the spring finger catches extend in front of the outer surface of the chassis side walls and latch on to the chassis side walls, thereby securing the shield member to the chassis and causing the bottom portions of the shield member side walls to retain the printed circuit board against the chassis when the spring finger catches are latched to the chassis side walls, the spring finger catches being resilient for compensating for tolerance variations in the shielded electronic assembly.

5,383,099

PORTABLE PHOTOGRAPHY BOOTH AND IMPROVED LIGHT REFLECTOR ASSEMBLY

Larry D. Peters, 314 N. Main St., London, Ohio 43140

Filed Dec. 14, 1992, Ser. No. 990,032
Int. Cl.[6] G03B *15/06*
U.S. Cl. 362—18 **11 Claims**



1. A photography lighting assembly for taking photographs of the upper torso and face of a human or animal subject comprising in combination;

a) a light reflecting surface defining a cylindrical segment having an arc length greater than its height, said cylindrical segment generated about a selected radius approximately equal to a distance measured between the midpoint of said curved reflecting surface and a predetermined position for locating the face of the subject to be photographed, said reflecting surface being inclined toward the predetermined position of said subject's face at a selected angle relative to the horizontal;

b) a light source disposed in vertically spaced relationship to said reflecting surface at a distance approximately equal to the selected radius of curvature of said reflecting surface and at approximately the same distance from the face of the subject to be photographed.

5,383,100

MULTI-CHANNEL TUBULAR DISPLAY PACKAGE

J. Peter Kikos, 1111 W. El Camino Real, Ste. 109, Sunnyvale, Calif. 94087

Filed Aug. 2, 1991, Ser. No. 739,885
Int. Cl.[6] F21K *2/00*
U.S. Cl. 362—34 **46 Claims**



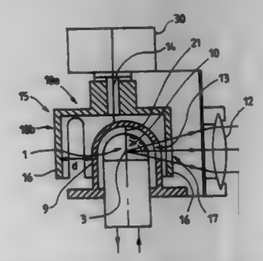
1. A tubular display package comprising an elongated substantially solid light transmitting plastic tube, said tube having a longitudinal axis and a radial axis, and a plurality of side-by-side channels formed and extending longitudinally within said tube, said channels being permanently closed at their ends to form an interior volume for containing a light affecting material within said channels, said plastic tube completely surrounding said channels to form a plurality of light paths along said radial axis substantially throughout its longitudinal axis, wherein said channels comprise means to emit light predominately in the radial direction.

5,383,101

DEVICE FOR GENERATING RADIATION

Heimo Keränen, Oulu, Finland, assignor to Rautaruukki Oy, Oulu, Finland

PCT No. PCT/FI93/00103, § 371 Date Oct. 26, 1993, § 102(e) Date Oct. 26, 1993, PCT Pub. No. WO93/19351, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 19, 1993, Ser. No. 137,157
Claims priority, application Finland, Mar. 20, 1992, 921220
Int. Cl.[6] F21V *21/30*; G01J *1/00*
U.S. Cl. 362—35 **10 Claims**



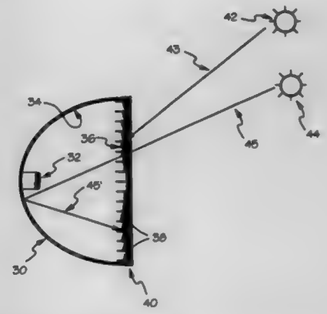
1. A device for generating radiation, which device comprises an electrically operated radiation source (**1**) to be connected to a power source (U, I), a means (**2**) for regulating a current of the radiation source (**1**) and an at least partly curvilinearly symmetric cap-like reflector means (**9**), which reflector means (**9**) is positioned round the radiation source (**1**) in such a way that the radiation source (**1**) is situated mainly in a centre of curvature (**10**) of the reflector means (**9**) or in the vicinity thereof and the cap-like reflector means surrounds the radiation source along a wide sector, the cap-like reflector means (**9**) comprising an opening (**13**) for directing radiation out of the reflector means (**9**) towards a collecting optics (**12**) positioned in the vicinity of the opening (**13**) and the size of the opening (**13**) being arranged to limit the outcoming radiation mainly only to the collecting optics (**12**), which device additionally comprises a modulator means (**15**) rotatable about a rotating axis thereof and including interrupting means (**16** and **17**) for modulating the radiation coming from the radiation source (**1**) outside the reflector means (**9**) by interrupting the propagation of the radiation, characterized in that the modulator means (**15**) is cup-like and comprises a bottom portion (**18***a*), at which the modulator means (**15**) can be rotated, and a substantially circular wall portion (**18***b*), which wall portion (**18***b*) comprises interrupting means (**16** and **17**) and that the cup-like modulator means (**15**) is positioned round the cap-like reflector means (**9**) in such a way that, when rotating the modulator means (**15**), the wall portion (**18***b*) together with its interrupting means (**16** and **17**) are arranged to rotate along a substantially circular periphery (**19**) round the cap-like reflector means (**9**).

5,383,102

ILLUMINATION APPARATUS AND REFLECTION CONTROL TECHNIQUES

Peter W. J. Jones, Belmont, Mass., assignor to Tenebraex Corporation, Boston, Mass.

Filed Nov. 25, 1992, Ser. No. 981,375
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—61 **26 Claims**



1. A light device comprising:

a light source;

a light transmitting lens positioned in front of said light source and having a substantially non-opaque front surface and a light receiving rear surface having a plurality of lens or prism elements, light received from said light source at the rear surface of said lens being transmitted through substantially the entire non-opaque front surface of said lens;

a reflective surface associated with said light source for projecting light from said light source to the rear surface of the lens and outwardly through said lens to be transmitted therefrom;

an array of substantially tubular elements being at least partially embedded in the rear surface of said lens whereby, when said light source is not operative, the front surface of the light device appears as a substantially opaque surface.

5,383,103

FLASHLIGHT WAND ATTACHMENT

Ricky C. Pasch, 915 W. County B2, Roseville, Minn. 55113, and David R. Thomas, 10105 152nd St. North, Hugo, Minn. 55038

Filed Sep. 21, 1993, Ser. No. 124,724
Int. Cl.[6] F21L *15/00*
U.S. Cl. 362—102 **13 Claims**

1. A wand attachment for a flashlight, including a handle portion having a first diameter, and an axially aligned lamp

housing having a second diameter larger than the first diameter, comprising:

a wand member having a generally conical portion and proximal and distal ends;

an opposing member; and



means for attaching the wand member to the opposing member when the wand member is disposed in engagement, at said proximal end, with one axial end of the flashlight lamp housing, having a central longitudinal axis, and the opposing member is disposed in engagement with an opposite axial end of the lamp housing so that the wand attachment is secured to the flashlight.

5,383,104

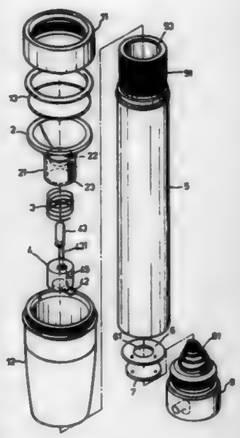
RENOVATED FLASHLIGHT

Hsien-Te Hou, No. 5, Lane 279, Chung Cheng Rd., Yung Kang City, Tainan Hsien, Taiwan, Prov. of China

Filed Jun. 15, 1993, Ser. No. 76,638

Int. Cl.[6] F21L *9/00*

U.S. Cl. 362—202 **5 Claims**



1. A flashlight comprising:

a) a generally cylindrical casing defining a battery compartment having a first end and a second end, the casing configured to receive at least one battery having positive and negative terminals in the battery compartment;

b) a first electrical conductor located adjacent to the first end of the casing and configured so as to electrically contact the positive terminal of a battery located in the battery chamber;

c) a second electrical conductor having a portion located adjacent to the first end of the casing and configured so as to electrically contact the negative terminal of a battery located in the battery chamber;

d) a barrel having a reflector and a lens attached thereto;

e) a bulb assembly having a bulb attached to a conducting means, and first and second potential plates electrically connected to terminal means of the bulb and extending from the conducting means;

f) a pair of slots and an aperture defined by the reflector;

g) a pair of protuberances extending from the conducting means and through the slots such that the bulb assembly may move axially within the aperture with respect to the reflector between a first position wherein the conducting means is closest to the reflector and a second position wherein the conducting means extends away from the reflector;

h) spring means operatively located between the conducting means and the reflector so as to normally bias the conducting means toward its second position; and,

i) attachment means attaching the barrel to the first end of the casing such that rotation of the barrel relative to the casing causes axial movement of the barrel relative to the casing in a direction along a longitudinal axis of the casing such that the conducting means can be moved between a position wherein the first and second potential plates are in electrical contact with the first and second electrical conductors, and a position wherein both first and second potential plates are out of contact with the first and second electrical conductors.

5,383,105

LAMP FOR SURGICAL ILLUMINATION WITH AUTOMATIC ADJUSTMENT OF THE CONCENTRATION OF LIGHT RAYS ON OPERATING FIELD

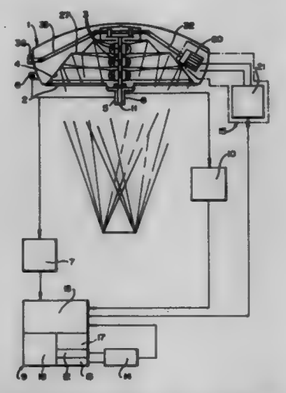
Gerard Agut, Ugias, France, assignor to STE Distributon Materiel Chirurgical (S.D.M.C.)(S.A.), Toulouse, France

Filed Nov. 24, 1992, Ser. No. 980,918

Claims priority, application France, Nov. 25, 1991, 91 14622

Int. Cl.[6] A61C *13/00*

U.S. Cl. 362—285 **23 Claims**



1. A lamp for surgical illumination, comprising:

a hollow lamp body fixedly mounted to a carrier structure, said hollow lamp body including an opening closed off by a transparent panel;

at least one light source fixed to a support structure and at least one reflector positioned in optical relation with said at least one light source mounted within said lamp body for reflecting light rays transmitted by said at least one light source toward a surgical operating field to illuminate the operating field so that light rays pass through said transparent panel before reaching the operating field;

at least one manual gripping device associated with said lamp body to enable manual displacement of said lamp body for adjusting the position of said lamp body with respect to the operating field;

said at least one light source and said at least one reflector being displaceably mounted within said hollow lamp body for movement with respect to one another;

means for measuring luminous intensity of the light reflected onto the operating field, said means for measuring including a device sensitive to light which is positioned facing the operating field and at a predetermined distance from the operating field, wherein, upon receiving reflected light, said means for measuring sends an electrical signal, the voltage of which is representative of the value of the luminous intensity of the light that said sensitive device receives from the operating field; and

means for automatically adjusting the concentration of the light rays on the operating field, by performing an adjustment operation including adjusting the position of at least one of said at least one light source and said at least one reflector with respect to one another in such a way that the luminous intensity of the illumination of the operating field is optimized, comprising:

means for sensing the touch of an operator;

means for driving the adjustment operation of the concentration of the light rays in association with said means for sensing the touch of an operator;

a first memory element coupled to said means for measuring, activated by said means for driving the adjustment operation, said first memory element, when activated, storing the value of said electrical signal sent by said device sensitive to light of said means for measuring;

a second memory element, activated by said means for driving the adjustment operation, said second memory element, when activated, storing the value of the electrical signal corresponding to the most recent measurement previously performed by said means for measuring;

comparator means for comparing said two values recorded in said first and second memory elements, activated by said means for driving the adjustment operation, having inputs connected to said memory elements and an output connected to said means for driving the adjustment operation, said comparator means, when activated, comparing said two values recorded in said first and second memory elements, and outputting to said means for driving the adjustment operation a signal representing the value of the algebraic difference between said value of the measurement recorded in said first memory element and said value of the measurement recorded in said second memory element; and

motor means, controlled by said means for driving the adjustment operation, mechanically coupled to at least one of said support structure of said at least one light source or said at least one reflector for displacing said at least one light source and said at least one reflector with respect to one another in at least one of two opposite directions along an optical axis, the direction of displacement being determined by said means for driving the adjustment operation;

said means for sensing the touch of an operator comprising at least one element adapted to be manually touched by an operator, whereby when said element is touched, said means for sensing sends an electrical activation signal for actuation to said means for driving the adjustment operation of the concentration of the light rays.

5,383,106

REGENERATIVE CONTROL TYPE SWITCHING POWER SOURCE DEVICE

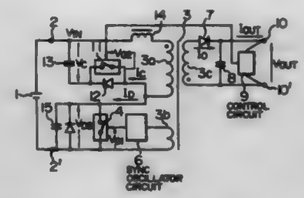
Koji Yoshida, Neyagawa; Nobuyoshi Nagagata, Takatsuki, and Takuya Ishii, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 7, 1993, Ser. No. 1,646

Claims priority, application Japan, Jan. 10, 1992, 4-002683

Int. Cl.[6] H02M *3/28*

U.S. Cl. 363—15 **4 Claims**



1. A switching power source device comprising:

first switching means for repeatedly switch on and off;

a transformer having a primary winding and at least one secondary winding, said primary winding being supplied with an input voltage to store energy in said transformer when said first switching means is ON;

first rectifying and smoothing means for acquiring an output from the energy discharged from said at least one secondary winding of said transformer when said first switching means is OFF;

second rectifying and smoothing means for acquiring a DC voltage from energy discharged from said primary winding of said transformer when said first switching means is OFF; and

second switching means for repeatedly switching on and off alternately with said first switching means,

wherein the DC voltage is applied through said second switching means to said primary winding of said transformer to store energy in said transformer, the energy stored in said transformer is returned from said primary winding of said transformer to said input voltage when said second switching means is OFF, and the output voltage is controlled by changing the on-off ratio in said first and second switching means, and

wherein in the closed circuit composed of said first and said second rectifying and smoothing means which are connected by said transformer, an inductance component induced in a magnetic circuit including said primary winding and said at least one secondary winding of said transformer, and at least one of said first and second rectifying and smoothing means, resonate with each other, so that current from said at least one secondary winding is taken as a resonating current.

5,383,107

HARMONIC CONTROL FOR AN INVERTER BY USE OF AN OBJECTIVE FUNCTION

Christopher E. Hopkins, Rockford; Albert L. Markunas, Roscoe; Vijay K. Maddali, and Richard A. Arbanella, both of Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 6, 1992, Ser. No. 973,119

Int. Cl.[6] H02M *1/12*

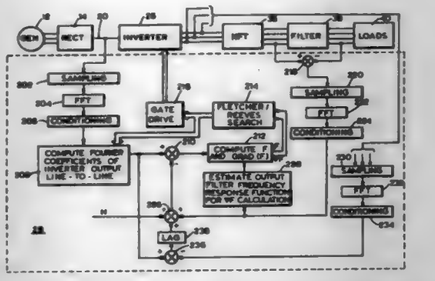
U.S. Cl. 363—41 **35 Claims**

1. An inverter system, comprising:

an inverter for converting input DC power into output AC power, the output AC power having at least three output phase voltages and at least three output phase-to-phase voltages and the inverter having a plurality of inverter switches; and,

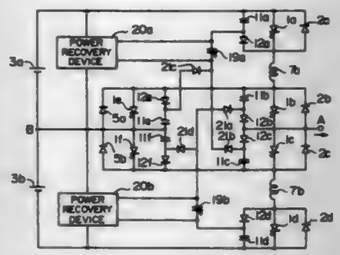
inverter controlling means for determining an objective

function having a value based solely upon harmonic content in less than all of said output phase-to-phase voltages as sensed from all of said output phase voltages and for controlling the inverter switches so as to generate output



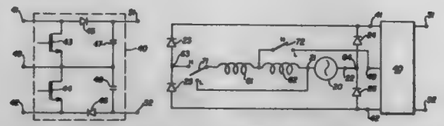
phase voltages which minimize the value of the objective function thereby minimizing said harmonic content generated by both said inverter and any load induced harmonics from load unbalances and non-linearities.

5,383,108
INVERTER APPARATUS
Hideo Okayama, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 3, 1992, Ser. No. 893,326
Claims priority, application Japan, Jun. 6, 1991, 3-134932
Int. Cl.[6] H02M *7/521*
U.S. Cl. 363—137 **14 Claims**



5. An inverter apparatus, comprising:
first and second self-arc-suppressing semiconductor devices connected in series between a positive electrode of a D.C. power supply having a mid-potential point and an output terminal;
a first reactor connected between said first and second semiconductor devices and forming, in cooperation with said first and second semiconductor devices, a positive arm;
third and fourth self-arc-suppressing semiconductor devices connected in series between a negative electrode of said D.C. power supply and said output terminal;
a second reactor connected between said third and fourth semiconductor devices and forming, in cooperation with said third and fourth semiconductor devices, a negative arm;
a first diode connected between one end of said first reactor and said mid-potential point of said D.C. power supply in forward direction with respect to said output terminal;
a second diode connected between one end of said second reactor and the mid-potential point of said D.C. power supply in backward direction with respect to said output terminal;
first to fourth series connections each including a diode and a capacitor connected in series to each other, said first to fourth series connections being connected in parallel with said first to fourth semiconductor devices, respectively;
a first recovery capacitor connected between the point where said diode and said capacitor of said first series connection are connected to each other and the point where said diode and said capacitor of said third series connection are connected to each other;
a second recovery capacitor connected between the point where said diode and said capacitor of said second series connection are connected to each other and the point where said diode and said capacitor of said fourth series connection are connected to each other;
a first power recovery device connected in parallel with said first recovery capacitor and adapted to recover energy from said first recovery capacitor to the D.C. power supply; and
a second power recovery device connected in parallel with said second recovery capacitor and adapted to recover energy from said second recovery capacitor to the D.C. power supply.

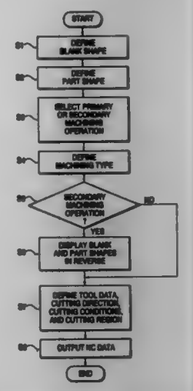
5,383,109
HIGH POWER FACTOR BOOST RECTIFIER APPARATUS
Dragan Maksimovic, and Robert W. Erickson, both of Boulder, Colo., assignors to University of Colorado, Boulder, Colo.
Filed Dec. 10, 1993, Ser. No. 165,404
Int. Cl.[6] G05F *1/10*; H02M *7/04*
U.S. Cl. 323—222 **17 Claims**



1. High power factor boost rectifier apparatus for providing a dc voltage output from one of a plurality of ac power sources, each of said sources providing one of a plurality of possible voltage levels, comprising:
input circuit means including input terminal means for connecting said boost rectifier apparatus to an ac power source, switching means for configuring said apparatus to the voltage level provided by said ac power source, and rectifier means for supplying rectified ac voltage across first and second rectifier terminals;
an output circuit including first and second intermediate terminals comprising:
semiconductor switch means connected across said first and second intermediate terminals;
first and second diodes;
capacitor means connected in series with said first and second diodes, said first diode connected to said first intermediate terminal and said second diode connected to said second intermediate terminal, thereby placing said semiconductor switch means in parallel with the series-connected first and second diodes and capacitor means;
a first output terminal connected to the junction of said first diode and said capacitor means;
a second output terminal connected to the junction of said second diode and said capacitor means;
said semiconductor switch means includes first and second transistors connected in series;
said capacitor means includes first and second capacitors connected in series; and
a connection from the junction of said first and second transistors to the junction of said first and second capacitors;
a first connection from the first rectifier terminal to the first intermediate terminal; and

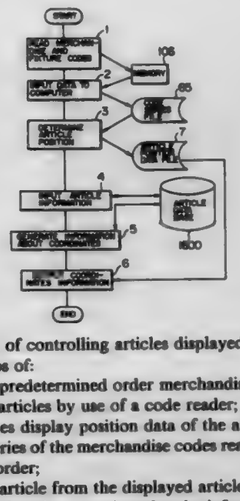
a second connection from the second rectifier terminal to the second intermediate terminal;
whereby a dc output voltage is developed across said first and second output terminals and said output voltage is divided between said first and second transistors, between said first and second diodes, and between said first and second capacitors.

5,383,110
METHOD OF PROGRAMMING PRIMARY AND SECONDARY MACHINING OPERATIONS USING AN INTERACTIVE NUMERICAL CONTROL APPARATUS
Naoki Fujita; Teruyuki Matsumura, and Hideaki Maeda, all of Yamanashi, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP91/00328, § 371 Date Nov. 13, 1991, § 102(e) Date Nov. 13, 1991, PCT Pub. No. WO91/14216, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 7, 1991, Ser. No. 776,226
Claims priority, application Japan, Mar. 15, 1990, 2-65284
Int. Cl.[6] G05B *19/42*; G06F *15/46*
U.S. Cl. 364—191 **1 Claim**



1. A method of programming an interactive numerical control apparatus by inputting data corresponding to a machined shape, using keys on a control panel and answering questions displayed on a display screen, to generate a numerical control program, said method comprising the steps of:
(a) defining a blank shape and a part shade;
(b) selecting one of a primary machining operation on a first spindle and a secondary machining operation on a second spindle for a machining type of a process to be defined;
(c) defining a cutting region for the one of the primary and secondary machining operations selected in step (b);
(d) displaying the blank shape and the part shape for the primary machining operation prior to said defining in step (c);
(e) displaying the blank shape and the part shape in reverse of said displaying in step (d), after said selecting in step (b) selects the secondary machining operation and before said defining of the cutting region for the secondary machining operation in step (c); and
(f) outputting numerical control data separately for the primary and secondary machining operations, based on the part shape, the machining type, and the cutting region defined in steps (a)–(c).

5,383,111
VISUAL MERCHANDIZING (VMD) CONTROL METHOD AND SYSTEM
Koichi Homma, Yokohama; Akira Kagami, Kawasaki; Tadashi Tenma, Sagamihara; Kichizo Akashi, Ebina; Tetsuo Kuwazaki, Kawasaki; Tatsumi Nishimoto, Ayase, and Hiroaki Oyama, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 9, 1990, Ser. No. 593,955
Claims priority, application Japan, Oct. 6, 1989, 1-260023; Mar. 15, 1990, 2-66482
Int. Cl.[6] G06F *15/24*
U.S. Cl. 364—401 **20 Claims**

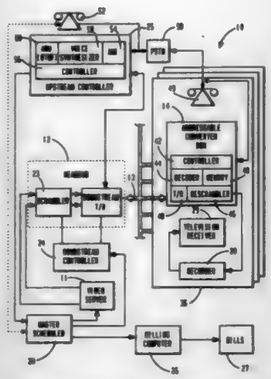


1. A method of controlling articles displayed for sale comprising the steps of:
reading in a predetermined order merchandise codes of the displayed articles by use of a code reader;
obtaining sales display position data of the articles depending on a series of the merchandise codes read in the predetermined order;
selecting an article from the displayed articles;
accessing a data base storing therein information of the displayed articles to retrieve at least one coordinate article, from the stored information, to be combined with the selected article; and
outputting information about the retrieved coordinate article.

5,383,112
INVENTORY MANAGEMENT METHOD
P. Deborah Clark, Anaheim, assignor to GTE Service Corporation, Stamford, Conn.
Filed Jan. 7, 1991, Ser. No. 637,857
Int. Cl.[6] G06F *15/22, 15/24*
U.S. Cl. 364—401 **36 Claims**

1. A method of managing exhibitions of predetermined performances recorded on recording media in a system for exhibiting said predetermined performances, wherein said system includes a controller, said method comprising the steps of:
scheduling exhibitions of said performances to occur at predetermined times and on predetermined channels;
creating a master data structure with said controllers, which master data structure identifies, for each channel and each performance throughout a predetermined interval, specific media copies to be transmitted over specific channels at specific times;

calculating, for each of said performances, the number of media copies needed to accommodate said schedule; and



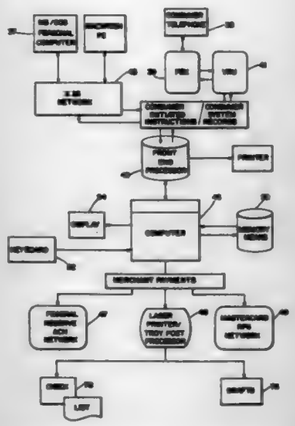
controlling a video server to play said specific media copies in accordance with said master data structure.

5,383,113

SYSTEM AND METHOD FOR ELECTRONICALLY PROVIDING CUSTOMER SERVICES INCLUDING PAYMENT OF BILLS, FINANCIAL ANALYSIS AND LOANS

Peter J. Kight; Mark A. Johnson, both of Dublin; Tamara K. Christenson, Gahanna; Regina Lach, Galena; Philip Pointer, Columbus, and Kenneth Cook, Gahanna, all of Ohio, assignors to Checkfree Corporation, Columbus, Ohio

Filed Jul. 25, 1991, Ser. No. 736,071
Int. Cl.[6] G06F *15/21*
U.S. Cl. 364—401 **3 Claims**



1. A system for use by a service provider to pay bills rendered to a consumer by billing entities, said system comprising:

a financial institutions database having specific information pertaining to the consumers' financial institutions at which consumers maintain accounts and from which accounts payments to the billing entities may be made;

a billing entities database having specific information pertaining to the billing entities to be paid;

at least one remote telecommunications device operable by a consumer to be in communication with a central processing unit operated by said service provider;

a program directing the operations of said central processing unit to analyze instructions received from said consumer through said telecommunications device, said program further including means for identifying a preferred form of payment drawn on the consumer's account at the financial institution with respect to payments to be effected to said billing entities; and

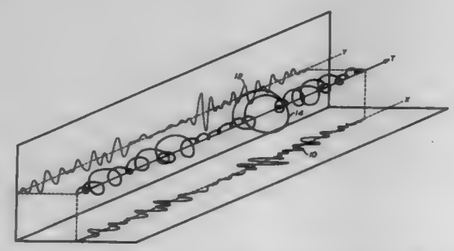
means for effecting payment of the bills on behalf of the consumer's accounts, to said billing entities, said payments to be made from the consumer's account at the financial institution, whether or not the service provider is a bank.

5,383,114

METHOD FOR DISPLAYING A VOLUME OF SEISMIC DATA

Ronald E. Chambers, Houston, Tex., assignor to Western Atlas International, Inc., Del.

Filed Oct. 5, 1992, Ser. No. 956,793
Int. Cl.[6] G01V *1/34*
U.S. Cl. 364—421 **7 Claims**



1. An interactive computer-graphics implemented method of displaying seismic attributes of the subsurface of the earth in three-dimensional format, comprising the steps of:

(a) establishing a reference surface;

(b) mapping the locations of a selected plurality of seismic observation stations over said reference surface;

(c) collecting, in a computer memory, seismic data from each of the respective seismic observation stations, said seismic data being formatted as two-dimensional variable-amplitude time-scale traces;

(d) in a data processor, converting the two-dimensional variable-amplitude time-scale traces to corresponding complex seismic traces; and

(e) using a computer graphics program, displaying each said complex seismic trace beneath its corresponding mapped seismic observation station of origin to create a three-dimensional model of attributes of a volume of the subsurface of the earth formatted as a forest of seismic traces.

5,383,115

APPARATUS FOR STATISTICALLY MONITORING THE FLOW OF MAIL THROUGH AN ELECTRONIC POSTAGE METER SYSTEM

Marc Lecarpentier, Antony, France, assignor to Neopost Industrie, Bagneux, France

Filed Dec. 21, 1992, Ser. No. 994,301
Claims priority, application France, Dec. 20, 1991, 91 15906
Int. Cl.[6] G07B *17/00*
U.S. Cl. 364—554 **8 Claims**

1. An apparatus for statistically monitoring the flow of mail through an electronic postage meter for a specific mail category or mode of posting, said postage meter comprising a memory used for recording statistical readings, said apparatus comprising:

a) means for allocating a first area of said memory for storing NSC statistics counters, each statistics counter relating to a specific category of mail or mode of posting;

b) means for allocating a second area of said memory for storing nsc ranges of postage values with nsc greater than NSC;

c) means for allocating a third area of said memory for storing extra data partitioning said nsc ranges of postage values, each partition comprising one or more of said nsc ranges of postage values characterizing a specific mail category or mode of posting and relating to one of said NSC statistics counters; and

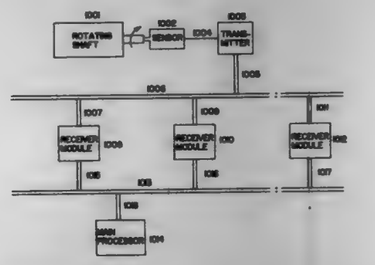
d) means for responding to franking of an item of mail by the postage meter with a particular postage falling into one of said nsc ranges of postage values, incrementing a statistics counter among said NSC statistics counters which relates to said one of said nsc ranges of postage values.

5,383,116

DEVICE FOR CONTROLLING A MEMBER IN A SYSTEM

Kent Lennartsson, Malmö, Sweden, assignor to Kvaser Consultant AB, Kinnahult, Sweden

PCT No. PCT/SE91/00414, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO91/20019, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 10, 1991, Ser. No. 956,780
Claims priority, application Sweden, Jun. 17, 1990, 9002155
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—138 **16 Claims**



1. An apparatus including:

a first member for executing a desired function or action which is controllable as a function of at least one parameter characteristic for a second member;

a first detection means for detecting signals corresponding to values of said at least one parameter of said second member;

at least one transmitter for receiving said detected signals and for assigning coded/numbered messages for each value of said parameter;

at least one receiver for controlling said desired action of said first member;

a connection bus for signal transmission between said transmitter and said receiver;

said signals being transmitted in the form of said coded/numbered messages in a predetermined order, with well defined transmission times between said first detection means and said transmitter and between said transmitter and said receiver; and

control means for transmitting to said receiver at least one of:

a) a desired parameter value at which a corresponding desired function or action is to be executed by the first member, and

b) a desired message number to be selected;

said receiver obtaining said desired message number or, based on a said desired parameter value and the time information for the desired action or function of the first member, selecting and receiving a corresponding message number containing said parameter value;

said receiver generating based on said message number an activation signal for said first member;

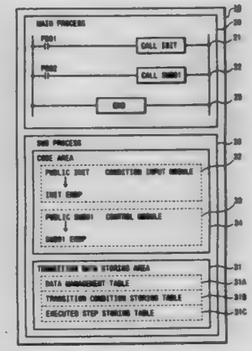
said message number being selected to ensure execution of said function by said first member at the time corresponding to said desired parameter value.

5,383,117

PROGRAMMABLE CONTROLLER AND CONTROL METHOD THEREOF

Shigeharu Takai, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,412
Claims priority, application Japan, Jun. 26, 1992, 4-168706
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—141 **19 Claims**



1. A method of controlling an object, including a main process for exercising the program control of said controlled object and a sub process for carrying out the automatic control thereof when executed, by programless establishment and operation of said sub process and in conjunction with input devices and output devices having respective device numbers, comprising the steps of:

operating said controlled object in accordance with a desired sequence control procedure and storing the device numbers of said input devices that have changed and bits which have changed as a result of the changed input devices in a storage order as transition conditions;

inputting data to be output to said controlled object from external equipment and storing said data as operation step data in correspondence with said transition conditions;

reading said stored transition conditions in storage order;

comparing said read transition conditions with the current states of said input devices; and

if any of said transition conditions matches any of said input device current states, reading said stored operation step data corresponding to said transition condition and outputting said data to said controlled object.

5,383,118

DEVICE ALIGNMENT METHODS

Hung N. Nguyen, Beasalem, assignor to AT&T Corp., Murray Hill, N.J.

Filed Sep. 23, 1992, Ser. No. 948,543
Int. Cl.[6] G05B *19/18*; G02B *6/26*
U.S. Cl. 364—167.01 **17 Claims**

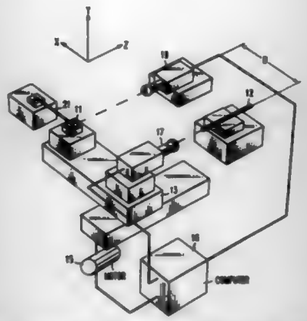
1. A method for aligning a first device with a second device comprising the steps of:

positioning a first device on a movable x-y-z table;

moving the movable table such that the first device is in approximate alignment with a first machine vision camera;

a second machine vision camera being mounted on the movable table along with the first device;

imaging a first feature of the first device in the first machine vision camera;
directing signals from the first machine vision camera representative of the image of the first feature to a computer;
using the computer to calculate the center of the image of the first feature and to determine from such calculation any deviations in x and y orthogonal directions of the position of the first device from a first predetermined position;
the moving step moving the second machine vision camera such that the second device is in approximate alignment with the second machine vision camera;
imaging a second feature of the second device in the second machine vision camera;



directing signals from the second machine vision camera representative of the image of the second feature to said computer;
using the computer to calculate the center of the image of the second feature and to determine from such calculation any deviations in the x and y directions of the position of the second device from a second predetermined position;
moving the movable table such that the first device is in alignment with the second device, and using signals from the computer to make fine adjustments of the movable table to compensate for said deviations of the first feature from a first predetermined position and for deviations of the second feature from a second predetermined position.

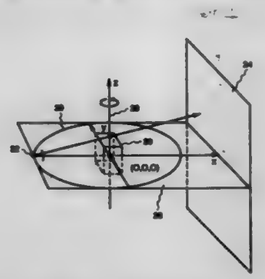
5,383,119

METHOD AND APPARATUS FOR ACQUIRING COMPLETE RADON DATA FOR EXACTLY RECONSTRUCTING A THREE DIMENSIONAL COMPUTERIZED TOMOGRAPHY IMAGE OF A PORTION OF AN OBJECT IRRADIATED BY A CONE BEAM SOURCE

Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 3, 1991, Ser. No. 725,142
Int. Cl.[6] G06F *15/00*
U.S. Cl. 364—413.19 **16 Claims**

1. A computer-related method of acquiring complete Radon data for exact reconstruction of a three dimensional image of a select portion of an object, wherein a region of support in the object space bounds said portion, said region of support in the object space being enclosed within a field of view of at least one cone beam source emitting a beam, said source being fixed with respect to a corresponding detector, said method comprising the steps of:
selectively scanning with said beam along a path enclosing said region of support in the object space at the upper and lower extent of said portion respectively, said upper and lower scan paths being joined by a connecting scan path, said upper, lower, and connecting scan paths collectively defining a complete scan path for said select portion;
selectively partitioning each surface of integration corresponding to a data point in Radon space based on the intersection of said surface with said portion; and



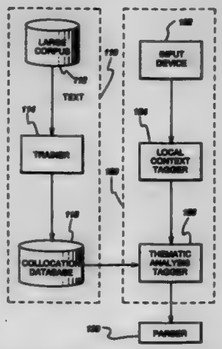
selectively manipulating corresponding cone beam data according to said partitioning in order to discard data not directly attributable to said portion and recover otherwise missing data directly attributable to said portion.

5,383,120

METHOD FOR TAGGING COLLOCATIONS IN TEXT

Uri Zernik, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1992, Ser. No. 844,026
Int. Cl.[6] G06F *15/38*
U.S. Cl. 364—419.08 **4 Claims**



1. A method for performing thematic part-of-speech tagging for collocations having content-word pairs in a natural language text processing system comprising the steps of:
identifying collocations of content-word pairs in a large corpus of text;
calculating, for each of said collocation content-word pair identified, a variability factor which is a measure of variability of said collocation content-word pairs occurring in said text;
storing said collocation content word pairs and associated variability factors in a collocation database; and
using said database to tag collocation content-word pairs according to said variability factors, wherein collocation content-word pairs with high variability factors are tagged as having a verb and a noun thereat and collocation content-word pairs with low variability factors are tagged as having an adjective and a noun thereat or a noun and noun thereat.

5,383,121

METHOD OF PROVIDING COMPUTER GENERATED DICTIONARY AND FOR RETRIEVING NATURAL LANGUAGE PHRASES THEREFROM

Kim D. Letkeman, Nepean, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed May 5, 1992, Ser. No. 878,854
Claims priority, application Canada, Sep. 11, 1991, 2051135
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—419.11 **3 Claims**



1. A method of providing a computer-generated natural language dictionary, said computer having computer-associated memory, comprising the steps of:
(a) subdividing storage space of said computer-associated memory into a plurality of memory tables;
(b) generating a plurality of natural language dictionary strings comprised of a plurality of separate tokens, respective ones of which tokens comprise groups of characters separated by one or more spaces;
(c) assigning a separate numeric value as a token number to each different token, whereby the same numeric value is assigned as the same token number to common tokens of various strings;
(d) storing the tokens of said natural language dictionary in said computer-associated memory;
(e) storing a first memory table in said computer-associated memory, said first memory table having an index and a list, said index being comprised of a first quantity representative of the number of strings in said list of natural language dictionary strings, and successive second quantities representative of the positions of respective strings in said plurality of natural dictionary strings, each position being immediately followed by a third quantity representative of the number of tokens in an associated dictionary string, said list being comprised of the assigned numeric value for each token in each of said strings; and
(f) storing a second memory table in said computer-associated memory, said second memory table containing a correlation of each token number, a storage location in said computer-associated memory at which each token starts, and the length of the token.

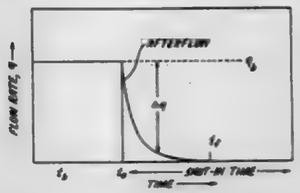
5,383,122

METHOD FOR ANALYZING PRESSURE BUILDUP IN LOW PUMPING RATE WELLS

Charles U. Ohaeri, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 30, 1992, Ser. No. 906,893
Int. Cl.[6] G06G *7/57*
U.S. Cl. 364—422 **16 Claims**

1. A method of determining production related properties of a well extending substantially downward from a surface, said well initially producing a liquid hydrocarbon at a production flowrate from a well bore and a formation, said method comprising:
shutting the well in at the surface so that the production flowrate is essentially stopped;
measuring a measured level of a gas/liquid interface rising against elapsed time within the well bore while said well is substantially shut in;
calculating a flow rate of liquid hydrocarbon into the well bore based on the measured level of the gas/liquid interface;
solving a convolution integral using the calculated flow rate to obtain a constant sandface pressure increase;



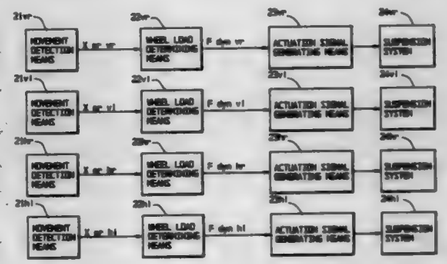
calculating production related properties of the wellbore and of the formation adjacent the wellbore based On the solved convolution integral; and
performing production well operations so that the production flowrate of liquid hydrocarbon is stimulated.

5,383,123

PROCESS AND DEVICE FOR CHASSIS CONTROL

Dieter Kunz, Ditzingen-Schoeckingen, Germany, assignor to Robert Bosch GmbH, Stuttgart-Feuerbach, Germany

Filed Oct. 27, 1992, Ser. No. 967,199
Claims priority, application Germany, Dec. 6, 1991, 4140270
Int. Cl.[6] B60G *17/08*
U.S. Cl. 364—424.05 **14 Claims**



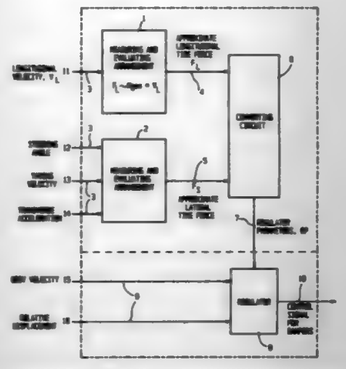
1. A process for chassis control of a vehicle, the vehicle including a body, a plurality of wheel units and at least one suspension system disposed between the body and a respective one of the wheel units, each said suspension system influencing relative movements between the body and the respective wheel unit, said process comprising the steps of:
sensing at least one of a relative movement between the body and the respective wheel unit, and an absolute movement of the wheel unit, said sensed movement corresponding to one of a plurality of discrete time segments defining a time period; and
actuating the suspension system during selected ones of said plurality of discrete time segments in one of a braking and accelerating maneuver of the vehicle, each said actuation influencing a momentary normal force between the respective wheel unit and a road surface toward a maximum value.

5,383,124

PROCESS FOR UNDERCARRIAGE REGULATION

Dieter Kunz, and Rainer Kallenbach, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 623,934, Dec. 14, 1990, abandoned.
This application Nov. 4, 1992, Ser. No. 971,686
Claims priority, application Germany, May 20, 1989, 3916460
Int. Cl.[6] B60G *17/015*
U.S. Cl. 364—424.05 **11 Claims**



1. An undercarriage regulation apparatus for a vehicle having a vehicle body, comprising:

at least one of a first sensor means for sensing at least one velocity of the vehicle body in a vertical direction to produce a first signal indicative thereof and a second sensor means for sensing at least one relative displacement between the vehicle body and at least one axle of the vehicle to produce a second signal indicative thereof;

third sensor means for sensing at least one of a vehicle longitudinal velocity, vehicle longitudinal acceleration, vehicle transverse acceleration, yawing velocity and steering angle and outputting a third signal indicative thereof;

a converting circuit for receiving said third signal and outputting at least one regulation parameter signal; and

a regulator for receiving said regulation parameter signal and at least one of said first signal and said second signal, said regulator exhibiting one of at least two transfer functions dependent on said regulation parameter signal, said regulator including means for outputting a control signal to at least one actuator of the undercarriage for attuning undercarriage characteristics;

wherein in noncritical travelling states, said regulation parameter signal is adjusted to provide a comfort-oriented attuning of said undercarriage characteristics, and in critical travelling states, said regulation parameter signal is adjusted utilizing one of a continuous and stepped transition to provide a safety-oriented attuning of said undercarriage characteristics.

5,383,125

SLIP CONTROL FOR AUTOMOTIVE VEHICLE WITH CONTINUOUSLY VARIABLE TRANSMISSION

Toshifumi Hibi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 23, 1992, Ser. No. 824,246
Claims priority, application Japan, Jan. 23, 1991, 3-22933
Int. Cl.[6] B60T *8/32*; B60K *41/12*
U.S. Cl. 364—426.03 **3 Claims**

1. A method of a slip control for an automotive vehicle including an engine operatively connected with a power commander, a continuously variable transmission having an input member drivingly connected to the engine and an output member, and at least one driving wheel drivingly connected to the output member, the automotive vehicle also including a pair of non-driving wheels which are free to rotate, the method comprising the steps of:

detecting a revolution speed of the input member of the continuously variable transmission and generating an actual input revolution speed indicative signal indicative of said revolution speed of the input member detected;

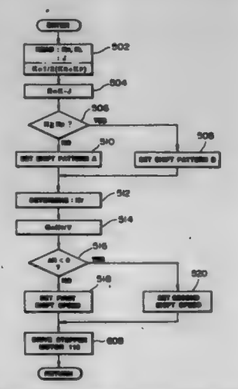
detecting a revolution speed of the output member of the continuously variable transmission and generating a vehicle speed indicated signal indicative of said revolution speed of the output member detected;

detecting a degree of power demand on the engine as indicated by the power commander and generating a power demand indicative signal indicative of said degree of the power demand detected;

detecting a wheel revolution speed of the driving wheel and generating a driving wheel revolution speed indicative signal indicative of said wheel revolution speed of the driving wheel detected;

detecting a wheel revolution speed of one of the pair of non-driving wheels and generating a first non-driving wheel revolution speed indicative signal indicative of said wheel revolution speed of said one of the pair of driving wheels;

detecting a wheel revolution speed of the other one of the pair of non-driving wheels and generating a second non-driving wheel revolution speed indicative signal indicative of said wheel revolution speed of said the other one of the pair of non-driving wheels;



calculating an average of said first and second non-driving wheel revolution speed indicative signals and generating an average non-driving wheel revolution speed indicative signal indicative of said average calculated;

calculating a deviation of said driving wheel revolution speed indicative signal from said average non-driving wheel revolution speed and generating a deviation indicative signal indicative of said deviation calculated;

comparing said deviation indicative signal with a predetermined reference value;

repeating execution of a first routine when said deviation indicative signal is less than said predetermined value, said first routine involving setting a first one of a plurality of shift patterns;

repeating execution of a second routine after said deviation indicative signal has become greater than or equal to said predetermined value till a predetermined condition being met subsequently, said second routine involving setting a second one of said plurality of shift patterns;

repeating execution of said first routine upon said predetermined condition being met after said deviation indicative signal having become greater than or equal to said predetermined value;

retrieving said shift pattern which has been set versus said vehicle speed indicative signal and said power demand indicative signal to give a target value in said input revolution speed and generating a target value indicative signal indicative of said target value given;

said first and second shift patterns giving first and second largest target values in said revolution speed of the input member, for each combination of vehicle speed indicative signal and power demand indicative signal, when said vehicle speed indicative signal is less than a predetermined vehicle speed value;

determining a change with respect to time in said deviation indicative signal;

determining based on said change in said deviation indicative signal whether said deviation indicative signal has decreased;

effecting a ratio change in the continuously variable transmission in such a direction as to bring said actual input revolution speed indicative signal toward said target value indicative signal at a first speed when it is determined that said deviation indicative signal has failed to decrease;

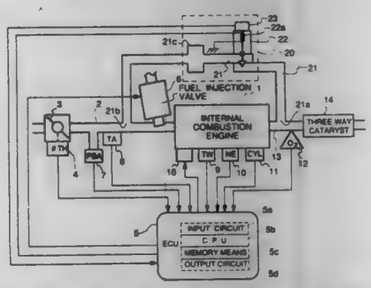
effecting a ratio change in the continuously variable transmission to bring said actual input revolution speed indicative signal toward said target value indicative signal at a second speed when it is determined that said deviation indicative signal has decreased, said second speed being lower than said first speed.

5,383,126

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH EXHAUST GAS RECIRCULATION SYSTEMS

Ken Ogawa; Yoshihisa Hara; Kotaro Miyashita, and Kei Machida, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,232
Claims priority, application Japan, Oct. 24, 1991, 3-305298; Oct. 24, 1991, 3-305299
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[6] F02D *41/08*
U.S. Cl. 364—431.06 **15 Claims**



1. In a control system for an internal combustion engine having an intake passage having an inner surface, an exhaust passage, at least one combustion chamber, and exhaust recirculation means having an exhaust gas recirculation control valve for controlling recirculation of exhaust gases from said exhaust passage to said intake passage, said control system including supply fuel amount calculating means for calculating an amount of supply fuel to be supplied to said engine, based upon operating conditions of said engine, adherent fuel amount estimating means for estimating an amount of adherent fuel adhering to said inner surface of said intake passage, carried-off fuel amount estimating means for estimating an amount of carried-off fuel evaporated from fuel adhering to said ifiner surface of said intake passage and carried into said combustion chamber, supply fuel amount correction means for correcting said supply fuel amount calculated by said supply fuel amount calculating means, in response to said adherent fuel amount estimated by said adherent fuel amount estimating means and the carried off fuel amount estimated by said carried-off fuel amount estimating means, fuel supply means for supplying said supply fuel amount corrected by said supply fuel amount correcting means into said intake passage, and recirculation gas amount control means for controlling an amount of said exhaust gases to be recirculated from said exhaust passage to said intake passage, by controlling said exhaust gas recirculation control valve, based upon operating conditions of said engine, the improvement comprising:

recirculation gas amount calculating means for calculating said amount of said exhaust gases to be recirculated; and

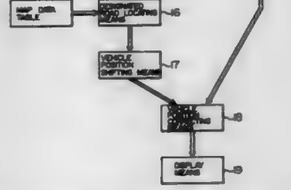
estimated fuel amount correcting means for correcting said adherent fuel amount and said carriedoff fuel amount, based upon said amount of said exhaust gases calculated by said recirculation gas amount calculating means.

5,383,127

ON-VEHICLE POSITION COMPUTING APPARATUS

Akihito Shibata, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 11, 1992, Ser. No. 943,525
Claims priority, application Japan, Sep. 19, 1991, 3-239213
Int. Cl.[6] G06F *15/50*
U.S. Cl. 364—449 **11 Claims**



1. An on-vehicle position detecting apparatus comprising:

means for estimating an estimated vehicle position of a vehicle in accordance with (i) signals from sensors for detecting behaviors of the vehicle and (ii) a present vehicle position on a map displayed on a display means;

means for designating a road by comparing a running path of the vehicle based upon said estimated vehicle position generated by said estimating means, with road data so as to locate a designated road on said displayed map;

means for shifting said estimated vehicle position to a displayed vehicle position on said designated road which has been located by said designating means; and

means for computing a cumulative value of shifting distances made by said shifting means after a predetermined number of cycles of shifting, and for correcting the displayed vehicle position on said displayed map in accordance with data obtained externally of said vehicle when said cumulative value exceeds a predetermined threshold value.

5,383,128

NAVIGATION DEVICE

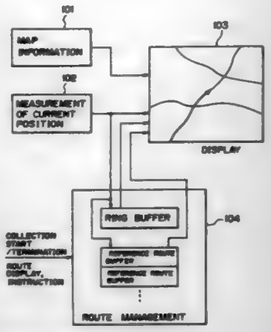
Junichi Nishida; Morio Araki; Takeharu Arakawa; Tessho Ishida; Yasushiro Ayukai; Toshiharu Babe; Masahiko Sakaguchi; Kenichi Nobe; Michihiro Kaneko, and Jun Shinohara, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 3, 1993, Ser. No. 56,998

Claims priority, application Japan, May 8, 1992, 4-116443

Int. Cl.[6] G08G *9/00*; G06F *15/50*

U.S. Cl. 364—449 **10 Claims**



1. A navigation device comprising:

measurement means for measuring a current position of a vehicle and generating current position data based on said measuring;

route data generation means for generating route data indicating a route travelled by the vehicle on the basis of said current position data;

place name extraction means for extracting place name information indicating a name of a place travelled by the vehicle from stored map information in accordance with said current position data with a predetermined interval;

storage means for storing the route data and the place name information in such a manner that said route data is sectioned into a plurality of block route data at positions corresponding to the places indicated by said place name information;

edit means for designating the block route data by the name of the place and editing the designated block route data stored in said storage means; and

display means for extracting the route data from said storage means and displaying the extracted route data together with the map information.

5,383,129

METHOD OF ESTIMATING COST OF PRINTING MATERIALS USED TO PRINT A JOB ON A PRINTING APPARATUS

Michael E. Farrell, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1993, Ser. No. 113,625

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—464.01 **13 Claims**

1. A method of estimating cost of printing materials used to print a job on a printing apparatus associated with at least one user interface, comprising the steps of:

storing billing rates reflecting the cost of printing materials to be used in printing the job;

programming a job ticket, with the user interface, for selecting a quantity of at least one printing material to be used in printing the job;

prior to printing the job, generating a value based on the quantity of each printing material selected when programming the ticket; and

prior to printing the job, calculating, with each value and its associated billing rate, a total printing material cost of the job wherein an estimated printing material cost is communicated to the user.



5,383,130

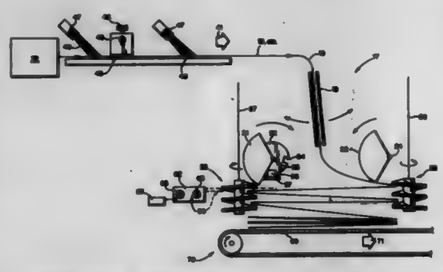
JOB SEPARATOR CONTROL

Michael S. Kalisiak, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 14, 1990, Ser. No. 537,457

Int. Cl.[6] G06F *15/46*; B41F *13/58*; B41L *1/32*

U.S. Cl. 364—471 **23 Claims**



1. Apparatus for automatically separating a continuous flow of business forms into predetermined jobs, each job comprising a plurality of business forms wherein each form is connected by perforations to another form, wherein detectable marks have been applied to at least one form of each job comprising:

means for transporting the forms in a first direction;

folding means for automatically folding the forms at their perforated connections to each other, said folding means comprising a swing chute mounted for oscillating movement about a generally horizontal axis and for receipt of forms therein; a plurality of spirals mounted for rotation about vertical axes and adjacent said swing chute, for receipt of the edges of the forms after engagement by said swing chute; and a plurality of beaters mounted for rotation about at least one axis parallel to said swing chute axis, for acting on the forms to keep them in operative association with said spirals;

means for automatically sensing the detectable marks on a form as it travels in the first direction, said means between a position where marks have been applied and said folding means;

severing means for automatically selectively severing the forms along a perforation between adjacent forms, during folding;

microprocessor controlled control means responsive to said sensing means for initiating operation of said severing means when predetermined detectable marks have been detected by said means; and

wherein said control means comprises: first and second notched discs mounted for rotation on a first shaft, said first disc having a pair of notches spaced approximately 18°, and said second disc having a single notch, and means for sensing said disc notches; and an encoder on said shaft, said encoder and said disc sensing means for determining the position of perforations between said forms for zeroing the detection of marks by said mark sensing means and for initiating operation of said severing means when desired.

5,383,131

METHOD OF DETERMINING CUTTING TRAJECTORY IN N/C MACHINING SYSTEM

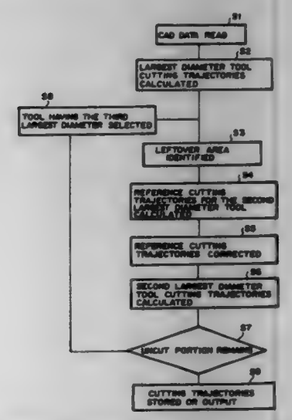
Takeshi Itamoto; Kenji Nakao; Shinji Tachikake, and Takanori Sakamoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 14, 1993, Ser. No. 91,037

Claims priority, application Japan, Jul. 14, 1992, 4-186628

Int. Cl.[6] G06F *15/46*; B23C *3/32*

U.S. Cl. 364—474.29 **4 Claims**



1. In a numerical control machining system, a method of determining a cutting trajectory for a small diameter ball end mill when cutting a leftover area on a work produced by cutting the work with a larger diameter ball end mill, the leftover area being an area formed of leftover portions which are left uncut on the respective cutting trajectories of the larger diameter ball end mill, said method comprising the steps of

identifying the leftover portions in the directions of the cutting trajectories for the larger diameter ball end mill which are set at regular pitches,

obtaining reference cutting trajectories for the small diameter ball end mill which are imaginary cutting trajectories in the same direction as the cutting trajectories for the larger diameter ball end mill,

dividing each of the reference cutting trajectories at dividing points which are of the same number for all the reference cutting trajectories and which are positioned at regular intervals in the direction of the reference cutting trajectory, and

plotting the cutting trajectories for the small diameter ball end mill by connecting the corresponding dividing points of the respective reference cutting trajectories with straight lines.

5,383,132

DESIGN VERIFICATION DEVICE

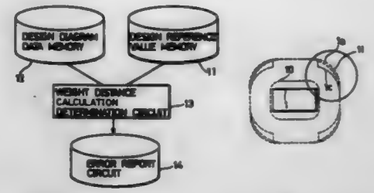
Hirofumi Shinohara; Yoshiki Tsujihashi, and Hisashi Matsumoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,663

Claims priority, application Japan, Oct. 30, 1991, 3-285109

Int. Cl.[6] G06F *15/60*, *15/40*

U.S. Cl. 364—491 **8 Claims**



1. A design verification device for making determination whether the design is carried out according to a previously set design reference value by calculating the distance of a straight line between boundaries of design diagram data in a physical space, said design verification device comprising:

diagram data memory means for storing design diagram data,

design reference value memory means for storing design reference values,

determination means for making determination whether said distance conforms to the corresponding design reference value with different weight given to different intersecting directions in calculating the distance of the straight line between boundaries of design diagram data, and

error signal output means for providing an error signal when determination is made by said determination means that the distance does not conform to the corresponding design reference value.

5,383,133

INTEGRATED VIBRATION REDUCING AND HEALTH MONITORING SYSTEM FOR A HELICOPTER

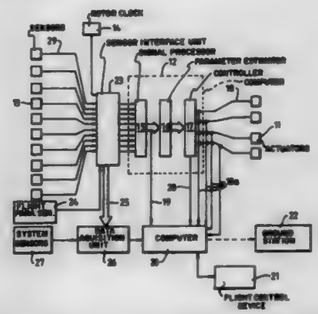
Alan E. Staple, Stoke-sub-Hamdon, England, assignor to Westland Helicopters Limited, Yeovil, England

Filed Oct. 26, 1992, Ser. No. 966,400

Claims priority, application United Kingdom, Nov. 2, 1991, 9123304

Int. Cl.[6] F16F *15/10*; G01H *11/00*

U.S. Cl. 364—508 **4 Claims**



1. An integrated vibration reducing and health monitoring system for a helicopter comprising:

a plurality of vibration sensors for measuring vibration responses located on a helicopter structure;

a computer;

a plurality of actuators for inputting forces into the structure to reduce vibration of the structure, said vibration sensors providing first data comprising signals representative of the vibration of the structure to said computer;

wherein said computer constructs second data comprising a transfer matrix providing a linear transfer relationship between the vibration responses measured by said vibration sensors and the forces from said actuators and representative of the dynamic characteristics of the helicopter, said computer further producing third data comprising actuator command signals for inputting calculated actuator control forces; and

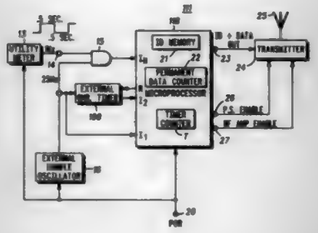
monitoring means for monitoring said second and third data provided by said computer, for comparing said monitored data with predetermined data and for providing a warning signal and diagnostic information if said predetermined data values are exceeded by said monitored data, wherein health monitoring is achieved in relation to helicopter dynamic characteristics independent of flight state characteristics.

5,383,134

DATA TRANSMISSION DEVICE, SYSTEM AND METHOD

Stanley Wrzesinski, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 997,390, Dec. 28, 1992, abandoned. This application May 23, 1994, Ser. No. 247,621
Int. Cl.[6] G08C *17/00*; H04K *1/00*; H04B *15/00*
U.S. Cl. 364—514 **25 Claims**



24. Data transmission method comprising the steps of;

providing a data signal for transmission,

establishing, in response to an initial received power on signal, a continuous sequence of maximum time intervals during which said data signal will be transmitted;

transmitting said data signal at a transmission time during each of said maximum time intervals; and

providing a random number for each of said maximum time intervals;

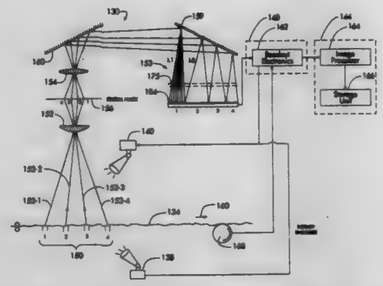
wherein said step of transmitting :said data signal includes the step of determining the transmission time during each said maximum time intervals in accordance with said random number provided for said each of said maximum time intervals, and wherein each of said maximum time intervals comprises a fixed time interval plus a variable time interval, said variable time interval being determined in accordance with said random number provided for each of said maximum time intervals, said variable time interval being determined by a microprocessor which utilizes said random numbers to provide said Variable time interval, and said fixed time interval provided by a fixed time interval circuit external to said microprocessor, and wherein said transmission times occur in accordance with said variable time intervals.

5,383,135

ACQUISITION, MEASUREMENT AND CONTROL OF THIN WEBS ON IN-PROCESS TEXTILE MATERIALS

Frederick M. Shofner; Joseph C. Baldwin, both of Knoxville; Gordon F. Williams, Norris, and Mark G. Townes, Knoxville, all of Tenn., assignors to Zellweger Uster, Inc., Knoxville, Tenn.

Filed Dec. 31, 1992, Ser. No. 999,007
Int. Cl.[6] G01N *21/89*
U.S. Cl. 364—552 **11 Claims**



1. An apparatus for monitoring and processing a supply of textile materials being processed in a textile mill, the supply including a plurality of entities including undesirable entities, comprising:

a sampler and sample forming apparatus for removing a sample of fibers from the supply, forming the sample into a desired configuration and delivering a reconfigured sample of entities to a monitoring location;

said reconfigured sample being shaped so as to facilitate monitoring of said sample; means for monitoring the reconfigured sample of textile materials at the monitoring location and producing a monitor signal containing information corresponding to the content of the reconfigured sample; and

computer processing means for receiving the monitor signal, analyzing the entity content of the reconfigured sample and for generating output signals based on the analyzed entity content of the reconfigured sample including information as to the undesirable entities contained within the reconfigured sample.

5,383,136

ELECTRICAL TEST STRUCTURE AND METHOD FOR MEASURING THE RELATIVE LOCATIONS OF CONDUCTING FEATURES ON AN INSULATING SUBSTRATE

Michael Cresswell, Frederick; Richard Allen, Germantown; Loren Linholm, Ijamsville, and Michael Gaitan, Gaithersburg, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Mar. 13, 1992, Ser. No. 852,439
Int. Cl.[6] G01R *31/00*
U.S. Cl. 364—561 **6 Claims**

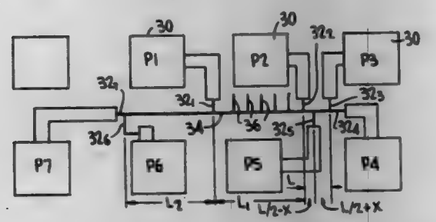
1. A method for determining the relative spacing of a center tap connected to a bridge conductor with respect to a pair of taps, said pair of taps terminating a third segment of a length of said bridge conductor comprising at least three segments, and for compensating measurements of said segments of the length of the bridge conductor made by forcing a current to flow between the ends of said length of the bridge conductor and measuring the voltages across taps disposed at respective ends of said segments for effective length reduction of said segments due to the presence of conductive taps intersecting said segments of the bridge conductor, said method comprising the steps of:

providing a test structure on an insulating substrate, said test structure comprising a length of said bridge conductor

effectively divided into three nonoverlapping segments by intermediate taps having pads connected thereto for measurement of voltages across said three segments, a first segment of said bridge conductor having no taps disposed between its ends, a second segment having a plurality of dummy taps not connected to pads employed for voltage measurement disposed between its ends, and a third segment having had a center tap applied to said bridge conductor disposed between taps at the ends of the third segment;

forcing a current along said bridge conductor and measuring a first voltage V_1 between pads connected to said taps at the ends of said first segment of said bridge conductor;

forcing a current along said bridge conductor and measuring a second voltage V_2 between pads connected to said taps at the ends of said second segment of said bridge conductor;



comparing V_1 and V_2 to measure a relative conductor-shortening effect caused by the presence of said dummy taps in said second segment of said bridge conductor;

forcing a current to flow along said bridge conductor and measuring a third voltage V_3 between a pad connected to a first tap at a first end of said third segment of said bridge conductor, and a pad connected to said center tap;

forcing a current along said bridge conductor and measuring a fourth voltage V_4 between a pad connected to a second tap at a second end of said third segment of said bridge conductor, and said pad connected to said center tap; and

comparing V_3 and V_4 to determine a relative offset x of said center tap from a nominal central position between said first and second taps at the ends of said third segment of said bridge conductor.

5,383,137

EMULATION SYSTEM AND METHOD FOR DEVELOPMENT OF A LOW POWER DATA PROCESSOR

Kenneth R. Burch, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1992, Ser. No. 984,755
Int. Cl.[6] G01R *19/00*
U.S. Cl. 364—578 **21 Claims**

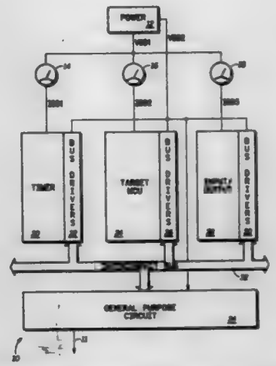
1. An emulation system for measuring current, comprising:

a power supply, the power supply having a first output for providing a first voltage value and a second output for providing a second voltage value;

a target microprocessor, the target microprocessor having a first plurality of bus drivers for communicating digital information and an internal circuit, the target microprocessor having a first input for receiving the first voltage value and a second input for receiving the second voltage value, the first voltage value being provided to the plurality of bus drivers and the second voltage value being provided to the internal circuit;

a plurality of peripheral devices external to the target microprocessor, each of the plurality of peripheral devices having both a circuit for emulating operation of a corresponding portion of the internal circuit of the target microprocessor and a second plurality of bus drivers, each of the plurality of peripheral devices having a first input for receiving the first voltage value and a second input for receiving the second voltage value, the first voltage value being provided to the plurality of bus drivers and the second voltage value being provided to the circuit for emulating operation; and

a plurality of analog current meters, a first one of the plurality of analog current meters being coupled to the power supply for receiving the second voltage value and having a bidirectional terminal coupled to the internal circuit of the target microprocessor for measuring a first current



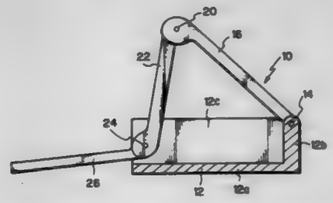
value, a remaining portion of the plurality of analog current meters being coupled to a respective one of the plurality of peripheral devices, each of the remaining portion of the plurality of analog current meters being coupled to the power supply for receiving the second voltage value and having a bidirectional terminal coupled to the circuit for emulating operation of each of the plurality of peripheral devices.

5,383,138

FOLDING PORTABLE DATA PROCESSING APPARATUS WITH THREE HINGE POINTS

Hideyuki Motoyama; Seiichi Iwasa, and Isao Kawamura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 9, 1993, Ser. No. 88,331
Claims priority, application Japan, Jul. 13, 1992, 4-185371
Int. Cl.[6] G06F *1/00*
U.S. Cl. 364—708.1 **31 Claims**



1. A portable data processing apparatus, comprising:

a base rested on a support surface, and having a front and a rear;

a top cover pivotally connected to said base by a first hinge means;

a display housing having a display, and pivotally connected to said top cover by a second hinge means; and

a keyboard pivotally connected to said display housing by a third hinge means,

wherein said first, second and third hinge means include respective hinge axes parallel to each other so that said apparatus can adopt a spread position in which said key-

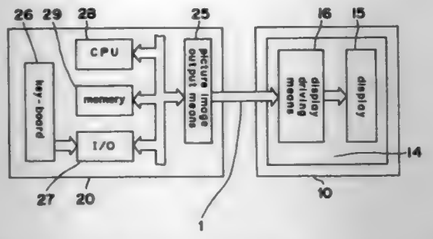
board portion and said display housing portion are spread to the front with said third hinge means moved away from said first hinge means, and a retracted position in which said keyboard overlaps said display housing with said third hinge means moved close to said first hinge means.

5,383,139

ELECTRONIC APPARATUS

Yoshito Saji, Ashiya; Yoshiteru Namoto, Ikoma, and Osamu Kajino, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 26, 1993, Ser. No. 51,643
Claims priority, application Japan, Apr. 24, 1992, 4-106322
Int. Cl.[6] G06F *1/00*
U.S. Cl. 364—708.1 **15 Claims**



1. An electronic apparatus comprising:
a main body casing;
an image output section accommodated in said main body casing;
a display casing rotatably mounted to said main body casing for rotation about a rotational axis extending in a width direction of said apparatus;
a display section accommodated in said display casing;
an image transmitting member having a first end operably coupled with said display section and a second end operably coupled with said image output section; and
wherein said image transmitting member comprises a sheet material having a wiring pattern thereon, said sheet material being formed in a U-shape which includes a base portion which extends in said width direction and has first and second ends, a first leg portion perpendicular to said base portion and having a first end connected to said first end of said base portion and a second end which constitutes said first end of said image transmitting member, and a second leg portion perpendicular to said base portion and having a first end connected to said second end of said base portion and a second end which constitutes said second end of said image transmitting member.

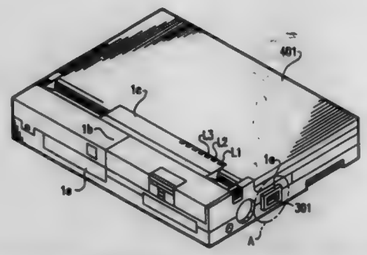
5,383,140

POWER SUPPLY CONTROL SYSTEM FOR A PORTABLE COMPUTER

Nobuyuki Nanno; Kazuo Akashi, and Hiromi Seimiya, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 862,056, Apr. 2, 1992, abandoned, which is a division of Ser. No. 541,978, Jun. 22, 1990, abandoned. This application Aug. 25, 1993, Ser. No. 111,400
Claims priority, application Japan, Jun. 23, 1989, 1-162228; Jun. 23, 1989, 1-162229; Jun. 23, 1989, 1-162231; Jun. 23, 1989, 1-162234
Int. Cl.[6] G06F *1/00*
U.S. Cl. 364—708.1 **3 Claims**

1. A portable computer unit comprising:
a body having a plurality of exterior surfaces,
a single ON/OFF push button switch disposed to project through one of said exterior body surfaces and being operable to control a supply of power to circuitry within the computer body;
a wall projecting outwardly from the one body surface beyond the outmost extent of the ON/OFF switch and



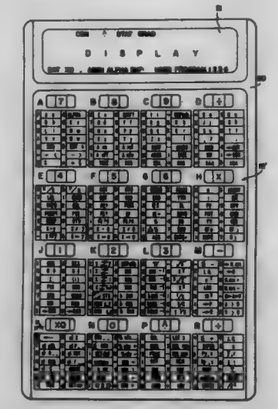
extending along the one body surface in juxtaposition with and around the edge of the ON/OFF switch, to enclose the ON/OFF switch and protect the ON/OFF switch from being inadvertently pushed by an operator while the computer unit is being moved.

5,383,141

COMPUTER WITH FEW KEYS DISPLAYING HUNDREDS OF FUNCTIONS

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation of Ser. No. 919,382, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 786,829, Nov. 1, 1991, abandoned, which is a continuation of Ser. No. 787,633, Oct. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 459,998, Jan. 21, 1983, Pat. No. 4,547,860. This application Feb. 11, 1993, Ser. No. 17,341
Int. Cl.[6] G06F *3/023*
U.S. Cl. 364—709.16 **5 Claims**



1. A hand-held data processing system for processing alphanumeric data having a plurality of modes of operation, comprising in combination:
a multipurpose computer operating system,
hand-held casing means containing the computer system,
a temporary electronic display screen operable from said system adapted for display of alphanumeric data and carried by said casing means,
a keyboard carried by said casing having a plurality n of more than six and less than seventeen manually operable keys,

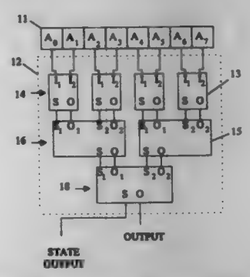
said operating system further comprising entry means employing said keyboard for entering data and instructions directly from the manually operable keys into the system to input functions, instructions, alphanumeric characters employing a complete twenty six character alphabet, and changes between said plurality of modes of operation,
means providing at least one of said keys for actuation to cause the computer to enter a data processing mode of operation for entering into the operating system a set of functions including said operating modes and alphabetic data, said set of functions significantly exceeding the number of keys n for processing up to n^2 functions with said n keys,
visual indicia displayed by sub-sets of said functions in n locations for ready recognition of respective input functions available by first stroking respective ones of said n keys,
means operable in said data processing mode for entering twenty-six alphabet characters and said set of functions with two sequential keystrokes from said keys,
said visual indicia sub-sets of functions being visibly located on said casing with a designation for identifying a first key to be stroked accompanying each of said sub-sets of functions, thereby indicating both keys to be stroked together with the stroking sequence of two keys for entering said alphabet characters and functions into the computer, and
visual status indication means including said temporary electronic display screen for indicating in response to the computer operating system to the user by visual alpha indicia different ones of said modes of operation as an auxiliary display separate from any display of alphanumeric data being processed.

5,383,142

FAST CIRCUIT AND METHOD FOR DETECTING PREDETERMINED BIT PATTERNS

Shine Chung, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 1, 1993, Ser. No. 131,052
Int. Cl.[6] G06F *5/01*
U.S. Cl. 364—715.11 **13 Claims**



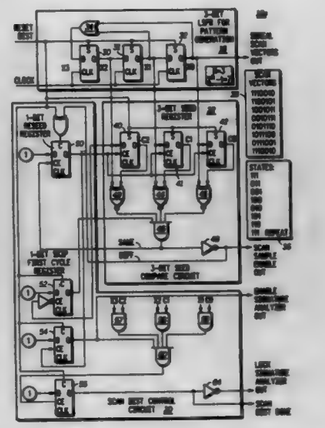
1. A processor for detecting a specified bit pattern in the contents of one or more registers, each register having a plurality of bits, said processor comprising a hierarchical array comprising a plurality of ordered levels of processors labeled 1, 2, . . . M, each level of processors having one or more processing modules, each processing module receiving a plurality of state inputs and generating therefrom a state output, said processing modules in level 1 of said processors having said state inputs connected to selected bits in said registers and said processing modules in the kth level of said hierarchy having said state inputs connected to state outputs of processing modules in level (k−1) of said hierarchy for k=2 to M, wherein each of said processing modules in said levels labeled with 2, 3, . . . , M further comprise means for receiving a plurality of input values and means for generating an output value based on said state inputs and said input values, said receiving means of said processing modules in the kth level of said hierarchy having said receiving means connected to said output generating means of processing modules in level (k−1) of said hierarchy for k=2 to M, said output value providing information on the potential location of said specified bit pattern, and wherein each said processing module in said level labeled 1 includes means for generating an output signal based on said selected bits connected thereto.

5,383,143

SELF RE-SEEDING LINEAR FEEDBACK SHIFT REGISTER (LFSR) DATA PROCESSING SYSTEM FOR GENERATING A PSEUDO-RANDOM TEST BIT STREAM AND METHOD OF OPERATION

Alfred L. Crouch, and Matthew D. Pressly, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1994, Ser. No. 220,348
Int. Cl.[6] G06F *1/02*
U.S. Cl. 364—717 **23 Claims**



1. A data processing system comprising:
circuit means for manipulating data having digital storage devices;
a first storage device coupled to the circuit means for manipulating data, the first storage device having N bits and generating a set of M unique logic values in a cyclic manner wherein $2 \leq M \leq 2^N$; and
a second storage device having N bits which stores one of the M unique logic values from the first storage device as a seed value and recognizes when the seed value repeats in the first storage device, the second storage device stores a different one of the M unique logic values from the first storage device as a new seed value when the seed value repeats.

5,383,144

SUBSAMPLING METHOD AND INTERPOLATION METHOD OF DIGITAL SIGNALS

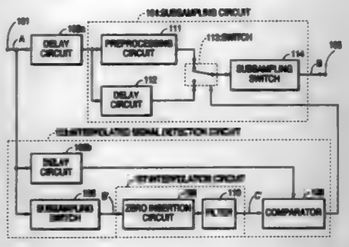
Shiro Kato, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 19, 1991, Ser. No. 794,219
Claims priority, application Japan, Nov. 20, 1990, 2-317224
Int. Cl.[6] G06F *15/31*
U.S. Cl. 364—724.1 **8 Claims**

1. A subsampling method for reducing the number of samples of a first signal which is a sampled and quantized signal transmittable at a first sampling frequency to obtain a second signal which is transmittable at a second sampling frequency lower than said first sampling frequency, wherein sampling points of said first signal are composed of a first group of

sampling points and a second group of sampling points and said second signal has only samples at the first group of sampling points, and wherein said first signal is one of an interpolated signal having samples at the second group of sampling points interpolated by a predetermined interpolation and a non-interpolated signal, said method comprising:

an interpolated signal detection step for detecting whether said first signal is said interpolated signal or said non-interpolated signal and generating a detection information signal indicative of a detection result; and



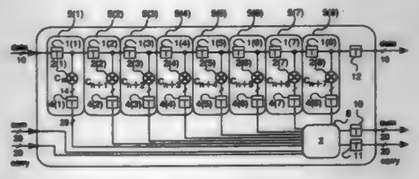
a subsampling step responsive to said detection information signal for removing samples at the second group of sampling points directly from said first signal to obtain said second signal when said detection information signal indicates that said first signal is said interpolated signal and for subjecting said first signal to a predetermined pre-processing including a filtering processing and removing samples at the second group of sampling points from the pre-processed signal to obtain said second signal when said detection information signal indicates that said first signal is said non-interpolated signal.

5,383,145

DIGITAL FILTER AND DIGITAL SIGNAL PROCESSING SYSTEM

Shiro Sakiyama, Kadoma, and Masakatsu Maruyama, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 14, 1993, Ser. No. 136,024
Int. Cl.[6] G06F *15/31*
U.S. Cl. 364—724.16 **10 Claims**



1. An (n×m)-tap digital filter comprising a plurality of n-tap digital filters, the number of n-tap digital filters being "m"; each of the n-tap digital filters comprising a plurality of 1-tap digital filters, the number of 1-tap digital filters being "n"; each of the 1-tap digital filters comprising:

a first type delay for delaying a first input data, the first type delay being connected to a first type delay in another 1-tap filter so that a plurality of the first type delays are connected in series;

a multiplier for multiplying the output data of the first type delay by a prescribed coefficient; and

a second type delay each for delaying the output of the multiplier;.

the n-tap digital filter further comprising:

an (n+2)-input adder for adding the outputs of the second type delays in the 1-tap digital registers to second and third input data and for supplying second and third data obtained in the midst of the addition operation;

a first register for storing the output of the first type delay at the last in the cascade connection for phase matching; and second and third registers for storing the results obtained in the midst of the addition operation by the (n+2)-input adder;

wherein the n-tap digital registers are arranged to form multi-stage dependency connection so that the output of the first register of the n-tap digital register is supplied to the n-tap digital filter of the following stage as the first input data and so that the outputs of the second and third registers are supplied as input data to the (n+2)-input adder in the n-tap digital filter at the following stage;

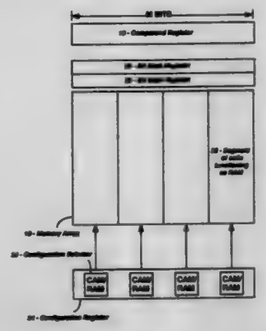
the (n×m)-tap digital filter further comprising: an adder for adding the outputs of the second and third registers in the n-tap digital filter unit at the final stage in the multi-stage dependency connection.

5,383,146

MEMORY WITH CAM AND RAM PARTITIONS

Norman B. Threewitt, Colorado Springs, Colo., assignor to Music Semiconductors, Inc., Colorado Springs, Colo.

Filed Jun. 8, 1992, Ser. No. 894,259
Int. Cl.[6] G06F *12/00*
U.S. Cl. 365—49 **10 Claims**



1. A memory array comprising:

(a.) a plurality of content addressable memory (CAM) cells coupled together to form an array of N data words of M bits each of CAM storage locations, wherein each CAM cell comprises a random access memory (RAM) cell capable of storing one bit of information connected to a comparator,

(b.) a comparison means for comparing a search word comprising a plurality of bits, so that each bit in said search word is simultaneously compared with a corresponding bit in all data words stored in said plurality of CAM cells, by means of said comparator in each said CAM cell,

(c.) comparison result generating means for generating a match signal, said match signal assuming a match state for each data word which is determined to match said search word when said search word is compared with said data words by said comparison means, and said match signal assuming a no-match state for each data word which is determined not to match said search word when said search word is compared with said data words by said comparison means,

(d.) comparator disabling means for disabling each comparator in at least one selected column of CAM cells, resulting in each CAM cell in each such selected column of CAM cells not participating in any comparison with said search word, so that all CAM cells in each such selected column function solely as RAM cells storing associated information, while all CAM cells which are not in such a selected column are participating in comparisons, and

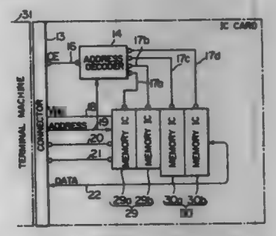
(e.) retrieval and storage means for directly retrieving and storing associated information stored in those CAM cells which are functioning solely as RAM cells, without computing and without decoding an address for said associated information.

5,383,147

IC CARD AND METHOD OF CHECKING THE MEMORY CAPACITY OF IC CARD

Yoshikado Sanemitsu, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,532
Claims priority, application Japan, Feb. 18, 1992, 4-030455
Int. Cl.[6] G11C *5/00, 29/00*
U.S. Cl. 365—52 **3 Claims**



1. An integrated circuit (IC) card comprising:

n identical memory ICs each having a memory capacity m1 and p identical memory ICs each having a memory capacity m2, when n and (p) are each integers larger than one and m1 and m2 are different, each of said n memory ICs having a data memory portion for storing data and a code memory portion in which a code and the number n are stored, and each of said p memory ICs having a data memory portion for storing data and a code memory portion in which a code and the number p are stored;

an address line and a data line connected to each of said memory ICs; and

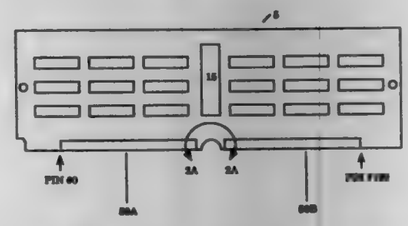
an address decoder for selecting one of said memory ICs according to an address signal on said address line.

5,383,148

SINGLE IN-LINE MEMORY MODULE

James Testa, Mountain View; Andreas Bechtolsheim, Stanford; Edward Frank, Portola Valley, and Shawn Storm, Mt. View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 115,438, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 886,413, May 19, 1992, Pat. No. 5,270,964. This application Jul. 25, 1994, Ser. No. 279,824
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—52 **11 Claims**



1. A single in-line memory module, said single in-line memory module comprising the elements of:

a printed circuit board, said printed circuit board having a first side and a second side, said printed circuit board having a connector edge, said connector edge having a first set of electrical contacts on said first side and a second set of electrical contacts on said second side of said printed circuit board;

a first set of memory elements arranged on said printed circuit board; and

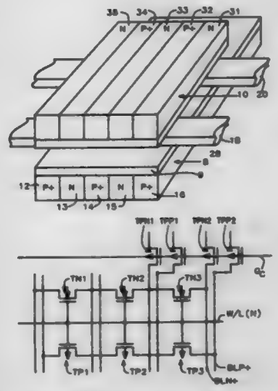
a driver circuit mounted on said printed circuit board, said driver circuit coupled to a set control signals in said first set of electrical contacts and said second set of electrical contacts, said driver circuit transmitting said controls signals to said first set of memory elements.

5,383,149

ULSI MASK ROM STRUCTURE AND METHOD OF MANUFACTURE

Gary Hong, Hsinchu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Division of Ser. No. 157,402, Nov. 26, 1993, Pat. No. 5,358,887. This application Aug. 29, 1994, Ser. No. 294,855
Int. Cl.[6] G11C *17/12*
U.S. Cl. 365—104 **12 Claims**



1. A ROM device providing a double density memory array comprising

a word line array composed of transversely disposed conductors, said word line array being sandwiched between two arrays of bit lines which are orthogonally disposed relative to said word line array,

said two arrays of bit lines being stacked with one above and with one below said word line array.

5,383,150

SEMICONDUCTOR MEMORY DEVICE

Masayuki Nakamura, Akishima, and Kazuyoshi Oshima, Ohme, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1994, Ser. No. 183,958
Claims priority, application Japan, Jan. 25, 1993, 5-028600
Int. Cl.[6] G11C *13/00, 11/22*
U.S. Cl. 365—145 **10 Claims**

8. An information processing system comprising:

a semiconductor memory device; and

a power supply voltage monitor circuit; wherein the semiconductor memory device comprising:

a switching element for address selection which has its gate connected to a word line;

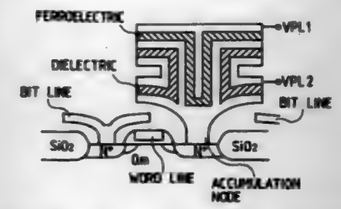
a ferroelectric capacitor which has one of electrodes thereof connected to a data line through the switching

element and the other of the electrodes connected to a first plate voltage supply line; and

a capacitor which has one of electrodes thereof commonly connected to the first electrode of the ferroelectric capacitor and the other of the electrodes connected to a second plate voltage supply line;

wherein a first operation mode and a second operation mode are provided, the first operation mode has a first voltage supplied to the first plate voltage supply line and a second voltage supplied to the second plate voltage supply line, the first voltage corresponding to a power supply voltage, the second voltage corresponding to a ground potential of a circuit, and the second operation mode has the second voltage supplied to the first plate voltage supply line and the first voltage supplied to the second plate voltage supply line; and

wherein the power supply voltage monitor circuit detects an interruption of the power supply voltage to the semiconductor memory device and causes the semiconductor memory device to execute the second operation mode.

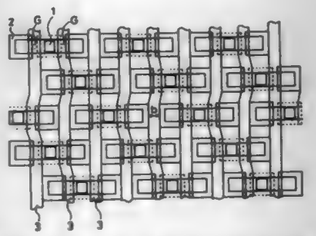


5,383,151

DYNAMIC RANDOM ACCESS MEMORY

Shigeo Onishi, Nara; Kenichi Tanaka, Fukuyama, and Keizo Sakiyama, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 2, 1993, Ser. No. 101,248
Int. Cl.[6] G11C *11/24*
U.S. Cl. 365—149 **4 Claims**



1. A dynamic random access memory which includes a plurality of rows of DRAM cell units each having a bit contact region and DRAM cells each formed in an active region, wherein the DRAM cells, each comprised of a transistor and a capacitor connected to the transistor, are arranged symmetrically to the right and left sides of a bit contact connected with the active region to form the DRAM cell unit; and

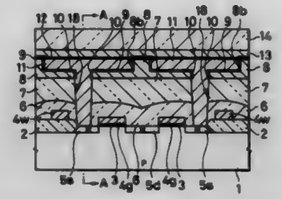
wherein each row of DRAM cell units is arranged with a prescribed uniform pitch in an X direction and further arranged in an orthogonal direction of Y shifted by about one third of the pitch in the X direction with respect to adjacent rows, whereby the prescribed uniform pitch produces uniformity in device density and is sufficiently small as to allow high integration density of said DRAM cell units.

5,383,152

SEMICONDUCTOR MEMORY DEVICE AND ITS FABRICATION METHOD

Hideharu Miyake, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 3, 1994, Ser. No. 176,467
Claims priority, application Japan, Jan. 4, 1993, 5-014397
Int. Cl.[6] G11C *11/24*
U.S. Cl. 361—149 **4 Claims**



1. A semiconductor memory device having stacked-capacitor type memory cells each of which includes an MOS transistor and a storage capacitor, each of said memory cells comprising:

said transistor having a source region and a drain region formed in a semiconductor substrate and a gate electrode formed through a gate insulator on said substrate;

said capacitor having a first opposed electrode formed through an inter-layer insulation film on said substrate, a first insulation film which covers a surface of said first opposed electrode, a charge storage electrode, a second insulation film which covers a surface of said charge storage electrode and a second opposed electrode formed on said second insulation film;

said first opposed electrode having a recess at its upper face; and

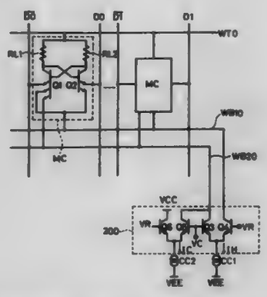
said charge storage electrode being formed in said recess of said first opposed electrode and being contacted with said source region of said transistor through a contact hole of said inter-layer insulation film.

5,383,153

SEMICONDUCTOR MEMORY DEVICE WITH FLASH-CLEAR FUNCTION

Hiroaki Sato, and Hiroyuki Takahashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,619
Claims priority, application Japan, Oct. 15, 1991, 3-295059
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—155 **3 Claims**



3. A semiconductor memory device equipped with a flash-clear function and having a plurality of flip-flop type memory cells each connected between a word top line and a word bottom line, said device comprising:

a first multi-emitter transistor;

a second multi-emitter transistor having emitter nodes the number of which is smaller than that of emitter nodes of said first multi-emitter transistor, said first multi-emitter transistor and said second multi-emitter transistor constituting each of said memory cells;

a clear line to which one of said emitter nodes of said first multi-emitter transistor is connected; and

a switching circuit through which a current source is selectively connected to said word bottom line and said clear line, said switching circuit comprising:

a third transistor of a bipolar type, having a base node receiving a reference voltage and connected between said word bottom line and a single constant-current source;

a fourth transistor of a bipolar type, having a base node receiving a control voltage and connected between said clear line and said single constant-current source; and

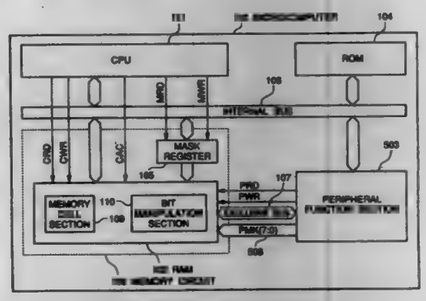
a fifth transistor of a bipolar type, having a base node receiving said control voltage and connected between said clear line and an emitter power supply terminal through a resistor, said control voltage being set such that an inactive level of the control voltage causes both said fourth transistor and said fifth transistor to be turned OFF, and an active level of the control voltage causes said fourth and fifth transistors to be turned ON.

5,383,154

MEMORY CIRCUIT CAPABLE OF EXECUTING A BIT MANIPULATION AT A HIGH SPEED

Tadashi Shibuya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,459
Claims priority, application Japan, Mar. 4, 1992, 4-046484
Int. Cl.[6] G06F *3/14*
U.S. Cl. 365—189.01 **3 Claims**



1. A memory circuit including

a random access memory having a memory cell section and a bit manipulation section for controlling a writing of a bit unit to said memory cell section, said random access memory being able to be read and written at different timings by at least two devices, and

a register for controlling an operation of said bit manipulation section for each bit of data within said bit unit written to said memory cell section,

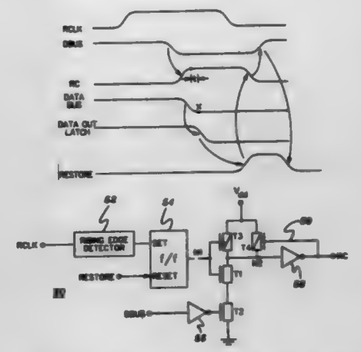
said bit manipulation section including bit manipulation means for rewriting a content of a memory cell within said memory cell section corresponding to each bit of data allowed to be written under control of said register, and inhibiting rewriting a content of a memory cell corresponding to each bit which is inhibited from being written under control of said register.

5,383,155

DATA OUTPUT LATCH CONTROL CIRCUIT AND PROCESS FOR SEMICONDUCTOR MEMORY SYSTEM

Trang K. Ta, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,601
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—191 **26 Claims**



1. In a memory system having a system data bus coupled to at least one data output latch, a control circuit for generating a read command to enable the at least one data output latch to latch valid data from the system data bus in response to a read clock signal, said control circuit comprising:

detecting means for detecting the read clock signal and for generating in response thereto a latch enable signal;

signaling means for generating a valid data signal representative of valid data occurring on the system data bus, said valid data signal being generated by said signaling means without direct monitoring of the system data bus; and

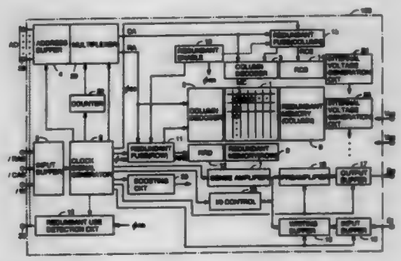
control means coupled to the detecting means and the signaling means for providing the read command to the at least one data output latch upon occurrence of both the latch enable signal and the valid data signal.

5,383,156

SEMICONDUCTOR DEVICE FOR PERMITTING EASY EXTERNAL DETECTION OF USE OF REDUNDANT CIRCUIT AND SEMICONDUCTOR MEMORY DEVICE THEREFORE

Takahiro Komatsu, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 136,841
Claims priority, application Japan, Mar. 23, 1993, 5-063573
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **19 Claims**



19. A semiconductor device, comprising:

program means for programming a position of a defective

circuit within said semiconductor device and transmitting an output signal indicative of said position;

redundant circuit means responsive to the output signal from said program means for functionally replacing said defective circuit;

enabling means for transmitting a first output signal to enable said program means and for transmitting a second output signal indicative of the enabling of said program means, wherein said program means is activated in response to said first output signal;

an external terminal; and

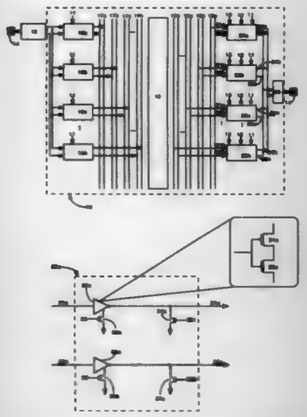
switching circuit means connected between said external terminal and a power supply source for conducting power from said power supply source to said external terminal in response to the second output signal from said enabling means.

5,383,157

PARALLEL TESTMODE

Cathal G. Phelan, Santa Clara, Calif., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Aug. 6, 1993, Ser. No. 103,449
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—201 **20 Claims**



20. A memory device having at least one I/O data source, said memory device including an electrical circuit for writing in parallel a plurality of data bits each having a predetermined polarity into a plurality of memory cells and for reading a corresponding plurality of data bits stored in said plurality of memory cells, both said plurality of data bits having the predetermined polarity and said stored plurality of data bits being greater in number than said at least one I/O data source, said circuit comprising:

means for replicating said at least one data bit having the predetermined polarity into said plurality of data bits having the predetermined polarity and for driving in parallel said plurality of data bits having the predetermined polarity;

bus means for writing in parallel said plurality of data bits having the predetermined polarity into said plurality of memory cells, said write bus means being coupled to said replicating and driving means;

bus means for reading said stored plurality of data bits from said plurality of memory cells;

means for detecting whether each of said stored plurality of data bits contain the predetermined polarity, said detecting means includes:

means for presetting said detecting means to drive the predetermined polarity, and

means for disabling said detecting means so as to perform as a driver; and

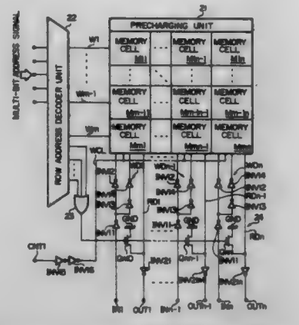
means for selecting said replicating and drive means and said detecting means.

5,383,158

SEMICONDUCTOR MEMORY DEVICE EQUIPPED WITH DISCHARGING UNIT FOR BIT LINES ACCESSED WITH INVALID ADDRESS

Fumio Ikegami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 706,710, May 28, 1991, abandoned. This application Oct. 5, 1993, Ser. No. 131,937
Claims priority, application Japan, May 28, 1990, 2-137376
Int. Cl.[6] G11C *8/00, 7/00*
U.S. Cl. 365—230.01 **11 Claims**



1. A semiconductor memory device comprising

a) a plurality of memory cells arranged in rows and columns and storing data bits,

b) a plurality of word lines respectively associated with the rows of said memory cells and selectively driven to an active level for selecting one of the rows of said memory cells,

c) a plurality of read-out data paths respectively connectable with said one of the rows of said memory cells for propagating said data bits read out therefrom,

d) a plurality of circuits respectively coupled to said plurality of read-out data paths and responsive to said data bits on said associated plurality of read-out data paths,

e) a switching circuit responsive to a control signal for coupling said plurality of read-out data paths to a source of constant voltage level indicative of a logic level, and

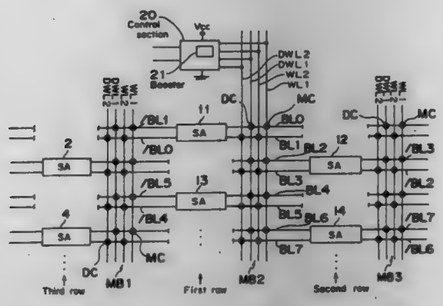
f) a row address decoder unit having first output nodes respectively coupled to said plurality of word lines and at least one second output node coupled to said switching circuit, without any electrical connection to one of said plurality of word lines, and responsive to a row address signal for selectively driving said first output nodes and said at least one second output node to active level depending upon a row address indicated by said row address signal, said control signal allowing said switching circuit to couple said source of constant voltage level to said read-out data paths when said row address signal is indicative of said at least one second output node, said switching circuit electrically isolating said read-out data paths from said source of constant voltage level when said row address signal is indicative of one of said word lines.

5,383,159

SEMICONDUCTOR MEMORY DEVICE OF ALTERNATELY-ACTIVATED OPEN BIT-LINE ARCHITECTURE

Yasushi Kubota, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 15, 1993, Ser. No. 120,823
Claims priority, application Japan, Sep. 17, 1992, 4-247666
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—207 **7 Claims**



1. A semiconductor memory device, comprising:

a plurality of sense amplifiers of differential type arranged in one direction in rows, wherein the neighboring rows constitute associated first and second rows and the sense amplifiers of the first and second rows are disposed alternately with each other in a staggering manner and the sense amplifiers of each row are spaced from adjacent sense amplifiers in the same row by a distance at least equal to four times of a bit line pitch;

two pairs of alternatively-activated bit lines extending from each of the sense amplifiers of the first and second rows in opposite first and second directions, wherein the bit lines extending from the sense amplifiers of the first row in the first direction and the bit lines extending from the sense amplifiers of the second row in the second direction constitute a bit line group between the first and second rows, wherein said bit line pitch is the distance between bit lines in said pairs of bit lines in each respective bit line group;

a plurality of word lines intersecting said bit line group;

a pair of dummy word lines intersecting said bit line group, said pair of dummy word lines positioned in proximity to said word lines;

a plurality of memory cells disposed at intersections between the bit lines in said bit line group and said word lines such that the memory cells connected with one word line are connected with alternate bit lines and that the memory cells connected with one bit line are connected with alternate word lines;

a plurality of dummy cells disposed at intersections between the bit lines in said group and said dummy word lines such that the dummy cells connected with one dummy word line are connected with the alternate bit lines and that the dummy cells connected with the other dummy word line are connected with the remaining bit lines;

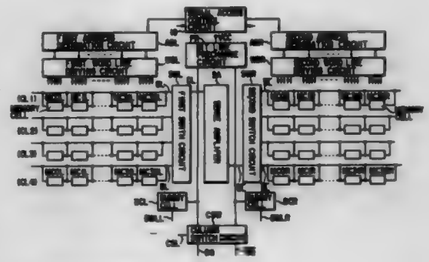
a control section for controlling activation of a selected one of said word lines by a signal, said control section applying to a corresponding dummy word line a signal opposite in phase from that applied to said selected word line such that when the memory cells connected with the activated word line are electrically connected with the associated bit lines, the dummy cells connected with the same bit lines are electrically disconnected therefrom.

5,383,160

DYNAMIC RANDOM ACCESS MEMORY

Tohru Furuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1994, Ser. No. 187,517
Claims priority, application Japan, Jan. 28, 1993, 5-012734
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—221 **20 Claims**



1. A DRAM comprising:

a memory cell array having cascade-connected type memory cells arranged in a matrix form and each capable of storing plural-bit information in the unit of bit, word lines each commonly connected to the memory cells of the same row, and bit lines each commonly connected to the memory cells of the same column;

sense amplifiers each arranged for a preset number of columns in said memory cell array and disposed in the central portion of said bit lines of said preset number of columns in the arrangement direction;

first and second switching circuits disposed on both sides of each of said sense amplifiers, for electrically and selectively connecting said preset number of columns to said sense amplifier;

an address designation circuit for separately and serially designating addresses of a plurality of memory cells disposed on both sides of said sense amplifier in the same column of said memory cell array;

a word line driving circuit for selectively driving a word line connected to a memory cell of an address designated by said address designation circuit;

a column selection circuit for effecting the column selection of said memory cell array; and

an access control circuit for time-serially reading out plural-bit information from one of said memory cells storing storage information and lying on one side of said sense amplifier and sequentially rewriting the plural-bit information into one of the memory cells lying on the other side of said sense amplifier and set in a non-use state at the time of serial access to a plurality of memory cells in a desired column of said memory cell array.

5,383,161

IC CARD WITH DECODER FOR SELECTIVE CONTROL FOR MEMORY STORAGE

Yoshikado Sanemitsu, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 709,890, Jun. 4, 1991, abandoned. This application Aug. 4, 1993, Ser. No. 101,790
Claims priority, application Japan, Oct. 3, 1990, 2-263869
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.06 **4 Claims**

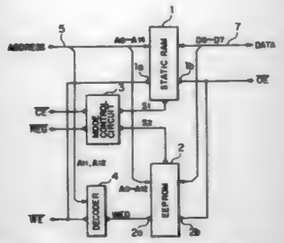
1. An IC card comprising:

a first semiconductor memory for storing main data;

a second semiconductor memory for storing physical information concerning the IC card;

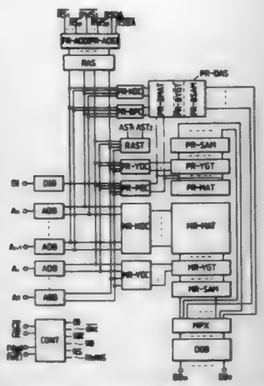
a control circuit connected to said first and second semiconductor memories for selectively enabling operation of said first and second semiconductor memories;

an address BUS connected to said first and second semiconductor memories and including a plurality of signal lines respectively corresponding to bits of addresses of memory locations in said first and second memories;
a data BUS connected to said first and second semiconductor memories; and
a decoder connected to at least two of said signal lines of said address BUS and said second semiconductor memory for decoding a write control signal applied to said decoder



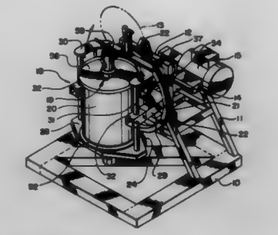
and signals on said signal lines of said address BUS connected to said decoder to produce a decoded write control signal applied to said second semiconductor memory to control storing of data in said second semiconductor memory whereby said second semiconductor memory has a non-rewritable memory region and a rewritable memory region selectively accessible in response to the signals on said signal lines of said address bus connected to said decoder.

5,383,162
SEMICONDUCTOR MEMORY DEVICE
Masaki Shirai, Sayama; Hisahiro Moriuchi, Tanashi; Yasuhiro Yoshii, Kodaira; Kenichi Kuroda, Tachikawa, and Akinori Matsuo, Higashiyamato, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., Tokyo, Japan
Filed Aug. 26, 1992, Ser. No. 935,176
Claims priority, application Japan, Aug. 26, 1991, 3-240479
Int. Cl.[6] H01L 27/10; G11C 11/40
U.S. Cl. 365—231 **28 Claims**



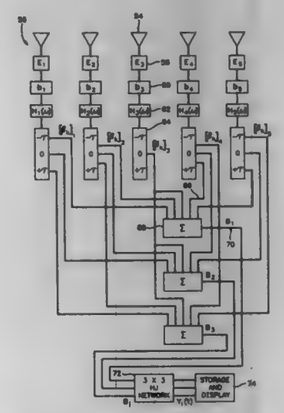
1. A semiconductor memory device comprising:
a memory matrix including a plurality of data lines, a plurality of word lines and a plurality of read only memory cells which are coupled to the data lines and to the word lines;
a row decoder, coupled to the word lines, for selecting one of the word lines in accordance with row address signals;
a column decoder for generating a selection signal in accordance with column address signals;
a column selector, coupled to said column decoder and to the data lines, for selecting one of the data lines in accordance with the generated selection signal from said column decoder;
a column redundant memory matrix including at least one redundant word line, a plurality of redundant data lines and a plurality of electrically programmable memory cells which are coupled to the redundant data lines and to said at least one redundant word line;
a column redundant column decoder for generating a redundant selection signal in accordance with the row address signals;
a column redundant selector, coupled to the redundant data lines and to said column redundant column decoder, for selecting at least one of the redundant data lines in accordance with the row address signals;
column detection means, for detecting coincidence of the column address signals to be supplied to said column decoder with a defective column address signal which indicates a defective data line in said memory matrix, and for generating a redundant word line selection signal for selecting a respective redundant word line from said column redundant memory matrix; and
output means, coupled to said column selector and to said column redundant selector, for selectively outputting an output from said column selector and said column redundant selector,
whereby data stored in the electrically programmable memory cells of said column redundant memory matrix are read out in place of read only memory cells coupled to the defective data line of said memory matrix.

5,383,163
MIXING APPARATUS
Randy J. Bruna, Brooklyn Park, Minn., assignor to Red Devil Equipment Company, Bloomington, Minn.
Continuation of Ser. No. 4,810, Jan. 15, 1993, Pat. No. 5,261,744. This application Oct. 21, 1993, Ser. No. 140,751
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[6] B01F 9/00
U.S. Cl. 366—217 **21 Claims**



1. A mixing apparatus comprising:
a support frame;
a fixed gear connected with said support frame and having gear teeth arranged in a generally circular path around a first axis;
a mixer chassis carrying clamp means for holding a container of material to be mixed, said clamp means including container gripping means rotatable relative to said mixer chassis about a second axis for gripping engagement with the container of material to be mixed;
first drive means for rotating said mixer chassis about said first axis; and
second drive means carried by said mixer chassis for rotating said gripping means about said second axis, said second drive means including a planetary gear having gear teeth for engagement with the gear teeth of said fixed gear and a planetary gear shaft extending from said planetary gear, whereby said planetary gear and said planetary gear shaft rotate as said mixer chassis rotates about said first axis; and
means connected with said planetary gear shaft and said gripping means for transmitting rotational movement of said planetary gear shaft to said gripping means.

5,383,164
ADAPTIVE SYSTEM FOR BROADBAND MULTISIGNAL DISCRIMINATION IN A CHANNEL WITH REVERBERATION
Terrence Sejnowski, Solana Beach, and Shao L. Li, San Diego, both of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.
Filed Jun. 10, 1993, Ser. No. 74,940
Int. Cl.[6] G01S 13/68
U.S. Cl. 67—134 **27 Claims**



1. A method for recovering at least one of a plurality I of source signals $\{S_i\}$, each said source signal S_i arriving at a receiver from one of a plurality J of directions $\{D_j\}$, said receiver including a plurality K of sensors each having a sensor output signal E_k, wherein i, j and k are non-zero positive integers and I, J and K are positive integers greater than unity, said method comprising:
creating a plurality K of said sensor output signals $\{E_k\}$ responsive to said plurality I of source signals $\{S_i\}$;
multiplying said sensor output signals $\{E_k\}$ by predetermined shading factors $\{b_k\}$ to create a plurality K of shaded sensor output signals $\{b_kE_k\}$;
delaying said shaded sensor output signals $\{b_kE_k\}$ by means of a plurality J of phasing vectors $[\beta_k]$ to produce a plurality J·K of delayed shaded sensor output signals $[b_kE_k]_j$ and combining said delayed shaded sensor output signals to create a plurality J of spatial beam signals $\{B_j\}$ such that

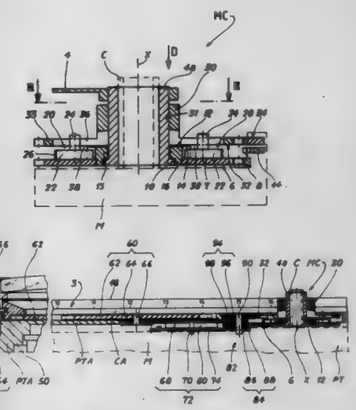
$$B_j = \sum_{k=1}^{K} b_k E_k(t - \lambda_k \sin\beta_{kj}),$$

wherein t is time and λ_k is a predetermined constant; and
producing an estimated source signal Y_i at an output such that $Y_i = \epsilon B_j$, wherein said estimated source signal Y_i corresponds to said at least one source signal S_k, ϵ is a predetermined constant, and said shaded sensor output signals $\{b_kE_k\}$ are filtered by means of a filter characteristic $H_k(\omega)$ substantially equivalent to

$$H_k(\omega) = \gamma(\omega)e^{\frac{-k2}{\alpha(\omega)}} + \delta(\omega),$$

wherein $\alpha(\omega)$, $\delta(\omega)$ and $\gamma(\omega)$ are predetermined functions of frequency ω selected such that each said spatial beam signal B_j is unchanging over a predetermined continuous frequency band.

5,383,165
TIMEPIECE WITH A UNIVERSAL TIME DISPLAY
Frank Vaucher, Cormoret, Switzerland, assignor to Compagnie des Montres Longines Francillon S.A., St-Imier, Switzerland
Filed Jul. 16, 1993, Ser. No. 93,063
Claims priority, application Switzerland, Jul. 17, 1992, 02266/92
Int. Cl.[6] G04B 19/22
U.S. Cl. 368—27 **7 Claims**



1. A timepiece with a universal time display including:
a watch stem,
a horometric movement including a dial train,
an hours pipe,
an hours hand mounted on said hours pipe and driven by said dial train,
a rotary ring driven in order to effect one revolution per twenty-four hours,
a first display means including a twenty-four hour-hours circle,
a second display means including geographic indications respectively indicating various time zones, one of said display means being arranged on said rotary ring for being displaced with respect to the other of said display means and for furnishing with the latter the universal time display, and—a correction mechanism for acting on said hours hand including a first and a second toothed wheel coaxially mounted on said hours pipe, a jumping device coupling said first and second wheels and means intermediate said first wheel and said ring for permitting said wheel to drive said ring, said first wheel being in gear with said dial train, and being mounted to rotate freely on the hours pipe, said second wheel being secured to said hours pipe for rotation therewith, and means for permitting said second wheel to be operated by said stem for correcting the position of the hours hand without rotating said ring.

5,383,166

WATERTIGHT CONTROL DEVICE FOR WATCHES

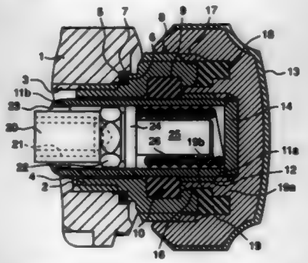
Jacques-André Gallay, Les Avanchets, Switzerland, assignor to Montres Rolex S.A., Switzerland

Filed Feb. 3, 1993, Ser. No. 13,082

Claims priority, application Switzerland, Feb. 12, 1992, 00424/92

Int. Cl.[6] G04B *37/00, 29/00*

U.S. Cl. 368—288 **5 Claims**



1. In a watertight control device for watches, comprising a crown with a central cavity surrounded by an annular cavity, a watertight seal disposed in the said annular cavity, a sleeve fixed at one end thereof in said central cavity, a watch control rod disposed inside said sleeve, said watch control rod and the other end of said sleeve having complementary coupling means for driving said rod in rotation and translational movement, a spring located in said sleeve between said one end thereof fixed in the said central cavity and the end of the control rod for engaging said coupling means, and a tube fixed to the casing of the watch, in the interior of which tube said sleeve is free to move and having a projecting part adapted to be screwed into said annular cavity of the crown and, in the screwed-up position, to compress said watertight seal at its end, the improvement wherein said watertight seal is an injected part made of thermoplastic elastomer having a cross section complementary to that of said annular cavity, said annular cavity comprising a groove formed in its bottom, said seal comprising two annular portions of the same external diameter, but diameter internal diameters, the annular portion of greater diameter engaging in said groove and the portion of smaller diameter being that on which the tube acts in the screwed-up position of the crown.

5,383,167

METHOD AND APPARATUS FOR HISTOGRAM BASED DIGITAL CIRCUIT SIMULATOR

Paul B. Weil, Fremont, Calif., assignor to Nextwave Design Automation, San Jose, Calif.

Filed Oct. 16, 1991, Ser. No. 777,451

Int. Cl.[6] G01R *27/00*

U.S. Cl. 364—488 **28 Claims**

MICROFICHE APPENDIX INCLUDED

(324 Microfiche, 4 Pages)

4. A method of analyzing on a computer a signal transition propagation through a component, said component being one of a plurality of components of a digital circuit, each of said components having an input signal, an output signal, and a signal propagation delay time, said signals having logic level transitions over time, said computer having memory, said method comprising the step of

associating said component with at least one input signal and at least one output signal;

scheduling at least one event comprising an input signal transition propagating through said component, and for each such event performing the steps of

storing in said memory the signal propagation delay time of the component as a segmented probability distribution;

storing in said memory the input signal level transition time as a segmented probability distribution;

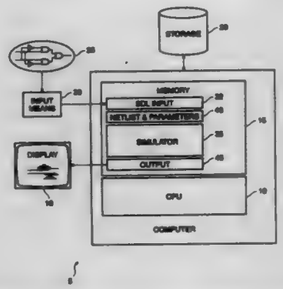
determinately combining the input signal transition probability distribution with the propagation delay probability distribution to generate the output signal transition time represented as a segmented probability distribution; and

storing in said memory said output signal transition time probability distribution;

wherein the step of storing the signal propagation delay time of the component comprises storing a histogram having at least two segments, each segment having a time range and a probability corresponding to the likelihood of the delay time being within the segment time range;

wherein the step of storing the input signal level transition time comprises storing a histogram having at least two segments, each segment having a time range and a probability corresponding to the likelihood of the input signal transition time being within the segment time range;

wherein the step of storing the output signal transition time comprises storing a histogram having at least two segments, each segment having a time range and a probability corresponding to the likelihood of the output signal transition time being within the segment time range;



wherein time ranges have a begin time and an end time, and wherein said combining step comprises the steps of

i) combining the signal transition histogram segments with the delay histogram segments to generate divisions, each division having a time range and probability, by performing the steps of

1) adding transition histogram segment begin times to delay histogram segment begin times to produce division begin times;

2) adding transition histogram segment end times to delay histogram segment end times to produce division end times;

3) multiplying transition histogram segment probabilities by delay histogram segment probabilities to produce division probabilities

ii) generating an output signal transition histogram from the divisions.

5,383,168

ACTIVELY ATHERMALIZED OPTICAL HEAD ASSEMBLY

Michael J. O'Brien, and William B. Smith, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1993, Ser. No. 41,641

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

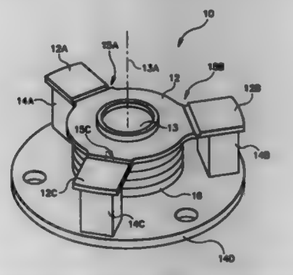
Int. Cl.[6] G11B *7/00*; G02B *26/08*

U.S. Cl. 369—44.14 **11 Claims**

1. An actively athermalized optical head assembly, comprising:

(a) a collimating optics mount including a flexure plate, light beam collimating optics fixed on the flexure plate and thereby defining an optical axis, and three flexure plate extensions being substantially equally distributed about the optical axis and each being attached to the flexure plate at a respective elastic kinematic hinge; and

(b) a light beam source mount having located thereon actuator means and a light beam source so as to direct a light beam through said collimating optics, said actuator means



being operatively connected to each of the mount extensions for selective coupling of a displacement force through the respective elastic kinematic hinge to effect an adjustment of the position of the collimating optics with respect to the beam source.

5,383,169

OPTICAL RECORDING AND REPRODUCING APPARATUS FOR TRACKING WOBBLING GUIDE GROOVES

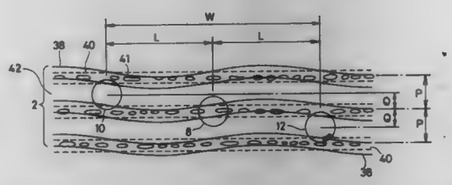
Masahisa Shinoda; Kenjiro Kime; Toshiya Matozaki; Keiji Nakamura; Toru Yoshihara, and Takeshi Ito, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 935,925, Aug. 27, 1992, Pat. No. 5,303,216. This application Feb. 15, 1994, Ser. No. 196,463

Claims priority, application Japan, Aug. 28, 1991, 3-217027; Nov. 22, 1991, 3-307418

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.13 **7 Claims**



1. An optical apparatus for recording and reproducing information on or from an information recording medium having guide grooves that are disposed at a certain pitch and that wobble with a certain repeating period, said apparatus comprising:

a laser for emitting at least one laser beam;

an optical system for receiving said laser beam and forming a center spot and two satellite spots on said information recording medium, said center spot and said two satellite spots being aligned in a straight line at an angle to said guide grooves with said center spot disposed midway between said two satellite spots and distant from each of said two satellite spots by an odd multiple of substantially one-half said repeating period in a longitudinal direction of said guide grooves;

a first split photodetector for receiving reflected light from said center spot and generating a first pair of electrical signals;

a second split photodetector for receiving reflected light from one of said two satellite spots and generating a second pair of electrical signals;

a third split photodetector for receiving reflected light from another of said two satellite spots and generating a third pair of electrical signals; and

a tracking error detection circuit for generating a first difference signal from said first pair of electrical signals, a second difference signal from said second pair of electrical signals, and a third difference signal from said third pair of electrical signals, then adding said second difference signal and said third difference signal and subtracting their sum from said first difference signal to generate a tracking error signal.

5,383,170

OPTICAL CARD RECORDING/REPRODUCING APPARATUS WHEREIN A DATA PROCESS IS MADE DURING AN ACCESS OPERATION

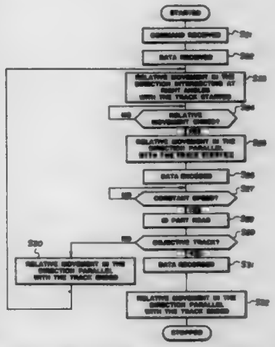
Toshio Horiguchi, Hachioji, and Hisakatsu Tanaka, Chofu, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 786,654, Nov. 1, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 134,876

Claims priority, application Japan, Nov. 2, 1990, 2-298452; Jan. 30, 1991, 3-009705

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.28 **12 Claims**



11. An optical card recording/reproducing method including an optical head, a card-like recording medium having a plurality of linear tracks each containing a data portion, in which information can be recorded/reproduced, and an ID portion, in which identifying information is recorded, and a photodetector, comprising the steps of:

reproducing of information by generating a light beam from the optical head to the tracks of the card-like recording medium and reflecting the light beam to the photodetector;

moving either the optical head or the card-like recording medium relative to one another in a direction crossing the tracks;

moving either the optical head or the card-like recording medium relative to one another in a direction parallel with the tracks;

performing either an encoding process of adding information for detecting and correcting errors to the information to be recorded in the card-like recording medium or an error correcting process of detecting and correcting errors in the information reproduced from the card-like recording medium;

moving the light beam to a target track with a seek control means by controlling the moving operation in the direction crossing the tracks or the moving operation in the direction parallel with the tracks, by judging, during the

moving operation in the direction parallel with the tracks, whether or not a track illuminated by the light beam is the target track to be recorded/reproduced according to an output signal of the photodetector which indicates that the light reflected by the ID portion is received;

performing the encoding process/error correcting process during a period of time which begins with the start of the moving operation of said light beam to said target track by said seek control means and ends before the moving operation in the direction parallel with the tracks reaches a constant speed.

5,383,171

INFORMATION RECORDING/REPRODUCING DEVICE AND METHOD FOR RECORDING/REPRODUCING INFORMATION ON A RECORDING MEDIUM USING ACCURATE SYNCHRONIZATION IN A DATA AREA IN WHICH CODED DATA IS STORED

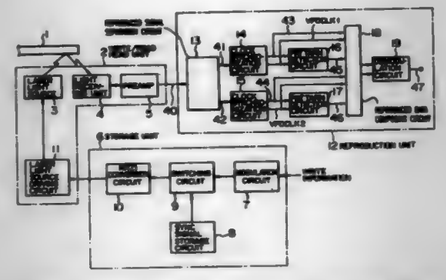
Takuya Mizokami; Odawara; Atsushi Saito, Ichikawa; Naozane Yoshida, and Takehiko Sekine, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Engineering, Inc., Yokohama, both of Japan

Continuation of Ser. No. 588,361, Sep. 26, 1990, Pat. No. 5,229,986. This application Dec. 15, 1992, Ser. No. 991,469

Claims priority, application Japan, Sep. 26, 1989, 1-249994

Int. Cl.[6] H04N *5/76*

U.S. Cl. 369—59 **22 Claims**



1. An information recording device for recording information on a recording medium, the medium having a plurality of tracks, each track including a plurality of sectors, each sector including a preformatted area onto which an address is recorded and a data area in which coded data is stored, comprising:

means for converting the information to be recorded into recording data in the form of a run-length-limited code in accordance with a predetermined conversion rule, said information being in units corresponding to the sector;

means for storing a first sync signal to be added at a head of said recording data and a second sync signal to be inserted into said recording data, wherein said second sync signal comprises a special code pattern not found in said predetermined conversion rule and is distinguishable from said recording data;

means for adding said first sync signal at the head of said recording data and for inserting said second sync signal at predetermined intervals into said recording data in accordance with a predetermined format;

means for NRZI-converting a combination of the recording data and the first and second sync signals; and

means for writing a status transition pattern on the recording medium in the data area of a sector on the basis of the NRZI-converted combination data.

5,383,172

INFORMATION STORAGE SYSTEM AND DEVICE FOR IMPROVED ERASING OF INFORMATION WRITTEN ON A RECORD CARRIER

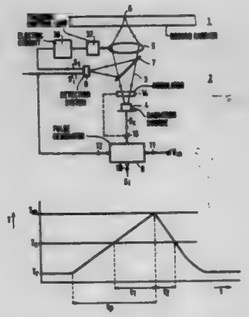
Antonius H. M. Holtslag; James H. Coombs, and Wilma Van Es-Spiekman, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1993, Ser. No. 107,532

Claims priority, application European Pat. Off., Aug. 19, 1992, 92202541

Int. Cl.[6] G03C *1/72*

U.S. Cl. 369—100 **18 Claims**



1. An information storage system, comprising: a device having:

(a) radiation generator means for generating a radiation beam having an intensity;

(b) pulse generator means for generating an erase pulse; and

(c) modulation means for modulating the intensity of the radiation beam in accordance with the erase pulse to produce an erase pulse radiation beam; and

a record carrier

(a) having a recording layer in which information is writable therein by changing an area of the recording layer which has an amorphous structure into an information area having a crystalline structure; and

(b) which is scannable by the erase pulse radiation beam so as to erase information which is written in the recording layer by heating an information area above a melting point of the recording layer;

wherein a time duration of both the erase pulse radiation beam and a cooling time of the recording layer following the erase pulse radiation beam is short enough that an area of the recording layer which is heated by the erase pulse radiation beam to a temperature which is higher than a crystallization temperature for the recording layer and lower than the melting point remains above the crystallization temperature for a period of time which is shorter than a crystallization time for the recording layer.

5,383,173

OPTICAL PICK-UP UTILIZING A PHASE DIFFRACTION GRATING FOR DIFFRACTING REFLECTED LIGHT IN TWO DIRECTIONS

Young-woong Kim, and Chul-woo Lee, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Mar. 30, 1993, Ser. No. 40,008

Claims priority, application Rep. of Korea, Mar. 31, 1992, 92-5405

Int. Cl.[6] G11B *7/00*

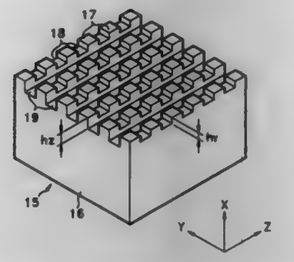
U.S. Cl. 369—112 **8 Claims**

1. An optical pickup comprising:

a light generation device for generating a light beam;

an objective lens for collecting and projecting said generated light beam onto a light recording medium;

light path separation means for separating a reflected light beam of the light recording medium from an incident light beam transmitted forward from the light generation device to an objective lens;



a two dimensional phase-diffraction grating for diffracting said separated reflected light beam in two mutually perpendicular directions on a surface perpendicular to the incident light beam axis; and

means for detecting an electrical signal from said diffracted and separated reflected light beam.

5,383,174

OPTICAL DISK APPARATUS

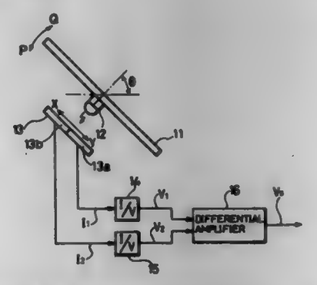
Tomiyuki Numata, Tenri; Takeshi Yamaguchi, Sakai, and Takashi Iwaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1992, Ser. No. 998,736

Claims priority, application Japan, Jan. 7, 1992, 4-000612

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—119 **21 Claims**



1. An optical disk apparatus comprising:

optical path changing means for changing an optical path of a light beam by rotating said changing means, thereby leading the light beam onto a recording medium;

error detection means for detecting a rotation angle of said optical path changing means, and for outputting an error signal upon detecting that the rotation angle of said optical path changing means does not fall in a predetermined range; and

control means for controlling said apparatus such that said apparatus stops recording and erasing of information in response to the error signal.

5,383,175

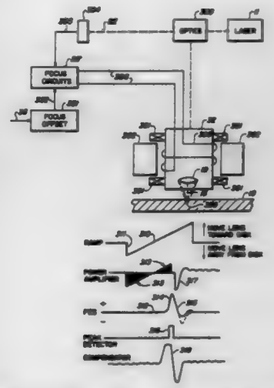
LASER POWER CONTROL WITH DEFOCUSING OFFSET DURING DATA RECORDING

Blair I. Finkelstein, and David E. Call, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,525

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—121 **7 Claims**



1. A method of operating apparatus for recording data on erasable optical media comprising the steps of:

producing a light beam from a laser;

providing an optical system including focusing means for coupling said light beam to said media;

providing focus control circuits to establish a control point for in-focus condition and for maintaining said in-focus condition; and

providing offset means to establish an out-of-focus condition during a data recording operation to reduce the effect of optical feedback on the power level stability of said laser during said data recording operation.

5,383,176

OPTICAL DISK

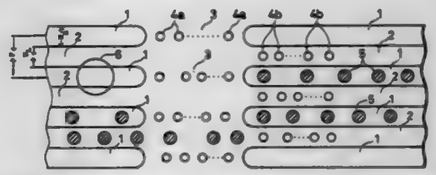
Tetsuya Inui; Akira Takahashi, and Kenji Ohta, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed May 7, 1993, Ser. No. 58,931

Claims priority, application Japan, May 15, 1992, 4-123429; Mar. 16, 1993, 5-56005

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.4 **23 Claims**



1. An optical disk comprising: concentric or spiral grooves, said grooves having an interrupted portion in each rotation, and a plurality of land portions formed between the grooves;

a first series of pits recorded in an interrupted portion as address information; and

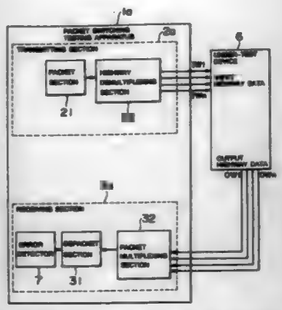
a second series of pits recorded in a portion of land as address information, the portion of said land and the interrupted portion of said groove being located in different radial directions.

5,383,177

PACKET SWITCHING TESTING METHOD AND APPARATUS

Hiroomi Tateishi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 31, 1994, Ser. No. 189,410
Claims priority, application Japan, Sep. 20, 1993, 5-233959
Int. Cl.[6] H04J *3/14*; H04L *1/24, 12/26*
U.S. Cl. 370—15 **18 Claims**



1. A packet switching testing method of testing an under-test device for transferring communications information packet-wise by connecting a plurality of input highways and a plurality of output highways to said under-test device, said method comprising:

a transmitting step of transmitting the packet data to said under-test device; and

a receiving step of receiving the packet data tested by said under-test device;

said transmitting step including:

a packet step of generating plural pieces of packet data by adding a packet header to each of a plurality of random patterns representing the communications information; and

a highway demultiplexing step of demultiplexing the packet data generated in said packet step to the plurality of input highways,

said receiving step including:

a packet multiplexing step of multiplexing the packet data to one highway, the packet data being supplied via the plurality of output highways;

a depacket step of fetching the random patterns out of the packet data multiplexed in said packet multiplexing step; and

an error detecting step of detecting an error in the random pattern fetched in said depacket step.

5,383,178

NETWORK COMMENTATOR

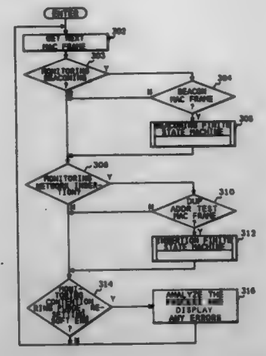
Rod Unverrich, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 26, 1992, Ser. No. 857,894
Int. Cl.[6] H04Q *9/00*
U.S. Cl. 370—17 **15 Claims**

11. A method for monitoring a token-ring local area network, wherein said token-ring local area network has at least one network computer station attached thereto, and further wherein said at least one network computer station may send a plurality of frames, each frame being one of several types of frames, through said token-ring local area network, said method comprising the steps of:

(a) receiving a plurality of frames being transmitted over said local area network by said at least one network computer station;

(b) examining each of said plurality of frames and starting a first timer after receiving a first duplicate address type of frame;



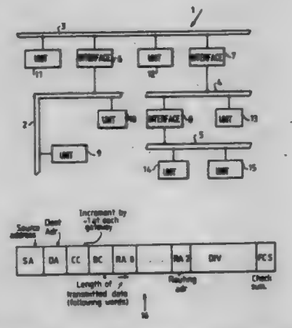
(c) displaying a duplicate address test failure error message when said first timer exceeds a first predetermined time before receiving a second duplicate address type of frame.

5,383,179

MESSAGE ROUTING METHOD IN A SYSTEM HAVING SEVERAL DIFFERENT TRANSMISSION CHANNELS

Jasjit S. Saini, Rosenwiller, and Pierre Troian, Hoenheim, both of France, assignors to Laboratoire Europeen de Recherches Electroniques Avancees, Courbevoie, France

Continuation of Ser. No. 845,798, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 543,794, Jul. 27, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 90,435
Claims priority, application France, Dec. 15, 1988, 88 16550
Int. Cl.[6] H04L *12/46, 12/56*
U.S. Cl. 370—54 **8 Claims**



1. A method for routing a message in a system comprising several different types of transmission channels and several different units with each one of said transmission channels being attached to at least one of said several different units, said several different units including interface units which link transmission channels at transition points, wherein each respective unit attached to a channel may communicate with another unit in the system, comprising the steps of:

adding to a data packet, which includes a source address field containing a source address representing an address of a source unit and a destination address field containing a destination address representing the address of a destination unit, transition point data identifying transmission points crossed by said data packet, said transition point data added when a transition point is crossed consisting of the replacement of the content of said source address field by an address of said transition point, the former content of said source address field becoming an entry into a routing information field, whereby said routing information field includes a sequence of addresses of transition points which have been passed through,

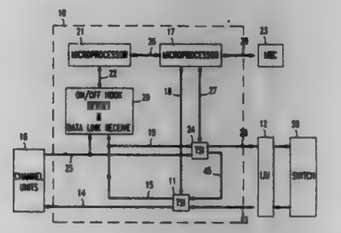
sending said packet from said source unit to said destination unit.

5,383,180

CIRCUIT PACK FOR DIGITAL LOOP CARRIER TRANMISSION SYSTEMS

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Filed May 24, 1993, Ser. No. 65,001
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 370—58.2 **9 Claims**



1. A circuit for receiving and transmitting data link signals in a digital loop transmission system comprising:

a first time slot interchanger for receiving frames of information from a local digital switch;

a first microprocessor coupled to the first time slot interchanger and adapted for commanding the time slot interchanger to interchange designated time slots in the frames to a designated transmission path;

a second time slot interchanger with programmable delay compensation coupled to the transmission path in order to receive the designated time slots;

a second microprocessor coupled to the second time slot interchanger and adapted for commanding the second time slot interchanger to send to it data link bits from the designated time slots and for assembling the bits into designated fields; and

a transmission path between the first and second microprocessors such that the second microprocessor can send to the first microprocessor the designated fields.

5,383,181

PACKET SWITCHING SYSTEM CAPABLE OF REDUCING A DELAY TIME FOR EACH PACKET

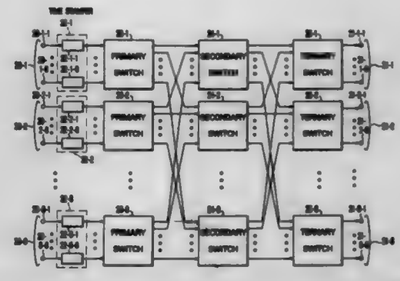
Toshiya Aramaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 968,507
Claims priority, application Japan, Oct. 31, 1991, 3-286033; Nov. 29, 1991, 3-315845
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 **10 Claims**

1. A packet switching system which is composed of a 3-stage switch network and which has N^2 original input ports and N^2 original output ports, where N represents a predetermined integer which is not less than two, each of said N^2 original input ports being supplied with an input packet having a fixed-length while each of the original output ports produces an output packet having said fixed-length, said input packet consisting of a header and information bits, the header of said input packet including a destination address indicative of destination for said input packet in question, said N^2 original input ports being divided into first through N-th input groups each of which comprises first through N-th partial input ports, said N^2 original output ports being divided into first through N-th output groups each of which comprises first through N-th partial output ports, said packet switching system comprising:

N^2 original time stampers connected to said N^2 original input ports, respectively, each of said original time stampers assigning a time stamp indicative of a time instant to the input packet supplied thereto to produce a time stamped packet, said N^2 original time stampers being divided into first through N-th stamper groups each of which comprises first through N-th partial time stampers, said first through said N-th partial time stampers of an n-th stamper group being connected to said first through said N-th partial input ports of an n-th input group, respectively, where n represents an integer varying one to N, both inclusive;

first through N-th primary switches connected to said first through said N-th stamper groups, respectively, each of said first through said N-th primary switches having first through N-th primary input lines and first through N-th primary output lines, each of said first through said N-th primary switches carrying out a primary switching operation so as to connect said first through said N-th primary input lines with said first through said N-th primary output lines in one-to-one correspondence to produce primary switched packets, said first through said N-th primary input lines of an n-th primary switch being connected to said first through said N-th partial time stampers of said n-th stamper group, respectively;



first through N-th secondary switches connected to said first through said N-th primary switches in a cross link connection fashion, each of said first through said N-th secondary switches having first through N-th secondary input lines and first through N-th secondary output lines, the n-th secondary input line of each said first through said N-th secondary switches being connected to said first through said N-th primary output lines of said n-th primary switch, respectively, each of said first through said N-th secondary switches carrying out a secondary switching operation on said primary switched packets supplied thereto in sequence on the basis of said destination addresses included in the respective primary switched packets to produce secondary switched packets; and

first through N-th ternary switches connected to said first through said N-th secondary switches in a cross link connection fashion, each of said first through said N-th ternary switches having first through N-th ternary input lines and first through N-th ternary output lines, the n-th ternary input line of each said first through said N-th ternary switches being connected to said first through said N-th secondary output lines of an n-th secondary switch, respectively, each of said first through said N-th ternary switches comprising a sequence correcting section for correcting sequence of the secondary switched packets successively supplied thereto on the basis of the time stamps assigned to the respective secondary switched packets to successively produce sequence corrected packets and a switching section for carrying out a ternary

switching operation on the sequence corrected packets on the basis of said destination addresses included in the respective sequence corrected packets to produce ternary switched packets, said first through said N-th ternary switches being connected to said N^2 original output ports, said first through said N-th ternary output lines of an n-th ternary switch being connected to said first through said N-th partial output ports of said n-th output group, respectively, whereby each of said N^2 original output ports produces, as said output packet, the ternary switched packet supplied thereto.

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RESEQUENCING DEVICE FOR A NODE OF A CELL SWITCHING SYSTEM

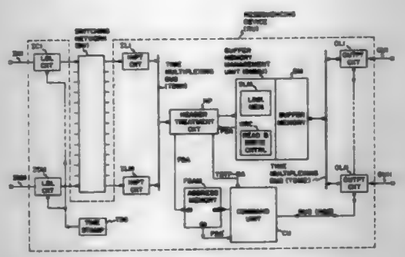
Yves Therasse, Chastre, and Pierre-Paul F. M. M. Guebels, Keerbergen, both of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Nov. 12, 1993, Ser. No. 152,594

Claims priority, application European Pat. Off., Nov. 30, 1992, 92203694

Int. Cl.[6] H04Q *11/04*; H04L *12/56*

U.S. Cl. 370—60 **4 Claims**



1. Resequencing device (RU) for a node of a system for switching cells, each cell comprising a variable number of sub-cells of fixed length, said node comprising a switching network (SW) through which said cells are transmitted with first variable delays, all the sub-cells of a same cell being subjected to a same first delay; said resequencing device (RU) including means for storing all said cells that have been transmitted through said switching network and for then sending them to at least one output of said resequencing device after respective waiting delays constituting respective second delays having expired so that for each cell a sum of said first delay and said respective second delay is equal to a predetermined value substantially equal for all said cells; said means including:

a buffer memory (BM) responsive to a cell having been transmitted through said switching network, for storing all the sub-cells of said cell transmitted through said switching network and received by said resequencing device;

an address memory (FSAM) responsive to said storage of said cell in said buffer memory (BM), for storing an address (FSA) of a location of said buffer memory containing a first sub-cell of said cell;

means (TSG, IC1, . . . , ICN, CU) responsive to said storage of said cell in said buffer memory (BM), for finding in said address memory a location containing an address (FSA') of said location of said buffer memory (BM) containing said first sub-cell of said cell when said waiting delay of said cell has expired and when an output on which said cell has to be sent is available;

wherein said means for finding said address (FSA') of said location of said buffer memory containing said first sub-cell of said cell includes:

a waiting-cell memory (VIM), addressable by its content, for storing a waiting-cell identifier (TSTP-OA) when said cell is stored in said buffer memory (BM); said waiting-cell identifier (TSTP-OA) being stored at a location of said waiting-cell memory (VIM) with an address (FA) identical to an address of said location of said address memory (FSAM) where said address (FSA) of said location of said first sub-cell in said buffer memory (BM) is stored; and said waiting-cell identifier including: a time label (TSTP) identifying a time slot period within which said waiting delay of said cell stored in said buffer memory (BM) will expire and an identity (OA; OM) of at least one output of said resequencing device to which said cell has to be sent;

means (TC, AC) responsive to said waiting-cell identifier, for finding in said waiting-cell memory (VIM) said waiting-cell identifier (TSTP-OA) of each cell when its waiting delay expires, and for providing for each thus found waiting-cell identifier said identity of said at least one output included in said waiting-cell identifier and an address (NA) of a location of said waiting-cell memory (VIM) containing said found waiting-cell identifier;

queuing memories (QC1, . . . , QCN) respectively associated with the outputs of said resequencing device and addressable by their content, for storing in response to said output identity included in said waiting-cell identifier and to said address (NA) of said location of said waiting-cell memory (VIM) containing said found waiting-cell identifier, in a selected said queuing memory associated to an output having said output identity, a sequence number for each cell which has to be sent to said output having said output identity;

means (DMX, SNL1, . . . , SNLN) responsive to said address of said location of said waiting-cell memory (VIM), for determining and writing said sequence number in said selected queuing memory at said address (NA) provided by said means (TC, AC) for finding said waiting-cell identifier of each cell when its waiting delay expires;

means (SNL1, . . . , SNLN, FFO1, . . . , FFON) responsive to an output availability signal (IDL) provided by said outputs of said resequencing device and indicating whether a respective one of said outputs is available or not, for finding, in ascending order, each sequence number (SN') stored in said queuing memory when said output associated thereto becomes available; and for returning an address (NA') of a location of said queuing memory containing a found sequence number (SN');

means (MUX) responsive to said address returned by said means for finding each sequence number, for reading an address (FSA') of a location of a first sub-cell in said address memory (FSAM) at said address returned by said means (SNL1, . . . , SNLN, LRSN) for finding each number.

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DATA COMMUNICATION EQUIPMENT

Atsushi Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,833

Claims priority, application Japan, Aug. 28, 1991, 3-217566

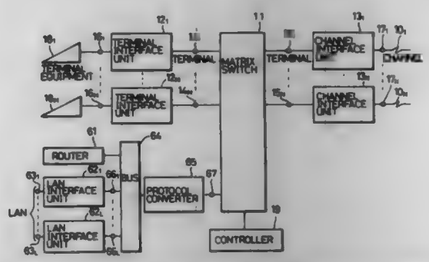
Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—60.1 **4 Claims**

1. Data communication equipment for installation at a host computer site, comprising N communication channel interface units designed to terminate each interface of N communication channels, M terminal interface units designed to terminate each interface of M terminals, matrix switching means installed between the communication channel interface units and the terminal interface units for selecting one of the communication channel interface units and one of the terminal interface units as a pair of interface units to accomplish mutual connection of said pair of selected units, said matrix switching means being connected to said N channel interface units and said M terminal interface units to allow insertion/extraction of channel interface units and terminal interface units, and controller means connected to said matrix switching means for connecting said pair of selected units to each other in a manner capable

of individual insertion and extraction of said pair of selected units, wherein said matrix switching means comprises:

M AND gates each having a first input connected to a corresponding one said M terminal interface units, M-1 shift registers each having an output connected to a corresponding one of a second input of second through M AND gates, said shift registers each receiving a frame pulse input and a clock pulse input and generating different time delays, an OR gate connected to receive outputs



of said M AND gates and delivering a time shared output,

N flip-flops connected to receive the output of said OR gate and triggered by a clock input,

N counters each having a reset input and a clock pulse input and generating an output to a corresponding clock input of said N flip-flops, said counters being controlled by said controller means to generate their outputs delayed by n counts from a frame pulse, and

pulse generator means for generating frame, reset and clock pulses to said shift registers and said counters.

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MULTI-SPEAKER CONFERENCING OVER NARROWBAND CHANNELS

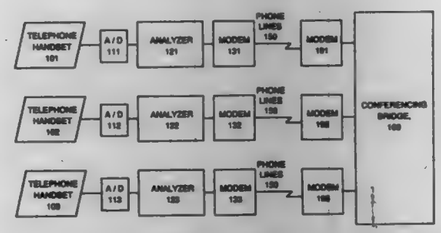
Terrance G. Champion, Hudson, N.H., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 760,021, Sep. 12, 1991, Pat. No. 5,317,567. This application Nov. 5, 1993, Ser. No. 152,632

The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.

Int. Cl.[6] H04M *3/42*

U.S. Cl. 370—62 **7 Claims**



1. A process, of facilitating multispeaker conferencing for users of a digitally encoded voice system, wherein each of said users is capable of outputting encoded digital voice signals in a bit stream at a system data rate, wherein said process comprises the steps of:

counting a number of active conferees to produce thereby a count number N, said active conferees being users of said digitally encoded voice system which are speaking when said counting step is performed;

compressing each of the encoded digital voice signals produced by said active conferees down to a plurality of compressed digital signals which each have a compressed data rate, wherein said digitally encoded voice system used in said process comprises a set of vocoders which operate over a narrowband with said system data rate ranging substantially between 2.4 and 32.0 kb/s, and wherein said comprising step comprises digitally compressing each of said encoded voice signals into said compressed digital signals such that their compressed data rate has a bit rate given by SDR/N, where SDR is the system data rate, and N is the number of active conferees;

a digital signal summation step, in which the compressed digital signals are combined to output thereby a combined compressed digital signal which is transmitted to said users at the system data rate; and

decoding said combined compressed digital signal to thereby an artificial voice signal to said users of the digitally encoded voice system, wherein said signal represents voices of all the active conferees which are speaking.

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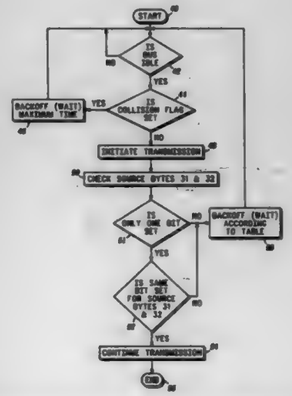
METHOD AND APPARATUS FOR DATA COLLISION DETECTION IN A MULTI-PROCESSOR COMMUNICATION SYSTEM

Peter J. Armbruster, and James A. Stephens, both of Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 785,124, Oct. 30, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 124,418

Int. Cl.[6] H04L *12/40*

U.S. Cl. 370—85.3 **16 Claims**



1. A method for data collision protection and resolution in a multi-processor communication system including a plurality of processors coupled by a bus, said method comprising the steps of:

first determining by one processor of said plurality of processors that communication is required with at least one other processor of said plurality of processors via a first message on said bus;

second determining by said one processor whether a data collision flag indicates that a previous data collision occurred from a transmission of another message;

maximum waiting by said one processor a maximum time, if said previous data collision occurred;

initiating by said one processor transmission of said first message, if said data collision flag indicates a previous data collision has not occurred;

checking to determine whether a new data collision occurred during transmission of said first message by each of said plurality of processors by checking a plurality of source indicators in said first message, said source indica-

tors indicating an identity of a processor transmitting said first message;

continuing transmitting by said one processor said first message to said at least one other processor, if no new data collision is determined;

waiting by said one processor a selective time, if said new data collision of said first message is determined; and

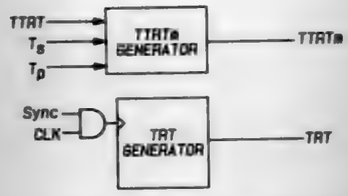
repeating by said one processor said steps of first determining, second determining, initiating, checking, continuing transmitting, and waiting if said new data collision of said first message is determined.

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APPARATUS AND METHOD FOR SYNCHRONOUS TRAFFIC BANDWIDTH ON A TOKEN RING NETWORK

Kang G. Shin, and Qin Zheng, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed May 4, 1993, Ser. No. 57,112
Int. Cl.[6] H04L *12/42*
U.S. Cl. 370—85.5 **4 Claims**



1. A data communications network interface comprising:

a plurality of network nodes each having an address and being interconnected in order to enable communications between one network node of the plurality and at least one other network node of the plurality by addressing a message to the other network node;

a token ring network comprising the plurality of network nodes that serially interconnects the plurality of network nodes to enable transmission of data between the plurality of nodes;

means for arbitrating access to the token ring network by each of the plurality of network nodes so that a token is serially passed to each of the plurality of network nodes and a node is granted access to the token ring network upon receipt of the token, the arbitration means defining a predetermined response time to a request for access and a predetermined access time upon a grant of access to the network to define synchronous communications, the arbitration means further guaranteeing an opportunity to transmit synchronous communications traffic at least once every predetermined time interval as determined in accordance with a target token rotation time TTRT;

a plurality of timer means operatively associated with each node to define a minimum time period during which each of the plurality of network nodes may transmit synchronous traffic, where the summation of the minimum amounts defines a synchronous traffic transmission time Ts;

a rotation timer operatively associated with the arbitration means to define a time interval within which the token must pass to each of the network nodes to define a modified target token rotation time TTRTm, the time interval being a function of a maximum message-size transmit time Tp, the synchronous traffic transmission time Ts, and the target token rotation time TTRT, such that TTRTm=TTRT−Ts−Tp; and

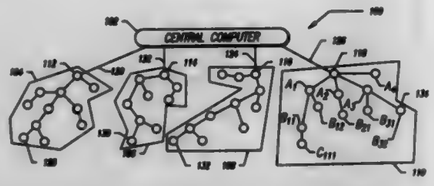
an upward counter which resets to zero upon reaching TTRT and is inhibited upon the transmission of a synchronous message.

5,383,187

ADAPTIVE PROTOCOL FOR PACKET COMMUNICATIONS NETWORK AND METHOD

George M. Vardakas, Alpine, and Jason C. Erickson, Encinatas, both of Calif., assignors to Hughes Aricraft Company, Los Angeles, Calif.

Filed Sep. 18, 1992, Ser. No. 950,260
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—94.3 **17 Claims**



1. A packet communications network comprising:

means for generating a concatenated data packet containing a plurality of messages for transmission to a plurality of radios in said network;

means for appending a first set of assignment commands for controlling which radio in a first set of radios of said plurality of radios can transmit and receive and destination codes to said concatenated data packet to form said first concatenated data packet;

means for transmitting said first concatenated data packet to said first set of radios of said plurality of radios in a single transmission;

means for extracting messages from said first concatenated data packet for said first set of radios;

means for appending a second set of assignment commands for controlling which radio in a second set of radios of said plurality of radios can transmit and receive and destination codes to said first concatenated data packet to form said second concatenated data packet; and

means for relaying said second concatenated data packet to said second set of radios of said plurality of radios in a single transmission.

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RECEIVER HAVING CLOCK PHASE MEMORY FOR RECEIVING SHORT PREAMBLE TIME SLOTS

Naoto Shigemoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 138,006
Claims priority, application Japan, Oct. 19, 1992, 4-279730
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—105.2 **4 Claims**

1. An apparatus for receiving a sequence of time slots each containing a preamble for clock timing recovery and an encoded digital signal, comprising:

a phase detector for detecting a clock phase of the preamble of each of said time slots and deriving therefrom a clock phase signal for each of the time slots;

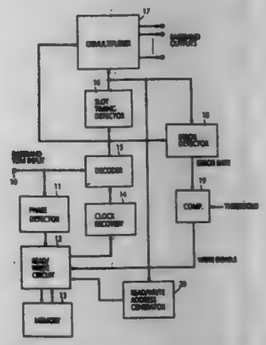
memory means having a plurality of memory locations corresponding respectively to said time slots;

memory control means for writing a clock phase signal of a time slot from said phase detector into one of the memory locations corresponding to the time slot so that a previously stored clock phase signal is overwritten with a subsequent clock phase signal, and reading a clock phase signal of a subsequent time slot from one of the memory locations corresponding to the subsequent time slot;

clock recovery means for deriving clock pulses from the clock phase signal read out of said memory means;

a decoder synchronized with said clock pulses for decoding the encoded digital signal of each time slot and producing a decoded signal; and

detector means for detecting an error rate of the decoded signal and preventing said memory control means from



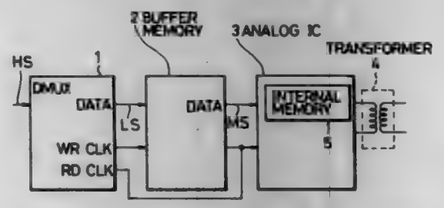
writing a clock phase signal when the detected error rate is higher than a prescribed value.

5,383,189

METHOD AND CIRCUIT FOR DEMULTIPLEXING DIGITAL SIGNALS CAPABLE OF ASBORBING DESTUFFING JITTER

Kazunori Matsuyama, Miyagi, and Naoto Iga, Tokyo, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 850,905
Claims priority, application Japan, Mar. 15, 1991, 3-074318
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—105.3 **5 Claims**



1. A circuit for demultiplexing digital signals comprising:

a demultiplexing circuit for receiving frame-structured higher order digital signals, demultiplexing them into lower order digital signals, separating the lower order signals into groups;

buffer memories, each of which receives one of the groups of the lower order signals, each of which digitally smoothes the jitters which are periodically generated in the received group of the lower order signals demultiplexed by the demultiplexing circuit, by writing the lower order signals separated by demultiplexing into the buffer memories and reading them out;

analog ICs, each of which is connected to one of the smoothing buffer memories, finishing resmoothing of the signals which had been smoothed by the buffer memory connected to itself and for performing digital/analog conversion of the resmoothed lower order signals; and

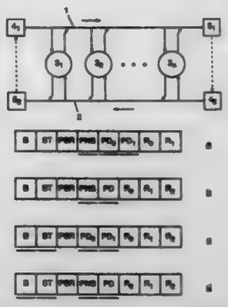
transformers, each of which is connected to one of the analog ICs, performing unipolar/bipolar conversion of the signals which have already been processed through digital/analog conversion thereof by means of the analog IC connected to itself.

5,383,190

METHOD OF IMPROVING THE TRANSMISSION OF DATA PACKETS HAVING DIFFERENT PRIORITIES IN ACCORDANCE WITH THE DQDB PROTOCOL

Sander J. L. M. Janssen, The Hague, and Thomas D. Poelhekken, Leiden, both of Netherlands, assignors to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Feb. 25, 1993, Ser. No. 23,199
Claims priority, application Netherlands, Mar. 4, 1992, 9200405
Int. Cl.[6] H04J *3/16*; H04L *12/40*
U.S. Cl. 370—85.6 **2 Claims**



1. Method of transmitting information in the form of data packets in a communication network which comprises:

a first and a second unidirectional transmission channel having opposite directions of transmission;

a series of consecutive access units 1 to N which are each coupled to the first and to the second transmission channel;

head stations coupled to the start of each transmission channel; and

end stations coupled to the end of each transmission channel;

the method comprising:

transferring information to which higher and lower priorities may be assigned, respectively, from the first to the Nth access unit via the first transmission channel and from the Nth to the first access unit via the second transmission channel;

generating at said head stations consecutive time slots which each comprises an access field including a fixed number of bit positions and in which time slots at least a number of information bits can be written;

the head station of each transmission channel always assigning a priority to each time slot by means of a code in the access field,

the end station of each transmission channel recording numbers per priority of access units communicating with the same priority; and

the head station of each transmission channel assigning priorities to said consecutive time slots in conformity with those numbers per priority, recorded in the end station;

and wherein:

for said recording of said numbers per priority, the head station associated with said first transmission channel transmits a trigger code which is incorporated in the access field;

each active access unit on said second transmission channel placing, after receiving said trigger code, a priority code in the access field of a subsequent time slot on said first transmission channel, which priority code is representative of a priority with which that active access unit communicates; and

the end station associated with said first transmission channel records, after receiving said priority codes, said numbers per priority of active access units on the second

transmission channel and passes said numbers per priority to the head station of the second transmission channel.

5,383,191

DUAL RING RECONFIGURATION SWITCHING UNIT

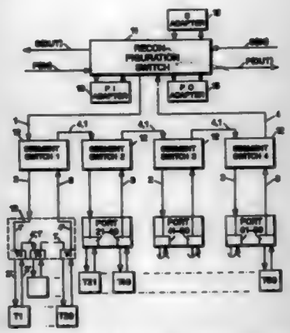
Robert B. Hobgood; Jay L. Smith, both of Raleigh; Robert D. Verne, Chapel Hill, and Anthony D. Walker, Durham, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1990, Ser. No. 633,649

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[6] G06F *11/00*; H04J *3/02, 1/16*; H04Q *11/00*

U.S. Cl. 371—11.2 **6 Claims**



1. A reconfiguration unit for attaching to a dual ring network which includes a primary ring (PR) carrying signals in a first direction and a secondary ring (SR) carrying signals in a second opposite direction and for selectively interconnecting said PR and SR when signal transmission in the dual ring network is impaired comprising:

a plurality of station access ports for attaching terminal devices;

a first and second input for receiving signals from said PR and SR respectively;

a first and second output for transmitting signals on said PR and SR respectively;

first, second and third adapter means for selectively receiving signals from the network, retransmitting signals and generating signals;

first switching means operatively coupled to the station access ports, said first switching means selectively connecting at least one station access port to said network;

a programmed processor connected to said first, second and third adapter means for receiving the signals therefrom and generating control signals related thereto; and

a second switching means connected to said first and second inputs and outputs, said first, second and third adapters and said first switching means; said second switching means receiving the control signals and interconnecting selected ones of said first and second inputs and outputs, said first, second and third adapters and said first switching means so that the dual ring network is reconfigured into one of a plurality of reconfigurable states.

5,383,192

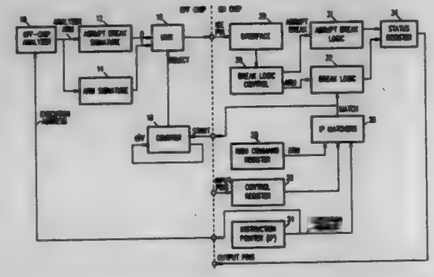
MINIMIZING THE LIKELIHOOD OF SLIP BETWEEN THE INSTANT A CANDIDATE FOR A BREAK EVENT IS GENERATED AND THE INSTANT A MICROPROCESSOR IS INSTRUCTED TO PERFORM A BREAK, WITHOUT MISSING BREAKPOINTS

James W. Alexander, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 23, 1992, Ser. No. 996,036

Int. Cl.[6] G06F *11/22*

U.S. Cl. 371—16.2 **4 Claims**



1. In an in-circuit emulator on an integrated circuit chip having

an input pin;

an instruction pointer counter;

a break logic; and,

an abrupt break logic;

an improvement comprising:

first means for registering an instruction execution address;

second means connected to said instruction pointer counter and to said first means for asserting a match output upon a condition that a contents of said instruction pointer counter matches said instruction execution address:

third means connected to said second means for clocking a period of time, said period of time being an amount of time said break logic takes to arm in response to assertion of an arm signal;

fourth means connected to said second means and to said third means for generating an abrupt break signal at said input pin upon a condition that said match output is asserted during said period of time;

fifth means connected to said third means for generating an arm signal at said input pin upon a condition that said match output is not asserted during said period of time;

sixth means connected to said input pin for activating said break logic in response to said arm signal on said input pin; and,

seventh means connected to said input pin for activating said abrupt break logic in response to said abrupt break signal on said input pin.

5,383,193

METHOD FOR TESTING NON-VOLATILE MEMORIES

Saroj Pathak, Los Altos Hills; Glen A. Rosendale, Santa Clara, and James E. Payne, Boulder Creek, all of Calif., assignors to Atmel Corporation, San Jose, Calif.

Filed Sep. 25, 1992, Ser. No. 951,207

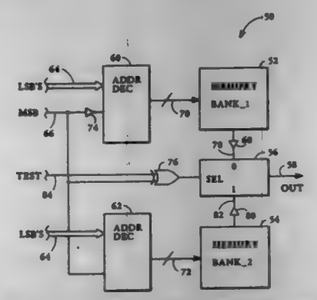
Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—21.4 **13 Claims**

12. A method for testing a non-volatile memory, the method comprising the steps of:

providing a memory having at least two banks of memory cells arranged in rows and columns, each bank having address decoders connected to rows and columns of said each bank for addressing at least one of said rows and columns of memory cells in that bank and at least one sense amplifier connected to read memory cells in that bank and to produce an output in response to addressing of a memory cell by said address decoders, all memory cells being in an erased state, each memory cell being characterized by a measurable time delay from a first time at which that memory cell is addressed by said address decoders to a second time when an output of the addressed memory cell is produced by said sense amplifier, the address decoders being disabled so that no row or column is addressed, and the memory having an output selector for selecting the output of each bank's at least one sense amplifier for output as a memory output; and

performing the following steps in sequence until testing is completed:



disabling the address decoders and selecting the sense amplifier output of a first memory bank,

addressing the at least one memory cell to be tested in the first bank,

enabling the address decoders and measuring said time delay which characterizes the at least one addressed memory cell,

comparing the measured time delay with a predetermined limit value,

if the measured time delay exceeds the predetermined limit value, designate the address of said at least one memory cell as a weak address, then

continuing with the next address from the step of disabling the address decoders.

5,383,194

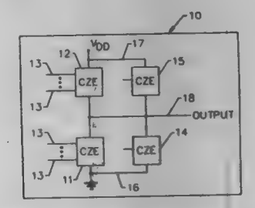
INTEGRATED LOGIC CIRCUIT INCLUDING IMPEDANCE FAULT DETECTION

Mark D. Sloan, Princeton, Ind.; William A. Rogers, and Srihari Shoroff, both of Austin, Tex., assignors to University of Texas System Board of Regents, Austin, Tex.

Filed Nov. 6, 1992, Ser. No. 973,069

Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—22.1 **22 Claims**



1. An integrated logic circuit comprising:

a logic circuit having a plurality of logic circuit controlled-impedance elements and at least one input and an output, said output being in one of two binary states as a function of the binary value of said at least one input; and

at least one test controlled-impedance element electrically connected to said logic circuit, said at least one test controlled-impedance element having an impedance which electrically loads said logic circuit to produce a first digital output signal when the impedance of at least one of said plurality of logic circuit controlled-impedance elements is within a predetermined range and produce a second digital output signal when said impedance is outside said predetermined range.

5,383,195

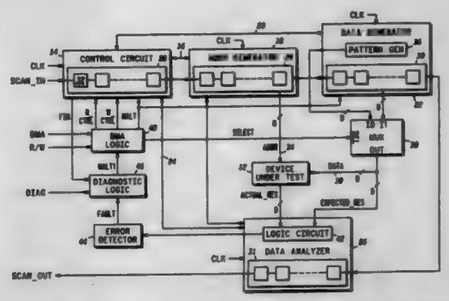
BIST CIRCUIT WITH HALT SIGNAL

Nicholas J. M. Spence, Mesa, and Jerome A. Gruis, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 19, 1992, Ser. No. 962,551

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.5 **9 Claims**



4. A BIST circuit for testing a device under test, comprising:

a control circuit for providing a plurality of control signals, said control circuit including first latching means having an input and an output, said input of said first latching means being responsive to an input scan signal;

an address generator responsive to a first portion of said plurality of control signals, said address generator including a second latching means having an input and an output, said input of said second latching means being coupled to said output of said first latching means, said address generator providing an address signal to the device under test;

a data generator responsive to a second portion of said plurality of control signals, said data generator including a pattern generator for generating a random length bit sequence, said data generator including third latching means having an input and an output, said input of said third latching means being coupled to said output of said second latching means;

a first multiplexor having first and second inputs, a select input, and an output, said first input of said first multiplexor being coupled to said third latching means, said second input of said first multiplexor being coupled to said pattern generator, said output of said first multiplexor being coupled to provide a data signal to the device under test;

a data analyzer responsive to a third portion of said plurality of control signals, said data analyzer including fourth latching means having an input and an output, said input of said fourth latching means being coupled to said output of said third latching means, said output of said fourth latching means being coupled to provide an output scan signal, said data analyzer including a first logic circuit having first and second inputs and an output, said first input of said first logic circuit being coupled to receive an output signal from the device under test, said second input of said first logic circuit being coupled to said output of said first multiplexor;

said first, second, third and fourth latching means each

including at least one shift register coupled in a serial manner so as to form a scan chain wherein a signals appearing at both an input and an output of said at least one shift register are scan chain signals; and

an error detector having an input and an output, said input of said error detector being coupled to said output of said first logic circuit, said output of said error detector providing a fault signal;

a second logic circuit having a plurality of inputs and an output for providing an output signal, a first one of said plurality of inputs being coupled to said output of said error detector, a second one of said plurality of inputs being coupled to receive a diagnostic signal, a third one of said plurality of inputs being coupled to receive a finished signal from said control circuit, wherein if said fault signal and said diagnostic signal are in predetermined logic states said output signal of said second logic circuit is forced to a first logic state; and

a third logic circuit having a plurality of inputs for providing a pluralilty of outputs, a first one of said plurality of inputs of said third logic circuit being coupled to said output of said second logic circuit, a second one of said plurality of inputs of said third logic circuit being coupled to receive memory access signal, a third one of said plurality of inputs of said third logic circuit being coupled to receive a read/write signal, a first one of said plurality of outputs providing a halt signal to said control circuit, said address generator, said data generator and said data analyzer for stopping the operation of the BIST circuit, a second one of said plurality of outputs providing a select signal to said select input of said first multiplexor, third and fourth ones of said plurality of outputs providing read and write control signals to said control circuit.

5,383,196

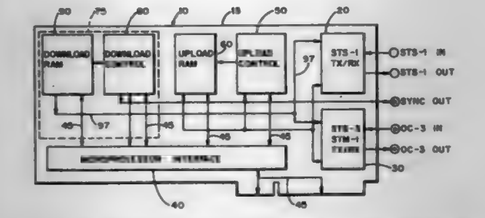
SONET SIGNAL GENERATING APPARATUS AND METHOD

Steven G. Morton, Oxford, Conn., assignor to TranSwitch Corporation, Shelton, Conn.

Continuation of Ser. No. 587,345, Sep. 24, 1990, abandoned. This application Mar. 12, 1993, Ser. No. 29,981

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—27 **46 Claims**



1. A test apparatus for generating a SONET telecommunications test signal without receiving incoming telecommunications signals, said test apparatus comprising:

a) memory means for storing a plurality of data words at a respective plurality of memory means locations, each data word being comprised of at least one byte of SONET data and at least one command bit, wherein a plurality of command bits of a plurality of said data words comprises a plurality of program routines which sequence bytes of SONET data from said plurality of data words, which sequence of bytes is used to form a continuous SONET data test signal having SONET payload and overhead bytes, at least one of said plurality of program routines being repeated a plurality of times, wherein said bytes of SONET data are not used for computations or instruction sequencing;

b) addressing means coupled to said memory means for selecting among said memory means locations;

c) counter means having a plurality of states;

d) instruction decoding means coupled to said memory means, to said addressing means, and to said counter means, said instruction decoding means for receiving and decoding said plurality of command bits, and in response thereto, generating counter control signals for said counter means and address control signals for said address selecting means, wherein memory means locations selected by said addressing means are selected based on said address control signals, and wherein at least one of said address control signals is generated in response to both a plurality of command bits and a state of said counter means; and

e) SONET data output means for taking from the plurality of data words selected by said addressing means the SONET data bytes, and for forwarding the SONET data bytes as said SONET telecommunications test signal for output from said SONET signal generating apparatus.

5,383,197

LASER AND AN AMPLIFIER

Colin A Millar; Michael H. Hunt, and Michael C. Brierley, all of Suffolk, England, assignors to British Telecommunications public limited company, London, England

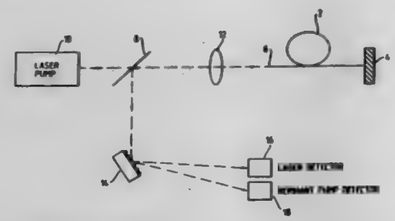
PCT No. PCT/GB91/01512, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO92/04750, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 5, 1991, Ser. No. 50,165

Claims priority, application United Kingdom, Sep. 5, 1990, 9019367; Oct. 24, 1990, 9023186

Int. Cl.[6] H01S *3/30*

U.S. Cl. 372—6 **24 Claims**



7. A laser comprising:

a resonant cavity (**2, 4, 6**) including a medium (**2**) incorporating lasing ions having an upper and a lower laser level each above the ion's ground state levels, which upper and lower lasing levels form a normally self-terminating laser transition; and

a pumping means (**10**) for applying excitation energy of a suitable wavelength and intensity to elevate ions from the lower lasing level to maintain a population inversion between the upper and lower lasing levels;

CHARACTERISED IN THAT

the wavelength and intensity of the excitation energy is also suitable to elevate ions from the ground state levels to the upper lasing level by exciting ions both from the ground state levels directly to a first energy level and directly from the first energy level to a second energy level by excited state absorption.

5,383,198

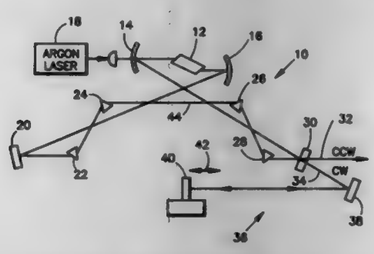
SELF-STARTING MODE-LOCKED RING CAVITY LASER

Wayne S. Pelouch, Albuquerque, N. Mex.; Peter E. Powers, and Chung L. Tang, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 25, 1993, Ser. No. 140,503

Int. Cl.[6] H01S *3/98*

U.S. Cl. 372—18 **11 Claims**



1. A self-starting, mode-locked femtosecond laser comprising:

a laser cavity having a pair of spaced, aligned, curved mirrors and optical means including at least an output coupler;

a laser crystal located between said curved mirrors;

pump means supplying a pumping beam to said crystal, to produce first and second, oppositely directed continuous wave beams in said laser cavity, at least a portion of each of said beams passing out of said laser cavity through said output coupler;

an external cavity receiving said first beam and retroreflecting said first beam back into said laser cavity; and

means in said external cavity for modulating said retroreflected beam to start mode-locked lasing operation in said laser cavity and to force unidirectional operation in the direction of said second beam.

5,383,199

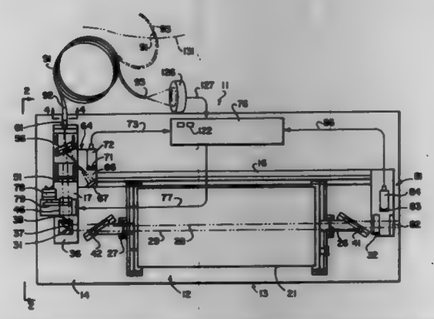
APPARATUS AND METHOD FOR OPTICALLY CONTROLLING THE OUTPUT ENERGY OF A PULSED LASER SOURCE

James B. Laudenslager, Long Beach, and Fred G. Kinley, Mission Viejo, both of Calif., assignors to Advanced Interventional Systems, Inc., Irvine, Calif.

Filed Jul. 2, 1992, Ser. No. 909,054

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—25 **25 Claims**



1. In an apparatus using a pulsed laser source, an ultraviolet laser producing a plurality of laser pulses in a laser beam, an optical attenuator disposed in the laser beam to attenuate the individual pulse energy in the laser beam to provide an attenuated pulsed laser beam without substantial spatial distortion or angular deviation, pick-off means for sensing the energy in the attenuated laser beam and means coupled to the pick-off means for controlling the optical attenuator to vary the individual pulse energy in the attenuated laser beam to thereby vary the pulse output fluence from the apparatus, said optical attenuator being free of degradation after repeated pulses.

5,383,200

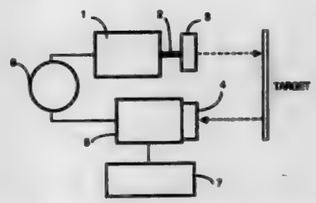
EYE SAFE LASER IMAGING SYSTEM

Joseph J. Barrett, Morris Plains; Joseph Yee, Fort Lee, and William R. Rapoport, Bridgewater, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 20, 1993, Ser. No. 169,289

Int. Cl.[6] H01S *3/13*

U.S. Cl. 372—25 **11 Claims**



1. An active night vition system capable of viewing a target over long distances comprising, in combination,

(a) laser means for emitting a beam of coherent radiation having wavelength of from about 1.52 μm to about 1.76 μm or of from about 2.03 μm to about 2.34 μm for illuminating a target;

(b) receiving means for receiving an image of the reflected radiation from said target and for transforming the optical image into an electronic signal; and

(c) means for electronically storing and/or displaying the image received by said receiving means.

5,383,201

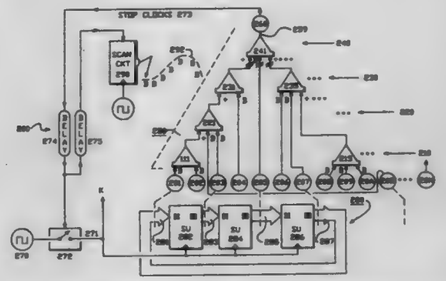
METHOD AND APPARATUS FOR LOCATING SOURCE OF ERROR IN HIGH-SPEED SYNCHRONOUS SYSTEMS

Chris Satterlee, San Jose, and Duncan Penman, Sunnyvale, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Dec. 23, 1991, Ser. No. 813,891

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—29.1 **12 Claims**



1. In a system having a plurality of report-generating error-detectors, a multilayered network of error-communicating cells, the network comprising:

a base layer composed of at least two error-communicating cells and a top layer having one error-communicating cell, said top layer being operatively coupled to the base layer for receiving error reports from the base layer;

wherein each cell includes:

input means for receiving a plurality of error reports either directly from report-generating error-detectors or from error-communicating cells in other layers;

report condensing means, coupled to the input means of the cell, for collecting all error reports received by the input means and responsively outputting a collective error report indicating that the input means has received one or more error reports; and

wherein each cell that receives one or more error reports directly from a corresponding number of one or more detectors includes:

a corresponding number of report storing means, coupled to the input means, for storing error reports received by the input means directly from the report-generating error-detectors, each report storing means having a self-freezing function for preserving its respectively received error report; and

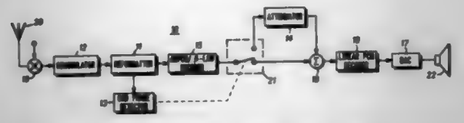
input state preserving means, coupled to the report storing means and to the report condensing means, for storing a state code indicating whether one or more error reports were stored by the report storing means when the report condensing means of the cell outputs a collective error report.

5,383,202

SIMPLIFIED METHOD OF ATTENUATION OF LOGARITHMICALLY CODED DIGITAL SIGNALS

Gregory A. Edgar, Euless; Jeff Klingberg, Fort Worth, and John Ruppel, North Richland Hills, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1992, Ser. No. 981,563
Int. Cl.[6] H04L *1/20*; H04B *15/00*
U.S. Cl. 371—30 **8 Claims**



1. A method of attenuating a signal value within erroneous frames of a logarithmically coded digital signal, such method comprising the steps of: detecting an erroneous frame of the logarithmically coded digital signal; and adding an attenuation value to a frame exponent of the erroneous frame.

5,383,203

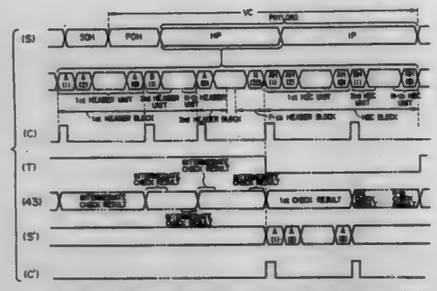
COMPACT DEVICE FOR CORRECTING A HEADER ERROR IN ATM CELLS

Takashi Miyazono, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 8, 1992, Ser. No. 880,252
Claims priority, application Japan, May 10, 1991, 3-105836
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—37.1 **4 Claims**

1. A header error correcting device which has a data input terminal for receiving an original STM signal comprising a header part, said header part comprising first through P-th header blocks and a header error check block, where P represents a first predetermined natural number, each of said header blocks comprising first through N-th ATM cell header units, where N represents a second predetermined natural number, said header error check block comprising first through N-th ATM cell header error check units, each of said first through said N-th ATM cell header units and said first through said N-th ATM cell header error check units comprising a third predetermined natural number of bits at a predetermined bit interval, said header error correcting device being for correcting a header error in the first through the N-th ATM cell header units of said first through said P-th header blocks, said header error correcting device including a control signal producing section connected to said data input terminal for producing an original unit control signal for indicating successively the first through the N-th ATM cell header units of the first through the P-th header blocks of said original STM signal and subsequently successively the first through the N-th ATM cell header error check units of said original STM signal, said header error correcting device comprising:

a sole error checking section connected to said data input terminal and said control signal producing section for checking said header error in connection with an n-th ATM cell header unit of a p-th header block of said original STM signal and an n-th ATM cell header error check unit of said original STM signal when said original unit control signal indicates the n-th ATM cell header unit of the p-th header block of said original STM signal and the n-th ATM cell header error check unit of said original STM signal, where n is variable between 1 and N, both inclusive, p being variable between 1 and P, both inclusive, said sole error checking section being for producing



an n-th check result when said original unit control signal indicates the n-th ATM cell header error check unit of said original STM signal;

a first delay circuit connected to said data input terminal for producing a delayed STM signal by giving said original STM signal a delay of a plurality of bit intervals, equal in number to (P×N) times said third predetermined natural number;

a second delay circuit connected to said control signal producing section for producing a delayed unit control signal by giving said original unit control signal said delay; and

a sole error correcting section connected to said sole error checking section and to said first and said second delay circuits for correcting, in accordance with said n-th check result, said header error in connection with the n-th ATM cell header unit of the p-th header block of said delayed STM signal when said delayed unit control signal indicates the n-th ATM cell header unit of the p-th header block of said delayed STM signal.

5,383,204

PARALLEL ENCODING APPARATUS AND METHOD IMPLEMENTING CYCLIC REDUNDANCY CHECK AND REED-SOLOMON CODES

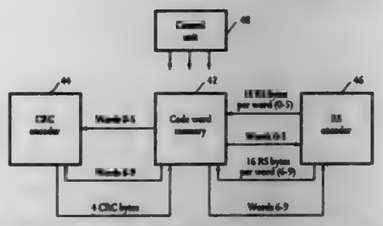
Vickie L. Gibbs, and Rom-Shen Kao, both of Durham, N.C., assignors to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Jun. 29, 1993, Ser. No. 82,870
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.7 **14 Claims**

1. A method of encoding a plurality of incoming data elements combined in q words in an error correction system incorporating a Cyclic Redundancy Check (CRC) circuit using h CRC elements, and a Reed-Solomon (RS) encoding circuit, q and h being integers, and h<q, said method comprising the steps of:

RS encoding (q-h) of the q words by the RS encoding circuit to form a plurality of RS redundant elements appended to each of (q-h) incoming words,

CRC encoding (q-h) of the q words by the CRC circuit to form the CRC elements to be used for a CRC check,



said steps of RS and CRC encoding (q-h) of the q words being performed simultaneously, and thereafter

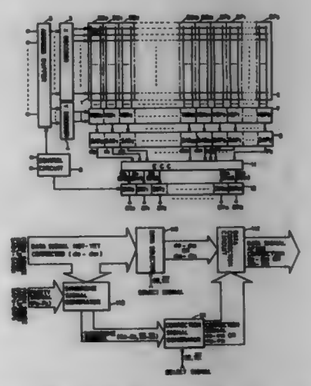
processing the last h of the q words by the CRC circuit and RS encoding circuit to generate h check elements incorporated into the last h words and to form a plurality of RS redundant elements appended to each of the last h words.

5,383,205

SEMICONDUCTOR MEMORY DEVICE HAVING AN ERROR CORRECTION CIRCUIT AND AN ERROR CORRECTION METHOD OF DATA IN A SEMICONDUCTOR MEMORY DEVICE

Hiroyasu Makihara, and Kenji Kohda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,661
Claims priority, application Japan, Jun. 24, 1991, 3-151809
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—40.1 **17 Claims**



1. A semiconductor device comprising:

a memory cell array having a plurality of data and a plurality of parity data stored therein,

means for reading out said plurality of data and said plurality of parity data from said memory cell array and

error correction means for correcting an error in said plurality of data by applying operation according to a predetermined Hamming matrix to said plurality of data and said plurality of parity data read out by said reading means,

wherein said plurality of data are equally divided into a first group and a second group,

wherein said error correction means comprises

syndrome signal producing means for producing a plurality of syndrome signals on the basis of said first and second groups of data and said plurality of parity data read out from said memory cell array by said reading means,

group selecting means for sequentially selecting the data of said first group and said second group read out from said memory cell array by said reading means,

correction signal producing means for sequentially producing a correction signal for said first group of data and a correction signal for said second group of data in synchronization with the selecting operation of said group selecting means, in response to said syndrome signals produced by said syndrome signal producing means, and

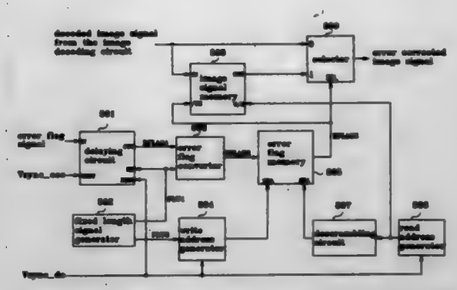
data correction means for correcting an error in the group of data selected by said group selecting means according to a correction signal produced by said correction signal producing means.

5,383,206

ERROR CORRECTING APPARATUS FOR IMAGE PROCESSING SYSTEM

Seung-Kwon Pack, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyounggi-do, Rep. of Korea

Filed Dec. 10, 1993, Ser. No. 164,797
Claims priority, application Rep. of Korea, Dec. 30, 1992, 92-26637
Int. Cl.[6] H03M *13/00*
U.S. Cl. 371—40.3 **1 Claim**



1. An image processing system having two main circuit portions, which are capable of transmitting and receiving an image signal through a channel, one of which is an image coding circuit portion for coding the image signal to generate a coded image signal, and the other of which is an image decoding circuit portion for decoding the coded image signal applied through the channel, the image decoding circuit portion comprising:

error code decoder for decoding a coded error signal through the channel to produce an error flag signal having a symbol unit and a first vertical synchronizing signal;

image decoding means for decoding the coded image signal to produce a decoded image signal and a second vertical synchronizing signal;

error correcting means for correcting the decoded image signal in accordance with the error flag signal; and

said error correcting means comprising a fixed length unit signal generator for generating a first fixed length unit signal and a second fixed length unit signal delayed by a predetermined fixed length unit as compared with the first fixed length unit signal; a delaying circuit preset by the second vertical synchronizing signal applied from said image decoding means, for saving the error flag signal from said error code decoder using the first vertical synchronizing signal applied from said error code decoder and outputting the error flag signal stored therein using the first fixed length unit signal; an error flag converter for converting the error flag signal into a second error flag signal having a fixed length unit; a write address generator

for generating a first address signal in response to the second fixed length unit signal; a read address generator for generating a second address signal in synchronizing with the second vertical synchronizing signal; descrambling means for generating a third address signal corresponding to position rearranged by scrambling in response to the second address signal; an error flag memory for saving the second error flag signal using the first address signal and performing read operation by the third address signal so as to generate a third error flag signal corresponding to a descrambled image signal; an image signal memory for saving the decoded image signal from said image decoding circuit in accordance with the third error flag signal and outputting stored image signal in response to the second address signal; and a selector for selecting one of the decoded image signal from said image decoding circuit and the output image signal of said image signal memory in accordance with the third error flag signal.

5,383,207

OPTICAL CARRIER GENERATION USING STIMULATED BRILLOUIN SCATTERING

David Culverhouse; Faramarz Farahi; David A. Jackson, all of Canterbury; Christopher N. Pannell, Totton, and Ralph P. Tatam, Gresdon, all of England, assignors to British Technology Group Limited, London, England

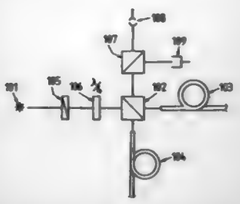
PCT No. PCT/GB90/01008, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO91/00632, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 29, 1990, Ser. No. 778,923

Claims priority, application United Kingdom, Jun. 29, 1989, 8914988; Nov. 24, 1989, 8926607

Int. Cl.[6] H01S *3/30*; G01B *9/02*

U.S. Cl. 372—28 **21 Claims**



1. An arrangement for producing information indicative of signal frequency shifts using stimulated Brillouin scattering, said arrangement comprising:

a laser producing a laser beam;

optical fibre means, illuminated by the laser beam for generating two back-scattered signals by stimulated Brillouin scattering, said optical fibre means including a plurality of propagating modes, and

means for combining said back-scattered signals to produce a beat frequency from the combined signals.

5,383,208

DEVICE AND METHOD TO CONTROL THE OUTPUT POWER OF LASER DIODES

Jean-François Quenist, Trebeurden, and Andre Jaillard, Lannion, both of France, assignors to France Telecom, Paris, France

Filed Jul. 30, 1993, Ser. No. 99,842

Claims priority, application France, Jul. 30, 1992, 92 09487

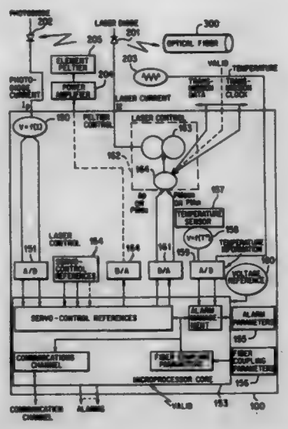
Int. Cl.[6] H01S *3/13*

U.S. Cl. 372—29 **17 Claims**

1. A device to control the output power of a laser diode capable of being coupled to an optical fiber, comprising:

a photodiode which acquires a characteristic signal of the power emitted by said laser diode; and

a digital laser diode driver capable of receiving and processing said characteristic signal to give a current drive signal so as to maintain a constant luminous output power of said laser diode, said driver comprising memorizing means and a central processing unit associated with a servo-control computation program for carrying out a servo-control of the output power on the basis of two levels of power emitted by said laser diode and two levels of power given by the recorded characteristic parameters of said laser diode, maintaining a constant output power despite changes in drift and change of slope of said characteristic signal of said laser diode in response to aging phenomena or to a change in temperature or to a loss of power due to



the coupling of said laser diode with an optical fiber or to variations in the response of the photodiode as a function of the temperature.

15. A method of servo-controlling the output power of a laser diode, said method comprising the steps of:

acquiring a characteristic signal, said characteristic signal including two levels of output power emitted by said laser diode;

accessing recorded characteristic parameters of said laser diode; and

driving said laser diode with current on the basis of said characteristic signal and said characteristic parameters.

5,383,209

SECOND HARMONIC GENERATOR

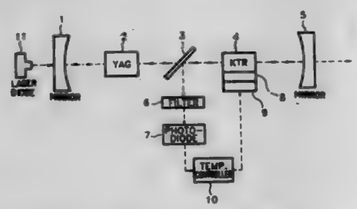
Myeong-mo Hwang, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Nov. 12, 1993, Ser. No. 150,299

Claims priority, application Rep. of Korea, Nov. 25, 1992, 92-22330

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—34 **5 Claims**



1. A second harmonic generator comprising:

a pair of mirrors for establishing a laser resonating zone;

a pumping beam source for supplying a pumping beam to said resonating zone;

an active laser rod for generating a resonant beam having a predetermined fundamental frequency in said laser resonating zone, by means of said pumping beam;

a non-linear frequency converting element responsive to said resonant beam for generating a second harmonic beam at a second harmonic frequency of said resonant beam in said laser resonating zone;

a temperature detecting element coupled to said non-linear frequency converting element for detecting the temperature of said frequency converting element;

a brewster plate means placed between said active laser rod on the beam path of said resonating zone and said non-linear frequency converting element for reflecting a split portion of said second harmonic beam;

a filtering unit provided along the path of said split portion reflected from said brewster plate means for selectively passing only a harmonic beam component of said split portion;

a beam-to-current converting element responsive to said filtering unit for converting said harmonic beam component into current;

a controlling unit responsive to said beam-to-current converting element and to said temperature detecting element for generating control current; and

a current-to-heat converting element coupled to said non-linear frequency converting element and responsive to said control current from said controlling unit for controlling the temperature of said non-linear frequency converting element.

5,383,210

OPTICAL PHASE LOCKED LOOP CIRCUIT

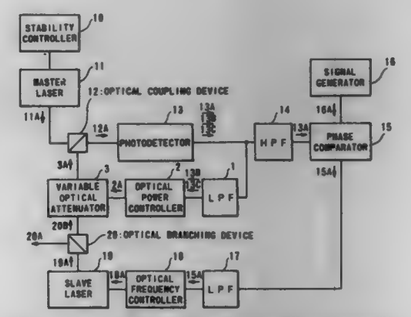
Akio Ichikawa, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1994, Ser. No. 186,595

Claims priority, application Japan, Jan. 28, 1993, 5-032608

Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—38 **1 Claim**



1. An optical phase locked loop circuit, comprising;

a stability controller (10) for stabilizing the optical frequency and the optical power of a laser;

a master laser (11) for continuously outputting a coherent light (11A) whose optical frequency and optical power is stabilized by said stability controller (10);

an optical coupling means (12) which receives said coherent light (11A) supplied from said master laser (11) as the first input light;

a photodetector (13) for heterodyning a coupled light (12A) received from said optical coupling means (12);

a high-pass filter (14) for extracting a difference frequency signal (13A) between said coherent light (11A) and an output control light (3A) from signals supplied by said photodetector (13);

a phase comparator (15) for phase comparing the difference frequency signal (13A) extracted by said high-pass filter (14) and a signal (16A) supplied from a signal generator (16), and outputting a signal (15A) proportional to the phase difference between them;

a low-pass filter (17) for filtering noise components from the signal (15A) supplied by said phase comparator (15);

an optical frequency controller (18) for generating an optical frequency control signal (18A) corresponding to the signal (15A) transmitted through said low-pass filter (17);

a slave laser (19) whose optical frequency varies corresponding to the signal (18A) supplied from said optical frequency controller (18);

an optical branching means (20) for separating an outpost light (19A) of the slave laser (19) into an external output light (20A) and an output control light (20B) which is supplied to said optical coupling means (12) as its second input light;

a low-pass filter (1) for extracting a signal (13B) proportional to the optical power of said output control light (3A) and a signal (13C) proportional to the optical power of said coherent light (11A) by filtering said difference frequency signal (13A) from the output of said photodetector (13);

an optical power controller (2) for generating a control signal (2A) corresponding to the signals (13B,13C) transmitted through said low-pass filter (1);

a variable optical attenuator (3), provided between said optical branching means (20) and said optical coupling means (12), for varying the attenuation of the optical power of said output control light (20A) corresponding to said control signal (2A) in order to supply said output control light (3A) having a stable optical power to said optical coupling means (12).

5,383,211

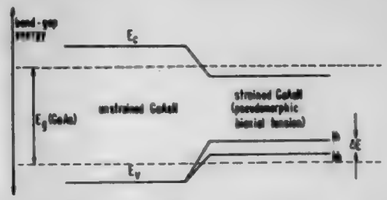
TM-POLARIZED LASER EMITTER USING III-V ALLOY WITH NITROGEN

Chris Van de Walle, Menlo Park, and David P. Bour, Cupertino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1993, Ser. No. 146,758

Int. Cl.[6] H01S *3/10*, *3/18*

U.S. Cl. 372—43 **12 Claims**



1. A laser diode comprising:

(a) a crystalline substrate of GaAs having a first lattice constant and a first bandgap,

(b) a crystalline active layer deposited over said substrate, said active layer comprising a III-V alloy and having a second lattice constant smaller than said first lattice constant and a second bandgap when unstrained, said active layer when deposited over said substrate being strained such that said active layer has a third bandgap when strained that is smaller than the first bandgap,

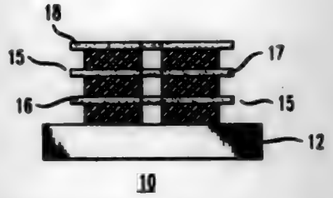
(c) electrodes for injecting carriers into the active layer to thereby cause laser emission in said active layer at a wavelength exceeding the wavelength of laser emission of a material having the first bandgap.

5,383,212

FREE STANDING QUANTUM WELL STRUCTURE

Wayne H. Knox, Rumson; Stephen C. Shunk, Island Heights; Michael D. Williams, Freehold, and Jane E. Zucker, Aberdeen, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 30, 1993, Ser. No. 100,531
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—45 19 Claims



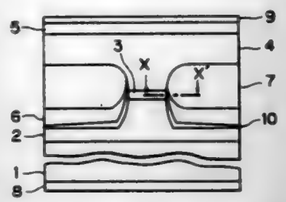
1. A semiconductor structure comprising:
a first layer for forming a first quantum well;
a second layer for forming a second quantum well; and
support means for supporting said first and second layers in a fixed spaced relationship separated by a gap of approximately between 100 Å and 2500 Å from one another.

5,383,213

SEMICONDUCTOR DEVICE WITH CURRENT CONFINEMENT STRUCTURE

Michinori Irikawa, Yokohama; Masayuki Iwase, and Kenichi Iga, both of Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed May 7, 1993, Ser. No. 57,758
Claims priority, application Japan, May 8, 1992, 4-143419
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—46 4 Claims



1. A semiconductor device consisting of a substrate, active region and semiconductor current blocking layers to confine current to said active region and electrodes to inject current or to apply voltage, wherein said current blocking layers include a multiquantum barrier structure.

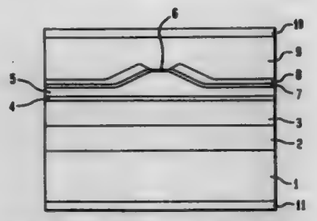
5,383,214

SEMICONDUCTOR LASER AND A METHOD FOR PRODUCING THE SAME

Isao Kidoguchi, Miao; Satoshi Kamiyama, Sanda, and Kiyoshi Ohnaka, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 15, 1993, Ser. No. 92,358
Claims priority, application Japan, Jul. 16, 1992, 4-189074; Oct. 23, 1992, 4-285740
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—46 13 Claims

1. In semiconductor laser, a semiconductor structure comprising:
a semiconductor substrate; and
a multi-layer structure formed upon the semiconductor substrate, the multi-layer structure including an active layer, a pair of cladding layers between which the active layer is interposed, and a current confinement layer for injecting a current into a stripe-shaped predetermined region of the active layer,
wherein the current confinement layer comprises a first current blocking layer formed in regions thereof excluding a region corresponding to the predetermined region of the active layer, the first current blocking layer having a refractive index higher than a refractive index of the pair of cladding layers and an energy band gap larger than an energy band gap of the active layer.

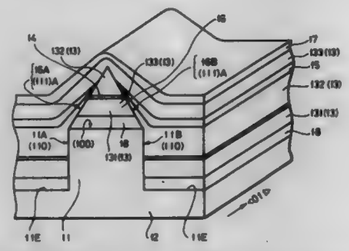


5,383,215

SEMICONDUCTOR LASER WHICH HAS A (100) TOP SURFACE AND A STRIPE RIDGE WHICH EXTENDS IN THE HORIZONTAL <01-1> AXIS DIRECTION AND HAS SIDE WALL SURFACES (110) AND A TRIANGULAR REGION BETWEEN (111) FACES

Hironobu Narui, and Daisuke Imanishi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1993, Ser. No. 103,799
Claims priority, application Japan, Aug. 25, 1992, 4-225992
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—46 2 Claims



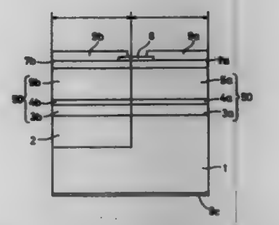
1. A semiconductor laser comprising:
a semiconductor substrate which is (100) oriented and has a stripe ridge thereon with a top surface of (100) orientation;
first and second cladding layers disposed on said stripe ridge;
an active layer sandwiched between said first and second cladding layers;
an electrode held in electric contact with said first and second cladding layers and said active layer;
said stripe ridge extending in a <01-1> axis direction;
said first and second cladding layers and said active layer jointly providing a region of triangular cross-section sandwiched between (111) A faces, wherein said stripe ridge has side wall surfaces composed of (110) faces, further, comprising a current block layer disposed on opposite sides of said region of triangular cross section, and further comprising a cap layer covering said region of triangular cross section.

5,383,216

SEMICONDUCTOR LASER WITH LIGHT MODULATOR

Masayoshi Takemi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1993, Ser. No. 150,883
Claims priority, application Japan, Dec. 28, 1992, 4-361110
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—50 8 Claims



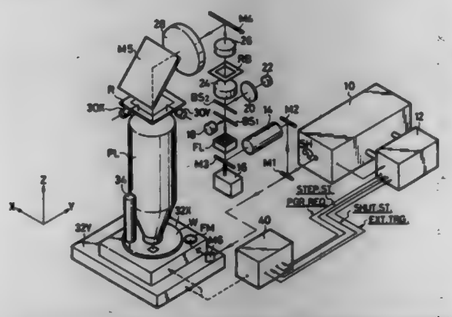
1. An integrated semiconductor laser and an electric field absorption type light modulator comprising:
a semiconductor substrate having a first surface, a second surface, a lattice constant, and a groove extending into said semiconductor substrate from the first surface;
a first semiconductor material having a lattice constant smaller than the lattice constant of said semiconductor substrate epitaxially grown in, filling the groove and having a surface coplanar with the first surface of said semiconductor substrate producing misfit dislocations at an interface with said semiconductor substrate;
a second semiconductor layer epitaxially grown and disposed on the first surface of said semiconductor substrate having a lattice match with said semiconductor substrate, a part of said second semiconductor layer being an active layer of an electric field absorption type light modulator.

5,383,217

EXPOSURE APPARATUS WITH LASER SOURCE REQUIRING NEW GAS INTRODUCTION

Tsuneaburo Uemura, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 71,368, Jun. 3, 1993, abandoned, which is a continuation of Ser. No. 911,260, Jul. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 780,849, Oct. 23, 1991, abandoned, which is a continuation of Ser. No. 520,878, May 9, 1990, abandoned. This application Mar. 14, 1994, Ser. No. 209,367
Claims priority, application Japan, May 9, 1989, 1-115361
Int. Cl.[6] H01S 3/22
U.S. Cl. 372—58 19 Claims



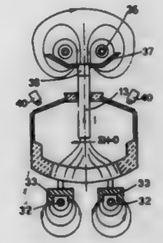
1. An apparatus using a laser beam for processing a material, said apparatus comprising:
(a) a gas laser source for generating a laser beam employed for processing the material, said gas laser source requiring the introduction of new gas from time to time in order to maintain a desired beam quality in accordance with said processing;
(b) a processing machine for executing at least a material loading operation and a material processing operation;
(c) first control means for establishing an operating sequence of said machine, said sequence including first intervals in which said processing machine requires the laser beam from said gas laser source and second intervals in which said processing machine does not require the laser beam from said gas laser source
(d) detecting means for detecting when said gas laser source requires the introduction of new gas in order to maintain said desired beam quality and for transmitting a corresponding request signal to said first control means; and
(e) second control means responsive to said request signal for ensuring that new gas is introduced to said gas laser source during at least one of said second intervals.

5,383,218

DIRECT CURRENT MELTING FURNACE WITH CONTROL OF DEFLECTION OF THE ELECTRIC AGE

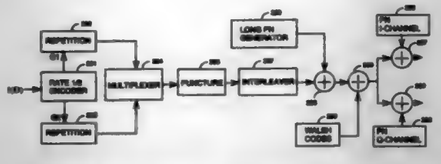
Kjell Bergman; Kenneth Landstrom, both of Västerås; Staffan Granstrom, Öjebyn, all of Sweden; Gessini Gianni, S. Stefano, and Giovanni Cossin, Pordenone, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA., Buttrio, Italy

Filed Jul. 20, 1993, Ser. No. 94,338
Claims priority, application Italy, Jul. 31, 1992, UD92A000127; Jul. 31, 1992, UD92A000128; Dec. 24, 1992, UD92A000185
Int. Cl.[6] H05B 7/144
U.S. Cl. 373—107 11 Claims



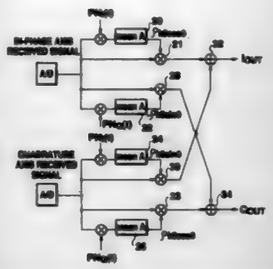
1. Direct-current smelting furnace with control of deflection of electric arc formed therein, which comprises:
a furnace hearth;
an upper electrode connected to a relative power return-flow line;
a plurality of bottom electrodes positioned on the hearth of the furnace and arranged in two or more assemblies, each assembly having its own controlled supply conductor line connected to its own transformer, there being included downstream of each transformer its own thyristor rectifier assembly associated with its own controlling means to control voltage, current and firing angle; and screens formed of magnetic sections for at least partly screening at least said controlled supply conductor line of said each assembly of said bottom electrodes and said power return-flow line of said upper electrode in the vicinity of the smelting furnace.

5,383,219
FAST FORWARD LINK POWER CONTROL IN A CODE DIVISION MULTIPLE ACCESS SYSTEM
Charles E. Wheatley, III, Del Mar; Roberto Padovani, and Ephraim Zehavi, both of San Diego, all of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.
Filed Nov. 22, 1993, Ser. No. 156,125
Int. Cl.[6] H04K *1/00*
U.S. Cl. 375—1 **5 Claims**



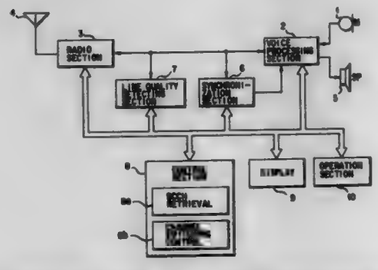
1. A method for providing a variable rate data communication link, the method comprising the steps of:
convolutionally encoding an input data signal to produce a first plurality of convolutionally encoded signals, each convolutionally encoded signal comprising a plurality of data symbols;
repeating each data symbol a predetermined number of times to produce a second plurality of convolutionally encoded signals comprising a plurality of repeated data symbols;
multiplexing the second plurality of convolutionally encoded signals to produce a data sequence;
puncturing the data sequence such that data symbols in predetermined locations of the data sequence are deleted to produce a punctured data sequence; and
interleaving the data sequence to produce an interleaved data sequence.

5,383,220
DATA DEMODULATOR OF A RECEIVING APPARATUS FOR SPREAD SPECTRUM COMMUNICATION
Hideshi Murai, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 82,035, Jun. 24, 1993, abandoned. This application Apr. 13, 1994, Ser. No. 227,197
Claims priority, application Japan, Jun. 29, 1992, 4-170946; Jun. 21, 1993, 5-149369
Int. Cl.[6] H04K *1/00*
U.S. Cl. 375—1 **45 Claims**



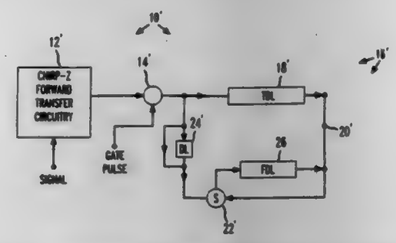
1. A data demodulator of a receiving apparatus for spread spectrum communication which receives a spread spectrum modulated signal for an in-phase axis and a quadrature axis by a direct-sequence technique with in-phase axis and quadrature axis pseudonoise codes and recovers data from the received signal, said data demodulator comprising:
a correlation calculation means which multiplies an in-phase axis or quadrature axis received signal by a pseudonoise code corresponding to a pilot signal transmitted from a base station and averages multiplication results for calculating a correlation containing an information of phase difference remaining after detection; and
phase difference compensation means using the phase difference information provided by said correlation calculation means for compensating an effect of a phase difference contained in in-phase axis and quadrature axis received signals.

5,383,221
MOBILE STATION UNIT AND CHANNEL SWITCHING METHOD
Yoshihiro Akita, Tokyo, and Masakazu Shirakawa, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 27, 1992, Ser. No. 842,614
Claims priority, application Japan, Mar. 1, 1991, 3-036271
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—7 **13 Claims**



1. A mobile station unit connectable to first and second base station units over control and communication channels arranged in frames each including communication channel time slots corresponding to respective communication channels and at least one control channel time slot corresponding to a control channel, said mobile station unit comprising;
a voice processing section including processing means for processing an input voice signal and for processing input voice data, means for encoding the input voice signal to produce output voice data, and means for decoding the input voice data to produce an output voice signal outputtable to a speaker;
a radio section including means for receiving modulated voice data during a first communication channel time slot corresponding to a first communication channel, means for demodulating the modulated voice data for output to said voice processing section as the input voice data, means for modulating the output voice data from said voice processing section, and means for transmitting the modulated voice data during a second communication channel time slot corresponding to a second communication channel;
a communication channel quality detecting section for detecting deterioration of quality of a communication channel between said mobile station unit and said first base station unit during communication between said mobile station unit and said first base station unit;
a synchronization section for providing timing signals to said voice processing section; and
a control section connected to said voice processing section, said radio section, said detecting section, and said synchronization section for controlling operation of said mobile station unit,
said control section including interrupting means, responsive to a detection of deterioration of the quality of a communication channel between said mobile base station unit and said first base station unit, for interrupting communication between said first base station unit and said mobile station unit during a time frame in which a first control channel of said second base station unit having predetermined control information is to be received, setting means responsive to said interrupting means for setting a receiving frequency of said radio station to a control channel frequency corresponding to said first control channel during said time frame, and detecting means for attempting to detect said predetermined control information during a control channel time slot corresponding to said first control channel of said time frame;
channel switching means for terminating communication with said first base station unit and connecting said mobile station unit to said second base station unit in accordance with said predetermined control information if said predetermined control information is detected; and
means for restoring communication between said mobile station unit and said first base station unit if said predetermined control information is not detected.

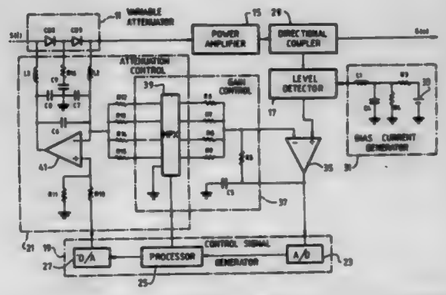
5,383,227
FEEDBACK CIRCUITRY FOR RECREATING CW COMPONENTS FROM CHIRP-Z PULSES
William, J. Skudera, Jr., Oceanport, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 8, 1993, Ser. No. 14,597
Int. Cl.[6] H04B *3/46, 17/00, 15/00*; H04Q *1/20*
U.S. Cl. 375—10 **3 Claims**



1. In a signal analyzer wherein Chirp-Z forward transforms are utilized to compress the individual CW components of the signal into segregated pulses having a uniform duration and selected CW components are recreated by replicating the Chirp-Z pulses relating thereto with a TDL from which a group of pulse replications separated by half the uniform Chirp-Z pulse duration, pass through a feedback switch for recirculation, the improvement comprising:
a FDL having a delay interval equal to the time duration occupied by the group of pulse replications and output from the feedback switch is directed to only said FDL.

5,383,253
POWER CONTROL DEVICE WHEREIN A BIAS VOLTAGE IN LEVEL DETECTION IS GIVEN A CONSTANT DIFFERENCE FROM A DETECTED VOLTAGE
Hiroyuki Inokuchi, Mitaka, Japan, assignor to Japan Radio Co., Ltd., Tokyo, Japan
Filed Jun. 4, 1993, Ser. No. 72,473
Claims priority, application Japan, Jun. 5, 1992, 4-145301
Int. Cl.[6] H03G *3/30*; H04B *1/02*
U.S. Cl. 375—60 **10 Claims**

1. A level control device producing for use in time division multiplex modulation a device output signal in response to a device input signal with said device output signal given at a controlled output level and comprising:
a variable attenuator responsive to said device input signal for producing an attenuator output signal having an attenuated level,
a bias current generator for generating a bias current,
level detecting means controlled by said bias current generator for detecting said attenuator output signal to:
produce a detected signal,
develop a bias voltage, and
give said detected signal alternatingly a detected voltage related to said attenuated level and said bias voltage,
a control signal generator, responsive to a generator input signal and a reference value, for generating an attenuation control signal having an attenuation control level,
attenuation control signal supply means for supplying said attenuation control signal to said variable attenuator to enable use of said attenuator output signal as said device output signal,
a gain variable amplifier for amplifying said detected signal with a variable gain into an amplifier output signal to give said amplifier output signal alternatingly an amplified



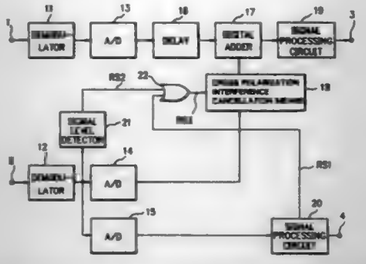
voltage related to said detected voltage and an amplified voltage related to said developed bias voltage,
a gain controller responsive to a device control signal from said control signal generator for controlling said variable gain,
said bias current generator generating said bias current to give said bias voltage a substantially constant difference from said detected voltage irrespective of a temperature variation; and
said control signal generator using said amplifier output signal as said generator input signal to convert said detected voltage and said bias voltage collectively to a substantially temperature independent digital value and comparing said digital value with said reference value to derive an analog value for use as said attenuation control level.

5,383,224
CROSS POLARIZATION INTERFERENCE CANCELLER
Shoichi Mizoguchi, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Nov. 24, 1992, Ser. No. 980,662
Claims priority, application Japan, Nov. 27, 1991, 3-312760
Int. Cl.[6] H03D *1/04*; H04B *1/10*
U.S. Cl. 375—99 **10 Claims**

1. A cross polarization interference canceller comprising:
first analog/digital conversion means and second analog/-digital conversion means for converting different polarization side baseband signals supplied from a different polarization side demodulator which receives different polarization side modulated signals which cause a cross polarization interference to main polarization side modulated signals in propagation paths, to digital signals;
cross polarization interference cancellation means for receiving output signals from said first analog/digital conversion means and generating reverse characteristic signals of cross polarization interference components from different polarization signals to main polarization signals which are produced in propagation paths by an adaptive

control, and for supplying said reverse characteristic signals to a digital adder of which another input is inputted to main polarization side digital baseband signals;

signal processing means for receiving output signals from said second analog/digital conversion means, and outputting different polarization side data after differential decoding and error correction decoding of said output signals received from said second analog/digital conversion means and transmitting a first reset signal to said cross polarization interference cancellation means when an abnormality is detected;



signal level detection means for receiving different polarization side baseband signals from the different polarization side demodulator and transmitting a second reset signal when levels of said received different polarization side baseband signals are lower than a predetermined value; and

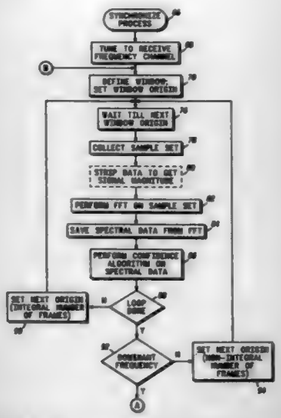
resetting means for receiving the first reset signals and the second reset signals and outputting a third reset signal to reset said cross polarization interference cancellation means when either one of said first and second reset signals is received.

5,383,225

SYNCHRONIZER FOR TDMA ACQUISITION SIGNAL HAVING AN UNKNOWN FREQUENCY

Sergio Aguirre, Boulder, Colo.; Christopher R. Keate, Santa Clara, Calif., and Gregory B. Vatt, Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 17, 1992, Ser. No. 991,816
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—106 **21 Claims**



1. A method for synchronizing a radiocommunication station to a time division multiple access (TDMA) communication signal having an unknown frequency and an unknown time slot within frames of data, said method comprising the steps of:

sampling said communication signal within a timing window having a first origin and within subsequent timing windows having subsequent origins to generate sample sets, each of said sample sets corresponding to one of the timing windows, said subsequent origins having been delayed from said first origin an integral number of frames;

transforming each of said sample sets into a frequency domain to generate sets of spectral data for each of said timing windows;

combining said sets of spectral data into a single set of spectral content data; and

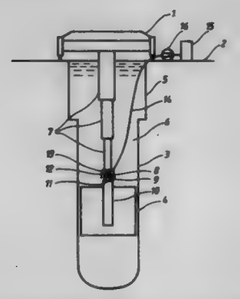
determining when said set of spectral content data contains a dominant frequency.

5,383,226

METHOD OF CARRYING OUT LEAK DETECTION OF NUCLEAR FUEL ASSEMBLIES

Roland Deleryd, Västerås, and Gunnar Stahl, Kolbäck, both of Sweden, assignors to ABB Atom AB, Västerås, Sweden

Filed Nov. 16, 1992, Ser. No. 977,032
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—253 **13 Claims**



1. A method of carrying out leak detection of a fuel assembly for a boiling water nuclear reactor, said fuel assembly being immersed in water, wherein from an area located above an outlet for water in a top tie plate of the fuel assembly and around a gripper which is arranged in the lower end of a lifting rod of telescopic design for a loading machine for fuel assemblies and which is secured to the fuel assembly above the outlet, water is sucked off while the fuel assembly is lifted in the water, and wherein the sucked-off water is subjected to an analysis with respect to the presence of fission products which have been formed from fuel in the fuel assembly.

5,383,227

METHOD FOR MODIFYING EXISTING TRANSITION PIECES IN BOTTOM ENTRY NUCLEAR FUEL ASSEMBLIES FOR REDUCING COOLANT PRESSURE DROP

Robert B. Macduff, Richland, Wash., assignor to Siemens Power Corporation, Richland, Wash.

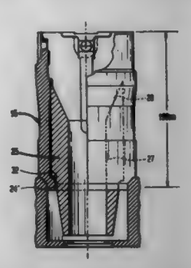
Filed Aug. 23, 1993, Ser. No. 110,642
Int. Cl.[6] G21C *3/30, 15/00*
U.S. Cl. 376—261 **7 Claims**

1. A method for retrofitting nuclear fuel assemblies in bottom entry fuel assembly type nuclear reactors having a transition piece to guide liquid coolant into a channel entry area, said transition piece being disposed above an entry orifice in a fuel assembly support plate and having side walls and a multipronged lead-in finger, said method comprising the steps of:

removing the lead-in finger from the transition piece;

machining internal surfaces of the side walls of the transition piece; and

installing an insert to be disposed within and supported by the machined transition piece, said insert having walls with internal surfaces defining a first cylindrical portion with a constant diameter at least as large as the diameter of the orifice and disposed immediately above the orifice for allowing the flow stream from the orifice to fully enter the



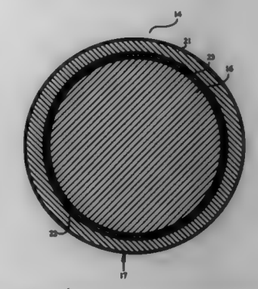
first portion and attach to the inner sides of the first portion and an outwardly flaring second portion having a diameter which increases in the direction of fluid flow for allowing controlled expansion of fluid in the transition piece.

5,383,228

METHOD FOR MAKING FUEL CLADDING HAVING ZIRCONIUM BARRIER LAYERS AND INNER LINERS

Joseph S. Armijo, Saratoga; Herman S. Rosenbaum, Fremont, both of Calif., and Cedric D. Williams, Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 14, 1993, Ser. No. 91,672
Int. Cl.[6] G21C *3/00*
U.S. Cl. 376—409 **54 Claims**



1. A method of making a cladding tube having an outer substrate, an intermediate zirconium barrier layer, and an inner liner, the substrate, barrier layer, and inner liner each having interior and exterior circumferential surfaces, the method comprising the following steps:

(a) bonding the zirconium barrier layer exterior circumferential surface to the substrate interior circumferential surface; and

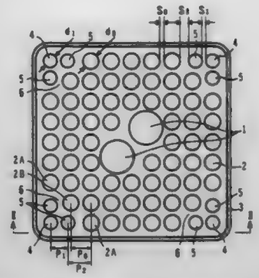
(b) bonding the inner liner outer circumferential surface to the zirconium barrier layer inner circumferential surface, wherein the inner liner comprises a zirconium alloy having less than about 1.2% tin by weight.

5,383,229

FUEL ASSEMBLY AND REACTOR CORE

Akinobu Nakajima, Hitachi; Yoko Ishibashi, Hitachiohta; Motoo Aoyama, Mito; Kunitoshi Kurihara, Katsuta; Junichi Yamashita, Hitachi; Junjiro Nakajima, Hitachi, and Koji Nishida, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1993, Ser. No. 879
Claims priority, application Japan, Jan. 8, 1992, 4-001515
Int. Cl.[6] G21C *3/32*
U.S. Cl. 376—434 **10 Claims**



1. A fuel assembly comprising a plurality of first fuel rods arrayed in a square lattice pattern and containing nuclear fuel material, and at least one moderator rod containing no nuclear fuel materials, wherein:

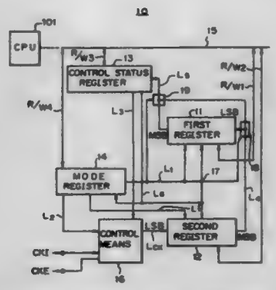
said fuel assembly further comprises a plurality of second fuel rods having a smaller outer diameter than an outer diameter of said first fuel rods, said second fuel rods are arranged at corners of an outermost layer of the fuel rod array and at positions adjacent to the corners of said outermost layer, and a pitch between said second fuel rods is narrower than a pitch between said first fuel rods.

5,383,230

RELOAD-TIMER/COUNTER CIRCUIT

Takeshi Fuse, Yokohama, and Osamu Tago, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 759,978, Sep. 17, 1991, abandoned, which is a continuation of Ser. No. 371,179, Jun. 26, 1989, abandoned. This application Aug. 9, 1993, Ser. No. 110,649
Claims priority, application Japan, Jun. 28, 1988, 63-162093
Int. Cl.[6] G06F *5/78, 1/14;* H03K *21/00*
U.S. Cl. 377—44 **27 Claims**



23. A reload-timer/counter circuit comprising:

a first register holding an initial value for a timer operation in a reload-timer mode and counting a first clock signal as a first portion of a counter in a counter mode;

a second register, said second register being operative counting in response to a second clock signal from the initial value loaded from said first register in said reload-timer

mode and counting in response to the second clock signal and supplying a carry signal as the first clock signal to said first register as a second portion of a counter in said counter mode;

a means for supplying the second clock signal to said second register;

a third register, operatively connected to said first and second registers, storing data for activating a reload-timer/-counter operation;

a fourth register connected to said first and second registers to supply mode data thereto, for storing a mode data for switching in mode between said reload-timer mode and said counter mode; and

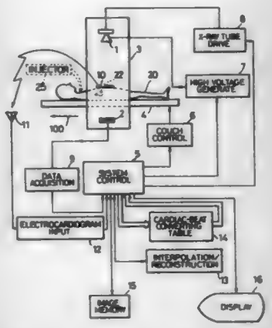
a switching means, operatively connected to said first, second and third registers, for selectively connecting an output of said second register to either an input of said first register or an input of said third register in accordance with said mode data.

5,383,231

METHOD AND APPARATUS FOR ACQUIRING X-RAY CT IMAGE IN HELICAL SCANNING MODE, UTILIZING ELECTROCARDIOGRAM

Ichiro Yamagishi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanegawa, Japan

Filed Apr. 3, 1992, Ser. No. 862,634
Claims priority, application Japan, Jun. 28, 1991, 3-159075
Int. Cl.[6] G01N *23/083*
U.S. Cl. 378—15 **17 Claims**



1. A method for reconstructing an X-ray CT (computerized tomographic) image of a biological body under medical examination, the method comprising the steps of:

acquiring continuous X-ray projection data of the biological body under medical examination by scanning an X-ray source around the biological body in a helical scanning movement mode;

acquiring a plurality of cardiac beats of a heart of the biological body as electrocardiogram data independent of the projection data acquiring step;

converting temporal information contained in the electrocardiogram data into positional information of the biological body in connection with the helical scanning movement mode;

determining a specific phase of the electrocardiogram data; and

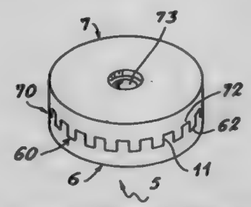
reconstructing a plurality of X-ray CT images by processing the continuous X-ray projection data based upon the positional information of the biological body obtained by the converting step, whereby the plurality of X-ray images are produced at the specific phases of cardiac beats of the heart determined by the determining step.

5,383,232

ROTATING ANODE FOR COMPOSITE X-RAY TUBE

Emile Gabbey, Paris, France, and Werner Roeck, Irvine, Calif., assignors to GE Medical Systems S.A., Buc, France

Filed Oct. 15, 1993, Ser. No. 136,080
Claims priority, application France, Oct. 15, 1992, 92 12361
Int. Cl.[6] H01J *35/08*
U.S. Cl. 378—124 **3 Claims**



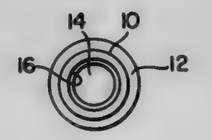
1. A rotating anode for a composite X-ray tube the focal spot of which is located on the edge, placed in front of a cathode in a vacuum glass chamber, wherein said anode is constituted by two half-anodes, each being made of a material with a different, high atomic number alternately subjected to the bombardment of an electron beam emitted by the cathode, each being in the form of a disk, one face of which is flat and the other face of which is cut out with radial notches that join their indented circumferences respectively to the centers of said half-anodes which fit into each other by their indented faces which are fixedly attached by a mechanical fastening system.

5,383,233

METHOD FOR IDENTIFYING ARTIFACTUAL RADIOGRAPHIC IMAGES CAUSED BY EPITHELIAL PROTUBERANCES

Donald G. Russell, Kensington, Conn., assignor to Beekly Corporation, Bristol, Conn.

Filed May 7, 1993, Ser. No. 59,201
Int. Cl.[6] H05G *1/28*
U.S. Cl. 378—162 **8 Claims**



1. A method for identifying the artifactual radiographic images caused by an epithelial protuberance, said method comprising the steps of:

securing around the protuberance a partially radiolucent, faintly radiopaque marker adapted to preserve the generally cylindrical shape and vertical boundaries of the protuberance when secured thereto and to maintain a layer of air around the protuberance;

presenting the vertical boundaries of the protuberance with the marker secured thereto tangentially to an xray beam to produce a radiographic shadow of the protuberance, and

identifying the artifactual radiographic image caused by the protuberance by detecting the radiographic shadow cast by the protuberance in association with the shadow cast by the surrounding marker.

5,383,234

RADIOGRAPHIC SYSTEM AND A METHOD FOR USING THE SYSTEM FOR RADIOGRAPHIC EXAMINATION OF TISSUE SPECIMENS

Donald G. Russell, Kensington, Conn., assignor to Beekley Corporation, Bristol, Conn.

Filed Sep. 3, 1993, Ser. No. 116,868
Int. Cl.[6] H05G *1/28*
U.S. Cl. 378—164 **19 Claims**

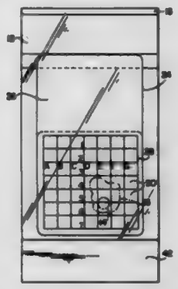
1. A radiographic system for transporting and radiographically examining a tissue specimen without risk of exposure to tissue fluid, said system comprising:

a transparent, sealable, liquid impervious container for receiving a tissue specimen;

a tray having a first side and an opposite side positioned within the container for supporting a tissue specimen on said first side, said tray comprising a substantially fluid impervious material;

a first locating grid supported on the first side of the tray;

a second locating grid supported on the opposite side of the tray in registration with the first locating grid, the second locating grid including grid lines which generate a radiographic image when exposed to xray radiation, and



means for securing the tissue specimen to the first side of the tray in a fixed position.

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DESIGN PATENTS

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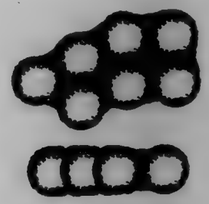
DESIGNS

JANUARY 17, 1995

354,386
CEREAL PIECE

Charles A. Smith, Marshall, and James B. Holder, Battle Creek, both of Mich., assignors to Kellogg Company, Battle Creek, Mich.

Filed Oct. 8, 1993, Ser. No. 13,977
Term of patent 14 years
U.S. Cl. D1—125



354,387
STREAKED SKI BOOT

Walter Wittmann, Köflach, Austria, assignor to Koflach Sport Gesellschaft m.b.H & Co. KG, Wagrain, Austria

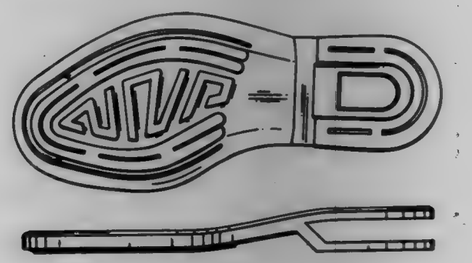
Continuation-in-part of Ser. No. 781,942, Oct. 22, 1991, abandoned. This application Feb. 20, 1992, Ser. No. 839,497
Claims priority, application Austria, Apr. 23, 1991, 993/91; Apr. 23, 1991, 994/91; Apr. 23, 1991, 995/91; Apr. 23, 1991, 996/91; Apr. 23, 1991, 997/91; Apr. 23, 1991, 998/91; Apr. 23, 1991, 999/91
Term of patent 14 years
U.S. Cl. D2—904



354,388
SHOE SOLE

Eagle E. Saez, Marblehead, Mass., assignor to Sperry Top-Sider, Inc., Cambridge, Mass.

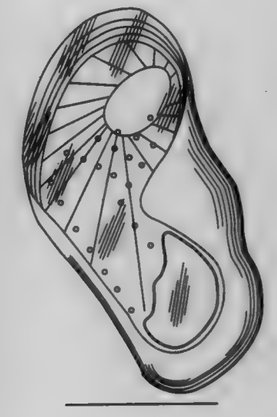
Filed Mar. 25, 1992, Ser. No. 857,309
Term of patent 14 years
U.S. Cl. D2—951



354,389
SPORTS INSOLE WITH PERFORATIONS

Harold A. Howlett, Nesbit, Mich.; Donald B. Thompson, Memphis, and William S. Rogers, Cordova, both of Tenn., assignors to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.

Filed May 5, 1993, Ser. No. 7,953
Term of patent 14 years
U.S. Cl. D2—961



354,390
SPORTS INSOLE

Harold A. Howlett, Nesbit, Miss.; Donald B. Thompson, Memphis, and William S. Rogers, Cordova, both of Tenn., assignors to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.

Filed May 5, 1993, Ser. No. 8,401
Term of patent 14 years
U.S. Cl. D2—961



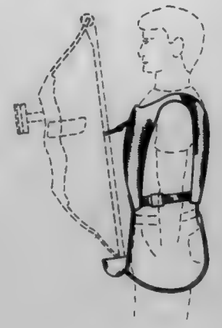
354,391
SHOE UPPER
Tinker L. Hatfield, Portland, and Wilson W. Smith, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Mar. 14, 1994, Ser. No. 19,932
Term of patent 14 years
U.S. Cl. D2—970



354,392
COVER FOR A CRUTCH
Cheryl J. Williams, 5510 W. Kamerlang, Chicago, Ill. 60651
Filed Sep. 29, 1992, Ser. No. 953,586
Term of patent 14 years
U.S. Cl. D3—10



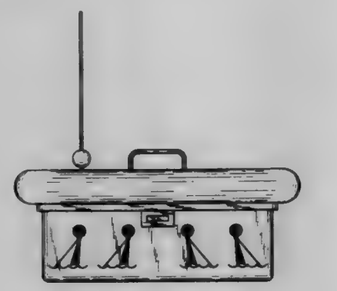
354,393
BOW HARNESS
William J. Mocca, 3032 St. Babette, St. Charles, Mo. 63301
Filed May 15, 1992, Ser. No. 883,970
Term of patent 14 years
U.S. Cl. D3—221



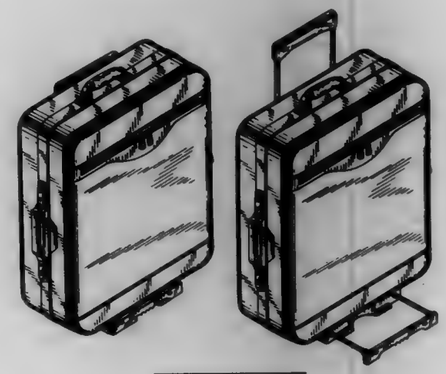
354,394
BUCKET BAG
Leslie A. Novak, 8 Bromfield St., Newburyport, Mass. 01950
Filed Mar. 23, 1993, Ser. No. 6,078
Term of patent 14 years
U.S. Cl. D3—246



354,395
FLOATING TACKLEBOX
Jack E. Harrold, and Carolyn B. Harrold, both of 1221 Oakwood Ave., Daytona Beach, Fla. 32114
Filed Mar. 1, 1993, Ser. No. 5,262
Term of patent 14 years
U.S. Cl. D3—260



354,396
SUITCASE
Franklin Löwenstein, Harbour City, Tst, Hong Kong, assignor to United System Ltd., Kowloon, Hong Kong
Continuation-in-part of Ser. No. 552,449, Jul. 12, 1990, abandoned. This application May 17, 1993, Ser. No. 8,472
Claims priority, application Benelux TM/Des. Off., Jan. 17, 1990, 65133-00
Term of patent 14 years
U.S. Cl. D3—276



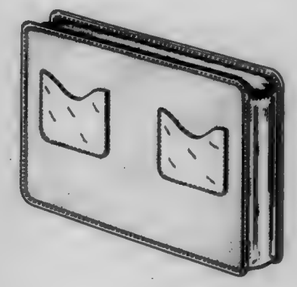
354,397
WHEELED LUGGAGE WITH TELESCOPING HANDLE
Joseph Berman, Hillsdale, N.J., assignor to VT International Ltd., New York, N.Y.
Filed Aug. 10, 1993, Ser. No. 11,622
Term of patent 14 years
U.S. Cl. D3—276



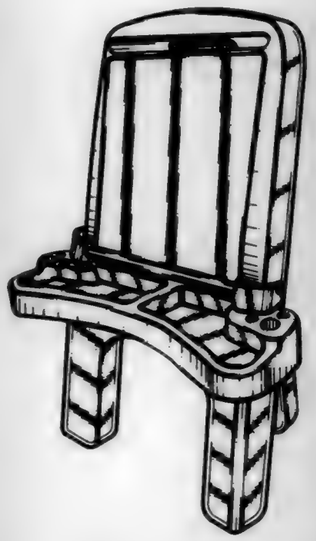
354,398
WHEELED LUGGAGE WITH PIVOTABLE HANDLE
Joseph Berman, Hillsdale, N.J., assignor to VT International Ltd., New York, N.Y.
Filed Aug. 10, 1993, Ser. No. 11,627
Term of patent 14 years
U.S. Cl. D3—276



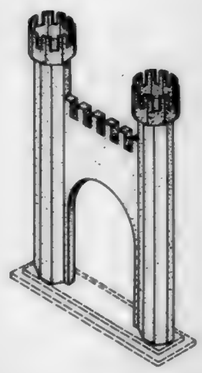
354,399
PADDED SLEEVE FOR HOLDING AN ELECTRONIC DEVICE WITHIN A CARRYING CASE
Jack Georges, 388 Oak Ave., River Edge, N.J. 07661
Filed Mar. 3, 1993, Ser. No. 5,397
Term of patent 14 years
U.S. Cl. D3—319



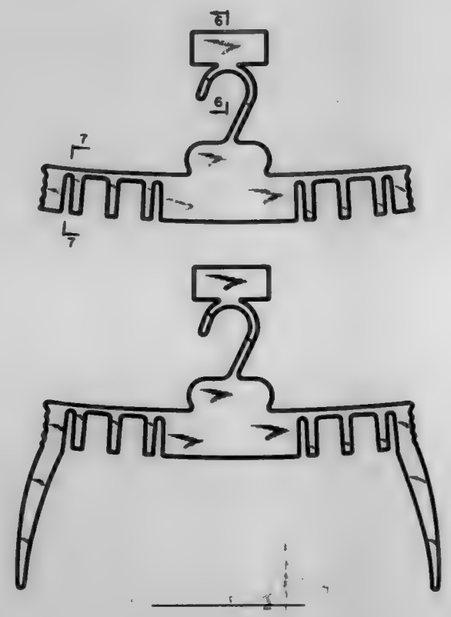
354,400
EASEL
Joseph C. Cacciola, Hudson, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Oct. 1, 1993, Ser. No. 13,758
Term of patent 14 years
U.S. Cl. D6—300



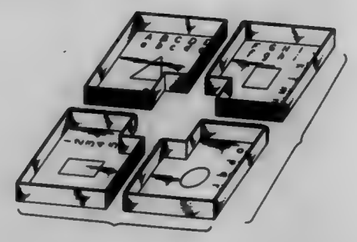
354,401
FRAME FOR A CLOCK OR PICTURE
Simon Kim, 73 Emerald Pl., Clark, N.J. 07066
Filed Mar. 29, 1993, Ser. No. 6,518
Term of patent 14 years
U.S. Cl. D6—303



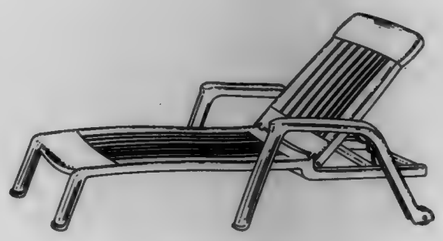
354,402
GARMENT HANGER
Herbert Feinberg, New York, N.Y.; Norman Katz, Jackson, Ind., and Denise Bro, New York, N.Y., assignors to I. Appel Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 827,111, Jan. 28, 1992, Pat. No. Des. 342,387. This application Sep. 17, 1993, Ser. No. 13,621
Term of patent 14 years
U.S. Cl. D6—315



354,403
SUPPORT FOR AN INFANT
Denise Meade, 502 Broad St., Hartford, Conn. 06105
Filed Sep. 8, 1993, Ser. No. 12,754
Term of patent 14 years
U.S. Cl. D6—333



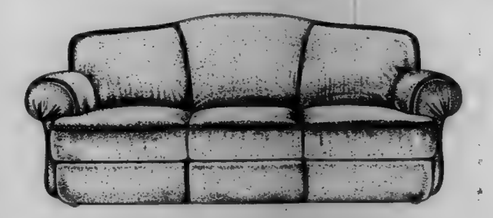
354,404
CHAISE LOUNGE
Michael W. Greene, Incline Village, Nev., assignor to Resinform, Inc., Incline Village, Nev.
Filed Nov. 2, 1992, Ser. No. 1,025
Term of patent 14 years
U.S. Cl. D6—361



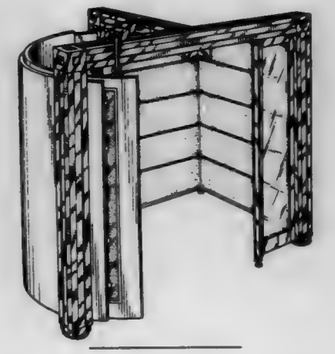
354,405
CHAIR
Michael W. Greene, Incline Village, Nev., assignor to Resinform, Inc., Incline Village, Nev.
Filed Nov. 2, 1992, Ser. No. 1,023
Term of patent 14 years
U.S. Cl. D6—370



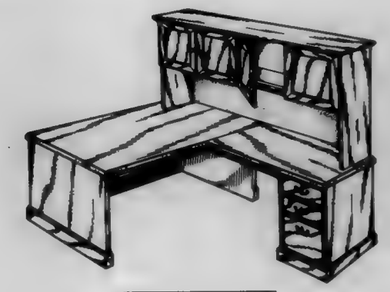
354,406
SOFA
Pasquale Natuzzi, Santeramo In Colle, and Domenico Abbruzzese, Gioia del Colle, both of Italy, assignors to Industrie Natuzzi, SpA, Bari, Italy
Filed Sep. 16, 1993, Ser. No. 13,043
Term of patent 14 years
U.S. Cl. D6—381



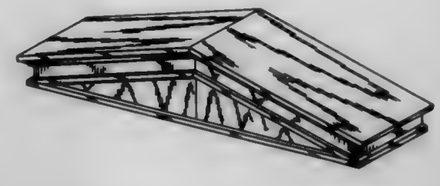
354,407
WORKSPACE MODULE
Mark A. Baloga, Grand Rapids, Mich.; Paul B. Siebert, Chicago, Ill., and Michael E. Tingley, Cambridge, Mass., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Jan. 10, 1992, Ser. No. 819,513
Term of patent 14 years
U.S. Cl. D6—421



354,408
DESK
James O. Kelley, Spring Lake, Mich., assignor to Sligh Furniture Co., Holland, Mich.
Filed May 19, 1992, Ser. No. 885,407
Term of patent 14 years
U.S. Cl. D6—426



354,409
PEDIMENT FOR A CABINET
Michael D. Tatum, Dallas, Tex.; Robert W. Purdom, deceased, late of Washington, DC by Richard E. Cytowic, executor
Filed Jun. 11, 1993, Ser. No. 9,375
Term of patent 14 years
U.S. Cl. D6—447



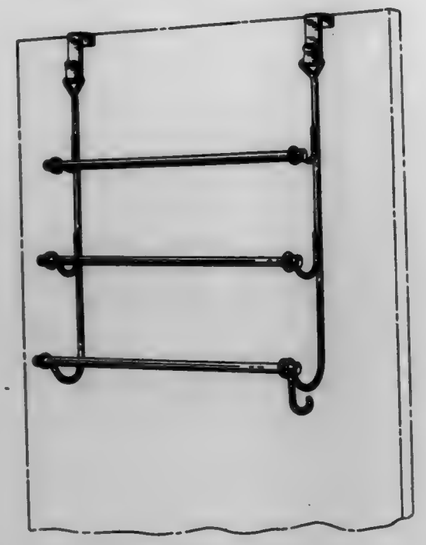
354,410
LEG FOR A DISPLAY RACK
Harold B. Goldring, Woodcliff Lake, N.J.; Mark A. Niven, Yonkers; Ronald Namaroff, Hartsdale, both of N.Y., and Leslie G. Davis, North Caldwell, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Aug. 11, 1993, Ser. No. 11,640
Term of patent 14 years
U.S. Cl. D6—495



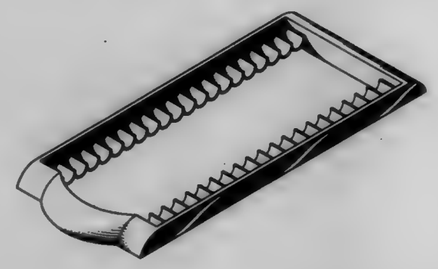
354,411
TABLE PEDESTAL
Alan J. Berkowitz, Clayton; Elliott W. Baum, Maryland Heights, and Lucian N. Chirea, St. Louis, all of Mo., assignors to Berco Industries, St. Louis, Mo.
Filed Apr. 15, 1993, Ser. No. 7,038
Term of patent 14 years
U.S. Cl. D6—498



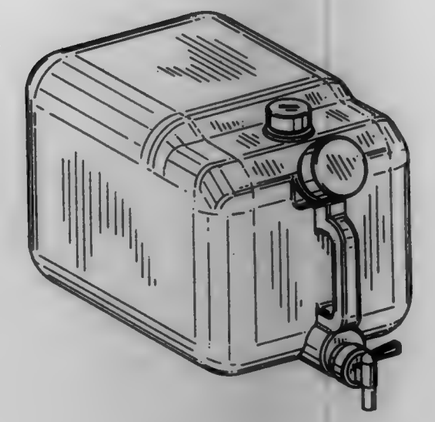
354,412
DOOR-MOUNTED TOWEL ORGANIZER
William W. Emery, Berkeley Heights, N.J., assignor to Better Sleep Mfg. Co., Berkeley Heights, N.J.
Filed May 19, 1993, Ser. No. 8,600
Term of patent 14 years
U.S. Cl. D6—548



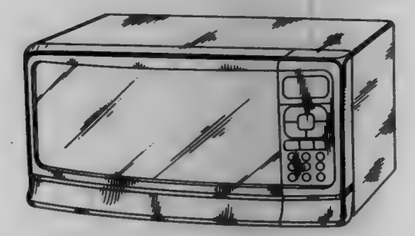
354,413
COMPACT DISC STORAGE AND DISPLAY RACK
Nicholas M. Sedon, N. Canton; James T. Weisburn, Massillon, and Tyrone M. Keyes, Cincinnati, all of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio
Filed Oct. 9, 1992, Ser. No. 257
Term of patent 14 years
U.S. Cl. D6—629



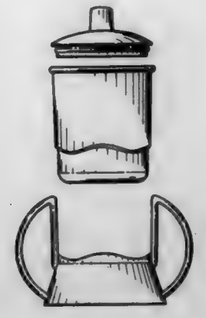
354,414
CONTAINER FOR LIQUIDS
James J. Westgerdes, Fort Recovery, Ohio, assignor to Impact Products, Inc., Toledo, Ohio
Filed Oct. 20, 1993, Ser. No. 14,405
Term of patent 14 years
U.S. Cl. D7—313



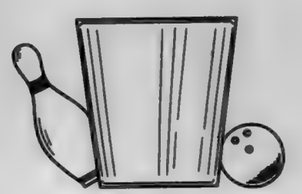
354,415
MICROWAVE OVEN
Kensaku Noda, and Noriyuki Mori, both of Shiga, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Jun. 1, 1993, Ser. No. 8,984
Claims priority, application Japan, Dec. 9, 1992, 4-36414
Term of patent 14 years
U.S. Cl. D7—351



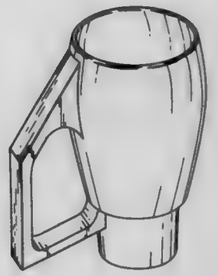
354,416
DRINKING TUMBLER WITH BASE AND SIPPER
Victor J. J. Cautereels, Borsbeek, Belgium, and Ian Ferris, Wokingham, United Kingdom, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Aug. 20, 1992, Ser. No. 932,859
Term of patent 14 years
U.S. Cl. D7—507



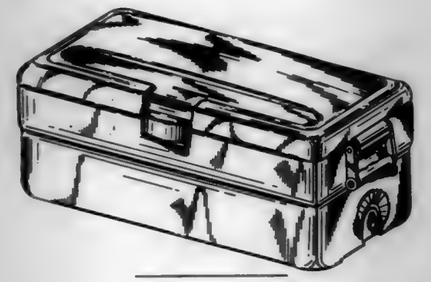
354,417
DRINKING GLASS
Kenneth D. Rigsby, 7911 Dunbarton Ave., Los Angeles, Calif. 90045
Filed Oct. 9, 1992, Ser. No. 392
Term of patent 14 years
U.S. Cl. D7—515



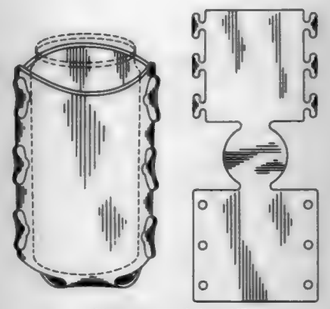
354,418
COFFEE MUG
Chris J. Martin, 22702 90th Way S., Apt. A-302, Kent, Wash. 98031
Filed Aug. 25, 1993, Ser. No. 12,156
Term of patent 14 years
U.S. Cl. D7—536



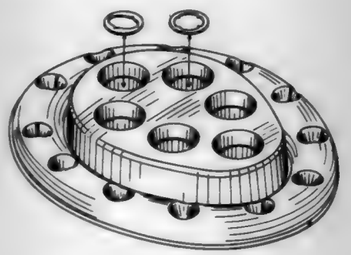
354,419
ICE CHEST
W. Henry Kahl, Wooster, and Allan G. Ross, Stow, both of Ohio, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Jul. 14, 1993, Ser. No. 10,655
Term of patent 14 years
U.S. Cl. D7—605



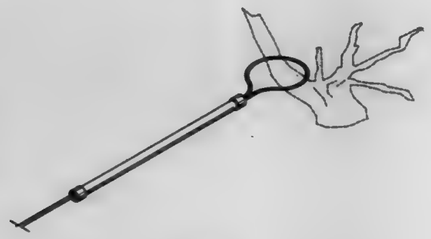
354,420
BEVERAGE CAN COOLER
Darren A. Sharp, 3331 N. Blythe, Fresno, Calif. 93722
Filed Nov. 22, 1993, Ser. No. 15,599
Term of patent 14 years
U.S. Cl. D7—607



354,421
EGG DYEING HOLDER
Michael T. Helmer, 7517 Blackthorne Way, Citrus Heights, Calif. 95621
Filed Oct. 29, 1993, Ser. No. 14,723
Term of patent 14 years
U.S. Cl. D7—669



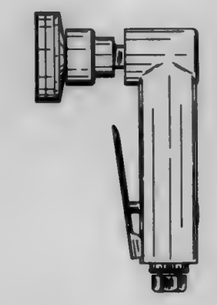
354,422
TREE STUMP PULLER
Raymond Jager, 1500 Lee, Alvin, Tex. 77511
Filed Nov. 29, 1993, Ser. No. 15,772
Term of patent 14 years
U.S. Cl. D8—1



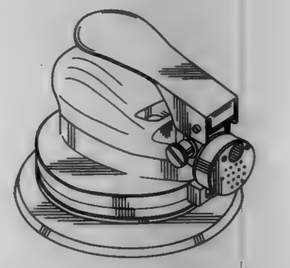
354,423
SCISSORS
Douglas J. Birkholz, Deforest, Wis., assignor to Fiskars Inc., Wausau, Wis.
Filed Jan. 12, 1994, Ser. No. 17,419
Term of patent 14 years
U.S. Cl. D8—57



354,424
MINIATURE DUAL ACTION ORBITAL SANDER
Osamu Izumisawa, Tokyo, Japan, assignor to Shinano Pneumatic Industries, Inc., Nagano, Japan
Filed Apr. 30, 1993, Ser. No. 7,865
Term of patent 14 years
U.S. Cl. D8—62



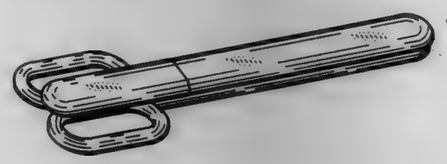
354,425
WET DUAL ACTION SANDER
Nobuyuki Izumisawa, Tokyo, Japan, assignor to Shinano, Inc., Japan
Filed May 4, 1993, Ser. No. 7,919
The portion of the term of this patent subsequent to Dec. 13, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—62



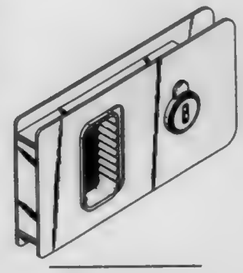
354,426
HOLDER FOR A DEBARKING TOOL
Lennart Magnusson, Iggesund, Sweden, assignor to Mecania AB, Hudiksvall, Sweden
Division of Ser. No. 246,174, Sep. 19, 1988, Pat. No. Des. 315,355. This application Jul. 13, 1990, Ser. No. 552,265
Claims priority, application Sweden, Jun. 8, 1988, 88-1411
Term of patent 14 years
U.S. Cl. D8—71



354,427
COMBINED SCISSORS AND LETTER OPENER
Mel Evenson, Rancho Palos Verdes, Calif., assignor to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Jun. 3, 1993, Ser. No. 9,134
Term of patent 14 years
U.S. Cl. D8—104



354,428
LOCK FOR SLIDING DOORS
Claes Magnusson, Vanadisvagen 43, S-113 23 Stockholm, Sweden
Filed Jul. 30, 1993, Ser. No. 11,224
Term of patent 14 years
U.S. Cl. D8—331



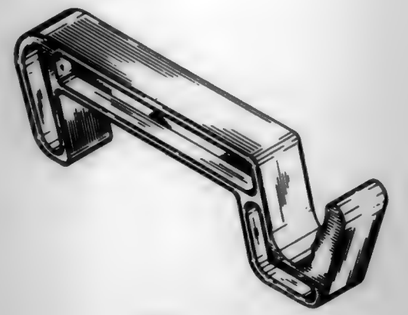
354,429
KITCHEN HOOK FOR HANGING FRUIT
Patrick McNaughton, Minneapolis, Minn., assignor to McNaughton Incorporated, Minneapolis, Minn.
Filed Dec. 30, 1993, Ser. No. 16,959
Term of patent 14 years
U.S. Cl. D8—367



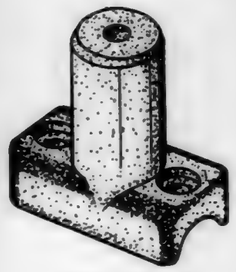
354,430
PAINT CONTAINER HOLDER
Marshall D. Lawrence, and Barbara A. Lawrence, both of 8801 Barr La., Garden Grove, Calif. 92641
Filed Jul. 6, 1993, Ser. No. 10,341
Term of patent 14 years
U.S. Cl. D8—373



354,431
WORK HOLDER FOR ATTACHMENT TO A STEP LADDER
George G. Andrews, 1800 Foxwood Ct., Arlington, Tex. 76012
Filed Oct. 25, 1993, Ser. No. 14,509
Term of patent 14 years
U.S. Cl. D8—373



354,432
CONNECTOR FOR LAWN FURNITURE
Ronald J. Starman, Quinton, Va., assignor to Omni Products International, Inc., Richmond, Va.
Filed Apr. 12, 1993, Ser. No. 6,966
Term of patent 14 years
U.S. Cl. D8—382



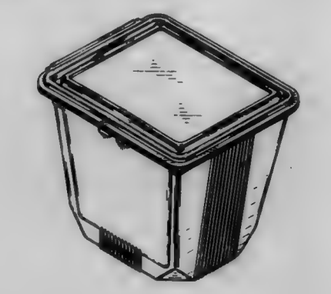
354,433
SNAPHOOK
Joseph A. Anscher, Port Washington, N.Y., assignor to National Molding Corporation, Farmingdale, N.Y.
Filed Jun. 11, 1993, Ser. No. 9,459
Term of patent 14 years
U.S. Cl. D8—382



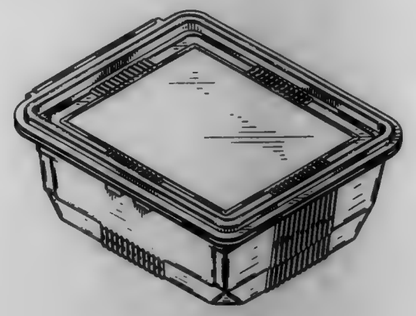
354,434
COSMETIC DISPENSER
Kenneth H. Nilssen, Huntington, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Aug. 11, 1993, Ser. No. 11,637
Term of patent 14 years
U.S. Cl. D7—338



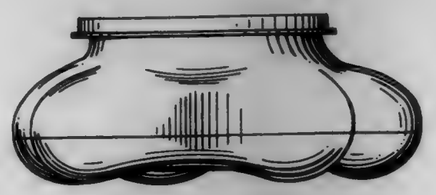
354,435
FOOD PACKAGE WITH HINGED LID
Calvin S. Krupa, Medina, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Oct. 12, 1993, Ser. No. 14,055
The portion of the term of this patent subsequent to Nov. 1, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—423



354,436
FOOD PACKAGE WITH HINGED LID
Calvin S. Krupa, Medina, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Oct. 12, 1993, Ser. No. 14,058
The portion of the term of this patent subsequent to Nov. 1, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—423



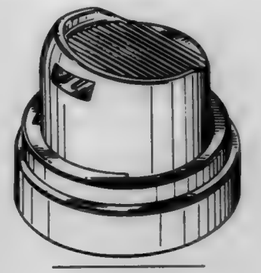
354,437
CONTAINER
Mark Barthold, Redondo Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Aug. 7, 1992, Ser. No. 926,241
Term of patent 14 years
U.S. Cl. D9—430



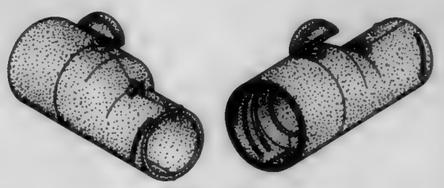
354,438
CONTAINER LID
Robert Miller, South Plainfield, N.J., assignor to Therma-Systems Corporation, Piscataway, N.J.
Filed Dec. 1, 1992, Ser. No. 2,062
Term of patent 14 years
U.S. Cl. D9—438



354,439
FOAM SPOUT
Rainer Kuplien, Bodenheimer Strabe 18, D-6500 Mainz, Germany
Filed Sep. 29, 1992, Ser. No. 954,059
Claims priority, application Germany, Mar. 30, 1992, DM/022 444
Term of patent 14 years
U.S. Cl. D9—448



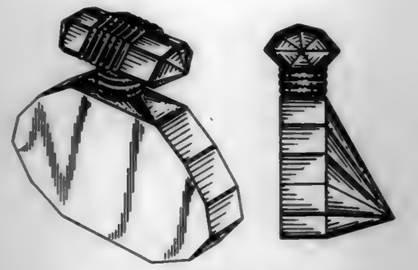
354,440
POUR SPOUT FOR AN OIL BOTTLE
Donald A. Nye, Box 293, Gladbrook, Iowa 50635
Filed Dec. 4, 1992, Ser. No. 2,186
The portion of the term of this patent subsequent to Dec. 15, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—449



354,441
BOTTLE
Adrienne Fontanella, New York, N.Y., assignor to Sanofi Beaute Inc., New York, N.Y.
Filed Sep. 29, 1993, Ser. No. 13,674
Term of patent 14 years
U.S. Cl. D9—504



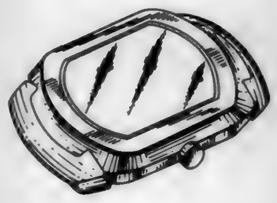
354,442
BOTTLE
Christian J. J. Hotton, Versailles, France, assignor to Parfums Van Cleef and Arpels S.A., both of Paris, France
Filed Jul. 14, 1993, Ser. No. 10,698
Claims priority, application France, Apr. 28, 1993, 93 22 90
Term of patent 14 years
U.S. Cl. D9—523



354,443
SPRAY BOTTLE
Robert Granai, Paris, France, assignor to Guerlain S.A., Paris, France
Filed Aug. 13, 1992, Ser. No. 929,805
Term of patent 14 years
U.S. Cl. D9—573



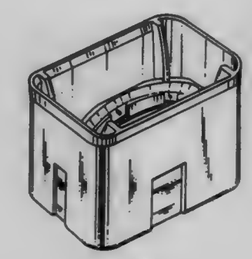
354,444
RECTANGULAR WATCH CASE
Christiane Pandel, Chambesy, Switzerland, assignor to Rolex Watch U.S.A., Inc., New York, N.Y.
Filed Jan. 6, 1993, Ser. No. 3,429
Term of patent 14 years
U.S. Cl. D10—30



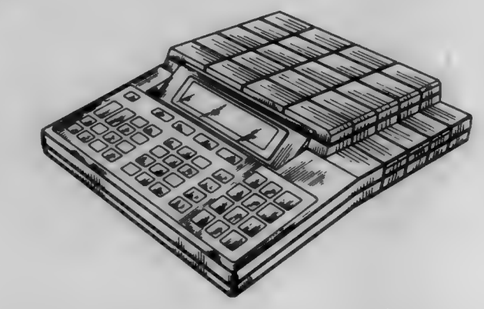
354,445
COMBINED WATCH AND BRACELET
Severin Wunderman, Laguna Beach, Calif., assignor to Severin Montres AG, Lengnau, Switzerland
Filed Aug. 31, 1992, Ser. No. 936,546
Claims priority, application Hague Agreement, Mar. 12, 1992, DM/022274
Term of patent 14 years
U.S. Cl. D10—32



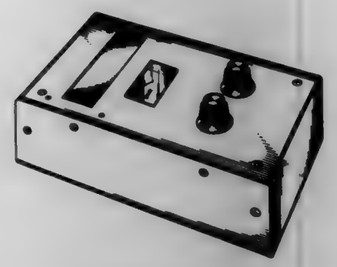
354,446
POUR CUP FOR FILLING CONTAINERS
James E. Meehan, Hopewell Township, Mercer County, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.
Filed Dec. 10, 1993, Ser. No. 16,196
Term of patent 14 years
U.S. Cl. D10—46.2



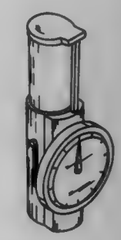
354,447
POSTAL SCALE
William A. Weirsman, Orange, Conn., assignor to Ascom Hasler Mailing Systems, Inc., Shelton, Conn.
Filed Sep. 3, 1993, Ser. No. 12,558
Term of patent 14 years
U.S. Cl. D10—91



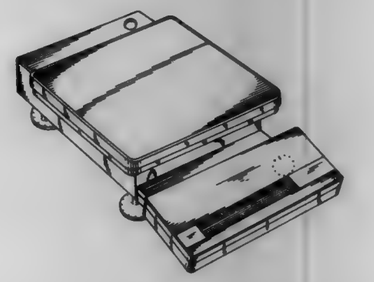
354,448
ANTENNA PERFORMANCE ANALYZER
Martin F. Jue, Starkville, Miss., assignor to MFJ Enterprises, Inc., Starkville, Miss.
Filed Jul. 21, 1993, Ser. No. 10,962
Term of patent 14 years
U.S. Cl. D10—75



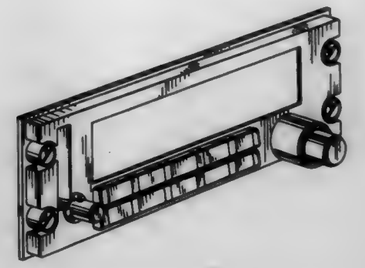
354,449
FINGER PRESSURE GAUGE
Tae W. Yoo, 807, 1-Dong, Hanyang, Apt. 32-5, Banpo-dong, Seocho-ku, Seoul, Rep. of Korea
Filed Sep. 8, 1993, Ser. No. 12,703
Claims priority, application Rep. of Korea, Mar. 8, 1993, 93-3861
Term of patent 14 years
U.S. Cl. D10—85



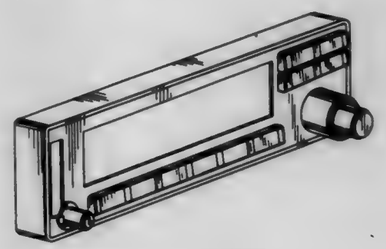
354,450
ELECTRONIC WEIGHING SCALE
Remy Jacquet, and William Kohler, both of Le Locle, Switzerland, assignors to Mettler - Toledo AG, Greifensee, Switzerland
Filed Aug. 10, 1993, Ser. No. 11,588
Term of patent 14 years
U.S. Cl. D10—91



354,451
NAVIGATIONAL DEVICE FRONT PANEL
Gary L. Burrell; Clifton A. Pemble; Larry Beason, and Sheldon Wheaton, all of Olathe, Kans., assignors to Garmin Corporation, Lenexa, Kans.
Filed Jun. 7, 1993, Ser. No. 9,173
Term of patent 14 years
U.S. Cl. D10—103



354,452
NAVIGATIONAL DEVICE FRONT PANEL
Gary L. Burrell; Clifton A. Pemble; Larry Beason, and Sheldon Wheaton, all of Olathe, Kans., assignors to Garmin Corporation, Lenexa, Kans.
Filed Jun. 7, 1993, Ser. No. 9,188
Term of patent 14 years
U.S. Cl. D10—103



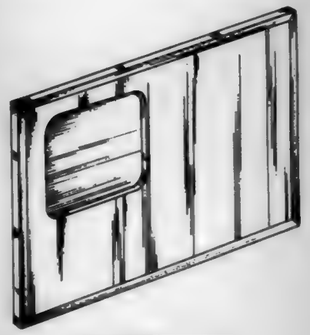
354,453
BELL
Chung-Shyan Huang, No. 1-1, Chang Mar Street,, Hsiu Shui Hsiang, Chang Hua Hsien, Taiwan, Prov. of China
Filed Jun. 28, 1993, Ser. No. 9,969
Term of patent 14 years
U.S. Cl. D10—116



354,454
DISPLAY HOLDER FOR CARDS
Frank J. Vernon, 16 Powell Rd., Emerson, N.J. 07630
Filed Nov. 8, 1993, Ser. No. 15,094
Term of patent 14 years
U.S. Cl. D11—121



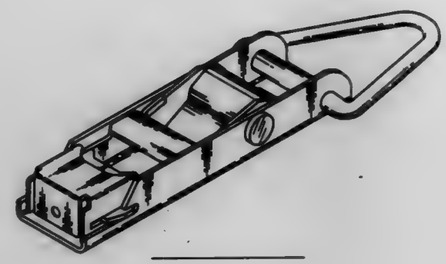
354,455
AWARD PLAQUE
Thomas M. Hooker, 17 Dona St., Lynn, Mass. 01904
Filed Mar. 29, 1993, Ser. No. 6,437
Term of patent 14 years
U.S. Cl. D11—132



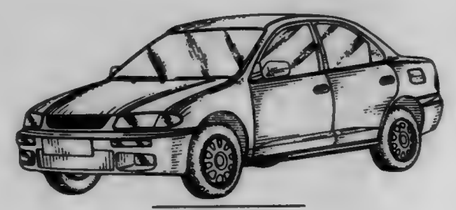
354,456
QUICK RELEASE STRAP
Chris St. Clair, 1341 F N. McDowell Blvd., Petaluma, Calif. 94954
Filed Nov. 5, 1993, Ser. No. 15,016
Term of patent 14 years
U.S. Cl. D11—215



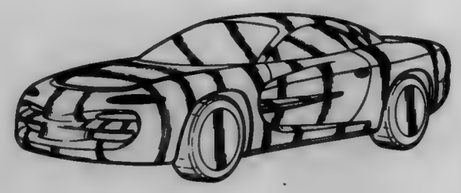
354,457
BUCKLE
Jack L. McIntyre, 6423 174th SW., Lynnwood, Wash. 98037
Filed Sep. 22, 1993, Ser. No. 13,332
Term of patent 14 years
U.S. Cl. D11—216



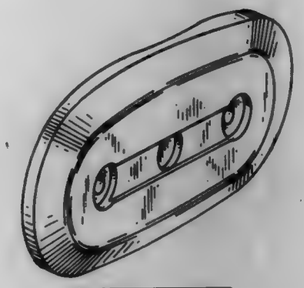
354,458
PASSENGER CAR
Yujiro Daikoku, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 26, 1993, Ser. No. 6,395
Claims priority, application Japan, Sep. 28, 1992, 4-027964
Term of patent 14 years
U.S. Cl. D12—92



354,459
AUTOMOBILE
Khashayer Honarkhah, Bloomfield Hills; K. Neil Walling, Leonard; Robert J. Janosko, Bloomfield Hills; Joseph S. Dehner, Auburn Hills, all of Mich.; John C. Sodano, Carlsbad, Calif., and Raymond C. Cannara, Clarkston, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 21, 1993, Ser. No. 14,446
Term of patent 14 years
U.S. Cl. D12—92



354,460
MOTORCYCLE AIR CLEANER COVER
William G. Davidson, Delafield, and Louis Netz, Grafton, both of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Dec. 9, 1993, Ser. No. 16,163
Term of patent 14 years
U.S. Cl. D12—126



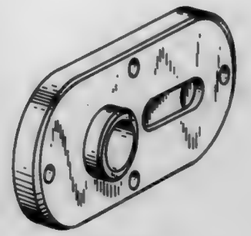
354,461
MOTORCYCLE CLUTCH COVER
William G. Davidson, Delafield, and Louis Netz, Grafton, both of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Dec. 9, 1993, Ser. No. 16,164
Term of patent 14 years
U.S. Cl. D12—126



354,462
MOTORCYCLE TIMER COVER
William G. Davidson, Delafield, and Louis Netz, Grafton, both of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Dec. 9, 1993, Ser. No. 16,165
Term of patent 14 years
U.S. Cl. D12—126



354,463
MOTORCYCLE CHAIN GUARD COVER
William G. Davidson, Delafield, and Louis Netz, Grafton, both of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Dec. 9, 1993, Ser. No. 16,151
Term of patent 14 years
U.S. Cl. D12—127



354,464
MOTORCYCLE CLUTCH CHAIN GUARD COVER
William G. Davidson, Delafield, and Louis Netz, Grafton, both of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Dec. 9, 1993, Ser. No. 16,159
Term of patent 14 years
U.S. Cl. D12—127



354,465
BICYCLE TIRE
Gert Detzner; Rolf Mahling, both of Korbach, and Rüdiger Schulte, Winterberg, all of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany
Filed Nov. 16, 1992, Ser. No. 1,523
Claims priority, application Germany, May 14, 1992, 9203575
Term of patent 14 years
U.S. Cl. D12—136



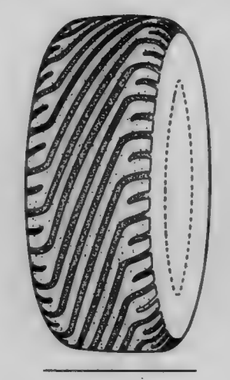
354,466
TIRE
John J. Regallis, Akron, and David L. Stewart, Uniontown, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Dec. 8, 1993, Ser. No. 16,119
Term of patent 14 years
U.S. Cl. D12—147



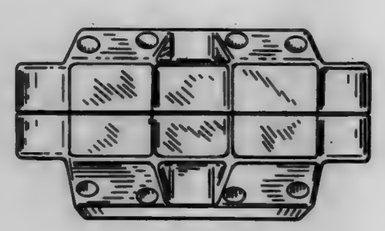
354,467
TIRE
Bill J. Wallet, Marshallville; John J. Regallis, Akron, and Karen J. Carney, Talmadge, all of Ohio, assignors to Bridgestone/-Firestone, Inc., Akron, Ohio
Filed Dec. 13, 1993, Ser. No. 16,328
Term of patent 14 years
U.S. Cl. D12—147



354,468
VEHICLE TIRE TREAD
Michael Jansen, Heinsberg, Germany, assignor to Uniroyal Engelbert Reifen GmbH, Aachen, Germany
Continuation of Ser. No. 749,499, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 487,661, Mar. 2, 1990, abandoned. This application Sep. 25, 1992, Ser. No. 951,102
Claims priority, application Germany, Mar. 4, 1989, 3907074
Term of patent 14 years
U.S. Cl. D12—149



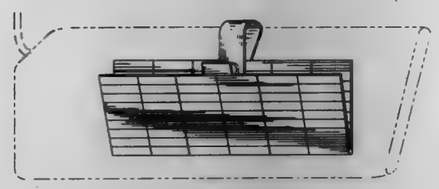
354,469
DISK BRAKE CALIPER HOUSING
Ronald H. Powers, Costa Mesa, Calif., assignor to Powers Design International, Newport Beach, Calif.
Filed Aug. 9, 1993, Ser. No. 11,642
Term of patent 14 years
U.S. Cl. D12—180



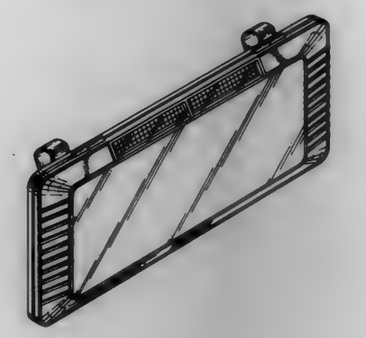
354,470
AUTOMOBILE SPOILER WITH BRAKE INDICATOR TURNABLE UPRIGHT
Masaru Watanabe, 7-108, Sakae 2, Satte-shi, Saitama-ken, Japan
Filed Jun. 18, 1993, Ser. No. 9,559
Term of patent 14 years
U.S. Cl. D12—181



354,471
VISOR PHONE NUMBER INDEX
Robert Moseley, P.O. Box 6994, San Antonio, Tex. 78209
Filed Aug. 11, 1993, Ser. No. 11,684
Term of patent 14 years
U.S. Cl. D12—191



354,472
CAR VISOR MIRROR WITH LIGHTING
Wing K. Tong, Chi Wan Ind. Bldg., 1-7 Kin Hon Street, Kwai Chung, N.T., Hong Kong
Filed Dec. 6, 1993, Ser. No. 15,989
Claims priority, application United Kingdom, Nov. 3, 1993, 2034947
Term of patent 14 years
U.S. Cl. D12—191



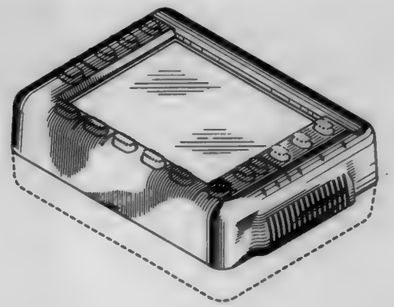
354,473
VEHICLE WINDSHIELD WIPER UNIT
Albert Lee, 232 Margate Rd., Timonium, Md. 21093
Filed Apr. 30, 1993, Ser. No. 7,700
The portion of the term of this patent subsequent to Dec. 1, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—219



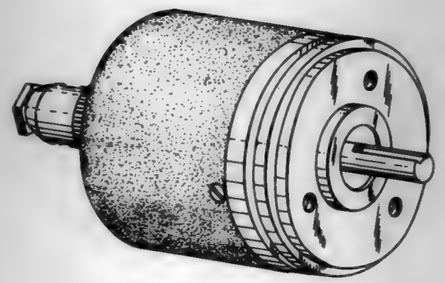
354,474
DOUBLE DECKED AIRPLANE
David G. Murphy, Los Alamitos, Calif.; John H. Lindley, Baldwin, Md.; Neil M. Jerstad, Long Beach; Edward A. Wen, both of Long Beach, and Norman T. L. Fraser, Seal Beach, all of Calif., assignors to McDonnell Douglas Corporation, Huntington Beach, Calif.
Filed Mar. 30, 1993, Ser. No. 6,456
Term of patent 14 years
U.S. Cl. D12—340



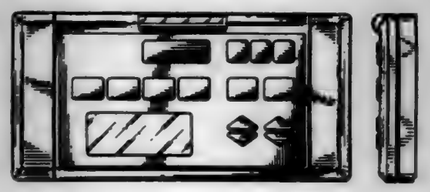
354,475
TOP PORTION OF A HOUSING FOR A MOTOR VEHICLE NAVIGATIONAL DEVICE
Leonid Soren, Lincolnwood; Allan Kirson, Highland Park; Jeffrey D. Pitts, Mt. Prospect; Stephen Kopish, Wheeling, and Scott R. Smith, Carol Stream, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 956,383, Oct. 5, 1992. This application Feb. 1, 1993, Ser. No. 4,260
Term of patent 14 years
U.S. Cl. D13—164



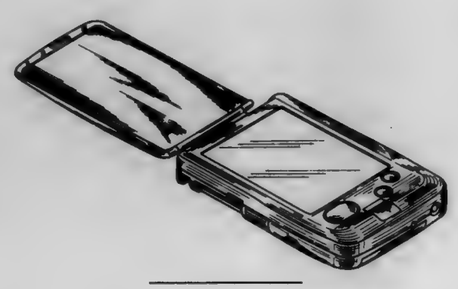
354,476
INCREMENTAL CODER
Michel Ehrhart, Strasbourg, France, assignor to Hohner Automation, Societe Anonyme, Eckbolsheim, France
Division of Ser. No. 425,846, Oct. 20, 1989, abandoned. This application Jul. 23, 1992, Ser. No. 917,275
Claims priority, application France, Apr. 20, 1989, 606
Term of patent 14 years
U.S. Cl. D13—122



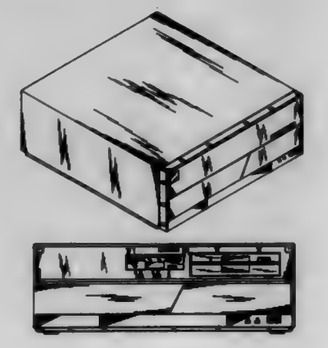
354,477
REMOTE CONTROLLER FOR A TOILET
Seijiro Kawamura, and Noriko Yoshii, both of Kitakyushu, Japan, assignors to Toto Ltd., Fukuoka, Japan
Filed Dec. 30, 1992, Ser. No. 3,156
Claims priority, application Japan, Jul. 30, 1992, 4-22852
Term of patent 14 years
U.S. Cl. D13—164



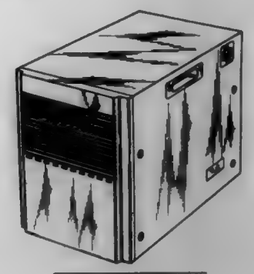
354,478
INFORMATION DEVICES HAVING THE FUNCTION OF CALCULATOR PORTABLE INFORMATION TERMINAL TELEPHONE BOOK, ADDRESS BOOK, CALENDAR, SCHEDULE BOOK AND MEMO BOOK
Akihiro Miyahara, Kunitachi, Japan, assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Apr. 15, 1993, Ser. No. 7,140
Claims priority, application Japan, Oct. 20, 1992, 4-30512
Term of patent 14 years
U.S. Cl. D14—100



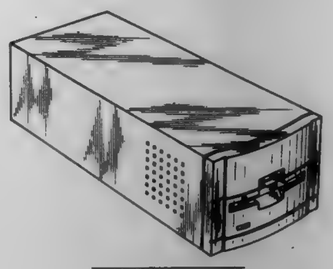
354,479
COMPUTER SYSTEM UNIT
Joseph E. Jasinski, Delray Beach, Fla., and Richard F. Sapper, Milan, Italy, assignors to International Business Machines, Corp, Armonk, N.Y.
Division of Ser. No. 924,331, Aug. 3, 1992. This application May 6, 1994, Ser. No. 22,554
Term of patent 14 years
U.S. Cl. D14—100



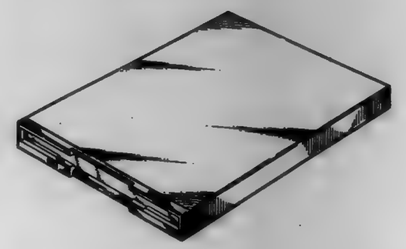
354,480
IMAGE RECORD CONVERTING DEVICE
Nobuyuki Agata, Soka, and Takeshi Komada, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 15, 1993, Ser. No. 7,072
Claims priority, application Japan, Oct. 20, 1992, 4-30694
Term of patent 14 years
U.S. Cl. D14—107



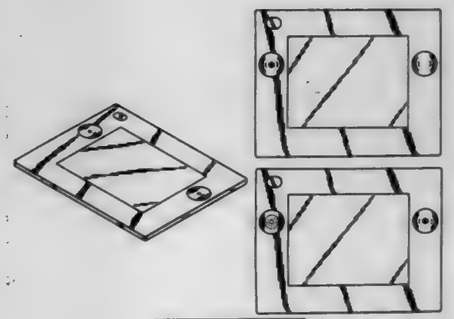
354,481
PHOTOMAGNETIC DISC READER
Masayuki Iimura, Akishima, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 26, 1993, Ser. No. 8,724
Claims priority, application Japan, Nov. 27, 1992, 4-35063
Term of patent 14 years
U.S. Cl. D14—107



354,482
DISC DRIVE
Kenji Matsumoto, Houya, Japan, assignor to TEAC Corporation, Japan
Filed Aug. 7, 1992, Ser. No. 926,894
Claims priority, application Japan, Feb. 14, 1992, 4-4074
The portion of the term of this patent subsequent to Oct. 19, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—109



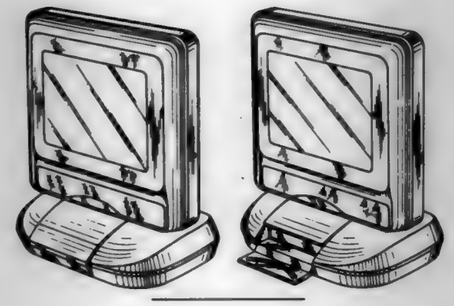
354,483
COMBINED FLAT PANEL DISPLAY WITH A MICROPHONE AND SPEAKERS
Kazuhiko Yamazaki, Hiratuka, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 20, 1991, Ser. No. 702,682
Term of patent 14 years
U.S. Cl. D14—113



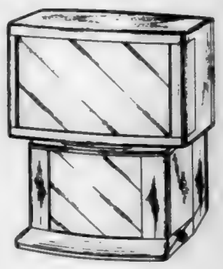
354,484
COMPUTER MOUSE
Paul T. Skaggs, Spokane, Wash., assignor to Key Tronic Corporation, Spokane, Wash.
Filed Aug. 12, 1993, Ser. No. 11,792
Term of patent 14 years
U.S. Cl. D14—114



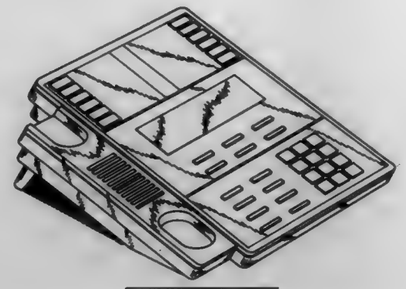
354,485
COMBINED TELEVISION RECEIVER AND VIDEO TAPE RECORDER
Hiroyuki Maeno; Mitsuru Takami; Hirofumi Takemasa, all of Osaka, and Eiichiro Naito, Hyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1993, Ser. No. 15,279
Claims priority, application Japan, May 13, 1993, 5-14034
Term of patent 14 years
U.S. Cl. D14—129



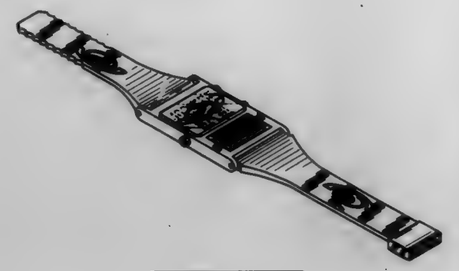
354,486
TELEVISION RECEIVER
Yusuke Morita, Osaka; Eiichiro Naito, Hyogo, and Hiroshi Yonekura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 26, 1993, Ser. No. 8,774
Claims priority, application Japan, Nov. 30, 1992, 4-35242
Term of patent 14 years
U.S. Cl. D14—133



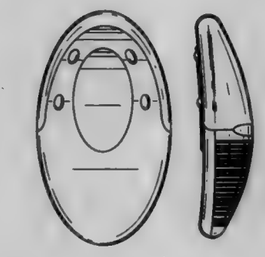
354,487
TELEPHONE SET
David A. Nogas, Ottawa, Canada, assignor to Mitel Corporation, Canada
Filed Aug. 13, 1992, Ser. No. 929,804
Claims priority, application Canada, Feb. 26, 1992, 2602921
Term of patent 14 years
U.S. Cl. D14—151



354,488
ONE CHANNEL RADIO RECEIVER
Andrew W. Hutcheson, 204 Engel Dr., Goodlettsville, Tenn. 37072
Filed Feb. 11, 1993, Ser. No. 4,674
Term of patent 14 years
U.S. Cl. D14—192



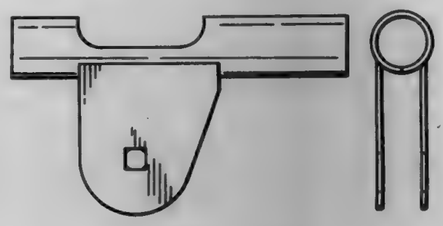
354,489
VIDEO REMOTE CONTROL
Douglas M. Patton, and Miles A. Conklin, both of Costa Mesa, Calif., assignors to Go-Video, Inc., Scottsdale, Ariz.
Filed May 26, 1992, Ser. No. 888,173
Term of patent 14 years
U.S. Cl. D14—218



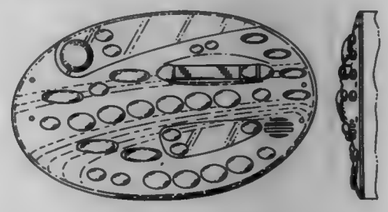
354,490
KEY SET FOR A UNIVERSAL REMOTE CONTROL
Paul V. Darbee, Santa Anna, Calif., and Frank A. O'Donnell, Clearwater, Fla., assignors to Universal Electronics, Inc., Twinsburg, Ohio
Continuation-in-part of Ser. No. 908,251, Jul. 2, 1992, Pat. No. Des. 342,259. This application Oct. 29, 1993, Ser. No. 14,703
Term of patent 14 years
U.S. Cl. D14—218



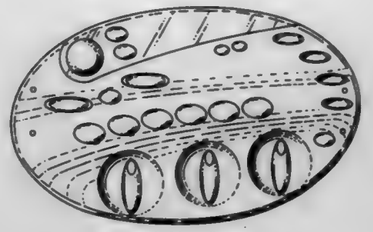
354,491
BOOM CLAMP
Kevin Ditch, Melville, Mo., assignor to American Trading and Production Corporation, Baltimore, Md.
Filed Aug. 17, 1993, Ser. No. 11,912
Term of patent 14 years
U.S. Cl. D14—229



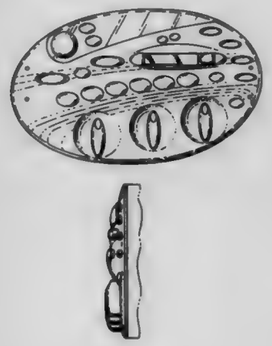
354,492
FRONT PANEL FOR AN AUTOMOTIVE AUDIO SYSTEM AND CLIMATE CONTROL
Nevenka Schumaker, Bloomfield Hills, and James A. Woodard, Jr., Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 5, 1993, Ser. No. 5,587
Term of patent 14 years
U.S. Cl. D14—258



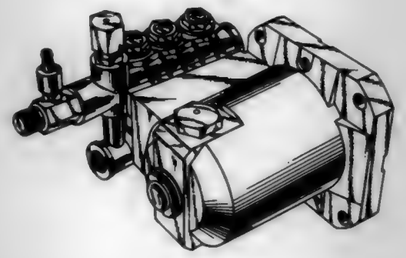
354,493
FRONT PANEL FOR AN AUTOMOTIVE AUDIO SYSTEM AND CLIMATE CONTROL
Nevenka Schumaker, Bloomfield Hills, and James A. Woodard, Jr., Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 5, 1993, Ser. No. 5,590
Term of patent 14 years
U.S. Cl. D14—258



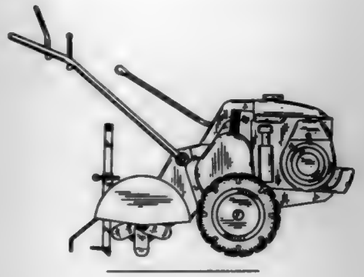
354,494
FRONT PANEL FOR AN AUTOMOTIVE AUDIO SYSTEM AND CLIMATE CONTROL
Nevenka Schumaker, Bloomfield Hills, and James A. Woodard, Jr., Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 5, 1993, Ser. No. 5,591
Term of patent 14 years
U.S. Cl. D14—258



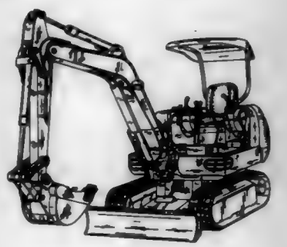
354,495
RECIPROCATING PUMP
Nobuo T. Tojo, Mobara, Japan, assignor to Maruyama Mfg. Co. Inc., Tokyo, Japan
Filed Apr. 7, 1993, Ser. No. 6,778
Claims priority, application Japan, Oct. 7, 1992, 4-029096
Term of patent 14 years
U.S. Cl. D15—7



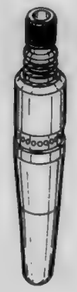
354,496
POWER TILLER
Hisato Katoh, and Hiroshi Imoo, both of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Jul. 15, 1993, Ser. No. 11,281
Claims priority, application Japan, Jan. 18, 1993, 5-1030
Term of patent 14 years
U.S. Cl. D15—12



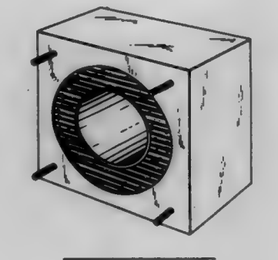
354,497
BACKHOE
Tadashi Kusunoki, and Masao Masumoto, both of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Jun. 18, 1993, Ser. No. 9,597
Claims priority, application Japan, Dec. 18, 1992, 4-37517
Term of patent 14 years
U.S. Cl. D15—25



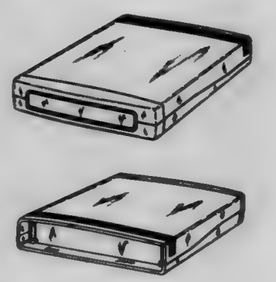
354,498
SEVERING HEAD WITH TAPERED CENTRALIZER ASSEMBLY
Wayne B. Hatcher, P.O. Box 305, Harvey, La. 70059
Filed Sep. 27, 1993, Ser. No. 13,544
Term of patent 14 years
U.S. Cl. D15—139



354,499
GAS BURNER BLOCK FOR A MOLTEN STEEL VESSEL COVER
Dan Simko, Hammond, Ind., assignor to Simko & Sons Industrial Refractories, Inc., East Chicago, Ind.
Filed Sep. 8, 1993, Ser. No. 12,759
Term of patent 14 years
U.S. Cl. D15—144.1



354,500
MODEM HOUSING
Thomas Georgopulos, Bradenton, Fla., assignor to AT&T Corp., Murray Hill, N.J.
Filed Mar. 10, 1993, Ser. No. 5,708
Term of patent 14 years
U.S. Cl. D14—242



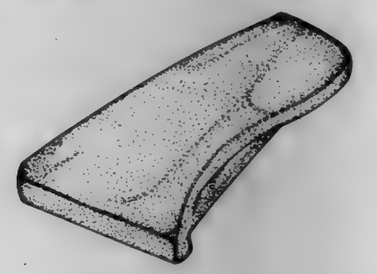
354,501
LATERALLY ELONGATED EYEWEAR
James H. Jannard, San Juan Capistrano, Calif., assignor to Oakley, Inc, Irvine, Calif.
Continuation of Ser. No. 789,405, Nov. 1, 1991, abandoned, which is a continuation of Ser. No. 436,471, Nov. 20, 1989, abandoned. This application Nov. 10, 1992, Ser. No. 984,592
Term of patent 14 years
U.S. Cl. D16—314



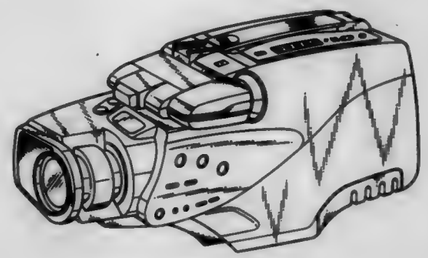
354,502
EYEGLASS FRAME ATTACHABLE/DETACHABLE GLASS GUARD
Alex K. Mekari, 6318 Tunney Ave., Reseda, Calif. 91335
Filed Jun. 1, 1993, Ser. No. 8,929
Term of patent 14 years
U.S. Cl. D16—334



354,503
MICROSCOPE ARMREST
Whitson Fowler, Rockville, Md., and Melina Vratny, Northport, N.Y., assignors to Nikon Inc., Melville, N.Y.
Filed Apr. 15, 1992, Ser. No. 869,639
Term of patent 14 years
U.S. Cl. D16—131



354,504
CAMCORDER
Gang H. Cha, Inchon, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 3, 1993, Ser. No. 9,135
Claims priority, application Rep. of Korea, Dec. 30, 1992, 22534/1992
Term of patent 14 years
U.S. Cl. D16—202



354,505
EYEGLASS TEMPLE
Luigi Francavilla, Agordo, Italy, assignor to Avant-Garde Optics, Inc., Port Washington, N.Y.
Filed Jan. 5, 1994, Ser. No. 17,051
Term of patent 14 years
U.S. Cl. D16—335



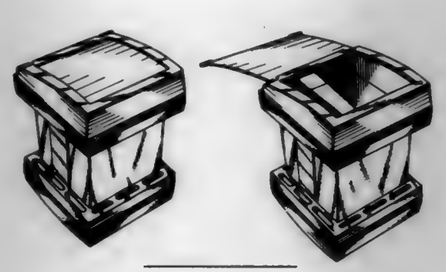
354,506
EYEGLASS TEMPLE
Luigi Francavilla, Agordo, Italy, assignor to Avant-Garde Optics, Inc., Port Washington, N.Y.
Filed Jan. 5, 1994, Ser. No. 17,098
Term of patent 14 years
U.S. Cl. D16—335



354,507
PICKUP UNIT FOR A STRINGED MUSICAL INSTRUMENT
Jeffrey J. Lace, Huntington Beach, Calif., assignor to Actodyne General, Inc., Huntington Beach, Calif.
Filed Jan. 14, 1993, Ser. No. 3,703
Term of patent 14 years
U.S. Cl. D17—20



354,508
PNEUMATICALLY PROPELLED CAPTIVE CARRIER
Victor J. Vogel, Oakridge, N.J., assignor to Mosler Inc., Hamilton, Ohio
Filed Jan. 28, 1993, Ser. No. 4,216
Term of patent 14 years
U.S. Cl. D18—35



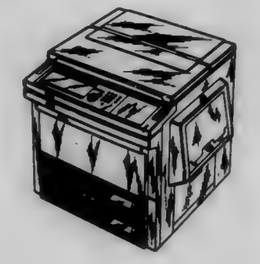
354,509
COPYING MACHINE
Takeshi Komada, Yokosuka; Masaaki Ishibashi, Kunitachi; Yosuke Ohsawa, Yokohama, and Hiroki Umeda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1992, Ser. No. 952,786
Claims priority, application Japan, Apr. 17, 1992, 4-11541
Term of patent 14 years
U.S. Cl. D18—36



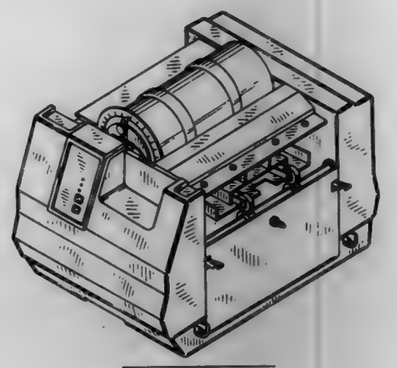
354,510
COPYING MACHINE
Masaaki Ishibashi, Kunitachi; Takeshi Komada, Yokosuka; Yosuke Ohsawa, Yokohama, and Mitsuru Sakurai, Musashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1992, Ser. No. 952,790
Claims priority, application Japan, Apr. 17, 1992, 4-11542
Term of patent 14 years
U.S. Cl. D18—36



354,511
ELECTRONIC COPIER
Nobuyuki Agata, Soka, and Takeshi Komada, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 11, 1993, Ser. No. 3,611
Claims priority, application Japan, Jul. 14, 1992, 4-21051
Term of patent 14 years
U.S. Cl. D18—36



354,512
FOLDER MODULE
Herbert E. Meister, Jr., Naugatuck, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Aug. 27, 1993, Ser. No. 12,301
Term of patent 14 years
U.S. Cl. D18—99



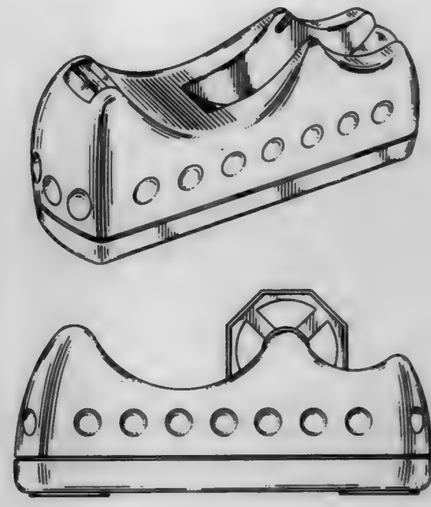
354,513
PALETTE WITH PAINT STORAGE
Juliet Jay, 2211 N. 7th Ave., Phoenix, Ariz. 85007
Filed Jun. 4, 1993, Ser. No. 9,056
Term of patent 14 years
U.S. Cl. D19—35



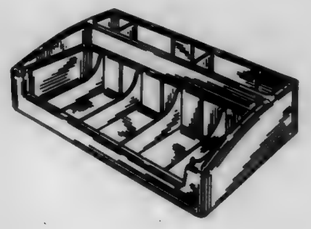
354,514
WRITING INSTRUMENT
Thierry C. de Baillon, Paris, France, assignor to Creeks, Saint-Denis, France
Filed Oct. 28, 1993, Ser. No. 14,682
Claims priority, application France, Jul. 30, 1993, 93 4066
Term of patent 14 years
U.S. Cl. D19—50



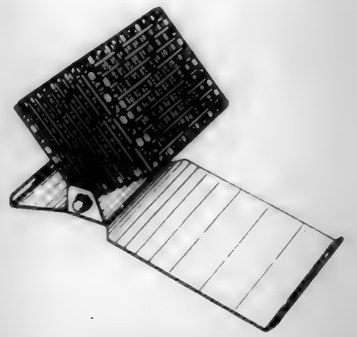
354,515
TAPE DISPENSER
Robert B. Vu, Houston, Tex., assignor to Shiang Shin International, Inc., Houston, Tex.
Filed Dec. 9, 1993, Ser. No. 16,149
Term of patent 14 years
U.S. Cl. D19—69



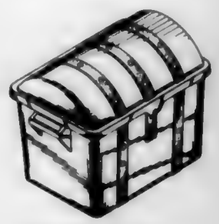
354,516
ORGANIZER FOR DESK DRAWER
Craig W. Crist, Muscatine, Iowa, and Robert Russell, Kentwood, Mich., assignors to Ring King Visibles, Inc., Muscatine, Iowa
Filed Nov. 18, 1993, Ser. No. 15,486
Term of patent 14 years
U.S. Cl. D19—75



354,517
DESKTOP PENCIL AND ACCESSORIES HOLDER
Anthony E. Difiglio, Jr., Buffalo Grove, Ill., assignor to Nina Enterprises, Inc., Chicago, Ill.
Filed Nov. 3, 1993, Ser. No. 14,923
Term of patent 14 years
U.S. Cl. D19—77



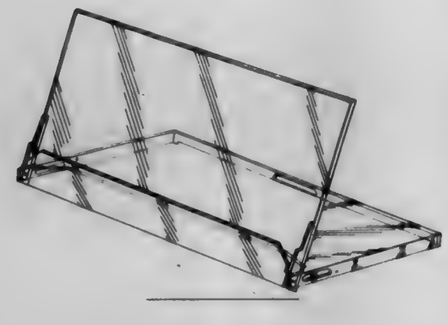
354,518
CRAYON CONTAINER
Charles W. Dietterich, Brodheadsville, and Anne M. Fraseklc, Bethlehem, both of Pa., assignors to Binney & Smith Inc., Easton, Pa.
Filed Apr. 21, 1993, Ser. No. 7,373
Term of patent 14 years
U.S. Cl. D19—82



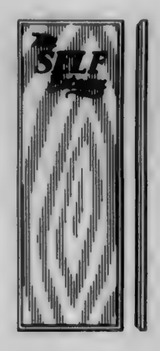
354,519
GOLF PENCIL HOLDER
Frederick D. Wagner, 151 Eileen Dr., Pittsburgh, Pa. 15214
Filed Feb. 1, 1993, Ser. No. 4,282
Term of patent 14 years
U.S. Cl. D19—85



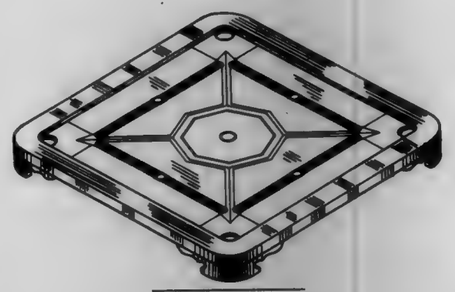
354,520
DISPLAY STAND
Kai M. Pong, Hong Kong, Hong Kong, assignor to Paper House Limited, Hong Kong
Filed Dec. 10, 1992, Ser. No. 2,457
Claims priority, application United Kingdom, Jun. 11, 1992, 2023437
Term of patent 14 years
U.S. Cl. D19—88



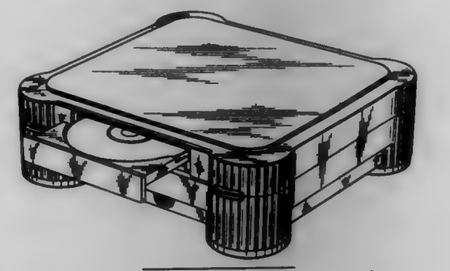
354,521
DISPLAY BOARD FOR MEMORABILIA
A. Thomas Colacino, 56 Rte. 88 S., Newark, N.Y. 14513
Filed Feb. 14, 1994, Ser. No. 18,645
Term of patent 14 years
U.S. Cl. D20—42



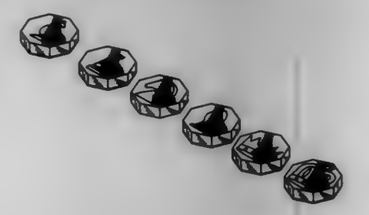
354,522
GAME BOARD
Digvijay S. Muir, Hopatcong, N.J., assignor to Muir Concepts, Inc., Hopatcong, N.J.
Filed Mar. 18, 1993, Ser. No. 5,951
Term of patent 14 years
U.S. Cl. D21—17



354,523
VIDEO GAME MACHINE
Shigeo Hiraoka; Takayuki Hayami, and Shinichi Sugihara, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 21, 1993, Ser. No. 14,415
Claims priority, application Japan, Apr. 23, 1993, 5-12218
Term of patent 14 years
U.S. Cl. D21—48



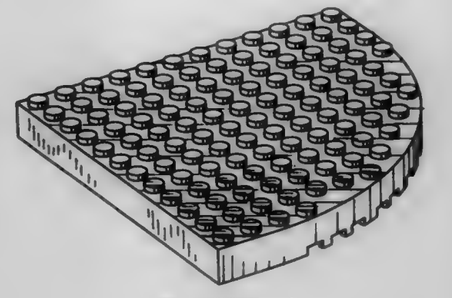
354,524
CHESS SET
Robert J. Freund, 11815 SE. Oak St., Portland, Oreg. 97216
Continuation of Ser. No. 723,532, Jul. 1, 1991, abandoned. This application May 25, 1994, Ser. No. 23,487
Term of patent 14 years
U.S. Cl. D21—52



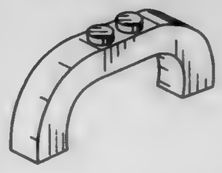
354,525
AERODYNAMIC DISK
Richard A. Sullivan, Manchester, N.J., assignor to Airsport, Inc., Lyndhurst, N.J.
Filed Jun. 25, 1993, Ser. No. 9,959
Term of patent 14 years
U.S. Cl. D21—86



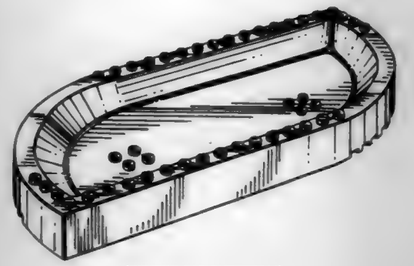
354,526
ELEMENT FOR A TOY BUILDING SET
Jan Ryan, Billund, and Birthe G. Vorre, Vejle, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,290
Term of patent 14 years
U.S. Cl. D21—108



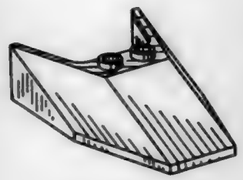
354,527
ELEMENT FOR A TOY BUILDING SET
Jan Ryan, Billund, and Lene Köhler, Jelling, both of Denmark, assignors to Interlego AG, Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,299
Term of patent 14 years
U.S. Cl. D21—108



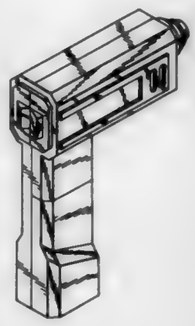
354,528
ELEMENT FOR A TOY BUILDING SET
Jan Ryan, and Bill S. Madsen, both of Billund, Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,314
Term of patent 14 years
U.S. Cl. D21—108



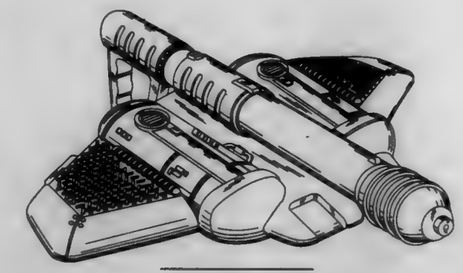
354,529
ELEMENT FOR A TOY BUILDING SET
Ib T. Skov, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,323
Term of patent 14 years
U.S. Cl. D21—108



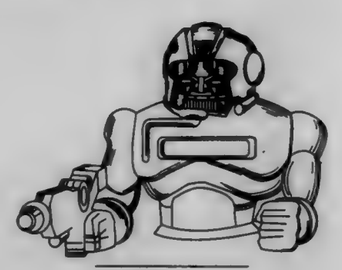
354,530
TOY DRILL
Dietmar Nagel, Chester, N.J., assignor to Azrak-Hamway International Inc., New York, N.Y.
Filed Feb. 5, 1993, Ser. No. 4,501
Term of patent 14 years
U.S. Cl. D21—120



354,531
COMBINATION KICK BOARD AND WATER GUN
Mel Appel, Livingston, and George Kress, Basking Ridge, both of N.J., assignors to Mel Appel Limited, Kowloon, Hong Kong
Filed Jul. 14, 1993, Ser. No. 10,622
Term of patent 14 years
U.S. Cl. D21—146



354,532
FIGURE ATTACHMENT FOR A PINBALL GAME
Finn Tornquist, Warren, N.J., and Avi Arad, Westport, Conn., assignors to Toy Biz, Inc., New York, N.Y.
Filed Dec. 22, 1992, Ser. No. 2,848
Term of patent 14 years
U.S. Cl. D21—150



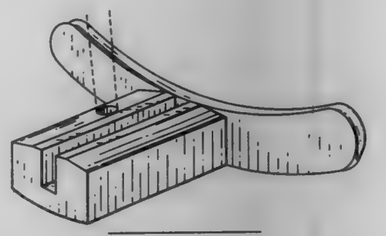
354,533
GIRL DOLL
Jan Ryan, Billund, and Maj C. Hønborg, Odense, both of Denmark, assignors to Interlego AG, Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,384
The portion of the term of this patent subsequent to Dec. 13, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—166



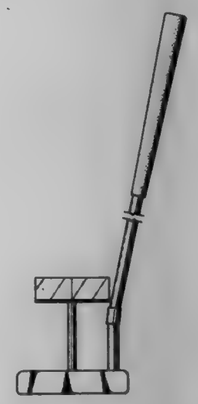
354,534
BASKETBALL HOOP DRAPE
James Michalik, 1888 Sycamore, Des Plaines, Ill. 60018
Filed Aug. 2, 1993, Ser. No. 11,323
Term of patent 14 years
U.S. Cl. D21—201



354,535
GOLF PUTTER HEAD
Theodore M. Queen, 508 Lakeside Rd., Hot Springs, Ark. 71901
Filed Mar. 5, 1993, Ser. No. 5,560
Term of patent 14 years
U.S. Cl. D21—219



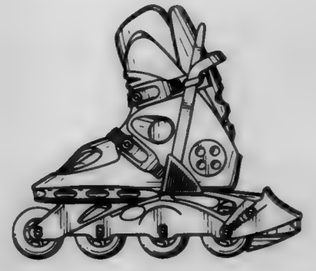
354,536
GOLF PUTTER
Bruce A. Hazelton, 1111 Rosedale Ave., Fort Pierce, Fla. 34982
Filed Jun. 18, 1993, Ser. No. 9,556
Term of patent 14 years
U.S. Cl. D21—219



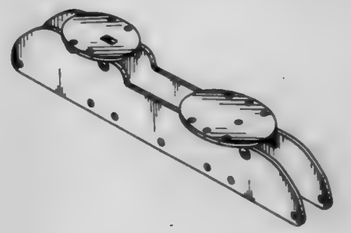
354,537
GOLF CLUB HEAD
Kunihiko Takahashi, Musashino, and Shigeki Take, Higashikurume, both of Japan, assignors to Daiwa Golf Co., Ltd., Higashikurume, Japan
Filed May 26, 1993, Ser. No. 8,773
Claims priority, application Japan, Nov. 27, 1992, 4-34888
Term of patent 14 years
U.S. Cl. D21—220



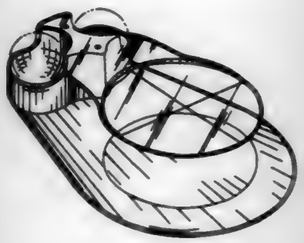
354,538
ROLLER BLADE
Wolfgang Skerbinjek, Voitsberg, Austria, assignor to Kofiach Sport Gesellschaft m.b.H. & Co. KG, Wagrain, Austria
Filed Oct. 27, 1993, Ser. No. 14,597
Claims priority, application Austria, Apr. 28, 1993, 1318/93
Term of patent 14 years
U.S. Cl. D21—226



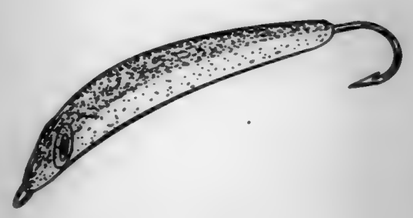
354,539
IN-LINE ROLLER SKATE FRAME
Antonin A. Melbock, Cleveland, Ohio, and John E. Svensson, Seattle, Wash., assignors to K-2 Corporation, Vashon, Wash.
Continuation-in-part of Ser. No. 94,576, Jul. 19, 1993, Ser. No. 100,745, Aug. 2, 1993, and Ser. No. 120,629, Sep. 13, 1993. This application Jan. 11, 1994, Ser. No. 17,353
Term of patent 14 years
U.S. Cl. D21—226



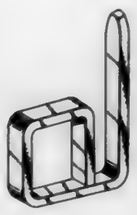
354,540
GOLF PUTTING PRACTICE TARGET
George W. Wiedenmeier, Grafton, Wis., assignor to Ace Product Management Group, Inc., Milwaukee, Wis.
Filed Jun. 30, 1993, Ser. No. 10,294
Term of patent 14 years
U.S. Cl. D21—234



354,541
FISHING LURE
Stephen A. Rogers, 110 Shandon Dr., Reidsville, N.C. 27320
Filed Sep. 11, 1992, Ser. No. 948,742
Term of patent 14 years
U.S. Cl. D22—131



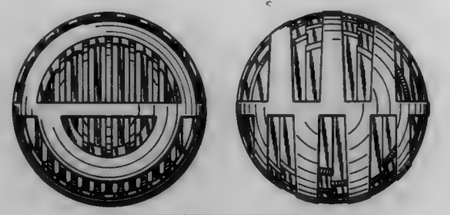
354,542
FISH HOLDER
Dorris W. Prince, 14811 Sylvia Dr., Brookpark, Ohio 44142, and Norman D. Burgner, 3191 Vanderhoof Rd., Clinton, Ohio 44126
Filed Aug. 23, 1993, Ser. No. 12,055
Term of patent 14 years
U.S. Cl. D22—134



354,543
FISHING BAIT THREADER
Joe T. Alongi, 145 Stillmeadows La., Castle Rock, Wash. 98611
Filed Mar. 1, 1993, Ser. No. 6,241
Term of patent 14 years
U.S. Cl. D22—149



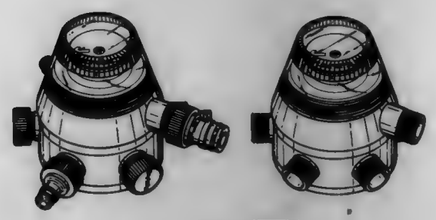
354,544
PACKING ELEMENT FOR WATER TREATMENT SYSTEMS
Rudolf Erwes, Steinstr. 11, D-5950 Finnentrop 11, Germany
Filed Jul. 10, 1992, Ser. No. 911,646
Claims priority, application Germany, Apr. 29, 1992, 9203469
Term of patent 14 years
U.S. Cl. D23—207



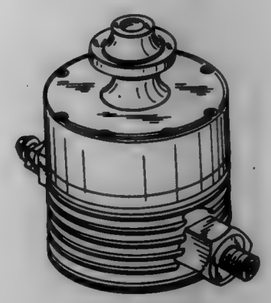
354,545
LIQUID SPRAY NOZZLE FOR AGRICULTURAL SPRAYERS
James Haruch, Naperville, Ill., assignor to Spraying Systems Co., Wheaton, Ill.
Filed Jan. 10, 1994, Ser. No. 17,303
Term of patent 14 years
U.S. Cl. D23—213



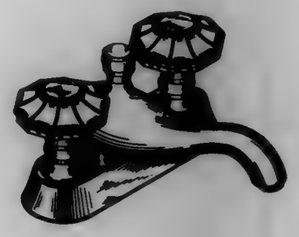
354,546
WATER DISTRIBUTION CONTROL UNIT
Franco Clivio, Erlenbach, Switzerland, assignor to Gardena Kress + Kastner GmbH, Germany
Filed Jan. 6, 1994, Ser. No. 17,165
Claims priority, application Germany, Jul. 6, 1993, 9305346
Term of patent 14 years
U.S. Cl. D23—246



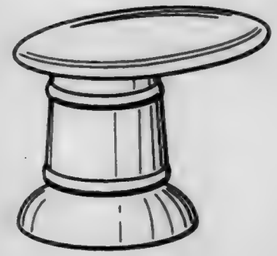
354,547
PRESSURE CONTROLLER
Richard Schops, Melville, N.Y.
Filed Oct. 12, 1993, Ser. No. 14,075
Term of patent 14 years
U.S. Cl. D23—235



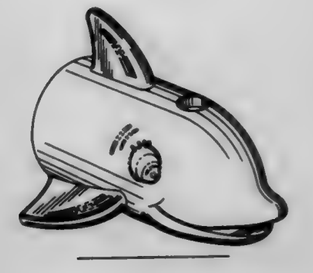
354,548
FAUCET
John E. Bollenbacher, Sheboygan, and Herbert V. Kohler, Jr., Kohler, both of Wis., assignors to Kohler Co., Kohler, Wis.
Division of Ser. No. 3,686, Jan. 14, 1993, Pat. No. Des. 349,948.
This application Apr. 15, 1994, Ser. No. 22,173
Term of patent 14 years
U.S. Cl. D23—241



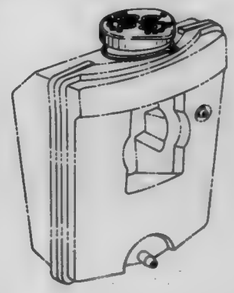
354,549
FAUCET HANDLE
Franz W. Jans, Roedermark, Germany, assignor to JADO Hardware and Bathroom Manufacturing Co., Camarillo, Calif.
Filed Apr. 1, 1994, Ser. No. 20,805
Term of patent 14 years
U.S. Cl. D23—252



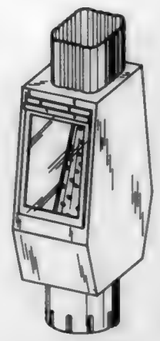
354,550
BATHTUB SPOUT PROTECTIVE COVER
Raul Munoz, Chicago, Ill., assignor to Selfix, Inc., Chicago, Ill.
Filed Dec. 20, 1993, Ser. No. 16,688
Term of patent 14 years
U.S. Cl. D23—256



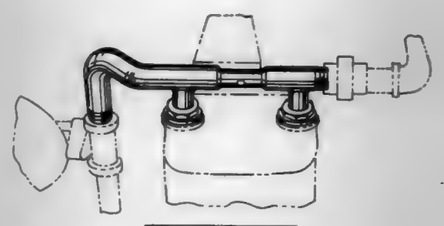
354,551
CAP FOR A PRESSURE WASHER TANK
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop Vac Corporation, Williamsport, Pa.
Filed Aug. 18, 1992, Ser. No. 932,040
Term of patent 14 years
U.S. Cl. D23—260



354,552
DOWNSPOUT TRAP
William H. Weber, 7722 Southland Dr., Mentor, Ohio 44060
Filed Jan. 11, 1993, Ser. No. 3,506
Term of patent 14 years
U.S. Cl. D23—261



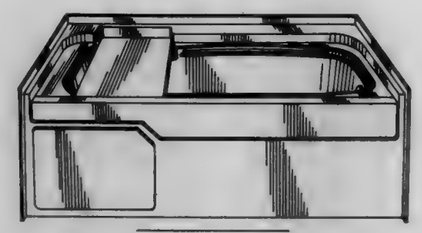
354,553
GAS PIPE CONNECTOR
Bruce J. Lange, New Berlin, Wis., assignor to Mechanical Specialties, Inc., New Berlin, Wis.
Filed Oct. 8, 1993, Ser. No. 14,006
Term of patent 14 years
U.S. Cl. D23—263



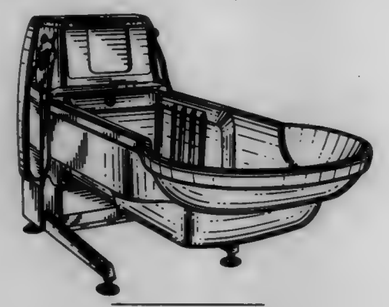
354,554
FLOW-THROUGH TELESCOPING POLE
Robert D. Newman, Sr., and Robert D. Newman, Jr., both of P.O. Box 377, Greenwood, Mo. 64034, assignors to Robert D. Newman, Sr. and Robert D. Newman, Jr., both of Greenwood, Mo.
Filed May 7, 1993, Ser. No. 8,402
Term of patent 14 years
U.S. Cl. D23—266



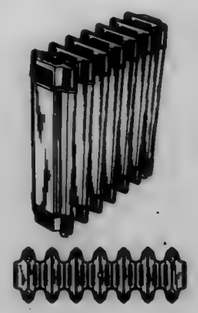
354,555
BATHTUB
Kenneth Salach, Granger, Ind., and Gregory Salach, Western Springs, Ill., assignors to G.K.L. Corporation, Romeoville, Ill.
Filed Mar. 26, 1993, Ser. No. 6,356
Term of patent 14 years
U.S. Cl. D23—277



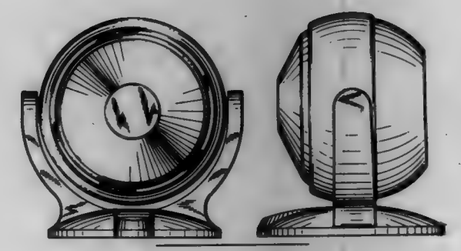
354,556
BATHTUB
Jonnie Silbersky, Malmö, Sweden, assignor to Arjo Hospital Equipment AB, Malmo, Sweden
Filed Oct. 28, 1992, Ser. No. 904
Claims priority, application Sweden, Apr. 29, 1992, 92-0964
Term of patent 14 years
U.S. Cl. D23—280.4



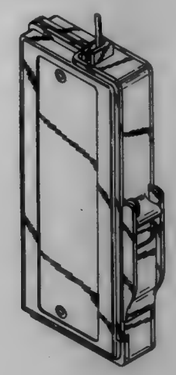
354,557
ELECTRIC RADIATOR HEATER
James J. Cich, Jr., and Edward W. Strubel, Jr., both of Fort Wayne, Ind., assignors to Patton Electric Company, Inc., New Haven, Ind.
Filed Jan. 5, 1994, Ser. No. 17,054
Term of patent 14 years
U.S. Cl. D23—330



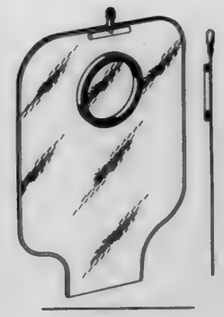
354,558
COMBINED ELECTRIC FAN HOUSING AND STAND THEREFOR
Robert Marvin, Farmington, and Richard O'Grady, Southington, both of Conn., assignors to Duracraft Corp., Sudbury, Mass.
Filed Mar. 14, 1994, Ser. No. 19,917
Term of patent 14 years
U.S. Cl. D23—411



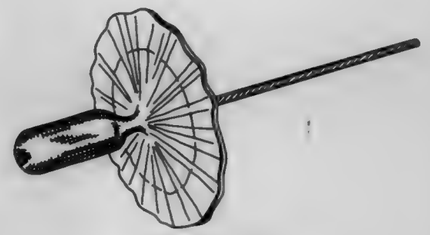
354,559
BLOOD CHEMISTRY SENSOR ASSEMBLY
Wallace L. Knute, Leucadia, and Stephens N. Sato, Del Mar, both of Calif., assignors to Via Medical Corporation, San Diego, Calif.
Filed Nov. 13, 1992, Ser. No. 1,462
Term of patent 14 years
U.S. Cl. D24—108



354,560
OSTOMY BAG
Terrel O. Chase, 14457 Essex Ct., Magalia, Calif. 95954
Filed May 24, 1993, Ser. No. 8,667
Term of patent 14 years
U.S. Cl. D24—118



354,561
TAMPON
Ingrid E. Tostrup, P.O. Box 2634 Fort MacArthur, San Pedro, Calif. 90731
Filed Mar. 15, 1994, Ser. No. 19,933
Term of patent 14 years
U.S. Cl. D24—124



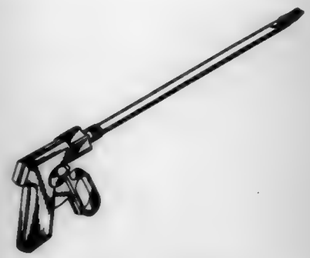
354,562
TROCAR SITE STABILIZER
Douglas J. Medema, Plainwell, Mich., assignor to Richard-Allan Medical Industries, Inc., Richland, Mich.
Filed Feb. 22, 1993, Ser. No. 5,074
Term of patent 14 years
U.S. Cl. D24—140



354,563
ENDOSCOPIC FORCEPS
J. Stephen Holmes, Atlanta, and Timothy LaMartina, Lawrenceville, both of Ga., assignors to Wright Medical Technology, Inc., Arlington, Tenn.
Filed Jul. 19, 1993, Ser. No. 10,794
Term of patent 14 years
U.S. Cl. D24—143



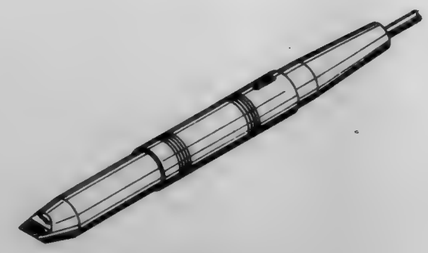
354,564
SURGICAL CLIP APPLIER
Douglas J. Medema, Plainwell, Mich., assignor to Richard-Allan Medical Industries, Inc., Richland, Mich.
Filed Jun. 25, 1993, Ser. No. 10,031
Term of patent 14 years
U.S. Cl. D24—145



354,565
TROCAR CONVERTER
Douglas J. Medema, Plainwell, Mich., assignor to Richard-Allan Medical Industries, Inc., Richland, Mich.
Filed Feb. 22, 1993, Ser. No. 5,234
Term of patent 14 years
U.S. Cl. D24—146



354,566
VIDEO IMAGING DENTAL CAMERA FOR VIEWING TEETH
Randy Donahoo, Tuttle, Okla., assignor to Dental Vision Direct, Inc., a Texas corporation, Carrollton, Tex.
Filed May 14, 1993, Ser. No. 8,344
Term of patent 14 years
U.S. Cl. D24—152



354,567
BODY LIMB FORM WITH A BENDABLE JOINT
Brian E. Forsthoff, Atlanta, and Edward G. Lapointe, Kennesaw, both of Ga., assignors to Versatile Molding U.S.A., Inc., Ackworth, Ga.
Filed Nov. 13, 1992, Ser. No. 1,592
Term of patent 14 years
U.S. Cl. D24—155



354,568
HEARING AID
Toshiyuki Araki, Kokubunji; Yoshiyuki Narisawa, Kokubunji, and Noboru Inoue, Tokyo, all of Japan, assignors to Rion Kabushiki Kaisha, Japan
Filed Feb. 9, 1994, Ser. No. 18,537
Term of patent 14 years
U.S. Cl. D24—174



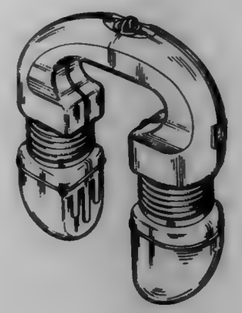
354,569
LINGUAL ORTHODONTIC ARCH APPLIANCE
James J. Hilgers, Escondido, Calif., assignor to Ormco Corporation, Glendora, Calif.
Filed Jul. 14, 1993, Ser. No. 10,694
Term of patent 14 years
U.S. Cl. D24—180



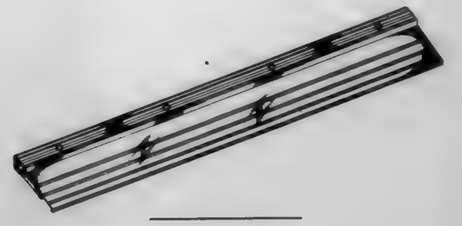
354,570
LINGUAL ARCH ORTHODONTIC APPLIANCE
James J. Hilgers, Escondido, Calif., assignor to Ormco Corporation, Glendora, Calif.
Filed Jul. 14, 1993, Ser. No. 10,696
Term of patent 14 years
U.S. Cl. D24—180



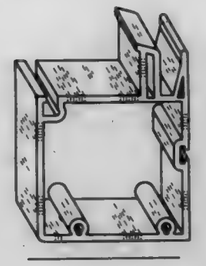
354,571
MASSAGER
Sergio Monti, Cademario, Switzerland, assignor to European Prudential Investments N.V., Netherlands Antilles
Filed Jan. 6, 1994, Ser. No. 17,130
Term of patent 14 years
U.S. Cl. D24—215



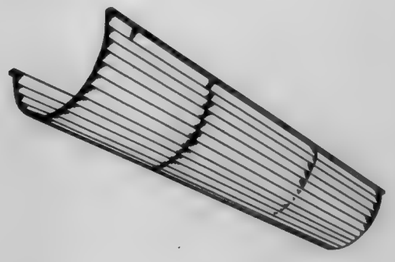
354,572
COMBINED DOOR SILL AND THRESHOLD
J. Charles Headrick, 6171 Willow Run Rd., Norcross, Ga. 30092
Filed Mar. 8, 1993, Ser. No. 5,621
Term of patent 14 years
U.S. Cl. D25—48



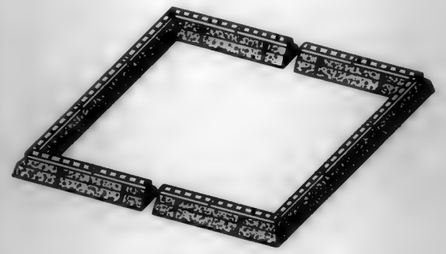
354,573
WINDOW COMPONENT EXTRUSION
Sam S. Hosseini, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Jul. 19, 1993, Ser. No. 10,812
Term of patent 14 years
U.S. Cl. D25—124



354,574
CEILING PANEL
Guy H. Lim; Cornelis Louwerens, both of Rotterdam, and Willem Rijnders, Papendrecht, all of Netherlands, assignors to Hunter Douglas International N.V., Curacao, Netherlands Antilles
Filed Jan. 25, 1991, Ser. No. 645,890
Claims priority, application United Kingdom, Jul. 26, 1990, 2008561
Term of patent 14 years
U.S. Cl. D25—138



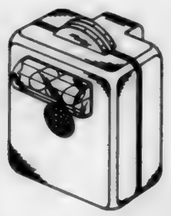
354,575
MOBILE HOME PERIMETER FOUNDATION
Matt Cusimano, Valencia, Calif., assignor to Mattguard Industries, Inc., Cupertino, Calif.
Filed Apr. 9, 1993, Ser. No. 6,914
Term of patent 14 years
U.S. Cl. D25—164



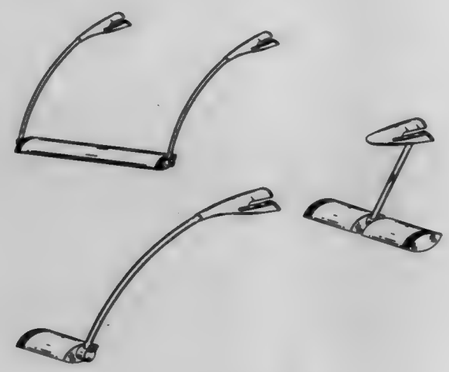
354,576
CONCRETE FORM PANEL
Richard Weinig, 1040 Canyon Rd., Forestville, Calif. 95436
Filed Sep. 23, 1993, Ser. No. 13,348
Term of patent 14 years
U.S. Cl. D25—199



354,577
CLIP-ON FLASHER LIGHT
Glenn L. Cota, and Gerald L. Haines, both of Piqua, Ohio, assignors to Valor Enterprises, Inc., Piqua, Ohio
Filed Apr. 5, 1993, Ser. No. 6,705
Term of patent 14 years
U.S. Cl. D26—39



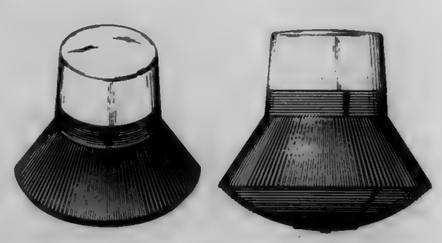
354,578
SPOTLIGHT
Bruno Housnis; Alain Girot, and Pierre-Laurent Martin, all of Paris, France, assignors to Zebulon, Paris, France
Filed Jul. 8, 1992, Ser. No. 910,706
Term of patent 14 years
U.S. Cl. D26—63



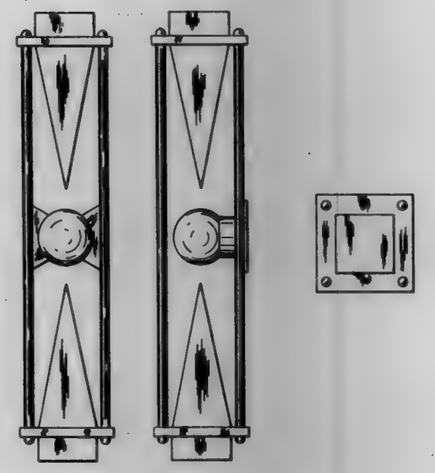
354,579
PENDANT LIGHT FIXTURE
Erik S. Chan, San Francisco, Calif., assignor to Boyd Lighting Company, San Francisco, Calif.
Filed Apr. 29, 1994, Ser. No. 22,189
Term of patent 14 years
U.S. Cl. D26—88



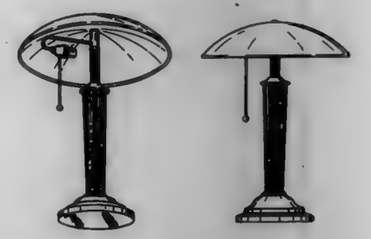
354,580
SUSPENDED LUMINAIRE
Herbert A. Fouke, and Rick M. Kelly, both of Newark, Ohio, assignors to Holophane Lighting, Inc., Newark, Ohio
Filed May 4, 1994, Ser. No. 22,401
Term of patent 14 years
U.S. Cl. D26—88



354,581
FLOOR LAMP
Kenneth P. Breidler, 1207 Monarte Ln., St. Louis, Mo. 63146
Filed Apr. 14, 1993, Ser. No. 7,121
Term of patent 14 years
U.S. Cl. D26—106



354,582
TABLE LAMP
John F. Stromberg, Holliston, Mass., assignor to Holmes Products Corp., Milford, Mass.
Filed Nov. 1, 1993, Ser. No. 14,850
Term of patent 14 years
U.S. Cl. D26—106



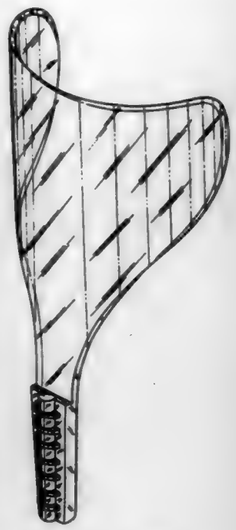
354,583
WATER PIPE
Mark R. Newman, P.O. Box 17009, Tucson, Ariz. 85731
Filed Oct. 18, 1993, Ser. No. 14,263
Term of patent 14 years
U.S. Cl. D27—162



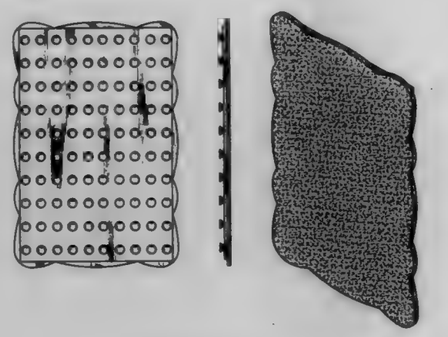
354,584
WATER PIPE
Mark R. Newman, P.O. Box 17009, Tucson, Ariz. 85731
Filed Oct. 12, 1993, Ser. No. 14,038
Term of patent 14 years
U.S. Cl. D27—162



354,585
PROTECTIVE FACE SHIELD
Ruth C. Rudy, R.D. 1, Box 570, Centre Hall, Pa. 16828
Filed Apr. 30, 1993, Ser. No. 7,674
Term of patent 14 years
U.S. Cl. D28—9



354,587
BACK SCRUBBER
George M. Bush, Sr., 1341 Cinder La., Kissimmee, Fla. 34744
Filed Aug. 17, 1992, Ser. No. 930,294
Term of patent 14 years
U.S. Cl. D28—63



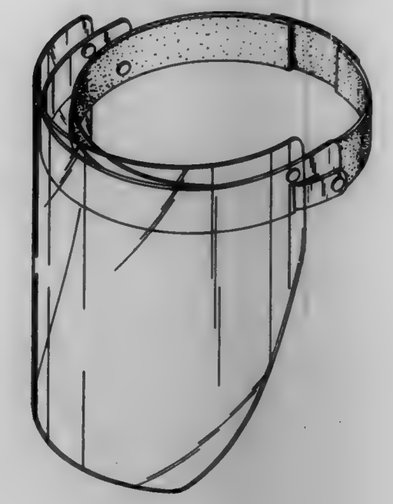
354,586
RAZOR
Kenneth Grange, London, England, assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 13, 1991, Ser. No. 669,218
Claims priority, application Germany, Sep. 13, 1990, M 90 06 021.0
Term of patent 14 years
U.S. Cl. D28—46



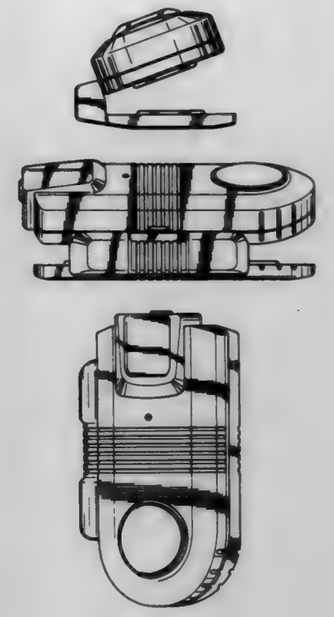
354,588
FACE SHIELD
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.
Filed Aug. 24, 1992, Ser. No. 933,510
Term of patent 14 years
U.S. Cl. D29—110



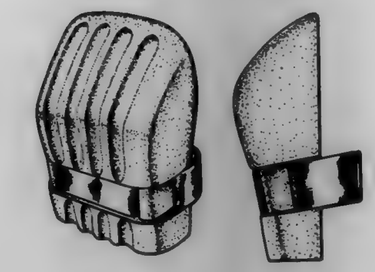
354,589
FACE SHIELD
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.
Filed Aug. 24, 1992, Ser. No. 933,522
Term of patent 14 years
U.S. Cl. D29—110



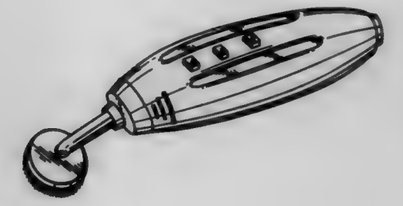
354,591
IRON
Joseph F. Wong, New Territories, Hong Kong, assignor to Motor Electric Manufacturing Co. Ltd., Hong Kong
Filed Mar. 24, 1993, Ser. No. 6,270
Claims priority, application United Kingdom, Sep. 28, 1992, 2026068
Term of patent 14 years
U.S. Cl. D32—9



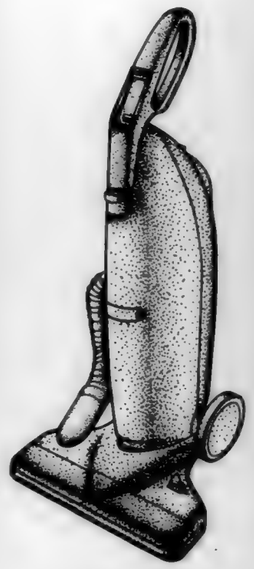
354,590
PROTECTIVE KNEE PAD
George P. Psikos, 10655 Baton Rouge, and David J. Long, 12216 Beaufait Ave., both of Northridge, Calif. 91326
Filed May 27, 1993, Ser. No. 8,831
Term of patent 14 years
U.S. Cl. D29—100



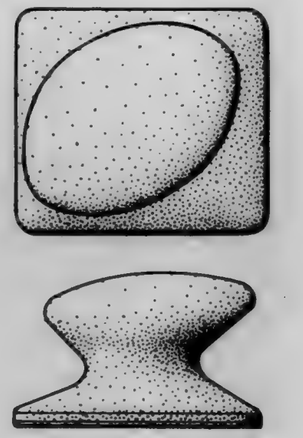
354,592
BRUSH-TYPE CLEANING DEVICE
Donald B. Powers, 7740 McCallum, Apt. 347, Dallas, Tex. 75252-7554
Filed Nov. 2, 1993, Ser. No. 14,767
Term of patent 14 years
U.S. Cl. D32—17



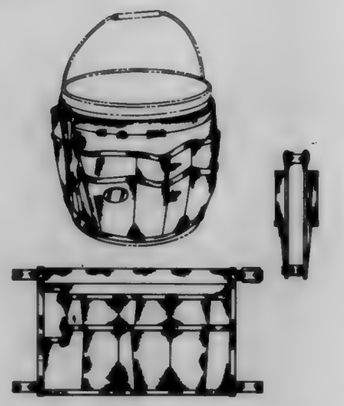
354,593
VACUUM CLEANER
Takeo Koike, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 19, 1993, Ser. No. 7,241
Claims priority, application Japan, Oct. 21, 1992, 4-30971
Term of patent 14 years
U.S. Cl. D32—22



354,595
VIDEO SCREEN CLEANER
Wojciech Wasak, North Vancouver, Canada, assignor to VS Cheesmaster Enterprises Inc., North Vancouver, Canada
Filed Dec. 23, 1993, Ser. No. 16,706
Term of patent 14 years
U.S. Cl. D32—52



354,596
BUCKET MOUNTED TOOL CARRIER
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Oct. 1, 1991, Ser. No. 770,296
Term of patent 14 years
U.S. Cl. D32—53



354,594
LENS CLEANING AND POLISHING DEVICE
William E. Reuswig, Port St. Lucie Blvd., Fla., assignor to Robert C. Day, Tequesta, Fla.
Filed Mar. 12, 1993, Ser. No. 5,915
Term of patent 14 years
U.S. Cl. D32—40



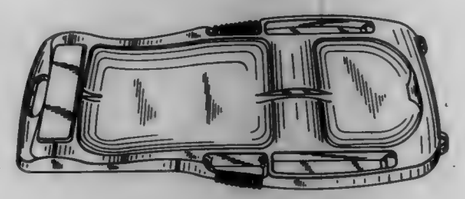
354,597
CART FOR TRANSPORTING LIGHTING EQUIPMENT
Brian J. Crane, 19960 Friar St., Woodland Hills, Calif. 91467
Filed Nov. 4, 1993, Ser. No. 14,910
Term of patent 14 years
U.S. Cl. D34—21



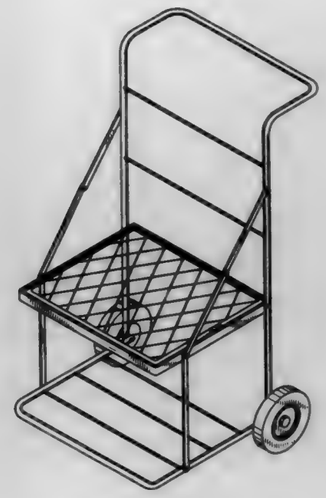
354,598
COMBINED DOLLY AND RAMP FOR MOTOR VEHICLES
Peter-Randolf Poten, Nettersheim; Karl Steffens, Dahlem, and Gunter Gebhardt, Stadtkyll, all of Germany, assignors to Diehl GmbH & Co., Nuraberg, Germany
Filed Aug. 16, 1993, Ser. No. 11,882
Claims priority, application Germany, Feb. 17, 1993, 9301392
Term of patent 14 years
U.S. Cl. D34—23



354,599
MECHANIC'S CREEPER
Michael W. K. Young, Flushing, N.Y., assignor to Injection Corporation, Plainfield, N.J.
Filed Jan. 3, 1994, Ser. No. 17,018
Term of patent 14 years
U.S. Cl. D34—23



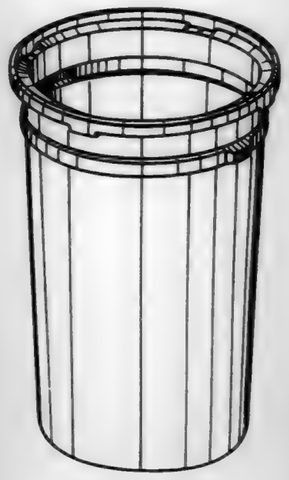
354,600
ROLLING CART
Bela F. Roberts, P.O. Box 1315, Sanibel, Fla. 33957-1315
Filed Dec. 21, 1992, Ser. No. 2,580
Term of patent 14 years
U.S. Cl. D34—24



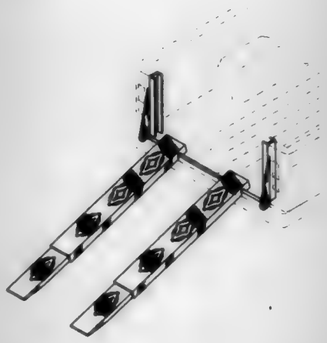
354,601
FOLDABLE HAND TRUCK ASSEMBLY
Gary L. Dunkle, Wichita, Kans., assignor to Harper Trucks, Inc., Wichita, Kans.
Filed Aug. 2, 1993, Ser. No. 11,327
Term of patent 14 years
U.S. Cl. D34—26



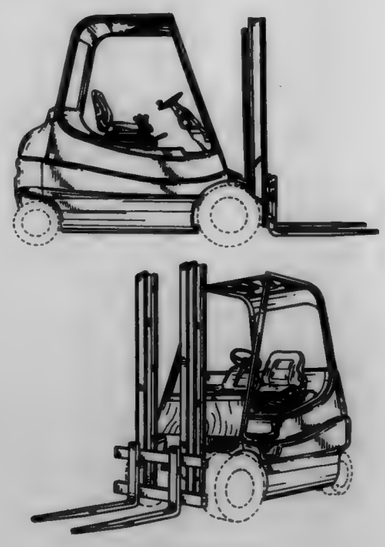
354,602
CHUTE SECTION FOR CONSTRUCTION SITES
Michel Goubaud, La Grand'Vue, Saint Herblon, Ancenis, France
Filed Oct. 30, 1989, Ser. No. 431,312
Claims priority, application France, Apr. 28, 1989, 892,926
Term of patent 14 years
U.S. Cl. D34—28



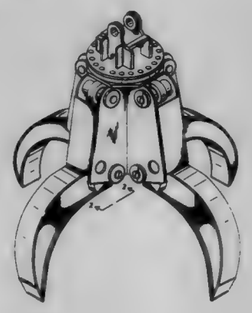
354,603
VEHICLE LOADING RAMP UNIT
Kevin W. Bullard, R.R. 1 Box 75, Shumway, Ill. 62461
Filed Aug. 16, 1993, Ser. No. 11,779
Term of patent 14 years
U.S. Cl. D34—32



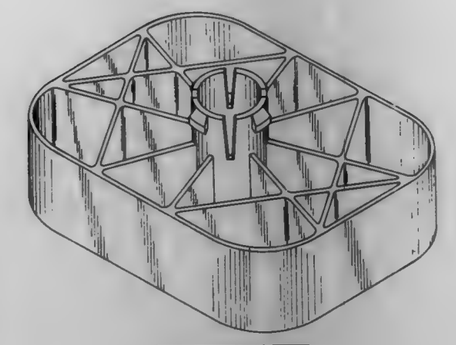
354,604
FORKLIFT
Richard Soederberg, Mühlacker, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Aug. 26, 1993, Ser. No. 12,178
Claims priority, application Germany, Feb. 26, 1993, 9301570
Term of patent 14 years
U.S. Cl. D34—34



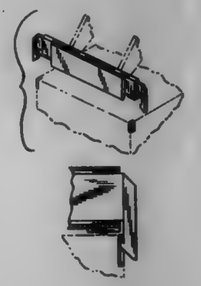
354,605
GRAPPLER
Bobby D. Lucky, Sr., Rte. 1 Box 160, Bain Rd. N.W., Athens, Ala. 35611
Filed Jun. 12, 1992, Ser. No. 896,356
Term of patent 14 years
U.S. Cl. D34—35



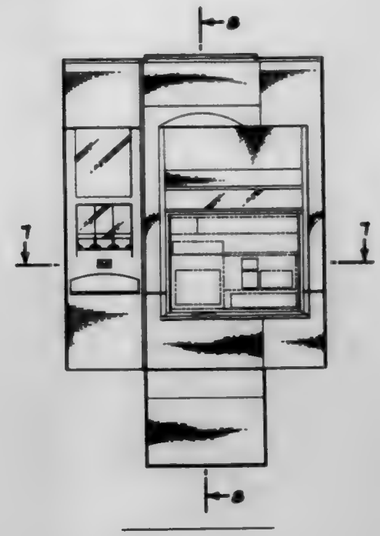
354,606
CONNECTOR FOR A PALLET ASSEMBLY
Brandon L. Pigott, 1017 Elmwood Ave., Wilmette, Ill. 60091; Schuyler F. Pigott, 1122 N. Patton St., Arlington Heights, Ill. 60004; Peter S. Pigott, 803 Elmwood Ave., Wilmette, Ill. 60091, and Maurice J. Pigott, 591 Cherry St., Winnetka, Ill. 60093
Continuation-in-part of Ser. No. 12,508, Sep. 2, 1993, Pat. No. Des. 347,511, which is a continuation-in-part of Ser. No. 7,372, Apr. 21, 1993, Pat. No. Des. 346,681, which is a continuation-in-part of Ser. No. 961,396, Oct. 15, 1992, which is a continuation-in-part of Ser. No. 644,928, Jan. 23, 1991, Pat. No. 5,197,395, which is a continuation-in-part of Ser. No. 230,025, Aug. 9, 1988, Pat. No. 4,843,976. This application Nov. 24, 1993, Ser. No. 15,696
Term of patent 14 years
U.S. Cl. D34—38



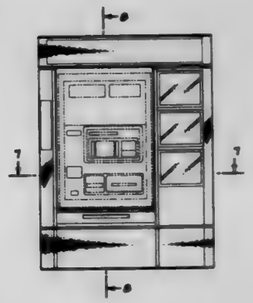
354,607
SIDE LATCH COUPLING ASSEMBLY
John J. Lanigan, Sr., 14560 Golf Rd., Orland Park, Ill. 60462; John J. Lanigan, Jr., 19516 Lake Lyinwood Dr., Lynwood, Ill. 60411; Michael T. Lanigan, 12601 Holm Dr., Lockport, Ill. 60441, and William P. Lanigan, 16946 Blue Heron Dr., Orland Park, Ill. 60462
Filed Apr. 30, 1992, Ser. No. 876,226
Term of patent 14 years
U.S. Cl. D34—33



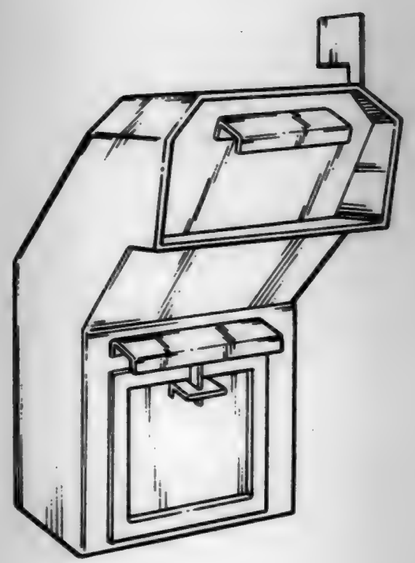
354,608
ENCLOSURE FOR AUTOMATIC TELLER MACHINES
Ralph G. Merrill, 3617 S. 400 East, Bountiful, Utah 84010, and Deanis O. Merrill, 2880 Newmans La., Salt Lake City, Utah 84121
Filed Dec. 30, 1993, Ser. No. 16,932
Term of patent 14 years
U.S. Cl. D99—28



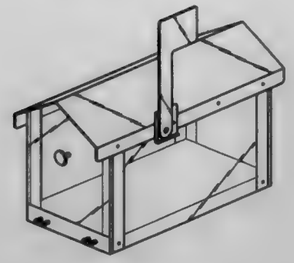
354,609
ENCLOSURE FOR AUTOMATIC TELLER MACHINES
Ralph G. Merrill, 3617 S. 400 East, Bountiful, Utah 84010, and Dennis O. Merrill, 2880 Newmans La., Salt Lake City, Utah 84121
Filed Dec. 30, 1993, Ser. No. 16,953
Term of patent 14 years
U.S. Cl. D99—28



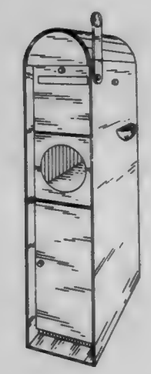
354,610
ANTI-THEFT MAILBOX
Shawky Hassan, 1146 S. Linden, Flint, Mich. 48504
Filed Jun. 21, 1993, Ser. No. 9,648
Term of patent 14 years
U.S. Cl. D99—29



354,611
MAIL BOX
Jack M. Hazlett, 93 South Rd., Farmington, Conn. 06032
Filed Aug. 19, 1992, Ser. No. 932,045
Term of patent 14 years
U.S. Cl. D99—30



354,612
COMBINED PARCEL, NEWSPAPER AND MAILBOX
Thomas C. Worden, 4608 Wye Way La. SW., Knoxville, Tenn. 37920
Filed Jun. 4, 1993, Ser. No. 9,085
Term of patent 14 years
U.S. Cl. D99—31



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JANUARY, 1995

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
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AB Food Mark Production: *See*—
Roheim, Karl-Axel, 5,381,720, Cl. 89-1.350.

ABB Atom AB: *See*—
Deleryd, Roland; and Stahl, Gunnar, 5,383,226, Cl. 376-253.000.

ABB Vetco Gray Inc.: *See*—
Milberger, Lionel J., 5,382,056, Cl. 285-1.000.

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Choudhury, Hrishikesh; Julian, Joseph F.; and Tanner, John C., III, 5,382,241, Cl. 604-192.000.
Grabenkort, Richard W.; Kruger, Robert J.; Mayoral, Joaquin; and Wecker, Sheldon M., 5,382,229, Cl. 604-27.000.
Hill, Jerry L.; Travis, Benjamin D.; Mahmoud, Mohamed I.; Brooks, James R.; Schenz, Timothy W.; and Dewille, Normanella T., 5,382,439, Cl. 426-73.000.
Kruger, Robert J.; and Mayoral, Joaquin, 5,382,406, Cl. 422-28.000.
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Abbott, Richard A.: *See*—
Nandagiri, Arun; Abbott, Richard A.; Nardone, Renee E.; and Borish, Edward T., 5,382,426, Cl. 424-70.510.

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Morita, Shinya; and Abe, Fumiyoshi, 5,383,069, Cl. 360-73.110.

Abe, Shinya: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouki-chi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

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Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

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Sakai, Kazuhiro; Miyake, Hiroyuki; and Abe, Tsutomu, 5,382,975, Cl. 348-241.000.

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Nakayama, Minoru; Sawai, Toshiya; Hayakawa, Masaharu; Murata, Shizuo; and Abe, Yukino, 5,382,688, Cl. 564-322.000.

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Arzoumanian, S. Allen, 5,382,941, Cl. 340-426.000.

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Hamm, Robert W.; Crandall, Kenneth R.; and Potter, James M., 5,382,914, Cl. 315-505.000.

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Nordgren, Timothy F.; Imling, Deborah K.; Ungari, Joseph L.; Killam, Donald G.; and McKeighen, Ronald E., 5,381,795, Cl. 128-663.010.

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Nagai, Kenichi; Yatsurugi, Yosifumi; Morihara, Hiroshi; and Izawa, Junji, 5,382,419, Cl. 423-348.000.

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Peeters, Dirk, 5,381,913, Cl. 215-232.000.

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Del Bianco, Alberto; and Stroppa, Fabrizio, 5,382,728, Cl. 585-24.000.

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Dieguez, Jose M.; and Lee, Robert G. H., 5,382,422, Cl. 424-45.000.

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Choe, Jung S.; Kellogg, Lyndon J., Jr.; and Weimer, Robert F., 5,382,280, Cl. 95-98.000.
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Nakamura, Hirotaka; Nishijoh, Astushi; Tsuchiya, Shigeki; and Hirobe, Yoshiaki, 5,382,933, Cl. 335-278.000.

Akey, Steven C.: *See*—
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Akiba, Uichi: *See*—
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Akyurek, Altan; Maier, Peter; and Schulz-Harder, Jurgen. Semiconductor module with multi-plane conductive path. 5,382,830, Cl. 257-701.000.

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Jung, Reinhold, 5,382,920, Cl. 330-308.000.
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Aldrich, Greg; Si, Stephen S.; and Wang, Eugene, to Amdahl Corporation. Selectable timing delay system. 5,382,850, Cl. 327-161.000.

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Cresswell, Michael; Allen, Richard; Linhom, Loren; and Gaitan, Michael, 5,383,136, Cl. 364-561.000.

Allen, Thomas E., to Halliburton Company. Apparatus and method for continuously mixing fluids. 5,382,411, Cl. 422-131.000.

Allen, William M. Support structure for retaining items in position. 5,381,892, Cl. 206-216.000.

Allergan, Inc.: *See*—
Rupp, David C.; Anger, Claude; Kapadia, Saroj; and Totaro, Mary, 5,382,599, Cl. 514-547.000.

AlliedSignal Inc.: *See*—
Barrett, Joseph J.; Yee, Joseph; and Rapoport, William R., 5,383,200, Cl. 372-25.000.
Prevorsek, Dusan C.; and Li, Hsin L., 5,382,392, Cl. 264-29.500.

Allison, Larry W.: *See*—
Hinde, Brian, 5,381,747, Cl. 114-39.200.

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Allsop, James D.; Barkley, Paul; and Calapp, David E., 5,382,038, Cl. 280-281.100.

Allsop, James D.; Barkley, Paul; and Calapp, David E., to Allsop, Inc. Shock absorber for a vehicle. 5,382,038, Cl. 280-281.100.

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Tei, Chuwa; Hosokawa, Takashi; Kato, Tomoyuki; Takekawa, Wataru; Ito, Hisao; and Yoshikawa, Yoshihiro, 5,381,794, Cl. 128-662.030.

Alps Electric Co., Ltd.: *See*—
Hasegawa, Kazuo; and Ouchi, Junichi, 5,382,782, Cl. 235-455.000.

Alsobrooks, Daniel E.; Finkbeiner, Steven P.; and Codling, Daryl O., to Orbital Walbro Corporation. Pressure regulator. 5,381,816, Cl. 137-15.000.

Althaus, Rolf, to Asea Brown Boveri Ltd. Aircraft engine with preasure exchanger. 5,381,653, Cl. 60-39.161.

Althausen, Ferdinand: *See*—
Krippl, Kurt; Ebeling, Wilfried; Fietz, Jurgen; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 5,382,603, Cl. 521-99.000.

Alusuisse-Lonza Services Ltd.: *See*—
Piata, Miroslaw; Bourqui, Bernard; and Strehmel, Werner, 5,382,306, Cl. 148-511.000.

Amano, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. Elevator group control device. 5,382,761, Cl. 187-383.000.

Amdahl Corporation: *See*—
Aldrich, Greg; Si, Stephen S.; and Wang, Eugene, 5,382,850, Cl. 327-161.000.
Satterlee, Chris; and Penman, Duncan, 5,383,201, Cl. 371-29.100.

Amend, Udo. Container for contact lenses and a reservoir for contact lens fluid. 5,381,889, Cl. 206-5.100.

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Spencer, Kevin C., 5,382,525, Cl. 435-244.000.

American Cyanamid Company: *See*—
Walker, Linda A.; and Hirsch, Evan M., 5,381,912, Cl. 215-220.000.

American Standard Inc.: *See*—
Aldridge, Richard L., 5,381,950, Cl. 236-1.00R.

American Wyott Corporation: *See*—
Humphrey, James E., 5,381,932, Cl. 222-321.000.

Amerock Corporation: *See*—
O'Toole, James F.; Martz, William M.; Bruchu, Todd W.; and Beske, Scott R., 5,382,060, Cl. 292-46.000.

Amir, Israel; and Treder, Ralph A., to AT&T Corp. Method for aligning two reflective surfaces. 5,383,016, Cl. 356-150.000.

Anabuki, Yoshinori; and Hina, Eiji, to Kawasaki Steel Corporation. Method of irradiating running strip with energy beams. 5,382,802, Cl. 250-492.100.

Anayama, Chikashi: *See*—
Kondo, Makoto; and Anayama, Chikashi, 5,381,756, Cl. 117-104.000.

Anchin, Gerald M.: *See*—
Shah, Vipin D.; Yen, Shing-Erh; and Anchin, Gerald M., 5,382,515, Cl. 435-7.400.
Shah, Vipin D.; Yen, Shing-Erh; and Anchin, Gerald M., 5,382,522, Cl. 435-7.400.

Anderson, Curtis L.: *See*—
Raghavan, Chidambaram; Olsen, John; Anderson, Curtis L.; and LaLande, Alton J., 5,381,631, Cl. 451-75.000.

Anderson, Elmer D., II, to Bethlehem Steel Corporation. Method and apparatus for combustion of steel plant wastes. 5,382,279, Cl. 75-746.000.

Anderson, George R.: *See*—
Lentz, Ronald R.; Pesheck, Peter S.; Anderson, George R.; Desa Mars, Jimmy; and Peck, Thomas R., 5,382,441, Cl. 426-241.000.

Anderson, Marlin H., Jr.: *See*—
Davis, D. Darryl; and Anderson, Marlin H., Jr., 5,381,624, Cl. 47-1.700.

Anderson, Richard L.; and Jones, Fred G., to SPS Technologies, Inc. Permanent magnets and methods for their fabrication. 5,382,303, Cl. 148-303.000.

Anderson, Rick A.: *See*—
Busscher, Michael D.; and Anderson, Rick A., 5,381,586, Cl. 16-297.000.

Anderson, Todd W.; and Fahl, Richard L. Tank car venting system. 5,381,997, Cl. 251-61.200.

Anderssos, Arne, to Arnes Plat AB. Building structure formed of lightweight interfitting panels. 5,381,638, Cl. 52-592.100.

Ando Electric Co., Ltd.: *See*—
Ichikawa, Akio, 5,383,210, Cl. 372-38.000.

Ando, Kazuhiro; Kawakami, Takamasa; Shouji, Yasuhiro; Tanaka, Yasuo; Kanaoka, Takeo; and Sayama, Norio, to Mitsubishi Gas Chemical Company, Inc. Process for producing copper clad laminate. 5,382,333, Cl. 204-130.000.

Andre, Thierry: *See*—
Melchior, Jean F.; and Andre, Thierry, 5,381,772, Cl. 123-447.000.

Andritz-Patentverwaltungs-Gesellschaft m.b.H.: *See*—
Jirenec, Karl; and Starcevic, Jovan, 5,382,335, Cl. 204-144.500.

Anelva Corporation: *See*—
Hosokawa, Naokichi; and Kim, Kyungshik, 5,382,344, Cl. 204-298.200.

Angel-Etts f California, Inc.: *See*—
MacMillan, M. Sean, 5,381,615, Cl. 36-137.000.

Angelchik, Jean P. Method for testing for esophagitis. 5,381,800, Cl. 128-780.000.

Angelopoulos, Marie; Feger, Claudius; Gelorme, Jeffrey D.; and Shaw, Jane M., to International Business Machines Corporation. Solid state chain extension polymerization between Lewis acid oligomers and deblocked Lewis bases. 5,382,637, Cl. 525-436.000.

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Rupp, David C.; Anger, Claude; Kapadia, Saroj; and Totaro, Mary, 5,382,599, Cl. 514-547.000.

Anschutz & Co., GmbH: *See*—
Otto, Karl-Heinz; and Pfister, Gerd, 5,382,236, Cl. 604-141.000.

Ansquer, Patrick; and Orgebin, Jean-Michel, to Total Raffinage Distribution S.A. Process for the fixed-bed sweetening of sour petroleum distillates with fraction temperatures of from about 125 to about 350 degrees C. 5,382,354, Cl. 208-207.000.

Anttila, Olli, to Okmetic Oy. Method for cleaning semiconductor products. 5,382,296, Cl. 134-3.000.

Aoki, Masakazu: *See*—
Etoh, Jun; Aoki, Masakazu; Horiguchi, Masashi; Ueda, Shigeki; Tanaka, Hitoshi; Kajigaya, Kazuhiko; Takahashi, Tsugio; and Kawamoto, Hiroshi, 5,383,080, Cl. 361-56.000.

Aoki, Shozo: *See*—
Shor, Steven M.; Zou, Chaofeng; Zhou, Pu; and Aoki, Shozo, 5,382,504, Cl. 430-619.000.

Aoki, Tomoyuki; and Ono, Yoji, to Henkel Corporation. Method for cleaning aluminum and aluminum alloys. 5,382,295, Cl. 134-2.000.

Aono, Shinji: *See*—
Nakahara, Kazuhiko; and Aono, Shinji, 5,382,926, Cl. 333-161.000.

Aoshima, Shinichiro, to Hamamatsu Photonics K.K. Near field scanning optical microscope. 5,382,789, Cl. 250-216.000.

Aotani, Akira: *See*—
Hayashi, Katuhiko; Ikeda, Hiroshi; and Aotani, Akira, 5,382,925, Cl. 333-112.000.

Aoyama, Motoo: *See*—
Nakajima, Akinobu; Ishibashi, Yoko; Aoyama, Motoo; Kurihara, Kunitoshi; Yamashita, Junichi; Nakajima, Junjiro; and Nishida, Koji, 5,383,229, Cl. 376-434.000.

Apple Computer, Inc.: *See*—
Shen, David W.; Howard, Robert A.; Riccomini, Robert A.; Young, Steven J.; Cox, Robert E. L.; Le Bars, Philippe; and Tsukinari, Keiichi, 5,382,182, Cl. 439-676.000.

Applied Materials, Inc.: *See*—
Aranovich, Julio A., 5,382,339, Cl. 204-192.120.
Hills, Graham W.; and Bucknall, Ruth E., 5,382,316, Cl. 156-643.000.

Arai, Izumi: *See*—
Ishikawa, Kenji; Komino, Mitsuaki; Mitui, Tadashi; Iwata, Teruo; Arai, Izumi; and Tahara, Yoshifumi, 5,382,311, Cl. 156-345.000.

Arai, Ken-ichi: *See*—
Kubota, Yoshihiro; Kawai, Makoto; Kojima, Shinji; and Arai, Ken-ichi, 5,382,469, Cl. 428-332.000.

Arai, Nobukatsu: *See*—
Miyazaki, Atsushi; Kobayashi, Chihiro; Igarashi, Shinya; Matsukura, Tetsuo; Maeda, Haruhiko; Arai, Nobukatsu; and Sekine, Yoshihito, 5,381,691, Cl. 73-202.500.

Arai, Tatsuharu: *See*—
Ohno, Hiromoto; Arai, Tatsuharu; Katamura, Koichi; Yuge, Sadayoshi; Kawai, Haruyuki; and Morito, Yasuaki, 5,382,724, Cl. 570-178.000.

Arakawa, Takeharu: *See*—
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasushiro; Baba, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.

Araki, Morio: *See*—
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasushiro; Baba, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.

Aramaki, Toshiya, to NEC Corporation. Packet switching system capable of reducing a delay time for each packet. 5,383,181, Cl. 370-60.000.

Aranovich, Julio A., to Applied Materials, Inc. Shield and collimator pasting deposition chamber with a side pocket for pasting the bottom of the collimator. 5,382,339, Cl. 204-192.120.

Aratani, Makoto: *See*—
Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, 5,381,857, Cl. 164-466.000.

Arbanella, Richard A.: *See*—
Hopkins, Christopher E.; Markunas, Albert L.; Maddali, Vijay K.; and Arbanella, Richard A., 5,383,107, Cl. 363-41.000.

Architectural Builders Hardware Mfg. Inc.: *See*—
D'Hooge, Richard, 5,381,628, Cl. 49-394.000.

Arco Chemical Technology, L.P.: *See*—
Guo, Shao-Hua, 5,382,642, Cl. 526-333.000.

Arendall, William L. Hand held abrasive disk. 5,382,189, Cl. 451-557.000.

Arii, Kouji; Maeda, Testsuo; Tomimoto, Tetsuo; and Akiyama, Ryo, to Matsushita Electric Industrial Co., Ltd. Combination of an optical-disk and barcode memory medium for use with an optical disk playback apparatus, having control programs stored in the optical-disk and specified by barcodes stored in the barcode memory medium. 5,382,776, Cl. 235-375.000.

Arimoto, Yuko: *See*—
Ohkubo, Keiji; Arimoto, Yuko; Uwazumi, Hiroyuki; and Yamasaki, Hisashi, 5,382,301, Cl. 148-108.000.

Arizona Board of Regents: *See*—
Benson, Byrant, 5,382,568, Cl. 514-15.000.

Arjo Hospital Equipment AB: *See*—
Sonesson, Leif; and Olsson, Jorgen, 5,381,566, Cl. 4-591.000.

Arledge, John K.; Swirbel, Thomas J.; and Davis, James L., to Motorola, Inc. Adherent metal coating for aluminum nitride surfaces. 5,382,471, Cl. 428-336.000.

Arlozynski, Daniel A. Engine coolant filter. 5,382,355, Cl. 210-85.000.

Armbruster, Joseph M. Polisher with rectangular pad and handle assembly. 5,381,578, Cl. 15-98.000.

Armbruster, Peter J.; and Stephens, James A., to Motorola, Inc. Method and apparatus for data collision detection in a multi-processor communication system. 5,383,185, Cl. 370-85.300.

Armijo, Joseph S.; Rosenbaum, Herman S.; and Williams, Cedric D., to General Electric Company. Method for making fuel cladding having zirconium barrier layers and inner liners. 5,383,228, Cl. 376-409.000.

Armiraglio, Massimo: *See*—
Delrosso, Giovanni; Vanoli, Stefano; and Armiraglio, Massimo, 5,383,051, Cl. 359-341.000.

Arnemann, Scott; and Ferrar, Scott, to E. H. Wachs Company, The. Valve operator. 5,381,996, Cl. 251-59.000.

Arnes Plat AB: *See*—
Andersson, Arne, 5,381,638, Cl. 52-592.100.

Arnold, Bernhard: *See*—
Eisenbacher, Egon; Pawellek, Franz; and Arnold, Bernhard, 5,382,140, Cl. 417-273.000.

Arnold, John E., to Goodyear Tire & Rubber Company, The. Airspring piston and airspring assembly. 5,382,006, Cl. 267-64.270.

Arnold, Thomas J., to Mion International Corporation. Glass ionomer cement compositions and restorative methods. 5,382,284, Cl. 106-35.000.

Aronow, Michael F.: *See*—
Raffa, James M.; Cwik, Terry T.; Aronow, Michael F.; Little, Winston A.; Meitzler, Allen H.; Misangyi, Peter W.; Nix-Gomez, Jame A.; Saloka, George S.; and Walker, Noel A., 5,382,942, Cl. 340-457.400.

Aroutiounian, Vladimir M.; Adamian, Zaven N.; Abovian, Hrachia V.; Movsesian, Kurgin R.; Barsegyan, Ara A.; and Panosian, Manuk S. Method of making smoke detector. 5,382,341, Cl. 204-192.210.

Aruga, Tamotsu: *See*—
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, 5,382,692, Cl. 564-426.000.

Arzoumanian, S. Allen, to Accele Electronics. Vehicle alarm set signal level control. 5,382,941, Cl. 340-426.000.

Asahi Glass Company: *See*—
Hirai, Toshiharu; Abe, Yoneji; and Komatsu, Michio, 5,382,383, Cl. 252-501.100.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; Takahashi, Akio; and Matsudo, Nobuhiko, 5,382,997, Cl. 354-441.000.

Asai, Akira: *See*—
Fukuma, Masaki; Deguchi, Hiroaki; Nishida, Masami; Asai, Akira; and Aino, Hiroshi, 5,381,764, Cl. 123-90.170.

Asakawa, Teruo, to Tokyo Electron Limited. Ion injection device. 5,382,803, Cl. 250-492.210.

Asakura, Toshikage; Wernet, Wolfgang; Ohwa, Masaki; and Kai, Kenichiro, to Japat Ltd. Sheet-like heating elements and preparation thereof. 5,382,382, Cl. 252-500.000.

Asano, Osamu: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo;

Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, to Chiyoda Corporation. Process for the production of bishenol A. 5,382,711, Cl. 568-722.000.

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Asea Brown Boveri AB: *See*—
Hansson, Tomas; and Karlstrom, Per-Olof, 5,382,938, Cl. 338-22.00R.
Isaksson, Jan, 5,382,810, Cl. 257-81.000.

Asea Brown Boveri Ltd.: *See*—
Althaus, Rolf, 5,381,653, Cl. 60-39.161.
Schutter, Jan; and Wiederkehr, Martin, 5,382,906, Cl. 324-418.000.

Ashida, Motoi: *See*—
Tsutsumi, Kazuhito; Ashida, Motoi; and Inoue, Yasuo, 5,382,807, Cl. 257-69.000.

Ashland Oil, Inc.: *See*—
Bambauer, Ruth A.; Langer, Heimo J.; and Akey, Steven C., 5,382,289, Cl. 106-690.000.

Ashley, Timothy; Elliott, Charles T.; and Whitehouse, Colin R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Semiconductor device with low thermally generated leakage current. 5,382,814, Cl. 257-197.000.

Ashok, Sankaranarayanan; Tyler, Derek E.; Watson, William G.; Cheskis, Harvey P.; and List, George A., to Olin Corporation. Vertical casting process. 5,381,847, Cl. 164-46.000.

Aspect Medical Systems, Inc.: *See*—
Shambroom, John R., 5,381,804, Cl. 128-731.000.

Astbury, Christopher J.; Griffiths, David C.; Howard, Mark J.; and Reid, Ian A. B., to British Petroleum Company p.l.c., The. Process for the production of mono-olefins. 5,382,741, Cl. 585-652.000.

AT&T Corp.: *See*—
Amir, Israel; and Treder, Ralph A., 5,383,016, Cl. 356-150.000.
Berger, Steven D., 5,382,498, Cl. 430-296.000.
Blonder, Greg E.; Degani, Yinon; and Dudderar, Thomas D., 5,382,300, Cl. 148-24.000.
Downey, Stephen W.; Emerson, Adrian B.; Mujsce, Anthony M.; Muller, Amy J.; Reents, William D., Jr.; Sinclair, James D.; and Swanson, Alka, 5,382,794, Cl. 250-288.000.
Frankenthal, Robert P.; Siconolfi, David J.; and Sinclair, James D., 5,381,701, Cl. 73-865.600.
Grimes, Gary J., 5,383,015, Cl. 356-73.100.
Jin, Sungho, 5,382,314, Cl. 156-628.000.
Kartalopoulos, Stamatios V., 5,383,180, Cl. 370-58.200.
Knox, Wayne H.; Shunk, Stephen C.; Williams, Michael D.; and Zucker, Jane E., 5,383,212, Cl. 372-45.000.
Kola, Ratnaji R.; Miller, Gabriel L.; and Wagner, Eric R., 5,382,340, Cl. 204-192.130.
Nguyen, Hung N., 5,383,118, Cl. 364-167.010.

Atakov, Eugenia M.; Clement, John J.; and Lee, Brian C., to Digital Equipment Corporation. Integrated circuit metal film interconnect having enhanced resistance to electromigration. 5,382,831, Cl. 257-767.000.

Atchison, Topeka & Santa Fe Railway Company, The: *See*—
Kelly, Thomas P., 5,382,066, Cl. 294-68.300.

Atkins, Martin P.; and Smith, Mark R., to BP Chemicals Limited. Lubricating oils. 5,382,739, Cl. 585-530.000.

Atkinson, E. Earl, Jr.; Schaerfl, Robert A., Jr.; and Burt, Edward A., to Albemarle Corporation. Method for DMTDA production. 5,382,695, Cl. 564-440.000.

Atlantic Richfield Company: *See*—
Okonek, Leslie J.; and Wegner, John W., 5,381,815, Cl. 137-15.000.

Atlas Bolt & Screw Company: *See*—
Hiler, Allen J., 5,382,195, Cl. 470-9.000.

Atmel Corporation: *See*—
Pathak, Saroj; Rosendale, Glen A.; and Payne, James E., 5,383,193, Cl. 371-21.400.

ATR Auditory and Visual Perception Research Laboratories: *See*—
Uomori, Kenya; Yamada, Mitsuho; Hongo, Hitoshi; Yoshimatsu, Hiroshi; Ueno, Keiichi; Murakami, Shinji; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,382,989, Cl. 351-209.000.

Atsumi, Tetsuya: *See*—
Sasanuma, Nobuatsu; Fukushima, Hisashi; and Atsumi, Tetsuya, 5,383,055, Cl. 358-521.000.

Attanasio, Marco: *See*—
Pietrogrande, Stefano, deceased; Attanasio, Marco; Bisogni, Paolo; and Lomoro, Sandro, 5,381,634, Cl. 52-86.000.

Au, Anson: *See*—
Hegg, Ronald G.; Chern, Mao-Jin; and Au, Anson, 5,383,053, Cl. 359-486.000.

Audette, Charlene A.: *See*—
Bush, Christopher N.; Audette, Charlene A.; and Harvey, Michael A., 5,382,516, Cl. 435-41.000.

Audi AG: *See*—
Enning, Norbert; and Timm, Heinrich, 5,382,071, Cl. 296-203.000.

Ausimont S.p.A.: *See*—
Scarati, Mario A.; and Caporiccio, Gerardo, 5,382,614, Cl. 524-108.000.
Wlassics, Ivan; Alfieri, Mario; and Visentin, Walter, 5,382,337, Cl. 204-158.200.

Ausnit, Steven, to Minigrip, Inc. Reclosable plastic bag with oscillating grip strip. 5,382,094, Cl. 383-65.000.

Avanzino, Steven C.: *See*—
Sultan, Pervaiz; and Avanzino, Steven C., 5,382,547, Cl. 437-231.000.

Avon Products, Inc.: *See*—
Pahlck, Harold E.; Martin, Shari R.; and Squires, Michael E., 5,382,433, Cl. 424-401.000.

Ayala, Varin: *See*—
Magnotta, Vincent L.; Naddeo, Ronald C.; Ayala, Varin; Cirucci, John F.; and Fox, Virgil G., Jr., 5,382,322, Cl. 162-30.110.

Ayari, Susan: *See*—
Robillard, Christophe; Ayari, Susan; and Marcellin-Dibon, Eric, 5,382,790, Cl. 250-216.000.

Ayukai, Yasushiro: *See*—
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasushiro; Baba, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.

Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A.: *See*—
Spatafora, Mario; and Strazzari, Giulio, 5,381,884, Cl. 198-433.000.

Azuma, Youichiro; and Kitamura, Shigeyasu, to KEL Corporation. Stacking connector assembly of variable size. 5,382,168, Cl. 439-65.000.

B. F. Goodrich Company, The: *See*—
Holzheimer, John C., 5,382,007, Cl. 267-154.000.

Baba, Toshiharu: *See*—
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasushiro; Baba, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.

Babcock & Wilcox Company, The: *See*—
Chon, David N.; and Maynard, Andrew V., 5,381,972, Cl. 241-73.000.
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Chon, David N.; and Maynard, Andrew V., 5,381,976, Cl. 241-197.000.

Bacchi, Paul E.; Robalino, Manuel J.; and Filipski, Paul S., to Kensington Laboratories, Inc. Specimen carrier platform and scanning assembly. 5,382,806, Cl. 250-561.000.

Bacques, Jean-Yves: *See*—
Coalier, Guy; and Bacques, Jean-Yves, 5,381,948, Cl. 229-109.000.

Baghel, Sunita S.; and Haitko, Deborah A., to General Electric Company. Method for catalytic dechlorination of polychlorinated biphenyls. 5,382,736, Cl. 585-469.000.

Bahel, Vijay; Millet, Hank; Hickey, Mickey; Pham, Hung; and Herroon, Gregory P., to Copeland Corporation. Overcharge-undercharge diagnostic system for air conditioner controller. 5,381,669, Cl. 62-129.000.

Bahrmann, Helmut; Greb, Wolfgang; Heymanns, Peter; Lappe, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, to Hoechst Aktiengesellschaft. Decyl alcohol mixtures, phthalic obtainable therefrom, and their use as plasticizers. 5,382,716, Cl. 568-883.000.

Baigrie, Stephen; Chu, Edward F.; Park, George B.; Reddy, Vijay N.; Rinde, James A.; and Saltman, Robert P., to Raychem Corporation. Conductive polymer composition. 5,382,384, Cl. 252-511.000.

Bailey, John G. Load securing arrangement. 5,381,589, Cl. 24-129.00R.

Bailey, Kristy M.: *See*—
Furman, Gary S., Jr.; Kneller, James F.; Bailey, Kristy M.; Finck, Martha R.; and Su, Winston, 5,382,323, Cl. 162-111.000.

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Baird, Richard L.: *See*—
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Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacsony, Erno ; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

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Frank, Juergen; Rheude, Udo; Schulz, Bernhard; Paust, Joachim; and Hickmann, Eckhard, 5,382,732, Cl. 585-351.000.
Klein, Ulrich; Buschmann, Ernst; Keil, Michael; Goetz, Norbert; and Hartmann, Horst, 5,382,685, Cl. 564-301.000.
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Nita, Henry; and Mills, Timothy C., 5,382,228, Cl. 604-22.000.
Telang, Anil M., 5,382,244, Cl. 604-319.000.

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Krippl, Kurt; Ebeling, Wilfried; Fietz, Jurgen; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 5,382,603, Cl. 521-99.000.
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von Bonin, Wulf, 5,382,387, Cl. 252-602.000.

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Beery, Nicholas N.; and Piersak, David J. Backpack support apparatus. 5,381,936, Cl. 224-153.000.

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Beirle, Walter; and Konig, Ewald, to Waeschle Maschinenfabrik GmbH. Rotary feeder for granulated bulk material. 5,381,933, Cl. 222-368.000.

Bekiarian, Paul G.; Fagan, Paul J.; and Krusic, Paul J., to Du Pont de Nemours, E. I., and Company. Cyclofluoroalkylated fullerene compounds. 5,382,718, Cl. 570-129.000.

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Berlo, Marcelyn A.: *See*—
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Bianco, Eric L. Water/air mixing and dispensing devices. 5,381,957, Cl. 239-99.000.

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Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacxony, Erno; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

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Birk, Manfred; Engel, Gerhard; Rupp, Peter; and Wessel, Wolf, deceased (by Wessel, Christa, Wilfried Wessel Heirs), to Robert Bosch GmbH. System for controlling an internal combustion engine. 5,381,775, Cl. 123-679.000.

Bishop, David F.: *See*—
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Bishop, Gregory D.: *See*—
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Blaseck, Klaus: *See*—
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Blodgett & Blodgett, P.C.: *See*—
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Blonder, Greg E.; Degani, Yinon; and Dudderar, Thomas D., to AT&T Corp. Solder paste mixture. 5,382,300, Cl. 148-24.000.

Bluhm, Terry L.: *See*—
Ong, Beng S.; Bluhm, Terry L.; Hsiao, Cheng-Kuo; and Duff James M., 5,382,493, Cl. 430-135.000.

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BOC Group plc, The: *See*—
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Boecker, Monika: *See*—
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Boeddeker, David R.: *See*—
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Boehme, Christopher: *See*—
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Boeing Company, The: *See*—
Smith, Mark H.; Renzelmann, Michael E.; and Marx, Alan D., 5,381,986, Cl. 244-49.000.

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Bogner, James L.: *See*—
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Bonn, Joseph, to Thomas Jefferson University. Vascular access sheath for interventional devices. 5,382,230, Cl. 604-32.000.

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Masia, Michael; Reed, James P.; Wasley, Robert S.; Reeder, Larry R.; Brooks, Peter L.; Tolles, Thomas W.; Frank, Louis M.; Bonomi, Mauro; Stewart, Ray F.; Lahlough, John; and Welsh, Laurence, 5,382,909, Cl. 324-522.000.

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Borchardt, Robert L.; McGreevy, William T.; and Rodriguez, Efrain, to Recoton Corporation. Systems, methods and apparatus for transmitting radio frequency remote control signals. 5,383,044, Cl. 359-145.000.

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Grzesiak, Anthony J.; Fenoglio, Robert J.; and Slager, Douglas J., 5,381,876, Cl. 188-250.00H.

Borish, Edward T.: *See*—
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Weinberger, Scot R.; Egan, Robert W.; Hoppe, Thomas W.; Gassmann, Ernst; Schar, Martin M.; Bornsen, Klaus O.; and Tarantino, E. Rocco, 5,382,793, Cl. 250-288.000.

Bors, Hans: *See*—
Beckstein, Hellmut; and Bors, Hans, 5,382,894, Cl. 324-71.100.

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Bosy, Brian, to Intergraph Corporation. Vacuum drum for mounting media of different sizes. 5,383,001, Cl. 355-73.000.

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Bour, David P.: *See*—
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Bowen Tools, Inc.: *See*—
Berry, Joe R., 5,381,867, Cl. 175-85.000.

Bowser, John; and Dennison, John, to W. L. Gore & Associates, Inc. Process for removing alcohol from liquids. 5,382,364, Cl. 210-640.000.

Boy, Jurgen; and Hahndorff, Axel, to Siemens Aktiengesellschaft. Assembly for the discharge of electric overvoltages. 5,383,085, Cl. 361-119.000.

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Boylen, Wilford M. Septic system and method. 5,382,363, Cl. 210-605.000.

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Kronis, K. Anne; and Bozzato, Richard P., 5,382,638, Cl. 530-397.000.

BP Chemicals Limited: *See*—
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Braatz, Robert E.; Gregory, Raymond S.; Heaton, Robert A.; Whitaker, Keith; and Sampson, David C., to BOC Group plc, The. Fluid delivery system. 5,381,836, Cl. 141-21.000.

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Lindner, Christian; Uerdingen, Walter; Ott, Karl-Heinz; and Braese, hans-Eberhard, 5,382,625, Cl. 525-81.000.

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Doyelle, Pierre, 5,382,935, Cl. 335-288.000.

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Cook, Lee M.; Loncki, Scott B.; and Brancaleoni, Gregory, 5,382,272, Cl. 51-293.000.

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Brandt, Timothy B., to Parr Manufacturing, Inc. Plastic fuel filter with conductive coating for providing an evaporative barrier and for dissipating electrostatic charges. 5,382,359, Cl. 210-243.000.

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Braun, Hans: *See*—
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Braun, Max: *See*—
Pennetreau, Pascal; Janssens, Francine; Braun, Max; Eicher, Johannes; Rudolph, Werner; and Hausmann, Eckhard, 5,382,721, Cl. 570-166.000.

Bray, David A.; and Dixon, Robert, to Glasdon Group Limited. Refuse containers. 5,381,921, Cl. 220-404.000.

Breckenridge, Lloyd L.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; Kennedy, Clinton R.; and Kirker, Garry W., to Mobil Oil Corp. Combined paraffin isomerization/ring opening process. 5,382,730, Cl. 585-310.000.

Bremer, Edward C., to PSC Inc. False bar code inhibitor circuit. 5,382,783, Cl. 235-462.000.

Brendel, Joachim; Schonafinger, Karl; and Bohn, Helmut, to Cassella AG. Pyrimidofuroxans, their preparation and their use. 5,382,585, Cl. 514-253.000.

Breuer, Hans-Jurgen: *See*—
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Breunig, Timothy A.; Bogner, James L.; and Benson, Richard B., to Mega Manufacturing, Inc. Press for molding meat products during cooking. 5,381,725, Cl. 99-349.000.

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Bricmont, Francis H., 5,382,159, Cl. 432-124.000.

Bricmont, Francis H., to Bricmanage, Inc. Heating furnace system and method for producing hot rolled workpieces. 5,382,159, Cl. 432-124.000.

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Bright, John S.; Huszar, Gyula A.; and Spiers, Dean L., to Siemens Automotive L.P. Projection welded needle guide. 5,381,963, Cl. 239-533.200.

Brill, Klaus: *See*—
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Gylys, Jonas A.; Ruediger, Edward H.; Smith, David W.; Solomon, Carola; and Yevich, Joseph P., 5,382,592, Cl. 514-415.000.

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Jones, Brian A.; and Clarke, Derek W., 5,382,115, Cl. 405-226.000.

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Astbury, Christopher J.; Griffiths, David C.; Howard, Mark J.; and Reid, Ian A. B., 5,382,741, Cl. 585-652.000.

British Technology Group Ltd.: *See*—
Brown, Frank R.; and Billington, William P., 5,382,268, Cl. 47-1.010.
Culverhouse, David; Farahi, Faramarz; Jackson, David A.; Pannell, Christopher N.; and Tatam, Ralph P., 5,383,207, Cl. 372-28.000.
Payne, Peter A.; and Dewhurst, Richard J., 5,381,695, Cl. 73-643.000.

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Millar, Colin A; Hunt, Michael H.; and Brierley, Michael C., 5,383,197, Cl. 372-6.000.

Brokaw, Gary L. String instrument work table. 5,381,717, Cl. 84-327.000.

Brolund, Theodore F.; and Julian, Alfred J., to W. A. Whitney Co. Indexable marking tool for use with a punch press. 5,382,102, Cl. 400-134.000.

Brooke, Kenneth R.: *See*—
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Brooks, James R.: *See*—
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Brooks, Peter L.: *See*—
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Brose Fahrzeugteile GmbH & Co. KG: *See*—
Scheck, Georg; Meschkat, Reinhard; and Rampel, Hans, 5,382,076, Cl. 297-354.120.
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Brother Kogyo Kabushiki Kaisha: *See*—
Mochizuki, Isao, 5,382,762, Cl. 200-5.00A.
Sakuragi, Shoji; Ishida, Minako; and Nagase, Sachiyo, 5,382,100, Cl. 400-9.000.
Tsusaka, Shusaku, 5,383,009, Cl. 355-260.000.

Brotz, Gregory R. Method of art instruction. 5,382,233, Cl. 604-88.000.

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Sasaki, Lawrence H.; and Brown, Anthony K. D., 5,382,838, Cl. 327-108.000.

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Nguyen, Philip D.; Murphey, Joe R.; and Brown, David L., 5,381,864, Cl. 166-280.000.

Brown, Frank R.; and Billington, William P., to British Technology Group Ltd. Method and apparatus for use in micropropagation. 5,382,268, Cl. 47-1.010.

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Pike, Richard D.; Brown, Kurtis L.; Gwaltney, Sharon W.; Herschberger, Thomas A.; and Siegel, Scott D., 5,382,400, Cl. 264-168.000.

Browne, Richard P. Method of installing putting hole liner and collar. 5,382,018, Cl. 273-34.00R.

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O'Toole, James F.; Martz, William M.; Bruchu, Todd W.; and Beske, Scott R., 5,382,060, Cl. 292-46.000.

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Bruckner, Gunther: *See*—
Eberlein, Helmut; Bruckner, Gunther; and Schmidek, Reinhard, 5,382,771, Cl. 219-121.640.

Brun, Philippe, to Lucas Industries public limited company. Liquid and entrained air filter. 5,382,361, Cl. 210-436.000.

Brune, Paul W. Pivotable seat member for backpack frame. 5,381,941, Cl. 224-155.000.

Brunn, Randy J., to Red Devil Equipment Company. Mixing apparatus. 5,383,163, Cl. 366-217.000.

Bruno, Salvatore A.; and Swanson, Donald K., to Du Pont de Nemours, E. I., and Company. Luminescent materials prepared by coating luminescent compositions onto substrate particles. 5,382,452, Cl. 427-215.000.

Buchanan, Thomas D.: *See*—
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Buchwald, Warren G.: *See*—
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Buckland, Paul R.; and Latimer, Lee H., to Eastman Kodak Company. Nitroanilides and their preparation. 5,382,682, Cl. 564-184.000.

Buckley, Daniel T., to C.A. Lawton Corporation. Two-stage mat forming, preforming and molding apparatus. 5,382,148, Cl. 425-174.400.

Bucknall, Ruth E.: *See*—
Hills, Graham W.; and Bucknall, Ruth E., 5,382,316, Cl. 156-543.000.

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Pozzobon, Alessandro; Foscaro, Giancarlo; Marongiu, Gianpaola; Tacchetto, Maurizio; and Bugliesi, Luca, 5,381,613, Cl. 36-117.000.

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Miric, Zivko; Bui, Cuong; and Eynon, Stephen J., 5,381,813, Cl. 135-72.000.

Bullard, James R. Extendable and retractable laryngoscope. 5,381,787, Cl. 128-11.000.

Buller, Bruce W.: *See*—
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Burch, Robert R., Jr.: *See*—
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Burns, Lawrence M.; and Tso, Robert, to Hughes Aircraft Company. Digital integrated time of arrival detector. 5,382,848, Cl. 327-18.000.

Burrows, Fremond W., to Quinton Instrument Company. Spread spectrum telemetry of physiological signals. 5,381,798, Cl. 128-696.000.

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Bush, Christopher N.; Audette, Charlene A.; and Harvey, Michael A., to Schleicher & Schuell, Inc. Method and devices for delivery of substrate for the detection of enzyme-linked, membrane-based binding assays. 5,382,516, Cl. 435-41.000.

Busscher, Michael D.; and Anderson, Rick A., to Prince Corporation. Latch. 5,381,586, Cl. 16-297.000.

Butcher, Steven J.; Hobby, James D.; and Kings, David H. M., to Cookson Group PLC. Composite multilayer ceramic structure. 5,382,865, Cl. 310-366.000.

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Zumstein, Ernst, 5,382,772, Cl. 219-121.670.

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C.J. Associates, Ltd.: *See*—
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Canada, Her Majesty in right of, as represented by the Minister of Energy, Mines and Resoruces: *See*—
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Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See*—
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Canadian Liquid Air Ltd.,: *See*—
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Candiani, Ilaria; Cabri, Walter; Bedeschi, Angelo; and Zarini, Franco, to Farmitalia Carlo Erba S.r.l. Process for the preparation of ergoline derivatives. 5,382,669, Cl. 546-69.000.

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Fukuda, Tadaji; and Komatsu, Toshiyuki, 5,382,487, Cl. 430-57.000.
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Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 5,382,497, Cl. 430-269.000.
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Kobayashi, Masaki; Takahashi, Toshiaki; Nagura, Masato; and Hara, Kazuhiko, 5,381,693, Cl. 73-614.000.
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Carl, Stewart R.; Zarnowitz, Arthur H.; and Myers, Gary L., to Kensington Microware Limited. Computer physical security device. 5,381,685, Cl. 70-78.000.

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Hadank, John M.; McGuire, Kenneth J.; Meinhold, David R.; and Penick, Ron J., 5,381,874, Cl. 184-6.400.

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Chan, Carcy L. Methotrexate analogs and methods of using same. 5,382,582, Cl. 514-249.000.
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Chang, Jui Y., to Ciba-Geigy Corp. Aromatic acids. 5,382,659, Cl. 534-845.000.
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Nakayama, Minoru; Sawai, Toshiya; Hayakawa, Masaharu; Murata, Shizuo; and Abe, Yukino, 5,382,688, Cl. 564-322.000.
Onji, Yuichi; Ushioda, Makoto; Matsui, Shuichi; Kondo, Tomoyuki; and Goto, Yasuyuki, 5,382,379, Cl. 252-299.630.
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Kight, Peter J.; Johnson, Mark A.; Christenson, Tamara K.; Lach, Regina; Pointer, Philip; and Cook, Kenneth, 5,383,113, Cl. 364-401.000.
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Norden, Alexander R., 5,382,176, Cl. 439-357.000.
Straub, Stephen W., 5,381,773, Cl. 123-603.000.
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Bahel, Vijay; Millet, Hank; Hickey, Mickey; Pham, Hung; and Herroon, Gregory P., 5,381,669, Cl. 62-129.000.
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Pelouch, Wayne S.; Powers, Peter E.; and Tang, Chung L., 5,383,198, Cl. 372-18.000.
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Young, George H.; Cowfer, Joseph A.; and Johnston, Victor J., 5,382,726, Cl. 570-243.000.
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Shen, David W.; Howard, Robert A.; Riccomini, Robert A.; Young, Steven J.; Cox, Robert E. L.; Le Bars, Philippe; and Tsukinari, Keiichi, 5,382,182, Cl. 439-676.000.
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Hamm, Robert W.; Crandall, Kenneth R.; and Potter, James M., 5,382,914, Cl. 315-505.000.
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Stokes, Robert B.; Garber, Edward M.; Crawford, Jay D.; and Cushman, Drew, 5,382,930, Cl. 333-191.000.
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Orr, Douglas P.; Powelson, Gerald D.; and Crawford, Mark, 5,382,239, Cl. 604-177.000.
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Crouch, Alfred L.; and Pressly, Matthew D., to Motorola, Inc. Self re-seeding linear feedback shift register (LFSR) data processing system for generating a pseudo-random test bit stream and method of operation. 5,383,143, Cl. 364-717.000.
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Pardoen, Matthijs D.; and Gerrits, John F. M., 5,382,924, Cl. 332-100.000.
CTS Biocides Ltd.: *See*—
Hill, Martyn W.; and Sharman, Dennis F., 5,382,529, Cl. 436-109.000.
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Cummings, Richard; Gee, Lee J.; and Warren, John. Insulated pipe assembly and pipe support therefor. 5,381,833, Cl. 138-107.000.
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Rasmussen, James M., 5,382,191, Cl. 453-11.000.
Cummins Engine Company, Inc.: *See*—
Marthaler, Michael J., 5,381,770, Cl. 123-400.000.
Cummins, Ian G. Vehicle steering wheel anti-theft devices. 5,381,679, Cl. 70-209.000.
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Stokes, Robert B.; Garber, Edward M.; Crawford, Jay D.; and Cushman, Drew, 5,382,930, Cl. 333-191.000.
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D & D Gaming Patents, Inc.: *See*—
Sklansky, David B.; and Jones, Daniel A., 5,382,025, Cl. 273-292.000.
Da Costa, Olavo N.: *See*—
Kadooka, Humberto T.; Moreno, Ricardo P.; and Da Costa, Olavo N., 5,382,622, Cl. 524-496.000.
Dagan, Gideon B. Encapsulation closure for cables. 5,382,756, Cl. 174-92.000.
Dahl, Jurgen, to Herberts Gesellschaft mit beschrankter Haftung. Device for securing the lid of a can, in particular, a can of paint. 5,381,918, Cl. 220-256.000.
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Fanning, Alan W.; Olich, Eugene E.; and Dahl, Leslie R., 5,382,860, Cl. 310-216.000.
Daicel Chemical Industries, Ltd.: *See*—
Kuwana, Akihiro; Honda, Kimihide; and Koga, Kunio, 5,382,676, Cl. 549-541.000.
Daido Metal Company Ltd.: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Kato, Tohru; and Sato, Yoshiaki, 5,382,144, Cl. 418-55.300.
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Tahara, Masaaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, 5,382,318, Cl. 156-656.000.
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Takano, Tsunesuke; and Sinzawa, Kouichi, 5,382,767, Cl. 200-531.000.
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Ikawa, Tsuneo; Morikawa, Yutaka; and Ueda, Wataru, 5,382,720, Cl. 570-153.000.
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Damron, Matthew. Chimney flashing system. 5,381,632, Cl. 52-58.000.
Dana Corporation: *See*—
Christensen, Norman B., 5,381,822, Cl. 137-460.000.
D'Andrade, Bruce M.; and Johnson, Lonnie G. Pressurized toy rocket with rapid action release mechanism. 5,381,778, Cl. 124-69.000.
Danieli & C. Officine Meccanicue SpA.: *See*—
Bergman, Kjell; Lundstrom, Kenneth; Granstrom, Staffan; Gianni, Gensini; and Coassin, Giovanni, 5,383,218, Cl. 373-107.000.
Dansereau, Robert E.; and Hutchinson, Joseph A., to Health Research, Inc. Radon collector and bubbler. 5,381,699, Cl. 73-864.010.
Danter, Laurence K.; Herzog, Armin; and Wilmes, Manfred, to Weidmuller Interface GmbH & Co. Insulation stripping apparatus. 5,381,601, Cl. 30-90.100.
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Daugherty, Charles W. Self contained needle and shield. 5,382,237, Cl. 604-164.000.
Daute, Peter; Gruetzmacher, Roland; Hoefer, Rainer; and Stoll, Gerhard, to Henkel Kommanditgesellschaft auf Aktien. Polyurethane-based friable sealing compound. 5,382,647, Cl. 528-73.000.
Davenport, Bruce; and McArthur, James A., to Med°Ex Diagnostics of Canada, Inc. Constant force load for an exercising apparatus. 5,382,212, Cl. 482-123.000.
David R. Webb Co., Inc.: *See*—
Weil, George, 5,381,841, Cl. 144-209.00B.
Davidsen, Steven K.: *See*—
Summers, James B.; Sheppard, George S.; Phillips, James G.; Pireh, Daisy; Steinman, Douglas H.; May, Paul D.; Guinn, Denise E.; Heyman, H. Robin; Carrera, George M., Jr.; and Davidsen, Steven K., 5,382,670, Cl. 546-273.000.
Davidson Textron: *See*—
Gajewski, Gerry, 5,382,047, Cl. 280-728.00B.
Davis, D. Darryl; and Anderson, Marlin H., Jr. Agricultural chemical applicator. 5,381,624, Cl. 47-1.700.
Davis, James L.: *See*—
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Williams, Melanie; and Davis, James L., 5,383,089, Cl. 361-502.000.
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Coran, Aubert Y.; Tremont, Samuel J.; Davis, Leonard H.; Ignatz-Hoover, Frederick; and McGrath, Martin P., 5,382,629, Cl. 525-194.000.
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Dayco Products, Inc.: *See*—
Wilson, Samuel L., 5,382,059, Cl. 285-256.000.
Deak, Gyorgy: *See*—
Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacxony, Erno ; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.
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DeBruzzi, Michael S.: *See*—
Huang, Hao; DeBruzzi, Michael S.; and Riso, Thomas A., 5,382,859, Cl. 310-216.000.
Debussche, Patrick; and Fisch, Thomas, to Cegelac. Data input module for inputting data by means of electrical contact for a monitoring-/control installation. 5,382,907, Cl. 324-418.000.
Decao, Marco; Pianciola, Aurelio; and Tambosso, Tiziana, to Sirtl S.p.A. Method for fusion-forming an optical signal attenuator. 5,382,275, Cl. 65-407.000.
Deckard, Carl R.: *See*—
Bourell, David L.; Marcus, Harris L.; Barlow, Joel W.; Beaman, Joseph J.; and Deckard, Carl R., 5,382,308, Cl. 156-62.200.
Dedicated Electronics: *See*—
Glynn, Dennis P.; Joseph, John C.; and Perkins, Thomas O., 5,381,694, Cl. 73-627.000.
Deere & Company: *See*—
Seegert, Brian D.; Sebben, Daniel A.; and Teal, Richard D., 5,381,648, Cl. 56-17.100.
Degani, Yinon: *See*—
Blonder, Greg E.; Degani, Yinon; and Dudderar, Thomas D., 5,382,300, Cl. 148-24.000.
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Vion, Patrick, 5,382,369, Cl. 210-726.000.
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Muller, Karl-Hans; and Barthel, Walter, 5,382,348, Cl. 208-22.000.
de Haan, Pieter; and Deurloo, M., to Akzo N.V. Low steroid dose dry pharmaceutical preparaiton. 5,382,434, Cl. 424-465.000.
Dehnel, Kris P., to Compaq Computer Corporation. Maximum power regulated battery charger. 5,382,893, Cl. 320-32.000.
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DeLaRama, Alan; Dial, Larry A.; Harp, Richard J.; Hursman, Thomas L.; Soria, Alfred S.; Serra, R. J.; and Tarpening, Steve, to Spectrum Medsystems Corporation. Bi-directional and multi-directional miniscopes. 5,381,782, Cl. 128-4.000.
Del Bianco, Alberto; and Stroppa, Fabrizio, to AGIP S.p.A.; and Enericerche S.p.A. Effective hydrocarbon blend for removing asphaltenes. 5,382,728, Cl. 585-24.000.
del Castillo, Javier B. Protective instrument for suturing. 5,382,256, Cl. 606-148.000.
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Hall, Gregory L., 5,381,599, Cl. 29-856.000.
Deleryd, Roland; and Stahl, Gunnar, to ABB Atom AB. Method of carrying out leak detection of nuclear fuel assemblies. 5,383,226, Cl. 376-253.000.
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Estes, Howard S., 5,383,094, Cl. 361-773.000.
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Del Rossi, Kenneth J.: *See*—
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Delrosso, Giovanni; Vanoli, Stefano; and Armiraglio, Massimo, to Pirelli Cavi S.p.A. Compact-size optical amplifier. 5,383,051, Cl. 359-341.000.
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Deluxe Corporation: *See*—
Pennaz, Thomas J., 5,382,282, Cl. 106-20.00R.
Del Zotto, William M. Concrete hole former. 5,381,995, Cl. 249-35.000.
Demangeon, Francis: *See*—
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Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacxony, Erno ; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.
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Deptowicz, Donald L.: *See*—
Moore, Robert P.; and Deptowicz, Donald L., 5,382,133, Cl. 415-115.000.
DePue, Patricia: *See*—
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Derez, Frank G. H.; and Vandervondelen, Patrick L. J., to Cerestar Holding B.V. Process for the production of an alkali metal citrate. 5,382,681, Cl. 562-580.000.
Desai, Kantilal B.: *See*—
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Desu, Seshu B.; and Pan, Wei, to CERAM Incorporated; Sharp Kabushiki Kaisha; and Virginia Polytechnic Institute and State University. Reactive ion etching of lead zirconate titanate and ruthenium oxide thin films using $CHClFCF_3$ or $CHCl_2CF_3$ as an etch gas. 5,382,320, Cl. 156-667.000.
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Martus, Charles R.; and Detweiler, Charles A., 5,382,763, Cl. 200-61.620.
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Deutsch, Edward A.: *See*—
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Devore, David I.: *See*—
Fischer, Stephen A.; Clungeon, Nancy S.; and Devore, David I., 5,382,324, Cl. 162-168.200.
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Boualam, Mohammad; Gielen, Marcel; El Khloufi, Abdelaziz; De Vos, Dirk; and Willem, Rudolph, 5,382,597, Cl. 514-493.000.
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Dewhurst, Richard J.: *See*—
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Dewille, Normanella T.: *See*—
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D'Hooge, Richard, to Architectural Builders Hardware Mfg. Inc. Door holder/door stop. 5,381,628, Cl. 49-394.000.

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DeLaRama, Alan; Dial, Larry A.; Harp, Richard J.; Hursman, Thomas L.; Soria, Alfred S.; Serra, R. J.; and Tarpening, Steve, 5,381,782, Cl. 128-4.000.

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Diaz, Arthur F.; Guay, Jean M.; and Nguyen, My T., to International Business Machines Corporation. Toner composition. 5,382,491, Cl. 430-110.000.

DiBartolo, Ernest A., to San Hydraulics. Hydraulic pressure control valve. 5,381,823, Cl. 137-494.000.

Di Bernardo, Pietro, to Interdibipack S.p.A. Machine for packaging with single-folded heat-shrinkable film, provided with a device for automatically opening the film. 5,381,644, Cl. 53-557.000.

Diefenbach, Berndt, to Big-Spielwarenfabrik. Child's highchair. 5,382,072, Cl. 297-1.000.

Dieguez, Jose M.; and Lee, Robert G. H., to Canadian Liquid Air Ltd.; and Air Liquide Canada Ltee. Method and apparatus for formation and delivery of insect attractant based on carbon dioxide. 5,382,422, Cl. 424-45.000.

Diehr, Hans-Joachim, to Bayer Aktiengesellschaft. Process for the preparation of 2-chloro-5-alkylaminomethyl-pyridines. 5,382,671, Cl. 546-329.000.

DiForte, Mario P., Jr. Personal flotation device in the form of an inflatable belt. 5,382,184, Cl. 441-108.000.

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DiNinno, Frank: *See*—
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Disney, Robin E. L., to R. & R. Trench Equipment Limited. Rotary rockwheel assemblies. 5,381,616, Cl. 37-94.000.

Diver, David R.; Kinder, Mark R.; and Zanetis, Charles C., to Alitec Corporation. Milling drum with internal drive motor. 5,382,084, Cl. 299-39.000.

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Bray, David A.; and Dixon, Robert, 5,381,921, Cl. 220-404.000.

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Stepto, Robert F. T.; Tomka, Ivan; Dobler, Beat; and Pyrah, Keith, 5,382,611, Cl. 524-47.000.

Dobner, Alfred: *See*—
Bilz, Georg; Lammermann, Hans; Dobner, Alfred; Sterner, Klaus; and Riess, Klaus, 5,381,851, Cl. 164-119.000.

Doerner Products Ltd.: *See*—
Stumpf, William S.; Patton, Art A.; and Helmond, Gerard G., 5,382,077, Cl. 297-353.000.

Doherty, Annette M.: *See*—
Cody, Wayne L.; DePue, Patricia; Doherty, Annette M.; He, John X.; and Taylor, Michael D., 5,382,569, Cl. 514-17.000.

Doi, Atsuhiro, to Fuji Photo Film Co., Ltd. Exposure head for image recording apparatus. 5,382,966, Cl. 346-107.00R.

Don De Cristo Concrete Accessories, Inc.: *See*—
Kassardjian, Vasken; and Wilson, Patrick J., 5,381,636, Cl. 52-301.000.

Donnerdal, Ove: *See*—
Nilsson, Dan; and Donnerdal, Ove, 5,381,723, Cl. 91-437.000.

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Freundner, Hasso; and Grabowski, Walter, deceased, 5,383,090, Cl. 361-624.000.

Dormandy, Ray H., Jr.; and Berlo, Marcelyn A., to Interventional Therapeutics Corp. Embolization device and apparatus including an introducer cartridge and method for delivering the same. 5,382,260, Cl. 606-151.000.

Dorra, Erich: *See*—
Colignon, Dietmar; Dorra, Erich; Panthel, Guenter; Schmidt, Wolfgang; and Wrede, Norbert, 5,382,677, Cl. 554-98.000.

Dostalek, Roman: *See*—
Pinkos, Rolf; Fischer, Rolf; and Dostalek, Roman, 5,382,740, Cl. 385-640.000.

Dow Chemical Company, The: *See*—
Durvasula, V. Rao; Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,382,693, Cl. 564-430.000.
Walters, Marlin E.; Richey, W. Frank; and Tasset, Emmett L., 5,382,710, Cl. 568-720.000.

Dowbrands L.P.: *See*—
Smith, Terry B., 5,381,978, Cl. 242-520.000.

Dowd, Tracy J. Liquid disburser device. 5,381,839, Cl. 141-242.000.

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Little, Jack C.; Kidisti, Mariam G.; Thibos, Patricia A.; and Thompson, Susan D., 5,382,674, Cl. 548-263.800.

Downey, Stephen W.; Emerson, Adrian B.; Mujsce, Anthony M.; Muller, Amy J.; Reents, William D., Jr.; Sinclair, James D.; and Swanson, Alka, to AT&T Corp. Laser induced mass spectrometry. 5,382,794, Cl. 250-288.000.

Doyelle, Pierre, to Braillon Magnetique. Permanent-magnet grab. 5,382,935, Cl. 335-288.000.

Draxlmaier, Fritz, Jr., to Eldra-Kunststofftechnik GmbH. Method of fabricating an interior furnishing part with decorative or attachment seam. 5,382,398, Cl. 264-46.500.

Dreifus, David L.; and Ruggles, Gary A., to Kobe Steel, USA Inc. Metal boride ohmic contact on diamond and method for making same. 5,382,808, Cl. 257-77.000.

Dreifus, David L., to Kobe Development Corporation. Diamond and II-VI heterojunction semiconductor light emitting device. 5,382,812, Cl. 257-94.000.

Drespa, Gerd; and Rittscher, Heinz-Gunter. Installation for processing waste oil. 5,382,328, Cl. 202-235.000.

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Jenson, Dale A.; and Eltomi, Sam F., 5,382,520, Cl. 436-55.000.

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Kopel, Shimon; and Drori, Gideon, 5,382,213, Cl. 483-7.000.

Drozdenko, Ronald: *See*—
Weinstein, Sidney; Weinstein, Curt; and Drozdenko, Ronald, 5,381,806, Cl. 128-744.000.

Drube, John V.: *See*—
Hennessy, Joseph J.; Drube, John V.; and Goad, Eugine W., 5,381,729, Cl. 99-483.000.

D'Silva, Arthur P., to CETAC Technologies Inc. Compact photoinization systems. 5,382,804, Cl. 250-493.100.

DSP Holdings Ltd.: *See*—
Tyren, Carl, 5,382,863, Cl. 310-328.000.

Ducharme, Leon N., to U.S. Tsubaki, Inc. Large bearing area roller chain. 5,382,199, Cl. 474-210.000.

Dudderar, Thomas D.: *See*—
Blonder, Greg E.; Degani, Yinon; and Dudderar, Thomas D., 5,382,300, Cl. 148-24.000.

Dueber, Ernst O.: *See*—
Stanssens, Dirk; and Dueber, Ernst O., 5,382,616, Cl. 524-394.000.

Duehlmeyer, Wolfgang: *See*—
Wietelmann, Juergen; Rueping, Thomas; Mueller, Norbert; and Duehlmeyer, Wolfgang, 5,383,086, Cl. 361-152.000.

Duff James M.: *See*—
Ong, Beng S.; Bluhm, Terry L.; Hsiao, Cheng-Kuo; and Duff James M., 5,382,493, Cl. 430-135.000.

Duffy, Robert D.; and Combs, George. Flexible slabstock polyurethane foam formulation for a rapid-cool process. 5,382,602, Cl. 521-55.000.

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Gerdes, Raymond J.; and Dufon, Dennis L., 5,382,010, Cl. 269-41.000.

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Moret de Rocheprise, Bernard; Serge, Tisserand; and Dugand, Pascal, 5,382,399, Cl. 264-127.000.

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Dumser, Josef; and Kolaska, Karl H., 5,381,902, Cl. 206-523.000.

Dunbar, Lawrence W.: *See*—
Orlando, Robert J.; and Dunbar, Lawrence W., 5,381,655, Cl. 60-226.300.

Duncan Industries Parking Control Systems Corp.: *See*—
Carmen, Ralph H., 5,382,780, Cl. 235-384.000.

Dunlap, Paul V.; and Callahan, Sean M., to Woods Hole Oceanographic Institution. Periplasmic 3':5'-cyclic nucleotide phosphodiesterase and related methods for producing and using the same. 5,382,519, Cl. 435-69.100.

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Bekiarian, Paul G.; Fagan, Paul J.; and Krusic, Paul J., 5,382,718, Cl. 570-129.000.
Bruno, Salvatore A.; and Swanson, Donald K., 5,382,452, Cl. 427-215.000.
Casalnuovo, Albert L.; and Foo, Thomas, 5,382,697, Cl. 568-1.000.
Fagan, Paul J., 5,382,719, Cl. 570-144.000.
Howard, Edward G., Jr., 5,382,643, Cl. 526-352.000.
Kasowski, Robert V.; and Burch, Robert R., Jr., 5,382,650, Cl. 528-277.000.
Kelly, William E., Jr.; and Baird, Richard L., 5,382,617, Cl. 524-405.000.
Krespan, Carl G.; and Rao, V. N. Mallikarjuna, 5,382,704, Cl. 568-683.000.

Romanauskas, William A.; and Sheeran, Edward T., Jr., 5,382,220, Cl. 494-85.000.
Sikora, Robert J.; Gam, Allisa; and Chung, Ding Y., 5,382,607, Cl. 523-415.000.

Dupont, Michel: *See*—
Granger, Michel; Dupont, Michel; and Ledon, Henry, 5,382,571, Cl. 514-58.000.

Duprez, Wayne R., to Standard-Thomson Corporation. Fail-safe thermostat. 5,381,952, Cl. 236-34.500.

Duracraft Corporation: *See*—
Wang, Jui-Shang, 5,382,136, Cl. 416-247.00R.

Durakon Industries, Inc.: *See*—
Wright, David W., 5,381,940, Cl. 224-42.420.

Durr, Walter; and Kirsch, Axel. Screw unit. 5,382,125, Cl. 411-396.000.

Durual, Pierre; and Lantz, Andre , to Elf Atochem S.A. Synthesis of hydrogen perfluoroalkanes. 5,382,723, Cl. 570-176.000.

Durvasula, V. Rao; Hefner, Robert E., Jr.; and Earls, Jimmy D., to Dow Chemical Company, The. Bis(aminophenoxy)-alpha-substituted stilbenes. 5,382,693, Cl. 564-430.000.

Dutcher, Dale E., to Gay Engineering & Sales Co., Inc. Removable temperature measuring device. 5,382,093, Cl. 374-208.000.

Dwivedi, Ratnesh K., to Lanxide Technology Company, LP. Method of making ceramic composite articles and articles made thereby. 5,382,458, Cl. 428-34.400.

Dyconex AG: *See*—
Schmidt, Walter; and Martinelli, Marco, 5,382,505, Cl. 430-313.000.

Dyer, David J.: *See*—
Paxton, Donald J.; and Dyer, David J., 5,382,048, Cl. 280-728.00R.

E.C.R.-Electro-Chemical Research Ltd.: *See*—
Fleischer, Niles A., 5,382,481, Cl. 429-192.000.

E. H. Wachs Company, The: *See*—
Arnemann, Scott; and Ferrar, Scott, 5,381,996, Cl. 251-59.000.

E.J. Brooks Company: *See*—
Swift, Allan W.; and Ruth, Donald A., 5,382,061, Cl. 292-311.000.

E-Systems, Inc.: *See*—
Ferro, John F., 5,381,596, Cl. 29-600.000.
Kunkel, Scott H., 5,382,175, Cl. 439-327.000.

Earls, Jimmy D.: *See*—
Durvasula, V. Rao; Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,382,693, Cl. 564-430.000.

Earp, Joan M.: *See*—
McPhee, Steven J.; and Earp, Joan M., 5,382,042, Cl. 280-477.000.

Eastman Chemical Company: *See*—
Beavers, William A., 5,382,700, Cl. 568-463.000.
Godfrey, Darryl A., 5,382,615, Cl. 524-271.000.
Stewart, Jennifer L.; and Bell, Emily T., 5,382,628, Cl. 525-174.000.

Eastman Kodak Company: *See*—
Buckland, Paul R.; and Latimer, Lee H., 5,382,682, Cl. 564-184.000.
Conroy, James E.; Ruschak, Kenneth J.; and Devine, William D., 5,382,292, Cl. 118-324.000.
Glover, Edward C. T. S.; and Marsden, Peter D., 5,382,995, Cl. 354-331.000.
Hibbard, Robert H., 5,382,976, Cl. 348-273.000.
Janson, Wilbert F., Jr., 5,382,167, Cl. 439-38.000.
Keelan, Brian W.; Niklewicz, Robert; Libby, Diane P.; and Nelson, John V., 5,382,499, Cl. 430-503.000.
Lau, Philip T. S.; Thompson, Danny R.; and Cowan, Stanley W., 5,382,502, Cl. 430-552.000.
O'Brien, Michael J.; and Smith, William B., 5,383,168, Cl. 369-44.140.
Ozimek, Edward J.; and Tarn, Terry, 5,382,310, Cl. 156-275.500.

Eatherly, Pauline. Simulated dough tossing game. 5,382,027, Cl. 273-317.000.

Eaton, Eric T.: *See*—
Mock, Von A.; and Eaton, Eric T., 5,382,949, Cl. 340-825.440.

EB Bruhl Aluminiumtechnik GmbH: *See*—
Schilling, Herbert, 5,381,852, Cl. 164-137.000.

Ebara Corporation: *See*—
Omori, Toshiaki; Nishiyama, Noriyuki; and Inoue, Naoyuki, 5,381,674, Cl. 62-497.000.

Ebeling, Wilfried: *See*—
Krippl, Kurt; Ebeling, Wilfried; Fietz, Jurgen; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 5,382,603, Cl. 521-99.000.

Eberhardt, Noel H., to Indala Corporation. Hand-held dual technology identification tag reading head. 5,382,784, Cl. 235-472.000.

Eberle, Ronald D., to Trail-Buster Dozer, Inc. ATV mower articulating hitch. 5,381,647, Cl. 56-15.800.

Eberlein, Helmut; Bruckner, Gunther; and Schmidek, Reinhard, to Mero-Raumstruktur Gmbh & Co. Method for manufacturing galvanized bar segments, in particular for latticeworks or three-dimensional frameworks. 5,382,771, Cl. 219-121.640.

Ecanow, Bernard, to Hunter Research Corporation. Frozen liquified gas composition and method for oral administration of drugs, biologicals, nutrients and foodstuffs. 5,382,437, Cl. 424-499.000.

ECC International Ltd.: *See*—
Jones, Thomas R.; Phillips, Reginald L.; and Falcon-Steward, Hugh R., 5,382,370, Cl. 210-781.000.

Echlin Inc.: *See*—
Ethen, Richard M.; and Connelly, Timothy P., 5,381,662, Cl. 60-584.000.

Eckler, Brent L. Rimmed vessel suspension device. 5,381,993, Cl. 248-312.100.

Ecogen Inc.: *See*—
Donovan, William P.; Rupar, Mark J.; Slaney, Annette C.; and Johnson, Timothy B., 5,382,429, Cl. 424-93.461.

ECP Enichem Polimeri S.r.l.: *See*—
Masi, Francesco; Invernizzi, Renzo; Moalli, Angelo; Ferrero, Cesare; Menconi, Francesco; and Barazzoni, Lia, 5,382,557, Cl. 502-107.000.

Edgar, Gregory A.; Klingberg, Jeff; and Ruppel, John, to Motorola, Inc. Simplified method of attenuation of logarithmically coded digital signals. 5,383,202, Cl. 371-30.000.

Edwards, Doreen: *See*—
Lowrance, Kenneth F., II; Knorr, Eric C.; Goldberger, William M.; Boss, Daniel; and Edwards, Doreen, 5,382,405, Cl. 505-125.000.

Eerdmans, Donald. Paddle boat. 5,381,752, Cl. 114-270.000.

EESA Electroplating Engineers S.A.: *See*—
Zwerner, Eric, 5,382,343, Cl. 204-224.00R.

Egan, Robert W.: *See*—
Weinberger, Scot R.; Egan, Robert W.; Hoppe, Thomas W.; Gassmann, Ernst; Schar, Martin M.; Bornsen, Klaus O.; and Tarantino, E. Rocco, 5,382,793, Cl. 250-288.000.

Eguchi, Kazuhiro; and Imabayashi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Image processing system. 5,383,032, Cl. 358-448.000.

Ehrhardt, Gary J.; Wolfangel, Robert G.; and Deutsch, Edward A., to University of Missouri, Curators of; and Mallinckrodt Medical, Inc. Process for the preparation of rhenium-188 and technetium-99m generators. 5,382,388, Cl. 252-635.000.

Eicher, Johannes: *See*—
Pennetreau, Pascal; Janssens, Francine; Braun, Max; Eicher, Johannes; Rudolph, Werner; and Hausmann, Eckhard, 5,382,721, Cl. 570-166.000.

Eicken, Ulrich; Mathis, Raymond; Fiedler, Heidi; and Gorzinski, Manfred, to Henkel Kommanditgesellschaft auf Aktien. Spinning preparations in the form of aqueous emulsions or aqueous solutions containing polymers. 5,382,372, Cl. 252-8.600.

Eisai Co., Ltd.: *See*—
Minami, Norio; Ozaki, Fumihiro; Ishibashi, Keiji; Kabesawa, Yasuhiro; Ikemori, Megumi; Ogawa, Toshiaki; and Kawamura, Takanori, 5,382,595, Cl. 514-450.000.
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Eisenbacher, Egon; Pawellek, Franz; and Arnold, Bernhard, to Elasis Sistema Ricerca Fiat Nel Mezzogiorno. Radial-piston pump. 5,382,140, Cl. 417-273.000.

EKC Technology, Inc.: *See*—
Lee, Wai M., 5,381,807, Cl. 134-2.000.

Elasis Sistema Ricerca Fiat Nel Mezzogiorno: *See*—
Eisenbacher, Egon; Pawellek, Franz; and Arnold, Bernhard, 5,382,140, Cl. 417-273.000.
Ricco, Mario, 5,381,999, Cl. 251-129.160.

Elastomer Specialties, Inc.: *See*—
Emmons, Orlin W., 5,381,887, Cl. 198-830.000.

Eldra-Kunststofftechnik GmbH: *See*—
Draxlmaier, Fritz, Jr., 5,382,398, Cl. 264-46.500.

Electronic Instrumentation and Technology, Inc.: *See*—
May, Joe T., 5,382,799, Cl. 250-372.000.

Elektrotechnische Fabrik GmbH & Co.: *See*—
Hofmann, Dieter; and Kalkus, Berthold, 5,382,171, Cl. 439-142.000.

Elf Atochem S.A.: *See*—
Clair, Rene , 5,382,413, Cl. 422-168.000.
Durual, Pierre; and Lantz, Andre , 5,382,723, Cl. 570-176.000.

Elf France: *See*—
Chaverot, Pierre; and Demangeon, Francis, 5,382,612, Cl. 524-60.000.

El-Hamamsy, Sayed-Amr A.: *See*—
Secen, Michael M.; Thomas, Edward J.; and El-Hamamsy, Sayed-Amr A., 5,382,878, Cl. 315-248.000.

Eli Lilly and Company: *See*—
Barnett, Charles J.; and Wilson, Thomas M., 5,382,668, Cl. 544-280.000.
Solenberg, Patricia J., 5,382,527, Cl. 435-320.100.

Elizabeth Arden Company, Division of Conopco, Inc.: *See*—
McCook, John P.; Meyers, Alan J.; and Vargas, Anthony, 5,382,432, Cl. 424-401.000.

El Khloufi, Abdelaziz: *See*—
Boualam, Mohammad; Gielen, Marcel; El Khloufi, Abdelaziz; De Vos, Dirk; and Willem, Rudolph, 5,382,597, Cl. 514-493.000.

Ellegaard, Oyvind. Method and a system for producing block bodies from loose material such as sphagnum. 5,382,403, Cl. 264-511.000.

Elliott, Charles T.: *See*—
Ashley, Timothy; Elliott, Charles T.; and Whitehouse, Colin R., 5,382,814, Cl. 257-197.000.

Elliott, Jason M.: *See*—
Baldwin, John J.; Claremon, David A.; and Elliott, Jason M., 5,382,587, Cl. 514-278.000.

Ellis, Paul E., Jr.; and Lyons, James E., to Sun Company, Inc. (R&M). Cyano- and polycyanometallo-porphyrins as catalysts for alkane oxidation. 5,382,662, Cl. 540-145.000.

Elmer, John W.; Teruya, Alan T.; and O'Brien, Dennis W., to University of California, Regents of the. System for tomographic determination of the power distribution in electron beams. 5,382,895, Cl. 324-71.300.

El-Sayed, Lyla M.; Lane, Gregg A.; and Pearlstine, Kathryn A., to Xerox Corporation. Quaternary ammonium compound as charge adjuvants for positive electrostatic liquid developers. 5,382,492, Cl. 430-115.000.

Elson, Clive M.: *See—*
Fanning, Bryce L.; Curran, Dennis T.; and Elson, Clive M., 5,382,286, Cl. 106-162.000.

Eltomi, Sam F.: *See—*
Jenson, Dale A.; and Eltomi, Sam F., 5,382,520, Cl. 436-55.000.

Emelianov, Igor I.: *See—*
Pak, Song C.; Goltcov, Vladimir V.; Krysaov, Alexander Y.; Emelianov, Igor I.; Emelianov, Igor P.; and Kotekin, Evgeny E., 5,381,797, Cl. 128-687.000.

Emelianov, Igor P.: *See—*
Pak, Song C.; Goltcov, Vladimir V.; Krysaov, Alexander Y.; Emelianov, Igor I.; Emelianov, Igor P.; and Kotekin, Evgeny E., 5,381,797, Cl. 128-687.000.

Emerson, Adrian B.: *See—*
Downey, Stephen W.; Emerson, Adrian B.; Mujsce, Anthony M.; Muller, Amy J.; Reents, William D., Jr.; Sinclair, James D.; and Swanson, Alka, 5,382,794, Cl. 250-288.000.

Emerson Electric Co.: *See—*
Sherman, Jeffrey, 5,382,766, Cl. 200-296.000.

Eminger, Michael F. Sublimation transfer apparatus. 5,382,313, Cl. 156-583.100.

Emitec Gesellschaft fuer Emissions-technologie mbh: *See—*
Bruck, Rolf; and Breuer, Hans-Jurgen, 5,382,774, Cl. 219-553.000.

Emmons, Orlin W., to Elastomer Specialties, Inc. Conveyor systems and high durability rollers therefor. 5,381,887, Cl. 198-830.000.

Emmons, William D.; and Gross, Andrew W., to Rohm and Haas Company. Polymers containing latent thiol monomers. 5,382,640, Cl. 526-266.000.

Emoto, Katsuya: *See—*
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, 5,382,652, Cl. 528-308.600.

Encon Safety Products: *See—*
Tanner, Stephen F.; and Bollas, Christopher J., 5,381,567, Cl. 4-630.000.

Endo, Tunehiro: *See—*
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

Endoh, Masakatsu, to Seiko Epson Corporation. Raster image serial printer having variable buffer memory and method for operating same. 5,382,968, Cl. 346-153.100.

Eneim, Arthur A.: *See—*
Kunimoto, Wallace Y.; and Eneim, Arthur A., 5,382,797, Cl. 250-352.000.

Engel, Gerhard: *See—*
Birk, Manfred; Engel, Gerhard; Rupp, Peter; and Wessel, Wolf, deceased, 5,381,775, Cl. 123-679.000.

Engelstad, Barry L.: *See—*
White, David L.; Engelstad, Barry L.; and Muetterties, Kurt, 5,382,421, Cl. 424-9.000.

Esiricerche S.p.A.: *See—*
Carugati, Angelo; Del Piero, Gastone; and Rausa, Riccardo, 5,382,559, Cl. 502-427.000.
Del Bianco, Alberto; and Stroppa, Fabrizio, 5,382,728, Cl. 585-24.000.
Mezzedimi, Vasco; Bonciani, Luciano; Ceccherini, Gianni; and Modi, Roberto, 5,381,652, Cl. 60-39.230.

Enning, Norbert; and Timm, Heinrich, to Audi AG. Motor vehicle with a central pillar constituted by an extruded section. 5,382,071, Cl. 296-203.000.

Enomoto, Keiji, to Sony Corporation. Television receiver with multiple inputs and outputs for automatically switching between inputs. 5,382,982, Cl. 348-706.000.

Enomoto, Masahiro, to Fuji Photo Film Co., Ltd. Light shielding container for photo-sensitive material. 5,381,980, Cl. 242-348.400.

Envirocube, Inc.: *See—*
Warda, Thomas S.; and Karnowka, Bernard J., 5,382,325, Cl. 162-218.000.

Epperson, Billy G., Jr.: *See—*
Linton, Paul; Shepherd, Richard C.; Fisk, Brian K.; and Epperson, Billy G., Jr., 5,381,742, Cl. 110-238.000.

Erickson, James R., to Shell Oil Company. Crosslinked epoxy functionalized polydiene block polymers and adhesives. 5,382,604, Cl. 522-158.000.

Erickson, Jason C.: *See—*
Vardakas, George M.; and Erickson, Jason C., 5,383,187, Cl. 370-94.300.

Erickson, Robert W.: *See—*
Maksimovic, Dragan; and Erickson, Robert W., 5,383,109, Cl. 323-222.000.

Escalante, Leonardo: *See—*
Gonzalez, Jose C.; Escalante, Leonardo; and Ramos, Raicelina, 5,382,706, Cl. 568-697.000.

ESCO Corporation: *See—*
Perotto, Richard D.; Briscoe, Terry L.; Carpenter, Christopher M.; and Richards, Dean F., 5,382,110, Cl. 403-322.000.

Eshita, Akinori: *See—*
Nakano, Masao; Eshita, Akinori; and Sekizawa, Kazuhiko, 5,382,416, Cl. 423-213.200.

Espie, Jacques; and Lefevre, Daniel, to Compagnie Generale des Etablissements Michelin - Michelin & Cie. Tire mold and method of molding a tire by means of such a mold. 5,382,402, Cl. 214-326.000.

Essadiqi, Flhachmi: *See—*
Thomson, Robert; Essadiqi, Flhachmi; and Barry, James, 5,381,854, Cl. 164-453.000.

Estes, Howard S., to Dell USA, L.P. Connection lead stucture for surface mountable printed circuit board components. 5,383,094, Cl. 361-773.000.

Estrada, Julio R.; and Mentzer, Ray A., to National Semiconductor Corporation. Automatic selection of an operating frequency in a low-gain broadband phase lock loop system. 5,382,921, Cl. 331-1.00A.

Ethen, Richard M.; and Connelly, Timothy P., to Echlin Inc. Handheld bleeder stroke tool. 5,381,662, Cl. 60-584.000.

Ethicon Endo-Surgery: *See—*
Failla, Stephen J.; Traini, Patrick J.; and Rarey, Charles M., 5,382,252, Cl. 606-119.000.

Ethicon, Inc.: *See—*
Allen, Eugene D.; Bedi, James J.; Bishop, Gregory D.; Burdorff, Mark A.; Conlon, Sean P.; Hibner, John A.; Hughett, J. David; Ortiz, Mark S.; Parashac, Joseph; Sambi, Narinderjit; Sierocuk, Thomas J.; and Smith, Jack E., 5,381,943, Cl. 227-177.000.
Simons, Teresa M., 5,381,896, Cl. 206-370.000.

Eto, Yoshihiro: *See—*
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Pompei, Francesco, 5,381,796, Cl. 128-664.000.

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Patil, Abhimanyu O.; Datta, Sudhin; and Lundberg, Robert D., 5,382,632, Cl. 525-274.000.
Song, Won R.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., 5,382,698, Cl. 568-3.000.
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Behrmann, William C.; Mauldin, Charles H.; and Pedrick, Larry E., 5,382,748, Cl. 585-899.000.
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Jones, Thomas R.; Phillips, Reginald L.; and Falcon-Steward, Hugh R., 5,382,370, Cl. 210-781.000.

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Kennedy, Thomas W., Jr.; and Fenstermaker, Donald F., 5,382,954, Cl. 340-961.000.

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Schwartztol, Robert; and Ferreiro, SecunDino, 5,381,617, Cl. 40-6.000.

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Hagedorn, Ferdinand; and Fiege, Helmut, 5,382,686, Cl. 564-307.000.

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Mailloux, Louis D.; and Filshtinsky, Sofia, 5,383,036, Cl. 358-518.000.

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Debussche, Patrick; and Fisch, Thomas, 5,382,907, Cl. 324-418.000.

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Calvert, Rodney K.; and Fishback, Alton J., 5,381,639, Cl. 53-48.100.

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Chabon, Michael W.; Harvey, Bruce J.; Lahnala, Thomas A.; Sailer, Hans J.; Ta, Bac; and Treusch, Christopher J., 5,381,965, Cl. 239-585.100.
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Orzel, Daniel V.; Zimlich, Glenn A.; and Truong, Tri T., 5,381,656, Cl. 60-274.000.
Patel, Ramchandra L., 5,381,600, Cl. 29-890.044.
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Head, George W., Jr.; Landers, Reginald R.; and Smith, James L., 5,381,712, Cl. 83-418.000.

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Forster, John C.: *See*—
Cotler, Tina J.; Forster, John C.; Kropp, Lawrence A.; and Singh, Jyothi, 5,382,911, Cl. 324-662.000.

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Pozzoboa, Alessandro; Foscaro, Giancarlo; Marongiu, Gianpaola; Tacchetto, Maurizio; and Bugliesi, Luca, 5,381,613, Cl. 36-117.000.

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Fox, Virgil G., Jr.: *See*—
Magnotta, Vincent L.; Naddeo, Ronald C.; Ayala, Varin; Cirucci, John F.; and Fox, Virgil G., Jr., 5,382,322, Cl. 162-30.110.

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Szopinski, Ryszard; and Fragassi, Vincent, 5,382,326, Cl. 162-238.000.

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Masia, Michael; Reed, James P.; Wasley, Robert S.; Reeder, Larry R.; Brooks, Peter L.; Tolles, Thomas W.; Frank, Louis M.; Bonomi, Mauro; Stewart, Ray F.; Lahlough, John; and Welsh, Laurence, 5,382,909, Cl. 324-522.000.

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Kruger, Ernst; and Klose, Reinhard, 5,382,146, Cl. 425-141.000.

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Credali, Lino; Cioni, Paolo; Frisch, Kurt C.; Kresta, Jiri E.; and Fu, Fushu, 5,382,626, Cl. 525-126.000.

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Doi, Atsuhiro, 5,382,966, Cl. 346-107.00R.
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Hayashi, Yoichi, 5,382,156, Cl. 425-436.00R.
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Ikenoue, Shinpei, 5,382,508, Cl. 430-496.000.
Kato, Eiichi; and Ishii, Kazuo, 5,382,488, Cl. 430-95.000.
Sakai, Minoru; Katoh, Kazunobu; and Morimoto, Kiyoshi, 5,382,496, Cl. 430-264.000.
Soeda, Haruo; and Tsugita, Makoto, 5,382,974, Cl. 348-221.000.
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Kimura, Shunichi; and Kamizawa, Koh, 5,383,037, Cl. 358-539.000.
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Kurihara, Makoto; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,382,380, Cl. 252-299.660.

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Ohshima, Katsutoshi; Urabayashi, Norihide; and Fujikawa, Satoshi, 5,381,878, Cl. 192-4.00A.

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Kondo, Makoto; and Anayama, Chikashi, 5,381,756, Cl. 117-104.000.
Motoyama, Hideyuki; Iwasa, Seiichi; and Kawamura, Isao, 5,383,138, Cl. 364-708.100.
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Sato, Hachiro, 5,382,368, Cl. 210-710.000.

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Nishii, Kanji; Ito, Masami; and Fukui, Atsushi, 5,383,056, Cl. 359-561.000.

Fukuma, Masaki; Deguchi, Hiroaki; Nishida, Masami; Asai, Akira; and Aino, Hiroshi, to Mazda Motor Corporation. Valve timing controller for use with internal combustion engine. 5,381,764, Cl. 123-90.170.

Fukumoto, Kazuhiro: *See*—
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Fukunaga, Kazuya: *See*—
Kato, Yoshitake; Fukunaga, Kazuya; and Hitomi, Yoshihisa, 5,383,078, Cl. 360-133.000.

Fukushima, Hisashi: *See*—
Sasanuma, Nobuatsu; Fukushima, Hisashi; and Atsumi, Tetsuya, 5,383,055, Cl. 358-521.000.

Fukushima, Yoshiaki: *See*—
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Fukutome, Toshiro: *See*—
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,382,423, Cl. 422-198.000.

Fuller, James W. Jointed spinner bait. 5,381,621, Cl. 43-42.130.

Funahashi, Hiroko; Kato, Mitsuo; Miyamura, Hidemi; and Yamazaki, Jun, to Sony Corporation. Color selecting structure for a cathode-ray tube. 5,382,871, Cl. 313-402.000.

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Yamamoto, Hironobu; Johnson, Robert; and Funato, Satoru, 5,383,050, Cl. 359-326.000.

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Furman, Gary S., Jr.; Kneller, James F.; Bailey, Kristy M.; Finck, Martha R.; and Su, Winston, to Nalco Chemical Company. Crosslinked poly(aminoamides) as yankee dryer adhesives. 5,382,323, Cl. 162-111.000.

Furomoto, Yoshiyuki, to Shimano Inc. Spinning reel with handle. 5,381,979, Cl. 242-224.000.

Furuhashi, Hiroyuki: *See*—
Koyama, Naomi; Usui, Miyuki; Furuhashi, Hiroyuki; and Ueki, Satoshi, 5,382,634, Cl. 525-286.000.

Furukawa Electric Co., Ltd., The: *See*—
Irikawa, Michinori; Iwase, Masayuki; and Iga, Kenichi, 5,383,213, Cl. 372-46.000.

Furumoto, Mitsumasa: *See*—
Kawahara, Eiichiro; Nakamura, Takashi; Furumoto, Mitsumasa; and Sakai, Kazuaki, 5,381,724, Cl. 92-12.200.

Furuyama, Tohru, to Kabushiki Kaisha Toshiba. Dynamic random access memory. 5,383,160, Cl. 365-221.000.

Fuse, Takeshi; and Tago, Osamu, to Fujitsu Limited. Reload-timer/-counter circuit. 5,383,230, Cl. 377-44.000.

Fussnegger, Wolfgang; and Heiss, Werner, to Mercedes-Benz AG. Casting method for casting a part onto a hollow section. 5,381,849, Cl. 164-102.000.

Futurestar Corporation, The: *See*—
Franz, Jeffrey S., 5,381,826, Cl. 137-557.000.

Fuwa, Toru; and Uekama, Kaneto, to Wakunaga Seiyaku Kabushiki Kaisha. Aromatic composition and method for controlling aroma. 5,382,567, Cl. 512-4.000.

G. D. Searle & Co.: *See*—
Husa, Robert K.; Hagen, Timothy J.; and Hallinan, E. Ann, 5,382,578, Cl. 514-211.000.

G & G New Idea Corporation: *See*—
Correnti, Giuseppe A., 5,382,755, Cl. 174-67.000.

G.T. Styling, Inc.: *See*—
Turner, Douglas A., 5,382,070, Cl. 296-180.100.

Gabbay, Emile; and Roeck, Werner, to GE Medical Systems S.A. Rotating anode for composite X-ray tube. 5,383,232, Cl. 378-124.000.

Gabhart, Thomas S. Pivotable and lockable hospital bed guard. 5,381,571, Cl. 5-430.000.

Gaitan, Michael: *See*—
Cresswell, Michael; Allen, Richard; Linhom, Loren; and Gaitan, Michael, 5,383,136, Cl. 364-561.000.

Gajewski, Gerry, to Davidson Textron. Supplemental inflatable restraint cover assembly with a perforated substrate. 5,382,047, Cl. 280-728.00B.

Gajewski, Henry M.; Vernick, Barry H.; Measells, Paul E.; and Garber, Jan W., to Baxter International Inc. Blood storage container and material. 5,382,526, Cl. 435-296.000.

Gale, Allan R., to Ford Motor Company. Method and apparatus for detecting leakage resistance in an electric vehicle. 5,382,946, Cl. 340-650.000.

Gale, Richard O., Jr., to Texas Instruments Incorporated. Bistable DMD addressing method. 5,382,961, Cl. 345-108.000.

Gallay, Jacques-Andre , to Montres Rolex S.A. Watertight control device for watches. 5,383,166, Cl. 368-288.000.

Galzigna, Lauro, to Boehringer Mannheim Italia S.p.A. Process for the preparation of glutathione S-acyl derivatives, compounds obtained from said process and an intermediate useful for the preparation thereof. 5,382,679, Cl. 560-16.000.

Gam, Allisa: *See*—
Sikora, Robert J.; Gam, Allisa; and Chung, Ding Y., 5,382,607, Cl. 523-415.000.

Gamberini, Gino; and Casuccio, Carlo, to Gamberini, Gino. Chair. 5,382,080, Cl. 297-440.100.

Gambino, Jeffrey P.: *See*—
Chapple-Sokol, Jonathan D.; Conti, Richard A.; and Gambino, Jeffrey P., 5,383,088, Cl. 361-305.000.

Gamemasters Pty Ltd: *See*—
Cook, Michael A.; and Sajn, Felix, 5,382,022, Cl. 273-126.00R.

Gansel, Eduard: *See*—
Matzo, David; Gansel, Eduard; and Schramm, Heribert, 5,381,602, Cl. 30-377.000.

Garay, Antonio A.: *See*—
Bailey, William R.; Garay, Antonio A.; and Rosborough, Keith A., 5,382,169, Cl. 439-76.000.

Garber, Edward M.: *See*—
Stokes, Robert B.; Garber, Edward M.; Crawford, Jay D.; and Cushman, Drew, 5,382,930, Cl. 333-191.000.

Garber, Jan W.: *See*—
Gajewski, Henry M.; Vernick, Barry H.; Measells, Paul E.; and Garber, Jan W., 5,382,526, Cl. 435-296.000.

Garden Way Incorporated: *See*—
Bold, Alfred J.; Kodesch, Steven E.; and Sheehan, William F., 5,381,970, Cl. 241-55.000.

Gardiewski, Neidhard: *See*—
Schmidt, Frank; and Gardiewski, Neidhard, 5,382,636, Cl. 525-412.000.

Gardzielia, Arno; Kurple, Ken; Hansen, Achim; Schroter, Stephan; and Roll, Willi, to Rutgerswerke Aktiengesellschaft. Binder mixtures containing reactive group containing lignin and novolaks. 5,382,608, Cl. 524-14.000.

Garraffa, Dean R., to Under Sea Industries, Inc. First stage scuba regulator. 5,381,825, Cl. 137-505.180.

Garrett, Charles R., to Crosby Group, Inc., The. Swivel hardware assembly. 5,381,650, Cl. 59-95.000.

Garric, George; and Lafond, Andre , to International Business Machines Corporation. Pressurized interface apparatus for transferring a semiconductor wafer between a pressurized sealable transportable container and a processing equipment. 5,382,127, Cl. 414-217.000.

Gassman, George W.; Buchwald, Warren G.; Gethmann, Douglas P.; and Scarpelli, Nate F., to Fisher Controls Incorporated, Inc. Mechanical flexure for motion amplification and transducer with same. 5,381,817, Cl. 137-82.000.

Gassmann, Ernst: *See*—
Weinberger, Scot R.; Egan, Robert W.; Hoppe, Thomas W.; Gassmann, Ernst; Schar, Martin M.; Bornsen, Klaus O.; and Tarantino, E. Rocco, 5,382,793, Cl. 250-288.000.

Gate Pallet Systems, Inc.: *See*—
Kilpatrick, Ted D.; and Wagner, Arthur M., 5,381,739, Cl. 108-51.300.

Gatte, Robert R.: *See*—
Miller, James G.; and Gatte, Robert R., 5,382,351, Cl. 208-120.000.

Gay Engineering & Sales Co., Inc.: *See*—
Dutcher, Dale E., 5,382,093, Cl. 374-208.000.

GE Medical Systems S.A.: *See*—
Gabbay, Emile; and Roeck, Werner, 5,383,232, Cl. 378-124.000.

Geary, Richard S.; and Schlameus, Herman W., to Southwest Research Institute. Microparticulate pharmaceutical delivery system. 5,382,435, Cl. 424-489.000.

Gebruder Loepfe AG: *See*—
Schurch, Georg, 5,383,017, Cl. 356-238.000.

GEC Alsthom Energie, Inc.: *See*—
Demissy, Daniel, 5,382,764, Cl. 200-146.00R.

Gee, Lee J.: *See*—
Cummings, Richard; Gee, Lee J.; and Warren, John, 5,381,833, Cl. 138-107.000.

Geenens, Robert: *See*—
Fecteau, Anthony J.; Boehme, Christopher; Geenens, Robert; and Papalambros, Lynn, 5,382,083, Cl. 297-452.200.

Gehrmann, Rainer, to U.S. Philips Corporation. Method of and arrangement for inserting a background signal into parts of a foreground signal fixed by a predetermined key color. 5,382,980, Cl. 348-586.000.

Geier, Petra: *See*—
Lorenz, Dieter; Pircher, Christian; Geier, Petra; Holler, Helmut; and Pfaff, Dietrich, 5,382,765, Cl. 200-148.00R.

Geissler, Norbert: *See*—
Frisch, Helmuth; Geissler, Norbert; and Weiss, Herbert, 5,381,681, Cl. 72-9.000.

Gelorme, Jeffrey D.: *See*—
Angelopoulos, Marie; Feger, Claudius; Gelorme, Jeffrey D.; and Shaw, Jane M., 5,382,637, Cl. 525-436.000.

Gene Tec Corporation: *See*—
Stapleton, Marilyn J., 5,382,511, Cl. 435-6.000.

General Acquisition Corporation: *See*—
Stein, Joseph L.; McIntyre, Donald A.; and McHugh, P. Sean, 5,382,555, Cl. 501-127.000.

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Armijo, Joseph S.; Rosenbaum, Herman S.; and Williams, Cedric D., 5,383,228, Cl. 376-409.000.
Baghel, Sunita S.; and Haitko, Deborah A., 5,382,736, Cl. 585-469.000.
de Jong, Robertus E.; and van der Kort, Jacobus J. C., 5,382,454, Cl. 427-393.500.
Fanning, Alan W.; Olich, Eugene E.; and Dahl, Leslie R., 5,382,860, Cl. 310-216.000.
Iacovangelo, Charles D.; Jerabek, Elihu C.; Wilson, Ronald H.; and Schaefer, Peter C., 5,382,758, Cl. 174-262.000.
Keck, Richard J.; O'Brien, Kirk G.; and Bigelow, Michael J., 5,382,856, Cl. 310-71.000.
Kissinger, Gaylord M., 5,382,708, Cl. 568-702.000.
Nerone, Louis R., 5,382,882, Cl. 315-307.000.
Orlando, Robert J.; and Dunbar, Lawrence W., 5,381,655, Cl. 60-226.300.
Pla, Frederic G.; Rajiyah, Harindra; Renshaw, Anthony A.; and Hedeen, Robert A., 5,382,134, Cl. 415-119.000.
Secen, Michael M.; Thomas, Edward J.; and El-Hamamsy, Sayed-Amr A., 5,382,878, Cl. 315-248.000.
Tam, Kwok C., 5,383,119, Cl. 364-413.190.
Zernik, Uri, 5,383,120, Cl. 364-419.080.

General Motors Corporation: *See*—
Pickett, Thomas J.; Otten, Richard A.; Stribbell, Bruce J.; and Sheth, Manhar K., 5,382,401, Cl. 264-177.160.

Ward, Robert W.; Parker, Sam B.; and Boys, William E., 5,382,862, Cl. 310-263.000.

General Signal Corporation: *See—*
Michaloski, Paul F.; and Partlo, William N., 5,383,000, Cl. 355-67.000.

Gentles, Margaret J.: *See—*
Afonso, Adriano; Weinstein, Jay; and Gentles, Margaret J., 5,382,572, Cl. 514-82.000.

Geon Company, The: *See—*
Young, George H.; Cowfer, Joseph A.; and Johnston, Victor J., 5,382,726, Cl. 570-243.000.

George, Jacob; Desai, Kantilal B.; and Schoeffler, Francis M., to Standard Chlorine of Delaware Inc. Process for the purification of 1,3-dihalobenzene from an isomeric mixture of dihalobenzenes. 5,382,725, Cl. 570-211.000.

Gerard, Eric-Jack: *See—*
Jordaan, Johannes C. M.; Mul, Wilhelmus P.; Smaardijk, Abraham A.; Mulder, Jan Harm; Gerard, Eric-Jack; and Lednor, Peter W., 5,382,653, Cl. 528-392.000.

Gerdes, Raymond J.; and Dufon, Dennis L., to Metalarc Inc. Furniture article and fixture for making same. 5,382,010, Cl. 269-41.000.

Gerin, Merlin: *See—*
Schueller, Pierre; Laffont, Pierre; and Houbre, Pascal, 5,382,896, Cl. 324-127.000.

Gernert, George G., II, to Lucas Industries Public Limited Company. Fuel injector. 5,381,966, Cl. 239-585.300.

Gerrits, John F. M.: *See—*
Pardoen, Matthijs D.; and Gerrits, John F. M., 5,382,924, Cl. 332-100.000.

Gersbach, John E.; and Hayashi, Masayuki, to International Business Machines Corporation. Calibration systems and methods for setting PLL gain characteristics and center frequency. 5,382,922, Cl. 331-1.00A.

Gershen, Bernard; Lombardi, Alfred J.; Meehan, James E.; and Rosenbaum, Saul, to Leviton Manufacturing Co., Inc. Circuit analyzing system. 5,383,084, Cl. 361-113.000.

Gesellschaft fur Schwerionenforschung mbH: *See—*
Boggasch, Ekkehard; and Tauschwitz, Andreas, 5,382,866, Cl. 313-231.310.

Gethmann, Douglas P.: *See—*
Gassman, George W.; Buchwald, Warren G.; Gethmann, Douglas P.; and Scarpelli, Nate F., 5,381,817, Cl. 137-82.000.

Ghent Manufacturing, Inc.: *See—*
Hutten, James E., 5,382,562, Cl. 503-227.000.

Gianni, Gensini: *See—*
Bergman, Kjell; Lundstrom, Kenneth; Granstrom, Staffan; Gianni, Gensini; and Coassin, Giovanni, 5,383,218, Cl. 373-107.000.

Giat Industries: *See—*
Begneu, Michel, 5,381,722, Cl. 89-7.000.

Gibbs, Louie W., to Classic Fishing Products, Inc. Lure utilizing easily changed aft portion of soft, flexible texture. 5,381,620, Cl. 43-42.090.

Gibbs, Vickie L.; and Kao, Rom-Shen, to Mitsubishi Semiconductor America, Inc. Parallel encoding apparatus and method implementing cyclic redundancy check and Reed-Solomon codes. 5,383,204, Cl. 371-37.700.

Gibson, James O.: *See—*
Seibold, Robert W.; Buller, Bruce W.; and Gibson, James O., 5,382,309, Cl. 156-242.000.

Gibson, Keith H.: *See—*
Russell Keith; Ohnmacht, Cyrus J.; and Gibson, Keith H., 5,382,598, Cl. 514-522.000.

Gielen, Marcel: *See—*
Boualam, Mohammad; Gielen, Marcel; El Khloufi, Abdelaziz; De Vos, Dirk; and Willem, Rudolph, 5,382,597, Cl. 514-493.000.

Gil, Sung-Ho: *See—*
Lee, Seung-Gap; Gil, Sung-Ho; Eun, Suk-Hyun; and Lee, Hong-Won, 5,381,673, Cl. 62-483.000.

Gill, Bryan D., to Seeburn Metal Products Limited. Extension arm for an automobile jack. 5,381,707, Cl. 74-546.000.

Giller, Gerald: *See—*
Mizuguchi, Jin; and Giller, Gerald, 5,382,485, Cl. 430-21.000.

Giroud-Abel, Bruno; and Molle, Francis, to Rhone-Poulenc Agrochimie. Artificial seeds. 5,382,269, Cl. 47-57.600.

Gladman, Neil R.; and Lovel, Peter A. Article holder. 5,381,922, Cl. 220-461.000.

Glance, Paul C., to Concept Analysis Corporation. Pneumatic pads for the interior of vehicles. 5,382,051, Cl. 280-751.000.

Glas, Gunilla: *See—*
Jonsson, Nils A.; Sparf, Bengt A.; Mikiver, Lembit; Moses, Pinchas; Nilvebrant, Lisbet; and Glas, Gunilla, 5,382,600, Cl. 514-803.000.

Glasdon Group Limited: *See—*
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Glaxo Canada Inc.: *See—*
Kronis, K. Anne; and Bozzato, Richard P., 5,382,658, Cl. 530-397.000.

Glesener, John W.; Merrish, Arthur A.; and Snail, Keith A., to United States of America, Navy. Method of synthesizing high quality, doped diamond and diamonds and devices obtained therefrom. 5,381,755, Cl. 117-88.000.

Glover, Edward C. T. S.; and Marsden, Peter D., to Eastman Kodak Company. Photographic processing apparatus. 5,382,995, Cl. 354-331.000.

Glynn, Dennis P.; Joseph, John C.; and Perkins, Thomas O., to Dedicated Electronics. Ice thickness measurement reflectometer. 5,381,694, Cl. 73-627.000.

Goad, Eugine W.: *See—*
Hennessy, Joseph J.; Drube, John V.; and Goad, Eugine W., 5,381,729, Cl. 99-483.000.

Godfrey, Darryl A., to Eastman Chemical Company. Modified polyethylene based hot-melt adhesives for use in packaging. 5,382,615, Cl. 524-271.000.

Goetz, Norbert: *See—*
Klein, Ulrich; Buschmann, Ernst; Keil, Michael; Goetz, Norbert; and Hartmann, Horst, 5,382,685, Cl. 564-301.000.

Gold Star Co., Ltd.: *See—*
Hong, Yeong K., 5,382,939, Cl. 340-309.150.

Goldberger, William M.: *See—*
Lowrance, Kenneth F., II; Knorr, Eric C.; Goldberger, William M.; Boss, Daniel; and Edwards, Doreen, 5,382,405, Cl. 505-125.000.

Goldsborough, Robert J.: *See—*
Simmons, Michael L.; and Goldsborough, Robert J., 5,382,068, Cl. 296-24.100.

Goldstar Co., Ltd.: *See—*
Lee, In K., 5,382,775, Cl. 219-702.000.
Park, Gwan R.; and Lyu, Jae C., 5,381,677, Cl. 68-23.700.

Goldstein, Marc. Aim improving self-aligning golf shoes. 5,381,614, Cl. 36-127.000.

Goltcov, Vladimir V.: *See—*
Pak, Song C.; Goltcov, Vladimir V.; Kryssov, Alexander Y.; Emelianov, Igor I.; Emellianov, Igor P.; and Kotekin, Evgeny E., 5,381,797, Cl. 128-687.000.

Gonzalez, Giovanni: *See—*
Castro, Salvatore; Phillips, Paul J.; and Gonzalez, Giovanni, 5,382,255, Cl. 606-143.000.
McGarry, Richard A.; Phillips, Paul J.; Gonzalez, Giovanni; and Castro, Salvatore, 5,382,254, Cl. 606-143.000.

Gonzalez, Jose C.; Escalante, Leonardo; and Ramos, Raicelina, to Intevep, S.A. Production of alkyl tert alkyl ethers and cation exchange resin for same. 5,382,706, Cl. 568-697.000.

Goodale, Robert J.: *See—*
Goodine, Allen; and Goodale, Robert J., 5,382,389, Cl. 261-18.100.

Goodine, Allen; and Goodale, Robert J. Foam producing venturi and method of using same. 5,382,389, Cl. 261-18.100.

Goodman, Michael G.: *See—*
Chen, Robert; Goodman, Michael G.; and Reitz, Allen, 5,382,580, Cl. 514-234.200.

Goodyear Tire & Rubber Company, The: *See—*
Arnold, John E., 5,382,006, Cl. 267-64.270.
Janne, Michel L., 5,382,198, Cl. 474-205.000.

Gorzinski, Manfred: *See—*
Eicken, Ulrich; Mathis, Raymond; Fiedler, Heidi; and Gorzinski, Manfred, 5,382,372, Cl. 252-8.600.

Goto, Akihiro: *See—*
Mouri, Naotake; Akamatsu, Koji; and Goto, Akihiro, 5,383,026, Cl. 356-376.000.

Goto, Yasuyuki: *See—*
Onji, Yuichi; Ushioda, Makoto; Matsui, Shuichi; Kondo, Tomoyuki; and Goto, Yasuyuki, 5,382,379, Cl. 252-299.630.

Gotou, Kanzen: *See—*
Yuhara, Tazunu; Onimaru, Hiroya; Gotou, Kanzen; and Oda, Ikuyo, 5,382,777, Cl. 235-379.000.

Gotthelf, Jeffrey B., to ITT Corporation. Pressure-reducing regulator for compressed natural gas. 5,381,819, Cl. 137-340.000.

Grabbe, Dimitry G.: *See—*
Korsunsky, Iosif; Grabbe, Dimitry G.; and Klotz, Robert C., 5,383,095, Cl. 361-785.000.

Grabenkort, Richard W.; Kruger, Robert J.; Mayoral, Joaquin; and Wecker, Sheldon M., to Abbott Laboratories. Irrigation solution re-circulating system. 5,382,229, Cl. 604-27.000.

Grabowski, Erika, Thomas Grabowski, Michael Grabowski, heirs: *See—*
Freundner, Hasso; and Grabowski, Walter, deceased, 5,383,090, Cl. 361-624.000.

Grabowski, Walter, deceased: *See—*
Freundner, Hasso; and Grabowski, Walter, deceased, 5,383,090, Cl. 361-624.000.

Graham, Neil B.; Ross, Donald S.; Szmidt, Robert A. K.; and Kirkwood, Ralph C., to University of Strathclyde. Plant growth media comprising cross-linked hydrogel particles. 5,382,270, Cl. 47-58.000.

Graham, Richard A. Inflatable cervical traction and exercising device. 5,382,226, Cl. 602-32.000.

Granger, Michel; Dupont, Michel; and Ledon, Henry, to Chemoxal S.A. Clathrates of peroxyacids, their preparation and their uses. 5,382,571, Cl. 514-58.000.

Granstrom, Staffan: *See—*
Bergman, Kjell; Lundstrom, Kenneth; Granstrom, Staffan; Gianni, Gensini; and Coassin, Giovanni, 5,383,218, Cl. 373-107.000.

Graves, Robert P., to Viskase Corporation. Package of shirred food casings. 5,382,190, Cl. 452-21.000.

Graves, Robert P., Jr.: *See—*
Kazaitis, Michael P.; Graves, Robert P., Jr.; and Monti, Joseph L., 5,381,643, Cl. 53-415.000.

Gray, Henry F.; and Hsu, David S. Y., to United States of America, Navy. Thin-film edge field emitter device and method of manufacture therefor. 5,382,185, Cl. 445-49.000.

Great Lakes Tool and Machine Co.: *See—*
Marquardt, Herman W.; and Marquardt, Herman K., 5,381,682, Cl. 72-90.000.

Greb, Wolfgang: *See—*
Bahrmann, Helmut; Greb, Wolfgang; Heymanns, Peter; Lappe, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,382,716, Cl. 568-883.000.

Green, Dennis J., to United Technologies Corporation. Rotor blade with cooled integral platform. 5,382,135, Cl. 416-97.00R.

Green, Frederick A.: *See—*
Mandel, Barry P.; Prevost, Charles F.; Rizzolo, Charles D.; Green, Frederick A.; and Van Dongen, Richard A., 5,382,012, Cl. 270-53.000.

Green, Glenn K. Solar phosphene generator. 5,382,204, Cl. 607-95.000.

Gregory, Raymond S.: *See—*
Braatz, Robert E.; Gregory, Raymond S.; Heaton, Robert A.; Whitaker, Keith; and Sampson, David C., 5,381,836, Cl. 141-21.000.

Greschner, Johann: *See—*
Bayer, Thomas; Greschner, Johann; Martin, Yves; Weiss, Helga; Wickramasinghe, Hemantha K.; and Wolter, Olaf, 5,382,795, Cl. 250-306.000.

Griffin, Gene A., to Texas Instruments Incorporated. Cylinder gas valve. 5,381,998, Cl. 251-117.000.

Griffin, Jeffery; and Harris, Robert S., to Stant Manufacturing Inc. Push-on fuel cap. 5,381,919, Cl. 220-307.000.

Griffith, Ronald C., to Fisons Corporation. 2-aminopropanamide derivatives. 5,382,683, Cl. 564-196.000.

Griffiths, David C.: *See—*
Astbury, Christopher J.; Griffiths, David C.; Howard, Mark J.; and Reid, Ian A. B., 5,382,741, Cl. 585-652.000.

Grimes, Gary J., to AT&T Corp. Optical time domain reflectometry measurements on a multi-branch optical network using multiwavelength pass filters. 5,383,015, Cl. 356-73.100.

Grimmel, Margitta; and de Villiers, Ethel-Michele, to Behringwerke Aktiengesellschaft. Method and kit for the diagnosis of human papillomavirus type 41. 5,382,509, Cl. 435-5.000.

Grocki, Wayne D.; and DeWaal, Christopher S., to Zenith Electronics Corporation. Stray magnetic field suppresser for CRT image displays. 5,382,875, Cl. 315-8.000.

Gronemeyer, Michael, to Siemens Aktiengesellschaft. Device for implementing an interrupt distribution in a multi-computer system. 5,382,950, Cl. 340-825.500.

Gross, Andrew W.: *See—*
Emmons, William D.; and Gross, Andrew W., 5,382,640, Cl. 526-266.000.

Grosskopf, George, Jr., to Servo Corporation of America. Train analysis system enhancement having threshold adjustment means for unidentified wheels. 5,381,700, Cl. 73-865.900.

Gruettner-Merten, Sabine: *See—*
Degen, Helmut; Lange, Arno; Gruettner-Merten, Sabine; and Reichelt, Helmut, 5,382,263, Cl. 8-638.000.

Gruetzmacher, Roland: *See—*
Daute, Peter; Gruetzmacher, Roland; Hoefer, Rainer; and Stoll, Gerhard, 5,382,647, Cl. 528-73.000.

Grula, Jerome A.: *See—*
Spence, Nicholas J. M.; and Grula, Jerome A., 5,383,195, Cl. 371-22.500.

Grupoutil De. De Prod. De. Util. Ltda.: *See—*
Mallmamm, Breno S.; and Irigoite, Fabio, 5,381,905, Cl. 206-551.000.

Grzesiak, Anthony J.; Fenoglio, Robert J.; and Slager, Douglas J., to Borg-Warner Automotive Transmission & Engine Components Corporation. Anchor in automatic transmission bands. 5,381,876, Cl. 188-250.00H.

GTE Service Corporation: *See—*
Clark, P. Deborah, 5,383,112, Cl. 364-401.000.

Guardian Products, Inc.: *See—*
Miric, Zivko; Bui, Cuong; and Eynon, Stephen J., 5,381,813, Cl. 135-72.000.

Guay, Jean M.: *See—*
Diaz, Arthur F.; Guay, Jean M.; and Nguyen, My T., 5,382,491, Cl. 430-110.000.

Gulczyski, Jeff. One or two transistor logic with temperature compensation and minimized supply voltage. 5,382,843, Cl. 326-109.000.

Guebels, Pierre-Paul F. M. M.: *See—*
Therasse, Yves; and Guebels, Pierre-Paul F. M. M., 5,383,182, Cl. 370-60.000.

Guerin, Jean-Michel, to Xerox Corporation. Ros bow compensation. 5,383,047, Cl. 359-209.000.

Guerrini, Robert J.; and Rey, Paul A., to Calgon Corporation. Composition useful for treating suspended solids and color bodies in water systems. 5,382,378, Cl. 252-181.000.

Guetling GmbH: *See—*
Schwering, Hans-Ulrich; and Schaich, Roland, 5,382,366, Cl. 210-662.000.

Guillemot, Jean-Claude: *See—*
Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Legoux, Richard; Loison, Gerard; Larbre, Elisabeth; Lupker, Johannes; Leplatois, Pascal; Salome, Marc; and Laurent, Patrick, 5,382,518, Cl. 435-191.000.

Guinn, Denise E.: *See—*
Summers, James B.; Sheppard, George S.; Phillips, James G.; Pireh, Daisy; Steinman, Douglas H.; May, Paul D.; Guinn, Denise E.; Heyman, H. Robin; Carrera, George M., Jr.; and Davidsen, Steven K., 5,382,670, Cl. 546-273.000.

Guo, Shao-Hua, to Arco Chemical Technology, L.P. Copolymers of allyl alcohol propoxylates and vinyl aromatic monomers. 5,382,642, Cl. 526-333.000.

Gupta, Om P., to Digicomp Research Corporation. Shelf price label verification apparatus and method. 5,382,779, Cl. 235-383.000.

Guthrie, Roderick I. L.: *See—*
Sankaranarayanan, Ramani; and Guthrie, Roderick I. L., 5,382,003, Cl. 266-230.000.

Gutierrez, Antonio: *See—*
Song, Won R.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., 5,382,698, Cl. 568-3.000.

Guyon, Claude: *See—*
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,382,590, Cl. 514-396.000.

Guzik, Nahum; Karaaslan, Ufuk; and Slutsky, Boris, to Guzik Technical Enterprises, Inc. Method and apparatus for compensating positioning error in magnetic-head and magnetic-disk tester. 5,382,887, Cl. 318-652.000.

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Guzik, Nahum; Karaaslan, Ufuk; and Slutsky, Boris, 5,382,887, Cl. 318-652.000.

Gwaltney, Sharon W.: *See—*
Pike, Richard D.; Brown, Kurtis L.; Gwaltney, Sharon W.; Herschberger, Thomas A.; and Siegel, Scott D., 5,382,400, Cl. 264-168.000.

Gygi, Martin H. Crusher. 5,381,974, Cl. 241-188.100.

Gylys, Jonas A.; Ruediger, Edward H.; Smith, David W.; Solomon, Carola; and Yevich, Joseph P., to Bristol-Myers Squibb Company. Antimigraine cyclobutenedione derivatives of tryptamines. 5,382,592, Cl. 514-415.000.

H. D. Medical, Inc.: *See—*
Jacobson, Robert E.; and Mirson, Brian J., 5,382,248, Cl. 606-60.000.

Haase, Donald J., to Herr Haase, Inc. Process for removal of selected component gases from multi-component gas streams. 5,382,417, Cl. 423-219.000.

Haasis, Hans, to Omninet Industries, Inc. Cabinet refrigeration system with cold air distributor. 5,381,672, Cl. 62-458.000.

Habegger, Douglas A.; LaPointe, Larry P.; Weyher, Clifford K.; Saul, Jonathan R.; and Komorowski, Karl J., to La-Z-Boy Chair Co. Modular reclining chair and method. 5,382,073, Cl. 297-85.000.

Hacker, Erwin: *See—*
Schumacher, Hans; Huff, Hans P.; and Hacker, Erwin, 5,382,563, Cl. 504-136.000.
Schumacher, Hans; Huff, Hans P.; and Hacker, Erwin, 5,382,564, Cl. 504-136.000.

Hadank, John M.; McGuire, Kenneth J.; Meinhold, David R.; and Penick, Ron J., to Caterpillar Inc. Automatic lubrication control. 5,381,874, Cl. 184-6.400.

Hagedorn, Ferdinand; and Fiege, Helmut, to Bayer Aktiengesellschaft. Process for preparing nitrodiphenyl (thio) ethers. 5,382,686, Cl. 564-307.000.

Hagemeier, Kaethe: *See—*
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Hagen, Timothy J.: *See—*
Husa, Robert K.; Hagen, Timothy J.; and Hallinan, E. Ann, 5,382,578, Cl. 514-211.000.

Hague, Clifford W.; and Koenig, Paul A., to Ivac Corporation. Infusion system with air-in-line clear function. 5,382,232, Cl. 604-65.000.

Hahn, Erwin: *See—*
Weiser, Juergen; Reuther, Wolfgang; and Hahn, Erwin, 5,382,476, Cl. 428-411.100.

Hahndorff, Axel: *See—*
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Haimbaugh Enterprises, Inc.: *See—*
Fatchett, Robert P., 5,382,082, Cl. 297-440.220.

Haitko, Deborah A.: *See—*
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Hajdufi, Csaba: *See—*
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Hakoun, Roland; and Reslinger, Michel, to Mars Actel. Method and apparatuses for cutting a ribbon of an optical fibers obliquely. 5,382,276, Cl. 65-433.000.

Halin, Yves R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A). Thrust reverser safety system. 5,381,654, Cl. 60-226.200.

Hall, Gregory L., to Delco Electronics Corp. Liquid crystal polymer encapsulated electronic devices and methods of making the same. 5,381,599, Cl. 29-856.000.

Halliburton Company: *See—*
Allen, Thomas E., 5,382,411, Cl. 422-131.000.
Nguyen, Philip D.; Murphey, Joe R.; and Brown, David L., 5,381,864, Cl. 166-280.000.
Richter, Travis L., 5,382,057, Cl. 285-39.000.
Szarka, David D.; and Stepp, Lee W., 5,381,862, Cl. 166-212.000.
Worley, Thomas J.; Neal, Charles E.; and Rivera, Vincent P., 5,381,667, Cl. 62-50.200.

Hallinan, E. Ann: *See—*
Husa, Robert K.; Hagen, Timothy J.; and Hallinan, E. Ann, 5,382,578, Cl. 514-211.000.

Halstead, Peter D., to PDH Corporation. Fitting and retention system for headgear. 5,381,560, Cl. 2-421.000.

Hamada, Michio: *See*—
Kimura, Sakae; and Hamada, Michio, 5,383,057, Cl. 359-841.000.
Hamada, Yuji: *See*—
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Hamamatsu Photonics K.K.: *See*—
Aoshima, Shinichiro, 5,382,789, Cl. 250-216.000.
Hamilton, Peter W.; and Norado, Gabriele B., to Procter & Gamble Company, The. Inexpensive and easy to use mechanically operated bite force gauge. 5,381,799, Cl. 128-777.000.
Hamilton, Tracy J.: *See*—
Chagnon, Mark S.; Ferris, John R.; Fiore, Barry L.; Carter, Michelle J.; and Hamilton, Tracy J., 5,382,468, Cl. 428-328.000.
Hamm, Robert W.; Crandall, Kenneth R.; and Potter, James M., to AccSys Technology, Inc. Proton-beam therapy linac. 5,382,914, Cl. 315-505.000.
Hammerblow Corporation, The: *See*—
Nyman, Oscar W., 5,382,109, Cl. 403-316.000.
Hammons, John L.: *See*—
Thompson, Hugh A.; Young, Gerald A.; Osborn, Thomas W., III; Chappell, Charles W.; Johnson, Theresa L.; Hammons, John L.; Lavash, Bruce W.; Horney, James C.; and Hines, Lee M., 5,382,245, Cl. 604-367.000.
Han, Scott: *See*—
Chang, Clarence D.; Bastian, Roy D.; Han, Scott; and Santiesteban, Jose G., 5,382,731, Cl. 585-315.000.
Hanak, Laszlo: *See*—
Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karaczony, Erno; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.
Hanna, James L., to Mectron Engineering Company. Optical part inspection system. 5,383,021, Cl. 356-383.000.
Hannon, John H.: *See*—
Imperante, John; and Hannon, John H., 5,382,381, Cl. 252-312.000.
Hansen, Achim: *See*—
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Hansen, Allen R.; Johnson, David L.; Stevenson, Scott A.; Schipper, Paul H.; and Harandi, Mohsen N., to Mobil Oil Corporation. Conversion of NO_x in FCC bubbling bed regenerator. 5,382,352, Cl. 208-121.000.
Hanson, Violet M. Convertible footwear. 5,381,610, Cl. 36-100.000.
Hansson, Roy: *See*—
Widlund, Urban; and Hansson, Roy, 5,382,467, Cl. 428-284.000.
Hansson, Tomas; and Karlstrom, Per-Olof, to Asea Brown Boveri AB. PTC element. 5,382,938, Cl. 338-22.00R.
Hara, Kazuhiko: *See*—
Kobayashi, Masaki; Takahashi, Toshiaki; Nagura, Masato; and Hara, Kazuhiko, 5,381,693, Cl. 73-614.000.
Hara, Yoshihisa: *See*—
Ogawa, Ken; Hara, Yoshihisa; Miyashita, Kotaro; and Machida, Kei, 5,383,126, Cl. 364-431.060.
Harada, Hiroyuki: *See*—
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,382,423, Cl. 422-198.000.
Harada, Koukichi: *See*—
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Harada, Nobuyuki; Wada, Katsuyuki; Obara, Hisanori; Shimomura, Tadao; and Sano, Yoshinori, to Nippon Shokubai Co., Ltd. Water absorbent matter and method for producing it as well as water absorbent and method for producing it. 5,382,610, Cl. 524-35.000.
Harandi, Mohsen N.: *See*—
Hansen, Allen R.; Johnson, David L.; Stevenson, Scott A.; Schipper, Paul H.; and Harandi, Mohsen N., 5,382,352, Cl. 208-121.000.
Hardenne, Anthony. Packaging system. 5,381,903, Cl. 206-526.000.
Harman, Jefferson H., to Wangtek, Inc. Automatic closed loop adjustment of analog read signals under microprocessor control. 5,383,064, Cl. 360-45.000.
Harp, Richard J.: *See*—
DeLaRama, Alan; Dial, Larry A.; Harp, Richard J.; Hursman, Thomas L.; Soria, Alfred S.; Serra, R. J.; and Tarpening, Steve, 5,381,782, Cl. 128-4.000.
Harreither, Rupert, to Berndorf Band Gesmbh. Apparatus for the apportioned release of flowable substances. 5,382,145, Cl. 425-8.000.
Harris Corporation: *See*—
Bajor, George; and Rivoli, Anthony L., 5,382,541, Cl. 437-67.000.
King, Ken R.; Riemer, David W.; and Cotreau, Gerald M., 5,382,916, Cl. 330-253.000.
Neilson, John M. S., 5,382,825, Cl. 257-489.000.
Harris, Ivor R.: *See*—
Cockayne, Brian; MacEwan, William R.; Harris, Ivor R.; and Smith, Nigel A., 5,382,304, Cl. 148-306.000.
Harris, Randall L., to Riverwood International Corporation. Wraparound carrier with end straps. 5,381,891, Cl. 206-197.000.
Harris, Robert S.: *See*—
Griffin, Jeffery; and Harris, Robert S., 5,381,919, Cl. 220-307.000.
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Hartig, Klaus; and Szczyrbowski, Joachim, to Leybold AG. Multichamber coating apparatus. 5,382,126, Cl. 414-217.000.
Hartmann, Horst: *See*—
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Harvard, Albert F.; and Brooke, Kenneth R., to Hughes Aircraft Company. Multiple participant moving vehicle shooting gallery. 5,382,026, Cl. 273-310.000.
Harvey, Bruce J.: *See*—
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Harvey, Michael A.: *See*—
Bush, Christopher N.; Audette, Charlene A.; and Harvey, Michael A., 5,382,516, Cl. 435-41.000.
Harvey, Ronald B.; Holmes, Jon A.; and Benson, Keith A., to Lifetouch National School Studios Inc. Portrait printer system with digital image processing editing. 5,383,027, Cl. 358-296.000.
Hasebe, Fumio: *See*—
Fujikura, Masahiro; Sato, Takashi; Yamada, Toshio; Hasebe, Fumio; and Chida, Hiromi, 5,381,856, Cl. 164-463.000.
Hasebe, Ren; Okuda, Norimasa; and Saito, Noboru, to Nippon Shokubai Kagaku Kogyo Company, Limited. Method of preparing alkylnaphthalene compounds. 5,382,735, Cl. 585-467.000.
Hasegawa, Kazuo; and Ouchi, Junichi, to Alps Electric Co., Ltd. Circuit for adjusting sensitivity of optical character reader and method thereof. 5,382,782, Cl. 235-455.000.
Hashimoto, Kazuhiko: *See*—
Matsumoto, Michikazu; and Hashimoto, Kazuhiko, 5,382,544, Cl. 437-195.000.
Hashimoto, Ken: *See*—
Yui, Toshitake; Hashimoto, Ken; Koide, Fuminori; Yamashita, Yoshiro; and Chujo, Akihiko, 5,382,283, Cl. 106-22.00R.
Hashimukai, Tadashi: *See*—
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Hashizume, Kenji; and Okamura, Masatoshi, to TDK Corporation. Housing case for tape cassette with index card. 5,381,893, Cl. 206-232.000.
Hata, Mitsuo; and Matsumoto, Shigeo, to Sony Corporation. Projector of a rear projection type. 5,382,990, Cl. 353-94.000.
Hatakawa, Kazuhiko: *See*—
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Hatanaka, Yasumichi: *See*—
Adachi, Einosuke; Hatanaka, Yasumichi; Nakajima, Kiroyuki; and Hayashi, Satoru, 5,381,598, Cl. 29-845.000.
Hattori, Tamotsu: *See*—
Thogho, Makoto; Hattori, Tamotsu; Okazaki, Noboru; Akamatus, Kozaburo; Hayashi, Tomoyuki; and Kusumi, Tomohiko, 5,382,356, Cl. 210-96.100.
Hauptli, Wayne L. Device for detecting school bus stop arm violations. 5,382,953, Cl. 340-937.000.
Hausmann, Eckhard: *See*—
Pennetreau, Pascal; Janssens, Francine; Braun, Max; Eicher, Johannes; Rudolph, Werner; and Hausmann, Eckhard, 5,382,721, Cl. 570-166.000.
Havas, Laszlo: *See*—
Bontempa, Xavier; Havas, Laszlo; Martens, Andre; and Morterol, Frederic R. M. M., 5,382,638, Cl. 526-67.000.
Hawker, Michael J. Suspension device for a seat of a bicycle. 5,382,039, Cl. 280-283.000.
Hawman, Michael W.: *See*—
Winslow, Christopher L.; Roncallo, John A.; Boyce, William C.; Bonitz, Robert T.; Zepke, Bruce E.; and Hawman, Michael W., 5,381,692, Cl. 73-593.000.
Hay, Andrew G. Apparatus and method with improved drive force capability for transporting and metering particulate material. 5,381,886, Cl. 198-642.000.
Hayafune, Kazuya: *See*—
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,382,205, Cl. 477-43.000.
Hayakawa, Hitoshi: *See*—
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Hayakawa, Masaharu: *See*—
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Hayashi, Katuhiko; Ikeda, Hiroshi; and Aotani, Akira, to TDK Corporation. Hybrid coupler. 5,382,925, Cl. 333-112.000.
Hayashi, Keisuke: *See*—
Shimizu, Tomohito; Mori, Hiroshi; Kagami, Yoshinobu; Yamakawa, Takeshi; Shiina, Susumu; and Hayashi, Keisuke, 5,382,129, Cl. 414-411.000.
Hayashi, Masayuki: *See*—
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Hayashi, Nobuhiro, to Sony Corporation. Magnetic disk recorder. 5,383,065, Cl. 360-67.000.
Hayashi, Satoru: *See*—
Adachi, Einosuke; Hatanaka, Yasumichi; Nakajima, Kiroyuki; and Hayashi, Satoru, 5,381,598, Cl. 29-845.000.
Hayashi, Takahisa: *See*—
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Hayashi, Tomoyuki: *See*—
Thogho, Makoto; Hattori, Tamotsu; Okazaki, Noboru; Akamatus, Kozaburo; Hayashi, Tomoyuki; and Kusumi, Tomohiko, 5,382,356, Cl. 210-96.100.
Hayashi, Torahiko: *See*—
Morikawa, Michio; Hayashi, Torahiko; and Saito, Nobuyuki, 5,382,154, Cl. 425-321.000.
Hayashi, Yasukazu, to Okuma Corporation. Multi-displacement detecting apparatus for detecting rotary and radial displacement with two pair of sensors. 5,382,900, Cl. 324-207.230.
Hayashi, Yoichi, to Fuji Photo Film Co., Ltd. Apparatus for extracting injection-molded product. 5,382,156, Cl. 425-436.00R.
Hayashibara, Ken: *See*—
Mitsuhashi, Masakazu; and Matsuda, Osamu, 5,382,880, Cl. 315-291.000.
Hayashida, Shigeru: *See*—
Morishita, Yoshii; Hayashida, Shigeru; Sugimoto, Yasushi; Ishikawa, Hiroko; Kobayashi, Hiroshi; and Sonoda, Takaaki, 5,382,687, Cl. 564-319.000.
Hayes, Frank F., Jr.; and Rianda, Kent A. Tool for cold form flaring tubing ends. 5,382,151, Cl. 425-392.000.
Hayes, Kenneth C.: *See*—
Perlman, Daniel; and Hayes, Kenneth C., 5,382,442, Cl. 426-607.000.
He, John X.: *See*—
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Head, George W., Jr.; Landers, Reginald R.; and Smith, James L., to Forest Products Machinery, Inc. Infeed system for a gang saw. 5,381,712, Cl. 83-418.000.
Health Research, Inc.: *See*—
Dansereau, Robert E.; and Hutchinson, Joseph A., 5,381,699, Cl. 73-864.010.
Heaton, Robert A.: *See*—
Braatz, Robert E.; Gregory, Raymond S.; Heaton, Robert A.; Whitaker, Keith; and Sampson, David C., 5,381,836, Cl. 141-21.000.
Heck, James V.: *See*—
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Hedeen, Robert A.: *See*—
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Hedges, James H.: *See*—
Stahl, G. Allan; Moradi-Araghi, Ahmad; Westerman, I. John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,382,371, Cl. 507-221.000.
Hedges, Kenneth B. Method of using volcanic ash to maintain separation between asphalt roofing shingles. 5,382,449, Cl. 427-187.000.
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Hefner, Robert E., Jr.: *See*—
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Hegg, Ronald G.; Chern, Mao-Jin; and Au, Anson, to Hughes Aircraft Company. Virtual image display having a high efficiency grid beamsplitter. 5,383,053, Cl. 359-486.000.
Heidel, Jeffrey C.; Carlson, Bradley D.; and Stansberry, Warren W., to Cline Labs, Inc. Angle measurement device employing angle sensor and electronics integrally formed on a printed circuit board. 5,381,604, Cl. 33-366.000.
Heidelberger Druckmaschinen AG: *See*—
Becker, Ludwig, 5,381,734, Cl. 101-247.000.
Heinrichs, Angelika: *See*—
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Heiss, Werner: *See*—
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Helene Curtis, Inc.: *See*—
Nandagiri, Arun; Abbott, Richard A.; Nardone, Renee E.; and Borish, Edward T., 5,382,426, Cl. 424-70.510.
Helmond, Gerard G.: *See*—
Stumpf, William S.; Patton, Art A.; and Helmond, Gerard G., 5,382,077, Cl. 297-353.000.
Hemesath, Gerhard, to Noell Service und Maschinentechnik GmbH. Rotor for impact crushes or hammer mills. 5,381,973, Cl. 241-191.000.
Hendel, Horst; Kern, Josef; and Kleine-Onnebrink, Bernhard, to Siemens Aktiengesellschaft. Electromagnetic changeover relay. 5,382,934, Cl. 335-159.000.
Henderson, David E., to VLSI Technology, Inc. Rotatable flange union for use with vacuum systems. 5,382,058, Cl. 285-96.000.
Hendrich, John H. Assembly and method for constructing a building. 5,381,633, Cl. 52-71.000.
Henkel Corporation: *See*—
Aoki, Tomoyuki; and Ono, Yoji, 5,382,295, Cl. 134-2.000.
Fischer, Stephen A.; Clungeon, Nancy S.; and Devore, David I., 5,382,324, Cl. 162-168.200.
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Colignon, Dietmar; Dorra, Erich; Panthel, Guenter; Schmidt, Wolfgang; and Wrede, Norbert, 5,382,677, Cl. 554-98.000.
Daute, Peter; Gruetzmacher, Roland; Hoefer, Rainer; and Stoll, Gerhard, 5,382,647, Cl. 528-73.000.
Eicken, Ulrich; Mathis, Raymond; Fiedler, Heidi; and Gorzinski, Manfred, 5,382,372, Cl. 252-8.600.
Raehse, Wilfried; Jacobs, Jochen; Kruse, Hans; Vogt, Guenther; Smulders, Eduard; and Boecker, Monika, 5,382,377, Cl. 252-174.000.
Rings, Friedel; and Holz, Peter, 5,382,117, Cl. 406-39.000.
Hennessy, Joseph J.; Drube, John V.; and Goad, Eugine W., to Industrial Design & Engineering Associates. Food warming vessel for cafeterias and restaurants. 5,381,729, Cl. 99-483.000.
Henrio, Philippe, to Societe nationale D'Etude et de Construction de Moteurs D'Aviation. Apparatus for molding a composite material article. 5,382,150, Cl. 425-390.000.
Henry, Glen F. Foldable, portable seat structure. 5,382,081, Cl. 297-440.120.
Hepp, James, to All Stock Displays Inc. Organizer for grocery shelves. 5,381,908, Cl. 211-184.000.
Herbert, William G.: *See*—
Yu, Robert C. U.; Foley, Geoffrey M. T.; Herbert, William G.; Limburg, William W.; Mishra, Satchidanand; Post, Richard L.; and VonHoene, Donald C., 5,382,486, Cl. 430-56.000.
Herberts Gesellschaft mit beschrankter Haftung: *See*—
Dahl, Jurgen, 5,381,918, Cl. 220-256.000.
Herbst, Richard. Injection molding apparatus comprising a stack mold. 5,382,158, Cl. 425-572.000.
Hercules Incorporated: *See*—
Fifield, Charles C., 5,381,735, Cl. 101-483.000.
Herleikson, Earl C.; and Lindauer, James M., to Hewlett-Packard Corporation. QRS detector for defibrillator/monitor. 5,381,803, Cl. 128-708.000.
Herleikson, Earl C.: *See*—
Baumgartner, Richard A.; Moore, Charles E.; and Herleikson, Earl C., 5,382,956, Cl. 341-155.000.
Herr Haase, Inc.: *See*—
Haase, Donald J., 5,382,417, Cl. 423-219.000.
Herring, Laura E.: *See*—
Nohr, Ronald S.; MacDonald, John G.; and Herring, Laura E., 5,382,703, Cl. 568-609.000.
Herrmann, Erhard: *See*—
Thone, Bernd; Schmidt, Gerhard; and Herrmann, Erhard, 5,382,418, Cl. 423-239.100.
Herroon, Gregory P.: *See*—
Bahel, Vijay; Millet, Hank; Hickey, Mickey; Pham, Hung; and Herroon, Gregory P., 5,381,669, Cl. 62-129.000.
Herschberger, Thomas A.: *See*—
Pike, Richard D.; Brown, Kurtis L.; Gwaltney, Sharon W.; Herschberger, Thomas A.; and Siegel, Scott D., 5,382,400, Cl. 264-168.000.
Herzog, Armin: *See*—
Danter, Laurence K.; Herzog, Armin; and Wilmes, Manfred, 5,381,601, Cl. 30-90.100.
Hewlett-Packard Company: *See*—
Chung, Shine, 5,383,142, Cl. 364-715.110.
Lovelace, Ralph E., 5,382,786, Cl. 250-214.00A.
Unverrich, Rod, 5,383,178, Cl. 370-17.000.
Weinberger, Scot R.; Egan, Robert W.; Hoppe, Thomas W.; Gassmann, Ernst; Schar, Martin M.; Bornsen, Klaus O.; and Tarantino, E. Rocco, 5,382,793, Cl. 250-288.000.
Hewlett-Packard Corporation: *See*—
Herleikson, Earl C.; and Lindauer, James M., 5,381,803, Cl. 128-708.000.
Heyman, H. Robin: *See*—
Summers, James B.; Sheppard, George S.; Phillips, James G.; Pireh, Daisy; Steinman, Douglas H.; May, Paul D.; Guinn, Denise E.; Heyman, H. Robin; Carrera, George M., Jr.; and Davidsen, Steven K., 5,382,670, Cl. 546-273.000.
Heymanns, Peter: *See*—
Bahrmann, Helmut; Greb, Wolfgang; Heymanns, Peter; Lappe, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,382,716, Cl. 568-883.000.
Hibbard, Robert H., to Eastman Kodak Company. Apparatus and method for adaptively interpolating a full color image utilizing luminance gradients. 5,382,976, Cl. 348-273.000.
Hibi, Toshifumi, to Nissan Motor Co., Ltd. Slip control for automotive vehicle with continuously variable transmission. 5,383,125, Cl. 364-426.030.
Hibner, John A.: *See*—
Allen, Eugene D.; Bedi, James J.; Bishop, Gregory D.; Burdorff, Mark A.; Conlon, Sean P.; Hibner, John A.; Hughett, J. David; Ortiz, Mark S.; Paraschac, Joseph; Sambi, Narinderjit; Sierocuk, Thomas J.; and Smith, Jack E., 5,381,943, Cl. 227-177.000.
Hickey, Mickey: *See*—
Bahel, Vijay; Millet, Hank; Hickey, Mickey; Pham, Hung; and Herroon, Gregory P., 5,381,669, Cl. 62-129.000.
Hickmann, Eckhard: *See*—
Frank, Juergen; Rheude, Udo; Schulz, Bernhard; Paust, Joachim; and Hickmann, Eckhard, 5,382,732, Cl. 585-351.000.
Hieblinger, Rudolf, to Tretorn AB. Shoe with central closure. 5,381,609, Cl. 36-50.100.
Higashi, Iwao: *See*—
Kitayama, Toru; and Higashi, Iwao, 5,382,751, Cl. 84-661.000.
Higgins, Kenneth B., to Milliken Research Corporation. Method to refurbish carpet tiles. 5,381,592, Cl. 28-100.000.
Highland Supply Corporation: *See*—
Weder, Donald E.; and Bergstrand, John W., 5,381,642, Cl. 53-399.000.

Highland Tank & Manufacturing Company: *See*—
O'Dea, Richard W., 5,381,923, Cl. 220-565.000.

Hiler, Allen J., to Atlas Bolt & Screw Company. Method for making a self-drilling and self-tapping screw. 5,382,195, Cl. 470-9.000.

Hill, Jerry L.; Travis, Benjamin D.; Mahmoud, Mohamed I.; Brooks, James R.; Schenz, Timothy W.; and Dewille, Normanella T., to Abbott Laboratories. Product and process of improving the stability of vitamin D. 5,382,439, Cl. 426-73.000.

Hill, Martyn W.; and Sharman, Dennis F., to CTS Biocides Ltd. Assay for dibromonitrilopropionamide. 5,382,529, Cl. 436-109.000.

Hills, Graham W.; and Bucknall, Ruth E., to Applied Materials, Inc. Process for simultaneous removal of photoresist and polysilicon/polycide etch residues from an integrated circuit structure. 5,382,316, Cl. 156-643.000.

Hina, Eiji: *See*—
Anabuki, Yoshinori; and Hina, Eiji, 5,382,802, Cl. 250-492.100.

Hinde, Brian, to Stavros, Michael G.; and Allison, Larry W. Mast box for a sailboard. 5,381,747, Cl. 114-39.200.

Hindsgaul, Kim, to Hygoform A.S. Tubular body, especially as a core element, and roll with a core element. 5,381,984, Cl. 242-613.500.

Hines, Lee M.: *See*—
Thompson, Hugh A.; Young, Gerald A.; Osborn, Thomas W., III; Chappell, Charles W.; Johnson, Theresa L.; Hammons, John L.; Lavash, Bruce W.; Horney, James C.; and Hines, Lee M., 5,382,245, Cl. 604-367.000.

Hintz, Roger L. Mouthpiece with a breathing channel. 5,381,783, Cl. 128-206.190.

Hirabayashi, Keiji: *See*—
Yamamoto, Kiyoshi; Hirabayashi, Keiji; Kurihara, Noriko; Taniguchi, Yasushi; and Ikoma, Keiko, 5,382,274, Cl. 65-26.000.

Hirai, Isamu: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; Takahashi, Akio; and Matsudo, Nobuhiko, 5,382,997, Cl. 354-441.000.

Hirai, Toshiharu; Abe, Yoneji; and Komatsu, Michio, to Catalysts & Chemicals Industries Co., Ltd.; and Asahi Glass Company. Coating solutions for forming transparent conductive ceramic coatings, substrates coated with transparent conductive ceramic coatings and process for preparing same, and uses of substrates coated with transparent conductive ceramic coatings. 5,382,383, Cl. 252-501.100.

Hiramitsu, Tetsushi; Takahashi, Toshinori; and Takahashi, Yuji, to Toyoda Gosei Co., Ltd. Air bag controlling apparatus. 5,382,049, Cl. 280-735.000.

Hirao, Toru; and Sato, Hideki, to Tsubakimoto Chain Co. Trolley apparatus with improved unloader. 5,381,885, Cl. 198-465.400.

Hirashima, Shigeyoshi, to Sony Corporation. Gravure printer with doctor blade grinding abrasive edged sheet. 5,381,733, Cl. 101-157.000.

Hirata, Kouichi: *See*—
Okada, Susumu; Hirata, Kouichi; Sato, Susumu; Morita, Masahiko; and Nakagawa, Tsuguhiko, 5,382,302, Cl. 148-226.000.

Hirata, Yoshiki: *See*—
Fujihira, Masamichi; Hirata, Yoshiki; Suga, Kosaku; and Akiba, Uichi, 5,382,332, Cl. 204-128.000.

Hirobe, Yoshiaki: *See*—
Nakamura, Hirotaka; Nishijoh, Astushi; Tsuchiya, Shigeki; and Hirobe, Yoshiaki, 5,382,933, Cl. 335-278.000.

Hiroi, Masakazu: *See*—
Kobayashi, Kenji; Murakami, Koichi; Hiroi, Masakazu; and Wakao, Naho, 5,382,016, Cl. 271-293.000.

Hirono, Tetsuro; and Shinada, Mikio, to Mitsubishi Denki Kabushiki Kaisha. Printing apparatus. 5,382,104, Cl. 400-608.200.

Hirsch, Evan M.: *See*—
Walker, Linda A.; and Hirsch, Evan M., 5,381,912, Cl. 215-220.000.

Hisada, Nobuo; Nishigakiuchi, Yasushi; Ueno, Yoshiyuki; Kotani, Yasuo; and Yagyu, Tadao, to Sanyo Chemical Industries, Ltd. Color developers and sheets thereof. 5,382,560, Cl. 503-209.000.

Hisano, Katsumi: *See*—
Minakami, Ko; Terashima, Toshinori; Maeda, Toshio; Sasaki, Tomiya; Hisano, Katsumi; Iwasaki, Hideo; and Kawano, Koichiro, 5,381,859, Cl. 165-80.300.

Hise, Robert L.: *See*—
Mulaskey, Bernard F.; Hise, Robert L.; Trumbull, Steven E.; Cannella, William J.; and Innes, Robert A., 5,382,353, Cl. 208-138.000.

Hitachi Automotive Engineering Co.: *See*—
Miyazaki, Atsushi; Kobayashi, Chihiro; Igarashi, Shinya; Matsukura, Tetsuo; Maeda, Haruhiko; Arai, Nobukatsu; and Sekine, Yoshihito, 5,381,691, Cl. 73-202.500.

Hitachi Chemical Company Ltd.: *See*—
Morishita, Yoshii; Hayashida, Shigeru; Sugimoto, Yasushi; Ishikawa, Hiroko; Kobayashi, Hiroshi; and Sonoda, Takaaki, 5,382,687, Cl. 564-319.000.

Hitachi, Ltd.: *See*—
Etoh, Jun; Aoki, Masakazu; Horiguchi, Masashi; Ueda, Shigeki; Tanaka, Hitoshi; Kajigaya, Kazuhiko; Takahashi, Tsugio; and Kawamoto, Hiroshi, 5,383,080, Cl. 361-56.000.
Homma, Koichi; Kagami, Akira; Tenma, Tadashi; Akashi, Kichizo; Kusuzaki, Tetsuo; Nishimoto, Tatsumi; and Oyama, Hiroaki, 5,383,111, Cl. 364-401.000.
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.
Masukawa, Tetsuo; Matsumoto, Masaaki; Saitoh, Yokuo; Kojima, Yasuo; Suzuki, Toshio; Umakoshi, Yukimori; and Morita, Kiyoji, 5,383,073, Cl. 360-104.000.
Miyazaki, Atsushi; Kobayashi, Chihiro; Igarashi, Shinya; Matsukura, Tetsuo; Maeda, Haruhiko; Arai, Nobukatsu; and Sekine, Yoshihito, 5,381,691, Cl. 73-202.500.
Mizokami, Takuya; Saito, Atsushi; Yoshida, Naozane; and Sekine, Takehiko, 5,383,171, Cl. 369-59.000.
Nakajima, Akinobu; Ishibashi, Yoko; Aoyama, Motoo; Kurihara, Kunitoshi; Yamashita, Junichi; Nakajima, Junjiro; and Nishida, Koji, 5,383,229, Cl. 376-434.000.
Nakamura, Masayuki; and Oshima, Kazuyoshi, 5,383,150, Cl. 365-145.000.
Saho, Norihide; Nemoto, Takeo; and Saeki, Mitsuru, 5,381,666, Cl. 62-47.100.
Shirai, Masaki; Moriuchi, Hisahiro; Yoshii, Yasuhiro; Kuroda, Kenichi; and Matsuo, Akinori, 5,383,162, Cl. 365-231.000.
Taniguchi, Yo; and Yamamoto, Etsuji, 5,382,902, Cl. 324-309.000.
Yamada, Tomio; and Hoshi, Akio, 5,382,546, Cl. 437-217.000.
Yuhara, Tazunu; Onimaru, Hiroya; Gotou, Kanzen; and Oda, Ikuyo, 5,382,777, Cl. 235-379.000.

Hitachi Maxell, Ltd.: *See*—
Kato, Yoshitake; Fukunaga, Kazuya; and Hitomi, Yoshihisa, 5,383,078, Cl. 360-133.000.

Hitachi Plant Engineering & Construction Co., Ltd.: *See*—
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,382,423, Cl. 422-198.000.

Hitachi Video Engineering, Inc.: *See*—
Mizokami, Takuya; Saito, Atsushi; Yoshida, Naozane; and Sekine, Takehiko, 5,383,171, Cl. 369-59.000.

Hitachi VLSI Engineering Corporation: *See*—
Etoh, Jun; Aoki, Masakazu; Horiguchi, Masashi; Ueda, Shigeki; Tanaka, Hitoshi; Kajigaya, Kazuhiko; Takahashi, Tsugio; and Kawamoto, Hiroshi, 5,383,080, Cl. 361-56.000.
Shirai, Masaki; Moriuchi, Hisahiro; Yoshii, Yasuhiro; Kuroda, Kenichi; and Matsuo, Akinori, 5,383,162, Cl. 365-231.000.

Hitomi, Yoshihisa: *See*—
Kato, Yoshitake; Fukunaga, Kazuya; and Hitomi, Yoshihisa, 5,383,078, Cl. 360-133.000.

Hobby, James D.: *See*—
Butcher, Steven J.; Hobby, James D.; and Kings, David H. M., 5,382,865, Cl. 310-366.000.

Hobgood, Robert B.; Smith, Jay L.; Verne, Robert D.; and Walker, Anthony D., to International Business Machines Corporation. Dual ring reconfiguration switching unit. 5,383,191, Cl. 371-11.200.

Hocking, Michael G.; and Sidky, Paulette S., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Production of ceramic filaments. 5,382,456, Cl. 427-434.600.

Hodgins, George: *See*—
Niziolek, Thomas C.; Hodgins, George; and Ray, Marie B., 5,382,495, Cl. 430-162.000.

Hoechst AG: *See*—
Bergner, Klaus-Dieter; and Pfahler, Gerhard, 5,382,613, Cl. 124-102.000.

Hoechst Aktiengesellschaft: *See*—
Bahrmann, Helmut; Greb, Wolfgang; Heymanns, Peter; Lappe, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,382,716, Cl. 568-883.000.
Billeb, Gilbert; and Folz, Georg, 5,382,694, Cl. 568-437.000.
Nettelnstroth, Karl, 5,382,153, Cl. 425-308.000.
Schenk, Karl H.; Heinrichs, Angelika; and Metz, Hans J., 5,382,288, Cl. 106-496.000.
Schumacher, Hans; Huff, Hans P.; and Hacker, Erwin, 5,382,563, Cl. 504-136.000.
Schumacher, Hans; Huff, Hans P.; and Hacker, Erwin, 5,382,564, Cl. 504-136.000.
Yamamoto, Hironobu; Johnson, Robert; and Funato, Satoru, 5,383,050, Cl. 359-326.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Shutske, Gregory M.; Kapples, Kevin J.; and Tomer, John D., 5,382,594, Cl. 514-297.000.

Hoefer, Rainer: *See*—
Daute, Peter; Gruetzmacher, Roland; Hoefer, Rainer; and Stoll, Gerhard, 5,382,647, Cl. 528-73.000.

Hoenes, Joachim; Wielinger, Hans; and Unkrig, Volker, to Boehringer Mannheim GmbH. Use of sparingly soluble salt of a heteropoly acid for the determination of an analyte, a corresponding method of determination as well as a suitable agent thereof. 5,382,523, Cl. 435-14.000.

Hoenke, Mark S., to Admiral Equipment Co. Profile extrusion apparatus and method for extruding a profile. 5,382,395, Cl. 264-40.700.

Hoffman, Jeffrey H., to Classic Modular Systems, Inc. Damper control apparatus. 5,382,192, Cl. 454-61.000.

Hoffmann-La Roche Inc.: *See*—
Karasiewicz, Robert; Nalin, Carlo; and Rosen, Perry, 5,382,657, Cl. 530-351.000.

Hofmann, Dieter; and Kalkus, Berthold, to Schoeller & Co.; and Elektrotechnische Fabrik GmbH & Co. Electric socket especially for motor vehicles. 5,382,171, Cl. 439-142.000.

Hogan Mfg., Inc.: *See*—
Kempf, Dale, 5,382,130, Cl. 414-540.000.

Hogendijk, Michael, to Unisurge, Inc. Clip applier tool. 5,382,253, Cl. 606-142.000.

Holler, Helmut: *See*—
Lorenz, Dieter; Pircher, Christian; Geier, Petra; Holler, Helmut; and Pfaff, Dietrich, 5,382,765, Cl. 200-148.00R.

Holloway, Joan M.; and Ridley, Jeter L., to Vollrath Group, Inc. Contoured basin. 5,381,562, Cl. 4-516.000.

Holmes, Jon A.: *See*—
Harvey, Ronald B.; Holmes, Jon A.; and Benson, Keith A., 5,383,027, Cl. 358-296.000.

Holmes, Lester E.: *See*—
Wilson, Robert L.; Pittman, Ernest; and Holmes, Lester E., 5,382,079, Cl. 297-411.360.

Holmstrom, Peter; and Pettersson, Sven, to NobelTech Electronics. Release unit, and release system comprising at least one such release unit. 5,381,721, Cl. 89-1.510.

Holtslag, Antonius H. M.; Coombs, James H.; and Van Es-Spiekman, Wilma, to U.S. Philips Corporation. Information storage system and device for improved erasing of information written on a record carrier. 5,383,172, Cl. 369-100.000.

Holz, Peter: *See*—
Rings, Friedel; and Holz, Peter, 5,382,117, Cl. 406-39.000.

Holz, Walter: *See*—
Lohnherr, Ludger; Kimmeyer, Ludger; Holz, Walter; Zigan, Bernhard; and Schoneich, Werner, 5,381,968, Cl. 241-19.000.

Holzheimer, John C., to B. F. Goodrich Company, The. Constant force torsion spring apparatus. 5,382,007, Cl. 267-154.000.

Homma, Koichi; Kagami, Akira; Tenma, Tadashi; Akashi, Kichizo; Kusuzaki, Tetsuo; Nishimoto, Tatsumi; and Oyama, Hiroaki, to Hitachi, Ltd. Visual merchandizing (VMD) control method and system. 5,383,111, Cl. 364-401.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ichinose, Katsuki; and Takebe, Katuhiko, 5,381,696, Cl. 73-771.000.
Kawahara, Eiichiro; Nakamura, Takashi; Furumoto, Mitsumasa; and Sakai, Kazuaki, 5,381,724, Cl. 92-12.200.
Ogawa, Ken; Hara, Yoshihisa; Miyashita, Kotaro; and Machida, Kei, 5,383,126, Cl. 364-431.060.
Takizawa, Tsuyoshi; Seki, Yasunari; Iwata, Yoichi; Sato, Toshihiko; and Nakayama, Takayoshi, 5,381,657, Cl. 60-276.000.
Watanabe, Hideo; Takahashi, Shoji; Suzuki, Takeshi; and Oikawa, Masatoshi, 5,381,838, Cl. 141-198.000.

Honda, Hiroshi: *See*—
Nakamura, Takashi; Yamauchi, Satomi; and Honda, Hiroshi, 5,381,746, Cl. 112-275.000.

Honda, Jun: *See*—
Shinoda, Ryuichi; Honda, Jun; and Miyata, Kunihiro, 5,383,083, Cl. 361-103.000.

Honda, Kimihide: *See*—
Kuwana, Akihiro; Honda, Kimihide; and Koga, Kunio, 5,382,676, Cl. 549-541.000.

Honeywell Inc.: *See*—
Kennedy, Thomas W., Jr.; and Fenstermaker, Donald F., 5,382,954, Cl. 340-961.000.

Hong, Gary, to United Microelectronics Corporation. Interconnection process with self-aligned via plug. 5,382,545, Cl. 437-195.000.

Hong, Gary, to United Microelectronics Corporation. Ulsi mask ROM structure and method of manufacture. 5,383,149, Cl. 365-104.000.

Hong, Yeong K., to Gold Star Co., Ltd. Cooking state displaying apparatus and method for a microwave oven combined with a television. 5,382,939, Cl. 340-309.150.

Hongo, Hitoshi: *See*—
Uomori, Kenya; Yamada, Mitsuho; Hongo, Hitoshi; Yoshimatsu, Hiroshi; Ueno, Keiichi; Murakami, Shinji; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,382,989, Cl. 351-209.000.

Honjo, Atsushi, to Kabushiki Kaisha Toshiba. Semiconductor device having MOS source follower circuit. 5,382,819, Cl. 257-371.000.

Honkanen, Erkki; and Lindholm, Stig, to Orion-yhtyma Oy. Method for the preparation of 3,4-dihydroxy-5-nitrobenzaldehyde. 5,382,699, Cl. 568-436.000.

Hood, Larry L.; Hughes, Gregg; Carlson, Ted; Berkman, John; Caillouette, James T.; Klapper, Robert C.; and Watson, Woodrow W., to Biomet, Inc. Plug pulling method. 5,382,251, Cl. 606-99.000.

Hoover Universal, Inc.: *See*—
Fecteau, Anthony J.; Boehme, Christopher; Geenens, Robert; and Papalambros, Lynn, 5,382,083, Cl. 297-452.200.

Hopkins, Christopher E.; Markunas, Albert L.; Maddali, Vijay K.; and Arbanella, Richard A., to Sundstrand Corporation. Harmonic control for an inverter by use of an objective function. 5,383,107, Cl. 363-41.000.

Hoppe, Thomas W.: *See*—
Weinberger, Scot R.; Egan, Robert W.; Hoppe, Thomas W.; Gassmann, Ernst; Schar, Martin M.; Bornsen, Klaus O.; and Tarantino, E. Rocco, 5,382,793, Cl. 250-288.000.

Horacek, Heinrich, to Chemie Linz GmbH. Thermoplastic polyesterimides from trimellitic acid, propanediphenol and an aromatic diamine which have improved mechanical properties, their preparation and their use. 5,382,649, Cl. 528-170.000.

Horch, Kenneth W.: *See*—
Tuckett, Robert P.; Horch, Kenneth W.; Fisher, John H.; and Evans, Barry L., 5,381,805, Cl. 128-739.000.

Horiguchi, Masashi: *See*—
Etoh, Jun; Aoki, Masakazu; Horiguchi, Masashi; Ueda, Shigeki; Tanaka, Hitoshi; Kajigaya, Kazuhiko; Takahashi, Tsugio; and Kawamoto, Hiroshi, 5,383,080, Cl. 361-56.000.

Horiguchi, Toshio; and Tanaka, Hisakatsu, to Olympus Optical Co., Ltd. Optical card recording/reproducing apparatus wherein a data process is made during an access operation. 5,383,170, Cl. 369-44.280.

Horikawa, Shozo: *See*—
Sakano, Makoto; Oku, Shuitiro; and Horikawa, Shozo, 5,381,983, Cl. 242-562.100.

Horney, James C.: *See*—
Thompson, Hugh A.; Young, Gerald A.; Osborn, Thomas W., III; Chappell, Charles W.; Johnson, Theresa L.; Hammons, John L.; Lavash, Bruce W.; Horney, James C.; and Hines, Lee M., 5,382,245, Cl. 604-367.000.

Horton, Duane L.; and Nye, Richard V., to Mallinckrodt Medical, Inc. Capping device for conduit connector. 5,382,242, Cl. 604-283.000.

Hoshi, Akio: *See*—
Yamada, Tomio; and Hoshi, Akio, 5,382,546, Cl. 437-217.000.

Hoshizaki, Taketoshi: *See*—
Ojima, Fumio; Mashimo, Kiyokazu; Ishii, Toru; Kobayashi, Tomoo; and Hoshizaki, Taketoshi, 5,382,489, Cl. 430-96.000.

Hosokawa, Atusi: *See*—
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

Hosokawa, Naokichi; and Kim, Kyungshik, to Anelva Corporation. Sputtering apparatus. 5,382,344, Cl. 204-298.200.

Hosokawa, Takashi: *See*—
Tei, Chuwa; Hosokawa, Takashi; Kato, Tomoyuki; Takekawa, Wataru; Ito, Hisao; and Yoshikawa, Yoshihiro, 5,381,794, Cl. 128-667.000.

Hosono, Kunihiro, to Mitsubishi Denki Kabushiki Kaisha. Method of correcting defects in the pattern of phase shift mask. 5,382,484, Cl. 430-5.000.

Hosono, Mituo: *See*—
Kurosu, Hidetsugu; and Hosono, Mituo, 5,381,837, Cl. 141-103.000.

Hospal Industrie: *See*—
Riquier, Jean-Claude, 5,382,227, Cl. 604-4.000.

Hosseinmardi, Mohsen: *See*—
Boja, Ronilo V.; and Hosseinmardi, Mohsen, 5,381,641, Cl. 53-255.000.

Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Mori, Shinichiro; Tanaka, Toshio; Tanaka, Koji; and Ono, Hiroshi, to Toyo Boseki Kabushiki Kaisha. Polymer particles and method for producing the same. 5,382,624, Cl. 525-10.000.

Hottinger, Herbert; Mignot, Olivier; and Mollet, Beat, to Nestec S.A. Preparation of yogurt with lac(−) *L. bulgaricus*. 5,382,438, Cl. 426-43.000.

Hou, Hsien-Te. Renovated flashlight. 5,383,104, Cl. 362-202.000.

Houbre, Pascal: *See*—
Schueller, Pierre; Laffont, Pierre; and Houbre, Pascal, 5,382,896, Cl. 324-127.000.

Houdayer, Christophe: *See*—
Rigaux, Christian; Lhote, Pascal; Caillault, Claude; and Houdayer, Christophe, 5,382,098, Cl. 384-448.000.

Houston Advanced Research Center: *See*—
Pissanetzky, Sergio, 5,382,904, Cl. 324-319.000.

Howard, Edward G., Jr., to Du Pont de Nemours, E. I., and Company. Annealed linear high density polyethylene and preparation thereof. 5,382,643, Cl. 526-352.000.

Howard, Mark J.: *See*—
Astbury, Christopher J.; Griffiths, David C.; Howard, Mark J.; and Reid, Ian A. B., 5,382,741, Cl. 585-652.000.

Howard, Robert A.: *See*—
Shen, David W.; Howard, Robert A.; Riccomini, Robert A.; Young, Steven J.; Cox, Robert E. L.; Le Bars, Philippe; and Tsukinari, Keiichi, 5,382,182, Cl. 439-676.000.

Hozumi, Toshiaki; and Ogawa, Hidehiro, to Nikon Corporation. Imprinting camera system with data changeover capability. 5,382,993, Cl. 354-106.000.

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Kato, Eiichi; and Ishii, Kazuo, 5,382,488, Cl. 430-95.000.

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Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

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Gotthelf, Jeffrey B., 5,381,819, Cl. 137-340.000.
Noone, David L.; and Mitchell, Frank L., 5,383,087, Cl. 361-215.000.

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Hague, Clifford W.; and Koenig, Paul A., 5,382,232, Cl. 604-65.000.

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Numata, Tomiyuki; Yamaguchi, Takeshi; and Iwaki, Takashi, 5,383,174, Cl. 369-119.000.

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Motoyama, Hideyuki; Iwasa, Seiichi; and Kawamura, Isao, 5,383,138, Cl. 364-708.100.

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Irikawa, Michinori; Iwase, Masayuki; and Iga, Kenichi, 5,383,213, Cl. 372-46.000.

Iwata, Michihiro: *See*—
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Kotitschke, Gerhard; and Kolb, Otmar, 5,381,580, Cl. 15-302.000.

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Friedmann, Oswald; and Jackel, Johann, 5,382,193, Cl. 464-64.000.

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Chung, Harold S.; Jackson, Andrew; and Wu, Margaret M., 5,382,705, Cl. 568-697.000.

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Namowitz, Hermann, 5,382,217, Cl. 493-310.000.

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Queniat, Jean-Francois; and Jaillard, Andre, 5,383,208, Cl. 372-29.000.

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Thogho, Makoto; Hattori, Tamotsu; Okazaki, Noboru; Akamatsu, Kozaburo; Hayashi, Tomoyuki; and Kusumi, Tomohiko, 5,382,356, Cl. 210-96.100.

Japan Radio Co., Ltd.: *See*—
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Japan Tobacco Inc.: *See*—
Sakano, Makoto; Oku, Shuitiro; and Horikawa, Shozo, 5,381,983, Cl. 242-562.100.

Japat Ltd.: *See*—
Asakura, Toshikage; Wernet, Wolfgang; Ohwa, Masaki; and Kai, Kenichiro, 5,382,382, Cl. 252-500.000.

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Iizuka, Naonori, 5,382,201, Cl. 475-123.000.

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Walsh, Joseph F., 5,382,910, Cl. 324-533.000.

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Cliffe, Ian A., 5,382,583, Cl. 514-252.000.

Johnson, David L.: *See*—
Hansen, Allen R.; Johnson, David L.; Stevenson, Scott A.; Schipper, Paul H.; and Harandi, Mohsen N., 5,382,352, Cl. 208-121.000.

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Johnson, Lonnie G.: *See*—
D'Andrade, Bruce M.; and Johnson, Lonnie G., 5,381,778, Cl. 124-69.000.

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Kight, Peter J.; Johnson, Mark A.; Christenson, Tamara K.; Lach, Regina; Pointer, Philip; and Cook, Kenneth, 5,383,113, Cl. 364-401.000.

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Johnson, Theresa L.: *See*—
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Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, to Hitachi, Ltd. Vacuum cleaner. 5,381,584, Cl. 15-319.000.

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Akita, Yoshihiro; and Shirakawa, Masakazu, 5,383,221, Cl. 375-7.000.
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Kagami, Yoshinobu: *See—*
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Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Legoux, Richard; Loison, Gerard; Larbre, Elisabeth; Lupker, Johannes; Leplatois, Pascal; Salome, Marc; and Laurent, Patrick, 5,382,518, Cl. 435-191.000.

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Kanda, Eiichiro: *See—*
Yoshita, Mitsuru; Ii, Kenichi; Kashima, Kazuhiro; Kanda, Eiichiro; Ohno, Takanori; and Takeuchi, Naotake, 5,382,349, Cl. 205-40.000.

Kanduth, Harald H.; and Hudyma, Marty, to Noranda Inc. Method and apparatus for measuring three dimensional stress in rock surrounding a borehole. 5,381,690, Cl. 73-151.000.

Kanegafuchi Chemical Industry Co., Ltd.: *See—*
Takada, Jun; Nakajima, Akihiko; and Tawada, Yoshihisa, 5,382,787, Cl. 250-214.100.

Kaneko, Michihiro: *See—*
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tesho; Ayukai, Yasuhiro; Babe, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.

Kanengieter, Dorette E., executrix: *See—*
Kniefel, John H.; Boeddeker, David R.; and Kanengieter, Glenn G., deceased, 5,381,873, Cl. 182-152.000.

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Kanesaka, Nozomu. Electrophysiology apparatus. 5,381,790, Cl. 123-647.000.

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Yoshimura, Masaji; Kanezaki, Kazuharu; Satoh, Takashi; Nakata, Tomoyuki; and Takiguchi, Minoru, 5,382,627, Cl. 525-132.000.

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Kansei Corporation: *See—*
Nagami, Masafumi, 5,382,897, Cl. 324-143.000.

Kanto Kagaku Kabushiki Kaisha: *See—*
Kurihara, Makoto; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,382,380, Cl. 252-299.660.

Kanzaki, Shigeki: *See—*
Kawaguchi, Masahiro; Sonobe, Masanori; Kanzaki, Shigeki; and Yokono, Tomohiko, 5,382,139, Cl. 417-269.000.

Kao, Rom-Shen: *See—*
Gibbs, Vickie L.; and Kao, Rom-Shen, 5,383,204, Cl. 371-37.700.

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Rupp, David C.; Anger, Claude; Kapadia, Saroj; and Totaro, Mary, 5,382,599, Cl. 514-547.000.

Kapples, Kevin J.: *See—*
Shutske, Gregory M.; Kapples, Kevin J.; and Tomer, John D., 5,382,594, Cl. 514-297.000.

Karaaslan, Ufuk: *See—*
Guzik, Nahum; Karaaslan, Ufuk; and Slutsky, Boris, 5,382,887, Cl. 318-652.000.

Karaczony, Erno : *See—*
Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacxony, Erno ; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

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Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacxony, Erno ; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

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Hanssoo, Tomas; and Karlstrom, Per-Olof, 5,382,938, Cl. 338-77.000.

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Warda, Thomas S.; and Karnowka, Bernard J., 5,382,325, Cl. 162-218.000.

Kartalopoulos, Stamatios V., to AT&T Corp. Circuit pack for digital loop carrier tranmission systems. 5,383,180, Cl. 370-58.200.

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Okamura, Hisatake; Kasahara, Masahiro; Tsuru, Teruhisa; and Taniguchi, Tetsuo, 5,382,927, Cl. 333-175.000.

Kaser, Beda, to Zumbach Electronic AG. Method and apparatus for measuring the dimensions of an object. 5,383,022, Cl. 356-387.000.

Kasha, Michael. Fan-bracing and X-bracing for cello and double bass. 5,381,714, Cl. 84-276.000.

Kashida, Meguru: *See—*
Kuwabara, Haruyoshi; Otsuka, Akio; and Kashida, Meguru, 5,382,554, Cl. 501-97.000.

Kashihara, Keiichiro; and Itoh, Hiromi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device having a ferroelectric capacitor with a planarized lower electrode. 5,382,817, Cl. 257-295.000.

Kashima, Kazuhiro: *See—*
Yoshita, Mitsuru; Ii, Kenichi; Kashima, Kazuhiro; Kanda, Eiichiro; Ohno, Takanori; and Takeuchi, Naotake, 5,382,349, Cl. 205-40.000.

Kasowski, Robert V.; and Burch, Robert R., Jr., to Du Pont de Nemours, E. I., and Company. Catalysts for polyester production. 5,382,650, Cl. 528-277.000.

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Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, to Canon Kabushiki Kaisha. Optical recording medium and process for recording thereupon. 5,382,497, Cl. 430-269.000.

Katagiri, Masayoshi: *See—*
Tsuruta, Matsuhisa; Sakakibara, Ryuichi; and Katagiri, Masayoshi, 5,381,875, Cl. 188-73.380.

Katamura, Koichi: *See—*
Ohno, Hiromoto; Arai, Tatsuharu; Katamura, Koichi; Yuge, Sadayoshi; Kawai, Haruyuki; and Morito, Yasuaki, 5,382,724, Cl. 570-178.000.

Katayama, Hiroyuki: *See—*
Misawa, Tsutami; Itoh, Hisato; Nishizawa, Tsutomu; Nakano, Masami; and Katayama, Hiroyuki, 5,382,465, Cl. 428-195.000.

Katayama, Kouichi: *See—*
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Katayama, Satoshi: *See—*
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Kato, Eiichi; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Electrophotographic light-sensitive material. 5,382,488, Cl. 430-95.000.

Kato, Haruyuki: *See—*
Matsubara, Toshio; Kato, Haruyuki; Ota, Yuji; and Tominaga, Hideki, 5,381,776, Cl. 123-681.000.

Kato, Masahiko: *See—*
Yuhi, Toshiya; Ohtake, Takahiro; Kato, Masahiko; and Someya, Ryouichi, 5,382,852, Cl. 310-40.0MM.

Kato, Mitsuo: *See—*
Funahashi, Hiroko; Kato, Mitsuo; Miyamura, Hidemi; and Yamazaki, Jun, 5,382,871, Cl. 313-402.000.

Kato, Shiro, to Matsushita Electric Industrial Co., Ltd. Subsampling method and interpolation method of digital signals. 5,383,144, Cl. 364-724.100.

Kato, Tatsuo: *See—*
Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, 5,382,620, Cl. 524-491.000.

Kato, Tohru: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Kato, Tohru; and Sato, Yoshiaki, 5,382,144, Cl. 418-55.300.

Kato, Tomoyuki: *See—*
Tei, Chuwa; Hosokawa, Takashi; Kato, Tomoyuki; Takekawa, Wataru; Ito, Hisao; and Yoshikawa, Yoshihiro, 5,381,794, Cl. 128-662.030.

Kato, Yoshitake; Fukunaga, Kazuya; and Hitomi, Yoshihisa, to Hitachi Maxell, Ltd. Magnetic disk assembly having a hub with a circular recess extending circumferentially along an outer peripheral edge thereof. 5,383,078, Cl. 360-133.000.

Katoh, Kazunobu: *See—*
Sakai, Minoru; Katoh, Kazunobu; and Morimoto, Kiyoshi, 5,382,496, Cl. 430-264.000.

Katsumata, Shuichi; Kawabata, Akira; and Matsumoto, Hironori, to Yazaki Corporation. Vehicle headlamp control system. 5,382,877, Cl. 315-82.000.

Kattas, Alex P. Tethered model gyroglider. 5,381,988, Cl. 244-153.00A.

Kaufman, Russell D. Motorized skateboard apparatus. 5,381,870, Cl. 180-181.000.

Kawabata, Akira: *See—*
Katsumata, Shuichi; Kawabata, Akira; and Matsumoto, Hironori, 5,382,877, Cl. 315-82.000.

Kawaguchi, Masahiro; Sonobe, Masanori; Kanzaki, Shigeki; and Yokono, Tomohiko, to Kabushiki Kaisha Toyoda Jodoshokki Seisakusho. Guiding mechanism for reciprocating piston of piston type compressor. 5,382,139, Cl. 417-269.000.

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Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Kawai, Haruyuki: *See—*
Ohno, Hiromoto; Arai, Tatsuharu; Katamura, Koichi; Yuge, Sadayoshi; Kawai, Haruyuki; and Morito, Yasuaki, 5,382,724, Cl. 570-178.000.

Kawai, Junji: *See—*
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,382,205, Cl. 477-43.000.

Kawai, Makoto: *See—*
Kubota, Yoshihiro; Kawai, Makoto; Kojima, Shinji; and Arai, Ken-ichi, 5,382,469, Cl. 428-332.000.

Kawai Musical Inst. Mfg. Co., Ltd.: *See—*
Fujita, Akihiro; and Ishii, Katsushi, 5,382,749, Cl. 84-603.000.

Kawakami, Kazuhisa: *See—*
Mochizuki, Seiji; Hayakawa, Hitoshi; and Kawakami, Kazuhisa, 5,382,969, Cl. 347-23.000.

Kawakami, Takamasa: *See—*
Ando, Kazuhiro; Kawakami, Takamasa; Shouji, Yasuhiro; Tanaka, Yasuo; Kanaoka, Takeo; and Sayama, Norio, 5,382,333, Cl. 204-130.000.

Kawamata, Mitsuhisa: *See—*
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

Kawamoto, Hiroshi: *See—*
Etoh, Jun; Aoki, Masakazu; Horiguchi, Masashi; Ueda, Shigeki; Tanaka, Hitoshi; Kajigaya, Kazuhiko; Takahashi, Tsugio; and Kawamoto, Hiroshi, 5,383,080, Cl. 361-56.000.

Kawamoto, Mutsumi; Tanaka, Satoru; and Yamashita, Mitsugi, to Kabushikikaisha Equos Research. Electrical motor drive apparatus with planetary gearing. 5,382,854, Cl. 310-67.00R.

Kawamura, Isao: *See—*
Motoyama, Hideyuki; Iwasa, Seiichi; and Kawamura, Isao, 5,383,138, Cl. 364-708.100.

Kawamura, Kunio; Izumi, Shuji; Okada, Hiroyuki; Chikasaki, Masaaki; Iwata, Michihiro; and Tsuji, Sadafusa, to Minolta Camera Kabushiki Kaitha. Film cartridge accommodating device which prevents previously used cartridges from being employed in a camera or the like. 5,382,992, Cl. 354-21.000.

Kawamura, Masateru, to Sony Corporation. Detachable apparatus for automotive audio equipment. 5,381,684, Cl. 70-58.000.

Kawamura, Takanori: *See—*
Minami, Norio; Ozaki, Fumihiro; Ishibashi, Keiji; Kabasawa, Yasuhiro; Ikemori, Megumi; Ogawa, Toshiaki; and Kawamura, Takanori, 5,382,595, Cl. 514-450.000.

Kawano, Koichiro: *See—*
Minakami, Ko; Terashima, Toshinori; Maeda, Toshio; Sasaki, Tomiya; Hisano, Katsumi; Iwasaki, Hideo; and Kawano, Koichiro, 5,381,859, Cl. 165-80.300.

Kawano, Masashi, to Koyo Disposable Goods Company. Disposable diaper. 5,382,246, Cl. 604-385.200.

Kawarada, Motonobu; Kurihara, Kazuaki; Sasaki, Ken-ichi; Teshima, Akitomo; and Koshino, Nagaaki, to Fujitsu Limited. Plasma jet CVD apparatus for forming diamond films. 5,382,293, Cl. 118-723.0DC.

Kawasaki, Hisao: *See—*
Sharma, Umesh; and Kawasaki, Hisao, 5,382,540, Cl. 437-52.000.

Kawasaki Steel Corporation: *See—*
Anabuki, Yoshinori; and Hina, Eiji, 5,382,802, Cl. 250-492.100.
Okada, Susumu; Hirata, Kouichi; Sato, Susumu; Morita, Masahiko; and Nakagawa, Tsuguhiko, 5,382,302, Cl. 148-226.000.
Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, 5,381,857, Cl. 164-466.000.

Kawate, Koichiro, to Minnesota Mining and Manufacturing Company. Heat-sensitive imaging material. 5,382,641, Cl. 526-301.000.

Kayser, Mark H., to Minnesota Mining and Manufacturing Company. Pigmented algae-resistant granular materials and composites sheets including same. 5,382,475, Cl. 428-403.000.

Kayserberg, S.A.: *See—*
Ruppel, Remy; Laurent, Pierre; and Hungler, Joel, 5,382,464, Cl. 428-172.000.

Kazaitis, Michael P.; Graves, Robert P., Jr.; and Monti, Joseph L., to Viskase Corporation. Package of shirred food casing and method. 5,381,643, Cl. 53-415.000.

Keate, Christopher R.: *See—*
Aguirre, Sergio; Keate, Christopher R.; and Vatt, Gregory B., 5,383,225, Cl. 375-106.000.

Keck, Richard J.; O'Brien, Kirk G.; and Bigelow, Michael J., to General Electric Co. Generator rotor collector terminal stud hydrogen seal. 5,382,856, Cl. 310-71.000.

Keelan, Brian W.; Niklewicz, Robert; Libby, Diane P.; and Nelson, John V., to Eastman Kodak Company. Color reversal photographic elements adapted for underwater photography. 5,382,499, Cl. 430-503.000.

Kei Lau, James C.; Malmgren, Richard P.; and Roush, Michael, to TRW Inc. Massive parallel interconnection attachment using flexible circuit. 5,382,759, Cl. 174-264.000.

Keil, Michael: *See—*
Klein, Ulrich; Buschmann, Ernst; Keil, Michael; Goetz, Norbert; and Hartmann, Horst, 5,382,685, Cl. 564-301.000.

Keith, James A., Jr.; Bellew, William S.; and Sistare, James R., Sr., to Ryobi Motor Products, Corp. Plate joiner. 5,381,595, Cl. 29-467.000.

Keith, Peter G. Method and apparatus for connecting a trailer with a rigid drawbar and at least one centrally positioned axle to a tow vehicle. 5,382,041, Cl. 280-476.100.

KEL Corporation: *See—*
Azuma, Youichiro; and Kitamura, Shigeyasu, 5,382,168, Cl. 439-65.000.

Kelemen, Janos: *See—*
Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacxony, Erno ; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

Keller, Stephen A.: *See—*
Malhi, Satwinder; Smayling, Michael C.; and Keller, Stephen A., 5,382,536, Cl. 437-41.000.

Kellogg Company: *See—*
Kincaid, James G.; and Talbot, Michael W., 5,382,443, Cl. 426-620.000.

Kellogg, Lyndon J., Jr.: *See—*
Choe, Jung S.; Kellogg, Lyndon J., Jr.; and Weimer, Robert F., 5,382,280, Cl. 95-98.000.

Kelly, Thomas P., to Atchison, Topeka & Santa Fe Railway Company, The. Mechanism for lifting freight containers. 5,382,066, Cl. 294-68.300.

Kelly, William E., Jr.; and Baird, Richard L., to Du Pont de Nemours, E. I., and Company. Stabilization of poly(hydroxy acid)s derived from lactic or glycolic acid. 5,382,617, Cl. 524-405.000.

Kelsey, Donald R.: *See—*
Wang, Pen C.; and Kelsey, Donald R., 5,382,713, Cl. 568-734.000.

Kelsey-Hayes Company: *See—*
Tuck, Brian; and Schnerer, Peter, 5,382,086, Cl. 303-100.000.

Kempf, Dale, to Hogan Mfg., Inc. Wheelchair lift with stow latch mechanism and improved barrier cylinder mounting. 5,382,130, Cl. 414-540.000.

Kennametal Inc.: *See—*
Mehrotra, Pankaj K.; and Nixon, Robert D., 5,382,273, Cl. 51-307.000.

Kennedy, Clinton R.: *See—*
Breckenridge, Lloyd L.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; Kennedy, Clinton R.; and Kirker, Garry W., 5,382,730, Cl. 585-310.000.

Kennedy, Thomas W., Jr.; and Fenstermaker, Donald F., to Honeywell Inc. Resolution advisory display instrument for TCAS guidance. 5,382,954, Cl. 340-961.000.

Kensington Laboratories, Inc.: *See—*
Bacchi, Paul E.; Robalino, Manuel J.; and Filipaki, Paul S., 5,382,806, Cl. 250-561.000.

Kensington Microware Limited: *See—*
Carl, Stewart R.; Zarnowitz, Arthur H.; and Myers, Gary L., 5,381,685, Cl. 70-78.000.

Keranen, Heimo, to Rautaruukki Oy. Device for generating radiation. 5,383,101, Cl. 362-35.000.

Keri, Vilmos: *See—*
Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karaczony, Erno; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

Kermoian, Gary H.: *See—*
Reyhan, Frederick B.; Kermoian, Gary H.; Kesl, Richard J.; and Weise, Gary K., 5,382,752, Cl. 174-50.000.

Kern, Josef: *See—*
Hendel, Horst; Kern, Josef; and Kleine-Onnebrink, Bernhard, 5,382,934, Cl. 335-159.000.

Kesl, Richard J.: *See—*
Reyhan, Frederick B.; Kermoian, Gary H.; Kesl, Richard J.; and Weise, Gary K., 5,382,752, Cl. 174-50.000.

Khachik, Frederick, to Catholic University of America, The. Process for isolation, purification, and recrystallization of lutein from saponified marigold oleoresin and uses thereof. 5,382,714, Cl. 568-834.000.

Kida, Akira; and Satoh, Yasuaki, to Konica Corporation. Image reading apparatus. 5,383,031, Cl. 358-444.000.

Kidisti, Mariam G.: *See—*
Little, Jack C.; Kidisti, Mariam G.; Thibos, Patricia A.; and Thompson, Susan D., 5,382,674, Cl. 548-263.800.

Kidoguchi, Isao; Kamiyama, Satoshi; and Ohnaka, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Semiconductor laser and a method for producing the same. 5,383,214, Cl. 372-46.000.

Kiefel, Carol A.: *See—*
Kiefel, Stanley A., 5,381,924, Cl. 220-709.000.

Kiefel, Stanley A., to Kiefel, Carol A. Non-spill drinking vessel. 5,381,924, Cl. 220-709.000.

Kiefl, John B. Television viewer monitoring system including portable data meter for each viewer. 5,382,970, Cl. 348-1.000.

Kiekert GmbH & Co. KG: *See—*
Kostler, Ulrich, 5,382,062, Cl. 292-340.000.

Kight, Peter J.; Johnson, Mark A.; Christenson, Tamara K.; Lach, Regina; Pointer, Philip; and Cook, Kenneth, to Checkfree Corporation. System and method for electronically providing customer services including payment of bills, financial analysis and loans. 5,383,113, Cl. 364-401.000.

Kikos, J. Peter. Multi-channel tubular display package. 5,383,100, Cl. 362-34.000.

Kikuchi, Hiroaki: *See—*
Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, 5,381,914, Cl. 215-341.000.

Kikuchi, Masahiko: *See—*
Okamoto, Yukimichi; Kikuchi, Masahiko; Takata, Kazutaka; and Ito, Hisayoshi, 5,382,092, Cl. 366-320.000.

Kikuchi, Toshiaki, to Nippondenso Co., Ltd. Electronic control system for an internal combustion engine. 5,381,767, Cl. 123-339.000.

Kikuchi, Yoshiyuki: *See—*
Ishii, Akihiro; Nishimura, Yasunobu; Kondoh, Hirotsune; and Kikuchi, Yoshiyuki, 5,382,589, Cl. 514-1.000.

Killam, Donald G.: *See—*
Nordgren, Timothy F.; Imling, Deborah K.; Ungari, Joseph L.; Killam, Donald G.; and McKeighen, Ronald E., 5,381,795, Cl. 128-663.010.

Kilpatrick, Ted D.; and Wagner, Arthur M., to Gate Pallet Systems, Inc. Paperboard pallet with decking members adjacent to inner panels of stringers. 5,381,739, Cl. 108-51.300.

Kim, Anderson H.; Youmans, Robert J.; Weiner, Maurice; and Kingsley, Lawrence E., to United States of America, Army. Monolithic photoconductive bipolar pulsar utilizing a radial transmission line. 5,382,788, Cl. 250-214.100.

Kim, Dae-Il, to Samsung Electron Devices Co., Ltd. Plasma addressed liquid crystal display with center substrate divided into separate sections. 5,383,040, Cl. 359-54.000.

Kim, Hee Y.; Song, Yong M.; Jeon, Jong Y.; Kwon, Dae H.; Lee, Kang M.; Lee, Jae S.; and Park, Dong S., to Korea Research Institute of Chemical Technology. Fluidized bed reactor heated by microwaves. 5,382,412, Cl. 422-142.000.

Kim, Hyun-Soo: *See—*
You, Seong-Soo; and Kim, Hyun-Soo, 5,382,375, Cl. 252-117.000.

Kim, Jong Gill. Juice extractor. 5,381,730, Cl. 99-510.000.

Kim, Jong-Kwan: *See—*
Kim, Kyung-Nam; Lee, Seong-Woo; Hwang, Jae-Yul; and Kim, Jong-Kwan, 5,382,872, Cl. 313-414.000.

Kim, Kwang T.; Kim, Tae H.; and Jun, Seung B., to Cheil Synthetics, Inc. Method for the preparation of polyester for a film. 5,382,651, Cl. 528-283.000.

Kim, Kyoung-Hwan, to Samsung Electronics Co., Ltd. Compensation for the dropout of a drum frequency generator signal in a drum servo system. 5,383,066, Cl. 360-70.000.

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Kim, Kyungshik: *See—*
Hosokawa, Naokichi; and Kim, Kyungshik, 5,382,344, Cl. 204-298.200.

Kim, Tae H.: *See—*
Kim, Kwang T.; Kim, Tae H.; and Jun, Seung B., 5,382,651, Cl. 528-283.000.

Kim, Young-woong; and Lee, Chul-woo, to Samsung Electronics Co., Ltd. Optical pick-up utilizing a phase diffraction grating for diffracting reflected light in two directions. 5,383,173, Cl. 369-112.000.

Kimberly-Clark Corporation: *See—*
Nohr, Ronald S.; MacDonald, John G.; and Herring, Laura E., 5,382,703, Cl. 568-609.000.
Pike, Richard D.; Brown, Kurtis L.; Gwaltney, Sharon W.; Herschberger, Thomas A.; and Siegel, Scott D., 5,382,400, Cl. 264-168.000.

Kime, Kenjiro: *See—*
Shinoda, Masahisa; Kime, Kenjiro; Matozaki, Toshiya; Nakamura, Keiji; Yoshihara, Toru; and Ito, Takeshi, 5,383,169, Cl. 369-44.130.

Kimmeyer, Ludger: *See—*
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Kimoshita, Yukiharu: *See—*
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Kimoto, Kanji, to Bando Chemical Industries, Ltd. Belt. 5,382,200, Cl. 474-260.000.

Kimura, Hidenobu: *See—*
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Kimura, Koichi; and Ichikawa, Yasushi, to Seikosha Co., Ltd. Multiple color ink ribbon cassette. 5,382,103, Cl. 400-248.000.

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Kimura, Shunichi; and Kamizawa, Koh, to Fuji Xerox Co., Ltd. Apparatus for image coding and decoding based on color components in an image signal. 5,383,037, Cl. 358-539.000.

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Kincaid, James G.; and Talbot, Michael W., to Kellogg Company. Ready-to-eat cereals containing extruded pre-wetted psyllium. 5,382,443, Cl. 426-620.000.

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King, Alan M., to VKI Technologies Corporation. Hopper which is vibrated so as to dispense product. 5,381,967, Cl. 239-659.000.

King, Ken R.; Riemer, David W.; and Cotreau, Gerald M., to Harris Corporation. Differential voltage follower. 5,382,916, Cl. 330-253.000.

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Butcher, Steven J.; Hobby, James D.; and Kings, David H. M., 5,382,865, Cl. 310-366.000.

Kingsley, Lawrence E.: *See—*
Kim, Anderson H.; Youmans, Robert J.; Weiner, Maurice; and Kingsley, Lawrence E., 5,382,788, Cl. 250-214.100.

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Laudenslager, James B.; and Kinley, Fred G., 5,383,199, Cl. 372-25.000.

Kinner, James. Brake rotor grinding method and apparatus. 5,381,630, Cl. 451-63.00F.

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Kinoshita, Shoji, to Whitaker Corporation, The. Waterproof electrical connector. 5,382,174, Cl. 439-271.000.

Kinugasa, Masanori: *See—*
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Kircher, Klaus: *See—*
Powell, Douglas G.; Lundy, Charles E.; Fennhoff, Gerhard; Hufen, Ralf; and Kircher, Klaus, 5,382,605, Cl. 523-136.000.

Kirker, Garry W.: *See—*
Breckenridge, Lloyd L.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; Kennedy, Clinton R.; and Kirker, Garry W., 5,382,730, Cl. 585-310.000.

Kirkwood, Ralph C.: *See—*
Graham, Neil B.; Ross, Donald S.; Szmidt, Robert A. K.; and Kirkwood, Ralph C., 5,382,270, Cl. 47-58.000.

Kirsch, Axel: *See—*
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Kishimoto, Junichi; and Minamizawa, Takashi, to Nippon Koki Co., Ltd. Air bag inflation gas generator. 5,382,415, Cl. 422-305.000.

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Kissinger, Gaylord M., to General Electric Company. Process for inhibiting dihydric phenol degradation and color formation and composition thereof. 5,382,708, Cl. 568-702.000.

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Kitayama, Toru; and Higashi, Iwao, to Yamaha Corporation. Electronic musical instrument including a configurable tone synthesizing system. 5,382,751, Cl. 84-661.000.

Kitazawa, Toshiyuki: *See—*
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; Takahashi, Akio; and Matsudo, Nobuhiko, 5,382,997, Cl. 354-441.000.

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Benson, R. Brian; Kittel, David W.; and Poynter, Adrian A., 5,381,888, Cl. 198-832.100.

Kiyoura, Tadamitsu; and Terada, Kazuhiro, to Mitsui Toatsu Chemicals, Incorporated. Method for preparing methylamines. 5,382,696, Cl. 564-479.000.

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Yamamura, Shigeo; Yamamoto, Junko; Kiyoyanagi, Tadayuki; and Nomura, Masaharu, 5,382,490, Cl. 430-110.000.

Klapper, Robert C.: *See—*
Hood, Larry L.; Hughes, Gregg; Carlson, Ted; Berkman, John; Cailloutte, James T.; Klapper, Robert C.; and Watson, Woodrow W., 5,382,251, Cl. 606-99.000.

Klein, Ulrich; Buschmann, Ernst; Keil, Michael; Goetz, Norbert; and Hartmann, Horst, to BASF Aktiengesellschaft. Preparation of O-substituted hydroxylammonium salts. 5,382,685, Cl. 564-301.000.

Kleine-Onnebrink, Bernhard: *See—*
Hendel, Horst; Kern, Josef; and Kleine-Onnebrink, Bernhard, 5,382,934, Cl. 335-159.000.

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Kleist, Robert A.: *See—*
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Klier, Jurgen; Satzinger, Gerhard; and Schule, Gerhard. Spiral cable box. 5,382,172, Cl. 439-164.000.

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Evans, Robert M.; and Klima, William L., 5,381,961, Cl. 239-333.000.

Klingberg, Jeff: *See—*
Edgar, Gregory A.; Klingberg, Jeff; and Ruppel, John, 5,383,202, Cl. 371-30.000.

Klinger AG: *See—*
Nendzig, Gerhard; and Taus, Alfred, 5,381,818, Cl. 137-242.000.

Klose, Reinhard: *See—*
Kruger, Ernst; and Klose, Reinhard, 5,382,146, Cl. 425-141.000.

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Korsunsky, Iosif; Grabbe, Dimitry G.; and Klotz, Robert C., 5,383,095, Cl. 361-785.000.

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Furman, Gary S., Jr.; Kneller, James F.; Bailey, Kristy M.; Finck, Martha R.; and Su, Winston, 5,382,323, Cl. 162-111.000.

Kniefel, John H.; Boeddeker, David R.; and Kanengieter, Glenn G., deceased (by Kanengieter, Dorette E., executrix), to Wenger Corporation. Portable riser unit with a telescopic brace. 5,381,873, Cl. 182-152.000.

Knierim, Daniel G., to Tektronix, Inc. Error tolerant thermometer-to-binary encoder. 5,382,955, Cl. 341-64.000.

Knorr, Eric C.: *See—*
Lowrance, Kenneth F., II; Knorr, Eric C.; Goldberger, William M.; Boss, Daniel; and Edwards, Doreen, 5,382,405, Cl. 505-125.000.

Knotts, Stephen E. Bearing tooth gear. 5,381,704, Cl. 74-416.000.

Knox, Jayne B. Calorie counter device and method for use. 5,382,165, Cl. 434-127.000.

Knox, Wayne H.; Shunk, Stephen C.; Williams, Michael D.; and Zucker, Jane E., to AT&T Corp. Free standing quantum well structure. 5,383,212, Cl. 372-45.000.

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Kobayashi, Hiroshi: *See—*
Morishita, Yoshii; Hayashida, Shigeru; Sugimoto, Yasushi; Ishikawa, Hiroko; Kobayashi, Hiroshi; and Sonoda, Takaaki, 5,382,687, Cl. 564-319.000.

Kobayashi, Kenji; Murakami, Koichi; Hiroi, Masakazu; and Wakao, Naho, to Canon Kabushiki Kaisha. Sheet sorter with a stapler having a controlled sheet aligning member. 5,382,016, Cl. 271-293.000.

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Kobayashi, Masami: *See—*
Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, 5,382,620, Cl. 524-491.000.

Kobayashi, Norihide: *See—*
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,382,143, Cl. 418-55.100.

Kobayashi, Tomoo: *See—*
Ojima, Fumio; Mashimo, Kiyokazu; Ishii, Toru; Kobayashi, Tomoo; and Hoshizaki, Taketoshi, 5,382,489, Cl. 430-96.000.

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Kobayashi, Yasutomo, to Nifco Inc. Rotating-piston type rotary damper. 5,381,877, Cl. 188-290.000.

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Dreifus, David L., 5,382,812, Cl. 257-94.000.

Kobe Steel, USA Inc.: *See—*
Dreifus, David L.; and Ruggles, Gary A., 5,382,808, Cl. 257-77.000.

Koblmuller, Gunther; and Martin, Michael, to P.C. Wagner Elektro-thermit-Schweissgesellschaft. Apparatus for destroying unwanted vegetation in the region of travel ways. 5,381,958, Cl. 239-136.000.

Kodesch, Steven E.: *See—*
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Koenig, Paul A.: *See—*
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Koga, Kunio: *See—*
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Kogame, Toshihiko, to Murata Manufacturing Co., Ltd. Method of cutting out a portion of a weak sheet. 5,382,404, Cl. 264-547.000.

Koharagi, Haruo: *See—*
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

Kohda, Kenji: *See—*
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Fujioka, Yasushi; Kurokawa, Takashi; Kansi, Masahiro; Sano, Massafumi; Yoshino, Takehito; and Kohda, Yuzo, 5,382,531, Cl. 437-2.000.

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Koike, Hirotami, to Kabushiki Kaisha Topcon. Apparatus for morphological observation of a sample. 5,382,796, Cl. 250-310.000.

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Koito Manufacturing Co., Ltd.: *See—*
Sugasawa, Masatoshi; Toda, Atsushi; Sasaki, Masaru; Yamashita, Masayasu; Matsumoto, Akihiro; Ozaki, Akiyoshi; and Oda, Goichi, 5,382,876, Cl. 315-82.000.

Koivisto, Markku H.; and Pietila, Seppo I., to Outokumpu Castform Oy. Apparatus for intensifying cooling in the casting of metal objects. 5,381,853, Cl. 164-443.000.

Koizumi, Junji: *See—*
Takeuchi, Junji; and Koizumi, Junji, 5,382,459, Cl. 428-36.400.

Kojima, Kiyonobu, to Sony Corporation. Information retrieval system. 5,383,029, Cl. 358-403.000.

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Kubota, Yoshihiro; Kawai, Makoto; Kojima, Shinji; and Arai, Ken-ichi, 5,382,469, Cl. 428-332.000.

Kojima, Yasuo: *See—*
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Kola, Ratnaji R.; Miller, Gabriel L.; and Wagner, Eric R., to AT&T Corp. Process for reduced stress tungsten deposition. 5,382,340, Cl. 204-192.130.

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Dumser, Josef; and Kolaska, Karl H., 5,381,902, Cl. 206-523.000.

Kolb, Otmar: *See—*
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Kolomayets, George: *See—*
Skowronski, Richard E.; Lantz, Kenneth F.; Leon, Tomas F.; Alexander, Donald J.; Kolomayets, George; Adams, Vincent C.; and Szymczak, Eugene B., 5,382,207, Cl. 482-54.000.

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Komatsu, Michio: *See*—
Hirai, Toshiharu; Abe, Yoneji; and Komatsu, Michio, 5,382,383, Cl. 252-501.100.
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Komorowski, Karl J.: *See*—
Habegger, Douglas A.; LaPointe, Larry P.; Weyher, Clifford K.; Saul, Jonathan R.; and Komorowski, Karl J., 5,382,073, Cl. 297-83.000.
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Onji, Yuichi; Ushioda, Makoto; Matsui, Shuichi; Kondo, Tomoyuki; and Goto, Yasuyuki, 5,382,379, Cl. 252-299.630.
Kondoh, Hirotsune: *See*—
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Kone OY: *See*—
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Konica Corporation: *See*—
Inoie, Hiroshi, 5,382,501, Cl. 430-506.000.
Kida, Akira; and Satoh, Yasuaki, 5,383,031, Cl. 358-444.000.
Kudo, Ichiro; Michihata, Isamu; and Kurachi, Yasuo, 5,382,494, Cl. 430-140.000.
Murakami, Shuji; Ohya, Yukio; and Kaga, Makoto, 5,382,503, Cl. 430-567.000.
Shida, Toshio; Satoh, Hisao; Otomo, Naoko; Sakabe, Takeshi; Okazaki, Shigeru; Ikeda, Tadayoshi; and Ogane, Atsushi, 5,382,998, Cl. 355-50.000.
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Sugita, Shuichi; Ohya, Hidenobu; and Tonishi, Masakazu, 5,382,500, Cl. 430-505.000.
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Koninklijke PTT Nederland N.V.: *See*—
Janssen, Sander J. L. M.; and Poelhekken, Thomas D., 5,383,190, Cl. 370-85.600.
Koopman, Nicholas G.; Rinne, Glenn A.; Turlik, Iwona; and Yung, Edward K., to MCNC. Method of forming differing volume solder bumps. 5,381,946, Cl. 228-254.000.
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Koshino, Nagaaki: *See*—
Kawarada, Motonobu; Kurihara, Kazuaki; Sasaki, Ken-ichi; Teshima, Akitomo; and Koshino, Nagaaki, 5,382,293, Cl. 118-723.0DC.
Kostler, Ulrich, to Kiekert GmbH & Co. KG. Motor-vehicle door latch with collision protection. 5,382,062, Cl. 292-340.000.
Kotani, Yasuo: *See*—
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Kotekin, Evgeny E.: *See*—
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Kotitschke, Gerhard; and Kolb, Otmar, to J. M. Voith GmbH. Device for cleaning a paper machine wire web. 5,381,580, Cl. 15-302.000.
Koura, Hiroyuki; Sasaki, Yoshizumi; Wakamatsu, Kazuki; and Takemura, Kazuyuki, to Sumitomo Chemical Company, Limited. Gas distributor for use in gas phase polymerization apparatus. 5,381,827, Cl. 137-561.00A.
Koury, George D. Vertical ball-lift with pneumatic actuator. 5,382,197, Cl. 473-111.000.
Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, to Toyo Seikan Kaisha, Ltd. Container closure with liner. 5,381,914, Cl. 215-341.000.
Koyama, Naomi; Usui, Miyuki; Furuhashi, Hiroyuki; and Ueki, Satoshi, to Tonen Corporation. Terminal-modifed polyolefins. 5,382,634, Cl. 525-286.000.
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Kawano, Masashi, 5,382,246, Cl. 604-385.200.
Kozlowski, Lester J.; Tennant, William E.; and Kleinhans, William A., to Rockwell International Corporation. Electronically scanned buffered direct injection circuit for staring IR focal plane array. 5,382,977, Cl. 348-300.000.
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Krampe, Stephen E.: *See*—
Johnson, Richard H.; Krampe, Stephen E.; and Young, Chung I., 5,382,451, Cl. 427-208.400.
Kraus, Robert, to Johnson & Johnson Professional Inc. Cranial drill stop. 5,382,250, Cl. 606-80.000.
Krespan, Carl G.; and Rao, V. N. Mallikarjuna, to Du Pont de Nemours, E. I., and Company. Fluorinated methyl ethers. 5,382,704, Cl. 564-883.000.
Kresta, Jiri E.: *See*—
Credali, Lino; Cioni, Paolo; Frisch, Kurt C.; Kresta, Jiri E.; and Fu, Fushu, 5,382,626, Cl. 525-126.000.
Krippl, Kurt; Ebeling, Wilfried; Fietz, Jurgen; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, to Bayer Aktiengesellschaft. Process and apparatus for the preparation of a polyurethane reaction mixture. 5,382,603, Cl. 521-99.000.
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van der Pol, Ronald, 5,381,697, Cl. 73-861.370.
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Kruse, Hans: *See*—
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Krusic, Paul J.: *See*—
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KTR Kupplungstechnik GmbH: *See*—
Scherner, Helmut; Wibbeling, Reinhard; and Schurhorster, Josef, 5,382,194, Cl. 464-92.000.
Kubota, Yasushi, to Sharp Kabushiki Kaisha. Semiconductor memory device of alternately-activated open bit-line architecture. 5,383,159, Cl. 365-207.000.
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Hill, Jerry L.; Travis, Benjamin D.; Mahmoud, Mohamed I.; Brooks, James R.; Schenz, Timothy W.; and Dewille, Normanella T., 5,382,439, Cl. 426-73.000.

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Horton, Duane L.; and Nye, Richard V., 5,382,242, Cl. 604-283.000.
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Kei Lau, James C.; Malmgren, Richard P.; and Roush, Michael, 5,382,759, Cl. 174-264.000.

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Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,382,590, Cl. 514-396.000.

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Martin, Shari R.: *See*—
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Yamazaki, Shunpei; and Mase, Akira, 5,383,041, Cl. 359-59.000.

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Minato, Teruo: *See—*
Tahara, Masaaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, 5,382,318, Cl. 156-656.000.

Minigrip, Inc.: *See—*
Ausnit, Steven, 5,382,094, Cl. 383-65.000.

Minnesota Mining and Manufacturing: *See—*
Johnson, Richard H.; Krampe, Stephen E.; and Young, Chung I., 5,382,451, Cl. 427-208.400.

Minnesota Mining and Manufacturing Company: *See—*
Kawate, Koichiro, 5,382,641, Cl. 526-301.000.
Kayser, Mark H., 5,382,475, Cl. 428-403.000.
Leonard, Ronald J., 5,382,407, Cl. 422-48.000.
Mertens, Timothy A.; and Vogel, Mark S., 5,382,055, Cl. 283-67.000.
Moore, George G. I.; and Zhu, Dong-Wei, 5,382,639, Cl. 526-243.000.
Rodriguez, Ernesto M., Jr.; and Beader, Ronald K., 5,382,991, Cl. 353-119.000.
Shor, Steven M.; Zou, Chaofeng; Zhou, Pu; and Aoki, Shozo, 5,382,504, Cl. 430-619.000.
Thomas, Patrick A., 5,382,317, Cl. 156-654.000.
Yasis, Rafael M., 5,382,445, Cl. 427-2.310.

Minolta Camera Kabushiki Kaisha: *See—*
Kawamura, Kunio; Izumi, Shuji; Okada, Hiroyuki; Chikasaki, Masaaki; Iwata, Michihiro; and Tsuji, Sadafusa, 5,382,992, Cl. 354-21.000.
Kinoshita, Naoyoshi; and Etou, Kouichi, 5,383,007, Cl. 355-246.000.

Minolta Co., Ltd.: *See—*
Ueda, Toshihiko, 5,383,059, Cl. 359-754.000.

Mion International Corporation: *See—*
Arnold, Thomas J., 5,382,284, Cl. 106-35.000.

Mircona AB: *See—*
Mihic, Wlajko, 5,382,119, Cl. 407-116.000.
Mihic, Wlajko, 5,382,122, Cl. 409-141.000.

Miric, Zivko; Bui, Cuong; and Eynon, Stephen J., to Guardian Products, Inc. Adjustable hand grip for orthopedic crutch. 5,381,813, Cl. 135-72.000.

Mirring, Knut: *See—*
Bauer, Bernhard; Heemskerk, Rut; Mirring, Knut; Olschewski, Armin; Schepp, Martin; Kispert, Klaus; Scholl, Jurgen; Stanzel, Rainer; and Stolz, Robert, 5,382,099, Cl. 384-454.000.

Mirson, Brian J.: *See—*
Jacobson, Robert E.; and Mirson, Brian J., 5,382,248, Cl. 606-60.000.

Misangyi, Peter W.: *See—*
Raffa, James M.; Cwik, Terry T.; Aronow, Michael F.; Little, Winston A.; Meitzler, Allen H.; Misangyi, Peter W.; Nix-Gomez, Jame A.; Saloka, George S.; and Walker, Noel A., 5,382,942, Cl. 340-457.400.

Misawa, Tsutami; Itoh, Hisato; Nishizawa, Tsutomu; Nakano, Masami; and Katayama, Hiroyuki, to Mitsui Toatsu Chemicals, Incorporated. Anthraquinonic colorant and polarizing film containing the colorant. 5,382,465, Cl. 428-195.000.

Mishra, Satchidanand: *See—*
Yu, Robert C. U.; Foley, Geoffrey M. T.; Herbert, William G.; Limburg, William W.; Mishra, Satchidanand; Post, Richard L.; and VonHoene, Donald C., 5,382,486, Cl. 430-56.000.

Misterka, Joseph J.; and Carroll, John W., III, to Digital Audio Disc Corporation. Storage case for multiple compact discs and related printed material. 5,381,894, Cl. 206-310.000.

Mitchell, Frank L.: *See—*
Noone, David L.; and Mitchell, Frank L., 5,383,087, Cl. 361-215.000.

Mitchell, J. Patrick; and Ploot, Terry, to Pro Line Company. Compound bow and yoke adjuster. 5,381,777, Cl. 124-25.600.

Mitchell, Michael A.: *See—*
Benicewicz, Brian C.; and Mitchell, Michael A., 5,382,665, Cl. 344-88.000.

Mitel Corporation: *See—*
Letkeman, Kim D., 5,383,121, Cl. 364-419.110.

Mitsubishi Consumer Electronics America, Inc.: *See—*
Farley, Mark H., 5,382,753, Cl. 174-52.100.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Adachi, Einosuke; Hatanaka, Yasumichi; Nakajima, Kiroyuki; and Hayashi, Satoru, 5,381,598, Cl. 29-845.000.
Amano, Masaaki, 5,382,761, Cl. 187-383.000.
Hirono, Tetsuro; and Shinada, Mikio, 5,382,104, Cl. 400-608.200.
Hosono, Kunihiro, 5,382,484, Cl. 430-5.000.
Inoue, Akira, 5,382,829, Cl. 257-659.000.
Inoue, Takeshi, 5,382,781, Cl. 235-384.000.
Ishida, Yasuhiko, 5,381,689, Cl. 73-116.000.
Kamon, Kazuya, 5,382,999, Cl. 355-53.000.
Kashihara, Keiichiro; and Itoh, Hiromi, 5,382,817, Cl. 257-295.000.
Komatsu, Takahiro, 5,383,156, Cl. 365-200.000.
Makihara, Hiroyasu; and Kohda, Kenji, 5,383,205, Cl. 371-40.100.
Mitsui, Katsuyoshi, 5,382,816, Cl. 257-266.000.
Miyake, Hideki; and Kamifuji, Tsutomu, 5,382,917, Cl. 330-255.000.
Mouri, Naotake; Akamatsu, Koji; and Goto, Akihiro, 5,383,026, Cl. 356-376.000.
Murai, Hideshi, 5,383,220, Cl. 375-1.000.
Nakahara, Kazuhiko; and Aono, Shinji, 5,382,926, Cl. 333-161.000.
Nakamura, Takashi; Yamauchi, Satomi; and Honda, Hiroshi, 5,381,746, Cl. 112-275.000.
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,382,143, Cl. 418-55.100.
Nishikawa, Naofumi, 5,383,081, Cl. 361-58.000.
Nishizawa, Yuji, 5,383,082, Cl. 361-93.000.
Okayama, Hideo, 5,383,108, Cl. 363-137.000.
Sanemitsu, Yoshikado, 5,383,147, Cl. 365-52.000.
Sanemitsu, Yoshikado, 5,383,161, Cl. 365-230.060.
Shinoda, Masahisa; Kime, Kenjiro; Matozaki, Toshiya; Nakamura, Keiji; Yoshihara, Toru; and Ito, Takeshi, 5,383,169, Cl. 369-44.130.
Shinohara, Hirofumi; Tsujihashi, Yoshiki; and Matsumoto, Hisashi, 5,383,132, Cl. 364-491.000.
Shinohara, Takayuki, 5,382,839, Cl. 327-545.000.
Sugiyama, Takeshi, 5,382,858, Cl. 310-90.000.
Takahira, Kenichi; and Matsubara, Toshiyuki, 5,382,778, Cl. 235-380.000.
Takai, Shigeharu, 5,383,117, Cl. 364-141.000.
Takemi, Masayoshi, 5,383,216, Cl. 372-50.000.
Tsutsumi, Kazuhito; Ashida, Motoi; and Inoue, Yasuo, 5,382,807, Cl. 257-69.000.
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Mitsubishi Gas Chemical Company, Inc.: *See—*
Ando, Kazuhiro; Kawakami, Takamasa; Shouji, Yasuhiro; Tanaka, Yasuo; Kanaoka, Takeo; and Sayama, Norio, 5,382,333, Cl. 204-130.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Togai, Kazuhide; and Ueda, Katsunori, 5,381,768, Cl. 123-339.000.
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,382,205, Cl. 477-43.000.

Mitsubishi Kasei Corporation: *See—*
Otake, Masayuki; and Nakanishi, Akio, 5,382,733, Cl. 585-407.000.

Mitsubishi Semiconductor America, Inc.: *See—*
Gibbs, Vickie L.; and Kao, Rom-Shen, 5,383,204, Cl. 371-37.700.

Mitsuhashi, Masakazu; and Matsuda, Osamu, to Hayashibara, Ken. Method for emitting light which does not substantially delay the latency of P100 wave in human VEP. 5,382,880, Cl. 315-291.000.

Mitsui, Katsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device having vertical transistor with tubular double-gate. 5,382,816, Cl. 257-266.000.

Mitsui, Kenichi, to Toyoda Gosei Co., Ltd. Branched hose connector. 5,381,832, Cl. 137-886.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, 5,382,620, Cl. 524-491.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Kiyoura, Tadamitsu; and Terada, Kazuhiro, 5,382,696, Cl. 564-479.000.
Misawa, Tsutami; Itoh, Hisato; Nishizawa, Tsutomu; Nakano, Masami; and Katayama, Hiroyuki, 5,382,465, Cl. 428-195.000.
Nagata, Teruyuki; Kusuda, Chiyuki; Wada, Masaru; and Satou, Kenichi, 5,382,690, Cl. 564-415.000.
Ura, Daisuke; Hashimukai, Tadashi; Matsumoto, Toshio; and Fukuhara, Nobuhiro, 5,382,517, Cl. 435-116.000.
Yoshimura, Masaji; Kanezaki, Kazuharu; Satoh, Takashi; Nakata, Tomoyuki; and Takiguchi, Minoru, 5,382,627, Cl. 525-132.000.

Mitsumi Electric Co., Ltd.: *See—*
Saito, Akio; and Ikeda, Hideyuki, 5,383,076, Cl. 360-128.000.

Mitui, Tadashi: *See—*
Ishikawa, Kenji; Komino, Mitsuaki; Mitui, Tadashi; Iwata, Teruo; Arai, Izumi; and Tahara, Yoshifumi, 5,382,311, Cl. 156-345.000.

Miura, Isago; and Miura, Takashi. Intermittently heated injection molding apparatus. 5,382,147, Cl. 425-144.000.

Miura, Takashi: *See—*
Miura, Isago; and Miura, Takashi, 5,382,147, Cl. 425-144.000.

Miyaguchi, Satoshi; Onoe, Atsushi; and Ota, Hiroyuki, to Pioneer Electronic Corporation. Process for forming polarization inversion layer. 5,382,334, Cl. 204-130.000.

Miyaguchi, Takehiko: *See—*
Kimura, Yasuhisa; and Miyaguchi, Takehiko, 5,381,828, Cl. 137-596.000.

Miyake, Hideharu, to NEC Corporation. Semiconductor memory device and its fabrication method. 5,383,152, Cl. 361-149.000.

Miyake, Hideki; and Kamifuji, Tsutomu, to Mitsubishi Denki Kabushiki Kaisha. Amplifier circuit. 5,382,917, Cl. 330-255.000.

Miyake, Hiroyuki: *See—*
Sakai, Kazuhiro; Miyake, Hiroyuki; and Abe, Tsutomu, 5,382,975, Cl. 348-241.000.

Miyake, Masayasu: *See—*
Kobayashi, Toshio; Okazaki, Yukio; Miyake, Masayasu; Inokawa, Hiroshi; and Morimoto, Takashi, 5,382,532, Cl. 437-34.000.

Miyamoto, Mitsuaki: *See—*
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouki-chi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Miyamura, Hidemi: *See—*
Funahashi, Hiroko; Kato, Mitsuo; Miyamura, Hidemi; and Yamazaki, Jun, 5,382,871, Cl. 313-402.000.

Miyashita, Kotaro: *See—*
Ogawa, Ken; Hara, Yoshihisa; Miyashita, Kotaro; and Machida, Kei, 5,383,126, Cl. 364-431.060.

Miyashita, Kunio: *See—*
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

Miyata, Koji; and Inoue, Yuji, to Shin-Etsu Chemical Co., Ltd.; and Yokogawa Medical Systems, Ltd. Magnet apparatus for magnetic resonance imaging. 5,382,905, Cl. 324-319.000.

Miyata, Kunihiro: *See—*
Shinoda, Ryuichi; Honda, Jun; and Miyata, Kunihiro, 5,383,083, Cl. 361-103.000.

Miyataka, Norio: *See—*
Uchida, Kiyoshi; and Miyataka, Norio, 5,383,075, Cl. 360-122.000.

Miyazaki, Atsushi; Kobayashi, Chihiro; Igarashi, Shinya; Matsukura, Tetsuo; Maeda, Haruhiko; Arai, Nobukatsu; and Sekine, Yoshihito, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co. Air flow meter. 5,381,691, Cl. 73-202.500.

Miyazaki, Masahiro: *See—*
Terunuma, Kouichi; and Miyazaki, Masahiro, 5,382,305, Cl. 148-306.000.

Miyazawa, Jiro: *See—*
Uomori, Kenya; Yamada, Mitsuho; Hongo, Hitoshi; Yoshimatsu, Hiroshi; Ueno, Keiichi; Murakami, Shinji; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,382,989, Cl. 351-209.000.

Miyazawa, Shuhei: *See—*
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouki-chi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Miyazono, Takashi, to NEC Corporation. Compact device for correcting a header error in ATM cells. 5,383,203, Cl. 371-37.100.

Mizoguchi, Shoichi, to NEC Corporation. Cross polarization interference canceller. 5,383,224, Cl. 375-99.000.

Mizokami, Takuya; Saito, Atsushi; Yoshida, Naozane; and Sekine, Takehiko, to Hitachi, Ltd.; and Hitachi Video Engineering, Inc. Information recording/reproducing device and method for recording/reproducing information on a recording medium using accurate synchronization in a data area in which coded data is stored. 5,383,171, Cl. 369-59.000.

Mizuguchi, Jin; and Giller, Gerald, to Ciba-Geigy Corporation. Process for storing information. 5,382,485, Cl. 430-21.000.

Mizuide, Yasuo, to Kabushiki Kaisha Toshiba. Electric waveform generating circuit for brushless motor. 5,382,886, Cl. 518-807.000.

Mizuki, Koji: *See—*
Inao, Kiyohisa; Mizuki, Koji; Kumagai, Masaki; and Seki, Takeo, 5,382,929, Cl. 333-187.000.

Mizuno, Den'ichi: *See—*
Soma, Gen-Ichiro; Yoshimura, Jun; Tsukioka, Daisuke; Mizuno, Den'ichi; and Oshima, Haruyuki, 5,382,430, Cl. 424-195.100.

MLS Mikrowellen-Labor Systeme GmbH: *See—*
Lautenschlager, Werner, 5,382,414, Cl. 422-186.000.

Moalli, Angelo: *See—*
Masi, Francesco; Invernizzi, Renzo; Moalli, Angelo; Ferrero, Cesare; Menconi, Francesco; and Barazzoni, Lia, 5,382,557, Cl. 502-107.000.

Mobil Oil Corp.: *See—*
Beck, Jeffrey S.; McCullen, Sharon B.; Olson, David H.; and Venkat, Chaya R., 5,382,737, Cl. 585-475.000.
Beech, James H., Jr.; Saeger, Roland B.; and Ware, Robert A., 5,382,743, Cl. 585-671.000.
Breckenridge, Lloyd L.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; Kennedy, Clinton R.; and Kirker, Garry W., 5,382,730, Cl. 585-310.000.
Chang, Clarence D.; Bastian, Roy D.; Han, Scott; and Santiesteban, Jose G., 5,382,731, Cl. 585-315.000.
Child, Jonathan E.; Melli, Tomas R.; and Yurchak, Sergei, 5,382,746, Cl. 585-802.000.
Chung, Harold S.; Jackson, Andrew; and Wu, Margaret M., 5,382,705, Cl. 568-697.000.
Hansen, Allen R.; Johnson, David L.; Stevenson, Scott A.; Schipper, Paul H.; and Harandi, Mohsen N., 5,382,352, Cl. 208-121.000.
Moini, Ahmad; and Shen, Dong-Ming, 5,382,684, Cl. 564-281.000.
Morrison, Roger A.; and Rubin, Mae K., 5,382,742, Cl. 585-654.000.
Musclow, Gordon L.; Poirier, Robert V.; and Weber, Ralph J., 5,382,473, Cl. 428-353.000.

Mochizuki, Isao, to Brother Kogyo Kabushiki Kaisha. Keyswitch assembly having mechanism for controlling touch of keys. 5,382,762, Cl. 200-5.00A.

Mochizuki, Seiji; Hayakawa, Hitoshi; and Kawakami, Kazuhisa, to Seiko Epson Corporation. Ink-expelling restoring device and method for ink jet printer. 5,382,969, Cl. 347-23.000.

Mock, Elmar, to Tetra Laval Holdings & Finance S.A. Closure unit for a container having a hinged construction, made of different materials and having a film which tears on first opening. 5,381,935, Cl. 222-541.000.

Mock, Von A.; and Eaton, Eric T., to Motorola, Inc. Method for increasing battery life for selective call receivers. 5,382,949, Cl. 340-825.440.

Modi, Roberto: *See—*
Mezzedimi, Vasco; Bonciani, Luciano; Ceccherini, Gianni; and Modi, Roberto, 5,381,652, Cl. 60-39.230.

Moh, Sungwon R.; Potter, Scott T.; Ramirez, Frank D.; and Salazar, Edilberto I., to Pitney Bowes Inc. Integrated circuit driver having current limiter for brushless motor. 5,382,890, Cl. 318-254.000.

Mohammad, Shaikh N.; Renbeck, Robert B.; and Walter, Keith M., to International Business Machines Corporation. Carrier conduction conductor-insulator semiconductor (CIS) transistor. 5,382,815, Cl. 257-197.000.

Mohlmann, Gustaaf R.: *See—*
Picken, Stephen J.; and Mohlmann, Gustaaf R., 5,382,648, Cl. 528-75.000.

Moini, Ahmad; and Shen, Dong-Ming, to Mobil Oil Corporation. Nitrogenous 1,3-substituted adamantanes. 5,382,684, Cl. 564-281.000.

Mojaradi, Mohamad M.; and Vo, Tuan A., to Xerox Corporation. Stacked high voltage transistor unit. 5,382,826, Cl. 257-489.000.

Molecular Bioquest, Inc.: *See—*
Chagnon, Mark S.; Ferris, John R.; Fiore, Barry L.; Carter, Michelle J.; and Hamilton, Tracy J., 5,382,468, Cl. 428-328.000.

Moll Automatische Naehsysteme GmbH i.g.: *See—*
Moll, Philipp, 5,381,743, Cl. 112-121.140.

Moll, Philipp, to Moll Automatische Naehsysteme GmbH i.g. Device for making seams on three-dimensional objects. 5,381,743, Cl. 112-121.140.

Molle, Francis: *See—*
Giroud-Abel, Bruno; and Molle, Francis, 5,382,269, Cl. 47-57.600.

Mollet, Beat: *See—*
Hottinger, Herbert; Mignot, Olivier; and Mollet, Beat, 5,382,438, Cl. 426-43.000.

Molnlycke AB: *See—*
Widlund, Urban; and Hansson, Roy, 5,382,467, Cl. 428-284.000.

Molyneux, John, to Silent Power GmbH fur Energiespeichertechnik. Battery terminals. 5,382,480, Cl. 429-120.000.

Mong, Oyvind, to Kverneland Klepp AS. Multi-share plough. 5,381,866, Cl. 172-219.000.

Monsanto Company: *See—*
Coran, Aubert Y.; Tremont, Samuel J.; Davis, Leonard H.; Ignatz-Hoover, Frederick; and McGrath, Martin P., 5,382,629, Cl. 525-194.000.
Stern, Michael K.; and Cheng, Brian K-M., 5,382,691, Cl. 564-415.000.

Montague, Robert A.; and Matyjaszewski, Krzysztof, to Carnegie Mellon University. Linear polyphosphazenes and a process for their production. 5,382,644, Cl. 528-30.000.

Montedison S.p.A.: *See—*
Credali, Lino; Cioni, Paolo; Frisch, Kurt C.; Kresta, Jiri E.; and Fu, Fushu, 5,382,626, Cl. 525-126.000.

Monti, Joseph L.: *See—*
Kazaitis, Michael P.; Graves, Robert P., Jr.; and Monti, Joseph L., 5,381,643, Cl. 53-415.000.

Monti, Osvaldo, to Canadian Marconi Company. Electronic components and systems using coaxial cable. 5,382,932, Cl. 333-245.000.

Montres Rolex S.A.: *See—*
Gallay, Jacques-Andre , 5,383,166, Cl. 368-288.000.

Moog Inc.: *See—*
Ohno, Mitsumasa, 5,381,702, Cl. 74-89.150.

Moore Business Forms, Inc.: *See—*
Kalisiak, Michael S., 5,383,130, Cl. 364-471.000.

Moore, Charles E.: *See—*
Baumgartner, Richard A.; Moore, Charles E.; and Herleikson, Earl C., 5,382,956, Cl. 341-155.000.

Moore, George G. I.; and Zhu, Dong-Wei, to Minnesota Mining and Manufacturing Company. Aqueous fluorochemical compositions and coatings therefrom. 5,382,639, Cl. 526-243.000.

Moore, Robert P.; and Deptowicz, Donald L., to United Technologies Corporation. High coverage shaped diffuser film hole for thin walls. 5,382,133, Cl. 415-115.000.

Moore, Samuel B., to Burlington Chemical Co. Process for preparing a super saturated liquid alkali composition for reactive dyeing of textiles. 5,382,262, Cl. 8-543.000.

Moradi-Araghi, Ahmad: *See—*
Stahl, G. Allan; Moradi-Araghi, Ahmad; Westerman, I. John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,382,371, Cl. 507-221.000.

Mordenga, Samuel P.: *See—*
Thayer, Bruce E.; Mordenga, Samuel P.; and Walcott, Billy D., 5,381,583, Cl. 15-308.000.

Moreno, Ricardo P.: *See—*
Kadooka, Humberto T.; Moreno, Ricardo P.; and Da Cos'a, Olavo N., 5,382,622, Cl. 524-496.000.

Moret de Rocheprise, Bernard; Serge, Tisserand; and Dugand, Pascal, to Compagnie Plastic Omnium. Method for the production of fluorinated resin tubes, particularly of polytetrafluoroethylene. 5,382,399, Cl. 264-127.000.

Mori, Hiroshi: *See—*
Shimizu, Tomohito; Mori, Hiroshi; Kagami, Yoshinobu; Yamakawa, Takeshi; Shiina, Susumu; and Hayashi, Keisuke, 5,382,129, Cl. 414-411.000.

Mori, Keiji: *See—*
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, 5,382,652, Cl. 528-308.600.

Mori, Masukuni; and Sakurai, Osamu, to Tsuyakin Co., Ltd. Sublimation type color printing sheet. 5,382,561, Cl. 503-227.000.

Mori, Shinichiro: *See—*
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Mori, Shinichiro; Tanaka, Toshio; Tanaka, Koji; and Ono, Hiroshi, 5,382,624, Cl. 525-10.000.

Morihara, Hiroshi: *See—*
Nagai, Kenichi; Yatsurugi, Yosifumi; Morihara, Hiroshi; and Izawa, Junji, 5,382,419, Cl. 423-348.000.

Morikawa, Atsushi; Inoue, Jiro; and Tabota, Jun, to Murata Manufacturing Co., Ltd. Piezoelectric bimorph type actuator. 5,382,864, Cl. 310-332.000.

Morikawa, Michio; Hayashi, Torahiko; and Saito, Nobuyuki, to Rheon Automatic Machinery Co., Ltd. Method and device for aligning and bending individual round elongated dough pieces. 5,382,154, Cl. 425-321.000.

Morikawa, Yutaka: *See—*
Ikawa, Tsuneo; Morikawa, Yutaka; and Ueda, Wataru, 5,382,720, Cl. 570-153.000.

Morimoto, Kiyoshi: *See—*
Sakai, Minoru; Katoh, Kazunobu; and Morimoto, Kiyoshi, 5,382,496, Cl. 430-264.000.

Morimoto, Takashi: *See—*
Kobayashi, Toshio; Okazaki, Yukio; Miyake, Masayasu; Inokawa, Hiroshi; and Morimoto, Takashi, 5,382,532, Cl. 437-34.000.

Morin, Paul G.: *See—*
Roehrig, Paul G.; Overkamp, Henry J.; and Morin, Paul G., 5,382,444, Cl. 426-646.000.

Morioka, Koji, to Taikisha, Ltd. Method of maintaining artificial snow surface. 5,381,668, Cl. 62-94.000.

Morishita, Yoshii; Hayashida, Shigeru; Sugimoto, Yasushi; Ishikawa, Hiroko; Kobayashi, Hiroshi; and Sonoda, Takaaki, to Hitachi Chemical Company Ltd. Enamine derivatives. 5,382,687, Cl. 564-319.000.

Morita, Kiyoji: *See—*
Masukawa, Tetsuo; Matsumoto, Masaaki; Saitoh, Yokuo; Kojima, Yasuo; Suzuki, Toshio; Umakoshi, Yukimori; and Morita, Kiyoji, 5,383,073, Cl. 360-104.000.

Morita, Masahiko: *See—*
Okada, Susumu; Hirata, Kouichi; Sato, Susumu; Morita, Masahiko; and Nakagawa, Tsuguhiko, 5,382,302, Cl. 148-226.000.

Morita, Shinya; and Abe, Fumiyoshi, to Sony Corporation. Data reproducing device with drop out detection of position information and means for compensating with tape speed detecting. 5,383,069, Cl. 360-73.110.

Morita, Yoshio, to Matsushita Electric Industrial Co., Ltd. Light emission diode comprising a pn junction of p-type and n-type Al-containing ZnS compound semiconductor layers. 5,382,813, Cl. 257-101.000.

Morito, Yasuaki: *See*—
Ohno, Hiromoto; Arai, Tatsuharu; Katamura, Koichi; Yuge, Sadayoshi; Kawai, Haruyuki; and Morito, Yasuaki, 5,382,724, Cl. 570-178.000.

Moritsu, Takanao: *See*—
Tatesaka, Hiroyuki; and Moritsu, Takanao, 5,382,021, Cl. 273-86.00R.

Moriuchi, Hisahiro: *See*—
Shirai, Masaki; Moriuchi, Hisahiro; Yoshii, Yasuhiro; Kuroda, Kenichi; and Matsuo, Akinori, 5,383,162, Cl. 365-231.000.

Moriwaki, Saburo: *See*—
Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, 5,381,857, Cl. 164-466.000.

Moriya, Nobuo: *See*—
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,711, Cl. 568-722.000.
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,712, Cl. 568-724.000.

Morohashi, Kazuo: *See*—
Sato, Kunihiko; Morohashi, Kazuo; and Takahashi, Hidetoshi, 5,383,062, Cl. 359-894.000.

Morrison, Robert L., to University of California, Regents of the. Bifoam. 5,382,285, Cl. 106-122.000.

Morrison, Roger A.; and Rubin, Mae K., to Mobil Oil Corp. Gallium-containing zeolite MCM-22. 5,382,742, Cl. 585-654.000.

Morterol, Frederic R. M. M.: *See*—
Bontemps, Xavier; Havas, Laszlo; Martens, Andre; and Morterol, Frederic R. M. M., 5,382,638, Cl. 526-67.000.

Morton International, Inc.: *See*—
Paxton, Donald J.; and Dyer, David J., 5,382,048, Cl. 280-728.00R.

Morton, Steven G., to TranSwitch Corporation. SONET signal generating apparatus and method. 5,383,196, Cl. 371-27.000.

Moses, L. Meredith: *See*—
Sleevi, Mark C.; Minasskanian, Gevork; and Moses, L. Meredith, 5,382,596, Cl. 514-459.000.

Moses, Pinchas: *See*—
Jonsson, Nils A.; Sparf, Bengt A.; Mikiver, Lembit; Moses, Pinchas; Nilvebrant, Lisbet; and Glas, Gunilla, 5,382,600, Cl. 514-601.000.

Mosher, Douglas E., to Farrel Corporation. Convenient access for clean-out and maintenance of mixing chamber and both rotors in two-rotor continuous mixers for plastic materials. 5,382,089, Cl. 366-83.000.

Mosher, Frederick A. Electronically controlled carbon-cleaning system for internal combustion engines. 5,381,810, Cl. 134-56.00R.

Motorola, Inc.: *See*—
Aguirre, Sergio; Keate, Christopher R.; and Vatt, Gregory B., 5,383,225, Cl. 375-106.000.
Arledge, John K.; Swirbel, Thomas J.; and Davis, James L., 5,382,471, Cl. 428-336.000.
Armbruster, Peter J.; and Stephens, James A., 5,383,185, Cl. 370-85.300.
Burch, Kenneth R., 5,383,137, Cl. 364-578.000.
Carson, Lansing M.; and Boman, Dean J., 5,382,913, Cl. 327-141.000.
Crouch, Alfred L.; and Pressly, Matthew D., 5,383,143, Cl. 364-717.000.
Edgar, Gregory A.; Klingberg, Jeff; and Ruppel, John, 5,383,202, Cl. 371-30.000.
Feldbaumer, David W., 5,382,841, Cl. 326-30.000.
FitzGerald, Mark R., 5,382,958, Cl. 342-386.000.
Ma, Scott T.; and Phelps, William C., III, 5,383,098, Cl. 361-818.000.
Mock, Von A.; and Eaton, Eric T., 5,382,949, Cl. 340-825.440.
Muri, David L.; and Stengel, Robert E., 5,382,915, Cl. 330-10.000.
Sharma, Umesh; and Kawasaki, Hisao, 5,382,540, Cl. 437-52.000.
Spence, Nicholas J. M.; and Grula, Jerome A., 5,383,195, Cl. 371-22.500.
Williams, Melanie; and Davis, James L., 5,383,089, Cl. 361-502.000.
Wrzesinski, Stanley, 5,383,134, Cl. 364-514.000.

Motoyama, Hideyuki; Iwasa, Seiichi; and Kawamura, Isao, to Fujitsu Limited. Folding portable data processing apparatus with three hinge points. 5,383,138, Cl. 364-708.100.

Motozima, Toshiyo: *See*—
Ohshima, Jiro; and Motozima, Toshiyo, 5,382,549, Cl. 437-233.000.

Mount Sinai School of Medicine of the City University of New York, The: *See*—
Desnick, Robert J.; Bishop, David F.; Ioannou, Yiannis A.; and Wang, Anne M., 5,382,524, Cl. 435-200.000.

Mouri, Naotake; Akamatsu, Koji; and Goto, Akihiro, to Mouri, Naotake; and Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for determining the position and the configuration of an object under observation. 5,383,026, Cl. 356-376.000.

Mouyen, Francis. Ionizing radiation sensor used in a system of radiographic imaging. 5,382,798, Cl. 250-370.110.

Movsessian, Kurgin R.: *See*—
Aroutiounian, Vladimir M.; Adamian, Zaven N.; Abovian, Hrachia V.; Movsessian, Kurgin R.; Barsegyan, Ara A.; and Panossian, Manuk S., 5,382,341, Cl. 204-192.210.

Mower, Glenn L., to Thiokol Corporation. Perchlorate removal process. 5,382,265, Cl. 23-302.00R.

Mozeleski, Edmund J.: *See*—
Suciu, Elena N.; Livingston, Joel R., Jr.; and Mozeleski, Edmund J., 5,382,701, Cl. 568-454.000.

Muddiman, Robert W. Fluid check valve with replaceable flapper assembly. 5,381,821, Cl. 137-454.200.

Mueller, Carl A.: *See*—
Bednorz, Johannes G.; Mannhart, Jochen D.; and Mueller, Carl A., 5,382,565, Cl. 505-193.000.

Mueller, Norbert: *See*—
Wietelmann, Juergen; Rueping, Thomas; Mueller, Norbert; and Duehlmeyer, Wolfgang, 5,383,086, Cl. 361-152.000.

Muetterties, Kurt: *See*—
White, David L.; Engelstad, Barry L.; and Muetterties, Kurt, 5,382,421, Cl. 424-9.000.

Mujsce, Anthony M.: *See*—
Downey, Stephen W.; Emerson, Adrian B.; Mujsce, Anthony M.; Muller, Amy J.; Reents, William D., Jr.; Sinclair, James D.; and Swanson, Alka, 5,382,794, Cl. 250-288.000.

Mukunghwa Fats & Oils Co., Ltd.: *See*—
You, Seong-Soo; and Kim, Hyun-Soo, 5,382,375, Cl. 252-117.000.

Mul, Wilhelmus P.: *See*—
Jordaan, Johannes C. M.; Mul, Wilhelmus P.; Smaardijk, Abraham A.; Mulder, Jan Harm; Gerard, Eric-Jack; and Lednor, Peter W., 5,382,653, Cl. 528-392.000.

Mulaskey, Bernard F.; Hise, Robert L.; Trumbull, Steven E.; Cannella, William J.; and Innes, Robert A., to Chevron Research & Technology Co., a Div. of Chevron U.S.A. Inc. Pretreatment method for increasing conversion of reforming catalyst. 5,382,353, Cl. 208-138.000.

Mulder, Jan Harm: *See*—
Jordaan, Johannes C. M.; Mul, Wilhelmus P.; Smaardijk, Abraham A.; Mulder, Jan Harm; Gerard, Eric-Jack; and Lednor, Peter W., 5,382,653, Cl. 528-392.000.

Mulholland, Adrian. Apparatus with indicator for administration of eye medication. 5,382,243, Cl. 604-301.000.

Muller, Amy J.: *See*—
Downey, Stephen W.; Emerson, Adrian B.; Mujsce, Anthony M.; Muller, Amy J.; Reents, William D., Jr.; Sinclair, James D.; and Swanson, Alka, 5,382,794, Cl. 250-288.000.

Muller, Karl-Hans; and Barthel, Walter, to Degussa AG. Granular bitumen coated with precipitated silica. 5,382,348, Cl. 208-22.000.

Muller, Manfred: *See*—
Pugin, Benoit; Spindler, Felix; and Muller, Manfred, 5,382,729, Cl. 585-277.000.

Muller, Rolf: *See*—
von der Heide, Johann; Muller, Rolf; and Merkle, Alfred, 5,382,853, Cl. 310-67.00R.

Muller, Thomas: *See*—
Bahrmann, Helmut; Greb, Wolfgang; Heymanns, Peter; Lappe, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,382,716, Cl. 568-883.000.

Mun, Hen-Hee, to Samsung Electronics Co., Ltd. Method and circuit for adaptively selecting three-dimensional sub-band image signal. 5,382,979, Cl. 348-398.000.

Murai, Hideshi, to Mitsubishi Denki Kabushiki Kaisha. Data demodulator of a receiving apparatus for spread spectrum communication. 5,383,220, Cl. 375-1.000.

Murakami, Koichi: *See*—
Kobayashi, Kenji; Murakami, Koichi; Hiroi, Masakazu; and Wakao, Naho, 5,382,016, Cl. 271-293.000.

Murakami, Shinji: *See*—
Uomori, Kenya; Yamada, Mitsuho; Hongo, Hitoshi; Yoshimatsu, Hiroshi; Ueno, Keiichi; Murakami, Shinji; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,382,989, Cl. 351-209.000.

Murakami, Shuichi: *See*—
Kurihara, Kazuhiko; Yazawa, Hiroshi; Yazawa, Shoichi; Kuroiwa, Yuki; and Murakami, Shuichi, 5,382,773, Cl. 219-121.700.

Murakami, Shuji; Ohya, Yukio; and Kaga, Makoto, to Konica Corporation. Silver halide emulsion and silver halide photographic light-sensitive material. 5,382,503, Cl. 430-567.000.

Muramoto, Kenzo: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Murata Manufacturing Co., Ltd.: *See*—
Kogame, Toshihiko, 5,382,404, Cl. 264-547.000.
Morikawa, Atsushi; Inoue, Jiro; and Tabota, Jun, 5,382,864, Cl. 310-332.000.
Okamura, Hisatake; Kasahara, Masahiro; Tsuru, Teruhisa; and Taniguchi, Tetsuo, 5,382,927, Cl. 333-175.000.

Murata, Sakae: *See*—
Odawara, Akio; Sasaki, Yasuhiko; Murata, Sakae; and Narita, Hiroshi, 5,382,577, Cl. 514-211.000.

Murata, Shizuo: *See*—
Nakayama, Minoru; Sawai, Toshiya; Hayakawa, Masaharu; Murata, Shizuo; and Abe, Yukino, 5,382,688, Cl. 564-322.000.

Muri, David L.; and Stengel, Robert E., to Motorola, Inc. Pulsewidth-modulated amplifier having analog mode. 5,382,915, Cl. 330-10.000.

Murphey, Joe R.: *See*—
Nguyen, Philip D.; Murphey, Joe R.; and Brown, David L., 5,381,864, Cl. 166-280.000.

Murray, William V.: *See*—
Hsi, Jeffrey D.; and Murray, William V., 5,382,666, Cl. 544-106.000.

Musbach, Frank A.: *See*—
Cornelius, Richard G.; Walter, Larry A.; Lee, Douglas C.; and Musbach, Frank A., 5,382,234, Cl. 604-96.000.

Musclow, Gordon L.; Poirier, Robert V.; and Weber, Ralph J., to Mobil Oil Corporation. Multilayer film structure. 5,382,473, Cl. 428-353.000.

Music Semiconductors, Inc.: *See*—
Threewitt, Norman B., 5,383,146, Cl. 365-49.000.

Myers, Gary L.: *See*—
Carl, Stewart R.; Zarnowitz, Arthur H.; and Myers, Gary L., 5,381,685, Cl. 70-78.000.

N.I.T. Co., Ltd.: *See*—
Nakanishi, Wataru, 5,382,116, Cl. 405-269.000.

Nabi, Ivan R.: *See*—
Raz, Avraham; Nabi, Ivan R.; Watanabe, Hideomi; and Otto, Thomas, 5,382,521, Cl. 435-7.230.

Nabisco, Inc.: *See*—
Sullivan, Joanne, 5,382,440, Cl. 426-138.000.

Naddeo, Ronald C.: *See*—
Magnotta, Vincent L.; Naddeo, Ronald C.; Ayala, Varin; Cirucci, John F.; and Fox, Virgil G., Jr., 5,382,322, Cl. 162-30.110.

Nagagata, Nobuyoshi: *See*—
Yoshida, Koji; Nagagata, Nobuyoshi; and Ishii, Takuya, 5,383,106, Cl. 363-15.000.

Nagai, Kenichi; Yatsurugi, Yosifumi; Morihara, Hiroshi; and Izawa, Junji, to Advaned Silicon Materials, Inc. Production of high-purity polycrystalline silicon rod for semiconductor applications. 5,382,419, Cl. 423-348.000.

Nagai, Takayuki: *See*—
Takeda, Masayoshi; Nagai, Takayuki; and Sahashi, Toshiyasu, 5,382,045, Cl. 280-707.000.

Nagami, Masafumi, to Kansei Corporation. Cross-coil type measuring instrument with correction means for varying a supply voltage. 5,382,897, Cl. 324-143.000.

Nagasaka, Takashi, to Nippondenso Co., Ltd. Hybrid integrated circuit apparatus. 5,383,093, Cl. 361-771.000.

Nagase, Sachiyo: *See*—
Sakuragi, Shoji; Ishida, Minako; and Nagase, Sachiyo, 5,382,100, Cl. 400-9.000.

Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, to Mitsui Petrochemical Industries, Ltd. Resin composition. 5,382,620, Cl. 524-491.000.

Nagata, Teruyuki; Kusuda, Chiyuki; Wada, Masaru; and Satou, Kenichi, to Mitsui Toatsu Chemicals, Incorporated. Method for preparing aromatic secondary amino compound. 5,382,690, Cl. 564-415.000.

Nagura, Masato: *See*—
Kobayashi, Masaki; Takahashi, Toshiaki; Nagura, Masato; and Hara, Kazuhiko, 5,381,693, Cl. 73-614.000.

Nagy, Edit: *See*—
Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacsony, Erno; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

Nahm, James J. W.; and Wyant, Reece E., to Shell Oil Company. Conversion of oil-base mud to oil mud-cement. 5,382,290, Cl. 106-789.000.

Naito, Hideshi; Shiokama, Yoshiharu; and Ushio, Shinichi, to Nikon Corporation. Camera information transmission system including body, lens, and adapter components. 5,382,994, Cl. 354-286.000.

Nakagawa, Tsuguhiko: *See*—
Okada, Susumu; Hirata, Kouichi; Sato, Susumu; Morita, Masahiko; and Nakagawa, Tsuguhiko, 5,382,302, Cl. 148-226.000.

Nakagawa, Zenbee: *See*—
Ochi, Hideo; Igari, Akihide; Toyoda, Masaaki; and Nakagawa, Zenbee, 5,382,385, Cl. 252-519.000.

Nakahara, Kazuhiko; and Aono, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Multiple bit loaded line phase shifter. 5,382,926, Cl. 333-161.000.

Nakajima, Akihiko: *See*—
Takada, Jun; Nakajima, Akihiko; and Tawada, Yoshihisa, 5,382,787, Cl. 250-214.100.

Nakajima, Akinobu; Ishibashi, Yoko; Aoyama, Motoo; Kurihara, Kunitoshi; Yamashita, Junichi; Nakajima, Junjiro; and Nishida, Koji, to Hitachi, Ltd. Fuel assembly and reactor core. 5,383,229, Cl. 376-434.000.

Nakajima, Junjiro: *See*—
Nakajima, Akinobu; Ishibashi, Yoko; Aoyama, Motoo; Kurihara, Kunitoshi; Yamashita, Junichi; Nakajima, Junjiro; and Nishida, Koji, 5,383,229, Cl. 376-434.000.

Nakajima, Kiroyuki: *See*—
Adachi, Einosuke; Hatanaka, Yasumichi; Nakajima, Kiroyuki; and Hayashi, Satoru, 5,381,598, Cl. 29-845.000.

Nakajima, Shigeru, to Sumitomo Electric Industries, Ltd. High power field effect transistor. 5,382,821, Cl. 257-401.000.

Nakajima, Yuki, to Nissan Motor Co., Ltd. Air-fuel ratio control system for internal combustion engine. 5,381,774, Cl. 123-674.000.

Nakamura, Hirotaka; Nishijoh, Astushi; Tsuchiya, Shigeki; and Hirobe, Yoshiaki, to Akebono Brake Industry Co., Ltd. Solenoid valve device. 5,382,933, Cl. 335-278.000.

Nakamura, Keiji: *See*—
Shinoda, Masahisa; Kime, Kenjiro; Matozaki, Toshiya; Nakamura, Keiji; Yoshihara, Toru; and Ito, Takeshi, 5,383,169, Cl. 369-44.130.

Nakamura, Masayuki; and Oshima, Kazuyoshi, to Hitachi, Ltd. Semiconductor memory device. 5,383,150, Cl. 365-145.000.

Nakamura, Takahiro; and Terakado, Tomoji, to NEC Corporation. Semiconductor device manufacturing method capable of correctly forming active regions. 5,382,543, Cl. 437-129.000.

Nakamura, Takashi; Yamauchi, Satomi; and Honda, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Fiber optic detector and power indicator for a sewing machine. 5,381,746, Cl. 112-275.000.

Nakamura, Takashi, to Rohm Co., Ltd. Method for manufacturing a semiconductor device including nonvolatile memories. 5,382,539, Cl. 437-52.000.

Nakamura, Takashi: *See*—
Kawahara, Eiichiro; Nakamura, Takashi; Furumoto, Mitsunasa; and Sakai, Kazuaki, 5,381,724, Cl. 92-12.200.

Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Scroll type compressor having a thrust plate in a frame recess. 5,382,143, Cl. 418-55.100.

Nakanishi, Akio: *See*—
Otake, Masayuki; and Nakanishi, Akio, 5,382,733, Cl. 585-407.000.

Nakanishi, Wataru, to N.I.T. Co., Ltd. Ground reforming method with a hardening material mixed and injected at a super high pressure and reforming device of same. 5,382,116, Cl. 405-269.000.

Nakano, Masami: *See*—
Misawa, Tsutami; Itoh, Hisato; Nishizawa, Tsutomu; Nakano, Masami; and Katayama, Hiroyuki, 5,382,465, Cl. 428-195.000.

Nakano, Masao; Eshita, Akinori; and Sekizawa, Kazuhiko, to Tosoh Corporation. Method for purifying exhaust gas. 5,382,416, Cl. 423-213.200.

Nakano, Norihito: *See*—
Uomori, Kenya; Yamada, Mitsuho; Hongo, Hitoshi; Yoshimatsu, Hiroshi; Ueno, Keiichi; Murakami, Shinji; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,382,989, Cl. 351-209.000.

Nakano, Satoshi: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; Takahashi, Akio; and Matsudo, Nobuhiko, 5,382,997, Cl. 354-441.000.

Nakao, Kenji: *See*—
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Nakata, Tomoyuki: *See*—
Yoshimura, Masaji; Kanezaki, Kazuharu; Satoh, Takashi; Nakata, Tomoyuki; and Takiguchi, Minoru, 5,382,627, Cl. 525-132.000.

Nakayama, Minoru; Sawai, Toshiya; Hayakawa, Masaharu; Murata, Shizuo; and Abe, Yukino, to Chisso Corporation. Diamino compounds and their production method. 5,382,688, Cl. 564-322.000.

Nakayama, Takayoshi: *See*—
Takizawa, Tsuyoshi; Seki, Yasunari; Iwata, Yoichi; Sato, Toshihiko; and Nakayama, Takayoshi, 5,381,657, Cl. 60-276.000.

Nalco Chemical Company: *See*—
Banks, Rodney H., 5,382,331, Cl. 204-153.140.
Furman, Gary S., Jr.; Kneller, James F.; Bailey, Kristy M.; Finck, Martha R.; and Su, Winston, 5,382,323, Cl. 162-111.000.

Nalin, Carlo: *See*—
Karasiewicz, Robert; Nalin, Carlo; and Rosen, Perry, 5,382,657, Cl. 530-351.000.

Namoto, Yoshiteru: *See*—
Saji, Yoshito; Namoto, Yoshiteru; and Kajino, Osamu, 5,383,139, Cl. 364-708.100.

Namowitz, Hermann, to Jagenberg Aktiengesellschaft. System for breaking in creases of a box blank. 5,382,217, Cl. 493-310.000.

Nanassi, John. Bicycle training aid. 5,382,040, Cl. 280-293.000.

Nandagiri, Arun; Abbott, Richard A.; Nardone, Renee E.; and Borish, Edward T., to Helene Curtis, Inc. Cysteamine permanent wave composition and method. 5,382,426, Cl. 424-70.510.

Nanjo, Tsuguo, to Nidek Co., Ltd. Stereoscopic retinal camera with focus detection system. 5,382,988, Cl. 351-206.000.

Nanno, Nobuyuki; Akashi, Kazuo; and Seimiya, Hiromi, to Kabushiki Kaisha Toshiba. Power supply control system for a portable computer. 5,383,140, Cl. 364-708.100.

Narayan, Thirumurti; Johnson, Samuel E.; Dimitroff, Michael A.; and Schlotterbeck, Dietrich, to BASF Corporation. Poly(urethane-urea) microcellular elastomer compositions. 5,382,646, Cl. 528-60.000.

Nardone, Renee E.: *See*—
Nandagiri, Arun; Abbott, Richard A.; Nardone, Renee E.; and Borish, Edward T., 5,382,426, Cl. 424-70.510.

Narita, Hiroshi: *See*—
Odawara, Akio; Sasaki, Yasuhiko; Murata, Sakae; and Narita, Hiroshi, 5,382,577, Cl. 514-211.000.

Narui, Hironobu; and Imanishi, Daisuke, to Sony Corporation. Semiconductor laser which has a (100) top surface and a stripe ridge which extends in the horizontal <01-1> axis direction and has side wall surfaces (110) and a triangular region between (111) faces. 5,383,215, Cl. 372-46.000.

National Semiconductor Corporation: *See*—
Estrada, Julio R.; and Mentzer, Ray A., 5,382,921, Cl. 331-1.00A.
Sadjadi, S. M. Reza, 5,383,018, Cl. 356-243.000.
Yamatake, Mineo, 5,382,918, Cl. 330-260.000.

National Tsing Hua University: *See*—
Huang, Der-Ray; Hsiao, Tsai-Chu; and Chao, Shiuh, 5,382,345, Cl. 204-298.270.

Navare, Ravi Y.: *See*—
Patier, Paul A.; and Navare, Ravi Y., 5,382,209, Cl. 482-70.000.

Naveros, Francisco: *See*—
Roumagnac, Jean-Patrick; and Naveros, Francisco, 5,381,726, Cl. 99-371.000.

NDK, Nihon Dempa Kogyo Company, Ltd.: *See*—
Inao, Kiyohisa; Mizuki, Koji; Kumagai, Masaki; and Seki, Takeo, 5,382,929, Cl. 333-187.000.

Neal, Charles E.: *See*—
Worley, Thomas J.; Neal, Charles E.; and Rivera, Vincent P., 5,381,667, Cl. 62-50.200.

NEC Corporation: *See*—
Aramaki, Toshiya, 5,383,181, Cl. 370-60.000.
Ikegami, Fumio, 5,383,158, Cl. 365-230.010.
Ishida, Hisashi, 5,382,757, Cl. 174-262.000.
Matsuyama, Kazunori; and Iga, Naoto, 5,383,189, Cl. 370-105.300.
Miyake, Hideharu, 5,383,152, Cl. 361-149.000.
Miyazono, Takashi, 5,383,203, Cl. 371-37.100.
Mizoguchi, Shoichi, 5,383,224, Cl. 375-99.000.
Nakamura, Takahiro; and Terakado, Tomoji, 5,382,543, Cl. 437-129.000.
Oguri, Takashi, 5,382,842, Cl. 326-110.000.
Sato, Hiroaki; and Takahashi, Hiroyuki, 5,383,153, Cl. 365-155.000.
Shibuya, Tadashi, 5,383,154, Cl. 365-189.010.
Shigemoto, Naoto, 5,383,188, Cl. 370-105.200.
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Tanaka, Takanori, 5,382,978, Cl. 348-312.000.
Yoshida, Atsushi, 5,383,183, Cl. 370-60.100.

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Cox, Ingemar J., 5,383,013, Cl. 356-2.000.

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Bieck, Torsten; and Nehl, Wolfgang, 5,381,897, Cl. 206-387.100.

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Nelson, Terry N., to Specialty Mfg. Co., The. Garden hose reel. 5,381,981, Cl. 242-407.100.

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Saho, Norihide; Nemoto, Takeo; and Saeki, Mitsuru, 5,381,666, Cl. 62-47.100.

Nendzig, Gerhard; and Taus, Alfred, to Klinger AG. Shut-off valve and sealing ring. 5,381,818, Cl. 137-242.000.

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Lecarpentier, Marc, 5,383,115, Cl. 364-554.000.

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Hottinger, Herbert; Mignot, Olivier; and Mollet, Beat, 5,382,438, Cl. 426-43.000.

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Weinstein, Sidney; Weinstein, Curt; and Drozdenko, Ronald, 5,381,806, Cl. 128-744.000.

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Weil, Paul B., 5,383,167, Cl. 364-488.000.

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Malhi, Satwinder; and Ng, Wai T., 5,382,535, Cl. 437-40.000.

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Okajima, Hisakazu; and Noda, Masaki, 5,382,901, Cl. 324-244.100.

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Diaz, Arthur F.; Guay, Jean M.; and Nguyen, My T., 5,382,491, Cl. 430-110.000.

Nguyen, Philip D.; Murphey, Joe R.; and Brown, David L., to Halliburton Company. Well treating methods using particulate blends. 5,381,864, Cl. 166-280.000.

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Ojima, Juji, 5,382,108, Cl. 403-120.000.

Nian, Jau-Jer. Foldable toothbrush. 5,382,107, Cl. 401-191.000.

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Nanjo, Tsuguo, 5,382,988, Cl. 351-206.000.

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Niemchick, Robert L., to Outboard Marine Corporation. Dry head cooling system. 5,381,763, Cl. 123-41.82R.

Nifco Inc.: *See*—
Kobayashi, Yasutomo, 5,381,877, Cl. 188-290.000.
Watanabe, Hideo; Takahashi, Shoji; Suzuki, Takeshi; and Oikawa, Masatoshi, 5,381,838, Cl. 141-198.000.

Nihei, Eisuke: *See*—
Koike, Yasuhiro; and Nihei, Eisuke, 5,382,448, Cl. 427-163.200.

Nikki Box Stitching Machine Co, Ltd.: *See*—
Mano, Toshiyuki, 5,382,214, Cl. 493-89.000.

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Keelan, Brian W.; Niklewicz, Robert; Libby, Diane P.; and Nelson, John V., 5,382,499, Cl. 430-503.000.

Nikon Corporation: *See*—
Hozumi, Toshiaki; and Ogawa, Hidehiro, 5,382,993, Cl. 354-106.000.
Naito, Hideshi; Shiokama, Yoshiharu; and Ushio, Shinichi, 5,382,994, Cl. 354-286.000.
Uemura, Tsunesaburo, 5,383,217, Cl. 372-58.000.
Yonezawa, Yasuo, 5,383,058, Cl. 359-687.000.

Nilsson, Dan; and Donnerdal, Ove, to Aktiebolaget Electrolux. Hydraulic motor. 5,381,723, Cl. 91-437.000.

Nilvebrant, Lisbet: *See*—
Jonsson, Nils A.; Sparf, Bengt A.; Mikiver, Lembit; Moses, Pinchas; Nilvebrant, Lisbet; and Glas, Gunilla, 5,382,600, Cl. 514-603.000.

Nippon Chemiphar Co., Ltd.: *See*—
Nomura, Yutaka, 5,382,689, Cl. 564-349.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Yamamura, Shigeo; Yamamoto, Junko; Kiyoyanagi, Tadayuki; and Nomura, Masaharu, 5,382,490, Cl. 430-110.000.

Nippon Koki Co., Ltd.: *See*—
Kishimoto, Junichi; and Minamizawa, Takashi, 5,382,415, Cl. 422-305.000.

Nippon Oil Co., Ltd.: *See*—
Sato, Kunihiko; Morohashi, Kazuo; and Takahashi, Hidetoshi, 5,383,062, Cl. 359-894.000.
Suga, Masanobu; Akita, Seiichi; and Kuroda, Nobuyuki, 5,382,482, Cl. 429-206.000.

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Koike, Yasuhiro; and Nihei, Eisuke, 5,382,448, Cl. 427-163.200.

Nippon Petrochemicals Company, Limited: *See*—
Kurihara, Kazuhiko; Yazawa, Hiroshi; Yazawa, Shoichi; Kuroiwa, Yuki; and Murakami, Shuichi, 5,382,773, Cl. 219-121.700.

Nippon Shokubai Co., Ltd.: *See*—
Harada, Nobuyuki; Wada, Katsuyuki; Obara, Hisanori; Shimomura, Tadao; and Sano, Yoshinori, 5,382,610, Cl. 524-35.000.

Nippon Shokubai Kagaku Kogyo Company, Limited: *See*—
Hasebe, Ren; Okuda, Norimasa; and Saito, Noboru, 5,382,735, Cl. 585-467.000.

Nippon Steel Corporation: *See*—
Fujikura, Masahiro; Sato, Takashi; Yamada, Toshio; Hasebe, Fumio; and Chida, Hiromi, 5,381,856, Cl. 164-463.000.
Kageyama, Hideaki; Ueda, Masaharu; and Sugino, Kazuo, 5,382,307, Cl. 148-584.000.
Takahashi, Yasuhiko, 5,383,033, Cl. 358-456.000.

Nippon Telegraph and Telephone Corporation: *See*—
Kobayashi, Toshio; Okazaki, Yukio; Miyake, Masayasu; Inokawa, Hiroshi; and Morimoto, Takashi, 5,382,532, Cl. 437-34.000.

Nippondenso Co., Ltd.: *See*—
Ikeda, Hiroshi; Tabata, Taro; and Takasu, Yasuhito, 5,381,688, Cl. 73-105.000.
Kikuchi, Toshiaki, 5,381,767, Cl. 123-339.000.
Nagasaka, Takashi, 5,383,093, Cl. 361-771.000.
Nishigaki, Kazuhiro; and Tasaka, Hitoshi, 5,381,769, Cl. 123-399.000.
Oda, Kyoji; Takeuchi, Hitoshi; Tsujii, Masao; and Ohbe, Masahiro, 5,382,206, Cl. 477-108.000.
Takeda, Masayoshi; Nagai, Takayuki; and Sahashi, Toshiyasu, 5,382,045, Cl. 280-707.000.

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Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasushiro; Baba, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, to Pioneer Electronic Corporation. Navigation device. 5,383,128, Cl. 364-449.000.

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Nakajima, Akinobu; Ishibashi, Yoko; Aoyama, Motoo; Kurihara, Kunitoshi; Yamashita, Junichi; Nakajima, Junjiro; and Nishida, Koji, 5,383,229, Cl. 376-434.000.

Nishida, Masami: *See*—
Fukuma, Masaki; Deguchi, Hiroaki; Nishida, Masami; Asai, Akira; and Aino, Hiroshi, 5,381,764, Cl. 123-90.170.

Nishigaki, Kazuhiro; and Tasaka, Hitoshi, to Nippondenso Co., Ltd. Throttle valve drive apparatus. 5,381,769, Cl. 123-399.000.

Nishigakiuchi, Yasushi: *See*—
Hisada, Nobuo; Nishigakiuchi, Yasushi; Ueno, Yoshiyuki; Kotani, Yasuo; and Yagyu, Tadao, 5,382,560, Cl. 503-209.000.

Nishihara, Seiki: *See*—
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, 5,382,652, Cl. 528-308.600.

Nishii, Kanji; Ito, Masami; and Fukui, Atsushi, to Matsushita Electric Industrial Co., Ltd. Fourier transform lens assembly and optical information processor employing same. 5,383,056, Cl. 359-561.000.

Nishijima, Hiroaki: *See*—
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,711, Cl. 568-722.000.
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,712, Cl. 568-724.000.

Nishijoh, Astushi: *See*—
Nakamura, Hirotaka; Nishijoh, Astushi; Tsuchiya, Shigeki; and Hirobe, Yoshiaki, 5,382,933, Cl. 335-278.000.

Nishikawa, Naofumi, to Mitsubishi Denki Kabushiki Kaisha. Live insertion circuit. 5,383,081, Cl. 361-58.000.

Nishimoto, Hiroshi: *See*—
Tomofuji, Hiroaki; Sugata, Akihiko; and Nishimoto, Hiroshi, 5,383,046, Cl. 359-176.000.

Nishimoto, Tatsumi: *See*—
Homma, Koichi; Kagami, Akira; Tenma, Tadashi; Akashi, Kichizo; Kusuzaki, Tetsuo; Nishimoto, Tatsumi; and Oyama, Hiroaki, 5,383,111, Cl. 364-401.000.

Nishimura, Yasunobu: *See*—
Ishii, Akihiro; Nishimura, Yasunobu; Kondoh, Hirotsune; and Kikuchi, Yoshiyuki, 5,382,589, Cl. 514-1.000.

Nishino, Hisayasu; Yamada, Akio; Oae, Yoshihisa; and Yasuda, Hiroshi, to Fujitsu Limited. Charged particle beam exposure method and apparatus. 5,382,800, Cl. 250-396.0ML.

Nishio, Shoji: *See*—
Shimizu, Akira; Nishio, Shoji; Sanpei, Takeshi; and Ushiroyama, Hiroyuki, 5,382,507, Cl. 430-399.000.

Nishiwaki, Toshikazu: *See*—
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, 5,382,652, Cl. 528-308.600.

Nishiyama, Noriyuki: *See*—
Omori, Toshiaki; Nishiyama, Noriyuki; and Inoue, Naoyuki, 5,381,674, Cl. 62-497.000.

Nishizawa, Tsutomu: *See*—
Misawa, Tsutami; Itoh, Hisato; Nishizawa, Tsutomu; Nakano, Masami; and Katayama, Hiroyuki, 5,382,465, Cl. 428-195.000.

Nishizawa, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Overcurrent protector for power element. 5,383,082, Cl. 361-93.000.

Nissan Motor Co., Ltd.: *See*—
Fujihira, Masamichi; Hirata, Yoshiki; Suga, Kosaku; and Akiba, Uichi, 5,382,332, Cl. 204-128.000.
Hibi, Toshifumi, 5,383,125, Cl. 364-426.030.
Nakajima, Yuki, 5,381,774, Cl. 123-674.000.

Nita, Henry; and Mills, Timothy C., to Baxter International Inc. Method and device for connecting ultrasound transmission member (S) to an ultrasound generating device. 5,382,228, Cl. 604-22.000.

Nix-Gomez, Jame A.: *See*—
Raffa, James M.; Cwik, Terry T.; Aronow, Michael F.; Little, Winston A.; Meitzler, Allen H.; Misangyi, Peter W.; Nix-Gomez, Jame A.; Saloka, George S.; and Walker, Noel A., 5,382,942, Cl. 340-457.400.

Nixon, Robert D.: *See*—
Mehrotra, Pankaj K.; and Nixon, Robert D., 5,382,273, Cl. 51-307.000.

Niziolek, Thomas C.; Hodgins, George; and Ray, Marie B., to Rexham Graphics, Inc. Overcoats for diazo-containing layers with chemicals and abrasion resistance. 5,382,495, Cl. 430-162.000.

Nobe, Kenichi: *See*—
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasushiro; Baba, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.

NobelTech Electronics: *See*—
Holmstrom, Peter; and Pettersson, Sven, 5,381,721, Cl. 89-1.510.

Noda, Masaki: *See*—
Okajima, Hisakazu; and Noda, Masaki, 5,382,901, Cl. 324-244.100.

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Hemesath, Gerhard, 5,381,973, Cl. 241-191.000.

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Noguchi, Tashio: *See*—
Shibata, Takao; Taniguchi, Kozo; Noguchi, Tashio; and Tsuchiya, Koji, 5,381,676, Cl. 66-149.00R.

Nohr, Ronald S.; MacDonald, John G.; and Herring, Laura E., to Kimberly-Clark Corporation. Electron beam-graftable compound and product from its use. 5,382,703, Cl. 568-609.000.

Nolle, Wolfgang, to Union Special GmbH. Method of sewing a seam and a sewing unit therefor. 5,381,745, Cl. 112-262.100.

Nomura, Masaharu: *See*—
Yamamura, Shigeo; Yamamoto, Junko; Kiyoyanagi, Tadayuki; and Nomura, Masaharu, 5,382,490, Cl. 430-110.000.

Nomura, Yutaka, to Nippon Chemiphar Co., Ltd. Process for preparation of bevantolol hydrochloride. 5,382,689, Cl. 564-349.000.

Noone, David L.; and Mitchell, Frank L., to ITT Corporation. Multilayer fuel and vapor tube. 5,383,087, Cl. 361-215.000.

Norado, Gabriele B.: *See*—
Hamilton, Peter W.; and Norado, Gabriele B., 5,381,799, Cl. 128-777.000.

Noranda Inc.: *See*—
Kanduth, Harald H.; and Hudyma, Marty, 5,381,690, Cl. 73-151.000.

Norden, Alexander R., to Cooper Industries Inc. Electrical connectors. 5,382,176, Cl. 439-357.000.

Nordgren, Timothy F.; Imling, Deborah K.; Ungari, Joseph L.; Killam, Donald G.; and McKeighen, Ronald E., to Advanced Technology Laboratories, Inc. Intraoperative ultrasound probe. 5,381,795, Cl. 128-663.010.

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Marconato, Luca; and Pozzobon, Alessandro, 5,382,031, Cl. 280-11.220.
Pozzobon, Alessandro; Foecaro, Giancarlo; Marongiu, Gianpaolo; Tacchetto, Maurizio; and Bugliesi, Luca, 5,381,613, Cl. 36-117.000.
Tonel, Valerio; and Sartor, Claudio, 5,381,611, Cl. 36-117.000.

Nordson Corporation: *See*—
Raterman, John, 5,382,312, Cl. 156-500.000.
Turner, Herman E., Jr., 5,382,397, Cl. 264-46.500.

Norenburg, Johannes C.: *See*—
Rubin, Jacob N.; and Norenburg, Johannes C., 5,382,707, Cl. 568-697.000.

Norlin, Goran, to Tezo AB. Wrap thread feeding magazine in a weaving machine. 5,381,835, Cl. 139-97.000.

North American Philips Corporation: *See*—
Farkas, Thomas; and Venkitasubrahmanian, Sreeraman, 5,382,881, Cl. 315-307.000.

Northern Telecom Limited: *See*—
Sasaki, Lawrence H.; and Brown, Anthony K. D., 5,382,838, Cl. 327-108.000.

Norton, Peter. Servo steering system with stepping motor. 5,381,869, Cl. 180-79.100.

Noschese, Rocco J., to Burndy Corporation. Electrical connection system with mounting track. 5,382,179, Cl. 439-533.000.

Nourrisson, Marie-Renee: *See*—
Le Baut, Guillaume; Nourrisson, Marie-Renee; Renaud de la Faverie, Jean-Francois; Bizot Espiard, Jean-Guy; Caignard, Daniel-Henri; Renard, Pierre; and Adam, Gerard, 5,382,593, Cl. 514-418.000.

Novak, Peter J. Mail slot alarm. 5,382,945, Cl. 340-569.000.

Novo Nordisk A/S: *See*—
Jorgensen, Klavs H., 5,382,574, Cl. 514-3.000.

Nowak, William J.; Costanza, Daniel W.; and Powers, Edward A., to Xerox Corporation. Photoreceptor belt motion sensor using linear position sensors. 5,383,014, Cl. 356-28.000.

Numagami, Atsushi; Shirai, Hiroyuki; and Shoji, Takeo, to Canon Kabushiki Kaisha. Cleaning device, process cartridge incorporating the cleaning device, and image forming apparatus using the cleaning device. 5,383,011, Cl. 355-298.000.

Numata, Tomiyuki; Yamaguchi, Takeshi; and Iwaki, Takashi, to Sharp Kabushiki Kaisha. Optical disk apparatus. 5,383,174, Cl. 369-119.000.

Nuovopignone: *See*—
Mezzedimi, Vasco; Bonciani, Luciano; Ceccherini, Gianni; and Modi, Roberto, 5,381,652, Cl. 60-39.230.

Nurnberg, Eberhard; Seiller, Erhard; and Ritsert, Stefan, to Merz + Co. GmbH & Co. Memantine-containing solid pharmaceutical dosage forms having an extended two-stage release profile and production thereof. 5,382,601, Cl. 514-775.000.

Nurse, Harry L. Septic tank outlet filter. 5,382,357, Cl. 210-170.000.

Nye, Richard V.: *See*—
Horton, Duane L.; and Nye, Richard V., 5,382,242, Cl. 604-283.000.

Nyman, Oscar W., to Hammerblow Corporation, The. Coupling device. 5,382,109, Cl. 403-316.000.

O & K Geissler GmbH: *See*—
Frisch, Helmuth; Geissler, Norbert; and Weiss, Herbert, 5,381,681, Cl. 72-9.000.

Oae, Yoshihisa: *See*—
Nishino, Hisayasu; Yamada, Akio; Oae, Yoshihisa; and Yasuda, Hiroshi, 5,382,800, Cl. 250-396.0ML.

Obaishi, Hiroshi: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouki-chi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Obara, Hisanori: *See*—
Harada, Nobuyuki; Wada, Katsuyuki; Obara, Hisanori; Shimomura, Tadao; and Sano, Yoshinori, 5,382,610, Cl. 524-35.000.

O'Brien, Dennis W.: *See*—
Elmer, John W.; Teruya, Alan T.; and O'Brien, Dennis W., 5,382,895, Cl. 324-71.300.

O'Brien, Kirk G.: *See*—
Keck, Richard J.; O'Brien, Kirk G.; and Bigelow, Michael J., 5,382,856, Cl. 310-71.000.

O'Brien, Michael J.; and Smith, William B., to Eastman Kodak Company. Actively athermalized optical head assembly. 5,383,168, Cl. 369-44.140.

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Spohn, Ronald F.; and Saran, Mohan S., 5,382,745, Cl. 585-800.000.

Oceaneering Technologies, Inc.: *See*—
Richards, William R.; Wilkes, John A.; Schwatka, Brian K.; Resnick, Andrew M.; and Mackey, Lawrence A., 5,381,751, Cl. 114-264.000.

Ochi, Hideo; Igari, Akihide; Toyoda, Masaaki; and Nakagawa, Zenbee, to Somar Corporation. Sintered varistor material with small particle size. 5,382,385, Cl. 252-519.000.

O'Connell, Gary J.; and Tisdale, David G., to Falconbridge Ltd. Pretreatment of chromium-bearing metal scrap to remove chromium. 5,382,278, Cl. 75-626.000.

Oda, Goichi: *See*—
Sugasawa, Masatoshi; Toda, Atsushi; Sasaki, Masaru; Yamashita, Masayasu; Matsumoto, Akihiro; Ozaki, Akiyoshi; and Oda, Goichi, 5,382,876, Cl. 315-82.000.

Oda, Ikuyo: *See*—
Yuhara, Tazunu; Onimaru, Hiroya; Gotou, Kanzen; and Oda, Ikuyo, 5,382,777, Cl. 235-379.000.

Oda, Kyoji; Takeuchi, Hitoshi; Tsujii, Masao; and Ohba, Masahiro, to Nippondenso Co., Ltd. Method of and system for controlling the speed of a motor vehicle based on an adjustable control characteristic so that the speed of the vehicle follows a target speed. 5,382,206, Cl. 477-108.000.

Oda, Yasuhiro: *See*—
Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, 5,381,914, Cl. 215-341.000.

Odawara, Akio; Sasaki, Yasuhiko; Murata, Sakae; and Narita, Hiroshi, to Tanabe Seiyaku Co., Ltd. Pharmaceutical composition for inhibiting platelet aggregation. 5,382,577, Cl. 514-211.000.

O'Dea, Richard W., to Highland Tank & Manufacturing Company. Overflow control for liquid storage tanks. 5,381,923, Cl. 220-565.000.

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Shida, Toshio; Satoh, Hisao; Otomo, Naoko; Sakabe, Takeshi; Okazaki, Shigeru; Ikeda, Tadayoshi; and Ogane, Atsushi, 5,382,998, Cl. 355-50.000.

Ogawa, Hidehiro: *See*—
Hozumi, Toshiaki; and Ogawa, Hidehiro, 5,382,993, Cl. 354-106.000.

Ogawa, Hiroshi: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,382,143, Cl. 418-55.100.

Ogawa, Ken; Hara, Yoshihisa; Miyashita, Kotaro; and Machida, Kei, to Honda Giken Kogyo Kabushiki Kaisha. Control system for internal combustion engines with exhaust gas recirculation systems. 5,383,126, Cl. 364-431.060.

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Minami, Norio; Ozaki, Fumihiro; Ishibashi, Keiji; Kabasawa, Yasuhiro; Ikemori, Megumi; Ogawa, Toshiaki; and Kawamura, Takanori, 5,382,595, Cl. 514-450.000.

Oguchi, Yoshihiro: *See*—
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 5,382,497, Cl. 430-269.000.

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Takemitsu, Koji; Akiyama, Kenyu; Ohashi, Hiroshi; and Ichikawa, Syoichi, 5,382,374, Cl. 252-73.000.

Ohba, Masahiro: *See*—
Oda, Kyoji; Takeuchi, Hitoshi; Tsujii, Masao; and Ohba, Masahiro, 5,382,206, Cl. 477-108.000.

Ohio University: *See*—
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Pasch, Ricky C.; and Thomas, David R. Flashlight wand attachment. 5,383,103, Cl. 362-102.000.
Pasier, Paul A.; and Navare, Ravi Y. Apparatus for adjusting inclination of an exercise machine. 5,382,209, Cl. 482-70.000.
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Patel, Ramchandra L., to Ford Motor Company. Heat exchanger and method of making the same. 5,381,600, Cl. 29-890.044.
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Stumpf, William S.; Patton, Art A.; and Helmond, Gerard G., 5,382,077, Cl. 297-353.000.
Paulig, Robert, to Oy Gilvaria AB/Robert's Coffee Co. Arrangement and method in connection with the retail sales of brewable products. 5,381,969, Cl. 241-36.000.
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Frank, Juergen; Rheude, Udo; Schulz, Bernhard; Paust, Joachim; and Hickmann, Eckhard, 5,382,732, Cl. 585-351.000.
Pawellek, Franz: *See—*
Eisenbacher, Egon; Pawellek, Franz; and Arnold, Bernhard, 5,382,140, Cl. 417-273.000.
Paxton, Donald J.; and Dyer, David J., to Morton International, Inc. Soft deployment air bag fold. 5,382,048, Cl. 280-728.00R.
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Halstead, Peter D., 5,381,560, Cl. 2-421.000.
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El-Sayed, Lyla M.; Lane, Gregg A.; and Pearlstine, Kathryn A., 5,382,492, Cl. 430-115.000.
Pearson, Rune S. Electronic coin mechanism. 5,381,880, Cl. 194-217.000.
Peck, Thomas R.: *See—*
Lentz, Ronald R.; Pesheck, Peter S.; Anderson, George R.; DeMars, Jimmy; and Peck, Thomas R., 5,382,441, Cl. 426-241.000.
Pedrick, Larry E.: *See—*
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Peek, Joel A.: *See—*
Taylor, Ronald K.; and Peek, Joel A., 5,382,660, Cl. 536-23.200.
Peet, Norton P.: *See—*
Farr, Robert A.; and Peet, Norton P., 5,382,709, Cl. 568-704.000.
Peeters, Dirk, to Agfa-Gevaert N. V. Cap with an induction seal closure. 5,381,913, Cl. 215-232.000.
Pein, Howard B., to Philips Electronics North America Corporation. Lateral semiconductor-on-insulator (SOI) semiconductor device having a buried diode. 5,382,818, Cl. 257-347.000.
Pelouch, Wayne S.; Powers, Peter E.; and Tang, Chung L., to Cornell Research Foundation, Inc. Self-starting mode-locked ring cavity laser. 5,383,198, Cl. 372-18.000.
Peltier, Mark E., to In-Vironmental Integrity, Inc. Electrostatic vapor/aerosol generator with method and apparatus for conditioning building spaces. 5,382,410, Cl. 422-121.000.
Penick, Ron J.: *See—*
Hadank, John M.; McGuire, Kenneth J.; Meinhold, David R.; and Penick, Ron J., 5,381,874, Cl. 184-6.400.
Penman, Duncan: *See—*
Satterlee, Chris; and Penman, Duncan, 5,383,201, Cl. 371-29.100.
Pennaz, Thomas J., to Deluxe Corporation. Ink composition and method of making, using and recovering such composition. 5,382,282, Cl. 106-20.00R.
Pennela, Filippo: *See—*
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Pennetreau, Pascal; Janssens, Francine; Braun, Max; Eicher, Johannes; Rudolph, Werner; and Hausmann, Eckhard, to Solvay (Societe Anonyme). Process for the preparation of 1,1,1,2-tetrafluoroethane. 5,382,721, Cl. 570-166.000.
Perego, Bruno: *See—*
Manghisi, Elso; and Perego, Bruno, 5,382,663, Cl. 540-491.000.

Perkins, Thomas O.: *See—*
Glynn, Dennis P.; Joseph, John C.; and Perkins, Thomas O., 5,381,694, Cl. 73-627.000.
Perlman, Daniel, to Brandeis University. Microcentrifuge tube with upwardly projecting lid extension. 5,382,408, Cl. 422-102.000.
Perlman, Daniel; and Hayes, Kenneth C., to Brandeis University. Modified fat blends. 5,382,442, Cl. 426-607.000.
Perotto, Richard D.; Briscoe, Terry L.; Carpenter, Christopher M.; and Richards, Dean F., to ESCO Corporation. Quick coupling device. 5,382,110, Cl. 403-322.000.
Perreaut, Jean M.; and Roussel, Bruno F., to Thomson Tubes & Displays, S.A. Focusing device with two dynamic windings for energy recovery. 5,382,888, Cl. 315-382.000.
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Peters, David H.; and Harth, Jeff, to Silicon Systems, Inc. Self-commutating, back-EMF sensing, brushless DC motor controller. 5,382,889, Cl. 318-254.000.
Peters, Larry D. Portable photography booth and improved light reflector assembly. 5,383,099, Cl. 362-18.000.
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Petrovic, John J., to University of California, The Regents of the. Molybdenum disilicide composites reinforced with zirconia and silicon carbide. 5,382,553, Cl. 501-92.000.
Pett, Todd A.; Olson, Steven C.; and Sreenivas, Ajay I., to Ball Corporation. Broadband circular polarization antenna. 5,382,959, Cl. 343-700.0MS.
Pettersson, Sven: *See—*
Holmstrom, Peter; and Pettersson, Sven, 5,381,721, Cl. 89-1.510.
Pfaff, Dietrich: *See—*
Lorenz, Dieter; Pircher, Christian; Geier, Petra; Holler, Helmut; and Pfaff, Dietrich, 5,382,765, Cl. 200-148.00R.
Pfahler, Gerhard: *See—*
Bergner, Klaus-Dieter; and Pfahler, Gerhard, 5,382,613, Cl. 524-102.000.
Pfister, Gerd: *See—*
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Pham, Hung: *See—*
Bahel, Vijay; Millet, Hank; Hickey, Mickey; Pham, Hung; and Herroon, Gregory P., 5,381,669, Cl. 62-129.000.
Pharmachemie B.V.: *See—*
Boualam, Mohammad; Gielen, Marcel; El Khloufi, Abdelaziz; De Vos, Dirk; and Willem, Rudolph, 5,382,597, Cl. 514-493.000.
Pharmacia Aktiebolag: *See—*
Jonsson, Nils A.; Sparf, Bengt A.; Mikiver, Lembit; Moses, Pinchas; Nilvebrant, Lisbet; and Glas, Gunilla, 5,382,600, Cl. 514-603.000.
Phelan, Cathal G., to Cypress Semiconductor Corporation. Parallel TESTMODE. 5,383,157, Cl. 365-201.000.
Phelps, James J.; and Van, Nga T., to Target Therapeutics, Inc. Vasoocclusion coil with attached tubular woven or braided fibrous covering. 5,382,259, Cl. 606-151.000.
Phelps, William C., III: *See—*
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Philips Electronics North America Corporation: *See—*
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Phillips, Paul J.: *See—*
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Phillips Petroleum Company: *See—*
Abbott, Ronald G., 5,382,744, Cl. 585-709.000.
Lin, Fan-Nan; and Pennela, Filippo, 5,382,266, Cl. 44-382.000.
Reagen, William K.; and McDaniel, Max P., 5,382,738, Cl. 585-512.000.
Stahl, G. Allan; Moradi-Araghi, Ahmad; Westerman, I. John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,382,371, Cl. 507-221.000.
Phillips, Reginald L.: *See—*
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Photonics Research Incorporated: *See—*
Krafft, Terry, 5,381,605, Cl. 34-408.000.
Pianciola, Aurelio: *See—*
Decao, Marco; Pianciola, Aurelio; and Tambosso, Tiziana, 5,382,275, Cl. 65-407.000.
Piccirillo, Marcello; and Beutler, Paul, to Zellweger Uster AG. Machine for the automatic drawing-in of warp threads having warp beam truck. 5,381,594, Cl. 28-208.000.
Pickart, Loren R., to Skin Biology, Inc. Tissue protective and regenerative compositions. 5,382,431, Cl. 424-401.000.
Picken, Stephen J.; and Mohlmann, Gustaaf R., to Akzo Nobel nv. Twisted nematic film, a method for the preparation thereof, and a display device comprising said film. 5,382,648, Cl. 528-75.000.
Picker International, Inc.: *See—*
Young, Ian R., 5,382,903, Cl. 324-318.000.
Pickett, Thomas J.; Otten, Richard A.; Stribbell, Bruce J.; and Sheth, Manhar K., to General Motors Corporation. Extrusion die stabilizer guide and method of extrusion. 5,382,401, Cl. 264-177.160.
Pielartzik, Harald: *See—*
Meltzer, Aaron D.; and Pielartzik, Harald, 5,382,643, Cl. 528-45.000.
Piersak, David J.: *See—*
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Pietila, Seppo I.: *See—*
Koivisto, Markku H.; and Pietila, Seppo I., 5,381,853, Cl. 164-443.000.
Pietra, Barbara M. Detachable stroller tray. 5,382,074, Cl. 297-153.000.
Pietrogrande, Stefano, deceased (by Formenti, Daniela Pietrogrande nee, heir); Attanasio, Marco; Bisogni, Paolo; and Lomoro, Sandro, to I.C.P.-Industria Componenti Prefabbricati S.r.l. Covering structure particularly for surfaces having a marked longitudinal extension. 5,381,634, Cl. 52-86.000.
Pike, Richard D.; Brown, Kurtis L.; Gwaltney, Sharon W.; Herschberger, Thomas A.; and Siegel, Scott D., to Kimberly-Clark Corporation. Nonwoven multicomponent polymeric fabric and method for making same. 5,382,400, Cl. 264-168.000.
Pillsbury Company, The: *See—*
Lentz, Ronald R.; Pesheck, Peter S.; Anderson, George R.; DeMars, Jimmy; and Peck, Thomas R., 5,382,441, Cl. 426-241.000.
Piloto, Andrew J.; Leahy, Kevin A.; Flanick, Bruce A.; and Zaki, Kawthar A., to Westinghouse Electric Corporation. Waveguide filters having a layered dielectric structure. 5,382,931, Cl. 333-208.000.
Pinilla, Nicolas: *See—*
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Pinkos, Rolf; Fischer, Rolf; and Dostalek, Roman, to BASF Aktiengesellschaft. Continuous production of cyclohexene from cyclohexyl esters. 5,382,740, Cl. 585-640.000.
Pioneer Electronic Corporation: *See—*
Miyaguchi, Satoshi; Onoe, Atsushi; and Ota, Hiroyuki, 5,382,334, Cl. 204-130.000.
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasushiro; Baba, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.
Onagi, Nobuaki; Suzuki, Shinichiro; and Yoshikawa, Takamasa, 5,382,460, Cl. 428-64.000.
Saito, Akio; and Ikeda, Hideyuki, 5,383,076, Cl. 360-128.000.
Shinoda, Ryuichi; Honda, Jun; and Miyata, Kunihiro, 5,383,083, Cl. 361-103.000.
Pippert, Jon P. Basketball net with adjustable return control. 5,382,017, Cl. 273-1.50A.
Pircher, Christian: *See—*
Lorenz, Dieter; Pircher, Christian; Geier, Petra; Holler, Helmut; and Pfaff, Dietrich, 5,382,765, Cl. 200-148.00R.
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Pissanetzky, Sergio, to Houston Advanced Research Center. Structured coil electromagnets for magnetic resonance imaging and method for fabricating the same. 5,382,904, Cl. 324-319.000.
Pitney Bowes Inc.: *See—*
Liberati, Daniel J., 5,383,092, Cl. 361-704.000.
Moh, Sungwon R.; Potter, Scott T.; Ramirez, Frank D.; and Salazar, Edilberto I., 5,382,890, Cl. 318-254.000.
Pittman, Ernest: *See—*
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Pla, Frederic G.; Rajiyah, Harindra; Renshaw, Anthony A.; and Hedeen, Robert A., to General Electric Company. Active noise control using noise source having adaptive resonant frequency tuning through stiffness variation. 5,382,134, Cl. 415-119.000.
Plastro Guat: *See—*
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Plata, Miroslaw; Bourqui, Bernard; and Strehmel, Werner, to Alusuisse-Lonza Services Ltd. Spray unit for cooling extruded sections. 5,382,306, Cl. 148-511.000.
Playskool, Inc.: *See—*
Tomellini, Dalita R., 5,382,188, Cl. 446-397.000.
Plessey Semiconductors Limited: *See—*
Lawton, Rodney J., 5,382,919, Cl. 330-260.000.
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Mitchell, J. Patrick; and Ploot, Terry, 5,381,777, Cl. 124-25.600.
Plunkett, Marian L.; and Catino, Joseph J., to Schering-Plough Corporation. Use of IL-4 to treat solid tumors. 5,382,427, Cl. 424-85.200.
Podlas, Thomas J. Clay and mica replacement with CMC in joint compound. 5,382,287, Cl. 106-197.200.
Poelhekken, Thomas D.: *See—*
Janssen, Sander J. L. M.; and Poelhekken, Thomas D., 5,383,190, Cl. 370-85.600.

Pointer, Philip: *See*—
Kight, Peter J.; Johnson, Mark A.; Christenson, Tamara K.; Lach, Regina; Pointer, Philip; and Cook, Kenneth, 5,383,113, Cl. 364-401.000.

Poirier, Robert V.: *See*—
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Pollack, Jack, to Imodco, Inc. Vessel turret mooring system. 5,381,750, Cl. 114-230.000.

Polymer Processing Research Institute, Ltd.: *See*—
Kurihara, Kazuhiko; Yazawa, Hiroshi; Yazawa, Shoichi; Kuroiwa, Yuki; and Murakami, Shuichi, 5,382,773, Cl. 219-121.700.

Pompei, Francesco, to Exergen Corporation. Ear thermometer radiation detector. 5,381,796, Cl. 128-664.000.

Pond, Stephen F.; and Rezanka, Ivan, to Xerox Corporation. Ink jet printer for magnetic image character recognition printing. 5,382,963, Cl. 346-25.000.

Ponger, Uri; and Sagiv, Tuvia. Multi-tier burial system. 5,381,591, Cl. 27-35.000.

Popovic, Radivoje, to Landis & Gyr Business Support AG. Integrated circuit with an integrated color-selective photo diode and an amplifier following the photo-diode. 5,382,824, Cl. 257-464.000.

Post, Richard L.: *See*—
Yu, Robert C. U.; Foley, Geoffrey M. T.; Herbert, William G.; Limburg, William W.; Mishra, Satchidanand; Post, Richard L.; and VonHoene, Donald C., 5,382,486, Cl. 430-56.000.

Potter, James M.: *See*—
Hamm, Robert W.; Crandall, Kenneth R.; and Potter, James M., 5,382,914, Cl. 315-505.000.

Potter, Scott T.: *See*—
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Potts, Michael, to Surtech International Limited. Caffeine in the treatment of Herpes simplex virus infections. 5,382,436, Cl. 424-489.000.

Pouch, Thomas S. Portable counter-bar. 5,382,087, Cl. 312-140.200.

Powell, Douglas G.; Lundy, Charles E.; Fennhoff, Gerhard; Hufen, Ralf; and Kircher, Klaus, to Miles Inc.; and Bayer Aktiengesellschaft. Polycoadensates which can be sterilized by γ-radiation. 5,382,605, Cl. 523-136.000.

Powelson, Gerald D.: *See*—
Orr, Douglas P.; Powelson, Gerald D.; and Crawford, Mark, 5,382,239, Cl. 604-177.000.

Powers, Edward A.: *See*—
Nowak, William J.; Costanza, Daniel W.; and Powers, Edward A., 5,383,014, Cl. 356-28.000.

Powers, Peter E.: *See*—
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Poynter, Adrian A.: *See*—
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Pozzobon, Alessandro; Foscaro, Giancarlo; Marongiu, Gianpaola; Tacchetto, Maurizio; and Bugliesi, Luca, to Nordica S.p.A. Ski boot. 5,381,613, Cl. 36-117.000.

Pozzobon, Alessandro: *See*—
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PPG Industries, Inc.: *See*—
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Precision Dynamics Corporation: *See*—
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Precision Fukuhara Works, Ltd.: *See*—
Shibata, Takao; Taniguchi, Kozo; Noguchi, Tashio; and Tsuchiya, Koji, 5,381,676, Cl. 66-149.00R.

Precision Navigation, Inc.: *See*—
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Pressly, Matthew D.: *See*—
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Prevorsek, Dusan C.; and Li, Hsin L., to AlliedSignal Inc. Process for fabrication of carbon fiber-reinforced carbon composite material. 5,382,392, Cl. 264-29.500.

Prevost, Charles F.: *See*—
Mandel, Barry P.; Prevost, Charles F.; Rizzolo, Charles D.; Green, Frederick A.; and Van Dongen, Richard A., 5,382,012, Cl. 270-53.000.

Prince Corporation: *See*—
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Princeton University, The Trustees of: *See*—
Levine, Arnold J.; Shenk, Thomas E.; and Finlay, Cathy A., 5,382,510, Cl. 435-6.000.

Pro Line Company: *See*—
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Procter & Gamble Company, The: *See*—
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Michael, Daniel W.; and Maile, Michael S., 5,382,376, Cl. 252-153.000.
Stapler, Judith H.; and Hunter, Mary A., 5,382,424, Cl. 424-54.000.
Thompson, Hugh A.; Young, Gerald A.; Osborn, Thomas W., III; Chappell, Charles W.; Johnson, Theresa L.; Hammons, John L.; Lavash, Bruce W.; Horney, James C.; and Hines, Lee M., 5,382,245, Cl. 604-367.000.

PSC Inc.: *See*—
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Pugin, Benoit; Spindler, Felix; and Muller, Manfred, to Ciba-Geigy Corporation. Diphosphines containing silane groups, immobilized diphosphins and the use thereof as hydrogenation catalysts. 5,382,729, Cl. 585-277.000.

Purdue Research Foundation: *See*—
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Putnam, David L. Method and apparatus for detecting the presence of dental plaque or calculus. 5,382,163, Cl. 433-215.000.

Putney, Lloyd P. Portable livestock corral. 5,381,757, Cl. 119-20.000.

Pyrah, Keith: *See*—
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Qian, Jianzhong, to Siemens Medical Systems, Inc. Automatic indentification of anatomical features of interest from data acquired in nuclear medicine studies and automatic positioning of scintillation cameras to carry out such studies at optimal positions. 5,381,791, Cl. 128-659.000.

Quach, Frank: *See*—
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Qualcomm Incorporated: *See*—
Wheatley, Charles E., III; Padovani, Roberto; and Zehavi, Ephraim, 5,383,219, Cl. 375-1.000.

Quenist, Jean-Francois; and Jaillard, Andre, to France Telecom. Device and method to control the output power of laser diodes. 5,383,208, Cl. 372-29.000.

Quickie Designs Inc.: *See*—
Counts, David M.; and Williamson, Daniel E., 5,382,036, Cl. 280-250.100.

Quinton Instrument Company: *See*—
Abrahamson, Timothy A.; and Sommercorn, Richard K., 5,382,238, Cl. 604-170.000.
Burrows, Fremond W., 5,381,798, Cl. 128-696.000.

R.M.S. Safety, Inc.: *See*—
Sak, Robert F., 5,382,235, Cl. 604-110.000.

R. R. Donnelley & Sons Co.: *See*—
Scobbie, Gavin, 5,381,890, Cl. 206-45.230.

R. & R. Trench Equipment Limited: *See*—
Disney, Robin E. L., 5,381,616, Cl. 37-94.000.

Rabbitt, Mary M. Package assembly for decorative lights. 5,381,899, Cl. 206-397.000.

Radnai, Ferenc: *See*—
Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karaczony, Erno; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

Raehse, Wilfried; Jacobs, Jochen; Kruse, Hans; Vogt, Guenther; Smulders, Eduard; and Boecker, Monika, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of detergents. 5,382,377, Cl. 252-174.000.

Raffa, James M.; Cwik, Terry T.; Aronow, Michael F.; Little, Winston A.; Meitzler, Allen H.; Misangyi, Peter W.; Nix-Gomez, Jame A.; Saloka, George S.; and Walker, Noel A., to Ford Motor Company. Engine oil monitoring system having an in-vehicle display of the current status of the oil. 5,382,942, Cl. 340-457.400.

Raffel, Reiner: *See*—
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Raghavan, Chidambaram; Olsen, John; Anderson, Curtis L.; and La-Lande, Alton J., to Flow International Corporation. Method and apparatus for cutting metal casings with an ultrahigh-pressure abrasive fluid jet. 5,381,631, Cl. 451-75.000.

Rajagopalan, Raghavan: *See*—
Lyle, Leon R.; Rajagopalan, Raghavan; and Deutsch, Karen, 5,382,654, Cl. 530-311.000.

Rajavel, Damodaran: *See*—
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Rajiyah, Harindra: *See*—
Pla, Frederic G.; Rajiyah, Harindra; Renshaw, Anthony A.; and Hedeen, Robert A., 5,382,134, Cl. 415-119.000.

Ramirez, Frank D.: *See*—
Moh, Sungwon R.; Potter, Scott T.; Ramirez, Frank D.; and Salazar, Edilberto I., 5,382,890, Cl. 318-254.000.

Ramos, Raicelina: *See*—
Gonzalez, Jose C.; Escalante, Leonardo; and Ramos, Raicelina, 5,382,706, Cl. 568-697.000.

Rampel, Hans: *See*—
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Randad, Ramnarayan: *See*—
Abraham, Donald J.; Mehanna, Ahmed; and Randad, Ramnarayan, 5,382,680, Cl. 562-451.000.

Rankin, Charles G. Gearbox countershaft decoupler. 5,381,703, Cl. 74-329.000.

Rao, V. N. Mallikarjuna: *See*—
Krespan, Carl G.; and Rao, V. N. Mallikarjuna, 5,382,704, Cl. 568-583.000.

Rapoport, William R.: *See*—
Barrett, Joseph J.; Yee, Joseph; and Rapoport, William R., 5,383,200, Cl. 372-25.000.

Rarey, Charles M.: *See*—
Failla, Stephen J.; Traini, Patrick J.; and Rarey, Charles M., 5,382,252, Cl. 606-119.000.

Rasmussen, James M., to Cummins-Allison Corp. Coin queuing device and power rail sorter. 5,382,191, Cl. 453-11.000.

Raspanti, Giuseppe, to 3V Sigma S.p.A. Methyl piperidine derivatives of cinnamic acids, benzoic acids, benzoazols and benzophenones useful as skin anti-aging compounds. 5,382,588, Cl. 514-315.000.

Raterman, John, to Nordson Corporation. Dual format adhesive apparatus for intermittently disrupting parallel, straight lines of adhesive to form a band. 5,382,312, Cl. 156-500.000.

Rauch, Joseph J., Jr. Retractable wheel lock assembly. 5,381,680, Cl. 70-226.000.

Rausa, Riccardo: *See*—
Carugati, Angelo; Del Piero, Gastone; and Rausa, Riccardo, 5,382,559, Cl. 502-427.000.

Rautaruukki Oy: *See*—
Keranen, Heimo, 5,383,101, Cl. 362-35.000.

Ravera, Giorgio. Device for the automatic supply of a press for moulding thermoplastic material sheets. 5,382,152, Cl. 425-397.000.

Ray, Marie B.: *See*—
Niziolek, Thomas C.; Hodgins, George; and Ray, Marie B., 5,382,495, Cl. 430-162.000.

Raychem Corporation: *See*—
Baigrie, Stephen; Chu, Edward F.; Park, George B.; Reddy, Vijay N.; Rinde, James A.; and Saltman, Robert P., 5,382,384, Cl. 252-511.000.
Masia, Michael; Reed, James P.; Wasley, Robert S.; Reeder, Larry R.; Brooks, Peter L.; Tolles, Thomas W.; Frank, Louis M.; Bonomi, Mauro; Stewart, Ray F.; Lahlough, John; and Welsh, Laurence, 5,382,909, Cl. 324-522.000.

Raz, Avraham; Nabi, Ivan R.; Watanabe, Hideomi; and Otto, Thomas, to Michigan Cancer Foundation. Method of determining metastatic potential of bladder tumor cells. 5,382,521, Cl. 435-7.230.

Reagen, William K.; and McDaniel, Max P., to Phillips Petroleum Company. Chromium compounds and uses in trimerization or oligomerization. 5,382,738, Cl. 585-512.000.

Recoton Corporation: *See*—
Borchardt, Robert L.; McGreevy, William T.; and Rodriguez, Efrain, 5,383,044, Cl. 359-145.000.

Recreations, Inc.: *See*—
Mertz, Dyanna; and Mertz, John C., 5,382,009, Cl. 269-16.000.

Recton, Marc Jean-Marie. Saucepan, in particular a type of frying pan. 5,381,727, Cl. 99-423.000.

Red Devil Equipment Company: *See*—
Brunn, Randy J., 5,383,163, Cl. 366-217.000.

Reddy, Vijay N.: *See*—
Baigrie, Stephen; Chu, Edward F.; Park, George B.; Reddy, Vijay N.; Rinde, James A.; and Saltman, Robert P., 5,382,384, Cl. 252-511.000.

Reed, James P.: *See*—
Masia, Michael; Reed, James P.; Wasley, Robert S.; Reeder, Larry R.; Brooks, Peter L.; Tolles, Thomas W.; Frank, Louis M.; Bonomi, Mauro; Stewart, Ray F.; Lahlough, John; and Welsh, Laurence, 5,382,909, Cl. 324-522.000.

Reeder, Larry R.: *See*—
Masia, Michael; Reed, James P.; Wasley, Robert S.; Reeder, Larry R.; Brooks, Peter L.; Tolles, Thomas W.; Frank, Louis M.; Bonomi, Mauro; Stewart, Ray F.; Lahlough, John; and Welsh, Laurence, 5,382,909, Cl. 324-522.000.

Reents, William D., Jr.: *See*—
Downey, Stephen W.; Emerson, Adrian B.; Mujsce, Anthony M.; Muller, Amy J.; Reents, William D., Jr.; Sinclair, James D.; and Swanson, Alka, 5,382,794, Cl. 250-288.000.

Rehmer, Carl A., to Williams Patent Crusher and Pulverizer Company. Grinding apparatus. 5,381,971, Cl. 241-55.000.

Reichelt, Helmut: *See*—
Degen, Helmut; Lange, Arno; Gruettner-Merten, Sabine; and Reichelt, Helmut, 5,382,263, Cl. 8-638.000.

Reid, Ian A. B.: *See*—
Astbury, Christopher J.; Griffiths, David C.; Howard, Mark J.; and Reid, Ian A. B., 5,382,741, Cl. 585-652.000.

Reitz, Allen: *See*—
Chen, Robert; Goodman, Michael G.; and Reitz, Allen, 5,382,580, Cl. 514-234.200.

Rekers, Casper J. N. Dynamically balanced rowing simulator. 5,382,210, Cl. 482-72.000.

Reliant Laser Corporation: *See*—
Black, Michael; and Kupershmidt, Vladimir, 5,382,770, Cl. 219-121.630.
Black, Michael; and Kupershmidt, Vladimir, 5,382,986, Cl. 351-158.000.

Remiszewski, Stanley H.: *See*—
Matula, Paul A.; and Remiszewski, Stanley H., 5,381,788, Cl. 128-20.000.

Renard, Pierre: *See*—
Le Baut, Guillaume; Nourrisson, Marie-Renee; Renaud de la Faverie, Jean-Francois; Bizot Espiard, Jean-Guy; Caignard, Daniel-Henri; Renard, Pierre; and Adam, Gerard, 5,382,593, Cl. 514-418.000.

Renaud de la Faverie, Jean-Francois: *See*—
Le Baut, Guillaume; Nourrisson, Marie-Renee; Renaud de la Faverie, Jean-Francois; Bizot Espiard, Jean-Guy; Caignard, Daniel-Henri; Renard, Pierre; and Adam, Gerard, 5,382,593, Cl. 514-418.000.

Renbeck, Robert B.: *See*—
Mohammad, Shaikh N.; Renbeck, Robert B.; and Walter, Keith M., 5,382,815, Cl. 257-197.000.

Renshaw, Anthony A.: *See*—
Pla, Frederic G.; Rajiyah, Harindra; Renshaw, Anthony A.; and Hedeen, Robert A., 5,382,134, Cl. 415-119.000.

Renzelmann, Michael E.: *See*—
Smith, Mark H.; Renzelmann, Michael E.; and Marx, Alan D., 5,381,986, Cl. 244-49.000.

Resetarits, Michael R.; and Lockett, Michael J., to UOP. Multiple-downcomer fractionation tray with vapor directing slots and extended downcomer baffles. 5,382,390, Cl. 261-114.300.

Reslinger, Michel: *See*—
Hakoun, Roland; and Reslinger, Michel, 5,382,276, Cl. 65-433.000.

Resnick, Andrew M.: *See*—
Richards, William R.; Wilkes, John A.; Schwatka, Brian K.; Resnick, Andrew M.; and Mackey, Lawrence A., 5,381,751, Cl. 114-264.000.

Retrove, Jesse F. Automatic robot roofer for installation of shingles. 5,381,597, Cl. 29-714.000.

Reuther, Wolfgang: *See*—
Weiser, Juergen; Reuther, Wolfgang; and Hahn, Erwin, 5,382,476, Cl. 428-411.100.

Rexham Graphics, Inc.: *See*—
Niziolek, Thomas C.; Hodgins, George; and Ray, Marie B., 5,382,495, Cl. 430-162.000.

Rey, Paul A.: *See*—
Guerrini, Robert J.; and Rey, Paul A., 5,382,378, Cl. 252-181.000.

Reyhan, Frederick B.; Kermoian, Gary H.; Kesl, Richard J.; and Weise, Gary K., to Thermocraft Industries, Inc. Electrical junction box and method of making. 5,382,752, Cl. 174-50.000.

Reyna, John M. Water jet spray nozzle for cleaning a paintbrush. 5,381,964, Cl. 239-566.000.

Rezanka, Ivan: *See*—
Pond, Stephen F.; and Rezanka, Ivan, 5,382,963, Cl. 346-25.000.

Rheon Automatic Machinery Co., Ltd.: *See*—
Morikawa, Michio; Hayashi, Torahiko; and Saito, Nobuyuki, 5,382,154, Cl. 425-321.000.

Rheude, Udo: *See*—
Frank, Juergen; Rheude, Udo; Schulz, Bernhard; Paust, Joachim; and Hickmann, Eckhard, 5,382,732, Cl. 585-351.000.

Rhodes, Myron G., to Charter Manufacturing Company, Inc. Valve spring retainer. 5,381,765, Cl. 123-90.670.

Rhone-Poulenc Agrochimie: *See*—
Giroud-Abel, Bruno; and Molle, Francis, 5,382,269, Cl. 47-57.600.

Rhone-Poulenc Rorer S.A.: *See*—
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,382,590, Cl. 514-396.000.

Rianda, Kent A.: *See*—
Hayes, Frank F., Jr.; and Rianda, Kent A., 5,382,151, Cl. 425-392.000.

Ricco, Mario, to Elasis Sistema Ricerca Fiat Nel Mezzogiorno. Device for adjusting a fuel injector electromagnetic metering valve. 5,381,999, Cl. 251-129.160.

Riccomini, Robert A.: *See*—
Shen, David W.; Howard, Robert A.; Riccomini, Robert A.; Young, Steven J.; Cox, Robert E. L.; Le Bars, Philippe; and Tsukinari, Keiichi, 5,382,182, Cl. 439-676.000.

Richards, Dean F.: *See*—
Perotto, Richard D.; Briscoe, Terry L.; Carpenter, Christopher M.; and Richards, Dean F., 5,382,110, Cl. 403-322.000.

Richards, Thomas J.: *See*—
Brandt, Everett G.; Codina, George; and Richards, Thomas J., 5,382,835, Cl. 307-106.000.

Richards, William R.; Wilkes, John A.; Schwatka, Brian K.; Resnick, Andrew M.; and Mackey, Lawrence A., to Oceaneering Technologies, Inc. Transportation and discharge of waste to abyssal depths. 5,381,751, Cl. 114-264.000.

Richey, W. Frank: *See*—
Walters, Marlin E.; Richey, W. Frank; and Tasset, Emmett L., 5,382,710, Cl. 568-720.000.

Richmond, Henry. Vehicular security system with remote signalling for auto carjacking functions. 5,382,948, Cl. 340-825.360.

Richter, Simon J.; and Paisley, Gary V., to Coca-Cola Company, The. Method of dispensing from a liquid container system. 5,381,927, Cl. 222-1.000.

Richter, Travis L., to Halliburton Company. Manifold for a front-discharge fluid end reciprocating pump. 5,382,057, Cl. 285-39.000.

Ricoh Company, Ltd.: *See*—
Fukube, Noriaki, 5,382,014, Cl. 271-18.100.
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, 5,382,692, Cl. 564-426.000.
Shimizu, Tomohito; Mori, Hiroshi; Kagami, Yoshinobu; Yamakawa, Takeshi; Shiina, Susumu; and Hayashi, Keisuke, 5,382,129, Cl. 414-411.000.
Tani, Tatsuo, 5,382,011, Cl. 270-37.000.

Riddle, Duncan E.: *See*—
Adkins, Kelvin P.; and Riddle, Duncan E., 5,382,463, Cl. 428-141.000.

Ridley, Jeter L.: *See*—
Holloway, Joan M.; and Ridley, Jeter L., 5,381,562, Cl. 4-516.000.

Riemer, David W.: *See*—
King, Ken R.; Riemer, David W.; and Cotreau, Gerald M., 5,382,916, Cl. 330-253.000.

Ries, Stuart W.: *See*—
Saad, Elie E.; and Ries, Stuart W., 5,382,552, Cl. 501-25.000.

Riess, Klaus: *See*—
Bilz, Georg; Lammermann, Hans; Dobner, Alfred; Sterner, Klaus; and Riess, Klaus, 5,381,851, Cl. 164-119.000.

Rigaux, Christian; Lhote, Pascal; Caillault, Claude; and Houdayer, Christophe, to SKF France. Sealing device including an encoding element for a bearing, and bearing equipped with such a device. 5,382,098, Cl. 384-448.000.

Riley, Kenneth L.: *See*—
Vargas, Jose M.; and Riley, Kenneth L., 5,382,715, Cl. 568-882.000.

Rimedio, Nicholas T.; and Chen, Li Fu. Chromatographic separation of organic non-sugars, colloidal matterials and inorganic-organic complexes from juices, liquors, syrups and/or molasses. 5,382,294, Cl. 127-42.000.

Rinde, James A.: *See*—
Baigrie, Stephen; Chu, Edward F.; Park, George B.; Reddy, Vijay N.; Rinde, James A.; and Saltman, Robert P., 5,382,384, Cl. 252-511.000.

Ringhini, Roberto: *See*—
Romelli, Pier B.; Chiodoni, Giovanni; and Ringhini, Roberto, 5,382,530, Cl. 436-500.000.

Rings, Friedel; and Holz, Peter, to Henkel Kommanditgesellschaft auf Aktien. Apparatus for holding a powder container. 5,382,117, Cl. 406.39.000.

Rink, John L., to Diolase Corporation. Laser beam delivery path and target proximity sensor. 5,382,785, Cl. 250-205.000.

Rinne, Glenn A.: *See*—
Koopman, Nicholas G.; Rinne, Glenn A.; Turlik, Iwona; and Yung, Edward K., 5,381,946, Cl. 228-254.000.

Riquier, Jean-Claude, to Hospal Industrie. Apparatus and method for setting the level of a liquid in a chamber of an extracorporeal blood circuit. 5,382,227, Cl. 604-4.000.

Riso, Thomas A.: *See*—
Huang, Hao; DeBruzzi, Michael S.; and Riso, Thomas A., 5,382,859, Cl. 310-216.000.

Ritsert, Stefan: *See*—
Nurnberg, Eberhard; Seiller, Erhard; and Ritsert, Stefan, 5,382,601, Cl. 514-775.000.

Rittscher, Heinz-Gunter: *See*—
Drespa, Gerd; and Rittscher, Heinz-Gunter, 5,382,328, Cl. 202-235.000.

Rivera, James A.: *See*—
Nguyen, Dat; and Rivera, James A., 5,381,687, Cl. 73-1.00B.

Rivera, Vincent P.: *See*—
Worley, Thomas J.; Neal, Charles E.; and Rivera, Vincent P., 5,381,667, Cl. 62-50.200.

Riverwood International Corporation: *See*—
Harris, Randall L., 5,381,891, Cl. 206-197.000.

Rivoli, Anthony L.: *See*—
Bajor, George; and Rivoli, Anthony L., 5,382,541, Cl. 437-67.000.

Rizzolo, Charles D.: *See*—
Mandel, Barry P.; Prevost, Charles F.; Rizzolo, Charles D.; Green, Frederick A.; and Van Dongen, Richard A., 5,382,012, Cl. 270-53.000.

Roane, James B. Endodontic gutta percha placement. 5,382,161, Cl. 433-81.000.

Robalino, Manuel J.: *See*—
Bacchi, Paul E.; Robalino, Manuel J.; and Filipaki, Paul S., 5,382,806, Cl. 250-561.000.

Robert Bosch GmbH: *See*—
Birk, Manfred; Engel, Gerhard; Rupp, Peter; and Wessel, Wolf, deceased, 5,381,775, Cl. 123-679.000.
Hurst, Kurt; Brill, Klaus; and Braun, Hans, 5,382,792, Cl. 250-231.130.
Kunz, Dieter, 5,383,123, Cl. 364-424.050.
Kunz, Dieter; and Kallenbach, Rainer, 5,383,124, Cl. 364-424.050.
Matzo, David; Gansel, Eduard; and Schramm, Heribert, 5,381,602, Cl. 30-377.000.
Wietelmann, Juergen; Rueping, Thomas; Mueller, Norbert; and Duehlmeyer, Wolfgang, 5,383,086, Cl. 361-152.000.

Roberts, John W.; and Roberts, Ramoth G. Random number generator with spring propelled rotating wheels. 5,382,023, Cl. 273-142.00H.

Roberts, Ramoth G.: *See*—
Roberts, John W.; and Roberts, Ramoth G., 5,382,023, Cl. 273-142.00H.

Robillard, Christophe; Ayari, Susan; and Marcellin-Dibon, Eric, to Deutsche Thomson-Brandt GmbH. Illumination device having beam splitting polarization means. 5,382,790, Cl. 250-216.000.

Robinson, Alan S.; and Starr, Joseph W., to Wet Design. Self activating falling water display. 5,381,956, Cl. 239-22.000.

Robinson, Michael G., to Sharp Kabushiki Kaisha. 3 layer liquid crystal neural network with output layer displaying error value for optical weight updating. 5,383,042, Cl. 359-72.000.

Rocchino, Frank J., Jr.: *See*—
Yanusko, David P.; and Rocchino, Frank J., Jr., 5,381,706, Cl. 74-361.000.

Rockwell International Corporation: *See*—
Kozlowski, Lester J.; Tennant, William E.; and Kleinhans, William A., 5,382,977, Cl. 348-300.000.

Rodel, Inc.: *See*—
Cook, Lee M.; Loncki, Scott B.; and Brancaleoni, Gregory, 5,382,272, Cl. 51-293.000.

Rodriguez, Efrain: *See*—
Borchardt, Robert L.; McGreevy, William T.; and Rodriguez, Efrain, 5,383,044, Cl. 359-145.000.

Rodriguez, Ernesto M., Jr.; and Bender, Ronald K., to Minnesota Mining and Manufacturing Company. Pivoting projection head for overhead projector. 5,382,991, Cl. 353-119.000.

Roeck, Werner: *See*—
Gabbay, Emile; and Roeck, Werner, 5,383,232, Cl. 378-124.000.

Roehrig, Paul G.; Overkamp, Henry J.; and Morin, Paul G., to Oscar Mayer Foods Corporation. Process for preparing reduced fat meat. 5,382,444, Cl. 426-646.000.

Roepke, Greg: *See*—
Yates, Robert L.; Burkholder, Lyle; and Roepke, Greg, 5,382,149, Cl. 425-237.000.

Roff, John W., Jr. Barite scrubber mud tank. 5,382,091, Cl. 366-186.000.

Rogers, William A.: *See*—
Sloan, Mark D.; Rogers, William A.; and Shoroff, Srihari, 5,383,194, Cl. 371-22.100.

Roheim, Karl-Axel, to AB Food Mark Production. Device for mortars. 5,381,720, Cl. 89-1.350.

Rohm Co., Ltd.: *See*—
Imamura, Masaya; Sawase, Kensuke; and Koshikawa, Seiji, 5,383,034, Cl. 358-474.000.
Nakamura, Takashi, 5,382,539, Cl. 437-52.000.
Sunada, Shigemasa, 5,382,754, Cl. 174-52.300.

Rohm and Haas Company: *See*—
Emmons, William D.; and Gross, Andrew W., 5,382,640, Cl. 526-266.000.

Roll, Willi: *See*—
Gardzielia, Arno; Kurple, Ken; Hansen, Achim; Schroter, Stephan; and Roll, Willi, 5,382,608, Cl. 524-14.000.

Rolls-Royce plc: *See*—
Mason, Stephen, 5,382,453, Cl. 427-249.000.

Romanauskas, William A.; and Sheeran, Edward T., Jr., to Du Pont de Nemours, E. I., and Company. Centrifuge tube adapter. 5,382,220, Cl. 494-45.000.

Romelli, Pier B.; Chiodoni, Giovanni; and Ringhini, Roberto, to Technogenetics S.r.l. Method for the quantitative determination of a free form of substances present in biological fluids. 5,382,530, Cl. 436-500.000.

Rompre, Stephane. Articulated support for mounting an outboard motor to the transom of a boat. 5,382,183, Cl. 440-59.000.

Roncallo, John A.: *See*—
Winslow, Christopher L.; Roncallo, John A.; Boyce, William C.; Bonitz, Robert T.; Zepke, Bruce E.; and Hawman, Michael W., 5,381,692, Cl. 73-593.000.

Roper, William J.: *See*—
Crafton, James W.; Stene, Ronald J.; Shilling, Thomas; and Roper, William J., 5,381,861, Cl. 166-77.000.

Rosborough, Keith A.: *See*—
Bailey, William R.; Garay, Antonio A.; and Rosborough, Keith A., 5,382,169, Cl. 439-76.000.

Rose, Fritz, to Metallgesellschaft Aktiengesellschaft. Process for reducing fine-grain iron oxide materials with a gas. 5,382,277, Cl. 75-450.000.

Rosen, Perry: *See*—
Karasiewicz, Robert; Nalin, Carlo; and Rosen, Perry, 5,382,657, Cl. 530-351.000.

Rosenbaum, Herman S.: *See*—
Armijo, Joseph S.; Rosenbaum, Herman S.; and Williams, Cedric D., 5,383,228, Cl. 376-409.000.

Rosenbaum, Saul: *See*—
Gershen, Bernard; Lombardi, Alfred J.; Meehan, James E.; and Rosenbaum, Saul, 5,383,084, Cl. 361-113.000.

Rosendale, Glen A.: *See*—
Pathak, Saroj; Rosendale, Glen A.; and Payne, James E., 5,383,193, Cl. 371-21.400.

Rosenquist, Joel C.: *See*—
Thompson, Kenneth J.; Everhart, John R.; Rosenquist, Joel C.; and Foster, Wayne G., 5,381,937, Cl. 223-37.000.

Roskamp Champion: *See*—
Thom, Kelsey C., Jr., 5,381,731, Cl. 99-516.000.

Ross, Donald S.: *See*—
Graham, Neil B.; Ross, Donald S.; Szmidt, Robert A. K.; and Kirkwood, Ralph C., 5,382,270, Cl. 47-58.000.

Rossey, Guy: *See*—
Chekroun, Isaac; Ruiz-Montes, Jose; Bedoya-Zurita, Manuel; and Rossey, Guy, 5,382,672, Cl. 548-110.000.

Rossman, Steven L. Board setting tool. 5,382,000, Cl. 254-17.000.

Roumagnac, Jean-Patrick; and Naveros, Francisco, to Barriquand Steriflow. Holder for objects inside a rotating drum. 5,381,726, Cl. 99-371.000.

Roush, Michael: *See*—
Kei Lau, James C.; Malmgren, Richard P.; and Roush, Michael, 5,382,759, Cl. 174-264.000.

Roussel, Bruno F.: *See*—
Perreaut, Jean M.; and Roussel, Bruno F., 5,382,888, Cl. 315-382.000.

Roussel, Gerard: *See*—
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,382,590, Cl. 514-396.000.

Royal Wall Systems, Inc.: *See*—
Sanger, Wallace D., 5,381,635, Cl. 52-251.000.

Rubin, Jacob N.; and Norenburg, Johannes C., to Stone & Webster Engineering Corp. Integrated MTBE process. 5,382,707, Cl. 568-697.000.

Rubin, Mae K.: *See*—
Morrison, Roger A.; and Rubin, Mae K., 5,382,742, Cl. 585-654.000.

Rudolph, Werner: *See*—
Pennetreau, Pascal; Janssens, Francine; Braun, Max; Eicher, Johannes; Rudolph, Werner; and Hausmann, Eckhard, 5,382,721, Cl. 570-166.000.

Ruediger, Edward H.: *See*—
Gylys, Jonas A.; Ruediger, Edward H.; Smith, David W.; Solomon, Carola; and Yevich, Joseph P., 5,382,592, Cl. 514-415.000.

Rueping, Thomas: *See*—
Wietelmann, Juergen; Rueping, Thomas; Mueller, Norbert; and Duehlmeyer, Wolfgang, 5,383,086, Cl. 361-152.000.

Ruggie, Mark A.; and Schultz, William J., to Masonite Corporation. Partition wall panel system. 5,381,845, Cl. 160-135.000.

Ruggles, Gary A.: *See*—
Dreifus, David L.; and Ruggles, Gary A., 5,382,808, Cl. 257-77.000.

Ruiz-Montes, Jose: *See*—
Chekroun, Isaac; Ruiz-Montes, Jose; Bedoya-Zurita, Manuel; and Rossey, Guy, 5,382,672, Cl. 548-110.000.

Rupar, Mark J.: *See*—
Donovan, William P.; Rupar, Mark J.; Slaney, Annette C.; and Johnson, Timothy B., 5,382,429, Cl. 424-93.461.

Rupp, David C.; Anger, Claude; Kapadia, Saroj; and Totaro, Mary, to Allergan, Inc. Method of inhibiting protozoan growth in eye care products using a polyvalent cation chelating agent. 5,382,599, Cl. 514-547.000.

Rupp, Peter: *See*—
Birk, Manfred; Engel, Gerhard; Rupp, Peter; and Wessel, Wolf, deceased, 5,381,775, Cl. 123-679.000.

Ruppel, John: *See*—
Edgar, Gregory A.; Klingberg, Jeff; and Ruppel, John, 5,383,202, Cl. 371-30.000.

Ruppel, Remy; Laurent, Pierre; and Hungler, Joel, to Kayserberg, S.A. Multi-ply embossed paper and manufacturing method and apparatus. 5,382,464, Cl. 428-172.000.

Ruschak, Kenneth J.: *See*—
Conroy, James E.; Ruschak, Kenneth J.; and Devine, William D., 5,382,292, Cl. 118-324.000.

Russell, Donald G., to Beekly Corporation. Method for identifying artifactual radiographic images caused by epithelial protuberances, 5,383,233, Cl. 378-162.000.

Russell, Donald G., to Beekley Corporation. Radiographic system and a method for using the system for radiographic examination of tissue specimens. 5,383,234, Cl. 378-164.000.

Russell Keith; Ohnmacht, Cyrus J.; and Gibson, Keith H., to Imperial Chemical Industries PLC; and Imperial Chemical House. Therapeutic amides. 5,382,598, Cl. 514-522.000.

Rutgerswerke Aktiengesellschaft: *See*—
Gardzielia, Arno; Kurple, Ken; Hansen, Achim; Schroter, Stephan; and Roll, Willi, 5,382,608, Cl. 524-14.000.

Ruth, Donald A.: *See*—
Swift, Allan W.; and Ruth, Donald A., 5,382,061, Cl. 292-311.000.

Rutherford, John W.: *See*—
Wechsler, James K.; and Rutherford, John W., 5,381,985, Cl. 244-7.00C.

Ryobi Motor Products, Corp: *See*—
Keith, James A., Jr.; Bellew, William S.; and Sistare, James R., Sr., 5,381,595, Cl. 29-467.000.

S & S Electronic GmbH & Co. KG: *See*—
Frisch, Helmuth; Geissler, Norbert; and Weiss, Herbert, 5,381,681, Cl. 72-9.000.

Saad, Elie E.; and Ries, Stuart W., to Miles Inc.; and Whirlpool Corporation. Rare earth-containing alkali silicate frits and their use for the preparation of porcelain enamel coatings with improved cleansbility. 5,382,552, Cl. 501-25.000.

Sadjadi, S. M. Reza, to National Semiconductor Corporation. Apparatus and method for calibration of patterned wafer scanners. 5,383,018, Cl. 356-243.000.

Saeger, Roland B.: *See*—
Beech, James H., Jr.; Saeger, Roland B.; and Ware, Robert A., 5,382,743, Cl. 585-671.000.

Saeki, Mitsuru: *See*—
Saho, Norihide; Nemoto, Takeo; and Saeki, Mitsuru, 5,381,666, Cl. 62-47.100.

Sagiv, Tuvia: *See*—
Ponger, Uri; and Sagiv, Tuvia, 5,381,591, Cl. 27-35.000.

Sahashi, Toshiyasu: *See*—
Takeda, Masayoshi; Nagai, Takayuki; and Sahashi, Toshiyasu, 5,382,045, Cl. 280-707.000.

Saho, Norihide; Nemoto, Takeo; and Saeki, Mitsuru, to Hitachi, Ltd. Cryostat with liquefaction refrigerator. 5,381,666, Cl. 62-47.100.

Sailer, Hans J.: *See*—
Chabon, Michael W.; Harvey, Bruce J.; Lahnala, Thomas A.; Sailer, Hans J.; Ta, Bac; and Treusch, Christopher J., 5,381,965, Cl. 239-585.100.

Saini, Jasjit S.; and Troian, Pierre, to Laboratoire Europeen de Recherches Electroniques Avancees. Message routing method in a system having several different transmission channels. 5,383,179, Cl. 370-54.000.

Saito, Akio; and Ikeda, Hideyuki, to Pioneer Electronic Corp.; and Mitsumi Electric Co., Ltd. Magnetic head device with cleaning means for cleaning sliding surface thereof. 5,383,076, Cl. 360-128.000.

Saito, Atsushi: *See*—
Mizokami, Takuya; Saito, Atsushi; Yoshida, Naozane; and Sekine, Takehiko, 5,383,171, Cl. 369-59.000.

Saito, Hitoshi: *See*—
Yamakawa, Kenji; Saito, Hitoshi; and Sato, Masamichi, 5,382,965, Cl. 346-76.0PH.

Saito, Kazuo; and Sakuma, Tsutomu, to Kabushiki Kaisha Toshiba. Air conditioning apparatus with improved ice storage therein. 5,381,671, Cl. 62-430.000.

Saito, Noboru: *See*—
Hasebe, Ren; Okuda, Norimasa; and Saito, Noboru, 5,382,735, Cl. 585-467.000.

Saito, Nobuyuki: *See*—
Morikawa, Michio; Hayashi, Torahiko; and Saito, Nobuyuki, 5,382,154, Cl. 425-321.000.

Saito, Shogo; Tsutsui, Tetsuo; Adachi, Chihaya; and Hamada, Yuji, to Sanyo Electric Co., Ltd. Organic electroluminescent element and process for producing the same. 5,382,477, Cl. 428-690.000.

Saitoh, Yokuo: *See*—
Masukawa, Tetsuo; Matsumoto, Masaaki; Saitoh, Yokuo; Kojima, Yasuo; Suzuki, Toshio; Umakoshi, Yukimori; and Morita, Kiyoji, 5,383,073, Cl. 360-104.000.

Saitoh, Yutaka; Stro, Shinichirre; and Kimoshita, Yukiharu, to TDK Corporation. Coil device. 5,382,937, Cl. 336-178.000.

Saji, Yoshito; Namoto, Yoshiteru; and Kajino, Osamu, to Matsushita Electric Industrial Co., Ltd. Electronic apparatus. 5,383,139, Cl. 364-708.100.

Sajn, Felix: *See*—
Cook, Michael A.; and Sajn, Felix, 5,382,022, Cl. 273-126.00R.

Sak, Robert F., to R.M.S. Safety, Inc. Device for capturing and retracting the needle cannula of a disposable syringe. 5,382,235, Cl. 604-110.000.

Sakabe, Takeshi: *See*—
Shida, Toshio; Satoh, Hisao; Otomo, Naoko; Sakabe, Takeshi; Okazaki, Shigeru; Ikeda, Tadayoshi; and Ogane, Atsushi, 5,382,998, Cl. 355-50.000.

Sakaguchi, Masahiko: *See*—
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasushiro; Baba, Toshiharu; Sakaguchi, Masahiko; Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.

Sakai, Kazuaki: *See*—
Kawahara, Eiichiro; Nakamura, Takashi; Furumoto, Mitsumasa; and Sakai, Kazuaki, 5,381,724, Cl. 92-12.200.

Sakai, Kazuhiro; Miyake, Hiroyuki; and Abe, Tsutomu, to Fuji Xerox Co., Ltd. Image reading apparatus. 5,382,975, Cl. 348-241.000.

Sakai, Minoru; Katoh, Kazunobu; and Morimoto, Kiyoshi, to Fuji Photo Film Co., Ltd. Silver halide light-sensitive material and a method for forming image using the same. 5,382,496, Cl. 430-264.000.

Sakakibara, Ryuichi: *See*—
Tsuruta, Matsuhisa; Sakakibara, Ryuichi; and Katagiri, Masayoshi, 5,381,875, Cl. 188-73.380.

Sakamoto, Kazuya: *See*—
Funatsu, Mitsuhiro; and Sakamoto, Kazuya, 5,382,899, Cl. 324-207.180.

Sakamoto, Masaaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Kato, Tohru; and Sato, Yoshiaki, 5,382,144, Cl. 418-55.300.

Sakamoto, Takanori: *See*—
Itamoto, Takeshi; Nakao, Kenji; Tachikake, Shinji; and Sakamoto, Takanori, 5,383,131, Cl. 364-474.290.

Sakanishi, Yasuaki: *See*—
Tsujihara, Susumu; and Sakanishi, Yasuaki, 5,382,984, Cl. 346-746.000.

Sakano, Makoto; Oku, Shuitiro; and Horikawa, Shozo, to Japan Tobacco Inc. Apparatus for drawing out a web end from a web roll. 5,381,983, Cl. 242-562.100.

Sakashita, Kouji: *See*—
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,711, Cl. 568-722.000.
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,712, Cl. 568-724.000.

Sakata, Masahiro: *See*—
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,382,423, Cl. 422-198.000.

Sakita, Masami. Rotary piston engine. 5,381,766, Cl. 123-245.000.

Sakiyama, Keizo: *See*—
Onishi, Shigeo; Tanaka, Kenichi; and Sakiyama, Keizo, 5,383,151, Cl. 365-149.000.

Sakiyama, Shiro; and Maruyama, Masakatsu, to Matsushita Electric Industrial Co., Ltd. Digital filter and digital signal processing system. 5,383,145, Cl. 364-724.160.

Sakuma, Tsutomu: *See*—
Saito, Kazuo; and Sakuma, Tsutomu, 5,381,671, Cl. 62-430.000.

Sakuma, Yoshimori: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Sakuragi, Shoji; Ishida, Minako; and Nagase, Sachiyo, to Brother Kogyo Kabushiki Kaisha. Tape printing device with justification of multisized characters. 5,382,100, Cl. 400-9.000.

Sakurai, Masaaki, to Canon Kabushiki Kaisha. Color image forming apparatus with transfer sheet shifting compensation means. 5,383,010, Cl. 355-271.000.

Sakurai, Mitsuru: *See*—
Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, 5,381,857, Cl. 164-466.000.

Sakurai, Osamu: *See*—
Mori, Masukuni; and Sakurai, Osamu, 5,382,561, Cl. 503-227.000.

Salazar, Edilberto I.: *See*—
Moh, Sungwon R.; Potter, Scott T.; Ramirez, Frank D.; and Salazar, Edilberto I., 5,382,890, Cl. 318-254.000.

Salcudean, Septimiu E.; and Yan, Joseph, to University of British Columbia, The. Motion scaling tele-operating system with force feedback suitable for microsurgery. 5,382,885, Cl. 318-568.110.

Salisbury, Richard, to Blodgett & Blodgett, P.C. Method for powder spray coating an article using a conveyor having a wiping surface. 5,382,450, Cl. 427-195.000.

Salk Institute for Biological Studies, The: *See*—
Sejnowski, Terrence; and Li, Shao L., 5,383,164, Cl. 67-134.000.

Salmon, Sydney E.: *See*—
Lam, Kit S.; and Salmon, Sydney E., 5,382,513, Cl. 435-7.100.

Saloka, George S.: *See*—
Raffa, James M.; Cwik, Terry T.; Aronow, Michael F.; Little, Winston A.; Meitzler, Allen H.; Misangyi, Peter W.; Nix-Gomez, Jame A.; Saloka, George S.; and Walker, Noel A., 5,382,942, Cl. 340-457.400.

Salome, Marc: *See*—
Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Legoux, Richard; Loison, Gerard; Larbre, Elisabeth; Lupker, Johannes; Leplatois, Pascal; Salome, Marc; and Laurent, Patrick, 5,382,518, Cl. 435-191.000.

Salomon S.A.: *See*—
Paris, Jean, 5,381,612, Cl. 36-117.000.

Saltman, Robert P.: *See*—
Baigrie, Stephen; Chu, Edward F.; Park, George B.; Reddy, Vijay N.; Rinde, James A.; and Saltman, Robert P., 5,382,384, Cl. 252-511.000.

Salvail, Roger. Portable sharpener. 5,381,629, Cl. 451-540.000.

Salz, Robert B. Leveraged tube-winder with passive unwinding restraint. 5,381,929, Cl. 222-99.000.

Sambi, Narinderjit: *See*—
Allen, Eugene D.; Bedi, James J.; Bishop, Gregory D.; Burdorff, Mark A.; Conlon, Sean P.; Hibner, John A.; Hughett, J. David; Ortiz, Mark S.; Parashac, Joseph; Sambi, Narinderjit; Sierocuk, Thomas J.; and Smith, Jack E., 5,381,943, Cl. 227-177.000.

Sampson, David C.: *See*—
Braatz, Robert E.; Gregory, Raymond S.; Heaton, Robert A.; Whitaker, Keith; and Sampson, David C., 5,381,836, Cl. 141-21.000.

Samsung Electron Devices Co., Ltd.: *See*—
Kim, Dae-Il, 5,383,040, Cl. 359-54.000.
Kim, Kyung-Nam; Lee, Seong-Woo; Hwang, Jae-Yul; and Kim, Joog-Kwan, 5,382,872, Cl. 313-414.000.

Samsung Electronics Co., Ltd.: *See*—
Choi, Nag-eui, 5,383,067, Cl. 360-72.200.
Hwang, Myeong-mo, 5,383,209, Cl. 372-34.000.
Kim, Kyoung-Hwan, 5,383,066, Cl. 360-70.000.
Kim, Young-woong; and Lee, Chul-woo, 5,383,173, Cl. 369-112.000.
Lee, Chang-woo, 5,383,072, Cl. 360-96.500.
Lee, Jae W., 5,382,548, Cl. 437-233.000.
Lee, Seung-Gap; Gil, Sung-Ho; Eun, Suk-Hyun; and Lee, Hong-Won, 5,381,673, Cl. 62-483.000.
Mun, Hen-Hee, 5,382,979, Cl. 348-398.000.
Pack, Seung-Kwon, 5,383,206, Cl. 371-40.300.

Samuelsson, Soren. Scratch proof squeegee cleaning apparatus. 5,381,581, Cl. 15-245.000.

Sander, Thomas W.: *See*—
Lewis, Royce; and Sander, Thomas W., 5,382,257, Cl. 606-148.000.

Sanderford, Bruce: *See*—
Yanidis, Apostol; and Sanderford, Bruce, 5,382,472, Cl. 475-349.000.

Sanemitsu, Yoshikado, to Mitsubishi Denki Kabushiki Kaisha. IC card, and method of checking the memory capacity of IC card. 5,383,147, Cl. 365-52.000.

Sanemitsu, Yoshikado, to Mitsubishi Denki Kabushiki Kaisha. IC card with decoder for selective control for memory storage. 5,383,161, Cl. 365-230.060.

Sanger, Wallace D., to Royal Wall Systems, Inc. Construction wall panel and panel structure. 5,381,635, Cl. 52-251.000.

Sankaranarayanan, Ramani; and Guthrie, Roderick I. L. Flow control device for the suppression of vortices. 5,382,003, Cl. 266-230.000.

Sano, Fumiaki: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,382,143, Cl. 418-55.100.

Sano, Masafumi: *See*—
Fujioka, Yasushi; Kurokawa, Takashi; Kanai, Masahiro; Sano, Masafumi; Yoshino, Takehito; and Kohda, Yuzo, 5,382,531, Cl. 437-2.000.

Sano, Yoshinori: *See*—
Harada, Nobuyuki; Wada, Katsuyuki; Obara, Hisasori; Shimomura, Tadao; and Sano, Yoshinori, 5,382,610, Cl. 524-35.000.

Sanofi: *See*—
Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Legoux, Richard; Loison, Gerard; Larbre, Elisabeth; Lupker, Johannes; Leplatois, Pascal; Salome, Marc; and Laurent, Patrick, 5,382,518, Cl. 435-191.000.

Sanpei, Takeshi: *See*—
Shimizu, Akira; Nishio, Shoji; Sanpei, Takeshi; and Ushiroyama, Hiroyuki, 5,382,507, Cl. 430-399.000.

Santa Barbara Research Center: *See*—
Kunimoto, Wallace Y.; and Eneim, Arthur A., 5,382,797, Cl. 250-352.000.

Santagiuliana, Evans, to Taplast SRL. Plastic safety cap. 5,381,917, Cl. 220-219.000.

Santiesteban, Jose G.: *See*—
Chang, Clarence D.; Bastian, Roy D.; Han, Scott; and Santiesteban, Jose G., 5,382,731, Cl. 585-315.000.

Sanyo Chemical Industries, Ltd.: *See*—
Hisada, Nobuo; Nishigakiuchi, Yasushi; Ueno, Yoshiyuki; Kotani, Yasuo; and Yagyu, Tadao, 5,382,560, Cl. 503-209.000.

Sanyo Electric Co., Ltd.: *See*—
Saito, Shogo; Tsutsui, Tetsuo; Adachi, Chihaya; and Hamada, Yuji, 5,382,477, Cl. 428-690.000.
Tanaka, Tsutomu, 5,381,665, Cl. 62-197.000.
Tokizaki, Hisashi, 5,381,954, Cl. 236-78.00D.

Sapec S.A. fine chemicals: *See*—
Marazza, Fabrizio; and Jacques, Jean, 5,382,581, Cl. 514-249.000.

Saran, Mohan S.: *See*—
Spohn, Ronald F.; and Saran, Mohan S., 5,382,745, Cl. 585-800.000.

Sardar, Hashim; and Abrams, Lawrence M., to Hydrocarbon Research, Inc. Thermal reforming of naphthenic and hydrodealkylation of aromatic feedstocks to produce benzene. 5,382,734, Cl. 585-431.000.

Sartor, Claudio: *See*—
Tonel, Valerio; and Sartor, Claudio, 5,381,611, Cl. 36-117.000.

Sartori, Francesco, to Carl Freudenberg, Firma. Surface-wiping device. 5,381,579, Cl. 15-119.200.

Sasagawa, Masayuki: *See*—
Tosaka, Yasuo; and Sasagawa, Masayuki, 5,382,506, Cl. 430-358.000.

Sasaki, Ken-ichi: *See*—
Kawarada, Motonobu; Kurihara, Kazuaki; Sasaki, Ken-ichi; Teshima, Akitomo; and Koshino, Nagaaki, 5,382,293, Cl. 118-723.0DC.

Sasaki, Lawrence H.; and Brown, Anthony K. D., to Northern Telecom Limited. Digital driver with class AB output stage. 5,382,838, Cl. 327-108.000.

Sasaki, Masaomi: *See*—
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, 5,382,692, Cl. 564-426.000.

Sasaki, Masaru: *See*—
Sugasawa, Masatoshi; Toda, Atsushi; Sasaki, Masaru; Yamashita, Masayasu; Matsumoto, Akihiro; Ozaki, Akiyoshi; and Oda, Goichi, 5,382,876, Cl. 315-82.000.

Sasaki, Takatomo: *See*—
Wu, Yicheng; and Sasaki, Takatomo, 5,381,754, Cl. 117-13.000.

Sasaki, Tomiya: *See*—
Minakami, Ko; Terashima, Toshinori; Maeda, Toshio; Sasaki, Tomiya; Hisano, Katsumi; Iwasaki, Hideo; and Kawano, Koichiro, 5,381,859, Cl. 165-80.300.

Sasaki, Yasuhiko: *See*—
Odawara, Akio; Sasaki, Yasuhiko; Murata, Sakae; and Narita, Hiroshi, 5,382,577, Cl. 514-211.000.

Sasaki, Yoshizumi: *See*—
Koura, Hiroyuki; Sasaki, Yoshizumi; Wakamatsu, Kazuki; and Takemura, Kazuyuki, 5,381,827, Cl. 137-561.00A.

Sasanuma, Nobuatsu; Fukushima, Hisashi; and Atsumi, Tetsuya, to Canon Kabushiki Kaisha. Image forming apparatus including means for setting image forming condition in accordance with a judgement result. 5,383,055, Cl. 358-521.000.

Sato, Hachiro, to Fukoku Kogyo Co., Ltd. Method for dewatering sludge. 5,382,368, Cl. 210-710.000.

Sato, Hideki: *See*—
Hirao, Toru; and Sato, Hideki, 5,381,885, Cl. 198-465.400.

Sato, Hiroaki; and Takahashi, Hiroyuki, to NEC Corporation. Semiconductor memory device with flash-clear function. 5,383,153, Cl. 365-155.000.

Sato, Ichitaro, to Sony Corporation. Apparatus for tracking control using recorded pilot signals. 5,383,071, Cl. 360-77.140.

Sato, Kunihiko; Morohashi, Kazuo; and Takahashi, Hidetoshi, to Nippon Oil Co., Ltd. CFRP-made optical cylinder. 5,383,062, Cl. 359-894.000.

Sato, Masamichi: *See*—
Yamakawa, Kenji; Saito, Hitoshi; and Sato, Masamichi, 5,382,965, Cl. 346-76.0PH.

Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; Takahashi, Akio; and Matsudo, Nobuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure control apparatus of camera. 5,382,997, Cl. 354-441.000.

Sato, Shinya; and Hatakawa, Kazuhiko, to Sony Corporation. Tape cassette having tape guides made of polyethylene. 5,383,077, Cl. 360-132.000.

Sato, Susumu: *See*—
Okada, Susumu; Hirata, Kouichi; Sato, Susumu; Morita, Masahiko; and Nakagawa, Tsuguhiko, 5,382,302, Cl. 148-226.000.

Sato, Takashi: *See*—
Fujikura, Masahiro; Sato, Takashi; Yamada, Toshio; Hasebe, Fumio; and Chida, Hiromi, 5,381,856, Cl. 164-463.000.

Sato, Toshihiko: *See*—
Takizawa, Tsuyoshi; Seki, Yasunari; Iwata, Yoichi; Sato, Toshihiko; and Nakayama, Takayoshi, 5,381,657, Cl. 60-276.000.

Sato, Yoshiaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Kato, Tohru; and Sato, Yoshiaki, 5,382,144, Cl. 418-55.300.

Sato, Yoshinari; and Matuo, Teruaki, to Fujisawa Pharmaceutical Co., Ltd. Benzodiazepipe derivatives. 5,382,664, Cl. 540-509.000.

Satoh, Hisao: *See*—
Shida, Toshio; Satoh, Hisao; Otomo, Naoko; Sakabe, Takeshi; Okazaki, Shigeru; Ikeda, Tadayoshi; and Ogane, Atsushi, 5,382,998, Cl. 355-50.000.

Satoh, Takashi: *See*—
Yoshimura, Masaji; Kanezaki, Kazuharu; Satoh, Takashi; Nakata, Tomoyuki; and Takiguchi, Minoru, 5,382,627, Cl. 525-132.000.

Satoh, Yasuaki: *See*—
Kida, Akira; and Satoh, Yasuaki, 5,383,031, Cl. 358-444.000.

Satomi, Hitoshi, to Satomi Seisakusho Co., Ltd. Paper stock cleaning and collecting apparatus. 5,381,906, Cl. 209-17.000.

Satomi Seisakusho Co., Ltd.: *See*—
Satomi, Hitoshi, 5,381,906, Cl. 209-17.000.

Satou, Kenichi: *See*—
Nagata, Teruyuki; Kusuda, Chiyuki; Wada, Masaru; and Satou, Kenichi, 5,382,690, Cl. 564-415.000.

Satran, Amir; and Man, Yiri, to Iscar Ltd. Milling cutter insert. 5,382,118, Cl. 407-42.000.

Satterlee, Chris; and Penman, Duncan, to Amdahl Corporation. Method and apparatus for locating source of error in high-speed synchronous systems. 5,383,201, Cl. 371-29.100.

Satzinger, Gerhard: *See*—
Klier, Jurgen; Satzinger, Gerhard; and Schule, Gerhard, 5,382,172, Cl. 439-164.000.

Saul, Jonathan R.: *See*—
Habegger, Douglas A.; LaPointe, Larry P.; Weyher, Clifford K.; Saul, Jonathan R.; and Komorowski, Karl J., 5,382,073, Cl. 297-85.000.

Savage, Edward C.: *See*—
Thompson, David M.; Panepinto, Carol J.; Savage, Edward C.; and Magde, John M., Jr., 5,383,005, Cl. 355-208.000.

Savage, Robert L.; and Lazarov, Lazarin K., to Ohio University. Method of reducing inorganic and organic sulfur in solid carbonaceous material prior to use of the solid carbonaceous material. 5,382,267, Cl. 44-623.000.

Sawai, Toshiya: *See*—
Nakayama, Minoru; Sawai, Toshiya; Hayakawa, Masaharu; Murata, Shizuo; and Abe, Yukino, 5,382,688, Cl. 564-322.000.

Sawase, Kensuke: *See*—
Imamura, Masaya; Sawase, Kensuke; and Koshikawa, Seiji, 5,383,034, Cl. 358-474.000.

Sayama, Norio: *See*—
Ando, Kazuhiro; Kawakami, Takamasa; Shouji, Yasuhiro; Tanaka, Yasuo; Kanaoka, Takeo; and Sayama, Norio, 5,382,333, Cl. 204-130.000.

Scarati, Mario A.; and Caporiccio, Gerardo, to Ausimont S.p.A. Perfluoropolyether lubricants for magnetic recordings. 5,382,614, Cl. 524-108.000.

Scarpelli, Nate F.: *See*—
Gassman, George W.; Buchwald, Warren G.; Gethmann, Douglas P.; and Scarpelli, Nate F., 5,381,817, Cl. 137-82.000.

Schaefer, Peter C.: *See*—
Iacovangelo, Charles D.; Jerabek, Elihu C.; Wilson, Ronald H.; and Schaefer, Peter C., 5,382,758, Cl. 174-262.000.

Schaerfl, Robert A., Jr.: *See*—
Atkinson, E. Earl, Jr.; Schaerfl, Robert A., Jr.; and Burt, Edward A., 5,382,695, Cl. 564-440.000.

Schaich, Roland: *See*—
Schwering, Hans-Ulrich; and Schaich, Roland, 5,382,366, Cl. 210-662.000.

Schar, Martin M.: *See*—
Weinberger, Scot R.; Egan, Robert W.; Hoppe, Thomas W.; Gassmann, Ernst; Schar, Martin M.; Bornsen, Klaus O.; and Tarantino, E. Rocco, 5,382,793, Cl. 250-288.000.

Scharff, Robert P.: *See*—
McInnis, Edwin L.; Scharff, Robert P.; Bauman, Bernard D.; and Williams, Mark A., 5,382,635, Cl. 525-356.000.

Scheck, Georg; Meschkat, Reinhard; and Rampel, Hans, to Brose Fahrzeugteile GmbH & Co. KG. Seat for a motor vehicle. 5,382,076, Cl. 297-354.120.

Schellhorn, Gerhard; and Sesselmann, Helmut, to Brose Fahrzeugteile GmbH & Co. KG. Electric drive unit for adjustment systems in motor vehicles. 5,382,857, Cl. 310-83.000.

Schenk, Karl H.; Heinrichs, Angelika; and Metz, Hans J., to Hoechst Aktiengesellschaft. Azo pigment preparation. 5,382,288, Cl. 106-496.000.

Schenz, Timothy W.: *See*—
Hill, Jerry L.; Travis, Benjamin D.; Mahmoud, Mohamed I.; Brooks, James R.; Schenz, Timothy W.; and Dewille, Normanella T., 5,382,439, Cl. 426-73.000.

Schepp, Martin: *See*—
Bauer, Bernhard; Heemskerk, Rut; Mirring, Knut; Olschewski, Armin; Schepp, Martin; Kispert, Klaus; Scholl, Jurgen; Stanzel, Rainer; and Stolz, Robert, 5,382,099, Cl. 384-454.000.

Schering Corporation: *See*—
Afonso, Adriano; Weinstein, Jay; and Gentles, Margaret J., 5,382,572, Cl. 514-82.000.
Clark, Jon E.; Schumacher, Doris P.; and Wu, Guang-Zhong, 5,382,673, Cl. 548-239.000.

Schering-Plough Corporation: *See*—
Plunkett, Marian L.; and Catino, Joseph J., 5,382,427, Cl. 424-85.200.

Scherner, Helmut; Wibbeling, Reinhard; and Schurhorster, Josef, to KTR Kupplungstechnik GmbH. Plug-in axially and angularly yieldable toothed coupling for transmitting torque. 5,382,194, Cl. 464-92.000.

Schilling, Herbert, to EB Bruhl Aluminiumtechnik GmbH. Process for casting a motor vehicle wheel from metal, and a motor vehicle wheel produced by such process. 5,381,852, Cl. 164-137.000.

Schipper, Paul H.: *See*—
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Geary, Richard S.; and Schlameus, Herman W., 5,382,435, Cl. 424-489.000.

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Bush, Christopher N.; Audette, Charlene A.; and Harvey, Michael A., 5,382,516, Cl. 435-41.000.

Schlotterbeck, Dietrich: *See*—
Narayan, Thirumurti; Johnson, Samuel E.; Dimitroff, Michael A.; and Schlotterbeck, Dietrich, 5,382,646, Cl. 528-60.000.

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White, Trevor; Somogyi, Tibor; and Fausse, Arnaud, 5,382,951, Cl. 340-825.520.

Schmid, Peter: *See*—
Thaler, Markus; and Schmid, Peter, 5,382,947, Cl. 340-825.220.

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Thone, Bernd; Schmidt, Gerhard; and Herrmann, Erhard, 5,382,418, Cl. 423-239.100.

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Schmidt, Peter, 5,381,565, Cl. 4-560.100.

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Colignon, Dietmar; Dorra, Erich; Panthel, Guenter; Schmidt, Wolfgang; and Wrede, Norbert, 5,382,677, Cl. 554-98.000.

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Meyer, Helmut J. W.; Ahls, Hermann W.; Blaseck, Klaus; and Schmitting, Udo, 5,381,881, Cl. 198-333.000.

Schneider, Josef, to MAN Roland Druckmaschinen AG. Printing apparatus with thermo transfer foil capable of compensating variations in spacing or pressure between a printer form carrier and a recording head. 5,382,964, Cl. 346-76.0PH.

Schnerer, Peter: *See*—
Tuck, Brian; and Schnerer, Peter, 5,382,086, Cl. 303-100.000.

Schock, William H., to Triumph*LOR Inc. Sealed bearing roller reamer. 5,381,868, Cl. 175-346.000.

Schoeffler, Francis M.: *See*—
George, Jacob; Desai, Kantilal B.; and Schoeffler, Francis M., 5,382,725, Cl. 570-211.000.

Schoeller & Co.: *See*—
Hofmann, Dieter; and Kalkus, Berthold, 5,382,171, Cl. 439-142.000.

Schoenwald, Ronald D.; and Barfknecht, Charles F., to University of Iowa Research Foundation. 1-aza-1-arylcycloalkanes as topical glaucoma treatment agents. 5,382,576, Cl. 514-210.000.

Scholl, Jurgen: *See*—
Bauer, Bernhard; Heemskerk, Rut; Mirring, Knut; Olschewski, Armin; Schepp, Martin; Kispert, Klaus; Scholl, Jurgen; Stanzel, Rainer; and Stolz, Robert, 5,382,099, Cl. 384-454.000.

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Cimino, William W.; Lontine, Michael D.; and Schollmeyer, Michael P., 5,382,247, Cl. 606-33.000.

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Brendel, Joachim; Schonafinger, Karl; and Bohn, Helmut, 5,382,585, Cl. 514-253.000.

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Lohnherr, Ludger; Kimmeyer, Ludger; Holz, Walter; Zigan, Bernhard; and Schoneich, Werner, 5,381,968, Cl. 241-19.000.

Schramm, Heribert: *See*—
Matzo, David; Gansel, Eduard; and Schramm, Heribert, 5,381,602, Cl. 30-377.000.

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Kurek, Stephen R.; and Schroeder, David, 5,382,768, Cl. 200-556.000.

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Gardzielia, Arno; Kurpie, Ken; Hansen, Achim; Schroter, Stephan; and Roll, Willi, 5,382,608, Cl. 524-14.000.
Schrott, Alejandro G.: *See*—
Kaja, Suryanarayana; O'Sullivan, Eugene J.; and Schrott, Alejandro G., 5,382,447, Cl. 427-126.600.
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Ruggie, Mark A.; and Schultz, William J., 5,381,845, Cl. 160-135.000.
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Frank, Juergen; Rheude, Udo; Schulz, Bernhard; Paust, Joachim; and Hickmann, Eckhard, 5,382,732, Cl. 585-351.000.
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Akyurek, Altan; Maier, Peter; and Schulz-Harder, Jurgen, 5,382,830, Cl. 257-701.000.
Schumacher, Doris P.: *See*—
Clark, Jon E.; Schumacher, Doris P.; and Wu, Guang-Zhong, 5,382,673, Cl. 548-239.000.
Schumacher, Guenter: *See*—
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Scherner, Helmut; Wibbeling, Reinhard; and Schurhorster, Josef, 5,382,194, Cl. 464-92.000.
Schuster, Nicholas, to Westinghouse Electric Corporation. Advanced stacked multicell thermal battery. 5,382,479, Cl. 429-112.000.
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Otte, Bernd; and Schwarz, Rudolf, 5,381,850, Cl. 164-104.000.
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Richards, William R.; Wilkes, John A.; Schwatka, Brian K.; Resnick, Andrew M.; and Mackey, Lawrence A., 5,381,751, Cl. 114-264.000.
Schwering, Hans-Ulrich; and Schaich, Roland, to Guetling GmbH. Retardation installation with compressed air-diaphragm pump and stroke count device. 5,382,366, Cl. 210-662.000.
Sciandra, Charles C.; and Swisher, Paul L. Apparatus and method of play for a disc tossing game. 5,382,028, Cl. 273-401.000.
SciMed Life Systems, Inc.: *See*—
Cornelius, Richard G.; Walter, Larry A.; Lee, Douglas C.; and Musbach, Frank A., 5,382,234, Cl. 604-96.000.
Scobbie, Gavin, to R. R. Donnelley & Sons Co. Convertible package/-shelf organizer. 5,381,890, Cl. 206-45.230.
Scott, Gerald; and Al-Malaika, Sahar, to 3i Research Exploitation Limited. Modified polymers. 5,382,633, Cl. 525-279.000.
Scott, John D.; and Steven, Rachel A., to Imperial Chemical Industries PLC. Chemical process for the manufacture of 1,1,1,2-tetrafluoroethane. 5,382,722, Cl. 570-166.000.
Scoville, John R., to SPS Medical Supply Corporation. Method of using a disposable tamper evident locking device. 5,382,528, Cl. 436-1.000.
Scripps Research Institute, The: *See*—
Chen, Robert; Goodman, Michael G.; and Reitz, Allen, 5,382,580, Cl. 514-234.200.
Seaver, George. Stress-optical phase modulator and modulation system and method of use. 5,383,048, Cl. 359-279.000.
Sebben, Daniel A.: *See*—
Seegert, Brian D.; Sebben, Daniel A.; and Teal, Richard D., 5,381,648, Cl. 56-17.100.
Secen, Michael M.; Thomas, Edward J.; and El-Hamamsy, Sayed-Amr A., to General Electric Company. Auto-starting system for an electrodeless high intensity discharge lamp. 5,382,878, Cl. 315-248.000.
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Seibold, Robert W.; Buller, Bruce W.; and Gibson, James O., to Hughes Aircraft Company. Method of making a fiber reinforced ceramic glass composites having tailored coefficient of thermal expansion. 5,382,309, Cl. 156-242.000.
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Endoh, Masakatsu, 5,382,968, Cl. 346-153.100.
Mochizuki, Seiji; Hayakawa, Hitoshi; and Kawakami, Kazuhisa, 5,382,969, Cl. 347-23.000.
Takao, Hideo, 5,383,079, Cl. 360-137.000.
Seikosha Co., Ltd.: *See*—
Kimura, Koichi; and Ichikawa, Yasushi, 5,382,103, Cl. 400-248.000.
Seiller, Erhard: *See*—
Nurnberg, Eberhard; Seiller, Erhard; and Ritsert, Stefan, 5,382,601, Cl. 514-775.000.
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Nanno, Nobuyuki; Akashi, Kazuo; and Seimiya, Hiromi, 5,383,140, Cl. 364-708.100.
Sejnowski, Terrence; and Li, Shao L., to Salk Institute for Biological Studies, The. Adaptive system for broadband multisignal discrimination in a channel with reverberation. 5,383,164, Cl. 67-134.000.
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Inao, Kiyohisa; Mizuki, Koji; Kumagai, Masaki; and Seki, Takeo, 5,382,929, Cl. 333-187.000.
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Takizawa, Tsuyoshi; Seki, Yasunari; Iwata, Yoichi; Sato, Toshihiko; and Nakayama, Takayoshi, 5,381,657, Cl. 60-276.000.
Sekine, Takehiko: *See*—
Mizokami, Takuya; Saito, Atsushi; Yoshida, Naozane; and Sekine, Takehiko, 5,383,171, Cl. 369-59.000.
Sekine, Yoshihito: *See*—
Miyazaki, Atsushi; Kobayashi, Chihiro; Igarashi, Shinya; Matsukura, Tetsuo; Maeda, Haruhiko; Arai, Nobukatsu; and Sekine, Yoshihito, 5,381,691, Cl. 73-202.500.
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Nakano, Masao; Eshita, Akinori; and Sekizawa, Kazuhiko, 5,382,416, Cl. 423-213.200.
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Hutchinson, Richard D., Jr.; Self, Daines M., Jr.; and Trull, Michael P., 5,382,177, Cl. 439-358.000.
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Yamazaki, Shunpei; and Mase, Akira, 5,383,041, Cl. 359-59.000.
Senbokuya, Haruo: *See*—
Tahara, Masaaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, 5,382,318, Cl. 156-656.000.
Senninger Irrigation, Inc.: *See*—
Sullivan, Harry D.; Claybrooke, James R.; and McFadden, William, 5,381,960, Cl. 239-222.210.
Sensui, Takayuki: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; Takahashi, Akio; and Matsudo, Nobuhiko, 5,382,997, Cl. 354-441.000.
Seo, Ho I., to Hyundai Electronics Industries Co., Ltd. Multiple use system having a laser cartridge for a laser printer and laser facsimile. 5,383,030, Cl. 358-442.000.
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Barberich, Timothy J.; Matson, Stephen L.; and Wechter, William J., 5,382,591, Cl. 514-413.000.
Serge, Tisserand: *See*—
Moret de Rocheprise, Bernard; Serge, Tisserand; and Dugand, Pascal, 5,382,399, Cl. 264-127.000.
Serra, R. J.: *See*—
DeLaRama, Alan; Dial, Larry A.; Harp, Richard J.; Hursman, Thomas L.; Soria, Alfred S.; Serra, R. J.; and Tarpening, Steve, 5,381,782, Cl. 128-4.000.
Servo Corporation of America: *See*—
Grosskopf, George, Jr., 5,381,700, Cl. 73-865.900.
Sesselmann, Helmut: *See*—
Schellhorn, Gerhard; and Sesselmann, Helmut, 5,382,857, Cl. 310-83.000.
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Zambrano, Raffaele; and Magro, Carmelo, 5,382,538, Cl. 437-44.000.
Shah, Vipin D.; Yen, Shing-Erh; and Anchin, Gerald M., to International Immunoassay Laboratories, Inc. Creative kinase-MB immunoassay for myocardial infarction and reagents. 5,382,515, Cl. 435-7.400.
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Shambroom, John R., to Aspect Medical Systems, Inc. Monitor and method for acquiring and processing electrical signals relating to bodily functions. 5,381,804, Cl. 128-731.000.
Shamburger, John P.: *See*—
Taylor, Tommy G.; Mansell, J. Douglas; Shamburger, John P.; and Woodyear, Mark E., 5,382,727, Cl. 570-253.000.
Sharma, Jai P., to UKI Supreme Corporation. Process for dyeing spandex fibers. 5,382,264, Cl. 8-685.000.
Sharma, Umesh; and Kawasaki, Hisao, to Motorola, Inc. Process for forming an electrically programmable read-only memory cell. 5,382,540, Cl. 437-52.000.
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Hill, Martyn W.; and Sharman, Dennis F., 5,382,529, Cl. 436-109.000.
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Desu, Seshu B.; and Pan, Wei, 5,382,320, Cl. 156-667.000.

Inui, Tetsuya; Takahashi, Akira; and Ohta, Kenji, 5,383,176, Cl. 369-275.400.
Kubota, Yasushi, 5,383,159, Cl. 365-207.000.
Numata, Tomiyuki; Yamaguchi, Takeshi; and Iwaki, Takashi, 5,383,174, Cl. 369-119.000.
Onishi, Shigeo; Tanaka, Kenichi; and Sakiyama, Keizo, 5,383,151, Cl. 365-149.000.
Robinson, Michael G., 5,383,042, Cl. 359-72.000.
Yuji, Marou; Yutaka, Akagi; Tomokazu, Ise; and Masao, Urayama, 5,382,867, Cl. 313-309.000.
Sharp, Michael C., to Parkell Products, Inc. Autoclavable dental scaler handpiece sheath. 5,382,162, Cl. 433-116.000.
Shaw, Jane M.: *See*—
Angelopoulos, Marie; Feger, Claudius; Gelorme, Jeffrey D.; and Shaw, Jane M., 5,382,637, Cl. 525-436.000.
Sheehan, William F.: *See*—
Bold, Alfred J.; Kodesch, Steven E.; and Sheehan, William F., 5,381,970, Cl. 241-55.000.
Sheeran, Edward T., Jr.: *See*—
Romanauskas, William A.; and Sheeran, Edward T., Jr., 5,382,220, Cl. 494-85.000.
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Erickson, James R., 5,382,604, Cl. 522-158.000.
Jordaan, Johannes C. M.; Mul, Wilhelmus P.; Smaardijk, Abraham A.; Mulder, Jan Harm; Gerard, Eric-Jack; and Lednor, Peter W., 5,382,653, Cl. 528-392.000.
Nahm, James J. W.; and Wyant, Reece E., 5,382,290, Cl. 106-789.000.
Wang, Pen C.; and Kelsey, Donald R., 5,382,713, Cl. 568-734.000.
Shelton, Allen E. Balloon thruster. 5,381,779, Cl. 124-77.000.
Shemet, Arthur. Dental matrix with retention and locking mechanism. 5,382,160, Cl. 433-39.000.
Shen, David W.; Howard, Robert A.; Riccomini, Robert A.; Young, Steven J.; Cox, Robert E. L.; Le Bars, Philippe; and Tsukinari, Keiichi, to Apple Computer, Inc. Special purpose modular connector plug. 5,382,182, Cl. 439-676.000.
Shen, Dong-Ming: *See*—
Moini, Ahmad; and Shen, Dong-Ming, 5,382,684, Cl. 564-281.000.
Shen, Shing-Ren; Su, Kuan-Cheng; and Chung, Chen-Hui, to United Microelectronics Corporation. Field effect transistor with recessed buried source and drain regions. 5,382,534, Cl. 437-35.000.
Shenk, Thomas E.: *See*—
Levine, Arnold J.; Shenk, Thomas E.; and Finlay, Cathy A., 5,382,510, Cl. 435-6.000.
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Buti, Taqi N.; Hsu, Louis L.; Joshi, Rajiv V.; and Shepard, Joseph F., 5,382,832, Cl. 257-773.000.
Shepherd, Richard C.: *See*—
Linton, Paul; Shepherd, Richard C.; Fisk, Brian K.; and Epperson, Billy G., Jr., 5,381,742, Cl. 110-238.000.
Sheppard, George S.: *See*—
Summers, James B.; Sheppard, George S.; Phillips, James G.; Pireh, Daisy; Steinman, Douglas H.; May, Paul D.; Guinn, Denise E.; Heyman, H. Robin; Carrera, George M., Jr.; and Davidsen, Steven K., 5,382,670, Cl. 546-273.000.
Sherfield, Charles O. Hydroponic cultivation apparatus and method. 5,381,626, Cl. 47-84.000.
Sheridon, Nicholas K., to Xerox Corporation. Liquid ink electrostatic image development system. 5,383,008, Cl. 355-256.000.
Sherman, Jeffrey, to Emerson Electric Co. Shock resistant switch mounting. 5,382,766, Cl. 200-296.000.
Sheth, Manhar K.: *See*—
Pickett, Thomas J.; Otten, Richard A.; Stribbell, Bruce J.; and Sheth, Manhar K., 5,382,401, Cl. 264-177.160.
Shibata, Akihito, to Matsushita Electric Industrial Co., Ltd. On-vehicle position computing apparatus. 5,383,127, Cl. 364-449.000.
Shibata, Hideaki: *See*—
Bannai, Tatsushi; Shibata, Hideaki; Ohtsu, Masamitsu; and Okamoto, Hiroshi, 5,383,063, Cl. 360-18.000.
Shibata, Motoshi: *See*—
Okajima, Michio; Kusumoto, Osamu; Tohda, Takao; Yokoyama, Kazuo; and Shibata, Motoshi, 5,381,753, Cl. 117-12.000.
Shibata, Takao; Taniguchi, Kozo; Noguchi, Tashio; and Tsuchiya, Koji, to Precision Fukuhara Works, Ltd. Fabric take-up mechanism for circular knitting machines. 5,381,676, Cl. 66-149.00R.
Shibuya, Tadashi, to NEC Corporation. Memory circuit capable of executing a bit manipulation at a high speed. 5,383,154, Cl. 365-189.010.
Shida, Toshio; Satoh, Hisao; Otomo, Naoko; Sakabe, Takeshi; Okazaki, Shigeru; Ikeda, Tadayoshi; and Ogane, Atsushi, to Konica Corporation. Image forming apparatus of a clamshell type. 5,382,998, Cl. 355-50.000.
Shigehara, Hiroshi; and Kinugasa, Masanori, to Kabushiki Kaisha Toshiba. Level shifting circuit for suppressing output amplitude. 5,382,846, Cl. 326-68.000.
Shigemoto, Naoto, to NEC Corporation. Receiver having clock phase memory for receiving short preamble time slots. 5,383,188, Cl. 370-105.200.
Shih, Chao C., to Champion Freeze Drying Co., Ltd. Chair seat with a ventilation device. 5,382,075, Cl. 297-180.140.
Shiina, Susumu: *See*—
Shimizu, Tomohito; Mori, Hiroshi; Kagami, Yoshinobu; Yamakawa, Takeshi; Shiina, Susumu; and Hayashi, Keisuke, 5,382,129, Cl. 414-411.000.
Shikata, Shinichi: *See*—
Nishibayashi, Yoshiki; Tomikawa, Tadashi; and Shikata, Shinichi, 5,382,809, Cl. 257-77.000.
Shilling, Thomas: *See*—
Crafton, James W.; Stene, Ronald J.; Shilling, Thomas; and Roper, William J., 5,381,861, Cl. 166-77.000.
Shimada, Makoto: *See*—
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,382,205, Cl. 477-43.000.
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Shimada, Toshizi; Kanai, Yasunori; and Watanabe, Yoshio, to Shinko Electric Industries Co., Ltd.; and Fujitsu Limited. Charge-pump circuit for use in phase locked loop. 5,382,923, Cl. 331-8.000.
Shimano Inc.: *See*—
Furomoto, Yoshiyuki, 5,381,979, Cl. 242-224.000.
Shimizu, Akira; Nishio, Shoji; Sanpei, Takeshi; and Ushiroyama, Hiroyuki, to Konica Corporation. Method for processing black-and-white silver halide photographic light-sensitive materials. 5,382,507, Cl. 430-399.000.
Shimizu, Ryosuke; and Takaoka, Tetsurou, to Matsushita Electric Industrial Co., Ltd. Head position recognition method, a speed calculation method, and a head movement speed control device. 5,383,068, Cl. 360-78.060.
Shimizu, Tomohito; Mori, Hiroshi; Kagami, Yoshinobu; Yamakawa, Takeshi; Shiina, Susumu; and Hayashi, Keisuke, to Ricoh Company, Ltd. Sheet feed device for an image forming apparatus. 5,382,129, Cl. 414-411.000.
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Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,711, Cl. 568-722.000.
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Shimomura, Naoyuki: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Koukichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.
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Harada, Nobuyuki; Wada, Katsuyuki; Obara, Hisanori; Shimomura, Tadao; and Sano, Yoshinori, 5,382,610, Cl. 524-35.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Kubota, Yoshihiro; Kawai, Makoto; Kojima, Shinji; and Arai, Ken-ichi, 5,382,469, Cl. 428-332.000.
Kuwabara, Haruyoshi; Otsuka, Akio; and Kashida, Meguru, 5,382,554, Cl. 501-97.000.
Miyata, Koji; and Inoue, Yuji, 5,382,905, Cl. 324-319.000.
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Shinada, Mikio: *See*—
Hirono, Tetsuro; and Shinada, Mikio, 5,382,104, Cl. 400-608.200.
Shindo, Akio: *See*—
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,711, Cl. 568-722.000.
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,712, Cl. 568-724.000.
Shinko Electric Industries Co., Ltd.: *See*—
Shimada, Toshizi; Kanai, Yasunori; and Watanabe, Yoshio, 5,382,923, Cl. 331-8.000.
Shinko Pantec Co., Ltd.: *See*—
Okamoto, Yukimichi; Kikuchi, Masahiko; Takata, Kazutaka; and Ito, Hisayoshi, 5,382,092, Cl. 366-320.000.
Shinkoh Electric Co., Ltd.: *See*—
Umemura, Heihachiro, 5,382,836, Cl. 307-127.000.
Shinoda, Masahisa; Kime, Kenjiro; Matozaki, Toshiya; Nakamura, Keiji; Yoshihara, Toru; and Ito, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Optical recording and reproducing apparatus for tracking wobbling guide grooves. 5,383,169, Cl. 369-44.130.
Shinoda, Ryuichi; Honda, Jun; and Miyata, Kunihiro, to Pioneer Electronic Corporation. Protective apparatus for power transistor. 5,383,083, Cl. 361-103.000.
Shinohara, Hirofumi; Tsujihashi, Yoshiki; and Matsumoto, Hisashi, to Mitsubishi Denki Kabushiki Kaisha. Design verification device. 5,383,132, Cl. 364-491.000.
Shinohara, Jun: *See*—
Nishida, Junichi; Araki, Morio; Arakawa, Takeharu; Ishida, Tessho; Ayukai, Yasuhiro; Baba, Toshiharu; Sakaguchi, Masahiko;

Nobe, Kenichi; Kaneko, Michihiro; and Shinohara, Jun, 5,383,128, Cl. 364-449.000.

Shinohara, Takayuki, to Mitsubishi Denki Kabushiki Kaisha. Power supply control circuit for use in IC memory card. 5,382,839, Cl. 327-545.000.

Shiokama, Yoshiharu: *See*—
Naito, Hideshi; Shiokama, Yoshiharu; and Ushio, Shinichi, 5,382,994, Cl. 354-286.000.

Shirai, Hiroyuki: *See*—
Numagami, Atsushi; Shirai, Hiroyuki; and Shoji, Takeo, 5,383,011, Cl. 355-298.000.

Shirai, Masaki; Moriuchi, Hisahiro; Yoshii, Yasuhiro; Kuroda, Kenichi; and Matsuo, Akinori, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Semiconductor memory device. 5,383,162, Cl. 365-231.000.

Shiraishi, Takeshi: *See*—
Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, 5,381,857, Cl. 164-466.000.

Shirakawa, Masakazu: *See*—
Akita, Yoshihiro; and Shirakawa, Masakazu, 5,383,221, Cl. 375-7.000.

Shishikura, Takenao: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; Takahashi, Akio; and Matsudo, Nobuhiko, 5,382,997, Cl. 354-441.000.

Shivtech Plastics Inc.: *See*—
Vasudeva, Kailash C., 5,381,938, Cl. 223-85.000.

Shlain, Leonard M. Method for transesophageal retraction of the stomach. 5,382,231, Cl. 604-49.000.

Shofner, Frederick M.; Baldwin, Joseph C.; Williams, Gordon F.; and Townes, Mark G., to Zellweger Uster, Inc. Acquisition, measurement and control of thin webs on in-process textile materials. 5,383,135, Cl. 364-552.000.

Shoji, Takeo: *See*—
Numagami, Atsushi; Shirai, Hiroyuki; and Shoji, Takeo, 5,383,011, Cl. 355-298.000.

Shor, Steven M.; Zou, Chaofeng; Zhou, Pu; and Aoki, Shozo, to Minnesota Mining and Manufacturing Company. Photothermographic element with core-shell-type silver halide grains. 5,382,504, Cl. 430-619.000.

Shoroff, Srihari: *See*—
Sloan, Mark D.; Rogers, William A.; and Shoroff, Srihari, 5,383,194, Cl. 371-22.100.

Shouji, Yasuhiro: *See*—
Ando, Kazuhiro; Kawakami, Takamasa; Shouji, Yasuhiro; Tanaka, Yasuo; Kanaoka, Takeo; and Sayama, Norio, 5,382,333, Cl. 204-130.000.

Showa Denko Kabushiki Kaisha: *See*—
Ohno, Hiromoto; Arai, Tatsuharu; Katamura, Koichi; Yuge, Sadayoshi; Kawai, Haruyuki; and Morito, Yasuaki, 5,382,724, Cl. 570-178.000.

Shull, Robert D.: *See*—
Bennett, Lawrence H.; and Shull, Robert D., 5,381,664, Cl. 62-3.100.

Shunk, Stephen C.: *See*—
Knox, Wayne H.; Shunk, Stephen C.; Williams, Michael D.; and Zucker, Jane E., 5,383,212, Cl. 372-45.000.

Shutske, Gregory M.; Kapples, Kevin J.; and Tomer, John D., to Hoechst-Roussel Pharmaceuticals Inc. 9-aminotetrahydroacridines and related compounds. 5,382,594, Cl. 514-297.000.

Shy, Haw-Yaw: *See*—
Liou, Huei-Yu; and Shy, Haw-Yaw, 5,381,590, Cl. 24-602.000.

Shyu, Chih-Yes: *See*—
Hsu, Chi-Hsueh; and Shyu, Chih-Yes, 5,382,221, Cl. 601-114.000.

Si, Stephen S.: *See*—
Aldrich, Greg; Si, Stephen S.; and Wang, Eugene, 5,382,850, Cl. 327-161.000.

Siconolfi, David J.: *See*—
Frankenthal, Robert P.; Siconolfi, David J.; and Sinclair, James D., 5,381,701, Cl. 73-865.600.

Sidky, Paulette S.: *See*—
Hocking, Michael G.; and Sidky, Paulette S., 5,382,456, Cl. 427-434.600.

Siegel, Israel. Force-sparing balanced bellows refrigeration device. 5,381,675, Cl. 62-498.000.

Siegel, Scott D.: *See*—
Pike, Richard D.; Brown, Kurtis L.; Gwaltney, Sharon W.; Herschberger, Thomas A.; and Siegel, Scott D., 5,382,400, Cl. 164-168.000.

Siemens Aktiengesellschaft: *See*—
Boy, Jurgen; and Hahndorff, Axel, 5,383,085, Cl. 361-119.000.
Fenk, Josef; and Veit, Werner, 5,382,849, Cl. 327-310.000.
Gronemeyer, Michael, 5,382,950, Cl. 340-825.500.
Hendel, Horst; Kern, Josef; and Kleine-Onnebrink, Bernhard, 5,382,934, Cl. 335-159.000.
Knauer, Karl, 5,382,844, Cl. 326-95.000.
Lorenz, Dieter; Pircher, Christian; Geier, Petra; Holler, Helmut; and Pfaff, Dietrich, 5,382,765, Cl. 200-148.00R.
Massoner, Johann, 5,382,840, Cl. 327-206.000.
Stein, Rene , 5,382,822, Cl. 257-410.000.

Siemens Automotive L.P.: *See*—
Bright, John S.; Huszar, Gyula A.; and Spiers, Dean L., 5,381,963, Cl. 239-533.200.
Chabon, Michael W.; Harvey, Bruce J.; Lahnala, Thomas A.; Sailer, Hans J.; Ta, Bac; and Treusch, Christopher J., 5,381,965, Cl. 239-585.100.

Siemens Medical Systems, Inc.: *See*—
Qian, Jianzhong, 5,381,791, Cl. 128-659.000.

Siemens Power Corporation: *See*—
Macduff, Robert B., 5,383,227, Cl. 376-261.000.

Sierocuk, Thomas J.: *See*—
Allen, Eugene D.; Bedi, James J.; Bishop, Gregory D.; Burdorff, Mark A.; Conlon, Sean P.; Hibner, John A.; Hughett, J. David; Ortiz, Mark S.; Paraschac, Joseph; Sambi, Narinderjit; Sierocuk, Thomas J.; and Smith, Jack E., 5,381,943, Cl. 227-177.000.

Sigma, Incorporated: *See*—
Tatesaka, Hiroyuki; and Moritsu, Takanao, 5,382,021, Cl. 273-86.00K.

Sign-Up, Inc.: *See*—
Stocker, Harold L., 5,381,991, Cl. 248-206.500.

Sika AG, vorm. Kaspar Winkler & Co.: *See*—
Butikofer, Pierre-Andre , 5,382,606, Cl. 523-404.000.

Sikora, Robert J.; Gam, Allisa; and Chung, Ding Y., to Du Pont de Nemours, E. I., and Company. Cathodic electrodeposition coatings containing zinc hydroxyphosphite pigment. 5,382,607, Cl. 523-415.000.

Silberman, Cyril J. Bridge docking structure for aircraft. 5,381,575, Cl. 14-69.500.

Silent Power GmbH fur Energiespeichertechnik: *See*—
Molyneux, John, 5,382,480, Cl. 429-120.000.

Silicon Systems, Inc.: *See*—
Peters, David H.; and Harth, Jeff, 5,382,889, Cl. 318-254.000.

Silva, Jose: *See*—
Brown, Gregory S.; Quach, Frank; and Silva, Jose, 5,382,173, Cl. 439-188.000.

Simmons, Michael L.; and Goldsborough, Robert J. Easily installed flexible barriers for vans. 5,382,068, Cl. 296-24.100.

Simon, David F. Parrot tower. 5,381,758, Cl. 119-26.000.

Simon, Ira J.: *See*—
Simon, Martin S.; and Simon, Ira J., 5,381,627, Cl. 49-70.000.

Simon, Martin S.; and Simon, Ira J., to Triangle Brass Manufacturing Company. Panic guard. 5,381,627, Cl. 49-70.000.

Simonds, Edward L., to Thermal Dynamics, Inc. Air injection system for internal combustion engines during combustion cycle of operation. 5,381,760, Cl. 123-26.000.

Simons, Teresa M., to Ethicon, Inc. Presentation tray for surgical instruments. 5,381,896, Cl. 206-370.000.

Simpson, Marc L.: *See*—
Maxey, Lonnie C.; and Simpson, Marc L., 5,383,024, Cl. 356-336.000.

Sinclair, James D.: *See*—
Downey, Stephen W.; Emerson, Adrian B.; Mujsce, Anthony M.; Muller, Amy J.; Reents, William D., Jr.; Sinclair, James D.; and Swanson, Alka, 5,382,794, Cl. 250-288.000.
Frankenthal, Robert P.; Siconolfi, David J.; and Sinclair, James D., 5,381,701, Cl. 73-865.600.

Singer Company N.V., The: *See*—
Kamewada, Makoto; and Kojima, Shinji, 5,381,744, Cl. 112-254.000.

Singh, Jyothi: *See*—
Cotler, Tina J.; Forster, John C.; Kropp, Lawrence A.; and Singh, Jyothi, 5,382,911, Cl. 324-662.000.

Singleton, Richard L. Security frame for vehicle license plates. 5,381,618, Cl. 40-202.000.

Sinzawa, Kouichi: *See*—
Takano, Tsunesuke; and Sinzawa, Kouichi, 5,382,767, Cl. 200-531.000.

Sirtl S.p.A.: *See*—
Decao, Marco; Pianciola, Aurelio; and Tambosso, Tiziana, 5,382,275, Cl. 65-407.000.

Sistare, James R., Sr.: *See*—
Keith, James A., Jr.; Bellew, William S.; and Sistare, James R., Sr., 5,381,595, Cl. 29-467.000.

SKF France: *See*—
Rigaux, Christian; Lhote, Pascal; Caillault, Claude; and Houdayer, Christophe, 5,382,098, Cl. 384-448.000.

SKF GmbH: *See*—
Bauer, Bernhard; Heemskerk, Rut; Mirring, Knut; Olschewski, Armin; Schepp, Martin; Kispert, Klaus; Scholl, Jurgen; Stanzel, Rainer; and Stolz, Robert, 5,382,099, Cl. 384-454.000.

Skin Biology, Inc.: *See*—
Pickart, Loren R., 5,382,431, Cl. 424-401.000.

Sklansky, David B.; and Jones, Daniel A., to D & D Gaming Patents, Inc. Method for playing a poker game. 5,382,025, Cl. 273-292.000.

Skowronski, Richard E.; Lantz, Kenneth F.; Leon, Tomas F.; Alexander, Donald J.; Kolomayets, George; Adams, Vincent C.; and Szymczak, Eugene B., to Life Fitness. Exercise treadmill. 5,382,207, Cl. 482-54.000.

Skudera, William, J., Jr., to United States of America, Army. Feedback circuitry for recreating CW components from chirp-Z pulses. 5,383,222, Cl. 375-10.000.

Skulina, Kenneth M.: *See*—
Bionta, Richard M.; Makowiecki, Daniel M.; and Skulina, Kenneth M., 5,382,342, Cl. 204-192.260.

Slager, Douglas J.: *See*—
Grzesiak, Anthony J.; Fenoglio, Robert J.; and Slager, Douglas J., 5,381,876, Cl. 188-250.00H.

Slaney, Annette C.: *See*—
Donovan, William P.; Rupar, Mark J.; Slaney, Annette C.; and Johnson, Timothy B., 5,382,429, Cl. 424-93.461.

Sleevi, Mark C.; Minaskanian, Gevork; and Moses, L. Meredith, to Whitby Research, Inc. Substituted 2-aminotetralins. 5,382,596, Cl. 514-459.000.

Sloan, Mark D.; Rogers, William A.; and Shoroff, Srihari, to University of Texas System Board of Regents. Integrated logic circuit including impedance fault detection. 5,383,194, Cl. 371-22.100.

Slutsky, Boris: *See*—
Guzik, Nahum; Karaaslan, Ufuk; and Slutsky, Boris, 5,382,887, Cl. 318-652.000.

Smaardijk, Abraham A.: *See*—
Jordaan, Johannes C. M.; Mul, Wilhelmus P.; Smaardijk, Abraham A.; Mulder, Jan Harm; Gerard, Eric-Jack; and Lednor, Peter W., 5,382,653, Cl. 528-392.000.

Smayling, Michael C.: *See*—
Malhi, Satwinder; Smayling, Michael C.; and Keller, Stephen A., 5,382,536, Cl. 437-41.000.

SMC Kabushiki Kaisha: *See*—
Kimura, Yasuhisa; and Miyaguchi, Takehiko, 5,381,828, Cl. 137-596.000.

Smethers, Rick T.; and Warner, Brian D., to Chiron Corporation. Assay device with captured particle reagent. 5,382,512, Cl. 435-6.000.

Smith, David W.: *See*—
Gylys, Jonas A.; Ruediger, Edward H.; Smith, David W.; Solomon, Carola; and Yevich, Joseph P., 5,382,592, Cl. 514-415.000.

Smith, Jack E.: *See*—
Allen, Eugene D.; Bedi, James J.; Bishop, Gregory D.; Burdorff, Mark A.; Conlon, Sean P.; Hibner, John A.; Hughett, J. David; Ortiz, Mark S.; Paraschac, Joseph; Sambi, Narinderjit; Sierocuk, Thomas J.; and Smith, Jack E., 5,381,943, Cl. 227-177.000.

Smith, James L.: *See*—
Head, George W., Jr.; Landers, Reginald R.; and Smith, James L., 5,381,712, Cl. 83-418.000.

Smith, Jay L.: *See*—
Hobgood, Robert B.; Smith, Jay L.; Verne, Robert D.; and Walker, Anthony D., 5,383,191, Cl. 371-11.200.

Smith, Mark H.; Renzelmann, Michael E.; and Marx, Alan D., to Boeing Company, The. Folding wing-tip system. 5,381,986, Cl. 244-49.000.

Smith, Mark R.: *See*—
Atkins, Martin P.; and Smith, Mark R., 5,382,739, Cl. 585-530.000.

Smith & Nephew plc: *See*—
Ingham, Philip, 5,382,466, Cl. 428-219.000.

Smith, Nigel A.: *See*—
Cockayne, Brian; MacEwan, William R.; Harris, Ivor R.; and Smith, Nigel A., 5,382,304, Cl. 148-306.000.

Smith, Quinn C., to Lockformer Company, The. Glass scoring mechanism. 5,381,713, Cl. 83-881.000.

Smith, Robert H.; and Szadkowski, Jan, to Chrysler Corporation. Mounting structure of a front suspension system. 5,382,044, Cl. 280-673.000.

Smith, Ronald T., to Hughes Aircraft Company. Focused illumination, reduced light leakage floodlit center high mounted stoplight. 5,383,039, Cl. 359-13.000.

Smith, Terry B., to Dowbrands L.P. Apparatus and process for producing a rolled tab for a roll of plastic film. 5,381,978, Cl. 242-520.000.

Smith, William B.: *See*—
O'Brien, Michael J.; and Smith, William B., 5,383,168, Cl. 369-44.140.

Smith, Willis H., Jr., to Hughes Aircraft Company. Surface treatment process for liquid crystal cell substrates. 5,382,446, Cl. 427-126.300.

Smiths Industries Public Limited Company: *See*—
Blain, David I., 5,382,912, Cl. 324-713.000.

Smulders, Eduard: *See*—
Raehse, Wilfried; Jacobs, Jochen; Kruse, Hans; Vogt, Guenther; Smulders, Eduard; and Boecker, Monika, 5,382,377, Cl. 252-174.000.

Snail, Keith A.: *See*—
Glesener, John W.; Merrish, Arthur A.; and Snail, Keith A., 5,381,755, Cl. 117-88.000.

Sneed, Wilbert L. Golf putter. 5,382,019, Cl. 273-80.00C.

Snell, John R. Compost cutting and stirring apparatus. 5,382,065, Cl. 294-53.500.

Snell, Rusty B., to Sony Electronics, Inc. Grip and protective casing for cellular telephone. 5,383,091, Cl. 361-679.000.

Snofi, S.A.: *See*—
Petitou, Maurice; and van Boeckel, Constant A. A., 5,382,570, Cl. 514-53.000.

Societe Electromecanique du Nivernais-Selni: *See*—
Cousin, Joel, 5,382,855, Cl. 310-71.000.

Societe Francaise Hoechst: *See*—
Wilhelm, Didier; Soreau, Michel; and Blanc, Alain, 5,382,667, Cl. 544-141.000.

Societe nationale D'Etude et de Construction de Moteurs D'Aviation: *See*—
Henrio, Philippe, 5,382,150, Cl. 425-390.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A): *See*—
Halin, Yves R., 5,381,654, Cl. 60-226.200.

SOCO Technologies, Inc.: *See*—
Crafton, James W.; Stene, Ronald J.; Shilling, Thomas; and Roper, William J., 5,381,861, Cl. 166-77.000.

Soeda, Haruo; and Tsugita, Makoto, to Fuji Photo Film Company, Limited. Movie camera having still picture photographing function and method of photographing still picture therewith. 5,382,974, Cl. 348-221.000.

Solenberg, Patricia J., to Eli Lilly and Company. Transposable elements from streptomyces and other organisms. 5,382,527, Cl. 435-320.100.

Solimar, Keith F. Aeration devices and methods. 5,381,606, Cl. 34-585.000.

Solomon, Carola: *See*—
Gylys, Jonas A.; Ruediger, Edward H.; Smith, David W.; Solomon, Carola; and Yevich, Joseph P., 5,382,592, Cl. 514-415.000.

Solove, Jeffrey A.; Buchanan, Thomas D.; Irvin, Richard L.; and Toops, Terry R., to Barney & White Auto Parts, Inc. Automatic transmission control system and method. 5,382,202, Cl. 475-124.000.

Solvay (Societe Anonyme): *See*—
Pennetreau, Pascal; Janssens, Francine; Braun, Max; Eicher, Johannes; Rudolph, Werner; and Hausmann, Eckhard, 5,382,721, Cl. 570-166.000.

Solymosi, Frank. Rowing machine. 5,382,211, Cl. 482-72.000.

Soma, Gen-Ichiro; Yoshimura, Jun; Tsukioka, Daisuke; Mizuno, Den'ichi; and Oshima, Haruyuki, to Chiba Flour Milling Co., Ltd.; Mizuno, Den'ichi; and Soma, Gen-Ichiro. Method for the stimulation of the immune system of an animal by use of limulus test-positive plant glycolipid. 5,382,430, Cl. 424-195.100.

Somar Corporation: *See*—
Ochi, Hideo; Igari, Akihide; Toyoda, Masaaki; and Nakagawa, Zenbee, 5,382,385, Cl. 252-519.000.

Someya, Ryouichi: *See*—
Yuhi, Toshiya; Ohtake, Takahiro; Kato, Masahiko; and Someya, Ryouichi, 5,382,852, Cl. 310-40.0MM.

Sommercorn, Richard K.: *See*—
Abrahamson, Timothy A.; and Sommercorn, Richard K., 5,382,238, Cl. 604-170.000.

Somogyi, Tibor: *See*—
White, Trevor; Somogyi, Tibor; and Fausse, Arnaud, 5,382,951, Cl. 340-825.520.

Sonesson, Leif; and Olsson, Jorgen, to Arjo Hospital Equipment AB. Bathtubs. 5,381,566, Cl. 4-591.000.

Song, Won R.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., to Exxon Chemical Patents Inc. Borated ethylene alpha-olefin copolymer substituted Mannich base lubricant dispersant additives. 5,382,698, Cl. 568-3.000.

Song, Yong M.: *See*—
Kim, Hee Y.; Song, Yong M.; Jeon, Jong Y.; Kwon, Dae H.; Lee, Kang M.; Lee, Jae S.; and Park, Doug S., 5,382,412, Cl. 422-142.000.

Sonobe, Masanori: *See*—
Kawaguchi, Masahiro; Sonobe, Masanori; Kanzaki, Shigeki; and Yokono, Tomohiko, 5,382,139, Cl. 417-269.000.

Sonoda, Takaaki: *See*—
Morishita, Yoshii; Hayashida, Shigeru; Sugimoto, Yasushi; Ishikawa, Hiroko; Kobayashi, Hiroshi; and Sonoda, Takaaki, 5,382,687, Cl. 564-319.000.

Sony Corporation: *See*—
Enomoto, Keiji, 5,382,982, Cl. 348-706.000.
Fukaishi, Akira, 5,382,868, Cl. 313-313.000.
Funahashi, Hiroko; Kato, Mitsuo; Miyamura, Hidemi; and Yamazaki, Jun, 5,382,871, Cl. 313-402.000.
Hata, Mitsuo; and Matsumoto, Shigeo, 5,382,990, Cl. 353-94.000.
Hayashi, Nobuhiro, 5,383,065, Cl. 360-67.000.
Hirashima, Shigeyoshi, 5,381,733, Cl. 101-157.000.
Kawamura, Masateru, 5,381,684, Cl. 70-58.000.
Kojima, Kiyonobu, 5,383,029, Cl. 358-403.000.
Morita, Shinya; and Abe, Fumiyoshi, 5,383,069, Cl. 360-73.110.
Narui, Hironobu; and Imanishi, Daisuke, 5,383,215, Cl. 372-46.000.
Noguchi, Takashi, 5,382,537, Cl. 437-41.000.
Sato, Ichitaro, 5,383,071, Cl. 360-77.140.
Sato, Shinya; and Hatakawa, Kazuhiko, 5,383,077, Cl. 360-132.000.

Sony Electronics, Inc.: *See*—
Snell, Rusty B., 5,383,091, Cl. 361-679.000.

Soofi, Madjid: *See*—
Connors, Charles W., Sr.; and Soofi, Madjid, 5,382,004, Cl. 266-230.000.

Soreau, Michel: *See*—
Wilhelm, Didier; Soreau, Michel; and Blanc, Alain, 5,382,667, Cl. 544-141.000.

Soria, Alfred S.: *See*—
DeLaRama, Alan; Dial, Larry A.; Harp, Richard J.; Hursman, Thomas L.; Soria, Alfred S.; Serra, R. J.; and Tarpening, Steve, 5,381,782, Cl. 128-4.000.

Sorimachi, Kenichi: *See*—
Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, 5,381,857, Cl. 164-466.000.

Souda, Shigeru: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Southco, Inc.: *See*—
Frattarola, Albert J., 5,382,124, Cl. 411-352.000.

Southwest Research Institute: *See*—
Geary, Richard S.; and Schlameus, Herman W., 5,382,435, Cl. 424-489.000.

Spangler, Anthony G.: *See*—
Niemann, James E.; and Spangler, Anthony G., 5,381,830, Cl. 137-801.000.

Spangler, Harry V. Drop foot brace. 5,382,224, Cl. 602-23.000.

Sparf, Bengt A.: *See*—
Jonsson, Nils A.; Sparf, Bengt A.; Mikiver, Lembit; Moses, Pinchas; Nilvebrant, Lisbet; and Glas, Gunilla, 5,382,600, Cl. 514-603.000.

Spatafora, Mario; and Strazzari, Giulio, to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A. Method and device for aligning flat products. 5,381,884, Cl. 198-433.000.

Spears, Harry L., to Spears Speciality Oil Tools, Inc. Wall pump having backwash valve actuator. 5,382,142, Cl. 417-445.000.

Spears, James R., to Wayne State University. Method and apparatus for measurement of luminal dimensions. 5,381,786, Cl. 128-6.000.

Spears Speciality Oil Tools, Inc.: *See*—
Spears, Harry L., 5,382,142, Cl. 417-445.000.

Specialty Mfg. Co., The: *See*—
Nelson, Terry N., 5,381,981, Cl. 242-407.100.

Spectrum Medsystems Corporation: *See*—
DeLaRama, Alan; Dial, Larry A.; Harp, Richard J.; Hursman, Thomas L.; Soria, Alfred S.; Serra, R. J.; and Tarpening, Steve, 5,381,782, Cl. 128-4.000.

Speed, Charles S.: *See*—
Stehling, Ferdinand C.; Speed, Charles S.; and Welborn, Curtis H., Jr., 5,382,630, Cl. 525-240.000.
Stehling, Ferdinand C.; Speed, Charles S.; and Welborn, Howard C., Jr., deceased, 5,382,631, Cl. 525-240.000.

Spence, Nicholas J. M.; and Grula, Jerome A., to Motorola, Inc. BIST circuit with halt signal. 5,383,195, Cl. 371-22.500.

Spencer, Kevin C., to American Air Liquide. Method of effecting increased performance of diagnostic enzyme reaction systems using noble gases. 5,382,525, Cl. 435-244.000.

Spercel, Robert J. Tuning device. 5,381,715, Cl. 84-304.000.

Sperling, Harry G., to Board of Regents, The University of Texas System. Device for ERG spectral perimetry. 5,382,987, Cl. 351-206.000.

Spiers, Dean L.: *See*—
Bright, John S.; Huszar, Gyula A.; and Spiers, Dean L., 5,381,963, Cl. 239-533.200.

Spindler, Felix: *See*—
Pugin, Benoit; Spindler, Felix; and Muller, Manfred, 5,382,729, Cl. 585-277.000.

Spinks, David W.: *See*—
McShane, Jerry M.; and Spinks, David W., 5,381,801, Cl. 128-848.000.

Spohn, Ronald F.; and Saran, Mohan S., to Occidental Chemical Corporation. Separating vinylcyclohexene from a butadiene extracting solvent. 5,382,745, Cl. 585-800.000.

Spoto, Louis M.: *See*—
Parker, Eric G.; and Spoto, Louis M., 5,382,034, Cl. 280-104.000.

Springs, Michael A., to Ortho-Care, Inc. Contoured orthopaedic support having reduced skin irritation properties. 5,382,223, Cl. 602-6.000.

SPS Medical Supply Corporation: *See*—
Scoville, John R., 5,382,528, Cl. 436-1.000.

SPS Technologies, Inc.: *See*—
Anderson, Richard L.; and Jones, Fred G., 5,382,303, Cl. 148-303.000.

Squires, Michael E.: *See*—
Pahlck, Harold E.; Martin, Shari R.; and Squires, Michael E., 5,382,433, Cl. 424-401.000.

Sreenivas, Ajay I.: *See*—
Pett, Todd A.; Olson, Steven C.; and Sreenivas, Ajay I., 5,382,959, Cl. 343-700.0MS.

Staab, Craig C.: *See*—
Olson, David P.; Tafoya, Ed K.; and Staab, Craig C., 5,381,585, Cl. 16-112.000.

Stahl, G. Allan; Moradi-Araghi, Ahmad; Westerman, I. John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, to Phillips Petroleum Company. Polymers useful in the recovery and processing of natural resources. 5,382,371, Cl. 507-221.000.

Stahl, Gunnar: *See*—
Deleryd, Roland; and Stahl, Gunnar, 5,383,226, Cl. 376-253.000.

Stahlecker, Fritz: *See*—
Stahlecker, Gerd, 5,381,651, Cl. 57-264.000.

Stahlecker, Gerd, to Stahlecker, Fritz; and Stahlecker, Hans. Arrangement for monitoring the lap formation on drafting units of a spinning machine. 5,381,651, Cl. 57-264.000.

Stahlecker, Hans: *See*—
Stahlecker, Gerd, 5,381,651, Cl. 57-264.000.

Standard Chlorine of Delaware Inc.: *See*—
George, Jacob; Desai, Kantilal B.; and Schoeffler, Francis M., 5,382,725, Cl. 570-211.000.

Standard Keil Industries, Inc.: *See*—
Wang, Yushan; and Orozco, Wilson, 5,381,824, Cl. 137-505.000.

Standard-Thomson Corporation: *See*—
Duprez, Wayne R., 5,381,952, Cl. 236-34.500.

Stansberry, Warren W.: *See*—
Heidel, Jeffrey C.; Carlson, Bradley D.; and Stansberry, Warren W., 5,381,604, Cl. 33-366.000.

Stanssens, Dirk; and Dueber, Ernst O., to Imperial Chemical Industries plc. Polyisocyanate composition. 5,382,616, Cl. 524-394.000.

Stant Manufacturing Inc.: *See*—
Griffin, Jeffery; and Harris, Robert S., 5,381,919, Cl. 220-307.000.

Staszel, Rainer: *See*—
Bauer, Bernhard; Heemskerk, Rut; Mirring, Knut; Olschewski, Armin; Schepp, Martin; Kispert, Klaus; Scholl, Jurgen; Stanzel, Rainer; and Stolz, Robert, 5,382,099, Cl. 384-454.000.

Staple, Alan E., to Westland Helicopters Limited. Integrated vibration reducing and health monitoring system for a helicopter. 5,383,133, Cl. 364-508.000.

Stapler, Judith H.; and Hunter, Mary A., to Procter & Gamble Company, The. Breath protection microcapsules. 5,382,424, Cl. 424-54.000.

Stapleton, Marilyn J., to Gene Tec Corporation. Method for studying nucleic acids within immobilized specimens. 5,382,511, Cl. 435-6.000.

Starcevic, Jovan: *See*—
Jirenec, Karl; and Starcevic, Jovan, 5,382,335, Cl. 204-144.500.

Staron, Philippe; and Laurent, Jean, to Institut Francais du Petrole. Seismic well source. 5,382,760, Cl. 181-121.000.

Starr, Joseph W.: *See*—
Robinson, Alan S.; and Starr, Joseph W., 5,381,956, Cl. 239-22.000.

Stavros, Michael G.: *See*—
Hinde, Brian, 5,381,747, Cl. 114-39.200.

STE Distributon Materiel Chirurgical (S.D.M.C.)(S.A.): *See*—
Agut, Gerard, 5,383,105, Cl. 362-285.000.

Stehling, Ferdinand C.; Speed, Charles S.; and Welborn, Curtis H., Jr., to Exxon Chemical Patents Inc. Linear ethylene interpolymer blends of interpolymers having narrow molecular weight and composition distribution. 5,382,630, Cl. 525-240.000.

Stehling, Ferdinand C.; Speed, Charles S.; and Welborn, Howard C., Jr., deceased (by Zipprich, John L., II, executor), to Exxon Chemical Patents Inc. Linear ethylene interpolymer blends of interpolymers having narrow molecular weight and composition distributions. 5,382,631, Cl. 525-240.000.

Steidinger, Donald J., to Tamarack Products, Inc. Window-equipped mailer and method. 5,381,947, Cl. 229-71.000.

Stein, Heinrich; Van Haag, Rolf; and Junk, Dieter, to Sulzer Papertec Krefeld GmbH. Bearing for a heated roll. 5,382,096, Cl. 384-116.000.

Stein, Joseph L.; McIntyre, Donald A.; and McHugh, P. Sean, to General Acquisition Corporation. High alumina brick with metallic carbide and its preparation. 5,382,555, Cl. 501-127.000.

Stein, Rene , to Siemens Aktiengesellschaft. Metal-insulator semiconductor field-effect transistor. 5,382,822, Cl. 257-410.000.

Steinke, Robert J. Method and apparatus for forming chamfered outside corners on concrete products. 5,382,393, Cl. 264-31.000.

Steinman, Douglas H.: *See*—
Summers, James B.; Sheppard, George S.; Phillips, James G.; Pireh, Daisy; Steinman, Douglas H.; May, Paul D.; Guinn, Denise E.; Heyman, H. Robin; Carrera, George M., Jr.; and Davidsen, Steven K., 5,382,670, Cl. 546-273.000.

Stene, Ronald J.: *See*—
Crafton, James W.; Stene, Ronald J.; Shilling, Thomas; and Roper, William J., 5,381,861, Cl. 166-77.000.

Stengel, Robert E.: *See*—
Muri, David L.; and Stengel, Robert E., 5,382,915, Cl. 330-10.000.

Stephens, James A.: *See*—
Armbruster, Peter J.; and Stephens, James A., 5,383,185, Cl. 370-85.300.

Stepp, Lee W.: *See*—
Szarka, David D.; and Stepp, Lee W., 5,381,862, Cl. 166-212.000.

Stepto, Robert F. T.; Tomka, Ivan; Dobler, Beat; and Pyrah, Keith, to Warner-Lambert Company. Destructurized starch and method for making same. 5,382,611, Cl. 524-47.000.

Stern, Michael K.; and Cheng, Brian K-M., to Monsanto Company. Process for preparing substituted aromatic amines. 5,382,691, Cl. 564-415.000.

Stern, Sylvan S. Method for making dental restorations and the dental restoration made thereby. 5,382,164, Cl. 433-223.000.

Sterner, Klaus: *See*—
Bilz, Georg; Lammermann, Hans; Dobner, Alfred; Sterner, Klaus; and Riess, Klaus, 5,381,851, Cl. 164-119.000.

Steven, Rachel A.: *See*—
Scott, John D.; and Steven, Rachel A., 5,382,722, Cl. 570-166.000.

Stevenson, Scott A.: *See*—
Hansen, Allen R.; Johnson, David L.; Stevenson, Scott A.; Schipper, Paul H.; and Harandi, Mohsen N., 5,382,352, Cl. 208-121.000.

Stewart, Jennifer L.; and Bell, Emily T., to Eastman Chemical Company. High impact strength articles from polyester blends. 5,382,628, Cl. 525-174.000.

Stewart, Ray F.: *See*—
Masia, Michael; Reed, James P.; Wasley, Robert S.; Reeder, Larry R.; Brooks, Peter L.; Tolles, Thomas W.; Frank, Louis M.; Bonomi, Mauro; Stewart, Ray F.; Lahlough, John; and Welsh, Laurence, 5,382,909, Cl. 324-522.000.

Stinessen, Kjell O., to Kvaerner Rosenberg a.s. Kvaerner Subsea Contracting. Compressor system and method of operation. 5,382,141, Cl. 417-423.800.

Stocker, Harold L., to Sign-Up, Inc. Suspended display holder. 5,381,991, Cl. 248-206.500.

Stokes, Robert B.; Garber, Edward M.; Crawford, Jay D.; and Cushman, Drew, to TRW Inc. Monolithic multipole filters made of thin film stacked crystal filters. 5,382,930, Cl. 333-191.000.

Stoll, Gerhard: *See*—
Daute, Peter; Gruetzmacher, Roland; Hoefer, Rainer; and Stoll, Gerhard, 5,382,647, Cl. 528-73.000.

Stolz, Robert: *See*—
Bauer, Bernhard; Heemskerk, Rut; Mirring, Knut; Olschewski, Armin; Schepp, Martin; Kispert, Klaus; Scholl, Jurgen; Stanzel, Rainer; and Stolz, Robert, 5,382,099, Cl. 384-454.000.

Stone & Webster Engineering Corp.: *See*—
Rubin, Jacob N.; and Norenburg, Johannes C., 5,382,707, Cl. 568-697.000.

Stonner, Hans-Martin; and Buchold, Henning, to Metallgesellschaft Aktiengesellschaft. Process of controlling the rate at which used catalyst is recycled to hydrogenating means for preparing fatty alcohols from fatty acid derivatives. 5,382,717, Cl. 568-885.000.

Storm, Shawn: *See*—
Testa, James; Bechtolsheim, Andreas; Frank, Edward; and Storm, Shawn, 5,383,148, Cl. 365-52.000.

Storopack Hans Reichenecker GmbH & Co.: *See*—
Dumser, Josef; and Kolaska, Karl H., 5,381,902, Cl. 206-523.000.

Stout, Brian D.: *See*—
DeLucia, Paul; and Stout, Brian D., 5,383,097, Cl. 361-816.000.

Straub, Stephen W., to Cooper Industries, Inc. Modular ignition system. 5,381,773, Cl. 123-603.000.

Strawder, Glenn G. Modular receptacles. 5,381,916, Cl. 220-23.400.

Strazzari, Giulio: *See*—
Spatafora, Mario; and Strazzari, Giulio, 5,381,884, Cl. 198-433.000.

Strbka, Gyongyi: *See*—
Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karacsony, Erno ; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, 5,382,655, Cl. 530-317.000.

Street, Douglas A.: *See*—
Lee, James E.; and Street, Douglas A., 5,381,582, Cl. 15-250.190.

Strehmel, Werner: *See*—
Plata, Miroslaw; Bourqui, Bernard; and Strehmel, Werner, 5,382,306, Cl. 148-511.000.

Stribbell, Bruce J.: *See*—
Pickett, Thomas J.; Otten, Richard A.; Stribbell, Bruce J.; and Sheth, Manhar K., 5,382,401, Cl. 264-177.160.

Stro, Shinichirre: *See*—
Saitoh, Yutaka; Stro, Shinichirre; and Kimoshita, Yukiharu, 5,382,937, Cl. 336-178.000.

Stroppa, Fabrizio: *See*—
Del Bianco, Alberto; and Stroppa, Fabrizio, 5,382,728, Cl. 585-24.000.

Struben, Francis L. Portable two-way aluminum awning for recreational vehicles. 5,381,844, Cl. 160-46.000.

Stukuls, Alfred. Bottle display and secure storage rack. 5,381,907, Cl. 211-74.000.

Stumpf, William S.; Patton, Art A.; and Helmond, Gerard G., to Doerner Products Ltd. Height adjustment mechanism for a chair seat back. 5,382,077, Cl. 297-353.000.

Su, Chih-Hai. Omni-directional infrared sensing circuit. 5,383,043, Cl. 359-142.000.

Su, Kuan-Cheng: *See*—
Shen, Shing-Ren; Su, Kuan-Cheng; and Chung, Chen-Hui, 5,382,534, Cl. 437-35.000.

Su, Winston: *See*—
Furman, Gary S., Jr.; Kneller, James F.; Bailey, Kristy M.; Finck, Martha R.; and Su, Winston, 5,382,323, Cl. 162-111.000.

Subramanian, Eswar, to Cerprobe Corporation. High density probe card for testing electrical circuits. 5,382,898, Cl. 324-754.000.

Suciu, Elena N.; Livingston, Joel R., Jr.; and Mozeleski, Edmund J., to Exxon Chemical Patents Inc. Use as catalyst in the hydroformylation of olefinic feedstock to higher aldehydes and higher alcohols. 5,382,701, Cl. 568-454.000.

Suga, Kosaku: *See*—
Fujihira, Masamichi; Hirata, Yoshiki; Suga, Kosaku; and Akiba, Uichi, 5,382,332, Cl. 204-128.000.

Suga, Masanobu; Akita, Seiichi; and Kuroda, Nobuyuki, to Nippon Oil Company, Limited. Zinc electrode for alkaline storage battery. 5,382,482, Cl. 429-206.000.

Sugasawa, Masatoshi; Toda, Atsushi; Sasaki, Masaru; Yamashita, Masayasu; Matsumoto, Akihiro; Ozaki, Akiyoshi; and Oda, Goichi, to Koito Manufacturing Co., Ltd. Cord connection structure for connecting a ballast circuit and a starter circuit. 5,382,876, Cl. 315-82.000.

Sugata, Akihiko: *See*—
Tomofuji, Hiroaki; Sugata, Akihiko; and Nishimoto, Hjroshi, 5,383,046, Cl. 359-176.000.

Sugihara, Shigeharu: *See*—
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, 5,382,652, Cl. 528-308.600.

Sugimoto, Yasushi: *See*—
Morishita, Yoshii; Hayashida, Shigeru; Sugimoto, Yasushi; Ishikawa, Hiroko; Kobayashi, Hiroshi; and Sonoda, Takaaki, 5,382,687, Cl. 564-319.000.

Sugino, Kazuo: *See*—
Kageyama, Hideaki; Ueda, Masaharu; and Sugino, Kazuo, 5,382,307, Cl. 148-584.000.

Sugita, Shuichi; Ohya, Hidenobu; and Tonishi, Masakazu, to Konica Corporation. Silver halide color photographic light-sensitive material. 5,382,500, Cl. 430-505.000.

Sugiura, Atsushi: *See*—
Kurihara, Makoto; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,382,380, Cl. 252-299.660.

Sugiura, Hiroaki; and Yaka, Toshio, to Yoshino Kogysho Co., Ltd. Synthetic resin bottle-shaped container. 5,381,910, Cl. 215-1.00C.

Sugiura, Masato: *See*—
Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; Suzuki, Toshiharu; and Komiya, Iwao, 5,382,619, Cl. 524-437.000.

Sugiyama, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Driving motor for an electric car. 5,382,858, Cl. 310-90.000.

Suka, Hisao: *See*—
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

Sullivan, Harry D.; Claybrooke, James R.; and McFadden, William, to Senninger Irrigation, Inc. Wobbling irrigation sprinkler head including a magnet for initial tilt. 5,381,960, Cl. 239-222.210.

Sullivan, Joanne, to Nabisco, Inc. Flaky pie shells that maintain strength after filling. 5,382,440, Cl. 426-138.000.

Sultan, Pervaiz; and Avanzino, Steven C. Void free oxide fill for interconnect spaces. 5,382,547, Cl. 437-231.000.

Sulzbach, Hans-Michael: *See*—
Krippl, Kurt; Ebeling, Wilfried; Fietz, Jurgen; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 5,382,603, Cl. 521-99.000.

Sulzer Papertec Krefeld GmbH: *See*—
Stein, Heinrich; Van Haag, Rolf; and Junk, Dieter, 5,382,096, Cl. 384-116.000.

Sumitomo Chemical Company, Limited: *See*—
Koura, Hiroyuki; Sasaki, Yoshizumi; Wakamatsu, Kazuki; and Takemura, Kazuyuki, 5,381,827, Cl. 137-561.00A.
Takahashi, Hiroshi; Umezaki, Hiroshi; and Teshima, Yasushi, 5,382,556, Cl. 501-153.000.

Sumitomo Electric Industries, Ltd.: *See*—
Nakajima, Shigeru, 5,382,821, Cl. 257-401.000.
Nishibayashi, Yoshiki; Tomikawa, Tadashi; and Shikata, Shinichi, 5,382,809, Cl. 257-77.000.
Tanaka, Saburo; Matsuura, Takashi; and Itozaki, Hideo, 5,382,566, Cl. 505-329.000.

Sumitomo Wiring Systems, Ltd.: *See*—
Imanishi, Hisao, 5,382,170, Cl. 439-127.000.

Summers, James B.; Sheppard, George S.; Phillips, James G.; Pireh, Daisy; Steinman, Douglas H.; May, Paul D.; Guinn, Denise E.; Heyman, H. Robin; Carrera, George M., Jr.; and Davidsen, Steven K., to Abbott Laboratories. Platelet activating factor antagonists. 5,382,670, Cl. 546-273.000.

Sun Company, Inc. (R&M): *See*—
Ellis, Paul E., Jr.; and Lyons, James E., 5,382,662, Cl. 540-145.000.

Sun Hydraulics: *See*—
DiBartolo, Ernest A., 5,381,823, Cl. 137-494.000.

Sun Microsystems, Inc.: *See*—
Testa, James; Bechtolsheim, Andreas; Frank, Edward; and Storm, Shawn, 5,383,148, Cl. 365-52.000.

Sunada, Shigemasa, to Rohm Co., Ltd. Electronic part of surface mounted type and its mounting method. 5,382,754, Cl. 174-52.300.

Sundstrand Corporation: *See*—
Hopkins, Christopher E.; Markunas, Albert L.; Maddali, Vijay K.; and Arbanella, Richard A., 5,383,107, Cl. 363-41.000.

Sunsweet Growers, Inc.: *See*—
Yates, Robert L.; Burkholder, Lyle; and Roepke, Greg, 5,382,149, Cl. 425-237.000.

Surtech International Limited: *See*—
Potts, Michael, 5,382,436, Cl. 424-489.000.

Sussmann, Reinhold, to Tretorn AB. Stabilized honeycomb shoe sole, particularly for athletic shoes. 5,381,607, Cl. 36-28.000.

Sutcliffe, Brian L. Universal night splint. 5,382,225, Cl. 602-24.000.

Suzuki, Kenji, to Fuji Photo Film Co., Ltd. Photographic film analyzer with simulator and film inspecting method. 5,383,035, Cl. 358-500.000.

Suzuki, Kenji: *See*—
Kurihara, Makoto; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,382,380, Cl. 252-299.660.

Suzuki, Shinichiro: *See*—
Onagi, Nobuaki; Suzuki, Shinichiro; and Yoshikawa, Takamasa, 5,382,460, Cl. 428-64.000.

Suzuki, Takeshi: *See*—
Watanabe, Hideo; Takahashi, Shoji; Suzuki, Takeshi; and Oikawa, Masatoshi, 5,381,838, Cl. 141-198.000.

Suzuki, Toshiharu: *See*—
Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; Suzuki, Toshiharu; and Komiya, Iwao, 5,382,619, Cl. 524-437.000.

Suzuki, Toshio: *See*—
Masukawa, Tetsuo; Matsumoto, Masaaki; Saitoh, Yokuo; Kojima, Yasuo; Suzuki, Toshio; Umakoshi, Yukimori; and Morita, Kiyoji, 5,383,073, Cl. 360-104.000.

Swanson, Alka: *See*—
Downey, Stephen W.; Emerson, Adrian B.; Mujsce, Anthony M.; Muller, Amy J.; Reents, William D., Jr.; Sinclair, James D.; and Swanson, Alka, 5,382,794, Cl. 250-288.000.

Swanson, Donald K.: *See*—
Bruno, Salvatore A.; and Swanson, Donald K., 5,382,452, Cl. 427-215.000.

Swift, Allan W.; and Ruth, Donald A., to E.J. Brooks Company. Bag seal. 5,382,061, Cl. 292-311.000.

Swirbel, Thomas J.: *See*—
Arledge, John K.; Swirbel, Thomas J.; and Davis, James L., 5,382,471, Cl. 428-336.000.

Swisher, Paul L.: *See*—
Sciandra, Charles C.; and Swisher, Paul L., 5,382,028, Cl. 273-401.000.

Synthelabo: *See*—
Chekroun, Isaac; Ruiz-Montes, Jose; Bedoya-Zurita, Manuel; and Rossey, Guy, 5,382,672, Cl. 548-110.000.

Syntro Corporation: *See*—
Cochran, Mark D.; and Junker, David E., 5,382,425, Cl. 435-69.100.

Syvasive Technology, Inc.: *See*—
Fletcher, Henry H., 5,382,249, Cl. 606-79.000.

Szadkowski, Jan: *See*—
Smith, Robert H.; and Szadkowski, Jan, 5,382,044, Cl. 280-673.000.

Szameitat, Jurgen: *See*—
Bahrmann, Helmut; Greb, Wolfgang; Heymanns, Peter; Lappe, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,382,716, Cl. 568-883.000.

Szanya, Tibor; Hanak, Laszlo; Strbka, Gyongyi; Nagy, Edit; Melczer, Istvan; Deak, Gyorgy; Mako, Berta; Karczub, Anita; Balint, Janos; Radnai, Ferenc; Karaczony, Erno ; Hajdufi, Csaba; Keri, Vilmos; Marton, Gyula; Dencs, Judit; and Kelemen, Janos, to Biogal Gyogyszerugyar RT. Process for the purification of cyclosporin A. 5,382,655, Cl. 530-317.000.

Szarka, David D.; and Stepp, Lee W., to Halliburton Company. Coiled tubing operated full opening completion tool system. 5,381,862, Cl. 166-212.000.

Szczyrbowski, Joachim: *See*—
Hartig, Klaus; and Szczyrbowski, Joachim, 5,382,126, Cl. 414-217.000.

Szmidt, Robert A. K.: *See*—
Graham, Neil B.; Ross, Donald S.; Szmidt, Robert A. K.; and Kirkwood, Ralph C., 5,382,270, Cl. 47-58.000.

Szopinski, Ryszard; and Fragassi, Vincent, to Kamyr, Inc. Ozone mixing test apparatus. 5,382,326, Cl. 162-238.000.

Szymczak, Eugene B.: *See*—
Skowronski, Richard E.; Lantz, Kenneth F.; Leon, Tomas F.; Alexander, Donald J.; Kolomayets, George; Adams, Vincent C.; and Szymczak, Eugene B., 5,382,207, Cl. 482-54.000.

Ta, Bac: *See*—
Chabon, Michael W.; Harvey, Bruce J.; Lahnala, Thomas A.; Sailer, Hans J.; Ta, Bac; and Treusch, Christopher J., 5,381,965, Cl. 239-585.100.

Ta, Trang K., to International Business Machines Corporation. Data output latch control circuit and process for semiconductor memory system. 5,383,155, Cl. 365-191.000.

Tabata, Taro: *See*—
Ikeda, Hiroshi; Tabata, Taro; and Takasu, Yasuhito, 5,381,688, Cl. 73-105.000.

Tabota, Jun: *See*—
Morikawa, Atsushi; Inoue, Jiro; and Tabota, Jun, 5,382,864, Cl. 310-332.000.

Tac-Fast Systems SA: *See*—
Pacione, Joseph R., 5,382,462, Cl. 428-95.000.

Tacchetto, Maurizio: *See*—
Pozzobon, Alessandro; Foscaro, Giancarlo; Marongiu, Gianpaola; Tacchetto, Maurizio; and Bugliesi, Luca, 5,381,613, Cl. 36-117.000.

Tachikake, Shinji: *See*—
Itamoto, Takeshi; Nakao, Kenji; Tachikake, Shinji; and Sakamoto, Takanori, 5,383,131, Cl. 364-474.290.

Tafoya, Ed K.: *See*—
Olson, David P.; Tafoya, Ed K.; and Staab, Craig C., 5,381,585, Cl. 16-112.000.

Tago, Osamu: *See*—
Fuse, Takeshi; and Tago, Osamu, 5,383,230, Cl. 377-44.000.

Tahara, Kazuo: *See*—
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

Tahara, Masaaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, to Daidousanso Co., Ltd. Hard austenitic stainless steel screw and a method for manufacturing the same. 5,382,318, Cl. 156-656.000.

Tahara, Yoshifumi: *See*—
Ishikawa, Kenji; Komino, Mitsuaki; Mitui, Tadashi; Iwata, Teruo; Arai, Izumi; and Tahara, Yoshifumi, 5,382,311, Cl. 156-345.000.

Taikisha, Ltd.: *See*—
Morioka, Koji, 5,381,668, Cl. 62-94.000.

Takada, Jun; Nakajima, Akihiko; and Tawada, Yoshihisa, to Kanegafuchi Chemical Industry Co., Ltd. Photoconductive material. 5,382,787, Cl. 250-214.100.

Takahashi, Akio: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; Takahashi, Akio; and Matsudo, Nobuhiko, 5,382,997, Cl. 354-441.000.

Takahashi, Akira, to Fuji Jukogyo Kabushiki Kaisha. Rear wheel steering apparatus for four-wheel steering vehicle. 5,381,705, Cl. 74-498.000.

Takahashi, Akira: *See*—
Inui, Tetsuya; Takahashi, Akira; and Ohta, Kenji, 5,383,176, Cl. 369-275.400.

Takahashi, Hidetoshi: *See*—
Sato, Kunihiko; Morohashi, Kazuo; and Takahashi, Hidetoshi, 5,383,062, Cl. 359-894.000.

Takahashi, Hiroshi; Umezaki, Hiroshi; and Teshima, Yasushi, to Sumitomo Chemical Company, Limited. Translucent polycrystalline alumina and process for producing the same. 5,382,556, Cl. 501-153.000.

Takahashi, Hiroyuki, to NEC Corporation. ECL to CMOS level converter. 5,382,845, Cl. 326-66.000.

Takahashi, Hiroyuki: *See*—
Sato, Hiroaki; and Takahashi, Hiroyuki, 5,383,153, Cl. 365-155.000.

Takahashi, Kazuo: *See*—
Takahashi, Kiyoshi; and Takahashi, Kazuo, 5,382,128, Cl. 414-404.000.

Takahashi, Kiyoshi; and Takahashi, Kazuo. Wafer transfer device. 5,382,128, Cl. 414-404.000.

Takahashi, Nozomu, to Kabushiki Kaisha Toshiba. High contrast LED matrix. 5,382,811, Cl. 257-88.000.

Takahashi, Shoji: *See*—
Watanabe, Hideo; Takahashi, Shoji; Suzuki, Takeshi; and Oikawa, Masatoshi, 5,381,838, Cl. 141-198.000.

Takahashi, Toshiaki: *See*—
Kobayashi, Masaki; Takahashi, Toshiaki; Nagura, Masato; and Hara, Kazuhiko, 5,381,693, Cl. 73-614.000.

Takahashi, Toshinori: *See*—
Hiramitsu, Tetsushi; Takahashi, Toshinori; and Takahashi, Yuji, 5,382,049, Cl. 280-735.000.

Takahashi, Tsugio: *See*—
Etoh, Jun; Aoki, Masakazu; Horiguchi, Masashi; Ueda, Shigeki; Tanaka, Hitoshi; Kajigaya, Kazuhiko; Takahashi, Tsugio; and Kawamoto, Hiroshi, 5,383,080, Cl. 361-56.000.

Takahashi, Yasuhiko, to Nippon Steel Corporation. Image processor for an improved tone level expression. 5,383,033, Cl. 358-456.000.

Takahashi, Yuji: *See*—
Hiramitsu, Tetsushi; Takahasshi, Toshinori; and Takahasshi, Yuji, 5,382,049, Cl. 280-735.000.

Takahata, Naohiko: *See*—
Uomori, Kenya; Yamada, Mitsuho; Hongo, Hitoshi; Yoshimatsu, Hiroshi; Ueno, Keiichi; Murakami, Shinji; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,382,989, Cl. 351-209.000.

Takahira, Kenichi; and Matsubara, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Non-contact IC card. 5,382,778, Cl. 235-380.000.

Takai, Shigeharu, to Mitsubishi Denki Kabushiki Kaisha. Programmable controller and control method thereof. 5,383,117, Cl. 364-141.000.

Takano, Tsunesuke; and Sinzawa, Kouichi, to Daiichi Denso Buhin Co., Ltd. Push-button switches. 5,382,767, Cl. 200-531.000.

Takao, Hideo, to Seiko Epson Corporation. Portable information reproducing and voice amplifying apparatus. 5,383,079, Cl. 360-137.000.

Takaoka, Tetsurou: *See*—
Shimizu, Ryosuke; and Takaoka, Tetsurou, 5,383,068, Cl. 360-75.000.

Takasu, Yasuhito: *See*—
Ikeda, Hiroshi; Tabata, Taro; and Takasu, Yasuhito, 5,381,688, Cl. 73-105.000.

Takasu, Yoshio: *See*—
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 5,382,497, Cl. 430-269.000.

Takata, Kazutaka: *See*—
Okamoto, Yukimichi; Kikuchi, Masahiko; Takata, Kazutaka; and Ito, Hisayoshi, 5,382,092, Cl. 366-320.000.

Takata, Nobuo, to THK MENT Research Co., Ltd. Torque absorber. 5,381,879, Cl. 192-45.000.

Takatsuka, Takashi: *See*—
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,382,205, Cl. 477-43.000.

Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; Suzuki, Toshiharu; and Komiya, Iwao, to Takemoto Yushi Kabushiki Kaisha. Polymerizable compositions and in-mold cured products using same. 5,382,619, Cl. 524-437.000.

Takebe, Katuhiko: *See*—
Ichinose, Katsuki; and Takebe, Katuhiko, 5,381,696, Cl. 73-771.000.

Takeda, Masayoshi; Nagai, Takayuki; and Sahashi, Toshiyasu, to Nippondenso Co., Ltd. Suspension control system for automotive vehicle utilizing variable damping force shock absorber. 5,382,045, Cl. 280-707.000.

Takekawa, Wataru: *See*—
Tei, Chuwa; Hosokawa, Takashi; Kato, Tomoyuki; Takekawa, Wataru; Ito, Hisao; and Yoshikawa, Yoshihiro, 5,381,794, Cl. 128-662.030.

Takemi, Masayoshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor laser with light modulator. 5,383,216, Cl. 372-50.000.

Takemitsu, Koji; Akiyama, Kenyu; Ohashi, Hiroshi; and Ichikawa, Syoichi, to Tonen Corporation; and Toyota Jidosha Kabushiki Kaisha. Hydraulic fluids for automobile suspensions. 5,382,374, Cl. 252-73.000.

Takemoto, Takatoshi; and Yanagisawa, Koji, to Kabushiki Kaisha Ace Denken. Alarm system for amusement arcade. 5,382,940, Cl. 340-323.00R.

Takemoto Yushi Kabushiki Kaisha: *See*—
Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; Suzuki, Toshiharu; and Komiya, Iwao, 5,382,619, Cl. 524-437.000.

Takemura, Kazuyuki: *See*—
Koura, Hiroyuki; Sasaki, Yoshizumi; Wakamatsu, Kazuki; and Takemura, Kazuyuki, 5,381,827, Cl. 137-561.00A.

Takeuchi, Hiroshi: *See*—
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, 5,382,652, Cl. 528-308.600.

Takeuchi, Hitoshi: *See*—
Oda, Kyoji; Takeuchi, Hitoshi; Tsujii, Masao; and Ohba, Masahiro, 5,382,206, Cl. 477-108.000.

Takeuchi, Junji; and Koizumi, Junji, to Toyoda Gosei Co., Ltd. Glass fiber reinforced resin composition and wheel cap formed of same. 5,382,459, Cl. 428-36.400.

Takeuchi, Naotake: *See*—
Yoshita, Mitsuru; Ii, Kenichi; Kashima, Kazuhiro; Kanda, Eiichiro; Ohno, Takanori; and Takeuchi, Naotake, 5,382,349, Cl. 208-49.000.

Takeuchi, Shuji: *See*—
Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, 5,381,857, Cl. 164-466.000.

Takiguchi, Minoru: *See*—
Yoshimura, Masaji; Kanezaki, Kazuharu; Satoh, Takashi; Nakata, Tomoyuki; and Takiguchi, Minoru, 5,382,627, Cl. 525-132.000.

Takizawa, Tsuyoshi; Seki, Yasunari; Iwata, Yoichi; Sato, Toshihiko; and Nakayama, Takayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Catalyst deterioration-detecting system for internal combustion engines. 5,381,657, Cl. 60-276.000.

Tal, Rony: *See*—
Benziman, Moshe; and Tal, Rony, 5,382,656, Cl. 530-350.000.

Talbot, Michael W.: *See*—
Kincaid, James G.; and Talbot, Michael W., 5,382,443, Cl. 426-620.000.

Tam, Kwok C., to General Electric Company. Method and apparatus for acquiring complete radon data for exactly reconstructing a three dimensional computerized tomography image of a portion of an object irradiated by a cone beam source. 5,383,119, Cl. 364-413.190.

Tamarack Products, Inc.: *See*—
Steidinger, Donald J., 5,381,947, Cl. 229-71.000.

Tambosso, Tiziana: *See*—
Decao, Marco; Pianciola, Aurelio; and Tambosso, Tiziana, 5,382,275, Cl. 65-407.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Odawara, Akio; Sasaki, Yasuhiko; Murata, Sakae; and Narita, Hiroshi, 5,382,577, Cl. 514-211.000.

Tanaka, Hisakatsu: *See*—
Horiguchi, Toshio; and Tanaka, Hisakatsu, 5,383,170, Cl. 369-44.280.

Tanaka, Hitoshi: *See*—
Etoh, Jun; Aoki, Masakazu; Horiguchi, Masashi; Ueda, Shigeki; Tanaka, Hitoshi; Kajigaya, Kazuhiko; Takahashi, Tsugio; and Kawamoto, Hiroshi, 5,383,080, Cl. 361-56.000.

Tanaka, Kenichi: *See*—
Onishi, Shigeo; Tanaka, Kenichi; and Sakiyama, Keizo, 5,383,151, Cl. 365-149.000.

Tanaka, Koji: *See*—
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Mori, Shinichiro; Tanaka, Toshio; Tanaka, Koji; and Ono, Hiroshi, 5,382,624, Cl. 525-10.000.

Tanaka, Mutuo. Remote monitoring unit. 5,382,943, Cl. 340-539.000.

Tanaka, Saburo; Matsuura, Takashi; and Itozaki, Hideo, to Sumitomo Electric Industries, Ltd. Josephson junction device formed of oxide superconductor and process for preparing the same. 5,382,566, Cl. 505-329.000.

Tanaka, Satoru: *See*—
Kawamoto, Mutsumi; Tanaka, Satoru; and Yamashita, Mitsugi, 5,382,854, Cl. 310-67.00R.

Tanaka, Seiya, to Aisin Seiki Kabushiki Kaisha. Fan coupling for an engine of a vehicle. 5,381,761, Cl. 123-41.120.

Tanaka, Tadashi; Sakamoto, Masaaki; Kato, Tohru; and Sato, Yoshiaki, to Daido Metal Company Ltd. Oldham ring of scroll type compressor. 5,382,144, Cl. 418-55.300.

Tanaka, Takanori, to NEC Corporation. Method for driving two-dimensional CCD imaging device. 5,382,978, Cl. 348-312.000.

Tanaka, Toshio: *See*—
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Mori, Shinichiro; Tanaka, Toshio; Tanaka, Koji; and Ono, Hiroshi, 5,382,624, Cl. 525-10.000.

Tanaka, Tsutomu, to Sanyo Electric Co., Ltd. Refrigerating system with compressor cooled by liquid refrigerant. 5,381,665, Cl. 62-197.000.

Tanaka, Yasuo: *See*—
Ando, Kazuhiro; Kawakami, Takamasa; Shouji, Yasuhiro; Tanaka, Yasuo; Kanaoka, Takeo; and Sayama, Norio, 5,382,333, Cl. 204-130.000.

Tanaka, Yoshiya. Protective jacket having a magnifying lens. 5,382,053, Cl. 281-42.000.

Tang, Chung L.: *See*—
Pelouch, Wayne S.; Powers, Peter E.; and Tang, Chung L., 5,383,198, Cl. 372-18.000.

Tani, Tatsuo, to Ricoh Company, Ltd. Recording apparatus with a folder/stapler device. 5,382,011, Cl. 270-37.000.

Taniguchi, Kozo: *See*—
Shibata, Takao; Taniguchi, Kozo; Noguchi, Tashio; and Tsuchiya, Koji, 5,381,676, Cl. 66-149.00R.

Taniguchi, Tetsuo: *See*—
Okamura, Hisatake; Kasahara, Masahiro; Tsuru, Teruhisa; and Taniguchi, Tetsuo, 5,382,927, Cl. 333-175.000.

Taniguchi, Yasushi: *See*—
Yamamoto, Kiyoshi; Hirabayashi, Keiji; Kurihara, Noriko; Taniguchi, Yasushi; and Ikoma, Keiko, 5,382,274, Cl. 65-26.000.

Taniguchi, Yo; and Yamamoto, Etsuji, to Hitachi, Ltd. Method for eliminating motional artifacts in magnetic resonance imaging. 5,382,902, Cl. 324-309.000.

Tanner, John C., III: *See*—
Choudhury, Hrishikesh; Julian, Joseph F.; and Tanner, John C., III, 5,382,241, Cl. 604-192.000.

Tanner, Stephen F.; and Bollas, Christopher J., to Escon Safety Products. Mobile emergency eyewash and body splash apparatus. 5,381,567, Cl. 4-620.000.

Taplast SRL: *See*—
Santagiuliana, Evans, 5,381,917, Cl. 220-219.000.

Tarantino, E. Rocco: *See*—
Weinberger, Scot R.; Egan, Robert W.; Hoppe, Thomas W.; Gassmann, Ernst; Schar, Martin M.; Bornsen, Klaus O.; and Tarantino, E. Rocco, 5,382,793, Cl. 250-288.000.

Target Therapeutics, Inc.: *See*—
Phelps, James J.; and Van, Nga T., 5,382,259, Cl. 606-151.000.

Tarn, Terry: *See*—
Ozimek, Edward J.; and Tarn, Terry, 5,382,310, Cl. 156-275.500.

Tarng, Min M. In-line roller blade figure skate. 5,382,052, Cl. 280-844.000.

Tarpening, Steve: *See*—
DeLaRama, Alan; Dial, Larry A.; Harp, Richard J.; Hursman, Thomas L.; Soria, Alfred S.; Serra, R. J.; and Tarpening, Steve, 5,381,782, Cl. 128-4.000.

Tasaka, Hitoshi: *See*—
Nishigaki, Kazuhiro; and Tasaka, Hitoshi, 5,381,769, Cl. 123-399.000.

Tasset, Emmett L.: *See*—
Walters, Marlin E.; Richey, W. Frank; and Tasset, Emmett L., 5,382,710, Cl. 568-720.000.

Tatam, Ralph P.: *See*—
Culverhouse, David; Farahi, Faramarz; Jackson, David A.; Pannell, Christopher N.; and Tatam, Ralph P., 5,383,207, Cl. 372-28.000.

Tateishi, Hiroomi, to Fujitsu Limited. Packet switching testing method and apparatus. 5,383,177, Cl. 370-15.000.

Tateno, Chikara R. Apparatus for the preparation of sushi products. 5,381,728, Cl. 99-450.100.

Tatesaka, Hiroyuki; and Moritsu, Takanao, to Sigma, Incorporated. Horse racing game having rotating arm and tethered members. 5,382,021, Cl. 273-86.00R.

Taus, Alfred: *See*—
Nendzig, Gerhard; and Taus, Alfred, 5,381,818, Cl. 137-242.000.

Tauschwitz, Andreas: *See*—
Boggasch, Ekkehard; and Tauschwitz, Andreas, 5,382,866, Cl. 313-231.310.

Tawada, Yoshihisa: *See*—
Takada, Jun; Nakajima, Akihiko; and Tawada, Yoshihisa, 5,382,787, Cl. 250-214.100.

Taylor, Michael D.: *See*—
Cody, Wayne L.; DePue, Patricia; Doherty, Annette M.; He, John X.; and Taylor, Michael D., 5,382,569, Cl. 514-17.000.

Taylor, Ronald K.; and Peek, Joel A., to University of Tennessee Research Corporation, The. TcpG gene of vibrio cholerae. 5,382,660, Cl. 536-23.200.

Taylor, Tommy G.; Mansell, J. Douglas; Shamburger, John P.; and Woodyear, Mark E., to PPG Industries, Inc. Concurrent production of trichloroethane isomers. 5,382,727, Cl. 570-253.000.

TDK Corporation: *See*—
Hashizume, Kenji; and Okamura, Masatoshi, 5,381,893, Cl. 206-232.000.
Hayashi, Katuhiko; Ikeda, Hiroshi; and Aotani, Akira, 5,382,925, Cl. 333-112.000.
Saitoh, Yutaka; Stro, Shinichirre; and Kimoshita, Yukiharu, 5,382,937, Cl. 336-178.000.
Terunuma, Kouichi; and Miyazaki, Masahiro, 5,382,305, Cl. 148-306.000.

Teague, Jim C., to Hydro-Chem Systems, Inc. Remote controlled spraying device. 5,381,962, Cl. 239-526.000.

Teal, Richard D.: *See*—
Seegert, Brian D.; Sebben, Daniel A.; and Teal, Richard D., 5,381,648, Cl. 56-17.100.

Technogenetics S.r.l.: *See*—
Romelli, Pier B.; Chiodoni, Giovanni; and Ringhini, Roberto, 5,382,530, Cl. 436-500.000.

Technolizenz Establishment: *See*—
Lohausen, Viktor, 5,381,992, Cl. 248-220.200.

Tei, Chuwa; Hosokawa, Takashi; Kato, Tomoyuki; Takekawa, Wataru; Ito, Hisao; and Yoshikawa, Yoshihiro, to Aloka Co., Ltd.; and Tei, Chuwa. Ultrasonic probe apparatus. 5,381,794, Cl. 128-662.030.

Teicher, Mordechai; and Bar-Yona, Itzhak, to Log-Plastic Products. Child-resistant container closure. 5,381,911, Cl. 215-216.000.

Tektronix, Inc.: *See*—
Knierim, Daniel G., 5,382,955, Cl. 341-64.000.

Telang, Anil M., to Baxter International Inc. Stand alone control module. 5,382,244, Cl. 604-319.000.

Teleflex Incorporated: *See*—
King, Michael G., 5,381,834, Cl. 138-125.000.
Yanusko, David P.; and Rocchino, Frank J., Jr., 5,381,706, Cl. 74-505.000.

Tenebraex Corporation: *See*—
Jones, Peter W. J., 5,383,102, Cl. 362-61.000.

Tenma, Tadashi: *See*—
Homma, Koichi; Kagami, Akira; Tenma, Tadashi; Akashi, Kichizo; Kusuzaki, Tetsuo; Nishimoto, Tatsumi; and Oyama, Hiroaki, 5,383,111, Cl. 364-401.000.

Tennant, William E.: *See*—
Kozlowski, Lester J.; Tennant, William E.; and Kleinhans, William A., 5,382,977, Cl. 348-300.000.

Terada, Kazuhiro: *See*—
Kiyoura, Tadamitsu; and Terada, Kazuhiro, 5,382,696, Cl. 564-479.000.

Terakado, Tomoji: *See*—
Nakamura, Takahiro; and Terakado, Tomoji, 5,382,543, Cl. 437-129.000.

Terasawa, Norio: *See*—
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,382,423, Cl. 422-198.000.

Terashima, Toshinori: *See*—
Minakami, Ko; Terashima, Toshinori; Maeda, Toshio; Sasaki, Tomiya; Hisano, Katsumi; Iwasaki, Hideo; and Kawano, Koichiro, 5,381,859, Cl. 165-80.300.

Terhardt, Josef, to Verfahrenstechnik Hubers GmbH. Apparatus and method for supplying viscous blends that cure. 5,382,394, Cl. 264-40.700.

Terumo Kabushiki Kaisha: *See*—
Komatsu, Kiyoshi; and Kudo, Takeshi, 5,382,823, Cl. 257-419.000.

Terunuma, Kouichi; and Miyazaki, Masahiro, to TDK Corporation. Soft magnetic thin film. 5,382,305, Cl. 148-306.000.

Teruya, Alan T.: *See*—
Elmer, John W.; Teruya, Alan T.; and O'Brien, Dennis W., 5,382,895, Cl. 324-71.300.

Teshima, Akitomo: *See*—
Kawarada, Motonobu; Kurihara, Kazuaki; Sasaki, Ken-ichi; Teshima, Akitomo; and Koshino, Nagaaki, 5,382,293, Cl. 118-723.0DC.

Teshima, Yasushi: *See*—
Takahashi, Hiroshi; Umezaki, Hiroshi; and Teshima, Yasushi, 5,382,556, Cl. 501-153.000.

Testa, James; Bechtolsheim, Andreas; Frank, Edward; and Storm, Shawn, to Sun Microsystems, Inc. Single in-line memory module. 5,383,148, Cl. 365-52.000.

Tetra Laval Holdings & Finance S.A.: *See*—
Mock, Elmar, 5,381,935, Cl. 222-541.000.

Texaco Inc.: *See*—
Hussami, Imran S., 5,382,884, Cl. 318-567.000.
Wehner, Scott C., 5,381,863, Cl. 166-263.000.

Texas Instruments Incorporated: *See*—
Gale, Richard O., Jr., 5,382,961, Cl. 345-108.000.
Griffin, Gene A., 5,381,998, Cl. 251-117.000.
Malhi, Satwinder; and Ng, Wai T., 5,382,535, Cl. 437-40.000.
Malhi, Satwinder; Smayling, Michael C.; and Keller, Stephen A., 5,382,536, Cl. 437-41.000.

Texo AB: *See*—
Norlin, Goran, 5,381,835, Cl. 139-97.000.

Thakur, Randhir P. S.: *See*—
Ahmad, Aftab; and Thakur, Randhir P. S., 5,382,533, Cl. 437-24.000.

Thaler, Markus; and Schmid, Peter, to Feller AG. Remote-controlled operation system for electrical consumers. 5,382,947, Cl. 340-825.220.

Thayer, Bruce E.; Mordenga, Samuel P.; and Walcott, Billy D., to Xerox Corporation. High velocity air and stationary disturber cleaner. 5,381,583, Cl. 15-308.000.

Therasse, Yves; and Guebels, Pierre-Paul F. M. M., to Alcatel N.V. Resequencing device for a node of a cell switching system. 5,383,182, Cl. 370-60.000.

Thermal Dynamics, Inc.: *See*—
Simonds, Edward L., 5,381,760, Cl. 123-26.000.

Thermocraft Industries, Inc.: *See*—
Reyhan, Frederick B.; Kermoian, Gary H.; Keal, Richard J.; and Weise, Gary K., 5,382,752, Cl. 174-50.000.

Thibos, Patricia A.: *See*—
Little, Jack C.; Kidisti, Mariam G.; Thibos, Patricia A.; and Thompson, Susan D., 5,382,674, Cl. 548-263.800.

Thiokol Corporation: *See*—
Mower, Glenn L., 5,382,265, Cl. 23-302.00R.

THK MENT Research Co., Ltd.: *See*—
Takata, Nobuo, 5,381,879, Cl. 192-45.000.

Thogho, Makoto; Hattori, Tamotsu; Okazaki, Noboru; Akamatus, Kozaburo; Hayashi, Tomoyuki; and Kusumi, Tomohiko, to Tokyo Metropolitan; Tokyo Metropolitan Sewerage Service Corp.; and Japan Organo Co., Ltd. Method and apparatus for controlling sludge dewatering. 5,382,356, Cl. 210-96.100.

Thom, Kelsey C., Jr., to Roskamp Champion. Round expanding modular steam chamber. 5,381,731, Cl. 99-516.000.

Thomas, David R.: *See*—
Pasch, Ricky C.; and Thomas, David R., 5,383,103, Cl. 362-102.000.

Thomas, Edward J.: *See*—
Secen, Michael M.; Thomas, Edward J.; and El-Hamamsy, Sayed-Amr A., 5,382,878, Cl. 315-248.000.

Thomas Jefferson University: *See*—
Bonn, Joseph, 5,382,230, Cl. 604-32.000.

Thomas, Patrick A., to Minnesota Mining and Manufacturing Company. Method of selectively applying a coating to a bilevel substrate. 5,382,317, Cl. 156-654.000.

Thomas, Tony. Photovoltaic electricfield gas recovery method. 5,382,338, Cl. 204-164.000.

Thompson, Danny R.: *See*—
Lau, Philip T. S.; Thompson, Danny R.; and Cowan, Stanley W., 5,382,502, Cl. 430-552.000.

Thompson, David M.; Panepinto, Carol J.; Savage, Edward C.; and Magde, John M., Jr., to Xerox Corporation. Xerographic process control using periodic electrostatic set up to automatically adjust charging potential. 5,383,005, Cl. 355-208.000.

Thompson, Hugh A.; Young, Gerald A.; Osborn, Thomas W., III; Chappell, Charles W.; Johnson, Theresa L.; Hammons, John L.; Lavash, Bruce W.; Horney, James C.; and Hines, Lee M., to Procter & Gamble Company, The. Absorbent articles, especially catamenials, having improved fluid directionality. 5,382,245, Cl. 604-367.000.

Thompson, Kenneth J.; Everhart, John R.; Rosenquist, Joel C.; and Foster, Wayne G. Pocket-folding device. 5,381,937, Cl. 223-37.000.

Thompson, Leif A., to TRW Inc. Gas generator for vehicle occupant restraint. 5,382,050, Cl. 280-741.000.

Thompson, Susan D.: *See*—
Little, Jack C.; Kidisti, Mariam G.; Thibos, Patricia A.; and Thompson, Susan D., 5,382,674, Cl. 548-263.800.

Thoms, Roland H., to BMC Industries, Inc. Stackable aperture masks. 5,382,870, Cl. 313-402.000.

Thomsen, John E. Golf ball stacking and carrying device. 5,381,895, Cl. 206-315.900.

Thomson-CSF: *See*—
Warnan, Francois, 5,381,909, Cl. 212-191.000.

Thomson, Robert; Essadiqi, Flhachmi; and Barry, James, to Canada, Her Majesty in right of, as represented by the Minister of Energy, Mines and Resoruces. Pneumatic flow control of liquid metals. 5,381,854, Cl. 164-453.000.

Thomson Tubes & Displays, S.A.: *See*—
Perreaut, Jean M.; and Roussel, Bruno F., 5,382,888, Cl. 315-382.000.

Thone, Bernd; Schmidt, Gerhard; and Herrmann, Erhard, to Metallgesellschaft Aktiengesellschaft. Process for removing pollutants from combustion exhaust gases. 5,382,418, Cl. 423-239.100.

Thorne, John. Feeding devices for stock. 5,381,759, Cl. 119-60.000.

Thorup, James A., to Coherent Inc. Dual-action pneumo-hydraulic crimping apparatus. 5,381,686, Cl. 72-453.060.

Threewitt, Norman B., to Music Semiconductors, Inc. Memory with CAM and RAM partitions. 5,383,146, Cl. 365-49.000.

Thurell, Peter, to Item Development AB. Dispenser for medical preparations and insert therefor. 5,381,904, Cl. 206-538.000.

Tijunelis, Donatas: *See*—
Juhl, Roger L.; Lustig, Stanley; and Tijunelis, Donatas, 5,382,391, Cl. 264-22.000.

Tilak, Anup: *See*—
Leupold, Herbert A.; and Tilak, Anup, 5,382,936, Cl. 335-306.000.

Timm, Heinrich: *See*—
Enning, Norbert; and Timm, Heinrich, 5,382,071, Cl. 296-203.000.

Tippets, Clyde A. Vehicle cargo carrier. 5,381,939, Cl. 224-42.070.

Tippmann, Joseph R.; and Tippmann, Vincent P. Apparatus for cooling food by conduction. 5,381,670, Cl. 62-330.000.

Tippmann, Vincent P.: *See*—
Tippmann, Joseph R.; and Tippmann, Vincent P., 5,381,670, Cl. 62-330.000.

Tirado, John: *See*—
Ortiz, Jose A., 5,382,181, Cl. 439-628.000.

Tisdale, David G.: *See*—
O'Connell, Gary J.; and Tisdale, David G., 5,382,278, Cl. 75-626.000.

Toda, Atsushi: *See*—
Sugasawa, Masatoshi; Toda, Atsushi; Sasaki, Masaru; Yamashita, Masayasu; Matsumoto, Akihiro; Ozaki, Akiyoshi; and Oda, Goichi, 5,382,876, Cl. 315-82.000.

Togai, Kazuhide; and Ueda, Katsunori, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio control apparatus of an internal combustion engine. 5,381,768, Cl. 123-339.000.

Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Control device for an internal combustion engine and a continuous variable transmission. 5,382,205, Cl. 477-43.000.

Tohda, Takao: *See*—
Okajima, Michio; Kusumoto, Osamu; Tohda, Takao; Yokoyama, Kazuo; and Shibata, Motoshi, 5,381,753, Cl. 117-12.000.

Tokizaki, Hisashi, to Sanyo Electric Co., Ltd. Temperature control apparatus. 5,381,954, Cl. 236-78.00D.

Tokyo Electron Kabushiki Kaisha: *See*—
Kamikawa, Yuji, 5,381,808, Cl. 134-61.000.

Tokyo Electron Limited: *See*—
Asakawa, Teruo, 5,382,803, Cl. 250-492.210.
Ishikawa, Kenji; Komino, Mitsuaki; Mitui, Tadashi; Iwata, Teruo; Arai, Izumi; and Tahara, Yoshifumi, 5,382,311, Cl. 156-345.000.

Tokyo Electron Saga Kabushiki Kaisha: *See*—
Kamikawa, Yuji, 5,381,808, Cl. 134-61.000.

Tokyo Electron Yamanashi Limited: *See*—
Ishikawa, Kenji; Komino, Mitsuaki; Mitui, Tadashi; Iwata, Teruo; Arai, Izumi; and Tahara, Yoshifumi, 5,382,311, Cl. 156-345.000.

Tokyo Gas Co., Ltd.: *See*—
Omori, Toshiaki; Nishiyama, Noriyuki; and Inoue, Naoyuki, 5,381,674, Cl. 62-497.000.

Tokyo Metropolitan: *See*—
Thogho, Makoto; Hattori, Tamotsu; Okazaki, Noboru; Akamatus, Kozaburo; Hayashi, Tomoyuki; and Kusumi, Tomohiko, 5,382,356, Cl. 210-96.100.

Tokyo Metropolitan Sewerage Service Corp.: *See*—
Thogho, Makoto; Hattori, Tamotsu; Okazaki, Noboru; Akamatus, Kozaburo; Hayashi, Tomoyuki; and Kusumi, Tomohiko, 5,382,356, Cl. 210-96.100.

Tolles, Thomas W.: *See*—
Masia, Michael; Reed, James P.; Wasley, Robert S.; Reeder, Larry R.; Brooks, Peter L.; Tolles, Thomas W.; Frank, Louis M.; Bonomi, Mauro; Stewart, Ray F.; Lahlough, John; and Welsh, Laurence, 5,382,909, Cl. 324-522.000.

Tomellini, Dalita R., to Playskool, Inc. Audio playback device. 5,382,188, Cl. 446-397.000.

Tomer, John D.: *See*—
Shutske, Gregory M.; Kapples, Kevin J.; and Tomer, John D., 5,382,594, Cl. 514-297.000.

Tomikawa, Tadashi: *See*—
Nishibayashi, Yoshiki; Tomikawa, Tadashi; and Shikata, Shinichi, 5,382,809, Cl. 257-77.000.

Tomimoto, Tetsuo: *See*—
Arii, Kouji; Maeda, Testsuo; Tomimoto, Tetsuo; and Akiyama, Ryo, 5,382,776, Cl. 235-375.000.

Tominaga, Hideki: *See*—
Matsubara, Toshio; Kato, Haruyuki; Ota, Yuji; and Tominaga, Hideki, 5,381,776, Cl. 123-681.000.

Tomiyama, Yoshiro: *See*—
Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, 5,381,857, Cl. 164-466.000.

Tomka, Ivan: *See*—
Stepto, Robert F. T.; Tomka, Ivan; Dobler, Beat; and Pyrah, Keith, 5,382,611, Cl. 524-47.000.

Tomofuji, Hiroaki; Sugata, Akihiko; and Nishimoto, Hiroshi, to Fujitsu Limited. Supervisory and control signal transmitting system for use in optically amplifying repeaters system. 5,383,046, Cl. 359-176.000.

Tomokazu, Ise: *See*—
Yuji, Marou; Yutaka, Akagi; Tomokazu, Ise; and Masao, Urayama, 5,382,867, Cl. 313-309.000.

Tonel, Valerio; and Sartor, Claudio, to Nordica S.p.A. Footgear with replaceable flap elements. 5,381,611, Cl. 36-117.000.

Tonen Corporation: *See*—
Koyama, Naomi; Usui, Miyuki; Furuhashi, Hiroyuki; and Ueki, Satoshi, 5,382,634, Cl. 525-286.000.
Takemitsu, Koji; Akiyama, Kenyu; Ohashi, Hiroshi; and Ichikawa, Syoichi, 5,382,374, Cl. 252-73.000.

Tonishi, Masakazu: *See*—
Sugita, Shuichi; Ohya, Hidenobu; and Tonishi, Masakazu, 5,382,500, Cl. 430-505.000.

Toops, Terry R.: *See*—
Solove, Jeffrey A.; Buchanan, Thomas D.; Irvin, Richard L.; and Toops, Terry R., 5,382,202, Cl. 475-124.000.

Top Fortune Ltd.: *See*—
Cheng, Ying-Hsiung, 5,381,570, Cl. 5-99.100.

Topical Testing, Inc.: *See*—
Tuckett, Robert P.; Horch, Kenneth W.; Fisher, John H.; and Evans, Barry L., 5,381,805, Cl. 128-739.000.

Tosaka, Yasuo; and Sasagawa, Masayuki, to Konica Corporation. Silver halide color photographic light sensitive material and the image-forming process thereof. 5,382,506, Cl. 430-358.000.

Tosoh Corporation: *See*—
Nakano, Masao; Eshita, Akinori; and Sekizawa, Kazuhiko, 5,382,416, Cl. 423-213.200.

Total Raffinage Distribution S.A.: *See*—
Ansquer, Patrick; and Orgebin, Jean-Michel, 5,382,354, Cl. 208-207.000.
Castel, Claude, 5,382,618, Cl. 524-423.000.

Totaro, Mary: *See*—
Rupp, David C.; Anger, Claude; Kapadia, Saroj; and Totaro, Mary, 5,382,599, Cl. 514-547.000.

Townes, Mark G.: *See*—
Shofner, Frederick M.; Baldwin, Joseph C.; Williams, Gordon F.; and Townes, Mark G., 5,383,135, Cl. 364-552.000.

TOX-Pressotechnik GmbH: *See*—
Malina, Viktor, 5,381,661, Cl. 60-560.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, 5,382,652, Cl. 528-308.600.
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Mori, Shinichiro; Tanaka, Toshio; Tanaka, Koji; and Ono, Hiroshi, 5,382,624, Cl. 525-10.000.

Toyo Seikan Kaisha, Ltd.: *See*—
Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, 5,381,914, Cl. 215-341.000.

Toyoda Gosei Co., Ltd.: *See*—
Hiramitsu, Tetsuhi; Takahashi, Toshinori; and Takahashi, Yuji, 5,382,049, Cl. 280-735.000.
Mitsui, Kenichi, 5,381,832, Cl. 137-886.000.
Takeuchi, Junji; and Koizumi, Junji, 5,382,459, Cl. 428-36.400.

Toyoda, Masaaki: *See*—
Ochi, Hideo; Igari, Akihide; Toyoda, Masaaki; and Nakagawa, Zenbee, 5,382,385, Cl. 252-519.000.

Toyoshima, Hisanori: *See*—
Jyoraku, Fumio; Suka, Hisao; Ishii, Yoshitaro; Toyoshima, Hisanori; Kawamata, Mitsuhisa; Koharagi, Haruo; Tahara, Kazuo; Endo, Tunehiro; Miyashita, Kunio; Ajima, Toshiyuki; Abe, Takeshi; and Hosokawa, Atusi, 5,381,584, Cl. 15-319.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Meguro, Taiichi, 5,381,658, Cl. 60-276.000.
Takemitsu, Koji; Akiyama, Kenyu; Ohashi, Hiroshi; and Ichikawa, Syoichi, 5,382,374, Cl. 252-73.000.

Tozawa, Hirokazu; Takeuchi, Shuji; Sorimachi, Kenichi; Fujii, Tetsuya; Yasukawa, Noboru; Moriwaki, Saburo; Sakurai, Mitsuru; Aratani, Makoto; Tomiyama, Yoshiro; and Shiraishi, Takeshi, to Kawasaki Steel Corporation. Apparatus and method for continuous casting. 5,381,857, Cl. 164-466.000.

Trabucco, Robert T., to LSI Logic Corporation. Casting of raised bump contacts on a substrate. 5,381,848, Cl. 164-102.000.

Trail-Buster Dozer, Inc.: *See*—
Eberle, Ronald D., 5,381,647, Cl. 56-15.800.

Traini, Patrick J.: *See*—
Failla, Stephen J.; Traini, Patrick J.; and Rarey, Charles M., 5,382,252, Cl. 606-119.000.

TranSwitch Corporation: *See*—
Morton, Steven G., 5,383,196, Cl. 371-27.000.

Travis, Benjamin D.: *See*—
Hill, Jerry L.; Travis, Benjamin D.; Mahmoud, Mohamed I.; Brooks, James R.; Schenz, Timothy W.; and Dewille, Normanella T., 5,382,439, Cl. 426-73.000.

Treder, Ralph A.: *See*—
Amir, Israel; and Treder, Ralph A., 5,383,016, Cl. 356-150.000.

Tregre, Euclid L. Noise-making slip weight device for fishing. 5,381,622, Cl. 43-42.310.

Tremont, Samuel J.: *See*—
Coran, Aubert Y.; Tremont, Samuel J.; Davis, Leonard H.; Ignatz-Hoover, Frederick; and McGrath, Martin P., 5,382,629, Cl. 525-194.000.

Trenary, Bryant. Rail truck suspended car transit vehicles. 5,381,737, Cl. 105-34.100.

Tretorn AB: *See*—
Hieblinger, Rudolf, 5,381,609, Cl. 36-50.100.
Sussmann, Reinhold, 5,381,607, Cl. 36-28.000.

Treusch, Christopher J.: *See*—
Chabon, Michael W.; Harvey, Bruce J.; Lahnala, Thomas A.; Sailer, Hans J.; Ta, Bac; and Treusch, Christopher J., 5,381,965, Cl. 239-585.100.

Trevi S.p.A.: *See*—
Trevisani, Davide, 5,382,114, Cl. 405-140.000.

Trevisani, Davide, to Trevi S.p.A. Tunnel excavation apparatus. 5,382,114, Cl. 405-140.000.

Triangle Brass Manufacturing Company: *See*—
Simon, Martin S.; and Simon, Ira J., 5,381,627, Cl. 49-70.000.

Triumph*LOR Inc: *See*—
Schock, William H., 5,381,868, Cl. 175-346.000.

Troian, Pierre: *See*—
Saini, Jasjit S.; and Troian, Pierre, 5,383,179, Cl. 370-54.000.

Trompeter Electronics, Inc.: *See*—
Brown, Gregory S.; Quach, Frank; and Silva, Jose, 5,382,173, Cl. 439-188.000.

Trout, Robert E. Can crusher with metal-plastic separation capability. 5,381,732, Cl. 100-49.000.

Truemner, Dale; and Booms, Richard. Apparatus for perforating corrugated tubing. 5,381,711, Cl. 83-318.000.

Trull, Michael P.: *See*—
Hutchinson, Richard D., Jr.; Self, Daines M., Jr.; and Trull, Michael P., 5,382,177, Cl. 439-358.000.

Trumbull, Steven E.: *See*—
Mulaskey, Bernard F.; Hise, Robert L.; Trumbull, Steven E.; Cannella, William J.; and Ianes, Robert A., 5,382,353, Cl. 208-131.000.

Truong, Tri T.: *See*—
Orzel, Daniel V.; Zimlich, Glenn A.; and Truong, Tri T., 5,381,656, Cl. 60-274.000.

TRW Inc.: *See*—
Cuevas, Jess A., 5,382,046, Cl. 280-728.00A.
Kei Lau, James C.; Malmgren, Richard P.; and Roush, Michael, 5,382,759, Cl. 174-264.000.
Stokes, Robert B.; Garber, Edward M.; Crawford, Jay D.; and Cushman, Drew, 5,382,930, Cl. 333-191.000.
Thompson, Leif A., 5,382,050, Cl. 280-741.000.

Tso, Robert: *See*—
Burns, Lawrence M.; and Tso, Robert, 5,382,848, Cl. 327-18.000.

Tsubakimoto Chain Co.: *See*—
Hirao, Toru; and Sato, Hideki, 5,381,885, Cl. 198-465.400.

Tsuchiya, Koji: *See*—
Shibata, Takao; Taniguchi, Kozo; Noguchi, Tashio; and Tsuchiya, Koji, 5,381,676, Cl. 66-149.00R.

Tsuchiya, Shigeki: *See*—
Nakamura, Hirotaka; Nishijoh, Astushi; Tsuchiya, Shigeki; and Hirobe, Yoshiaki, 5,382,933, Cl. 335-278.000.

Tsugita, Makoto: *See*—
Soeda, Haruo; and Tsugita, Makoto, 5,382,974, Cl. 348-221.000.

Tsuji, Sadafusa: *See*—
Kawamura, Kunio; Izumi, Shuji; Okada, Hiroyuki; Chikasaki, Masaaki; Iwata, Michihiro; and Tsuji, Sadafusa, 5,382,992, Cl. 354-21.000.

Tsujihara, Susumu; and Sakanishi, Yasuaki, to Matsushita Electric Industrial Co., Ltd. Digital convergence correction apparatus for color television receiver with cursor on screen. 5,382,984, Cl. 348-746.000.

Tsujihashi, Yoshiki: *See*—
Shinohara, Hirofumi; Tsujihashi, Yoshiki; and Matsumoto, Hisashi, 5,383,132, Cl. 364-491.000.

Tsujii, Masao: *See*—
Oda, Kyoji; Takeuchi, Hitoshi; Tsujii, Masao; and Ohba, Masahiro, 5,382,206, Cl. 477-108.000.

Tsukinari, Keiichi: *See*—
Shea, David W.; Howard, Robert A.; Riccomini, Robert A.; Young, Steven J.; Cox, Robert E. L.; Le Bars, Philippe; and Tsukinari, Keiichi, 5,382,182, Cl. 439-676.000.

Tsukioka, Daisuke: *See*—
Soma, Gen-Ichiro; Yoshimura, Jun; Tsukioka, Daisuke; Mizuno, Den'ichi; and Oshima, Haruyuki, 5,382,430, Cl. 424-195.100.

Tsukishima Kikai Co., Ltd.: *See*—
Kurosu, Hidetsugu; and Hosono, Mituo, 5,381,837, Cl. 141-103.000.

Tsunoda, Hajime: *See*—
Okano, Kazuo; Miyazawa, Shuhei; Clark, Richard S. J.; Abe, Shinya; Kawahara, Tetsuya; Shimomura, Naoyuki; Asano, Osamu; Yoshimura, Hiroyuki; Miyamoto, Mitsuaki; Sakuma, Yoshimori; Muramoto, Kenzo; Obaishi, Hiroshi; Harada, Kouichi; Tsunoda, Hajime; Katayama, Satoshi; Yamada, Kouji; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,382,579, Cl. 514-219.000.

Tsuru, Teruhisa: *See*—
Okamura, Hisatake; Kasahara, Masahiro; Tsuru, Teruhisa; and Taniguchi, Tetsuo, 5,382,927, Cl. 333-175.000.

Tsuruta, Matsuhisa; Sakakibara, Ryuichi; and Katagiri, Masayoshi, to Aisin Seiki Kabushiki Kaisha. Disc brake assembly. 5,381,875, Cl. 188-73.380.

Tsusaka, Shusaku, to Brother Kogyo Kabushiki Kaisha. Developing device of electrostatic apparatus having separate sealed initial developer and magnetic toner storage spaces. 5,383,009, Cl. 355-260.000.

Tsutsui, Tetsuo: *See*—
Saito, Shogo; Tsutsui, Tetsuo; Adachi, Chihaya; and Hamada, Yuji, 5,382,477, Cl. 428-690.000.

Tsutsumi, Kazuhito; Ashida, Motoi; and Inoue, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Field effect thin film transistor and static-type semiconductor memory device provided with memory cell having complementary field effect transistor and method of manufacturing the same. 5,382,807, Cl. 257-69.000.

Tsuyakin Co., Ltd.: *See*—
Mori, Masukuni; and Sakurai, Osamu, 5,382,561, Cl. 503-227.000.

Tuck, Brian; and Schnerer, Peter, to Kelsey-Hayes Company. Vehicular antilock brake system incorporating improved adaptive control feature. 5,382,086, Cl. 303-100.000.

Tuckett, Robert P.; Horch, Kenneth W.; Fisher, John H.; and Evans, Barry L., to Topical Testing, Inc. Cutaneous testing device for determining nervous system function. 5,381,805, Cl. 128-739.000.

Tumminaro, Anthony J., Jr. Solution and process for chemically resharpening smoothing tools, forming tools and cutting tools. 5,382,319, Cl. 156-664.000.

Turlik, Iwona: *See*—
Koopman, Nicholas G.; Rinne, Glenn A.; Turlik, Iwona; and Yung, Edward K., 5,381,946, Cl. 228-254.000.

Turner, Douglas A., to G.T. Styling, Inc. Aero deflector for vehicles. 5,382,070, Cl. 296-180.100.

Turner, Herman E., Jr., to Nordson Corporation. Method of forming closed cell foam seals for automotive body seams. 5,382,397, Cl. 264-46.500.

Tyler, Derek E.: *See*—
Ashok, Sankaranarayanan; Tyler, Derek E.; Watson, William G.; Cheskis, Harvey P.; and List, George A., 5,381,847, Cl. 164-46.000.

Tyren, Carl, to DSP Holdings Ltd. Method and device in a motor. 5,382,863, Cl. 310-328.000.

Tyutinman, Adolf. Shock absorbing suspension. 5,382,008, Cl. 267-154.000.

Uchida, Kiyoshi; and Miyataka, Norio, to Matsushita Electric Industrial Co., Ltd. Slider body with embedded lubricants and magnetic biasing apparatus. 5,383,075, Cl. 360-122.000.

Uchida, Tadahiro, to Kabushiki Kaisha Kubota Seisakusho. Rotor having magnet mountable seats for rotor identification, and centrifuge using the same. 5,382,218, Cl. 404-10.000.

Udagawa, Tsunekazu; and Yamada, Yoshio, to Ishikawa Gasket Co., Ltd. Metal laminate gasket with deformation preventing mechanism. 5,382,029, Cl. 277-235.00B.

Ueberegger Heinrich, to Combitool AG. Tube closure. 5,381,934, Cl. 222-536.000.

Ueda, Katsunori: *See*—
Togai, Kazuhide; and Ueda, Katsunori, 5,381,768, Cl. 123-339.000.

Ueda, Masaharu: *See*—
Kageyama, Hideaki; Ueda, Masaharu; and Sugino, Kazuo, 5,382,307, Cl. 148-584.000.

Ueda, Shigeki: *See*—
Etoh, Jun; Aoki, Masakazu; Horiguchi, Masashi; Ueda, Shigeki; Tanaka, Hitoshi; Kajigaya, Kazuhiko; Takahashi, Tsugio; and Kawamoto, Hiroshi, 5,383,080, Cl. 361-56.000.

Ueda, Toshihiko, to Minolta Co., Ltd. Nonvariable transverse magnification focussing method and lens systems. 5,383,059, Cl. 359-754.000.

Ueda, Wataru: *See*—
Ikawa, Tsuneo; Morikawa, Yutaka; and Ueda, Wataru, 5,382,720, Cl. 570-153.000.

Uekama, Kaneto: *See*—
Fuwa, Toru; and Uekama, Kaneto, 5,382,567, Cl. 512-4.000.

Ueki, Satoshi: *See*—
Koyama, Naomi; Usui, Miyuki; Furuhashi, Hiroyuki; and Ueki, Satoshi, 5,382,634, Cl. 525-286.000.

Uemura, Tsunesaburo, to Nikon Corporation. Exposure apparatus with laser source requiring new gas introduction. 5,383,217, Cl. 372-58.000.

Ueno, Keiichi: *See*—
Uomori, Kenya; Yamada, Mitsuho; Hongo, Hitoshi; Yoshimatsu, Hiroshi; Ueno, Keiichi; Murakami, Shinji; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,382,989, Cl. 351-209.000.

Ueno, Yoshiyuki: *See*—
Hisada, Nobuo; Nishigakiuchi, Yasushi; Ueno, Yoshiyuki; Kotani, Yasuo; and Yagyu, Tadao, 5,382,560, Cl. 503-209.000.

Uenoyama, Harumi; and Okuda, Hisashi, to Kyoto Daiichi Kagaku Co., Ltd. Biosensor and method of quantitative analysis using the same. 5,382,346, Cl. 204-403.000.

Uerdingen, Walter: *See*—
Lindner, Christian; Uerdingen, Walter; Ott, Karl-Heinz; and Brase, hans-Eberhard, 5,382,625, Cl. 525-81.000.

Ueyama, Kenji: *See*—
Okazaki, Masahide; Ueyama, Kenji; and Hayashi, Takahisa, 5,383,052, Cl. 359-364.000.

UKI Supreme Corporation: *See*—
Sharma, Jai P., 5,382,264, Cl. 8-685.000.

Umakoshi, Yukimori: *See*—
Masukawa, Tetsuo; Matsumoto, Masaaki; Saitoh, Yokuo; Kojima, Yasuo; Suzuki, Toshio; Umakoshi, Yukimori; and Morita, Kiyoji, 5,383,073, Cl. 360-104.000.

Umemura, Heihachiro, to Shinkoh Electric Co., Ltd. Push-button switch device. 5,382,836, Cl. 307-127.000.

Umezaki, Hiroshi: *See*—
Takahashi, Hiroshi; Umezaki, Hiroshi; and Teshima, Yasushi, 5,382,556, Cl. 501-153.000.

Under Sea Industries, Inc.: *See*—
Garraffa, Dean R., 5,381,825, Cl. 137-505.180.

Ungari, Joseph L.: *See*—
Nordgren, Timothy F.; Imling, Deborah K.; Ungari, Joseph L.; Killam, Donald G.; and McKeighen, Ronald E., 5,381,795, Cl. 128-563.010.

Union Oil Company of California: *See*—
Ohaeri, Charles U., 5,383,122, Cl. 364-422.000.

Union Special GmbH: *See*—
Nolle, Wolfgang, 5,381,745, Cl. 112-262.100.

Unique Mobility: *See*—
Huang, Hao; DeBruzzi, Michael S.; and Riso, Thomas A., 5,382,859, Cl. 310-216.000.

Unisurge, Inc.: *See*—
Hogendijk, Michael, 5,382,253, Cl. 606-142.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Ashley, Timothy; Elliott, Charles T.; and Whitehouse, Colin R., 5,382,814, Cl. 257-197.000.
Cockayne, Brian; MacEwan, William R.; Harris, Ivor R.; and Smith, Nigel A., 5,382,304, Cl. 148-306.000.
Hocking, Michael G.; and Sidky, Paulette S., 5,382,456, Cl. 427-434.600.

United Microelectronics Corporation: *See*—
Hong, Gary, 5,382,545, Cl. 437-195.000.
Hong, Gary, 5,383,149, Cl. 365-104.000.
Shen, Shing-Ren; Su, Kuan-Cheng; and Chung, Chen-Hui, 5,382,534, Cl. 437-35.000.
Yang, Sheng-Hsing; and Yeh, Nai-Jen, 5,382,820, Cl. 257-371.000.

United States of America
Air Force: *See*—
Becker, Roger J.; and Kullen, Mark K., 5,382,985, Cl. 359-289.000.
Champion, Terrence G., 5,383,184, Cl. 370-62.000.
Army: *See*—
Kim, Anderson H.; Youmans, Robert J.; Weiner, Maurice; and Kingsley, Lawrence E., 5,382,788, Cl. 250-214.100.
Leupold, Herbert A.; and Tilak, Anup, 5,382,936, Cl. 333-306.000.
Skudera, William, J., Jr., 5,383,222, Cl. 375-10.000.
Commerce: *See*—
Bennett, Lawrence H.; and Shull, Robert D., 5,381,664, Cl. 62-3.100.
Creaswell, Michael; Allen, Richard; Linhom, Loren; and Gaitan, Michael, 5,383,136, Cl. 364-561.000.
Energy: *See*—
Benicewicz, Brian C.; and Mitchell, Michael A., 5,382,665, Cl. 544-81.000.
Bionta, Richard M.; Makowiecki, Daniel M.; and Skulina, Kenneth M., 5,382,342, Cl. 204-192.260.
Health and Human Services: *See*—
Passaniti, Antonino; and Martin, George R., 5,382,514, Cl. 435-7.210.
Navy: *See*—
Blume, Richard J., 5,382,957, Cl. 342-43.000.
Glesener, John W.; Merrish, Arthur A.; and Snail, Keith A., 5,381,755, Cl. 117-88.000.
Gray, Henry F.; and Hsu, David S. Y., 5,382,185, Cl. 445-49.000.

U.S. Philips Corporation: *See*—
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Holtslag, Antonius H. M.; Coombs, James H.; and Van Es-Spiekman, Wilma, 5,383,172, Cl. 369-100.000.

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United States Surgical Corporation: *See*—
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United Technologies Corporation: *See*—
Green, Dennis J., 5,382,135, Cl. 416-97.00R.
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University of British Columbia, The: *See*—
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University of California, Regents of the: *See*—
Elmer, John W.; Teruya, Alan T.; and O'Brien, Dennis W., 5,382,895, Cl. 324-71.300.
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Morrison, Robert L., 5,382,285, Cl. 106-122.000.
Petrovic, John J., 5,382,553, Cl. 501-92.000.
White, David L.; Engelstad, Barry L.; and Muetterties, Kurt, 5,382,421, Cl. 424-9.000.

University of Colorado: *See*—
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University of Iowa Research Foundation: *See*—
Schoenwald, Ronald D.; and Barfknecht, Charles F., 5,382,576, Cl. 514-210.000.

University of Michigan, The Regents of the: *See*—
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University of Missouri, Curators of: *See*—
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University of North Carolina at Chapel Hill, The: *See*—
DeSimone, Joseph M.; Maury, Elise E.; Combes, James R.; and Menceloglu, Yusuf Z., 5,382,623, Cl. 524-557.000.

University of Science and Technology of China: *See*—
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University of Strathclyde: *See*—
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University of Texas System Board of Regents: *See*—
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Kulprathipanja, Santi, 5,382,747, Cl. 585-828.000.
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Ura, Daisuke; Hashimukai, Tadashi; Matsumoto, Toshio; and Fukuhara, Nobuhiro, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of L-aerine by an enzymatic method. 5,382,517, Cl. 435-116.000.

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Ohshima, Katsutoshi; Urabayashi, Norihide; and Fujikawa, Satoshi, 5,381,878, Cl. 192-4.00A.

Uray, Alp J.: *See*—
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Ushio, Shinichi: *See*—
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Ushioda, Makoto: *See*—
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Ohkubo, Keiji; Arimoto, Yuko; Uwazumi, Hiroyuki; and Yamasaki, Hisashi, 5,382,301, Cl. 148-108.000.

Valentine, Douglas E.; and Cerone, Ronald J., to Merocel Corporation. Endoscope cleaning and defogging apparatus. 5,382,297, Cl. 134-15.000.

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Cimino, William W.; Lontine, Michael D.; and Schollmeyer, Michael P., 5,382,247, Cl. 606-33.000.

Van, Nga T.: *See*—
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van der Kort, Jacobus J. C.: *See*—
de Jong, Robertus E.; and van der Kort, Jacobus J. C., 5,382,454, Cl. 427-393.500.

van der Pol, Ronald, to Krohne Messtechnik GmbH & Co., KG. Mass flow meter. 5,381,697, Cl. 73-861.370.

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Derez, Frank G. H.; and Vandervoadelen, Patrick L. J., 5,382,681, Cl. 361-380.000.

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Van Dongen, Richard A.: *See*—
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Vanoli, Stefano: *See*—
Delrosso, Giovanni; Vanoli, Stefano; and Armiraglio, Massimo, 5,383,051, Cl. 359-341.000.

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McCook, John P.; Meyers, Alan J.; and Vargas, Anthony, 5,382,432, Cl. 424-401.000.

Vargas, Jose M.; and Riley, Kenneth L., to Exxon Chemical Patents Inc. Hydrogenation catalyst with low phosphorous content for oxo alcohol process. 5,382,715, Cl. 568-882.000.

Vasudeva, Kailash C., to Shivtech Plastics Inc. Clothes hanger with identification compartment. 5,381,938, Cl. 223-85.000.

Vatt, Gregory B.: *See*—
Aguirre, Sergio; Keate, Christopher R.; and Vatt, Gregory B., 5,383,225, Cl. 375-106.000.

Vaucher, Frank, to Compagnie des Montres Longines Francillon S.A. Timepiece with a universal time display. 5,383,165, Cl. 368-27.000.

Vaughan, David E. W., to Exxon Research & Engineering Company. ECR-33: a stabilized rare-earth exchanged Q type zeolite. 5,382,420, Cl. 423-716.000.

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Veit, Werner: *See*—
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Venkat, Chaya R.: *See*—
Beck, Jeffrey S.; McCullen, Sharon B.; Olson, David H.; and Venkat, Chaya R., 5,382,737, Cl. 585-475.000.

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Verfahrenstechnik Hubers GmbH: *See*—
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Verne Q. Powell Flutes, Inc.: *See*—
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Verne, Robert D.: *See*—
Hobgood, Robert B.; Smith, Jay L.; Verne, Robert D.; and Walker, Anthony D., 5,383,191, Cl. 371-11.200.

Vernick, Barry H.: *See*—
Gajewski, Henry M.; Vernick, Barry H.; Measells, Paul E.; and Garber, Jan W., 5,382,526, Cl. 435-296.000.

Versland, Anders, to Vico Products Mfg. Co. A/S. Drain valve. 5,381,831, Cl. 137-868.000.

Vicik, Stephen J., to Viskase Corporation. EVOH oxygen barrier stretched multilayer film. 5,382,470, Cl. 428-334.000.

Vico Products Mfg. Co. A/S: *See*—
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Vieillefosse, Michel, to Bertin & Cie. Method and apparatus for determining the color of a translucent object such as a tooth. 5,383,020, Cl. 356-326.000.

Vinci, Alfredo; Cummings, Kenneth R.; and Lajoie, M. Stephen, to Church & Dwight Co., Inc. Batch process for fatty acid alkaline earth metal salt production. 5,382,678, Cl. 554-156.000.

Vion, Patrick, to Degremont. Waste water-treatment process. 5,382,369, Cl. 210-726.000.

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Desu, Seshu B.; and Pan, Wei, 5,382,320, Cl. 156-667.000.

Visage, Albert B. Device for the reproduction of images on a photosensitive film from a transparent original, in particular from the negative of a photograph or from a slide. 5,383,003, Cl. 355-93.000.

Visentin, Walter: *See*—
Wlassics, Ivan; Alfieri, Mario; and Visentin, Walter, 5,382,337, Cl. 204-158.200.

Viskase Corporation: *See*—
Graves, Robert P., 5,382,190, Cl. 452-21.000.
Juhl, Roger L.; Lustig, Stanley; and Tijunelis, Donatas, 5,382,391, Cl. 264-22.000.
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VKI Technologies Corporation: *See*—
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VLSI Technology, Inc.: *See*—
Henderson, David E., 5,382,058, Cl. 285-96.000.
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Vo, Tuan A.: *See*—
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Vogel, Mark S.: *See*—
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Vogel, Paul; and Martinson, Thomas, to Acsom Tech AG. Code word recognition unit and use thereof. 5,383,045, Cl. 359-158.000.

Vogt, Guenther: *See*—
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Voigt, Bernard. Toothbrush with a teeth cleansing substance dispensing system. 5,382,106, Cl. 401-155.000.

Vollrath Group, Inc.: *See*—
Holloway, Joan M.; and Ridley, Jeter L., 5,381,562, Cl. 4-516.000.

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von der Heide, Johann; Muller, Rolf; and Merkle, Alfred, to Papst Licencing GmbH. Brushless DC drive motor with external rotor for use in disc drives and like devices. 5,382,853, Cl. 310-67.00R.

VonHoene, Donald C.: *See*—
Yu, Robert C. U.; Foley, Geoffrey M. T.; Herbert, William G.; Limburg, William W.; Mishra, Satchidanand; Post, Richard L.; and VonHoene, Donald C., 5,382,486, Cl. 430-56.000.

VonPless, Douglas J. Method and apparatus for pre-treating soiled fabric articles prior to laundering. 5,381,574, Cl. 8-149.200.

Vosper, George W. Spill free clean out traps and filters. 5,382,360, Cl. 210-239.000.

W. A. Whitney Co.: *See*—
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W. L. Gore & Associates, Inc.: *See*—
Bowser, John; and Dennison, John, 5,382,364, Cl. 210-640.000.

W. R. Grace & Co.-Conn.: *See*—
Miller, James G.; and Gatte, Robert R., 5,382,351, Cl. 208-120.000.

Wacker, Oskar, to Ciba-Geigy Corporation. Polycyclic compounds and processes for the preparation thereof. 5,382,675, Cl. 549-420.000.

Wada, Hirotaka: *See*—
Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; Suzuki, Toshiharu; and Komiya, Iwao, 5,382,619, Cl. 524-437.000.

Wada, Katsuyoshi: *See*—
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Wada, Katsuyuki: *See*—
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Wada, Masaru: *See*—
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Waddington, Donald R.; and Boulard, Robert J., to Algonquin Industries International, Inc. Vehicle running board assembly. 5,382,035, Cl. 280-169.000.

Waeschle Maschinenfabrik GmbH: *See*—
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Wagner, Arthur M.: *See*—
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Wagner, Eric R.: *See*—
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Wakamatsu, Kazuki: *See*—
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Wakao, Naho: *See*—
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Wakefield, Franklin W., III. Bandana with flexible bill. 5,381,559, Cl. 2-207.000.

Wakefield, John: *See*—
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Walcott, Billy D.: *See*—
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Walker, Anthony D.: *See*—
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Walker, Linda A.; and Hirsch, Evan M., to American Cyanamid Company. Package having a press-and-turn type cap and bottle with ramped gripping portions. 5,381,912, Cl. 215-220.000.

Walker, Noel A.: *See*—
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Walsh, James D., to Xerox Corporation. Clutch driven inverter shaft. 5,382,013, Cl. 271-186.000.

Walsh, Joseph F., to John Fluke Mfg. Co., Inc. Dual time base zero dead zone time domain reflectometer. 5,382,910, Cl. 324-533.000.

Walter, Keith M.: *See*—
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Walter, Larry A.: *See*—
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Walters, Marlin E.; Richey, W. Frank; and Tasset, Emmett L., to Dow Chemical Company, The. Aromatic polyhydroxy compounds and process for the preparation thereof. 5,382,710, Cl. 568-720.000.

Wang, Anne M.: *See*—
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Wang, Eugene: *See*—
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Wang, Jui-Shang, to Duracraft Corporation. Expandable window fan. 5,382,136, Cl. 416-247.00R.

Wang, Pen C.; and Kelsey, Donald R., to Shell Oil Company. Phenolic compounds. 5,382,713, Cl. 568-734.000.

Wang, Wen-chou V.; and Chou, William T., to Fujitsu Limited. Functional substrates for packaging semiconductor chips. 5,382,827, Cl. 257-528.000.

Wang, Yushan; and Orozco, Wilson, to Standard Keil Industries, Inc. Regulator. 5,381,824, Cl. 137-505.000.

Wangtek, Inc.: *See*—
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Ward, Robert W.; Parker, Sam B.; and Boys, William E., to General Motors Corporation. Alternating current generator rotor. 5,382,862, Cl. 310-263.000.

Warda, Thomas S.; and Karnowka, Bernard J., to Envirocube, Inc. Method and apparatus for manufacturing dunnage material. 5,382,325, Cl. 162-218.000.

Ware, Robert A.: *See*—
Beech, James H., Jr.; Saeger, Roland B.; and Ware, Robert A., 5,382,743, Cl. 585-671.000.

Warkentin, Herman S. Instant tissue moistener. 5,381,568, Cl. 4-661.000.

Warnan, Francois, to Thomson-CSF. Winch for towing submerged objects. 5,381,909, Cl. 212-191.000.

Warner, Brian D.: *See*—
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Stepto, Robert F. T.; Tomka, Ivan; Dobler, Beat; and Pyrah, Keith, 5,382,611, Cl. 524-47.000.

Warren, John: *See*—
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Washburn, Robert D.: *See*—
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Wasley, Robert S.: *See*—
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Wasser, Steven A., to Verne Q. Powell Flutes, Inc. Process for magnetically seating a tone hole pad. 5,381,718, Cl. 84-385.00P.

Watanabe, Hideo; Takahashi, Shoji; Suzuki, Takeshi; and Oikawa, Masatoshi, to Honda Giken Kogyo Kabushiki Kaisha; and Nifco, Inc. Fuel inlet device for a fuel tank. 5,381,838, Cl. 141-198.000.

Watanabe, Hideomi: *See*—
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Watanabe, Tsuneo: *See*—
Asaoka, Sachio; Maejima, Tetsuo; Sakashita, Kouji; Yoneda, Noriyuki; Yasui, Makoto; Onda, Nobuhiro; Watanabe, Tsuneo; Moriya, Nobuo; Shindo, Akio; Nishijima, Hiroaki; Kukidome, Athumi; Inaba, Ryuichi; Imazeki, Takashi; and Shimogawara, Kaoru, 5,382,711, Cl. 568-722.000.
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Watkins, Ty. Hollow fishing rod. 5,381,619, Cl. 43-18.100.

Watson, William G.: *See*—
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Webb, Stephen A. Medical staple forming die and punch. 5,381,649, Cl. 59-75.000.

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Weber, Ralph J.: *See*—
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Wechsler, James K.; and Rutherford, John W., to McDonnell Douglas Helicopter Co. Wingtip mounted, counter-rotating proprotor for tiltwing aircraft. 5,381,985, Cl. 244-7.00C.

Wechter, William J.: *See*—
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Wecker, Sheldon M.: *See*—
Grabenkort, Richard W.; Kruger, Robert J.; Mayoral, Joaquin; and Wecker, Sheldon M., 5,382,229, Cl. 604-27.000.

Weder, Donald E.; and Bergstrand, John W., to Highland Supply Corporation. Method of wrapping a floral grouping using a material having positioning marks. 5,381,642, Cl. 53-399.000.

Wegner, John W.: *See*—
Okonek, Leslie J.; and Wegner, John W., 5,381,815, Cl. 137-15.000.

Wehner, Scott C., to Texaco Inc. Cyclic huff-n-puff with immiscible injection and miscible production steps. 5,381,863, Cl. 166-263.000.

Weidler, Charles H.: *See*—
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Danter, Laurence K.; Herzog, Armin; and Wilmes, Manfred, 5,381,601, Cl. 30-90.100.

Weil, George, to David R. Webb Co., Inc. Tangential rotary slicer. 5,381,841, Cl. 144-209.00B.

Weil, Paul B., to Nextwave Design Automation. Method and apparatus for histogram based digital circuit simulator. 5,383,167, Cl. 364-488.000.

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Yanagida, Yuji; Iwama, Nobuyuki; and Okazaki, Kiyoshi, to Kabushiki Kaisha Toshiba. Shock wave curing apparatus capable of correcting phase shifts contained in echo signals. 5,381,792, Cl. 128-660.030.

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Yang, Sheng-Hsing; and Yeh, Nai-Jen, to United Microelectronics Corporation. High voltage CMOS device to integrate low voltage controlling device. 5,382,820, Cl. 257-371.000.

Yanidis, Apostol; and Sanderford, Bruce, to James River Paper Company, Inc. Resealable packaging material. 5,382,472, Cl. 428-349.000.

Yanusko, David P.; and Rocchino, Frank J., Jr., to Teleflex Incorporated. Connector for remote valve actuating assemblies. 5,381,706, Cl. 74-505.000.

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Yoshida, Koji; Nagagata, Nobuyoshi; and Ishii, Takuya, to Matsushita Electric Industrial Co., Ltd. Regenerative control type switching power source device. 5,383,106, Cl. 363-15.000.
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3i Research Exploitation Limited: *See*—
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3V Sigma S.p.A.: *See*—
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Hasegawa, Toshiyuki; Sakigawa, Shigenori; and Ohashi, Ryota, to Kanzaki Kokyukoki Mfg. Co., Ltd. Vehicle transmission assembly. Re. 34,833, Cl. 475-83.000.

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Lechuga, Gabriel V. Heat protective cover for hot water pipes. Re. 34,832, Cl. 428-99.000.

Lund, Van Metre. Communication system. Re. 34,831, Cl. 375-1.000.

Meyer, Larry D.: *See*—
Dover, Gary H.; and Meyer, Larry D., Re. 34,827, Cl. 172-19.000.

NTN Corporation: *See*—
Satoji, Fuminori, Re. 34,830, Cl. 252-12.000.

Ohashi, Ryota: *See*—
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Packaging Corporation of America: *See*—
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Sakigawa, Shigenori: *See*—
Hasegawa, Toshiyuki; Sakigawa, Shigenori; and Ohashi, Ryota, Re. 34,833, Cl. 475-83.000.

Satoji, Fuminori, to NTN Corporation. Lubricating rubber composition. Re. 34,830, Cl. 252-12.000.

Sirkar, Kamalesh, to Stevens Institute of Technology, The Trustees of the. Immobilized-interface solute-transfer apparatus. Re. 34,828, Cl. 210-137.000.

Specht, Werner O., to Thomas & Betts Corporation. Waste oil delivery system. Re. 34,826, Cl. 110-238.000.

Stevens Institute of Technology, The Trustees of the: *See*—
Sirkar, Kamalesh, Re. 34,828, Cl. 210-137.000.

Stone, James L., to Packaging Corporation of America. Food package for use in a microwave oven. Re. 34,829, Cl. 219-730.000.

Thomas & Betts Corporation: *See*—
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Hendershot, William B., III: *See*—
Tallent, Michael W.; Scaggs, Lee E.; Swain, Allan L.; Harrison, Ronnie M.; and Hendershot, William B., III, B1 3,860,952, Cl. 348-498.000.

Middleton, Christopher O.; and Robson, Colin L., to Spectra Physics. Method for automatic depth control for earth moving and grading. B1 4,914,593, 1-17-95, Cl. 364-424.070.

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Scaggs, Lee E.: *See*—
Tallent, Michael W.; Scaggs, Lee E.; Swain, Allan L.; Harrison, Ronnie M.; and Hendershot, William B., III, B1 3,860,952, Cl. 348-498.000.

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Swain, Allan L.: *See*—
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Tallent, Michael W.; Scaggs, Lee E.; Swain, Allan L.; Harrison, Ronnie M.; and Hendershot, William B., III, to Video Patents Limited. Video time base corrector. B1 3,860,952, 1-17-95, Cl. 348-498.000.

Video Patents Limited: *See*—
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Anscher, Joseph A., to National Molding Corporation. Snaphook. 354,433, 1-17-95, Cl. D8-382.000.

Appel, Mel; and Kress, George, to Mel Appel Limited. Combination kick board and water gun. 354,531, 1-17-95, Cl. D21-146.000.

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CLASS 203

60 5,382,329
5,382,330

CLASS 204

128 5,382,332
130 5,382,333
5,382,334
146.5 5,382,335
153.1 5,382,336
153.14 5,382,331
158.2 5,382,337
164 5,382,338
192.12 5,382,339
192.13 5,382,340
192.21 5,382,341
192.26 5,382,342
224 R 5,382,343
298.2 5,382,344
298.27 5,382,345
403 5,382,346

CLASS 205

50 5,382,347

CLASS 206

5.1 5,381,889
45.23 5,381,890
197 5,381,891
216 5,381,892
232 5,381,893
310 5,381,894
315.9 5,381,895
370 5,381,896
387.1 5,381,897
391 5,381,898
397 5,381,899
446 5,381,900
457 5,381,901
523 5,381,902
526 5,381,903
538 5,381,904
551 5,381,905

CLASS 208

22 5,382,348
49 5,382,349
65 5,382,350
120 5,382,351
121 5,382,352
138 5,382,353
207 5,382,354

CLASS 209

17 5,381,906

CLASS 210

85 5,382,355
96.1 5,382,356
137 Re.34,828
170 5,382,357
194 5,382,358
239 5,382,360
243 5,382,359
436 5,382,361
514 5,382,362
605 5,382,363
640 5,382,364
644 5,382,365
662 5,382,366
698 5,382,367
710 5,382,368
726 5,382,369
781 5,382,370

CLASS 211

74 5,381,907
184 5,381,908

CLASS 212

191 5,381,909

CLASS 214

326 5,382,402

CLASS 215

1 C 5,381,910
216 5,381,911
220 5,381,912
232 5,381,913
341 5,381,914

CLASS 219

85.15 5,382,769
121.63 5,382,770
121.64 5,382,771
121.67 5,382,772
121.7 5,382,773
553 5,382,774
702 5,382,775
730 Re.34,829

CLASS 220

4.33 5,381,915
23.4 5,381,916
219 5,381,917
256 5,381,918
307 5,381,919
342 5,381,920
404 5,381,921
481 5,381,922
563 5,381,923
709 5,381,924

CLASS 221

184 5,381,925

CLASS 222

1 5,381,926
5,381,927
79 5,381,928
99 5,381,929
205 5,381,930
309 5,381,931
321 5,381,932
368 5,381,933
536 5,381,934
541 5,381,935

CLASS 223

37 5,381,937
85 5,381,938

CLASS 224

42.07 5,381,939
42.42 5,381,940
153 5,381,936
155 5,381,941

CLASS 225

56 5,381,942

CLASS 227

177 5,381,943

CLASS 238

124.5 5,381,944
180.21 5,381,945
254 5,381,946

CLASS 229

71 5,381,947
109 5,381,948
198.2 5,381,949

CLASS 235

375 5,382,776
379 5,382,777
380 5,382,778
383 5,382,779
384 5,382,780
5,382,781
455 5,382,782
462 5,382,783
472 5,382,784

CLASS 236

1 R 5,381,950
34.5 5,381,951
5,381,952
5,381,953
78 D 5,381,954

CLASS 239

14.1 5,381,955
22 5,381,956
99 5,381,957
136 5,381,958
201 5,381,959
222.21 5,381,960
333 5,381,961
526 5,381,962
533.2 5,381,963
566 5,381,964
585.1 5,381,965
585.3 5,381,966
659 5,381,967

CLASS 241

19 5,381,968
36 5,381,969
55 5,381,970
5,381,971
73 5,381,972
188.1 5,381,974
191 5,381,973
195 5,381,975
197 5,381,976
227 5,381,977

CLASS 242

224 5,381,979
348.4 5,381,980
407.1 5,381,981
520 5,381,978
541.3 5,381,982
562.1 5,381,983
613.5 5,381,984

CLASS 244

7 C 5,381,985
49 5,381,986
50 5,381,987
153 A 5,381,988

CLASS 248

122 5,381,989
205.9 5,381,990
206.5 5,381,991
220.2 5,381,992
312.1 5,381,993
346 5,381,994

CLASS 249

33 5,381,995

CLASS 256

303 5,382,785
214 A 5,382,786
214.1 5,382,787
5,382,788
216 5,382,789
5,382,790
221 5,382,791
231.13 5,382,792
288 5,382,793
5,382,794
106 5,382,795
310 5,382,796
352 5,382,797
370.11 5,382,798
372 5,382,799
396 ML 5,382,801
423 R 5,382,801
492.1 5,382,802
492.21 5,382,803
493.1 5,382,804
504 R 5,382,805
561 5,382,806

CLASS 251

59 5,381,996
61.2 5,381,997
117 5,381,998
129.16 5,381,999

CLASS 252

8.6 5,382,372
12 Re.34,830
62.55 5,382,373
73 5,382,374
117 5,382,375
153 5,382,376
174 5,382,377
181 5,382,378
299.63 5,382,379
299.66 5,382,380
312 5,382,381
500 5,382,382
501.1 5,382,383
511 5,382,384
519 5,382,385
548 5,382,386
602 5,382,387
635 5,382,388

CLASS 254

17 5,382,000

CLASS 256

65 5,382,001

CLASS 257

69 5,382,807
77 5,382,808
5,382,809
81 5,382,810
88 5,382,811
94 5,382,812
101 5,382,813
197 5,382,814
5,382,815
266 5,382,816
295 5,382,817
347 5,382,818
371 5,382,819
5,382,820
401 5,382,821
410 5,382,822
419 5,382,823
464 5,382,824
489 5,382,825
5,382,826
528 5,382,827
586 5,382,828
659 5,382,829
701 5,382,830
767 5,382,831
773 5,382,832

CLASS 261

18.1 5,382,389
114.3 5,382,390

CLASS 264

22 5,382,391
29.5 5,382,392
31 5,382,393
40.7 5,382,394
5,382,395
44 5,382,396
46.5 5,382,397
5,382,398
127 5,382,399
168 5,382,400
177.16 5,382,401
511 5,382,403
547 5,382,404

CLASS 266

205 5,382,002
230 5,382,003
5,382,004
257 5,382,005

CLASS 267

64.27 5,382,006
154 5,382,007
5,382,008

CLASS 269

16 5,382,009
41 5,382,010

CLASS 270

37 5,382,011
53 5,382,012

CLASS 271

18.1 5,382,014
186 5,382,013
275 5,382,015
293 5,382,016

CLASS 273

1.5 A 5,382,017
34 R 5,382,018
80 C 5,382,019
86 R 5,382,021
126 R 5,382,022
142 N 5,382,023
149 R 5,382,024
292 5,382,025
310 5,382,026
317 5,382,027
401 5,382,028

CLASS 277

235 B 5,382,029

CLASS 279

46.7 5,382,030

CLASS 280

11.22 5,382,031
30 5,382,032
87.051 5,382,033
104 5,382,034
169 5,382,035
250.1 5,382,036
276 5,382,037
281.1 5,382,038
283 5,382,039
293 5,382,040
476.1 5,382,041
477 5,382,042
661 5,382,043
673 5,382,044
707 5,382,045
728 A 5,382,046
728 B 5,382,047
728 R 5,382,048
735 5,382,049
741 5,382,050
751 5,382,051
844 5,382,052

CLASS 281

42 5,382,053
5,382,054

CLASS 283

67 5,382,055

CLASS 285

1 5,382,056
39 5,382,057
96 5,382,058
256 5,382,059

CLASS 290

1 A 5,382,833

CLASS 292

46 5,382,060
311 5,382,061
340 5,382,062

CLASS 294

1.3 5,382,063
26 5,382,064
53.5 5,382,065
68.3 5,382,066
5,382,067

CLASS 296

24.1 5,382,068
37.6 5,382,069
180.1 5,382,070
203 5,382,071

CLASS 297

1 5,382,072
85 5,382,073
153 5,382,074
180.14 5,382,075
353 5,382,077
354.12 5,382,076
395 5,382,078
411.36 5,382,079
440.1 5,382,080
440.12 5,382,081
440.22 5,382,082
452.2 5,382,083

CLASS 299

39 5,382,084

CLASS 303

7 5,382,085
100 5,382,086

CLASS 307

9.1 5,382,834
106 5,382,835
127 5,382,836

CLASS 310

13 5,382,851
40 MM 5,382,852
67 R 5,382,853
5,382,854
71 5,382,855
5,382,856
83 5,382,857
90 5,382,858
216 5,382,859
5,382,860
5,382,861
263 5,382,862
328 5,382,863
332 5,382,864
366 5,382,865

CLASS 313

140.2 5,382,087
263 5,382,088

CLASS 313

231.31 5,382,866
309 5,382,867
313 5,382,868
318 5,382,869
402 5,382,870
5,382,871
414 5,382,872
570 5,382,873
578 5,382,874

CLASS 318

8 5,382,875
82 5,382,876
5,382,877
248 5,382,878
5,382,879
291 5,382,880
307 5,382,881
5,382,882
368.15 5,382,883
382 5,382,884
505 5,382,914

CLASS 318

254 5,382,889
5,382,890
269 5,382,891
567 5,382,884
568.11 5,382,885
652 5,382,887

CLASS 320

32 5,382,893

CLASS 323

222 5,383,109

CLASS 324

71.1 5,382,894
71.3 5,382,895
127 5,382,896
143 5,382,897
207.18 5,382,899
207.23 5,382,900
244.1 5,382,901
309 5,382,902
318 5,382,903
319 5,382,904
5,382,905
418 5,382,906
5,382,907
439 5,382,908
522 5,382,909
533 5,382,910
662 5,382,911
713 5,382,912
754 5,382,898

CLASS 326

30 5,382,841
66 5,382,845
68 5,382,846
5,382,847
95 5,382,844
109 5,382,843
110 5,382,842

CLASS 327

18 5,382,848
108 5,382,838
141 5,382,913
161 5,382,850
206 5,382,840
310 5,382,849
417 5,382,837
545 5,382,839

CLASS 330

10 5,382,915
253 5,382,916
255 5,382,917
260 5,382,918
5,382,919
308 5,382,920

CLASS 331

1 A 5,382,921
5,382,922
8 5,382,923

CLASS 332

100 5,382,924

CLASS 333

112 5,382,925
161 5,382,926
175 5,382,927
182 5,382,928
187 5,382,929
191 5,382,930
208 5,382,931
245 5,382,932

CLASS 335

159 5,382,934
278 5,382,933
288 5,382,935
306 5,382,936

CLASS 336

178 5,382,937

CLASS 338

22 R 5,382,938

CLASS 340

309.15 5,382,939
323 R 5,382,940
426 5,382,941
457.4 5,382,942
539 5,382,943
567 5,382,944
569 5,382,945
650 5,382,946
825.22 5,382,947
825.36 5,382,948
825.44 5,382,949
825.5 5,382,950
825.52 5,382,951

825.54 5,382,952
937 5,382,953
961 5,382,954

CLASS 341

64 5,382,955
155 5,382,956

CLASS 342

43 5,382,957
386 5,382,958

CLASS 343

700 MS 5,382,959

CLASS 345

108 5,382,961
167 5,382,962

CLASS 346

25 5,382,963
76 PH 5,382,964
5,382,965
107 R 5,382,966
108 5,382,967
153.1 5,382,968
746 5,382,984

CLASS 347

23 5,382,969

CLASS 348

1 5,382,970
8 5,382,971
15 5,382,972
98 5,382,973
221 5,382,974
241 5,382,975
273 5,382,976
300 5,382,977
312 5,382,978
398 5,382,979
408 B1 3,860,932
586 5,382,980
634 5,382,981
706 5,382,982
716 5,382,983

CLASS 351

138 5,382,986
206 5,382,987
5,382,988
209 5,382,989

CLASS 353

94 5,382,990
119 5,382,991

CLASS 354

21 5,382,992
106 5,382,993
286 5,382,994
331 5,382,995
403 5,382,996
441 5,382,997

CLASS 355

50 5,382,998
33 5,382,999
67 5,383,000
73 5,383,001
74 5,383,002
93 5,383,003
206 5,383,004
208 5,383,005
212 5,383,006
246 5,383,007
256 5,383,008
260 5,383,009
271 5,383,010
298 5,383,011
326 5,383,012

CLASS 356

2 5,383,013
28 5,383,014
73.1 5,383,015
150 5,383,016
238 5,383,017
243 5,383,018
316 5,383,019
326 5,383,020
336 5,383,024
371 5,383,025
376 5,383,026
383 5,383,021
387 5,383,022
417 5,383,023

CLASS 358

296 5,383,027
401 5,383,028
403 5,383,029
442 5,383,030
444 5,383,031
448 5,383,032
456 5,383,033
474 5,383,034
500 5,383,035
510 5,383,036
521 5,383,055
539 5,383,037

CLASS 358

7 5,383,038
13 5,383,039
54 5,383,040
59 5,383,041
82 5,383,042
142 5,383,043
145 5,383,044
158 5,383,045
176 5,383,046
209 5,383,047
279 5,383,048
283 5,383,049
289 5,383,985
326 5,383,050
341 5,383,051
364 5,383,052
486 5,383,053
507 5,383,054
561 5,383,056
617 5,383,058
754 5,383,059
820 5,383,060
841 5,383,057
872 5,383,061
894 5,383,062

CLASS 360

18 5,383,063
45 5,383,064
67 5,383,065
91 5,383,066
72.2 5,383,067
73.11 5,383,069
77.04 5,383,070
77.14 5,383,071
78.06 5,383,068
96.5 5,383,072
104 5,383,073
106 5,383,074
132 5,383,075
138 5,383,076
152 5,383,077
133 5,383,078
137 5,383,079

CLASS 361

56 5,383,080
58 5,383,081
93 5,383,082
103 5,383,083
113 5,383,084
119 5,383,085
149 5,383,152
152 5,383,086
215 5,383,087
305 5,383,088
302 5,383,089
624 5,383,090
679 5,383,091
704 5,383,092
771 5,383,093
773 5,383,094
785 5,383,095
816 5,383,096
5,383,097
818 5,383,098

CLASS 362

18 5,383,099
34 5,383,100
35 5,383,101
61 5,383,102
102 5,383,103
202 5,383,104
285 5,383,105

CLASS 363

15 5,383,106
44 5,383,107
137 5,383,108

CLASS 364

138 5,383,116
141 5,383,117
167.01 5,383,118
191 5,383,110
401 5,383,111
5,383,112
5,383,113
413.19 5,383,119
419.08 5,383,120
419.11 5,383,121
421 5,383,114
422 5,383,122
424.05 5,383,123
5,383,124
424.07 B1 4,914,593
426.05 5,383,125
431.06 5,383,126
449 5,383,127
5,383,128
804.01 5,383,129
471 5,383,130
474.29 5,383,131
488 5,383,167
491 5,383,132
508 5,383,133
516 5,383,134
552 5,383,135
554 5,383,115
561 5,383,136
578 5,383,137
708.1 5,383,138
5,383,139
5,383,140
709.16 5,383,141
715.11 5,383,142
717 5,383,143
724.1 5,383,144
724.16 5,383,145

CLASS 365

49 5,383,146
52 5,383,147
5,383,148
104 5,383,149
145 5,383,150
149 5,383,151
155 5,383,153
189.01 5,383,154
191 5,383,155
200 5,383,156
201 5,383,157
207 5,383,159
221 5,383,160
230.01 5,383,158
230.06 5,383,161
231 5,383,162

CLASS 366

83 5,382,089
177 5,382,090
186 5,382,091
217 5,383,163
320 5,382,092

CLASS 368

27 5,383,165
288 5,383,166

CLASS 369

44.13 5,383,169
44.14 5,383,168
44.28 5,383,170
59 5,383,171
100 5,383,172
112 5,383,173
119 5,383,174
121 5,383,175
275.4 5,383,176

CLASS 370

15 5,383,177
17 5,383,178
54 5,383,179
58.2 5,383,180
60 5,383,181
5,383,182
60.1 5,383,183
62 5,383,184
85.3 5,383,185
85.5 5,383,186
85.6 5,383,190
94.3 5,383,187
105.2 5,383,188
105.3 5,383,189

CLASS 371

11.2 5,383,191
16.2 5,383,192
21.4 5,383,193
22.1 5,383,194
22.5 5,383,195
37 5,383,196
29.1 5,383,201
30 5,383,202
37.1 5,383,203
37.7 5,383,204
401 5,383,205
40.3 5,383,206

CLASS 372

6 5,383,197
18 5,383,198
25 5,383,199
5,383,200
28 5,383,207
29 5,383,208
34 5,383,209
38 5,383,210
43 5,383,211
85 5,383,212
46 5,383,213
5,383,214
5,383,215
90 5,383,216
38 5,383,217

CLASS 373

107 5,383,218

CLASS 376

208 5,382,093

CLASS 375

1 Re.34,831
5,383,219
5,383,220
7 5,383,221
10 5,383,222
60 5,383,223
99 5,383,224
106 5,383,225

CLASS 376

253 5,383,226
261 5,383,227
409 5,383,228
434 5,383,229

CLASS 377

44 5,383,230

CLASS 378

13 5,383,231
124 5,383,232
162 5,383,233
164 5,383,234

CLASS 383

65 5,382,094

CLASS 384

100 5,382,095
116 5,382,096
122 5,382,097
448 5,382,098
454 5,382,099

CLASS 400

9 5,382,100
124.03 5,382,101
134 5,382,102
248 5,382,103
608.2 5,382,104
621 5,382,105

CLASS 401

155 5,382,106
191 5,382,107

CLASS 403

120 5,382,108
316 5,382,109
322 5,382,110
329 5,382,111

CLASS 404

6 5,382,112
10 5,382,218
25 5,382,113

CLASS 405

140 5,382,114
226 5,382,115
269 5,382,116

CLASS 406

39 5,382,117

CLASS 407

42 5,382,118
116 5,382,119

CLASS 408

16 5,382,120
57 5,382,121

CLASS 409

141 5,382,122

CLASS 410

100 5,382,123

CLASS 411

352 5,382,124
396 5,382,125

CLASS 414

217 5,382,126
5,382,127
404 5,382,128
411 5,382,129
540 5,382,130
684.3 5,382,131

CLASS 415

60 5,382,132
115 5,382,133
119 5,382,134

CLASS 416

97 R 5,382,135
247 R 5,382,136

CLASS 417

108 5,382,137
234 5,382,138
269 5,382,139
273 5,382,140
423.8 5,382,141
445 5,382,142

CLASS 418

55.1 5,382,143
55.3 5,382,144

CLASS 422

28 5,382,406
48 5,382,407
102 5,382,408
5,382,409
121 5,382,410
131 5,382,411
142 5,382,412
168 5,382,413
186 5,382,414
198 5,382,423
305 5,382,415

CLASS 423

213.2 5,382,416
219 5,382,417
239.1 5,382,418
348 5,382,419
716 5,382,420

CLASS 434

9 5,382,421
49 5,382,422
54 5,382,424
70.51 5,382,426
85.2 5,382,427
93.461 5,382,429
195.1 5,382,430
234.1 5,382,428
401 5,382,431
5,382,432
5,382,433
465 5,382,434
489 5,382,435
5,382,436
499 5,382,437

CLASS 435

8 5,382,145
141 5,382,146
144 5,382,147
174.4 5,382,148
237 5,382,149
308 5,382,153
321 5,382,154
390 5,382,150
392 5,382,151
397 5,382,152
436 R 5,382,156
526 5,382,157
572 5,382,158
577 5,382,155

CLASS 436

43 5,382,438
73 5,382,439
138 5,382,440
241 5,382,441
697 5,382,442
820 5,382,443
646 5,382,444

CLASS 437

2.31 5,382,445
126.3 5,382,446
128.6 5,382,447
163.2 5,382,448
187 5,382,449
195 5,382,450
208.4 5,382,451
215 5,382,452
249 5,382,453
393.5 5,382,454
429 5,382,455
434.6 5,382,456
596 5,382,457

CLASS 438

34.4 5,382,458
36.4 5,382,459
64 5,382,460
88 5,382,461
95 5,382,462
99 Re.34,832
141 5,382,463
172 5,382,464
195 5,382,465
219 5,382,466
284 5,382,467
228 5,382,468
332 5,382,469
334 5,382,470
336 5,382,471
349 5,382,472
353 5,382,473
364 5,382,474
401 5,382,475
411.1 5,382,476
690 5,382,477

CLASS 439

26 5,382,478
112 5,382,479
180 5,382,480
192 5,382,481
206 5,382,482

CLASS 430

5 5,382,483
5,382,484
21 5,382,485
56 5,382,486
57 5,382,487
95 5,382,488
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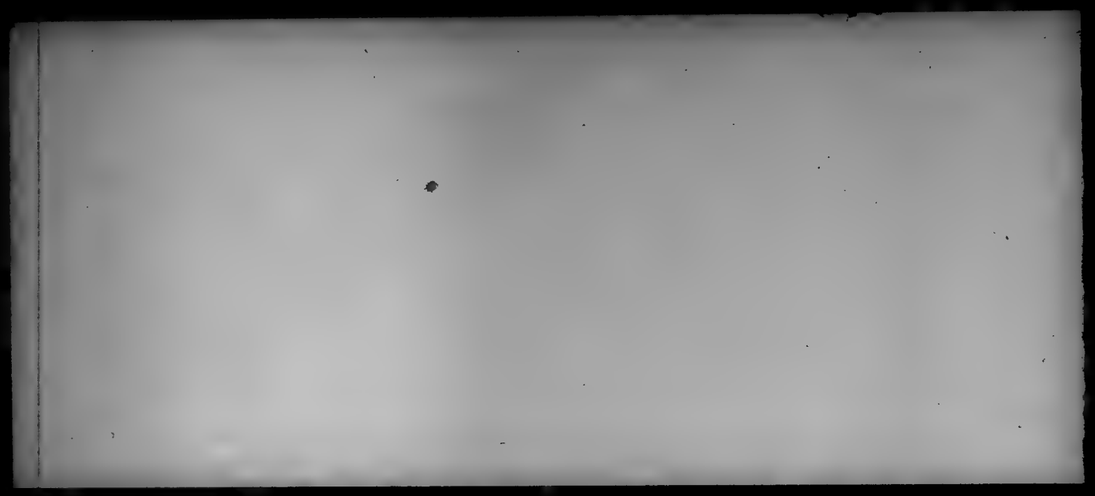
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Vol. 1170 Number 4

OFFICIAL GAZETTE

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Dec. 12, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Update

Accession by Uganda

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Uganda deposited its instrument of accession to the Patent Cooperation Treaty (PCT) on November 9, 1994. Uganda will become the 75th Contracting State of the PCT on February 9, 1995. Consequently, nationals and residents of Uganda are

entitled to file international applications under the PCT on and after February 9, 1995, and from the same date it is possible to file international applications designating and electing Uganda (country code: UG).

Designation for an ARIPO Patent will include Uganda

The African Regional Industrial Property Organization (ARIPO) has 14 member States, 11 of which are party to the Harare Protocol on Patents and Industrial Designs. The Harare Protocol makes it possible to obtain an ARIPO patent effective in any or all of the Protocol's member States. Under amendments to the Harare Protocol and its Implementing Regulations adopted in April 1994, an international application under the PCT will be able to include a designation for an ARIPO patent (two-letter code: AP) of those Harare Protocol member States which are also Contracting States of the PCT. Processing of such international applications in the regional phase will be undertaken by the ARIPO office as a designated (or elected) Office under the PCT. Since Uganda is a member of the Harare Protocol within the framework of ARIPO, Uganda will be able to be designated for a patent granted by ARIPO. As of February 9, 1995, any designation in an international application for an ARIPO patent will automatically include the designation of Uganda for that purpose.

Accession by Singapore

The United States Patent and Trademark Office received notification from WIPO that Singapore deposited its instrument of accession to the PCT on November 23, 1994. Singapore will become the 76th Contracting State of the PCT on February 23, 1995. Consequently, nationals and residents of Singapore are entitled to file international applications under the PCT on and after February 23, 1995, and from the same date it is possible to file international applications designating and electing Singapore (county code: SG).

Listing of PCT Member Countries

Country	Instrument	Date of Deposit of Instrument	Entry into Force[1]
(1) Central African Republic[2]	Accession	15 September 1971	24 January 1978
(2) Senegal[2]	Ratification	08 March 1972	24 January 1978
(3) Madagascar	Ratification	27 March 1972	24 January 1978
(4) Malawi	Accession	16 May 1972	24 January 1978
(5) Cameroon[2]	Accession	15 March 1973	24 January 1978
(6) Chad[2]	Accession	12 February 1974	24 January 1978
(7) Togo[2]	Ratification	28 January 1975	24 January 1978
(8) Gabon[2]	Accession	06 March 1975	24 January 1978
(9) United States of America	Ratification	26 November 1975	24 January 1978
(10) Germany[3]	Ratification	19 July 1976	24 January 1978
(11) Congo[2]	Accession	08 August 1977	24 January 1978
(12) Switzerland[3]	Ratification	14 September 1977	24 January 1978
(13) United Kingdom[3]	Ratification	24 October 1977	24 January 1978
(14) France[3]	Ratification	25 November 1977	25 February 1978
(15) Russian Federation	Ratification	29 December 1977	29 March 1978
(16) Brazil	Ratification	09 January 1978	09 April 1978
(17) Luxembourg[3]	Ratification	31 January 1978	30 April 1978
(18) Sweden[3]	Ratification	17 February 1978	17 May 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark[3]	Ratification	01 September 1978	01 December 1978
(21) Austria[3]	Ratification	23 January 1979	23 April 1979
(22) Monaco[3]	Ratification	22 March 1979	22 June 1979
(23) Netherlands[3]	Ratification	10 April 1979	10 July 1979
(24) Romania	Ratification	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein[3]	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium[3]	Ratification	14 September 1981	14 December 1981
(32) Sri Lanka	Accession	26 November 1981	26 February 1982
(33) Mauritania[2]	Accession	13 January 1983	13 April 1983
(34) Sudan	Accession	16 January 1984	16 April 1984
(35) Bulgaria	Accession	21 February 1984	21 May 1984
(36) Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37) Mali[2]	Accession	19 July 1984	19 October 1984
(38) Barbados	Accession	12 December 1984	12 March 1985
(39) Italy[3]	Ratification	28 December 1984	28 March 1985
(40) Benin[2]	Accession	26 November 1986	26 February 1987
(41) Burkina Faso[2]	Accession	21 December 1988	21 March 1989
(42) Spain[3]	Accession	16 August 1989	16 November 1989
(43) Canada	Ratification	02 October 1989	02 January 1990
(44) Greece[3]	Accession	09 July 1990	09 October 1990
(45) Poland	Accession	25 September 1990	25 December 1990

(46) Côte d'Ivoire[2]	Ratification	31 January 1991	30 April 1991
(47) Guinea[2]	Accession	27 February 1991	27 May 1991
(48) Mongolia	Accession	27 February 1991	27 May 1991
(49) Czech Republic	Declaration[4]	18 December 1992	01 January 1993
(50) Ireland[3]	Ratification	01 May 1992	01 August 1992
(51) Portugal[3]	Accession	24 August 1992	24 November 1992
(52) New Zealand	Accession	01 September 1992	01 December 1992
(53) Ukraine	Declaration[4]	21 September 1992	25 December 1991
(54) Viet Nam	Accession	10 December 1992	10 March 1993
(55) Slovakia	Declaration[4]	30 December 1992	01 January 1993
(56) Niger[2]	Accession	21 December 1992	21 March 1993
(57) Kazakhstan	Declaration[4]	16 February 1993	25 December 1991
(58) Belarus	Declaration[4]	14 April 1993	25 December 1991
(59) Latvia	Accession	07 June 1993	07 September 1993
(60) Uzbekistan	Declaration[4]	18 August 1993	25 December 1991
(61) China	Accession	01 October 1993	01 January 1994
(62) Slovenia	Accession	01 December 1993	01 March 1994
(63) Trinidad and Tobago	Accession	10 December 1993	10 March 1994
(64) Georgia	Declaration[4]	18 January 1994	25 December 1991
(65) Kyrgyzstan	Declaration[4]	14 February 1994	25 December 1991
(66) Republic of Moldova	Declaration[4]	14 February 1994	25 December 1991
(67) Tajikistan	Declaration[4]	14 February 1994	25 December 1991
(68) Kenya	Accession	08 March 1994	08 June 1994
(69) Lithuania	Accession	05 April 1994	05 July 1994
(70) Armenia	Declaration[4]	17 May 1994	25 December 1991
(71) Estonia	Accession	24 May 1994	24 August 1994
(72) Liberia	Accession	27 May 1994	27 August 1994
(73) Swaziland	Accession	20 June 1994	20 September 1994
(74) Mexico	Accession	01 October 1994	01 January 1995
(75) Uganda	Accession	09 November 1994	09 February 1995
(76) Singapore	Accession	23 November 1994	23 February 1995

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.

[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.

[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.

[4]Declaration of continued application.

December 29, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 21, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,078,714 through 5,083,313
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 19, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,719,650 through 4,720,873
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 17, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,425,667 through 4,426,738
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 16, 1994 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,180	06/672,139	06/10/86
(4,359,726)	(06/228,716)	(11/16/82)
Re. 34,098	07/718,213	10/13/92
(4,969,681)	(07/481,818)	(11/13/90)
Re. 34,263	07/809,271	05/25/93
(4,969,572)	(07/389,581)	(11/13/90)
Re. 34,480	07/940,309	12/14/93
(4,622,179)	(06/631,700)	(11/11/86)
4,358,869	06/275,326	11/16/82
4,358,885	06/234,734	11/16/82
4,358,893	06/255,706	11/16/82
4,358,932	06/298,981	11/16/82
4,358,933	06/225,922	11/16/82
4,358,934	06/295,751	11/16/82
4,358,935	06/279,641	11/16/82
4,358,938	06/303,873	11/16/82
4,358,947	06/219,123	11/16/82
4,358,961	06/222,428	11/16/82
4,358,965	06/217,634	11/16/82
4,359,000	06/226,585	11/16/82
4,359,014	06/266,505	11/16/82
4,359,017	06/273,048	11/16/82
4,359,033	06/224,423	11/16/82
4,359,058	06/223,992	11/16/82
4,359,063	06/232,153	11/16/82
4,359,086	06/264,519	11/16/82
4,359,118	06/216,565	11/16/82
4,359,146	06/216,450	11/16/82
4,359,150	06/307,170	11/16/82
4,359,169	06/297,247	11/16/82
4,359,170	06/276,385	11/16/82
4,359,196	06/218,927	11/16/82
4,359,198	06/244,334	11/16/82
4,359,212	06/229,593	11/16/82
4,359,216	06/227,579	11/16/82
4,359,224	06/229,147	11/16/82
4,359,234	06/239,558	11/16/82
4,359,247	06/230,870	11/16/82
4,359,253	06/218,625	11/16/82
4,359,269	06/262,246	11/16/82
4,359,270	06/242,738	11/16/82
4,359,295	06/220,117	11/16/82
4,359,325	06/216,453	11/16/82
4,359,328	06/310,038	11/16/82
4,359,337	06/297,967	11/16/82
4,359,342	06/229,211	11/16/82
4,359,344	06/312,051	11/16/82
4,359,345	06/254,699	11/16/82
4,359,353	06/264,991	11/16/82
4,359,356	06/291,063	11/16/82
4,359,358	06/286,645	11/16/82
4,359,363	06/298,566	11/16/82
4,359,366	06/287,248	11/16/82
4,359,375	06/328,833	11/16/82
4,359,385	06/280,746	11/16/82
4,359,388	06/229,013	11/16/82
4,359,398	06/219,087	11/16/82
4,359,400	06/228,855	11/16/82
4,359,405	06/218,603	11/16/82
4,359,416	06/282,366	11/16/82
4,359,437	06/242,295	11/16/82
4,359,438	06/303,760	11/16/82
4,359,440	06/313,555	11/16/82
4,359,442	06/221,739	11/16/82
4,359,445	06/268,962	11/16/82
4,359,449	06/216,056	11/16/82
4,359,454	06/217,149	11/16/82
4,359,458	06/305,885	11/16/82
4,359,459	06/305,886	11/16/82
4,359,460	06/310,672	11/16/82
4,359,461	06/315,789	11/16/82
4,359,472	06/334,017	11/16/82
4,359,476	06/252,536	11/16/82
4,359,477	06/230,716	11/16/82
4,359,479	06/226,740	11/16/82
4,359,483	06/233,135	11/16/82
4,359,486	06/289,880	11/16/82
4,359,487	06/310,330	11/16/82
4,359,492	06/243,328	11/16/82
4,359,495	06/237,830	11/16/82
4,359,500	06/316,109	11/16/82
4,359,505	06/233,343	11/16/82
4,359,518	06/277,944	11/16/82
4,359,534	06/258,483	11/16/82
4,359,540	06/268,220	11/16/82
4,359,542	06/290,049	11/16/82
4,359,557	06/244,365	11/16/82
4,359,576	06/269,174	11/16/82
4,359,581	06/270,716	11/16/82
4,359,590	06/262,377	11/16/82
4,359,591	06/248,709	11/16/82
4,359,593	06/325,450	11/16/82

Patent Number	Serial Number	Issue Date
4,359,595	06/230,921	11/16/82
4,359,614	06/305,064	11/16/82
4,359,621	06/319,772	11/16/82
4,359,681	06/328,168	11/16/82
4,359,699	06/247,455	11/16/82
4,359,737	06/228,394	11/16/82
4,359,755	06/232,792	11/16/82
4,359,781	06/216,718	11/16/82
4,359,782	06/265,127	11/16/82
4,621,378	06/613,301	11/11/86
4,621,380	06/737,621	11/11/86
4,621,381	06/764,308	11/11/86
4,621,382	06/649,821	11/11/86
4,621,383	06/699,433	11/11/86
4,621,387	06/764,732	11/11/86
4,621,389	06/719,118	11/11/86
4,621,392	06/732,598	11/11/86
4,621,396	06/749,954	11/11/86
4,621,401	06/765,346	11/11/86
4,621,402	06/650,532	11/11/86
4,621,405	06/527,083	11/11/86
4,621,409	06/709,238	11/11/86
4,621,416	06/383,399	11/11/86
4,621,421	06/651,404	11/11/86
4,621,423	06/635,392	11/11/86
4,621,426	06/783,892	11/11/86
4,621,431	06/855,727	11/11/86
4,621,440	06/658,546	11/11/86
4,621,441	06/694,132	11/11/86
4,621,442	06/737,528	11/11/86
4,621,445	06/692,902	11/11/86
4,621,447	06/720,322	11/11/86
4,621,452	06/692,535	11/11/86
4,621,453	06/635,246	11/11/86
4,621,455	06/775,229	11/11/86
4,621,460	06/610,383	11/11/86
4,621,462	06/773,305	11/11/86
4,621,463	06/661,684	11/11/86
4,621,465	06/734,885	11/11/86
4,621,470	06/595,626	11/11/86
4,621,472	06/689,347	11/11/86
4,621,478	06/580,068	11/11/86
4,621,483	06/631,068	11/11/96
4,621,484	06/737,826	11/11/86
4,621,492	06/690,273	11/11/86
4,621,495	06/625,005	11/11/86
4,621,496	06/601,902	11/11/86
4,621,500	06/662,375	11/11/86
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4,621,521	06/704,372	11/11/86
4,621,533	06/672,544	11/11/86
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4,621,536	06/675,753	11/11/86
4,621,539	06/763,084	11/11/86
4,621,541	06/617,464	11/11/86
4,621,542	06/673,342	11/11/86
4,621,543	06/590,859	11/11/86
4,621,547	06/762,570	11/11/86
4,621,549	06/649,865	11/11/86
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4,621,558	06/730,848	11/11/86
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4,621,574	06/720,364	11/11/86
4,621,575	06/719,686	11/11/86
4,621,576	06/735,853	11/11/86
4,621,577	06/688,672	11/11/86
4,621,584	06/752,340	11/11/86
4,621,589	06/714,884	11/11/86
4,621,592	06/676,012	11/11/86
4,621,594	06/774,640	11/11/86
4,621,601	06/718,968	11/11/86
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4,621,604	06/717,008	11/11/86
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4,621,624	06/570,598	11/11/86
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4,621,646	06/561,774	11/11/86
4,621,651	06/547,832	11/11/86
4,621,654	06/825,532	11/11/86
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4,621,659	06/824,623	11/11/86
4,621,664	06/657,259	11/11/86
4,621,665	06/713,437	11/11/86
4,621,668	06/758,167	11/11/86
4,621,669	06/652,825	11/11/86
4,621,670	06/716,643	11/11/86
4,621,675	06/753,815	11/11/86
4,621,676	06/582,473	11/11/86
4,621,677	06/827,210	11/11/86
4,621,679	06/404,553	11/11/86
4,621,682	06/645,900	11/11/86
4,621,683	06/740,793	11/11/86
4,621,687	06/659,651	11/11/86
4,621,688	06/571,736	11/11/86
4,621,694	06/770,928	11/11/86
4,621,698	06/723,792	11/11/86
4,621,700	06/664,168	11/11/86
4,621,701	06/713,542	11/11/86
4,621,702	06/647,431	11/11/86
4,621,705	06/658,529	11/11/86
4,621,707	06/703,560	11/11/86
4,621,708	06/642,531	11/11/86
4,621,712	06/690,003	11/11/86
4,621,713	06/701,897	11/11/86
4,621,714	06/754,462	11/11/86
4,621,716	06/731,290	11/11/86
4,621,719	06/697,087	11/11/86
4,621,721	06/670,716	11/11/86
4,621,725	06/722,608	11/11/86
4,621,729	06/691,333	11/11/86
4,621,730	06/719,170	11/11/86
4,621,731	06/659,583	11/11/86
4,621,735	06/705,972	11/11/86
4,621,739	06/560,505	11/11/86
4,621,746	06/650,354	11/11/86
4,621,754	06/455,383	11/11/86
4,621,756	06/627,303	11/11/86
4,621,759	06/734,537	11/11/86
4,621,761	06/677,955	11/11/86
4,621,762	06/763,427	11/11/86
4,621,768	06/784,758	11/11/86
4,621,777	06/679,117	11/11/86
4,621,778	06/687,429	11/11/86
4,621,779	06/738,413	11/11/86
4,621,784	06/705,794	11/11/86
4,621,785	06/674,280	11/11/86
4,621,787	06/606,748	11/11/86
4,621,791	06/745,535	11/11/86
4,621,792	06/757,837	11/11/86
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4,621,797	06/785,995	11/11/86
4,621,803	06/783,022	11/11/86
4,621,805	06/759,678	11/11/86
4,621,807	06/614,339	11/11/86
4,621,809	06/540,357	11/11/86
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4,621,824	06/738,653	11/11/86
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4,621,845	06/616,226	11/11/86
4,621,850	06/749,024	11/11/86
4,621,854	06/761,914	11/11/86
4,621,855	06/689,946	11/11/86
4,621,859	06/658,675	11/11/86
4,621,861	06/702,914	11/11/86
4,621,871	06/746,350	11/11/86
4,621,873	06/735,093	11/11/86
4,621,875	06/691,670	11/11/86
4,621,877	06/636,862	11/11/86
4,621,879	06/626,710	11/11/86
4,621,880	06/749,856	11/11/86
4,621,885	06/778,095	11/11/86
4,621,886	06/672,824	11/11/86
4,621,893	06/735,015	11/11/86
4,621,896	06/635,693	11/11/86
4,621,898	06/476,297	11/11/86
4,621,900	06/654,067	11/11/86
4,621,913	06/695,208	11/11/86
4,621,916	06/566,310	11/11/86
4,621,920	06/404,744	11/11/86
4,621,923	06/778,089	11/11/86
4,621,925	06/534,126	11/11/86
4,621,933	06/651,317	11/11/86
4,621,934	06/762,272	11/11/86
4,621,936	06/542,315	11/11/86
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4,621,945	06/690,581	11/11/86
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4,970,282	07/306,098	11/13/90
4,970,286	07/370,751	11/13/90
4,970,289	07/348,509	11/13/90
4,970,291	07/269,035	11/13/90
4,970,292	07/393,389	11/13/90
4,970,294	07/282,248	11/13/90
4,970,297	07/025,426	11/13/90
4,970,306	07/282,858	11/13/90
4,970,311	07/280,576	11/13/90
4,970,312	07/280,598	11/13/90
4,970,321	07/397,878	11/13/90
4,970,324	07/142,151	11/13/90
4,970,328	07/469,641	11/13/90
4,970,336	07/359,682	11/13/90
4,970,341	07/017,854	11/13/90
4,970,346	07/428,701	11/13/90
4,970,347	07/434,283	11/13/90
4,970,349	07/313,632	11/13/90
4,970,364	07/392,020	11/13/90

Patent Number	Serial Number	Issue Date
4,970,380	07/404,864	11/13/90
4,970,392	07/466,497	11/13/90
4,970,396	07/456,351	11/13/90
4,970,397	07/367,175	11/13/90
4,970,402	07/288,486	11/13/90
4,970,406	07/372,225	11/13/90
4,970,411	07/340,274	11/13/90
4,970,413	07/113,944	11/13/90
4,970,425	07/342,063	11/13/90
4,970,431	07/263,097	11/13/90
4,970,432	07/339,994	11/13/90
4,970,442	07/482,519	11/13/90
4,970,451	07/336,752	11/13/90
4,970,458	07/349,016	11/13/90
4,970,460	07/104,077	11/13/90
4,970,471	07/317,420	11/13/90
4,970,481	07/435,637	11/13/90
4,970,482	07/471,766	11/13/90
4,970,486	07/418,100	11/13/90
4,970,494	07/438,845	11/13/90
4,970,496	07/404,786	11/13/90
4,970,498	07/359,544	11/13/90
4,970,499	07/222,529	11/13/90
4,970,500	06/608,637	11/13/90
4,970,501	06/833,420	11/13/90
4,970,504	07/286,256	11/13/90
4,970,511	07/445,198	11/13/90
4,970,516	07/389,525	11/13/90
4,970,517	06/454,034	11/13/90
4,970,527	07/279,395	11/13/90
4,970,530	07/476,174	11/13/90
4,970,538	07/491,688	11/13/90
4,970,555	07/315,803	11/13/90
4,970,581	07/242,929	11/13/90
4,970,583	07/426,329	11/13/90
4,970,585	07/338,391	11/13/90
4,970,586	07/321,867	11/13/90
4,970,587	07/430,263	11/13/90
4,970,588	07/294,674	11/13/90
4,970,593	07/399,733	11/13/90
4,970,600	07/333,121	11/13/90
4,970,604	07/338,980	11/13/90
4,970,607	07/389,812	11/13/90
4,970,625	07/344,457	11/13/90
4,970,630	07/374,456	11/13/90
4,970,631	07/502,855	11/13/90
4,970,634	07/357,069	11/13/90
4,970,635	07/270,847	11/13/90
4,970,637	07/208,489	11/13/90
4,970,643	07/192,258	11/13/90
4,970,670	07/277,832	11/13/90
4,970,672	07/301,663	11/13/90
4,970,680	07/001,413	11/13/90
4,970,681	07/110,268	11/13/90
4,970,684	07/206,063	11/13/90
4,970,690	07/388,082	11/13/90
4,970,699	07/310,446	11/13/90
4,970,708	07/468,359	11/13/90

Erratum

In the list of patents which expired on May 9, 1993, due to failure to pay maintenance fees, in the O.G. of July 27, 1993, the following patent should not have appeared:

Patent No.	Serial No.	Issue Date	Filing Date
4,827,640	07/042,919	05/09/89	04/27/87

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,478,981	06/360,525	10/23/84	03/22/82	12/06/94
4,500,989	06/404,039	02/19/85	08/02/82	11/28/94
4,524,437	06/536,867	06/18/85	09/29/83	11/23/94
4,538,833	06/559,487	09/03/85	12/08/83	11/30/94
4,552,713	06/582,054	11/12/85	02/21/84	11/21/94
4,556,002	06/489,117	12/03/85	04/27/83	12/06/94
4,573,683	06/677,094	03/04/86	11/30/84	11/28/94
4,592,281	06/402,913	06/03/86	07/29/82	12/05/94
4,599,520	06/575,612	07/08/86	01/31/84	12/05/94
4,605,870	06/478,613	08/12/86	03/25/83	12/05/94
4,776,583	06/591,817	10/11/88	03/21/84	12/05/94
4,778,193	07/001,052	10/18/88	01/07/87	11/28/94
4,782,327	06/688,444	11/01/88	01/02/85	11/29/94
4,795,652	06/941,448	01/03/89	12/15/86	11/28/94
4,815,263	07/197,025	03/28/89	05/20/88	12/06/94
4,839,656	06/641,385	06/13/89	08/16/84	11/29/94
4,892,308	07/258,636	01/09/90	10/17/88	11/28/94
4,934,931	07/329,268	06/19/90	03/27/89	11/28/94
4,935,219	07/133,448	06/19/90	12/15/87	11/28/94
4,935,728	07/122,951	06/19/90	11/20/87	11/29/94
4,936,333	07/306,160	06/26/90	02/06/89	11/30/94
4,937,552	07/169,306	06/26/90	03/17/88	12/06/94
4,941,501	07/306,392	07/17/90	02/06/89	11/28/94
4,945,696	07/337,883	08/07/90	04/14/89	11/28/94
4,949,255	07/241,415	08/14/90	09/07/88	12/06/94
4,949,650	07/388,065	08/21/90	07/31/89	11/30/94
4,955,503	07/305,079	09/11/90	02/02/89	11/28/94
4,957,153	07/346,627	09/18/90	05/02/89	11/15/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,815,833, Re. S.N. 08/343,830, Nov. 22, 1994, Cl. 345, METHOD AND APPARATUS FOR ACCESSING A COLOR PALETTE SYNCHRONOUSLY DURING REFRESHING OF A MONITOR AND ASYNCHRONOUSLY DURING UPDATING OF THE PALETTE, Steven Harris, Owner of Record: *Advanced Micro Devices, Inc., Sunnyvale, Calif.*, Attorney or Agent: Martin C. Fliesler, Ex. Gp.: 2615

5,031,122, Re. S.N. 08/317,251, Oct. 3, 1994, Cl. 364/483, MEASURING AND MONITORING SYSTEM, B. James Halpern, Owner of Record: *Measuring & Monitoring, Inc., Red Bank, N.J.*, Attorney or Agent: Max Goldman, Ex. Gp.: 2314

5,094,401, Re. S.N. 08/209,559, Mar. 10, 1994, Cl. 52/57, RIDGE CAP TYPE ROOF VENTILATOR, Gary P. Kasner, et. al., Owner of Record: *Liberty Diversified Industries*, Attorney or Agent: Phillip G. Alden, Ex. Gp.: 3504

5,106,829, Re. S.N. 08/231,003, Apr. 21, 1994, Cl. 505/1, METHOD OF MAKING SUBSTANTIALLY SINGLE PHASE SUPERCONDUCTING OXIDE CERAMICS HAVING A TC ABOVE 85 DEGREES, Syed B. Qadri, Owner of Record: *The United States of America as Represented by The Dept. of Navy, Washington, D.C.*, Attorney or Agent: Thomas E. McDonnell, Ex. Gp.: 1112

5,119,104, Re. S.N. 08/252,842, June 2, 1994, Cl. 342/450, LOCATION SYSTEM ADAPTED FOR USE IN MULTI-PATH, Alan C. Heller, Owner of Record: *Precision Tracking FM, Inc., San Antonio, Tex.*, Attorney or Agent: Paul E. Krieger, Ex. Gp.: 2202

5,132,381, Re. S.N. 08/278,504, July 21, 1994, Cl. 526/160, PROCESS FOR THE PREPARATION OF A SYNDIOTACTIC POLYOLEFIN, Andreas Winter, et. al., Owner of Record: *Hoechst Aktiengesellschaft, Frankfurt AM Main, Federal Republic of Germany*, Attorney or Agent: Thomas M. Meshbesher, Ex. Gp.: 1505

5,139,565, Re. S.N. 08/291,822, Aug. 17, 1994, Cl. 504/215, SUBSTITUTED PYRIDINESULFONAMIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS CONTAINING THEM, Fumio Kimura, et. al., Owner of Record: *Ishihara Sangyo Kaisha Ltd., Osaka, Japan*, Attorney or Agent: Richard D. Kelly, Ex. Gp.: 1209

5,144,426, Re. S.N. 08/298,684, Aug. 31, 1994, Cl. 358/133, MOTION COMPENSATED PREDICTION INTERFRAME CODING SYSTEM, Akiyoshi Tanaka, et. al., Owner of Record: *Matsushita Electric Industrial Co., Ltd., Osaka, Japan*, Attorney or Agent: Irah H. Donner, Ex. Gp.: 2602

5,144,833, Re. S.N. 08/301,856, Sept. 7, 1994, Cl. 73/105, ATOMIC FORCE MICROSCOPY, Nabil Amer, et. al., Owner of Record: *IBM Corp., York Town Heights*, Attorney or Agent: Stephen S. Strunck, Ex. Gp.: 2605

5,147,487, Re. S.N. 08/305,534, Sept. 14, 1994, Cl. 156/164, METHOD OF MANUFACTURING DISPOSABLE UNDERPANTS BY APPLYING ANNULAR ADHESIVE ZONES TO THE BACKSHEET AND TOPSHEET FOR RETAINING ELASTIC FOR LEG HOLES, Hironori Nomura, et. al., Owner of Record: *Uni-Charm Corp.*, Attorney or Agent: Timothy R. Dewitt, Ex. Gp.: 1301

5,158,363, Re. S.N. 08/325,607, Oct. 19, 1994, Cl. 374/102, STEAM STERILIZATION INDICATOR, Irving A. Speelman, et. al., Owner of Record: *Propper Manufacturing Co., Inc., Long Island City, N.Y.*, Attorney or Agent: Marina T. Larson, Ex. Gp.: 2406

5,167,901, Re. S.N. 08/346,901, Nov. 30, 1994, Cl. 264/570, METHOD OF EVERTING A TUBE, Thomas F. Driver, et. al., Owner of Record: *Insituform Licensees BV/NL, Rotterdam, The Netherlands*, Attorney or Agent: Michael I. Wolfson, Ex. Gp.: 1307

5,169,254, Re. S.N. 08/354,839, Dec. 8, 1994, Cl. 402/8, PAPER SHEET FASTENER FILE AND METHOD OF ASSEMBLY, George A. Arkwright, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 3206

5,222,444, Re. S.N. 08/349,008, Dec. 2, 1994, Cl. 108/51.3, PAPERBOARD RUNNERS AND PAPERBOARD PALLETS CONSTRUCTED THEREWITH, Donald R. Youell, Jr., et. al., Owner of Record: *Inventors*, Attorney or Agent: John A. Molnar, Jr., Ex. Gp.: 3507

5,282,859, Re. S.N. 08/346,225, Nov. 29, 1994, Cl. 623/11, COMPOSITE LIVING SKIN EQUIVALENTS, Mark Eisenberg, Owner of Record: *Inventor*, Attorney or Agent: Ralph T. Lilore, Ex. Gp.: 3308

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,396,886, Reexam. No. 90/003,652, Dec. 5, 1994, Cl. 381/103, HEARING AID AMPLIFYER, Jared A. Anderson, Owner of Record: *A & L Ventures I, Orinda, Calif.*, Attorney or Agent: Cooley, Godward, Castro, Huddleson & Tatum, Palo Alto, Calif., Ex. Gp.: 2608, Requester: Siemens Hearing Instruments, Inc., Piscataway, N.J.

4,570,741, Reexam. No. 90/003,654, Dec. 6, 1994, Cl. 180/242, MULTI-WHEEL DRIVE SYSTEM, Gregory A. McCoy, Owner of Record: *Long Airdox Co., Oak Hill, W. Va.*, Attorney or Agent: Reginald J. Falkowski, Dresser-Rand Co., Corning, N.Y., Ex. Gp.: 3106, Requester: Stamler Corp., Millersburg, Ky.

5,044,412, Reexam. No. 90/003,655, Dec. 7, 1994, Cl. 144/208B, METHOD AND APPARATUS FOR DEBARKING LOGS, John P. Price, et. al., Owner of Record: *Price Industries, Monticello, AS*, Attorney or Agent: None, Ex. Gp.: 3201, Requester: Michelle N. Lester, Cushman, Darby & Cushman, Washington, D.C.

5,061,147, Reexam. No. 90/003,653, Dec. 5, 1994, Cl. 414/563, VEHICLE CARRIER WITH WHEEL LIFT, Ronald R. Nespor, Owner of Record: *Chevron, Inc., Mercer, Pa.*, Attorney or Agent: Joseph M. Kastelic, Merchant, Gould, Smith, Edell, Welter & Schmidt, Minneapolis, Minn., Ex. Gp.: 3107, Requester: Owner

5,141,486, Reexam. No. 90/003,656, Dec. 7, 1994, Cl. 494/037, WASHING CELLS, Glen D. Antwiler, Owner of Record: *Cobe Laboratories, Inc., Lakewood, Colo.*, Attorney or Agent: William A. Rymer, Fish & Richardson, Providence, R.I., Ex. Gp.: 2402, Requester: Owner

5,259,256, Reexam. No. 90/003,657, Dec. 9, 1994, Cl. 074/049, MOTION CONVERTER WITH PINION SECTOR/RACK INTERFACE, Douglas C. Brackett, Owner of Record: *Inventor*, Attorney or Agent: Ralph W. Selitto, Jr., Selitto & Associates, Edison, N.J., Ex. Gp.: 3502, Requester: Owner

5,297,779, Reexam. No. 90/003,658, Dec. 12, 1994, Cl. 254/098, JACK MECHANISM HAVING SAFETY PROTECTION FOR WORKERS, Robert H. Collins, et. al., Owner of Record: *Robert H. Collins, Jr., Incline, Nev. and Wilbert Jollivette, Houston, Tex.* Attorney or Agent: James L. Jackson, Bush, Moseley, Riddle & Jackson, Houston, Tex., Ex. Gp.: 3203, Requester: Sumner Manufacturing Co., Inc., Houston, Tex.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 12, 1994 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
42,198	70/042,198	03/08/1904
42,200	70/042,200	03/08/1904
42,226	70/042,226	03/08/1904
95,747	71/073,299	03/10/1914
95,754	71/072,335	03/10/1914
95,755	71/072,619	03/10/1914
310,626	71/343,279	03/06/1934
310,632	71/343,147	03/06/1934
310,644	71/341,319	03/06/1934
310,662	71/343,360	03/06/1934
310,663	71/343,361	03/06/1934
310,697	71/342,657	03/06/1934
310,713	71/342,210	03/06/1934
310,716	71/340,872	03/06/1934
310,722	71/343,462	03/06/1934
310,728	71/326,109	03/06/1934
310,746	71/342,170	03/06/1934
310,762	71/342,907	03/06/1934
310,777	71/343,464	03/06/1934
310,802	71/343,665	03/06/1934
586,408	71/562,261	03/09/1954
586,412	71/576,217	03/09/1954
586,419	71/591,643	03/09/1954
586,422	71/594,790	03/09/1954
586,425	71/597,895	03/09/1954
586,427	71/599,443	03/09/1954
586,431	71/605,857	03/09/1954
586,432	71/605,963	03/09/1954
586,440	71/608,168	03/09/1954
586,447	71/612,144	03/09/1954
586,449	71/613,733	03/09/1954
586,450	71/613,801	03/09/1954
586,454	71/615,096	03/09/1954
586,464	71/618,987	03/09/1954
586,470	71/620,118	03/09/1954
586,474	71/621,767	03/09/1954
586,496	71/626,730	03/09/1954
586,498	71/627,269	03/09/1954
586,516	71/630,102	03/09/1954
586,517	71/630,281	03/09/1954
586,518	71/630,510	03/09/1954
586,521	71/630,942	03/09/1954
586,526	71/631,396	03/09/1954
586,529	71/631,578	03/09/1954
586,532	71/631,844	03/09/1954
586,539	71/632,569	03/09/1954
586,540	71/632,858	03/09/1954
586,546	71/633,599	03/09/1954
586,550	71/634,084	03/09/1954
586,554	71/634,767	03/09/1954
586,566	71/629,591	03/09/1954
586,571	71/646,410	03/09/1954
586,575	71/646,492	03/09/1954
586,576	71/646,502	03/09/1954
586,591	71/647,222	03/09/1954
586,599	71/647,554	03/09/1954
586,608	71/647,762	03/09/1954
586,619	71/640,335	03/09/1954
586,626	71/641,209	03/09/1954
586,639	71/642,460	03/09/1954
586,640	71/642,620	03/09/1954
586,645	71/643,126	03/09/1954
586,646	71/643,217	03/09/1954
586,648	71/643,363	03/09/1954
586,651	71/643,564	03/09/1954
586,653	71/643,679	03/09/1954
586,663	71/644,438	03/09/1954
586,675	71/645,537	03/09/1954
586,678	71/645,733	03/09/1954
586,679	71/645,790	03/09/1954
586,681	71/645,842	03/09/1954
586,682	71/645,847	03/09/1954
586,694	71/635,931	03/09/1954
586,696	71/636,077	03/09/1954
586,700	71/636,395	03/09/1954
586,702	71/636,627	03/09/1954
586,704	71/637,081	03/09/1954
586,707	71/637,357	03/09/1954
586,720	71/638,183	03/09/1954
586,724	71/638,225	03/09/1954
586,728	71/638,474	03/09/1954
586,733	71/639,173	03/09/1954
586,741	71/648,155	03/09/1954
586,742	71/648,188	03/09/1954
586,752	71/648,456	03/09/1954
586,756	71/648,641	03/09/1954
586,764	71/649,215	03/09/1954
586,767	71/649,483	03/09/1954
586,768	71/649,865	03/09/1954
586,769	71/650,131	03/09/1954
586,771	71/650,415	03/09/1954
586,773	71/650,770	03/09/1954
586,792	71/601,884	03/09/1954
586,799	71/621,916	03/09/1954
586,807	71/631,931	03/09/1954
586,809	71/632,413	03/09/1954
586,825	71/649,971	03/09/1954
963,178	71/659,201	10/05/1954
963,581	72/416,609	07/10/1973
979,519	72/463,044	02/26/1974
979,694	72/331,975	03/05/1974
979,699	72/316,268	03/05/1974
979,701	72/427,422	03/05/1974
979,702	72/435,697	03/05/1974
979,706	72/453,852	03/05/1974
979,709	72/465,312	03/05/1974
979,710	72/415,038	03/05/1974
979,712	72/431,896	03/05/1974
979,718	72/343,322	03/05/1974
979,719	72/393,037	03/05/1974
979,720	72/427,569	03/05/1974
979,721	72/434,891	03/05/1974
979,723	72/442,522	03/05/1974
979,730	72/333,265	03/05/1974
979,733	72/454,360	03/05/1974
979,734	72/454,583	03/05/1974
979,735	72/454,944	03/05/1974
979,736	72/430,063	03/05/1974
979,737	72/440,053	03/05/1974
979,738	72/455,002	03/05/1974
979,741	72/455,005	03/05/1974
979,743	72/391,474	03/05/1974
979,744	72/405,596	03/05/1974
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979,752	72/441,955	03/05/1974
979,757	72/446,201	03/05/1974
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Reg. Number	Serial Number	Reg. Date
979,774	72/392,465	03/05/1974
979,775	72/402,887	03/05/1974
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979,780	72/428,961	03/05/1974
979,783	72/446,400	03/05/1974
979,785	72/450,143	03/05/1974
979,786	72/450,439	03/05/1974
979,787	72/450,895	03/05/1974
979,796	72/462,812	03/05/1974
979,797	72/463,793	03/05/1974
979,803	72/465,264	03/05/1974
979,804	72/465,265	03/05/1974
979,806	72/465,320	03/05/1974
979,807	72/465,513	03/05/1974
979,808	72/465,560	03/05/1974
979,810	72/465,667	03/05/1974
979,812	72/466,416	03/05/1974
979,813	72/466,748	03/05/1974
979,817	72/430,867	03/05/1974
979,819	72/434,798	03/05/1974
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979,826	72/449,602	03/05/1974
979,831	72/418,226	03/05/1974
979,833	72/418,800	03/05/1974
979,834	72/419,579	03/05/1974
979,835	72/426,421	03/05/1974
979,836	72/428,319	03/05/1974
979,837	72/431,233	03/05/1974
979,841	72/432,776	03/05/1974
979,846	72/441,134	03/05/1974
979,850	72/405,887	03/05/1974
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979,858	72/373,247	03/05/1974
979,859	72/373,862	03/05/1974
979,861	72/386,014	03/05/1974
979,866	72/411,475	03/05/1974
979,867	72/413,609	03/05/1974
979,869	72/418,215	03/05/1974
979,874	72/423,079	03/05/1974
979,876	72/425,124	03/05/1974
979,878	72/426,406	03/05/1974
979,881	72/428,750	03/05/1974
979,884	72/430,254	03/05/1974
979,887	72/430,837	03/05/1974
979,888	72/431,530	03/05/1974
979,889	72/432,246	03/05/1974
979,895	72/435,001	03/05/1974
979,898	72/440,789	03/05/1974
979,904	72/400,198	03/05/1974
979,906	72/409,425	03/05/1974
979,907	72/410,948	03/05/1974
979,908	72/412,720	03/05/1974
979,911	72/416,619	03/05/1974
979,919	72/431,454	03/05/1974
979,920	72/432,873	03/05/1974
979,923	72/435,861	03/05/1974
979,924	72/443,631	03/05/1974
979,925	72/449,509	03/05/1974
979,927	72/427,139	03/05/1974
979,928	72/446,047	03/05/1974
979,930	72/407,567	03/05/1974
979,932	72/441,996	03/05/1974
979,935	72/445,264	03/05/1974
979,939	72/431,730	03/05/1974
979,944	72/420,016	03/05/1974
979,946	72/436,519	03/05/1974
979,947	72/421,195	03/05/1974
979,948	72/436,451	03/05/1974
979,949	72/438,738	03/05/1974
979,953	72/375,193	03/05/1974
979,966	72/423,283	03/05/1974
979,971	72/427,002	03/05/1974
979,972	72/428,164	03/05/1974
979,982	72/442,433	03/05/1974
979,986	72/445,003	03/05/1974
979,987	72/445,465	03/05/1974
979,989	72/446,979	03/05/1974
979,990	72/446,282	03/05/1974
979,991	72/446,796	03/05/1974
979,994	72/447,077	03/05/1974
979,995	72/448,917	03/05/1974
979,999	72/456,424	03/05/1974
980,001	72/290,249	03/05/1974
980,007	72/423,721	03/05/1974
980,011	72/426,625	03/05/1974
980,013	72/428,803	03/05/1974
980,014	72/429,403	03/05/1974
980,020	72/444,716	03/05/1974
980,024	72/450,357	03/05/1974
980,028	72/455,362	03/05/1974
980,029	72/455,370	03/05/1974
980,032	72/382,142	03/05/1974
980,034	72/418,485	03/05/1974
980,037	72/437,262	03/05/1974
980,038	72/438,856	03/05/1974
980,040	72/439,930	03/05/1974
980,042	72/449,497	03/05/1974
980,044	72/430,868	03/05/1974
980,052	72/444,066	03/05/1974
980,053	72/347,140	03/05/1974
980,054	72/394,592	03/05/1974
980,055	72/401,022	03/05/1974
980,058	72/422,356	03/05/1974
980,060	72/423,745	03/05/1974
980,061	72/426,501	03/05/1974
980,064	72/429,867	03/05/1974
980,066	72/432,274	03/05/1974
980,071	72/435,980	03/05/1974
980,078	72/448,072	03/05/1974
980,080	72/450,532	03/05/1974
980,082	72/452,526	03/05/1974
980,084	72/453,202	03/05/1974
980,095	72/464,315	03/05/1974
980,100	72/451,963	03/05/1974
980,103	72/439,996	03/05/1974
980,104	72/440,921	03/05/1974
980,105	72/443,151	03/05/1974
980,107	72/453,909	03/05/1974
980,108	72/426,937	03/05/1974
980,111	72/430,050	03/05/1974
980,112	72/430,117	03/05/1974
980,113	72/430,739	03/05/1974
980,117	72/459,669	03/05/1974
980,118	72/460,270	03/05/1974
980,120	72/461,133	03/05/1974
980,121	72/461,326	03/05/1974
980,126	72/462,917	03/05/1974
980,130	72/455,285	03/05/1974
980,136	72/442,092	03/05/1974
980,139	72/445,449	03/05/1974
980,140	72/447,142	03/05/1974
980,145	72/422,938	03/05/1974
980,146	72/424,479	03/05/1974
980,148	72/439,662	03/05/1974
980,149	72/441,063	03/05/1974
980,150	72/443,119	03/05/1974
980,151	72/444,527	03/05/1974
980,152	72/445,926	03/05/1974
980,154	72/422,351	03/05/1974
980,156	72/442,959	03/05/1974
980,163	72/413,903	03/05/1974
980,164	72/443,009	03/05/1974
980,170	72/421,754	03/05/1974

Department of Commerce
Patent and Trademark Office

Request for Comments on Proposed Utility Examination Guidelines

Agency: Patent and Trademark Office, Commerce

Action: Notice and request for public comments.

Summary: The Patent and Trademark Office (PTO) requests comments from any interested member of the public on proposed internal guidelines that will be used by patent examiners in their review of patent applications for compliance with 35 U.S.C. § 101. Because these guidelines govern internal practices, they are exempt from notice and comment rulemaking under 5 U.S.C. § 553(b)(A).

Dates: Written comments on the proposed guidelines will be accepted by the PTO until February 24, 1995.

Addresses: Written comments should be addressed to the Commissioner of Patents and Trademarks, marked to the attention of Jeff Kushan. Comments submitted by mail should be sent to Commissioner of Patents and Trademarks, Box 4, Patent and Trademark Office, Washington, D.C. 20231. Comments may also be submitted by telefax at (703) 305-8885 and by electronic mail through the Internet to "comments-biotech@uspto.gov." Written comments should include the following information:

- name and affiliation of the individual responding;

-an indication of whether comments offered represent views of the respondent's organization or are the respondent's personal views; and

-if applicable, information on the respondent's organization, including the type of organization (e.g., business, trade group, university, non-profit organization) and general areas of interest.

Parties presenting written comments are requested, where possible, to provide their comments in machine readable format. Such submissions may be provided by electronic mail messages sent over the Internet, or on a 3.5" floppy disk formatted for use in either a Macintosh or MSDOS based computer. Machine-readable submissions should be provided as unformatted text (e.g., ASCII or plain text).

Written comments will be available for public inspection on or about March 1, 1995, in Room 902 of Crystal Park Two, 2121 Crystal Drive, Arlington, Virginia. In addition, comments provided in machine readable format will be available on or around March 1, 1995, through anonymous file transfer protocol (ftp) via the Internet (address: comments.uspto.gov) and through the World Wide Web (address: www.uspto.gov).

For Further Information Contact: Jeff Kushan by telephone at (703) 305-9300, by fax at (703) 305-8885, by electronic mail at kushan@uspto.gov, or by mail marked to his attention addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.

Supplementary Information

I. Guidelines for Examination of Applications for Compliance with the Utility Requirement

A. Introduction

The following guidelines establish the policies and procedures to be followed by Examiners when examining applications for compliance with the utility requirement of 35 U.S.C. § 101. The guidelines also address issues that may arise during examination of applications claiming protection for inventions in the field of biotechnology and human therapy. The guidelines are accompanied by an overview of applicable legal precedent governing the utility requirement.

B. Guidelines for Examination of Applications for Compliance With 35 U.S.C. § 101

Examiners must adhere to the following procedures when examining applications for compliance with 35 U.S.C. § 101.

1. Determine what the applicant has claimed as his or her invention. This is done to:

a) ensure that the applicant has claimed statutory subject matter (e.g., a process, a machine, a composition or a manufacture); and

b) ascertain what the invention is for purposes of determining whether it is "useful."

2. Review the specification and claims to determine if the applicant has disclosed or asserted or any credible utility for the claimed invention.

a) If the applicant has asserted that the claimed invention is useful for any particular purpose and that assertion would be considered credible by a person of ordinary skill in the art, the Examiner should not impose a rejection based on § 101. Credibility is to be assessed from the perspective of one of ordinary skill in the art in view of any evidence of record (e.g., data, statements, opinions, references, etc.) that is relevant to the applicant's assertions.

b) If the applicant has not asserted that the claimed invention is useful for a particular purpose but such a use would be readily apparent to a person of ordinary skill in the art, the Examiner should not impose a rejection under § 101.

3. If the applicant has not asserted any credible utility for the claimed invention or a utility would not be readily apparent to one of ordinary skill in the art, reject the claims under § 101. To be considered appropriate by the Office, a rejection under § 101 must include the following elements:

a) A prima facie showing that the claimed invention has no utility. A prima facie showing of no utility must establish that it is more likely than not that a person of ordinary skill in the art would not consider credible any utility for the claimed invention that has been asserted by the applicant. Where no utility has been asserted in the disclosure, the prima facie showing must support a finding that a person of ordinary skill would not be able to ascertain any use for the claimed invention. A prima facie showing must contain:

i) a well-reasoned statement by the Examiner that clearly sets forth the reasoning used in reaching his or her conclusions;

ii) support for factual findings relied upon by the Examiner in reaching his or her conclusions; and

iii) support for conclusions of the Examiner that evidence provided by the applicant to support an asserted utility would not be considered persuasive to a person of ordinary skill in the art.

b) Evidence that supports any factual assertions relied upon by the Examiner in establishing the prima facie showing. Whenever possible, the Examiner must provide documentary evidence that supports the factual basis of a prima facie showing of no utility (e.g., scientific or technical journals, excerpts from treatises or books, or U.S. or foreign patents). If documentary evidence is not available, the Examiner should note this fact and specifically explain the scientific basis for his or her conclusions.

4. A rejection under § 101 should not be maintained if an asserted utility for the claimed invention would be considered credible by a person of ordinary skill in the art in view of all evidence of record.

Once a prima facie showing of no utility has been properly established, the applicant bears the burden of rebutting it. The applicant can do this by amending the claims, by providing reasoning or arguments, or by providing evidence in the form of a declaration under 37 CFR § 1.132 or a printed publication, that rebuts the prima facie showing. Once a response has been received by the Examiner, he or she should review the original disclosure, any evidence relied upon in establishing the prima facie showing, any claim amendments and any new reasoning or evidence provided by the applicant in support of an asserted utility. It is essential that the Examiner recognize, fully consider

and respond to each substantive element of any response to a rejection under § 101.

Examiners are reminded that they must treat as true credible statements made by an applicant or a declarant in the specification or in a declaration provided under 37 CFR § 1.132, unless they can show that one of ordinary skill in the art would have a rational basis to doubt the truth of such statements. Thus, not accepting the opinion of a qualified expert that is based on an appropriate factual record would clearly be improper.

II. Additional Information

The PTO has prepared an analysis of the law governing 35 U.S.C. § 101 to support the guidelines outlined above. Interested members of the public are invited to comment on the legal analysis as well as the guidelines. Copies of the legal analysis can be obtained from Jeff Kushan, who can be reached using the information indicated above.

December 23, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Certificate of Correction
For Week of January 24, 1995

D. 352,276	5,211,684	5,299,004	5,335,624
D. 352,387	5,216,072	5,299,045	5,335,821
4,437,873	5,218,042	5,300,859	5,335,905
4,632,100	5,219,341	5,301,937	5,336,371
4,841,100	5,219,409	5,304,961	5,336,512
4,923,061	5,219,825	5,305,183	5,336,635
4,932,372	5,220,224	5,305,217	5,336,717
4,935,372	5,225,480	5,307,093	5,338,837
4,936,478	5,225,954	5,310,260	5,339,333
4,967,218	5,227,442	5,310,270	5,339,365
4,985,145	5,228,084	5,312,941	5,339,565
5,019,493	5,234,569	5,314,407	5,339,704
5,023,362	5,234,903	5,315,502	5,340,793
5,023,647	5,236,687	5,316,395	5,341,228
5,040,688	5,237,785	5,317,461	5,341,315
5,043,262	5,238,833	5,318,440	5,341,373
5,059,690	5,245,026	5,319,528	5,342,512
5,060,349	5,246,751	5,319,928	5,342,999
5,077,192	5,247,334	5,320,167	5,343,016
5,084,283	5,248,598	5,322,176	5,343,154
5,102,590	5,248,643	5,322,273	5,343,315
5,108,804	5,248,826	5,322,422	5,343,457
5,116,414	5,250,187	5,322,520	5,343,874
5,125,284	5,250,294	5,323,160	5,344,144
5,138,829	5,250,423	5,323,233	5,344,205
5,141,686	5,251,010	5,324,548	5,344,561
5,142,500	5,252,834	5,324,669	5,344,663
5,157,140	5,255,047	5,324,738	5,345,076
5,158,070	5,258,478	5,325,176	5,345,279
5,159,689	5,264,533	5,327,221	5,345,346
5,161,248	5,268,246	5,327,345	5,345,375
5,162,570	5,274,830	5,328,291	5,345,510
5,170,870	5,277,853	5,328,440	5,345,682
5,173,573	5,281,373	5,328,462	5,345,931
5,177,065	5,283,095	5,328,662	5,346,184
5,179,341	5,283,189	5,328,844	5,346,653
5,181,344	5,283,651	5,329,635	5,346,978
5,182,594	5,284,222	5,330,394	5,347,678
5,187,276	5,284,833	5,332,517	5,347,977
5,188,437	5,288,469	5,332,578	5,348,318
5,190,371	5,293,576	5,332,656	5,348,319
5,191,457	5,293,659	5,332,710	5,348,367
5,196,741	5,293,924	5,333,028	5,348,569
5,198,560	5,295,224	5,333,068	5,348,778
5,200,992	5,296,182	5,333,364	5,349,057
5,203,636	5,296,953	5,333,703	5,349,129
5,204,732	5,297,089	5,334,495	5,349,167
5,206,532	5,298,455	5,335,161	5,349,718
5,208,640	5,298,527	5,335,494	5,349,750
5,208,973	5,298,839	5,335,538	5,349,776
5,349,962	5,355,720	5,358,536	5,362,410
5,351,280	5,355,981	5,358,727	5,363,383
5,351,446	5,356,291	5,358,934	5,363,842
5,351,538	5,356,461	5,359,625	5,364,021
5,351,568	5,356,620	5,359,638	5,364,981
5,352,761	5,356,631	5,360,035	5,365,677
5,352,769	5,356,661	5,360,556	5,365,811
5,353,186	5,356,680	5,360,676	5,366,258
5,353,241	5,357,154	5,360,713	5,366,464
5,353,610	5,357,245	5,361,077	5,366,936
5,353,823	5,357,902	5,361,311	5,367,753
5,354,376	5,357,975	5,361,661	5,367,984
5,354,670	5,358,080	5,361,791	5,368,474
5,354,769	5,358,304	5,361,934	5,369,157
5,355,362	5,358,313	5,362,192	5,370,538
			5,370,635

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
November 21-25, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
11-22	EX	74/130,835	Diamond Rug & Carpet Mills, Inc.	whether the matter asserted for registration is capable of registration on the Supplemental Register (generic/descriptive)	Refusal Affirmed		"STAIN PROOF CARPET" [carpets having a pile surface of synthetic yarns]		No
11-22	OPP	84,601	Jimboy's Tacos, Inc. v. Jimmy Boy Pizza Corp.	2(d)	Opposition Sustained	"JIMBOY'S" [tacos, enchiladas, burritos, tostados; hand hamburgers for consumption on and off the premises	"JIMMY BOY PIZZA" (and design) [pizza for consumption on and off the premises]		No
11-22	EX	74/254,742	Vogel Peterson Furniture Co.	2(d)	Refusal Affirmed		"COMPORTEC" [office chairs]	"COMFORTECH-NOLOGY" [furniture, including beds, mattresses, box springs and sofa beds]	No
11-22	EX	74/282,549	Coster & Co.	2(d)	Refusal Affirmed		"COMFORT-PLUS" [electrically energized portable household heaters]	"COMFORT" and "COMFORT HEATER II" [portable electric room heaters]	No
11-23	EX	74/131,055	Contemporary Services Corp.	whether the matter asserted for registration functions as a service mark for the services recited in the application; whether identification of services is acceptable	Refusal Affirmed (on both grounds)		"EVENT STAFF" [patron services, i.e., security, crowd control, ticket takers and ushers, at various sporting and entertainment events or productions held at arenas, convention centers, stadiums, speedways, and amphitheatres nationwide]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
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Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box Designations	Explanation
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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
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Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
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New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
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Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	01/06/94
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	11/04/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	03/22/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	01/20/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/16/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/17/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/31/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	12/07/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	308-0771	12/13/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/14/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/20/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/16/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	12/20/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	11/30/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	01/06/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	07/16/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/30/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during December 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....Numbers 4,060,852 to 4,065,811 inclusive
Plant Patents.....4,161 to 4,173

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Nov. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/06/94	10/12/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/94	08/08/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/09/94	07/01/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/01/94	07/11/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/12/94	08/17/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/94	08/24/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/19/94	07/27/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/24/94	08/09/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/15/94	08/08/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/25/94	08/23/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/31/94	08/08/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/16/94	09/09/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/26/94	07/27/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	05/24/94	—0—
Renewals (All Classes)	09/01/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
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REEXAMINATIONS

JANUARY 24, 1995

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,784,356 (2455th)

VARIABLE PLACEMENT INTERCHANGEABLE LAMP SYSTEM

David K. Fox, Wayzata, Minn., assignor to Railway Equipment Company, Minneapolis, Minn.

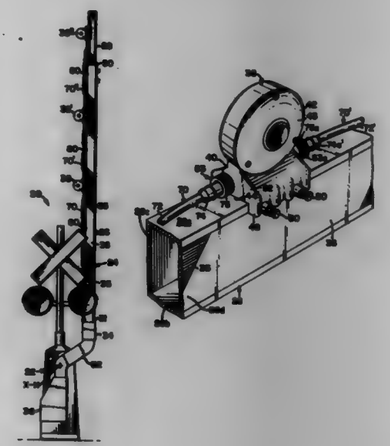
Reexamination Request No. 90/003,198, Sep. 20, 1993.

Reexamination Certificate for Patent No. 4,784,356, issued Nov. 15, 1988, Ser. No. 17,561, Feb. 24, 1987.

Continuation of Ser. No. 830,534, Feb. 18, 1986, Pat. No. 4,666,108

Int. Cl.[6] B61L *29/00*

U.S. Cl. 246—125



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2–20 is confirmed.

Claim 1 is cancelled.

2. A lamp system used with a railway crossing arm, comprising:

a housing portion including a means for holding a lamp controllable by electrical circuitry;

fastening means for fastening said housing portion to any of a plurality of selected locations along the length of a separate and distinct railway crossing arm, the fastening means including clamp means for nondestructively clamping the housing portion to the railway crossing arm whereby the housing portion can be attached to the railway crossing arm without drilling or other deformation of the railway crossing arm;

cable receiving means attached to the housing portion for receiving an extensible cable means in a plurality of orientations rotatably offset from each of said orientation providing a different electrical connection between said cable means and said lamp, a first position providing a constant illumination signal, a second position providing an intermittent signal, and a third position providing an intermittent illumination signal reciprocal to the intermittent signal of the second position.

B1 5,020,507 (2456th)

COMPOUND ARCHERY BOW

Marlow W. Larson, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah

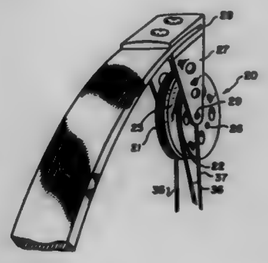
Reexamination Request No. 90/002,477, Oct. 15, 1991.

Reexamination Certificate for Patent No. 5,020,507, issued Jun. 4, 1991, Ser. No. 198,231, May 25, 1988.

Division of Ser. No. 236,781, Feb. 23, 1981, Pat. No. 4,748,962, Continuation-in-part of Ser. No. 12,799, Feb. 9, 1987, Pat. No. 4,774,927, which is a continuation-in-part of Ser. No. 676,740, Nov. 29, 1984, Pat. No. 4,686,955

Int. Cl.[6] F41B *5/10*

U.S. Cl. 124—25.6



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–4 are determined to be patentable as amended.

New claims 5–12 are added and determined to be patentable.

1. An eccentric for a compound bow comprising:

a wheel element mounted to pivot on an axis and carrying a string groove with a periphery having a geometric center remote from said axis, said string groove being parallel a plane approximately normal said axis; and

a take-up groove with a periphery which is [both] *of a different shaped configuration than and* non-concentric with [and] *the periphery of said string groove, the majority of the periphery of said take-up groove being* out of registration with the periphery of said string groove [about substantially the entire periphery of said string groove];

said wheel element being structured for paying out from said string groove a central stretch of bowstring whereby said central stretch is tangent to said string groove at successive first points along the periphery of said string groove as said wheel *element* pivots on said axis from a rest position to a peak force position and then to a fully drawn position;

said wheel *element* further being structured for receiving onto said take-up groove an end stretch of [a] said bowstring whereby said end stretch is tangent to said take-up groove at successive second points along the periphery of said take-up groove as said wheel *element* pivots on said axis from said rest position to said peak force position to said fully drawn position, said second points being opposite said axis with respect to said first points;

said string groove configured with respect to said axis such that a distance measured between the axis and any of said first points is relatively small between said rest and peak force positions, as compared to a distance measured be-

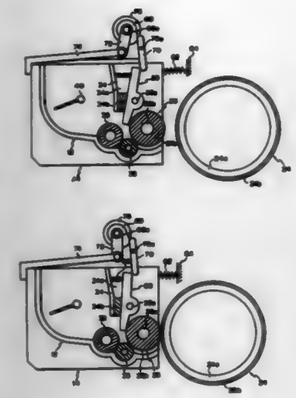
tween said axis and any of said first points between said peak force and said fully drawn positions.

B1 5,068,691 (2457th)

DEVELOPING DEVICE WITH A CONTROLLABLE PRESSURE RELEASE FOR THE DEVELOPING ROLLER

Yukio Nishio, Tama, and Kazunori Hirose, Hiratsuka, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Reexamination Request No. 90/003,111, Jun. 30, 1993.
Reexamination Certificate for Patent No. 5,068,691, issued Nov. 26, 1991, Ser. No. 530,518, May 30, 1990.
Claims priority, application Japan, Jun. 1, 1989, 1-139445; Jun. 5, 1989, 1-141217; Jun. 21, 1989, 1-159320; Jun. 26, 1989, 1-163120
Int. Cl.[6] G03G *15/08*
U.S. Cl. 355—259



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5, 9–19, 21, 22, 26–28** is confirmed.

Claims **20, 29** are cancelled.

Claims **6, 23** are determined to be patentable as amended.

Claims **7, 8** and **24, 25**, dependent on an amended claim, are determined to be patentable.

New claims **30–33** are added and determined to be patentable.

1. A developing device using a one-component developer composed of toner particles, comprising:

a vessel for holding the developer, said vessel being movable between first and second positions;

a developing roller rotatably provided within and supported by said vessel so that a portion of said developing roller is exposed therefrom, the exposed portion of said developing roller being pressed against a surface of an electrostatic latent image carrying body when positioning said vessel at the first position thereof, said developing roller being formed of a conductive elastic material by which the toner particles are entrained to form a developer layer around said developing roller and are carried to the surface of said electrostatic latent image carrying body for development of an electrostatic latent image formed thereon;

a blade member means provided within and movably supported by said vessel, said blade member means being movable between first and second positions, said blade member for regulating a thickness of the developer layer formed around said developing roller when positioning said blade member means at the first position thereof pressed against said developing roller; and

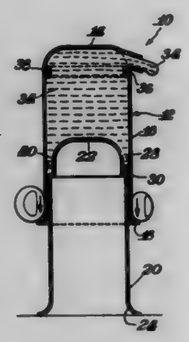
means for moving said vessel and said blade member means from the first positions thereof to the second positions thereof and for controlling at least partial release of the pressures exerted on said developing roller by said electrostatic latent image carrying body and said blade member means, respectively.

B1 5,092,496 (2458th)

DISPENSER FOR FLOWABLE MATERIALS HAVING A PISTON WITH A FLEXIBLE SEALING RIM

Harold R. Gayle, Wilmington, Del.; William T. Wilkinson, Chesapeake City, and Mario Bolardi, Queenstown, both of Md., assignors to Package Research Corporation, Cleveland, Ohio

Reexamination Request No. 90/003,363, Mar. 14, 1994.
Reexamination Certificate for Patent No. 5,092,496, issued Mar. 3, 1992, Ser. No. 667,288, Mar. 11, 1991.
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—386



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

New claims **7–11** are added and determined to be patentable.

1. In a dispenser for flowable materials comprising a barrel having an upper end and an open lower end, a dispensing spout at said upper end of said barrel, a plunger telescoped into said barrel, the upper end of said plunger having a piston head spaced from the inner surface of said barrel, a chamber formed between said upper end of said barrel and said upper end of said plunger whereby the flowable material may be inserted in and fill said chamber, and said barrel and said plunger being slidably mounted with respect to each other to vary the size of said chamber whereby the flowable material is caused to be discharged from said dispensing spout when said chamber is made smaller by said upper end of said barrel and said upper end of said plunger being moved toward each other, the improvement being in an annular peripheral sealing rim extending around said plunger below said piston head, said sealing rim having an outer longitudinal surface terminating in a corner at its upper edge, said sealing rim having an upper surface, said sealing rim having a thin portion which comprises hinge means, said corner being on a longitudinal extension of said outer longitudinal surface and positioned upwardly beyond said hinge means, said hinge means being disposed inwardly of said outer longitudinal surface for causing said outer longitudinal surface to pivot downwardly in response to pressure from the flowable material when said chamber is made smaller to thereby create sealing surface contact of said corner and a portion of said outer longitudinal surface with said inner surface of said barrel, and the degree of contact of said outer longitudinal surface increasing as materials continue to be dispensed from said spout.

B1 5,093,080 (2459th)

CONSERVATION PROCESS FOR AGRICULTURAL PRODUCTS

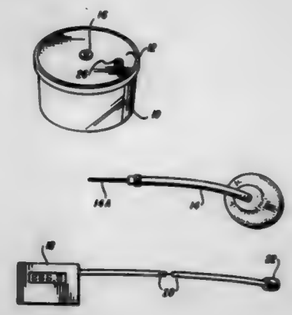
Elbert G. Keller, Fillmore, Calif., assignor to P C P Partnership

Reexamination Request No. 90/002,974, Jan. 25, 1993.
Reexamination Certificate for Patent No. 5,093,080, issued Mar. 3, 1992, Ser. No. 432,078, Nov. 6, 1989.
Int. Cl.[6] B01J *3/03*; G05D *22/00*; A01L *9/00*; A23K *3/00*
U.S. Cl. 422—40

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3** are cancelled.

[1. A method for preserving a respiratory agricultural product having a particular internal partial vapor pressure which comprises introducing air pressurized to a positive pressure with respect to ambient pressure to an enclosed area surrounding the produce thereby providing a positive pressure gradient from ambient pressure to the internal vapor pressure of the product to negate the outward diffusion of moisture and nutrients of the products.]



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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,834

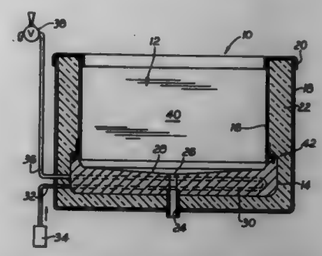
ICE COOLED BEVERAGE DISPENSER AND METHOD OF MAKING SAME

Craig A. Swanson, San Antonio, Tex., assignor to IMI Cornelius Inc., Anoka, Minn.

Original No. 4,958,505, dated Sep. 25, 1990, Ser. No. 180,513, Apr. 12, 1988. Application for reissue Sep. 24, 1992, Ser. No. 950,625

Int. Cl.[6] B67D *5/62*

U.S. Cl. 62—398 14 Claims



11. An ice cooled beverage dispenser, comprising:

a. a cast metal cold plate having a beverage circuit therethrough, the cold plate having an ice supporting surface and drain means located [generally centrally thereof] *therein*, and the cold plate having an upstanding rim extending around [the] *a* perimeter thereof above the ice supporting surface, *the rim having a top mounting pad surface and an inner ring surface depending downward from the top mounting pad surface to, and forming a sharp intersection with, a fillet surface, and the fillet surface depending downward from the intersection thereof with the inner ring surface to the cold plate ice supporting surface, and the ring surface being inclined at a relatively steep angle with respect to the ice supporting surface and the fillet surface being inclined at a relatively shallow angle with respect to the ice supporting surface for forming the sharp intersection between the ring and fillet surfaces;*

b. a tubular ice bin liner, the liner having a bottom perimeter edge, *an outer surface* and an inner ice containing surface, the [bottom perimeter edge] *ice bin liner* secured to the upstanding rim for forming an ice [containing chamber and] *bin cavity wherein* the *liner* bottom *perimeter* edge [secured to the upstanding perimeter edge above the ice supporting surface] *is press fit within the upstanding rim so that a bottom perimeter portion of the bin outer surface is closely adjacent the inner ring surface and so that the bin bottom perimeter edge is positioned adjacent the intersection between the inner ring surface and the fillet surface.*

Re. 34,835

METHOD AND APPARATUS FOR EDITING DOCUMENT IN COLORS

Masayoshi Ozeki, Chiba, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Original No. 4,789,855, dated Dec. 6, 1988, Ser. No. 702,831, Feb. 19, 1985. Application for reissue Dec. 5, 1990, Ser. No. 622,613

Claims priority, application Japan, Oct. 11, 1984, 59-211302

Int. Cl.[6] G09G *5/02*

U.S. Cl. 345—153 34 Claims

12. A device for editing a document in colors, comprising:

(a) character information storing means for storing information of each of characters included in a document which is to be displayed on a display screen;

(b) color information storing means for storing color information as to at least one of the display color and background color of each of said characters;

(c) editorial area specifying means for specifying a desired editorial area of the document which is to be displayed on the display screen, in response to an input of an operator;

(d) editorial area storing means for storing the editorial area specified by said editorial area specifying means;

(e) color specifying means for specifying color information specifying at least one of the display color and background color for certain characters of said document displayed on the display screen in response to an input of the operator;



(f) dot pattern refresh storing means for storing dot pattern display information to be displayed on the display screen which is generated based on information stored in said character information storing means and said color information storing means; and

(g) color information processing means for updating the contents of said color information storing means which corresponds to said editorial area, on the basis of color specifying information from said color information specifying means, whereby dot pattern information stored in said dot pattern refresh storing means is modified in response to said updating of said color information storing means.

Re. 34,836

EYEWEAR RETAINER

Edmond E. Murrell, 11500 NE. 76th St., A3-12, Vancouver, Wash. 98662

Original No. 5,002,381, dated Mar. 26, 1991, Ser. No. 455,514, Dec. 21, 1989. Continuation-in-part of Ser. No. 312,889, Feb. 17, 1989, abandoned. Application for reissue Mar. 26, 1993, Ser. No. 38,678

Int. Cl.[6] G02C *5/14*

U.S. Cl. 351—123 54 Claims

32. An eyewear retainer for use with eyewear including a pair of bows which extend rearwardly and include respective downwardly curved terminal portions, the eyewear retainer comprising:

an extender of resiliently flexible and elastic rubberlike material, attachable in a selected position on a respective one of the pair of bows, said extender including an elongate tubular portion adapted to fit around said terminal portion, said tubular portion having a front end and a rear end, said extender further having hook means, including flexible elongate forwardly concave hook member means, attached to and

depending downwardly from said tubular portion, for fitting behind a wearer's ear and resiliently holding said eyewear



securely in place while being flexible enough to bend resiliently and facilitate removal of said eyewear when desired.

Re. 34,837

FEEDS

Takefumi Iwasami, Kawasaki; Kiyoshi Maruta, Machida; Ichiya Murota, Sagamihara, and Hiroshi Miyazaki, Tokyo, all of Japan, assignors to The Calpis Food Industry Co., Ltd, Tokyo, Japan

Original No. 4,919,936, dated Apr. 24, 1990, Ser. No. 44,477, May 1, 1987. Application for reissue May 28, 1993, Ser. No. 69,200

Int. Cl.[6] A23K *1/17*; C12R *1/07*

U.S. Cl. 424—442 **2 Claims**

1. A method for increasing the weight gain in animals comprising feeding to said animals a food which is supplemented with an amount effective to increase the weight of a probiotic comprising a carrier and Bacillus subtilis C-3102 (FERM PB-1096).

PLANT PATENTS

GRANTED JANUARY 24, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

P.P. 9,046

NECTARINE TREE KNOWN AS LAURA

Giovanni B. Bubani, 921 N. Peach Ave., No. 119, Fresno, Calif. 93727-2492

Filed Dec. 20, 1993, Ser. No. 169,800

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—41.1 **1 Claim**

1. A new and distinct variety of nectarine tree substantially as shown and described, and characterized by its early maturing fruit of large size and excellent sugar balance and, further, having firm, highly edible flesh and skin of a red blush color ranging from dark garnet red to a lighter red with numerous yellow dots, giving it a very attracive appearance, and flesh of a firm and crisp texture and becoming juicy with after ripening.

P.P. 9,047

BROMELIAD PLANT 'GUZ 206'

Jeffrey C. Kent, Vista, Calif., assignor to Kent Bromeliad Nursery, Inc., Vista, Calif.

Filed Nov. 15, 1993, Ser. No. 152,028

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.8 **1 Claim**

1. A new and distinct variety of Bromeliad plant substantially as shown and described, characterized particularly as to novelty by the floral bracts wherein the color grades from strong reddish orange at the base of inflorescence to brilliant yellow, and the color blends somewhat into the mass of the plant rather than rising above it, the bracts being essentially bicolored which is unusual in Bromeliads.

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PATENTS

GRANTED JAN. 24, 1995

ERRATA

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326–031	5,384,498
326–039	5,384,499

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ERRATA—CONTINUED

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327–157	5,384,502
327–053	5,384,503
327–051	5,384,504
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347–041	5,384,587
348–015	5,384,588
348–031	5,384,589
361–062	5,384,678
361–119	5,384,679
395–147	5,384,886

PATENTS

GRANTED JANUARY 24, 1995

GENERAL AND MECHANICAL

5,383,235
BENCHPRESS SHIRT
Richard E. Peters, Noble, Okla., assignor to Ultimate Power Products, Bonita Springs, Fla.
Continuation-in-part of Ser. No. 983,035, Nov. 30, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 133,883
Int. Cl.[6] A41B *1/00*
U.S. Cl. 2—115 5 Claims



1. A shirt to be worn on the upper torso of an individual having a waist and a waist circumference and a chest and a chest circumference, comprising:

an upper portion corresponding to said chest area of said wearer having an upper portion circumference;

a lower portion corresponding to said waist area of said wearer having a lower portion circumference;

wherein said upper portion circumference of said shirt is substantially less than said chest circumference of said wearer, and said lower portion circumference of said shirt is substantially the same as said waist circumference of said wearer;

a front portion having first and second front panels, each of said first and second front panels having an upper portion having a width and a lower portion having a width;

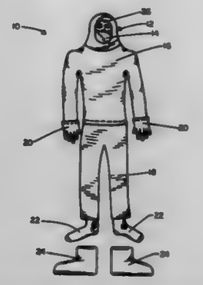
a back portion having first and second sides and an upper portion having a width and a lower portion having a width, said back and front portions of said shirt at their upper portions having an upper portion circumference and said lower portions of said front and back portions having a lower circumference;

said first and second front panels each having first and second sides, said first sides of said first and second front panels attached, respectively, to the first and second sides of said back portion of said shirt, and said second sides of said first and second front panels being centrally and vertically disposed on the front portion of said shirt;

first and second shoulder portions positioned, respectively, between said first and second front panels and said back portion;

a zipper having first and second engaging portions attached, respectively, to said second sides of said first and second front panels, said zipper in its unzipped mode coming together at said lower portion of said shirt to form a zipper junction, the combined width of said front panels at said lower portion being substantially the same as the width of said back portion at said lower portion and said first and second engaging portions of said zipper being separated from each other at said upper portion of said shirt when unzipped by a distance defined between said first and second front panels at said upper portion of said shirt, said distance at a particular point along said vertically disposed second sides of said first and second front panels determined by the width of said back portion at said upper portion being greater than the combined width of said first and second front panels at their upper portion by a distance defined between said first and second front panels in an unzipped mode causing a difference between the shirt's circumference and the wearer's chest at said point at the upper portion circumference of said shirt in its unzipped mode said shirt in its use mode, being zipped, pulling said upper portions of said first and second front panels together across said distance between said first and second front panels to exert greater pressure around the chest of the wearer at said upper portion of said shirt than at the wearer's waist at said lower portion of said shirt.

5,383,236
ODOR ABSORBING CLOTHING
Gregory J. Sesselmann, Muskegon, Mich., assignor to ALS Enterprises, Inc., Muskegon, Mich.
Continuation of Ser. No. 798,288, Nov. 25, 1991, abandoned. This application Sep. 22, 1993, Ser. No. 125,342
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—243.1 12 Claims



1. An article of clothing adapted to absorb odors emanating from the wearer and thereby prevent detection of the wearer by wildlife which have an acute sense of smell, wherein the article of clothing substantially envelopes the wearer including the scalp, mouth, underarms, groin and feet of the wearer and comprises a base layer, an outer layer and a fabric layer disposed between the base and outer layers, the fabric layer having an odor absorbing agent incorporated therein and the odor absorbing agent being selected from the group consisting of activated charcoal, chlorophyll, baking soda, activated alumina, soda lime, zeolite, calcium oxide, and potassium permanganate.

5,383,237
TOILET SEAT DEODORIZER APPARATUS
David B. Baker, Box 6, Newton Falls, N.Y. 13666
Filed Dec. 27, 1993, Ser. No. 172,921
Int. Cl.[6] A42K *13/24*
U.S. Cl. 4—237 3 Claims

1. A new and improved toilet seat deodorizer apparatus for a toilet which includes a toilet bowl, comprising:

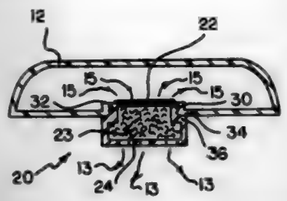
a flexible, resilient air pump assembly shaped substantially in the form of a toilet seat,

a connector assembly for connecting said flexible, resilient air pump assembly to the toilet bowl,

a removable and replaceable odor dispenser assembly connected to said flexible, resilient air pump assembly and including a first screened end in direct communication with air contained within said flexible, resilient air pump assembly, and said odor dispenser assembly including a second screened end in direct communication with air outside said flexible, resilient air pump assembly and said

odor dispenser assembly, such that when a person sits upon said flexible, resilient air pump assembly, a quantity of air is pumped from inside said flexible, resilient air pump assembly through said odor dispenser assembly to outside said odor dispenser assembly, such that odor-bearing air is pumped from inside said odor dispenser assembly to room air in which the toilet is located, and

rigid support members connected to said flexible, resilient air pump assembly for supporting said flexible, resilient air pump assembly a predetermined spaced distance from the toilet bowl,



wherein said odor dispenser assembly is located between said flexible, resilient air pump assembly and the toilet bowl,

wherein said odor dispenser assembly contains a quantity of solid particulate odor-bearing

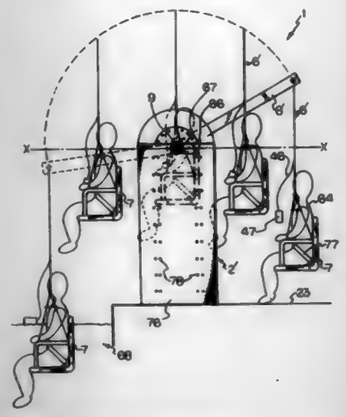
wherein said flexible, resilient air pump assembly includes a threaded aperture, and said odor dispenser assembly includes complementary threads, such that said odor dispenser assembly can be selectively screwed into or out of said flexible, resilient air pump assembly.

5,383,238

INDEPENDENT LIFT

Edward J. Morris, 302 Erie, Bay City, Mich. 48607

Filed Mar. 18, 1994, Ser. No. 210,626
Int. Cl.[6] E04H 4/14; A47K 3/12
U.S. Cl. 4—496 **6 Claims**



1. An independent lift comprising:

two spaced apart, vertical columns, each vertical column having a top end and a bottom end, and a front and a back, each vertical column being capable of being secured by its bottom end to a solid substrate and each vertical column comprised of at least four vertical posts;

each vertical column containing braces and support plates therein to at least stabilize and brace the vertical support posts to each other, in a spaced-apart relationship, at least one pair of such support plates being located near the top end of each vertical column, and at least one pair of such support plates being located near the bottom end of each vertical column, said vertical columns being detachedly braced to each other at their bottom ends thereof by a common brace;

two independent lifting arms, each said lifting arm having a near end and a distal end, each said lifting arm being fixedly attached at said near end to a first rotatable shaft, said first rotatable shaft having an outer end and an inner end, and being supported by, and rotatably locked into respective bearings on each of its outer and inner ends, said bearings being located in openings in the top support plates, and being supported by the top support plates, all of the openings in the top support plates, first rotatable shafts, and bearings of both lifting arms, being horizontally aligned from one column to the other, each said lifting arm being detachedly secured near its distal end by a lifting bar common to both lifting arms, to form a U-shaped assembly comprised of the lifting arms and the lifting bar;

the inner ends of each shaft being surmounted by a first pinion gear, in which each first pinion gear is movably integrated with a rack to provide vertical rectilinear motion from vertical reciprocating motion, each said rack being a movable, elongated shaft having an upper end and a lower end, and being slidably mounted in channel bearings, which channel bearings are mounted to the vertical column, and each said rack having physical contact at its upper end with its respective first pinion gear;

each said rack being movably integrated with a second pinion gear at its lower end, each said second pinion gear being fixedly surmounted on a common shaft;

said common shaft having a drive end and a follow end, and being located in the bottom end of the vertical column and being supported by bearings on each of its drive end and follow end, said bearings being located and supported in openings in the bottom support plates, the openings in the bottom support plates, the bearings in the bottom support plates, and the common shaft being horizontally aligned from one column to the other, the following end of the common shaft being rotatably locked into its respective bearing, the driving end of the common shaft being integrally locked to a transmission located adjacent the common shaft, and being driven by said transmission, which transmission is driven by gears located in a gear box adjacent the transmission, the gear box being driven by a third shaft, which third shaft is driven by a power source, which power source is controlled by a control device mounted on the independent lift near the user thereof;

a support device for supporting a human form, said support device being attached to the lifting bar by two, independent attachment means, each said attachment means being spaced apart along the lifting bar and comprised of

(i) a coupling having bearings situated therein, each coupling and bearing surrounding and rotatable around the lifting bar, and

(ii) a suspension means, attached to, and extending from each coupling and attached to the support device so as to support, stabilize, and balance the support device;

each said vertical column having a covering which is comprised of a top segment, having an upper surface, and a bottom segment having a top end, each said covering essentially enclosing said vertical column, said top segment being surmounted on the top end of the bottom segment;

each top segment of each covering having a slot through its upper surface, to accommodate a reciprocal movement of each lifting arm therethrough, from the front to the back and from the back to the front of each column, said reciprocal movement of the lifting arms being free through an arc which carries the arms at least below a horizontal plane formed by the horizontal alignment of the first rotatable shafts;

each said slot having inside edges and a groove on its inside edges to accommodate a sliding panel, which sliding panel is a flexible sheet, having a length sufficient to cover the slot in the top of the top segment as the arms travel through the arc from the front to the back and from the back to the front; each sliding panel having an opening near its center to accommodate a lifting arm therethrough; whereby, as each lifting arm is moved, each respective sliding panel is moved in relation thereto, without allowing the slot to be open at anytime;

each said bottom segment being covered by an outward side panel, an inward side panel, a front panel and a back panel, all of which panels are rigidly fixed to the vertical support posts.

5,383,239

SELF-CLEANING WHIRLPOOL SYSTEM

Cleo D. Mathis, 16209 Santa Bianca, Hacienda Heights, Calif. 91745, and Jeff C. Heary, 2952 Pineview St., Duluth, Ga. 30136

Filed Sep. 9, 1993, Ser. No. 118,263
Int. Cl.[6] E03C 1/046; B03B 3/08
U.S. Cl. 4—541.1 **7 Claims**



1. A self-cleaning system for a whirlpool, the whirlpool including a basin defined by inner and outer surfaces, a drain defined in a bottom portion of the basin, a water intake opening disposed near the bottom portion of the basin, and water inlets coupled to a water main, the system comprising:

a water circuit adapted to be supported on the outer surface of the basin, the water circuit including a plurality of nozzles disposed in a spaced relation, the nozzles communicating with the inner-surfaces of the basin when disposed in an open position, the water circuit adapted to be coupled to the water intake opening;

an air circuit adapted to be supported on the outer surface of the basin, the air circuit including at least one air intake opening adapted to be coupled to the basin, the air circuit being cooperable with the water circuit so as to direct ambient air through the air intake opening to be mixed with water in the water circuit so that the mixture of air and water may be discharged through the nozzles during a whirlpool mode of operation;

a pump adapted to be operatively coupled between the water circuit and the water intake opening;

a detergent dispensing conduit having first and second ends, the first end being operatively coupled to the air circuit, the second end being accessible from an exterior portion of the basin; and

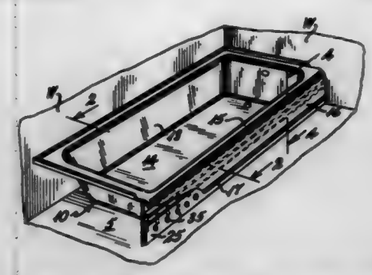
a valve disposed within a portion of the air circuit so as to prevent water from the water circuit from entering into the air circuit during the whirlpool mode of operation and to permit a water and detergent mixture to enter the water circuit during a cleaning mode of operation, whereby in the cleaning mode of operation, the air intake opening and nozzles are closed so as to isolate the inner surfaces of the basin from the air and water circuits, detergent introduced into the second end of the detergent conduit being mixed with fresh water from the water inlets, the mixture of water and detergent being directed into the air circuit, through the valve and water circuit, through the pump and the water intake opening and out through the drain, thereby flushing the system.

5,383,240

ADJUSTABLE TRIM STRIPS FOR BATHROOM FIXTURES

Alton S. Weeks, Sr., 686 Anderson Dr., Jonesboro, Ga. 30236

Filed Feb. 4, 1994, Ser. No. 191,079
Int. Cl.[6] A47K 3/02
U.S. Cl. 4—584 **5 Claims**



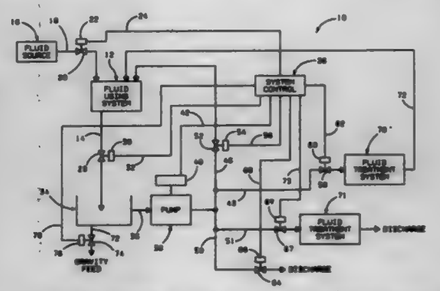
1. A bathroom fixture for bathing or showering which is designed to be supported on a floor of a structure so as to form a seal with a floor covering, the fixture comprising, a generally U-shaped basin having opposing sidewalls and a bottom wall, a front wall connected to one of said sidewalls and depending vertically to a lower edge, an intermediate wall extending vertically between said front and said one of said sidewalls and having a substantially continuous lower edge extending below said lower edge of said front wall which lower edge of said intermediate wall is engageable with the floor, said intermediate wall having front and rear surfaces, and a plurality of horizontally spaced vertical slots in said intermediate wall adjacent said lower edge thereof, a trim strip extending along the length of said intermediate wall in covering relationship to said slots therein, said trim strips having a lower edge extending forwardly of said front surface of said intermediate wall, a plurality of horizontally spaced openings in said trim strip, and means extending through said openings in said trim strip and said slots in said intermediate wall for securing said trim strip in vertically adjustable relationship to said intermediate wall, whereby said trim strip may be selectively engaged with the floor covering at a point below said lower edge of said front wall and above said lower edge of said intermediate wall.

5,383,241

FLUID CONTROL METHOD

Joseph P. Krieger, Guthrie, Okla., assignor to Hydro Modular Systems, Inc., Oklahoma City, Okla.

Filed Sep. 8, 1993, Ser. No. 118,070
Int. Cl.[6] D06F 33/02
U.S. Cl. 8—159 **48 Claims**



1. A method utilizing a fluid using system wherein fluid is passed from the fluid using system during at least two dumping cycles occurring at predetermined periodic time intervals, comprising:

sampling during a system calibration phase, the fluid passed from the fluid using system during each dumping cycle, and designating each such sample as a fluid dumping sample corresponding to the dumping cycle during which the fluid was passed from the fluid using system;

designating, during the system calibration phase, each of the dumping cycles, based on the fluid dumping sample taken during that dumping cycle, as one of the following designations:

(a) a discharge cycle;

(b) a reuse cycle;

(c) a treatment reuse cycle; or

(d) a treament discharge cycle;

operating, during a system operating phase, in at least two of the following modes of operation:

(a) passing automatically the fluid dumped from the fluid using system during each of the discharge cycles to discharge;

(b) passing automatically the fluid dumped from the fluid using system during each of the reuse cycles back to the fluid using system;

(c) passing automatically the fluid dumped from the fluid using system during each of the treatment reuse cycles through fluid treatment system means for treating the fluid and then passing the fluid from the fluid treatment system means back into the fluid using system; and

(d) passing automatically the fluid dumped from the fluid using system during each of the treatment discharge cycles through fluid treatment system means for treating the fluid and then passing the fluid from the fluid treatment system means to discharge.

5,383,242

ELECTRIC TOOTHBRUSH

Michael Bigler, Ittigen; Edgar Hommann, Grossaffoltern, both of Switzerland, and Scott Myerly, Alpharetta, Ga., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jul. 28, 1993, Ser. No. 98,977

Claims priority, application Germany, Jan. 8, 1992, 4225548

Int. Cl.[6] A61C *17/34*; A46B *13/02*

U.S. Cl. 15—22.1 **24 Claims**



1. A cleaning device defining a longitudinal axis therethrough, the cleaning device comprising:

(a) a housing:

(b) a motor shaft within the housing and aligned substantially parallel to the longitudinal axis;

(c) a motor located in the housing for rotating the shaft about the longitudinal axis of the shaft;

(d) a reciprocable rack located in the housing which extends substantially parallel to the longitudinal axis of the cleaning device;

(e) a cleaning head operatively connected with the reciprocable rack;

(f) a gear mounted for rotation with the shaft and for sliding movement along the shaft, the gear being operatively connected to the reciprocable rack so as to convert the rotation of the shaft into a reciprocating stroke of the rack;

(g) a lifting cam and a cam follower, one of the lifting cam and the cam follower positioned to rotate with the gear, the other of the lifting cam and the cam follower associated with the housing of the cleaning device, the cam follower interacting with the lifting cam such that when the gear is in the revolving motion of rotation, the gear oscillates back and forth along the shaft.

5,383,243

DUCT BRUSH

Gregory Thacker, and Patsy Thacker, both of 369 Biggs Branch, Pikeville, Ky. 41501

Continuation-in-part of Ser. No. 982,638, Nov. 27, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 202,837

Int. Cl.[6] B08B *9/02*

U.S. Cl. 15—104.18 **5 Claims**



1. A duct cleaning device, comprising:

a flexible hose, said hose having a proximal end, a distal end, an inner wall, and an outer wall, said distal end of said flexible hose having a plurality of circumferentially spaced axially extending slots therein near the extremity of said distal end, said distal end of said flexible hose having outwardly curved wall portions distal to said axially extending slots,

a plurality of cloth swabs which are connected to the distal end of the flexible hose, each cloth swab having a free distal end, a free proximal end, and a center portion,

a ring at the distal end of the hose, slidably surrounding the hose,

a plurality of extender arms, each arm having a proximal end and a distal end, the proximal end of the extender arm being connected by a hinge assembly to said ring, said extender arm slidably engaged to the outer wall of the hose at the distal end thereof and the distal end of the arm being attached to the center portion of a cloth swab,

said ring adapted so that when the ring is moved distally, said ring moves the extender arms to said outwardly curved wall portions of said distal end of said hose, such that said extender arms move distally and outwardly and so that when the ring is moved proximally, said hinge assemblies pull the extender arms proximally and said curved wall portions of said distal end of said hose permit the extender arms to move inwardly, and

a flexible plunger supported for axial movement within said hose, said plunger comprising a proximal end, a body portion, and a distal end, the distal end of said plunger being connected to the ring in such a way that when the plunger is moved distally, the ring moves distally in said slots pushing the extender arms distally and when the plunger is moved proximally, the ring moves proximally in said slots whereby said hinge assemblies pull the extender arms proximally.

5,383,244

MULTI-BRUSH DENTURE CLEANING DEVICE

Patricia Ahrens, 2217 Knollhaven, Simi Valley, Calif. 93065, and Patrick J. Masse, Woodland Hills, Calif., assignors to Patricia Ahrens, Simi Valley, Calif., a part interest

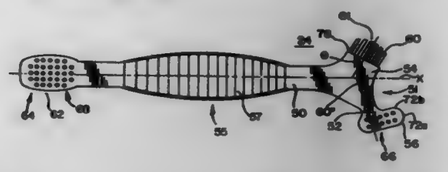
Filed Sep. 13, 1993, Ser. No. 121,067

Int. Cl.[6] A46B *9/04*

U.S. Cl. 15—106 **9 Claims**

1. A multi-brush denture cleaning device comprising:

a handle having a longitudinal axis and having a first end for holding a first brush and a separate second brush, and a second end for holding a third brush, the first end of the handle having a first extension portion and a second extension portion acutely angled with respect to each other wherein each extension portion includes one of the first and second brushes;



the first brush having bristles protruding in a first direction;

the second brush having bristles protruding in a second substantially perpendicular direction to the first direction; and

the third brush having bristles protruding in the same direction as the first brush bristles.

5,383,245

ROLLER BRUSH FOR SWEEPING MACHINE WITH CASSETTES HAVING METAL REINFORCED MOUNTING PLATE

Walter Droeser, Västerås, Sweden, assignor to Filippa i. Västerås Handelsbolag, Västerås, Sweden

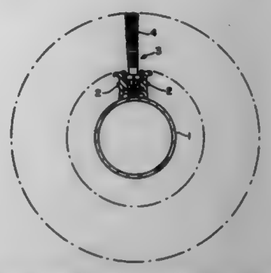
PCT No. PCT/SE91/00596, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO92/06612, PCT Pub. Date Apr. 30, 1992

PCT Filed Sep. 10, 1991, Ser. No. 39,279

Claims priority, application Sweden, Oct. 18, 1990, 9003329

Int. Cl.[6] A46B *13/02*

U.S. Cl. 15—183 **9 Claims**



1. A roller brush for a sweeping machine used to clean surfaces such as runways, railways and switches, the roller brush including an elongated roller; a plurality of pairs of elongated brackets mounted about a circumference of the roller so as to extend generally longitudinally thereof, said pairs of brackets defining generally facing grooves; and a plurality of cassettes mounted between respective pairs of brackets, each cassette comprising an elongated mounting bar Which includes a main portion and a plurality of spaced apart, upwardly open cups which extend from said main portion towards said roller, each said cassette also including a plurality of cages respectively mounted in said cups and respectively supporting bundles of radially-outwardly extending spring members, wherein each said mounting bar is mounted between a pair of brackets to provide a gap on each side thereof for the removal of debris and liquid, wherein each mounting bar is made of plastic, and including a reinforcing metal sheet on at least the main portion of said mounting bar.

5,383,246

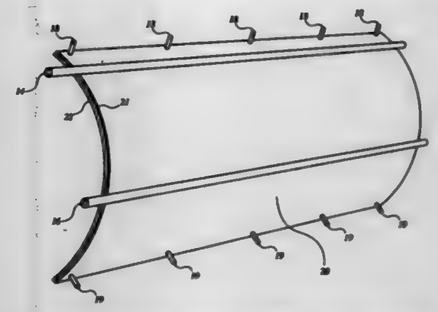
SEMI-RIGID SWEEPER COVER

Holger Hagen, Pittsburgh, Pa., assignor to Pleiger Plastics Company

Filed Mar. 23, 1994, Ser. No. 216,675

Int. Cl.[6] E01H *1/04*

U.S. Cl. 15—246 **18 Claims**



1. A polymeric cover for a rotary sweeper brush to cooperate with said sweeper brush lift and guide materials to a storage area, said cover having an inner surface which conforms to the shape of said sweeper brush when in motion; and said polymer selected from the group of materials having a shore hardness in the range of 50° A to 70° D and consisting of rubber, ultra-high molecular weight polyethylene, polypropylene, polyurethane, nylon and acrylic with embedded fibers.

5,383,247

WASHING INSTALLATION FOR WINDSHIELDS OR MOTOR VEHICLES, AIRCRAFT, LOCOMOTIVES OR THE LIKE

Klaus D. Nickel, Frankfurt am Main, Germany, assignor to Citadel Investments Limited, St. Heller, United Kingdom

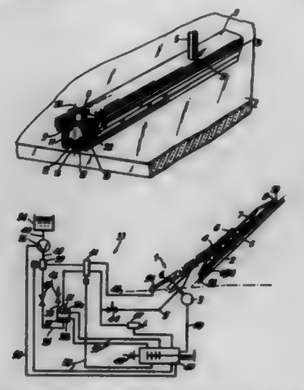
PCT No. PCT/EP92/00793, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO92/18360, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 8, 1992, Ser. No. 952,545

Claims priority, application Germany, Apr. 12, 1991, 4111937

Int. Cl.[6] B60S *1/52, 1/46, 1/38*

U.S. Cl. 15—250.04 **14 Claims**



1. A washing installation for windshields of motor vehicles, aircraft and locomotives, said washing installation comprising:

a wiper arm;

a motor connected to said wiper arm for driving same;

a wiper blade having a central longitudinal plane and a predetermined length, attachable to said wiper arm, and including a channel having outlet apertures;

retainer means for attaching said wiper blade to said wiper arm;

a water reservoir having a pump; and

a supply line for connecting said wiper blade channel to said water reservoir;

wherein said wiper blade further includes a wiper blade portion facing a windshield, forming a part of a wall of said channel into which said outlet apertures are mortised, a wiper lip extending from said blade portion in the central longitudinal plane of the wiper blade, two boundary lips projecting from said blade portion toward the windshield along opposite side surfaces of said wiper lip, said two boundary lips having respective inner side surfaces which define, with respective opposite side surfaces of said wiper lip, respective substantially closed cleaning spaces on the windshield, and said wiper blade further including a swivel strip extending in the central longitudinal plane of said wiper blade for connecting said wiper lip to said channel wall part; and

wherein said wiper lip has substantially a shape of a triangle with said swivel strip being connected to a base of said triangle, said triangle base having, on opposite sides of said swivel strip, portions, which form first means for blocking respective outlet apertures upon swivelling of said wiper lip in respective directions, and wherein said side surfaces of said wiper lip are defined by slightly concave side surfaces of said triangle, which have edge regions remote from said base and engaging respective inner edges of respective boundary lips, upon swivelling of said wiper lip in the respective directions, said edge regions of said concave side surfaces and said inner edges forming together second means for blocking flow from respective spaces defined betweens said side surfaces of said wiper lip and said inner side surfaces of said boundary lips.

5,383,248

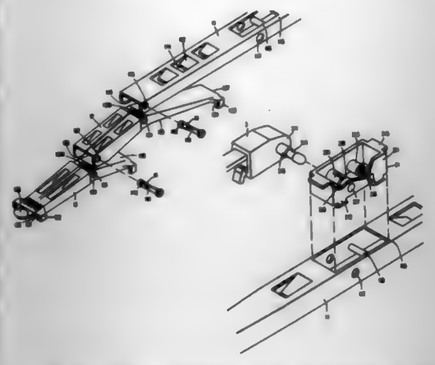
STRUCTURE OF DOUBLE-BLADE WIND SHIELDWIPER WITH ARM TO BLADE CONNECTORS

Chang S. Y. Ho, No. 2-11, Ding Lian Rd., Long Yuan Vill, Ba Li Hsiang, Taipei Hsien,

Continuation of Ser. No. 677,171, Mar. 29, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 22,385

Int. Cl.[6] B60S *1/40, 1/28*

U.S. Cl. 15—250.32 **4 Claims**



1. A double-bladed windshield wiper comprising an elongated blade assembly having an adapter connected thereto, an elongated wiper drive arm, and a connector connecting said adapter to said wiper drive arm, wherein:

said blade assembly comprises an elongated central main frame, two elongated intermediate frames respectively connected to said main frame at opposite ends thereof, each of said intermediate frames having a first end extending outwardly from said main frame and a second end disposed adjacent said main frame, an elongated end frame respectively connected to each of said intermediate frames, each of said end frames having a first end extending outwardly from the first end of each of said intermediate frames and a second end disposed adjacent each of said intermediate frames, said main frame having a pair of aligned apertures disposed at each end thereof, each of said intermediate frames having two pairs of aligned apertures, one pair being disposed at the first end thereof and each of said end frames having a pair of aligned apertures, the apertures in said end frames being in registry with the apertures at the first end of its respective intermediate frame, and the other pair of apertures in each of said intermediate frames being in registry with the apertures at its respective adjacent end of said main frame, a connecting pin extending through each of said pairs of aligned and registered apertures to interconnect said frames, and a spring plate coupled to said frames such as to retain each of said connecting pins in its respective apertures, two elongated clamping plates, mounted in parallel on said assembly, connecting said intermediate and end frames, said clamping plates depending from said frames and each defining a longitudinal groove, and a wiper blade disposed in each said clamping plate groove; said main frame being generally U-shaped in transverse cross section having spaced sidewalls and a web interconnecting said sidewalls, said frame having a plurality of elongated vent holes disposed longitudinally therealong in said web, a bevel strip extending obliquely from said main frame to a region below each vent hole, each of said intermediate frames having a main frame connecting portion located midway between the ends thereof, and a unitary hook member at the rear end thereof with two parallel grooves formed therein, each of said end frames having an intermediate frame connecting portion located midway between the ends thereof, unitary hook members disposed at each end of said end frames with each hook member having two parallel grooves respectively formed therein, and a stop plate vertically extending downward from said first end of each end frame;

said adapter comprising a rectangular casing formed by a pair of vertical parallel sidewalls coupled with a pair of vertical, parallel end walls, the sidewalls being perpendicular to the end walls, and all of said walls together defining a top and bottom edge of said casing, a projecting strip extending laterally from each end wall at the top edge and unitary hooks extending from each sidewall at the bottom edge, said hooks coupling the casing with the central main frame, a first and second cross bar extending between and connected with the sidewalls, said first cross bar having an elongated longitudinal opening, said second cross bar having a bore through the central axis thereof and a portion of said second cross bar forming a spring plate with a raised portion adjacent the bore;

said connector comprising a hollow housing and a resilient, elongated, U-shaped square tube member coupled together, said housing having an arcuate front end and an open rear end, said arcuate front end having a pivot pin extending outwardly from a side thereof to a free end, said pivot pin having an annular groove adjacent the free end thereof;

said adapter having an aperture therein in registration with the bore in said second cross bar so that when said pivot pin is received through said aperture extending into the bore in said second crossbar, said pin is retained by engagement of the annular groove with the spring plate, the open rear end of said housing mounting a spring plate therein with a hook on the distal portion thereof for engaging said U-shaped tube when one end of said tube member is received in said housing through the open rear end; and

said wiper drive arm is coupled to the end of said U-shaped tube member opposite the end received in the open end of said housing which is retained therein by said hook.

5,383,249

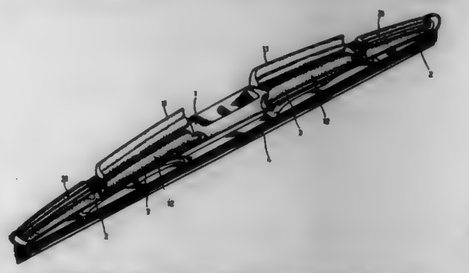
ADJUSTABLE-TYPE ADDITIVE PRESSURE WINDSHIELD WIPER

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuan St., Panchiao, Taipei Hsien, Taiwan, Prov. of China

Filed Aug. 26, 1993, Ser. No. 111,881

Int. Cl.[6] B60S *1/04, 1/38*

U.S. Cl. 15—250.42 **5 Claims**



1. A windshield wiper blade for a vehicle comprising:

a) a main frame having a first surface;

b) at least one pressure plate having a second surface and pivotally attached to the main frame so as to be movable between a closed position wherein the second surface faces the first surface so as to define an air flow channel therebetween and an open position wherein the second surface faces away from the first surface;

c) biasing means connected to the at least one pressure plate to normally bias the pressure plate toward its closed position whereby a predetermined force acting on the pressure plate caused by air passing through the air flow channel will move the pressure plate to its open position;

d) at least one support frame attached to the main frame;

e) at least one supplementary force plate defining an air guide flow surface and pivotally attached to the at least one support frame so as to be movable between a closed position wherein the air guide surface faces away from the at least one support frame and an open position wherein the guide surface faces toward the at least one support frame; and,

f) a wiper blade attached to the at least one support frame.

5,383,250

CLEANING APPARATUS FOR TEXTILE MACHINES

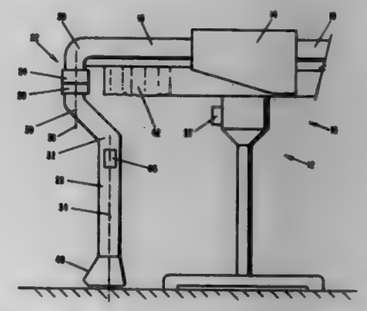
Manfred Sohler, Wangen, Germany, assignor to Sohler Airtex GmbH, Wangen, Germany

Filed Apr. 19, 1993, Ser. No. 49,475

Claims priority, application Germany, Apr. 16, 1993, 9305741[U]

Int. Cl.[6] B08B *5/00*

U.S. Cl. 15—312.2 **18 Claims**



1. A cleaning apparatus for cleaning textile machines, comprising:

a track along which said cleaning apparatus is driveable;

a blower;

at least one air line having a first end and a second end with said first end connected to said blower;

at least one air hose with a first end and a second end, said first end of said at least one air hose connected to said second end of said at least one air line and said second end of said at least one air hose having an opening;

a swivel joint connected between said second end of said at least one air hose and said first end of said at least one air line; and

a rotary drive acting on said swivel joint for rotating said at least one air hose relative to said at least one air line from a first position into a second position and optionally beyond said second position into a third position.

5,383,251

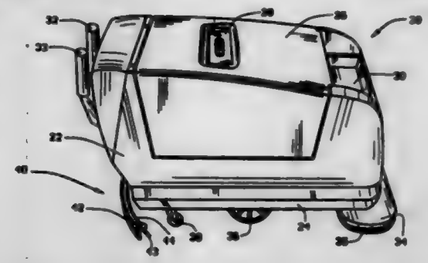
FLOOR SCRUBBER HAVING INTERLOCKING TANKS

Emert R. Whitaker, Siloam Springs; Trent A. Fulghum, Fayetteville; James J. Keezer, Rogers, and James A. Pritchett, Summers, all of Ark., assignors to Clarke Industries, Inc., Springdale, Ark.

Filed Jan. 21, 1994, Ser. No. 184,959

Int. Cl.[6] A47L *11/30*

U.S. Cl. 15—320 **9 Claims**



1. A floor washing machine for cleaning a floor comprising:

a chassis;

an on-board power system supported by said chassis;

at least one wheel powered by said power system and mounted to said chassis for supporting, carrying, and moving said chassis;

at least one brush powered by said power system and attached to said chassis for scrubbing and applying a cleaning solution to the floor;

a one-piece molded main body supported on said chassis and covering said power system, said main body having a central cavity and an integrally formed solution tank for holding the cleaning solution;

a one-piece molded secondary body defining a recovery tank, said secondary body receivable in and supported by said central cavity in an interlocking fashion;

a solution application system for transferring the solution from said solution tank to said at least one brush; and

a suction system for transferring liquid on the floor to said recovery tank;

said main body and said secondary body together defining a water-shedding housing.

5,383,252

VACUUM CLEANER WITH IMPROVED ASSEMBLY

Leonard B. Hampton; Vincent L. Bolevsky; Paul J. Burress, all of Normal, and Hollis Spence, Bloomington, all of Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

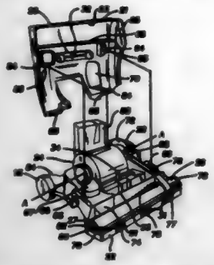
Division of Ser. No. 962,412, Oct. 16, 1992, Pat. No. 5,309,601. This application Jan. 18, 1994, Ser. No. 182,339

Int. Cl.[6] A47L *9/00*

U.S. Cl. 15—325 **2 Claims**

1. An upright vacuum cleaner, comprising a floor engaging unit, said floor engaging unit being supported above the floor

by a plurality of floor engaging wheels and having a rotary brush mounted thereto, said floor engaging unit comprising a base having an open mouth adapted to face a surface to be cleaned, a hood, and a combined bumper and sealing gasket means, said combined bumper and sealing gasket means including a sealing rib which sealingly extends between said base and hood, and a bumper portion which covers at least a portion of an exterior surface of said hood and at least a portion of an



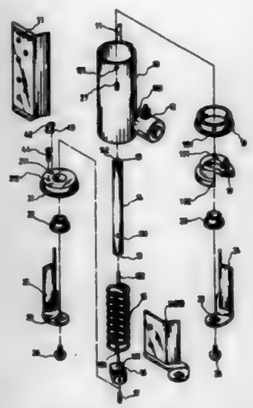
exterior surface of said base, said combined bumper and sealing gasket means at least partially sealingly isolating said rotary brush from an exterior of said floor engaging unit, said hood further comprising a raised sealing rib, said raised sealing rib engaging a gasket provided by the base to at least partially isolate the rotatable brush from an interior of the floor engaging unit.

5,383,253

HYDRAULIC BUFFER HINGE

Yeou-Yu Lin, 161, Chi Mei Street, San Chung Shih, Taipei Hsien, Taiwan, Prov. of China

Filed May 7, 1992, Ser. No. 879,284
Int. Cl.[6] E05F *3/20, 1/12*
U.S. Cl. 16—54 5 Claims



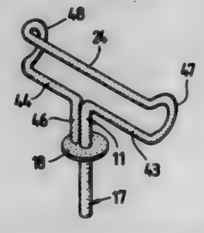
1. A hydraulic buffer hinge for a door comprising a hollow cylindrical casing, a mounting plate welded to said cylindrical casing on the outside thereof, a hydraulic buffer connected to said cylindrical casing adjacent a bottom end thereof, a shaft inserted through said cylindrical casing, said shaft having two square nuts at two opposite ends thereof, an upper bush, a spring tension adjusting ring and an upper cushion ring respectively received on said shaft and secured to said cylindrical casing at a top end thereof, a stop plate, a lower bush and a lower cushion ring respectively received on said shaft and secured to said cylindrical casing at the bottom end thereof, a compression spring sleeved on said shaft and received inside said cylindrical casing, said compression spring having a bottom end connected to said stop plate and a top end connected to said spring tension adjusting ring, an upper swinging plate and a lower swinging plate respectively connected to the two square nuts of said shaft by screws, a locating mechanism for maintaining the lower swinging plate at a location spaced from said mounting plate, wherein said upper and lower swinging plates are rotated on said cylindrical casing relative to said mounting plate as said door is opened or closed, and said stop plate engages the hydraulic buffer to form a hydraulic buffer mechanism for slowing down the moving speed of said upper and lower swinging plates during closing of the door.

5,383,254

DOORSTOP

Charles L. Wigley, Sr., Leeds, Ala., assignor to Common-Sense Industries, Inc., Trussville, Ala.

Continuation-in-part of Ser. No. 858,495, Mar. 27, 1992. This application May 24, 1993, Ser. No. 64,876
Int. Cl.[6] E05F *5/02*
U.S. Cl. 16—82 13 Claims



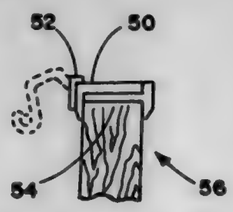
1. A doorstop for selectively controlling the movement of a door, comprising a vertically extended shaft having a cylindrical lower portion slidably and rotatably received within a hole formed in a floor proximal a bottom edge of said door when in a closed position and a cross-member rigidly connected to said shaft above said cylindrical lower portion extending horizontally relative to said shaft, said cross-member having integrally connected thereto at least one end member projecting perpendicularly, substantially horizontally therefrom, wherein said door movement is discriminately controlled by selectively arranging said end members relative said door, said door movement substantially obstructed when said end member protrudes toward said door, said door movement controllably permitted when said end member protrudes away from said door wherein said door will contact said cross-member and pivot said cross-member about a vertical axis such that said door is arrested by substantially planer contact with said cross-member and said shaft, said cross-member extending horizontally a predetermined distance sufficient to ensure contact with said door over an area substantially wider than said shaft.

5,383,255

HINGE ARM FASTENING PLATE SPACER

Georg Domenig, 1205 Bayhill Ct., Kernersville, N.C. 27284

Filed Mar. 23, 1993, Ser. No. 36,064
Int. Cl.[6] E05D *7/04*
U.S. Cl. 16—247 14 Claims



1. In an adjustable recessed hinge for mounting a door member on a supported frame member, one of which members is

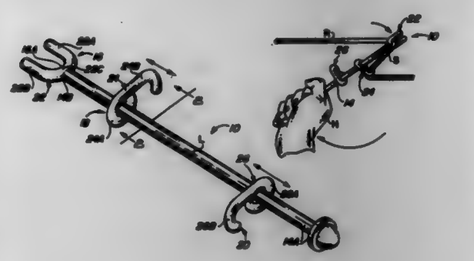
provided with a substantially circular bore having a hinge cup positioned therein, a hinge pin mounted in the hinge cup, and a hinge arm having one end pivoted on the hinge pin in the hinge cup and the opposing end defining a hinge plate, movably secured to the other of the frame or door member, the improvement comprising a spacer having a substantially flat and smooth body portion with flat parallel top and bottom surfaces positioned between the frame or door member and the hinge plate, the hinge plate having an elongated slot, and the spacer having an elongated slot continuous with the hinge plate elongated slot; and means passing through the hinge plate elongated slot and the spacer elongated slot releasably securing the spacer to the door or frame and the hinge plate to provide horizontal adjustment of the hinge plate relative to the door and maintain the hinge plate, spacer, and door or frame member in a fixed relationship each with the other.

5,383,256

ROPE CINCHING DEVICE

Leslie S. Wachi, P.O. Box 27, Honokaa, Hi. 96727, and Jeremy J. Kelley, P.O. Box 5238, Hilo, Hi. 96720

Filed Mar. 26, 1993, Ser. No. 38,158
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—71.1 9 Claims



1. A cinching device for tightening a rope being restrained at opposite ends, said cinching device comprising:

(a) an elongated member having a pair of spaced opposite ends;

(b) a first element mounted on said elongated member defining a first surface portion around which to extend a flexible rope in a first direction;

(c) a second element mounted on said elongated member and spaced from said first element, said second element defining a second surface portion around which to extend the flexible rope in a second direction being generally opposite to the first direction so as to form a section of the flexible rope into a substantially serpentine-shaped configuration thereby reducing the rope in length and taking up any slack in the rope so as to place the rope in a tightened condition; and

(d) a third element mounted on said elongated member and spaced from said first and second elements, said third element defining a third surface portion around which to extend the flexible rope so as to retain the flexible rope section in the substantially serpentine-shaped configuration and thereby retain the rope in the tightened condition;

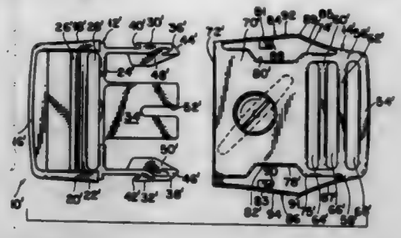
(e) said second element being a first hook-like element mounted to said elongated member to undergo sliding movement therealong between said opposite ends of said elongated member and toward and away from said first element.

5,383,257

CO-INJECTION MOLDED BUCKLE

Mark Krauss, E. Greenwich, R.I., assignor to American Cord & Webbing Co., Inc., Woonsocket, R.I.

Filed Apr. 5, 1993, Ser. No. 42,987
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—625 7 Claims



1. A buckle comprising:.

a male member comprising at least one flexible inwardly movable spring arm having a free end and a protuberance at the free end thereof and guiding means;

a female member having an Opening receptive to said spring arm and including at least one lateral aperture through which said protuberance is exposed to releasably latch the male member to the female member, when the male member is engaged within the female member and guiding surfaces within the female member for cooperating with the guide means of the male member to guide the male member within the female member, whereby upon applying digital pressure to the protuberance the spring arm is flexed inwardly to release the male member from the female member;

a visual discernable means forming part of the buckle for visually indicating the location upon which digital pressure is to be applied in releasing the buckle, the visual discernable means being the protuberance of different color, the male member being injection molded from resin and wherein the visual discernable means being coinjection molded from a different color resin.

5,383,258

SKI-BOOT FASTENING WITH A DEVICE FOR ADJUSTING THE FASTENING TENSION

Graziano Nicoletti, Treviso, Italy, assignor to Caastar Italia S.p.A., Treviso, Italy

Filed Jun. 3, 1993, Ser. No. 71,628
Claims priority, application Italy, Aug. 13, 1992, MI92 U 000785
Int. Cl.[6] A43C *11/14*
U.S. Cl. 24—68 SK 4 Claims



1. A fastening for sports footwear, particularly for ski boots and the like, comprising a tensioning lever pivotable on a

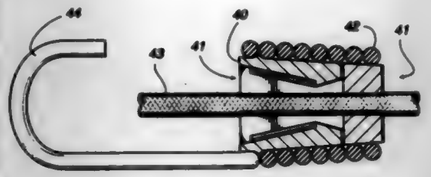
support base, and an engagement element which has an operative end and the other end of which is mounted pivotally on a pin associated with a tension element hinged on the lever and extending substantially in alignment therewith, wherein the pin is supported by a slide which is movable along guides extending longitudinally in the tension element, and including male-and-female means having a screw associated with the lever for moving the slide in the guides.

5,383,259

ADJUSTABLE SHOCK CORD END

David B. McIntire, 1057 S. Elisco Dr., Greenbrae, Calif. 94904

Filed Aug. 26, 1992, Ser. No. 935,758
Int. Cl.[6] F16G *11/00*
U.S. Cl. 24—300 28 Claims



1. An adjustable holding device comprising:
a shock cord having a fully relaxed shock cord width dimension and a stretched shock cord width dimension,
a casing having a longitudinal axis, said casing having a tapered opening generally parallel to said longitudinal axis, said tapered opening having a wide end and a narrow end, said shock cord being disposed within said opening passing from said wide end to said narrow end, and
a collet piece disposed in said opening adjacent said shock cord and said casing,
said shock cord being disposed in a passage in said tapered opening wherein a narrowest width dimension of said passage varies as said collet piece moves within said tapered opening from said wide end of said tapered opening to said narrow end of said tapered opening, wherein said narrowest width dimension of said passage when said collet piece is at said wide end of said tapered opening is less than said fully relaxed shock cord width dimension and is greater than said stretched shock cord width dimension, while said width dimension of said passage when said collet piece is at said narrow end of said tapered opening is less than said stretched shock cord width dimension.

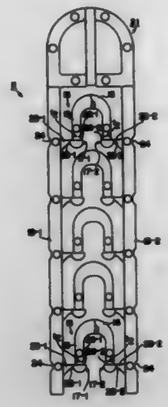
5,383,260

FASTENER CLIP INCLUDING ONE OR MORE FASTENERS ADAPTED FOR ATTACHING BUTTONS TO A GARMENT OR LIKE MATERIAL

Charles L. Deschenes, North Attleboro; Terence J. Jones, Bolton, both of Mass., and William J. Cooper, Woonsocket, R.I., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Dec. 11, 1992, Ser. No. 989,201
Int. Cl.[6] A44B *9/02*
U.S. Cl. 24—711 20 Claims

1. A fastener for attaching button to a piece of fabric, the button having two or more holes, said fastener comprising a flexible filament U-shaped prior to use in connection with attaching said button to said piece of fabric, a first transverse bar at one end of said flexible U-shaped filament and perpendicular thereto, and a second transverse bar at the opposite end of said flexible U-shaped filament and perpendicular thereto, said flexible U-shaped filament and said pair of transverse bars being appropriately dimensioned so that said pair of transverse bars may be inserted through a corresponding pair of holes in the button and then through the piece of fabric in such a way



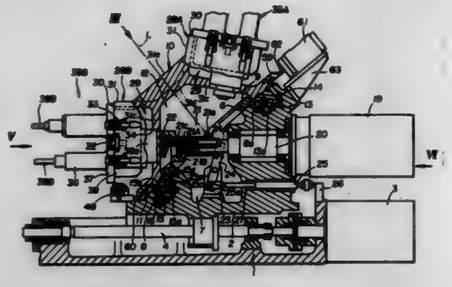
as to be retained by the underside of the piece of fabric, with said U-shaped filament looping between the pair of holes.

5,383,261

TURRET MACHINE TOOL

Hiroshi Yamamoto, and Takeshi Ohkubo, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Nov. 24, 1993, Ser. No. 158,684
Claims priority, application Japan, Nov. 24, 1992, 4-336637; Nov. 24, 1992, 4-336638; Nov. 24, 1992, 4-336639
Int. Cl.[6] B23B *29/32, 39/20*
U.S. Cl. 29—40 8 Claims



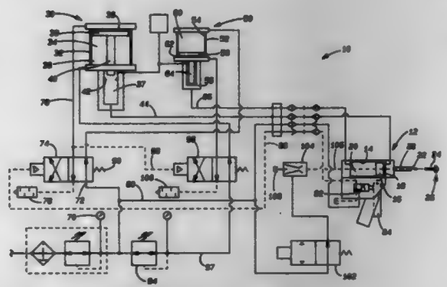
1. A turret machine tool comprising:
a support base;
a slide base slidably mounted on said support base and having a slant surface;
a turret head indexably disposed on said slant surface of the slide base for indexing movement about an axis;
a plurality of machining spindle modules mounted on said turret head at intervals about said axis and projecting outwardly from said turret head;
said turret head having a plurality of attachments each including an outwardly open cavity and an attachment frame defining said outwardly open cavity and having an outer attachment surface;
each of said machining spindle modules having a front module portion, a rear module portion extending rearwardly from said front module portion, and a front plate integral with said front module portion and disposed between and coupled to said front module portion and said rear module portion, said front plate having an attachment edge extending radially outwardly beyond said rear module portion, said machining spindle modules being installed on said attachments, respectively, with the rear module portions being housed in the cavities, respectively, and the attachment edges being held against the outer attachment surfaces, respectively, said rear module portion of each of said machining spindle modules having a sleeve assembly extending rearwardly and fitted in a hole defined in and extending through a bottom wall of said outwardly open cavity, said turret head having a cavity defined therein behind the bottom walls of said outwardly open cavities, and wherein said front module portion of each of said machining spindle modules comprises a spindle housing which supports a plurality of spindles therein, and said rear module portion of each of said machining spindle modules comprises a gear case which houses a transmission gear mechanism including at least an input shaft extending coaxially through said sleeve for transmitting drive forces to said spindles having an end projecting into said cavity in said turret head, further comprising an actuator supported on said slide base and having an output shaft for rotating said spindle through said transmission gear mechanism, and clutch means disposed in said cavity for selectively connecting and disconnecting said input shaft and said output shaft.

5,383,262

BLIND RIVETING SYSTEM

John Brown, Rochester Hills, Mich., assignor to Ebbert Engineering, Inc., Troy, Mich.

Filed May 9, 1994, Ser. No. 240,007
Int. Cl.[6] B21J *15/34*
U.S. Cl. 29—243.525 7 Claims



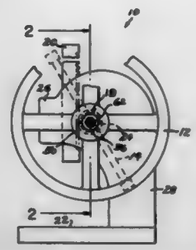
1. A blind riveting system comprising:
a rivet gun having a housing defining a fluid chamber,
a piston slidably mounted in said fluid chamber between a forward position and a retracted position, said first piston dividing said fluid chamber into a drive chamber and a return chamber,
means attached to said piston for gripping a shank of a rivet,
a first source of incompressible fluid,
means for fluidly connecting said first source with said drive chamber,
a second source of incompressible fluid,
means for fluidly connecting said second source with said return chamber,
a trigger movable between an actuated position and a released position,
means responsive to movement of said trigger to said actuated position for pressurizing said first source of incompressible fluid, and
means responsive to movement of said trigger to said released position for pressurizing said second source of incompressible fluid.

5,383,263

PRESSURE CONTROL FOR MECHANICAL ARBOR PRESS

Josip Sakar, 2424 Mundale Ave., Dayton, Ohio 45420

Filed Jun. 1, 1993, Ser. No. 69,433
Int. Cl.[6] B23P *19/02*
U.S. Cl. 29—251 20 Claims



1. In an arbor press having a base for supporting a product against which a predetermined pressure is to be applied to physically work the product, a beam extending essentially perpendicularly away from one side of said base, a cantilevered arm supported on said beam and having an end generally coextensive with said base, a toothed rack slidably supported by said arm for longitudinal movement toward and away from said base, said rack being capable of mounting a tool on its end nearest said base for working said product, a pinion mounted for rotation on said arm and meshing with and moving said rack in response to rotation thereof, a shaft for rotating said pinion to apply pressure from said tool to said product through said rack, said shaft having an extended end remote from said pinion, and manually-operable means on said extended shaft end for applying leverage to said shaft to urge said rack and tool toward and into contact with said product, the improvement consisting of pressure control means comprising:
clutch means comprising a driven member connected to said extended shaft end and a driving surface connected to said manually-operable leverage means and in constant engagement with a clutching surface of said driven member; and
spring biasing means for maintaining the torque required to be applied by said leverage means to said shaft until the pressure applied to said product by said tool has reached said predetermined pressure;
said clutch means being responsive to the pressure applied by said tool to said product for causing said driving surface and said manually-operable leverage means to slip relative to said shaft and thereby prevent further shaft rotation after said predetermined pressure of said tool against said product has been reached.

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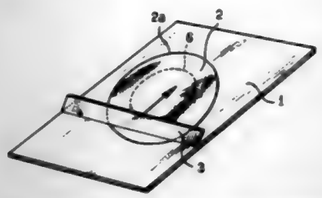
PROCESS FOR THE APPLICATION OF A FLUOROCARBONATED RESIN BASE COATING TO A FLAT METALLIC SUPPORT

Claudine Gardaz, Rumilly, and Jean-Pierre Buffard, Tresserve, both of France, assignors to SEB S.A., Selongey, France

Filed Mar. 29, 1993, Ser. No. 38,692
Claims priority, application France, Mar. 27, 1992, 92 03730
Int. Cl.[6] B05D *5/08*
U.S. Cl. 29—527.2 6 Claims

1. A process for the application of a fluorocarbonated resin base coating to a flat metallic support, which comprises applying by serigraphy an aqueous dispersion of polytetrafluoroethylene admixed with a thickening agent in a form of a paste as

a continuous coating on a flat metallic support in the shape of a disc, hardening said aqueous dispersion on said disc, and



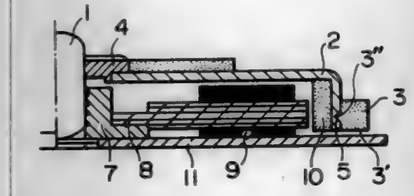
thereafter stamping the disc to the form of a cooking receptacle.

5,383,265

METHOD FOR FIXING FG MAGNET

Hiroshi Nishizawa, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 887,843, May 26, 1992, abandoned.
This application Mar. 22, 1994, Ser. No. 215,656
Claims priority, application Japan, Jun. 4, 1991, 3-132899
Int. Cl.[6] H02K *15/02*
U.S. Cl. 29—598 4 Claims



1. A method for fixing an FG magnet to a rotor frame of a motor without an adhesive and in a manner that said FG magnet does not extend beyond upper and lower bounds of said rotor frame, said method comprising the steps of:

providing a recessed portion shallower than a plate-tickness of said rotor frame on an outer peripheral surface of said rotor frame; and

monolithically forming the FG magnet around the outer periphery of said rotor frame by applying to said outer peripheral surface a plastic magnet which will form the FG magnet, said plastic magnet being applied so that said FG magnet will not extend beyond said upper and lower bounds of said rotor frame and so that at least a portion of said plastic magnet will fill said recessed portion.

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METHOD OF MANUFACTURING A LAMINATED COIL TO PREVENT EXPANSION DURING COIL LOADING

Timothy A. Soter, Monroe, N.C., assignor to Square D Company, Palatine, Ill.

Filed Mar. 17, 1993, Ser. No. 32,224
Int. Cl.[6] H01F *41/02*
U.S. Cl. 29—606 10 Claims

1. A method of manufacturing a stacked core for use with a transformer, said method comprising:

a. stamping individual core laminates from a core material;

b. stacking said individual core laminates to form the shape of the core;

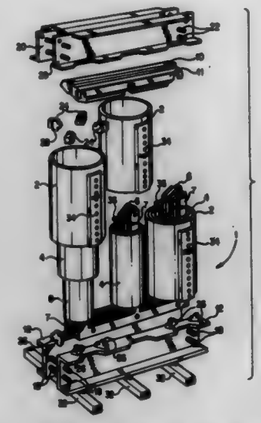
c. adding a lock strap as a last piece to the stack;

d. wrapping legs of the stacked core with a heat shrinkable material;

e. heating said stacked core to cause shrinkage of said heat shrinkable material;

f. coating exposed portions of the stacked core with an epoxy paint;

g. loading said legs of said core with primary and secondary windings;



h. attaching a yoke top to said core with said lock strap; and

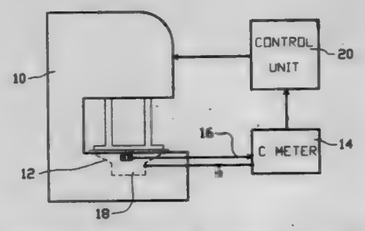
i. coating said yoke with said epoxy paint to complete assembly of said transformer.

5,383,267

APPARATUS FOR CENTERING AN ACTUATOR COIL

Bradley J. Plunkett, Granada Hills, Calif., assignor to Harman International Industries, Inc., Northridge, Calif.

Filed Sep. 7, 1993, Ser. No. 116,672
Int. Cl.[6] H04R *31/00*
U.S. Cl. 29—705 2 Claims



1. Automatic manufacturing apparatus for final relative positioning and affixing together of two major portions of an electro-magnetic moving coil actuator, the portions being (1) a mainframe portion incorporating a magnet system having an annular gap formed between a cylindrical pole piece and a surrounding pole piece, and (2) a coil assembly including a tubular coil disposed in the gap and associated suspension means having an edge region intended to be affixed to a corresponding region of the mainframe portion for laterally constraining the coil in a final permanent concentric location in the gap, the apparatus, comprising:

a holding mechanism for retaining the mainframe portion and the coil assembly positioned in a pre-final interrelationship;

a powered mechanism, cooperating with said holding mechanism, provided with capability of positioning the coil assembly relative to the main frame portion in a lateral plane to an extent bounded by interference between the coil and the pole pieces;

capacitance-measuring means connected to sense capacitance between the coil and a common ground node electrically connected to the pole pieces; and

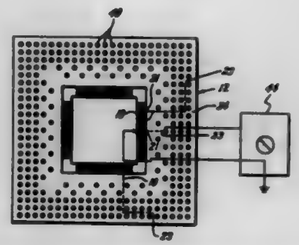
a control unit enabled to command said powered mechanism to sequentially position the coil assembly to a series of predetermined locations, to acquire data from said capacitance-measuring means for each of the locations, to analyze the data so as to determine therefrom a minimum capacitance value, and to finally relocate the coil assembly to a location corresponding to the minimum capacitance; whereby the coil assembly may then be affixed to the mainframe assembly such that the coil is suspended concentrically in the gap.

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METHOD OF MAKING THREE DIMENSIONAL INTEGRATED CIRCUIT INTERCONNECT MODULE

Claude Rathmell; Carroll S. Vance; David W. Burns, and Seyed H. Hashemi, all of Austin, Tex., assignors to Microelectronics And Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 958,974, Oct. 9, 1992, abandoned, which is a division of Ser. No. 753,504, Sep. 3, 1991, abandoned.
This application Sep. 2, 1993, Ser. No. 114,865
Int. Cl.[6] H05K *3/36*
U.S. Cl. 29—830 9 Claims



1. A method of making a three-dimensional IC interconnect module comprising,

making a plurality of slices having at least one integrated circuit having a plurality of input/output pads and a lead interconnect electrically connected to each pad, said lead interconnects terminating at various locations within the periphery of the slices and surrounding the integrated circuits,

testing each slice individually to test the integrated circuits and the lead interconnects,

stacking said slices together and aligning a plurality of signal connections extending transversely through the plurality of slices within the periphery of the slices and surrounding the integrated circuits,

electrically connecting the lead interconnects to the signal connections, and

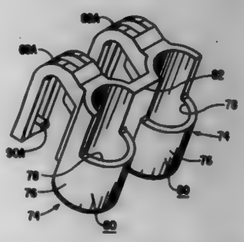
testing the stacked slices through the signal connections.

5,383,268

LOCATING TOOL FOR POWER PINS AND RECEPTACLES

Stephen L. Clark, Dillsburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 891,380, May 29, 1992, Pat. No. 5,237,739.
This application Mar. 12, 1993, Ser. No. 34,829
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—747 4 Claims



1. A disposable pin locating tool for use with a pin header housing, the housing having adjacent first and second power pin-receiving ports defined by at least four surfaces and having an axis therethrough,

each power pin-receiving port having a power pin disposed therein, each power pin having an axis, the axis of each power pin being able to lie in misalignment with respect to the axis of the port in which it is disposed and with respect to the axis of the adjacent power pin,

the disposable pin locating tool comprising:

a web;

first and second adjacent sleeves connected to the web, each sleeve comprising a non-conducting material and having a central bore extending therethrough and an outer positioning surface thereon, each sleeve having an axis therethrough, the axis of the sleeves being spaced a predetermined distance apart, the power pin being receivable in and retainable by the sleeve,

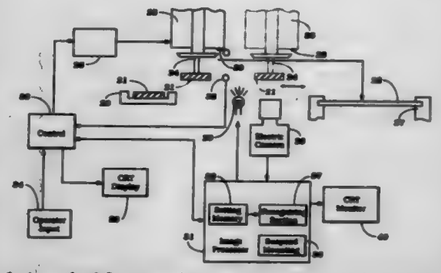
each sleeve being sized such that when the positioning surface thereon engages against at least two opposed surfaces of the port each pin extends into the bore of one of the sleeves to bring the axis of each pin into alignment with the axis of the port in which the pin is disposed and simultaneously to space the axis of the first pin the predetermined distance from the axis of the second pin.

5,383,270

METHOD FOR MOUNTING COMPONENT CHIPS AND APPARATUS THEREFOR

Yoshihisa Iwatsuka, and Takeshi Tamiwa, both of Iwata, Japan, assignors to YamahaHatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 28, 1993, Ser. No. 69,975
Claims priority, application Japan, Jun. 5, 1992, 4-171931
Int. Cl.[6] H05K *3/34;* B23P *21/00*
U.S. Cl. 29—840 14 Claims



1. A method for mounting a component on a substrate, said component having a pick up surface on one side and a mounting surface on another side, said mounting surface being configured so that a mounting force must be applied to a specific

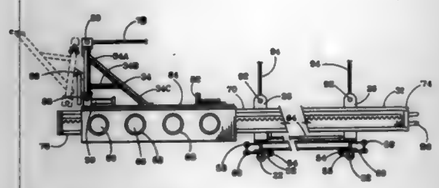
area of said pick up surface to insure effective mounting of said substrate, said specific area being smaller than the area of said pick up surface, using an apparatus comprising a component handling device having a pick up portion for picking up a component and mounting that component on a substrate, said pick up portion having a smaller effective area than said specific area of said pick up surface comprising the steps of detecting the position on said mounting surface where the component is held by the component handling device, and rejecting the mounting of the component of the substrate if the component is not held by said component handling device within said specific area of said pick up surface.

5,383,271

HEAT EXCHANGER BUNDLE EXTRACTOR ASSEMBLY AND METHOD

Jim E. Amany, 506 Brimstone, Sulphur, La. 70663

Division of Ser. No. 988,456, Dec. 10, 1992, Pat. No. 5,323,529. This application Feb. 7, 1994, Ser. No. 192,370
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—840.031 **14 Claims**



1. A method of extracting a heat exchanger tube assembly from a heat exchanger shell or reinserting a heat exchanger tube assembly within the heat exchanger shell, comprising:
supporting an extractor frame and an extractor body from a plurality of rollers; secured to the extractor frame
powering each of the plurality of rollers with a separate roller drive motor;
selectively activating each of the plurality of roller drive motors to position the extractor frame and the extractor body with respect to the heat exchanger shell;
thereafter elevating the extractor frame and the extractor body to a desired elevation with respect to the heat exchanger shell;
interconnecting the heat exchanger tube assembly and the extractor body; and
linearly moving the extractor body with respect to the extractor frame.

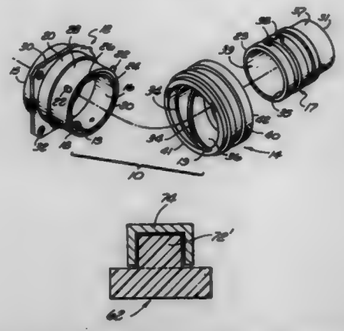
5,383,272

ELECTRICAL CONNECTOR SHELL REINFORCEMENT MEANS AND METHOD OF FABRICATING SAME

William R. Mattingly, Santa Ana; Michael Blum, Hesperia, and Christopher Nasser, Fontana, all of Calif., assignors to Matrix Science Corporation, Torrance, Calif.

Division of Ser. No. 853,029, Mar. 18, 1992, Pat. No. 5,256,077, which is a continuation of Ser. No. 614,797, Nov. 14, 1990, abandoned. This application Oct. 19, 1993, Ser. No. 139,235
Int. Cl.[6] H01R *9/54*
U.S. Cl. 29—876 **2 Claims**

1. A method of providing a composite material electrical connector, said method comprising the steps of:
providing a first shell formed of composite material and having a first and second end, said first shell having cooperatively associated with at least one bayonet pin, a metal cup, said first shell containing within the interior surface of said first shell an alignment receptacle means;
providing a second shell formed of composite material and having upon the exterior surface of said second shell an alignment key means operable to slidably interfit said alignment receptacle means of said first shell; and
providing a coupling ring comprising:
a coupling ring body formed of composite material and having an interior and an exterior surface;
a metal layer formed along said interior surface by molding said coupling ring body along the outside surface of a previously formed ungrooved metal member;
forming at least one interior surface annular groove defined into said metal layer and having bottom and side wall surfaces defined by said metal layer, said groove being thereby reinforced;
said coupling ring operable to cooperatively associate with and interfittingly lock said first shell bayonet pin and when said first shell and said second shell are matingly engaged, said groove extending helically from a pin-receiving entrance to a pin-receiving detent to receive thereinto and slidably therealong a said bayonet pin of said first shell.

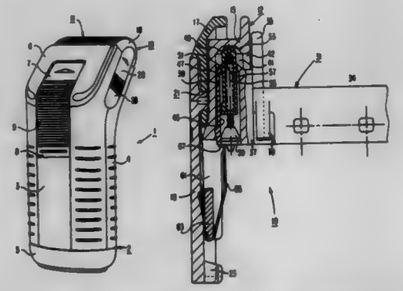


5,383,273

SHAVING APPARATUS HAVING A SHAVING-HEAD FRAME AND A FOIL FRAME TO BE SECURED THERETO

Ingo Muller; Ernst Poganitsch, both of Klagenfurt, and Gilbert Röttig, Strau, all of Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 15, 1993, Ser. No. 92,342
Claims priority, application Austria, Jul. 24, 1992, 1516/92
Int. Cl.[6] B26B *19/00*
U.S. Cl. 30—43.92 **3 Claims**



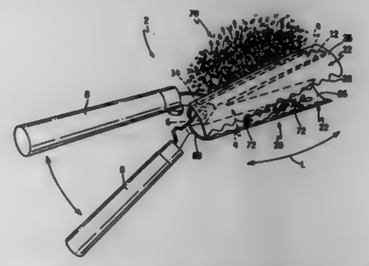
1. A shaving apparatus (1) comprising a housing (2) and a shaving head (10) adapted to be placed onto and to be secured to said housing (2), which shaving head comprises a shaving-head frame (12) having two longitudinal side walls (13, 14) and two transverse side walls (15, 16) and a foil frame (31) likewise having two longitudinal side walls (33, 34) and two transverse side walls (35, 36) and adapted to hold a foil cutter (71) of the shaving apparatus (1) and to be mounted and locked in the shaving-head frame (12) through a shaving-head frame (12) opening facing the housing (2), and positive locking devices (65, 66) acting between the shaving-head frame (12) and the foil frame (31) for positively locking the foil frame (31) mounted in the shaving-head frame (12), characterized in that the two transverse side walls (15, 16) of the shaving-head frame (12) are extended relative to the two transverse side walls (35, 36) of the foil frame (31) in a direction towards the housing (2) of the shaving apparatus (1) by a wall extensions (61, 62), and the inner side of the wall extensions (61, 62) of the shaving-head frame (12) carries said positive locking devices (65, 66) and each of said positive locking devices being a latch supported on a respective one of the wall extensions (61, 62), said latch extending substantially in the direction of its respective wall extension (61, 62) towards the foil frame (31), and movable transversely of its respective wall extension (61, 62) against spring force, said latch having a free end (67, 68) capable of positively locking the foil frame (31) in the shaving-head frame (12).

5,383,274

GARDEN SHEARS WITH DEBRIS CATCHERS

Mark D. Miller, 19075 Duck Lake Trail, Eden Prairie, Minn. 55346

Filed Dec. 22, 1993, Ser. No. 172,045
Int. Cl.[6] B26B *13/22*
U.S. Cl. 30—134 **22 Claims**



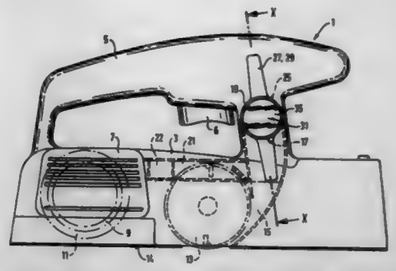
1. An improved pair of shears having a pair of cutting blades pivotally connected together, the cutting blades each having a front cutting edge with the cutting edges of the blades facing one another when the blades of the shears are opened, the cutting edges of the blades suited for cutting material between them when the blades of the shears are closed by pivoting the blades towards one another in a shearing action, the cutting blades each having a back, non-cutting edge with the back edges of the blades facing away from one another, the improvement comprising:
a pair of debris catchers that are attached to the blades with each debris catcher being attached to a respective one of the blades, wherein each debris catcher comprises a substantially imperforate piece of relatively thin sheet material which is attached to its respective blade along a lower edge thereof with each catcher extending generally vertically upwardly relative to an upper face of its respective blade to terminate in an upper edge located above the upper face of its respective blade, wherein each catcher has a transversely troughed shape relative to its respective blade between the lower and upper edges of the catcher to extend inwardly over its respective blade from the lower edge of the catcher towards the front edge of its respective blade, and wherein the piece of sheet material that forms each catcher has a downwardly facing, innermost face extending from the lower edge of the catcher to the upper edge of the catcher with said innermost face being spaced above and out of contact with the upper face of its respective blade to form a downwardly facing chamber beneath the innermost face of the catcher wherein said chamber is located above the upper face of its respective blade.

5,383,275

HAND PLANER

Eugen Hild, Aichtal, and Kai-Uwe Floettmann, Gaesteloh, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00867, § 371 Date Jun. 11, 1993, § 102(e) Date Jun. 11, 1993, PCT Pub. No. WO93/00004, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 14, 1992, Ser. No. 75,522
Claims priority, application Germany, Oct. 22, 1991, 4134768
Int. Cl.[6] B27C *1/10*
U.S. Cl. 30—475 **13 Claims**



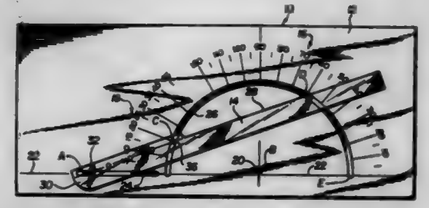
1. A hand planer, comprising a housing; a planer head supported in said housing; a motor driving said planer head; a fan blower connected with said motor for generating a flow of air for moving chips; a chip ejector; two air guidance ducts through which the flow of air is guided from said fan blower to said chip ejector; a chip conveying duct having a chip discharge opening such that planed chips exit said chip conveying duct through said chip discharge opening, said chip ejector accommodating both the chips and the flow of air; and means for guiding the flow of air in a switchable manner to said chip conveying duct via one of said two air guidance ducts, said chip discharge opening being formed so that the flow of air is guided past said chip discharge opening exclusively for generating an injector suction action via said chip discharge opening.

5,383,276

ANGLE TRISECTOR

John Y. Izumi, 22 W. 317 Glen Valley Dr., Glen Ellyn, Ill. 60137

Filed Jun. 10, 1993, Ser. No. 74,353
Int. Cl.[6] B43L *9/08*
U.S. Cl. 33—1 AP **9 Claims**



1. An angle trisecting device comprising:
a base including a flat portion having a zero angle reference axis;
angle indicating means on the base extending outwardly from a center point on said zero angle reference axis for selecting a first angle and indicating a second angle;
a circular slot in said base centered about said center point and cooperating with said angle indicating means to pro-

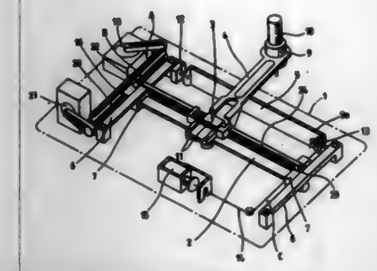
vide angle indication points from the zero angle reference axis;
an elongated slot in said base aligned with said center point and said zero angle reference axis;
an elongated member having an elongated straight-edge portion and a defined-length portion at one end of the elongated member, said defined-length portion having a length equal to the radius of the circular slot,
said defined-length portion having a base reference point and an angle reference point at opposite ends; and
a first pin extending from the base reference point and removably captured within said elongated slot in said base, and a second pin extending through said angle reference point and removably captured within said circular slot in said base;
wherein the elongated member is pivotable with respect to the elongated slot and the circular slot so that said second angle defined between the elongated straight-edge portion of said elongated member and said zero angle reference axis corresponds to a trisection of said first angle defined between said zero angle reference axis and a ray extending from said center point to said angle indication point on the circular slot.

5,383,277

WRITING APPARATUS AND METHOD

Mitsugi Shimoda; Hiroshi Hatori; Yoshinori Takubo; Takashi Maruda, all of Tokyo, and Hirokazu Takada, Gunma, all of Japan, assignors to Max Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 29,399
Claims priority, application Japan, Mar. 10, 1992, 4-021354[U]; Mar. 10, 1992, 4-021355[U]; Mar. 10, 1992, 4-021356[U]; Mar. 10, 1992, 4-021357[U]; Mar. 10, 1992, 4-006418; Mar. 10, 1992, 4-006419; Mar. 12, 1992, 4-021909
Int. Cl.[6] B43L *13/00*
U.S. Cl. 33—18.1 20 Claims



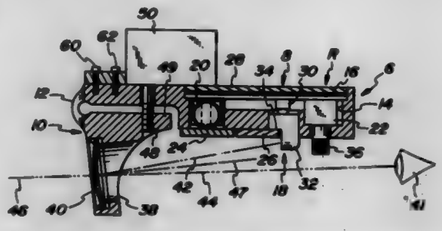
1. A writing apparatus comprising:
an x-axis rail (2) supported by a casing frame (1) so as to be movable relative to said frame (1) along a horizontal y-axis;
an x-axis carriage (3) supported by said x-axis rail (2) so as to be movable relative to said x-axis rail (2) along a horizontal x-axis perpendicular to said y-axis;
a pen support arm (4), having a tip and a butt, for supporting a pen (10) at the tip thereof, said pen support arm (4) being supported at the butt thereof by said carriage (3) so as to be swingable up and down;
a pen lifting rail (5) extending in parallel with said x-axis rail (2) and supported so as to be capable of being swung into contact with the bottom of said arm (4) to move said pen (10) up from the surface of writing medium and being swung down out of contact with said bottom to let said pen (10) fall into contact with the surface of said writing medium;
an urging means (13) for always urging said pen lifting rail (5) in a direction in which said pen lifting rail (5) is swung up; and
means (15) for reducing an impact noise between said pen lifting rail (5) and said arm (4), wherein said impact noise reducing means (15) comprises a solenoid (15) energized to swing down said pen lifting rail (5), wherein immediately before said pen lifting rail (5) being swung up by de-energizing said solenoid (15) comes into contact with the bottom of said arm (4), said solenoid (15) is instantaneously energized to slow down the upward swinging of said lifting rail (5).

5,383,278

WIDE FIELD OF VIEW REFLEX SIGHT FOR A BOW

Ira M. Kay, Elway Hall, Rte. 2, Box 70, Warrenton, Va. 22186

Continuation-in-part of Ser. No. 34,839, Mar. 19, 1993, which is a continuation-in-part of Ser. No. 3,703, Jan. 13, 1993, abandoned. This application Jan. 11, 1994, Ser. No. 180,081
Int. Cl.[6] F41G *1/34, 1/467*
U.S. Cl. 33—265 24 Claims



1. A sight for aiming an arrow propelled by a bow to a target, comprising:
a) a frame having a front end and a rear end;
b) a mounting support secured to said frame for attaching said frame to a bow;
c) a ring secured to said frame front end;
d) a lens secured in said ring, said lens having an optical axis disposed at an angle relative to a user's line of sight through said lens and the target;
e) a light source secured to said frame rear end and adapted to project a light spot onto said lens;
f) said light source and said lens being positioned relative to each other such that the light spot projected onto said lens is reflected to the user's eye who then lines up the light spot onto the target to take aim;
g) a hinge disposed between said ring and said frame;
h) a screw-drive operably associated with said ring and said frame and adapted to selectively move said ring about said hinge in first and second opposite directions to change the orientation of the optical axis of said lens relative to the user's line of sight, thereby causing the user to change the attitude of the arrow relative to the horizontal to compensate for various distances to the target; and
i) first and second switches adapted to control the operation of said screw-drive in moving said ring in said first and second opposite directions, respectively.

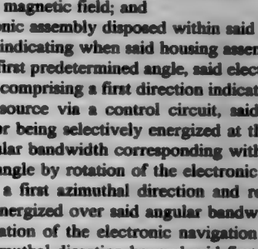
5,383,279

SIGHT GUARD SIGHT

Mark G. Tassi, R.D. #1 Box 178A, Brockport, Pa. 15823

Filed Apr. 6, 1994, Ser. No. 223,672
Int. Cl.[6] F41G *1/467*
U.S. Cl. 33—265 17 Claims

1. An archery bow sight adapted for mounting on a supporting means attached to a bracket affixed to an archers bow wherein the bow sight comprises;
an arrangement of cylindrical sleeves disposed on said support means wherein one of said sleeves includes a means of supporting and locking a sighting pin vertically, said sleeve with said supported sighting pin being pivotable in the relationship to the vertical plane of the bow string and therewith corresponding to horizontal elevation of a target and at least one end sleeve;
a means for fixing said arrangement of sleeves in a predetermined horizontally position on the supporting means so as to locate said sleeve with said supported sighting pin in a desired position;



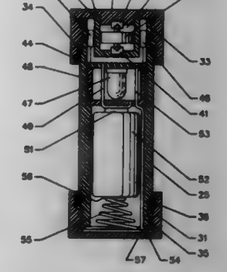
a resilient means mounted between said pivotable sleeve and one other sleeve of said arrangement of sleeves so as to set said pivotable sleeve with said vertical sighting pin in a selective position relative to a desired trajectory of an arrow.

5,383,280

DIRECTION INDICATOR FOR NAVIGATION

Kevin McDermott, 196 Phillips Dr., Hampstead, Md. 21074

Filed Nov. 20, 1992, Ser. No. 979,786
Int. Cl.[6] G01C *17/02*
U.S. Cl. 33—361 37 Claims



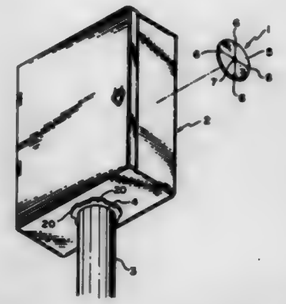
1. An electronic navigation device comprising:
a housing assembly, means for selecting a first predetermined angle of said housing assembly relative to the Earth's magnetic field; and
an electronic assembly disposed within said housing assembly for indicating when said housing assembly is oriented at said first predetermined angle, said electronic assembly further comprising a first direction indicator coupled to a power source via a control circuit, said first direction indicator being selectively energized at the beginning of an angular bandwidth corresponding with said predetermined angle by rotation of the electronic navigation device in a first azimuthal direction and remaining selectively energized over said angular bandwidth by continued rotation of the electronic navigation device in said first azimuthal direction beyond said first predetermined angle.

5,383,281

ELECTRICIAN'S CENTER POINT GAUGE TO FACILITATE PLACING CONDUIT HOLES IN ELECTRICAL BOXES

Robert T. Monger, P.O. Box 221, Mt. Crawford, Va. 22841

Filed Aug. 3, 1993, Ser. No. 101,013
Int. Cl.[6] G01D *21/00*
U.S. Cl. 33—520 6 Claims



1. An electrician's center point gauge to facilitate placing conduit holes in electrical boxes comprising, a circular disc having a diameter corresponding to the diameter of an electrical conduit to be installed on the wall of an electrical box, a plurality of circumferentially spaced notches provided on the peripheral edge of said disc, whereby the disc is placed on the electrical box side wall and a trace is made of the circumference of the disc; and diametric lines are drawn through the traced circumferentially spaced notches and extend radially outwardly beyond the circumferential trace, to thereby locate the center of the circumferential trace and to facilitate the positioning of a conventional knockout set for pulling a hole through the electrical box side wall, and a plurality of circumferentially spaced, radially extending tabs on the peripheral edge of said disc, said tabs being dimensioned to correspond to spanner lugs provided on conventional threaded collars employed for securing the electrical conduit to the side wall of the electrical box, whereby adjacent holes can be formed in the box side wall for accurately locating adjacent electrical conduits mounted in respective box side wall holes.

5,383,282

SADDLE-JOINT JIG

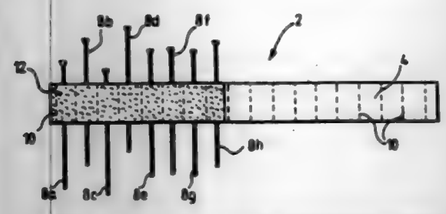
Robert W. Field, 81 Nelson Road, Gorleston, Great Yarmouth NR31 6AY, Norfolk, and Derek V. Doerr, Great Yarmouth, both of United Kingdom, assignors to Robert W. Field and Gordon J. Kingston, both of Norfolk, Great Britain

PCT No. PCT/GB91/02094, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO92/09841, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 27, 1991, Ser. No. 78,329
Claims priority, application United Kingdom, Nov. 28, 1990, 9025903
Int. Cl.[6] G01B *5/20*
U.S. Cl. 33—529 6 Claims

1. A saddle-joint jig for reproducing the line of contact of a first tube in relation to a second tube so that the first tube, when cut along that line, may be joined in end-to-edge abutment to the second tube in that same relation, which jig comprises:
a band for circumferentially encircling the first tube and which has a plurality of substantially parallel sleeves extending across the breadth thereof, the band being formed of a first strip of material adapted to be wrapped around said first tube in order to circumferential encircle it, superimposed upon a second strip of such material, the first strip being fixed to the second strip at intervals therealong

such as to form said plurality of sleeves between the first strip and the second strip;

said band being sufficiently flexible to fit tubes of various shapes and including means to permit mounting on tubes having a variety of sizes, said means including fastening



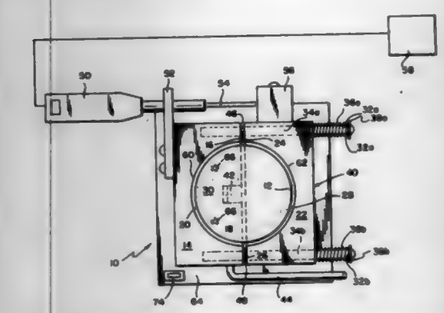
means located along the ends of said band to permit overlapping of said ends to fit said tubes in a variety of sizes; and at least three pins, each of which is slidingly held, in use, within a respective one of said plurality of sleeves to allow each pin to slide longitudinally and extend from the respective sleeve when a force is applied thereto.

5,383,283

AUTOMATED DIAMETER GAUGING SYSTEM

Steven L. Olsen, Plain City, and Kim D. Riding, Hyrum, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Oct. 29, 1992, Ser. No. 968,010
Int. Cl.[6] G01B *5/08*
U.S. Cl. 33—555.1 **2 Claims**



1. A method for measuring flexible three-dimensional objects comprising the steps of:

a. moving a first caliper, said first caliper having a first surface and a second surface, in a substantially linear relation relative to a second caliper, said second caliper having a first surface and a second surface, such that when said first surface and said second surface of said first caliper are placed opposite said respective first surface and said second surface of said second caliper an opening is defined which conforms substantially to the surface of the object to be measured, with a flexible object to be measured placed there between, thereby placing a flexible three-dimensional object to be measured under compression, wherein the flexible object to be measured conforms to the shape of the opening defined by the first caliper and said second caliper;

b. determining the length of the gap separating said first caliper from said second caliper;

c. comparing the length of the gap separating said first caliper from said second caliper when the flexible object to be measured is placed between said first caliper and said second caliper with the length of the gap separating said first caliper from said second caliper when a rigid reference object is placed between said first caliper and said second caliper to determine a resultant length;

d. calculating a diameter from the resultant length obtained in part C by taking the difference between the length of the gap separating said first caliper from said second caliper when the flexible object to be measured is placed between said first caliper and said second caliper; and the length of the gap separating said first caliper from said second caliper when a circular reference object is between said first caliper and said second caliper, multiplying the difference by two and dividing by η; and adding the diameter of the reference; and

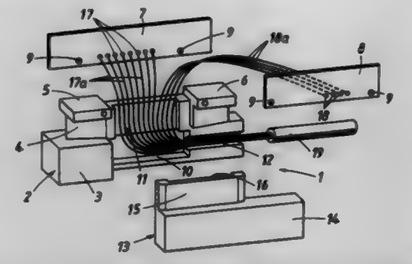
e. providing an output.

5,383,284

MEASURING CARRIAGE FOR A LINEAR MEASURING SYSTEM

Heinz Rieder, Oberndorf, Austria, assignor to RSF-Elektronik Gesellschaft m.b.H., Tarsdorf, Australia

Filed Nov. 2, 1993, Ser. No. 146,308
Claims priority, application Austria, Nov. 2, 1992, 2158/92
Int. Cl.[6] G01B *11/00*; H01J *5/16*
U.S. Cl. 33—706 **5 Claims**



1. A measuring carriage for a linear measuring system which comprises a tubular protective housing having opposite sides, the tubular housing defining an interior chamber and one of the housing sides defining a slot sealed by sealing lips, and a measuring rod carrying a measuring scale arranged in the interior housing chamber, the measuring carriage comprising

(a) a measurement sensing entrainment block arranged outside the housing adjacent the one housing side, the block comprising

(1) a tongue projecting into the interior housing chamber through the slot,

(b) means for generating electrical signals derived from sensing the measuring scale by the entrainment block,

(c) carrier means in the interior housing chamber for supporting the signal generating means,

(d) support means for the carrier means,

(1) the tongue connecting the entrainment block to the support means,

(e) a connecting cable attached to, and leading from, the entrainment block, and

(f) wires connecting the signal generating means to the connecting cable,

(1) the wires passing from the signal generating means to the entrainment block and the connecting cable through a recess in the tongue, and

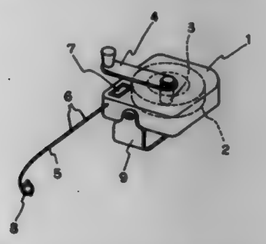
(2) the tongue comprising complementary halves which may be fitted together to define the recess therebetween.

5,383,285

SCALE USABLE AS LIFE LINE

Masakatsu Takahashi, 4-6, Narihira-cho, Ashiya-shi, Hyogo 659, Japan, assignor to Masakatsu Takahashi, Hyogo, Japan

PCT No. PCT/JP93/00260, § 371 Date Oct. 29, 1993, § 102(e) Date Oct. 29, 1993, PCT Pub. No. WO93/18367, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 1, 1993, Ser. No. 140,084
Claims priority, application Japan, Mar. 2, 1992, 4-081728
Int. Cl.[6] G01B *3/10*; A62B *1/06*
U.S. Cl. 33—756 **4 Claims**



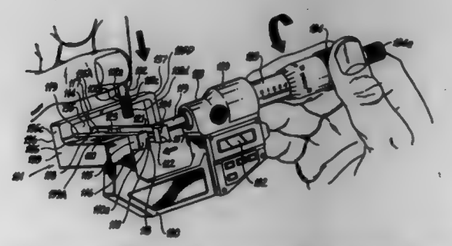
1. A lifesaving apparatus comprising a scale usable as a life line, said scale comprising a wire of high tensile strength with graduations in a longitudinal direction thereof, a drum for winding the wire thereunto, a casing accommodating the drum while permitting the same to rotate, a magnifying glass on said casing for allowing the graduations to be read, and means for carrying a person, wherein the metal wire of high tensile strength is formed of a stranded cable formed of a plurality of strands each having a tensile strength of at least 400 kgf/mm^2 such that said wire is capable of suspending a person, said strands having a coat of a synthetic resin covering the strands, and wherein said means for carrying a person is connected to an end of said scale.

5,383,286

HAND HELD DEVICE FOR MEASURING SCREW THREADS BY THE THREE-WIRE METHOD

Hyman J. Kipnes, 54 Canterbury Dr., Hauppauge, N.Y. 11788

Continuation-in-part of Ser. No. 972,248, Nov. 5, 1992, Pat. No. 5,317,809. This application Sep. 10, 1993, Ser. No. 120,174
Int. Cl.[6] G01B *3/18, 5/16*
U.S. Cl. 33—829 **14 Claims**



1. An improved measuring device for utilizing the three wire method of measuring pitch diameter and minor diameter of screw threads the device utilizing a micrometer having an anvil and an advancing spindle within the anvil, comprising:

a plurality of at least three cylindrical wires, said wires having an outer cylindrical surface capable of contacting a midpoint of a flank of a screw thread between an outer edge and an inner edge of said screw thread,

a means to hold said wires in vertical orientation during measurement to limit rotation and to position said wires for contact with said threads, said means including a pair of wire holders for engaging said respective three wires, and

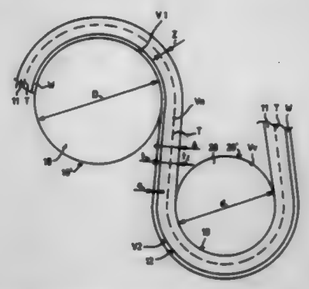
a means to limit a rotational movement of said holders from the application of rotational force against said wire holders for said wires, said means including an anvil engaging attachment engagable to the anvil of the micrometer, said anvil engaging attachment having a slot, the anvil of the micrometer being insertable within said slot, said slot of said anvil engaging attachment closely receiving said anvil, said anvil engaging attachment including a movement limiting means having a recess defined therein, each said wire holder movable within said recess and said recess providing a barrier limiting the movement of each said wire holder to the confines of said recess.

5,383,287

METHOD AND WIRE GROUP IN A DRYER SECTION PROVIDED WITH A SINGLE-WIRE DRAW

Antti Kukkola, Jyväskylä, Finland, assignor to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Jun. 3, 1993, Ser. No. 72,335
Claims priority, application Finland, Jun. 3, 1992, 922560
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—117 **20 Claims**



20. A method for drying a paper web in a dryer section of a paper machine or paper finishing machine, the dryer section having a single-wire draw and including drying cylinders and leading rolls arranged in proximity to said drying cylinders, comprising the steps of:

providing a drying wire to run over said drying cylinders and leading rolls, said drying wire having an asymmetric structure in a direction of its thickness such that a plane of constant speed, defined as a neutral plane of bending, is arranged in the direction of thickness of said drying wire between a paper-side face of said drying wire on which a paper web runs and a center plane of said drying wire, and

passing the paper web to be dried on support of said drying wire alternatingly over said drying cylinders and said leading rolls.

5,383,288

METHOD AND DEVICE FOR DRYING PAPER

Antti Ilmarinen, Jyväskylä , Finland, assignor to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Mar. 2, 1993, Ser. No. 25,191
Claims priority, application Finland, Mar. 2, 1992, 920942
Int. Cl.[6] F26B *7/00*
U.S. Cl. 34—392 **24 Claims**

1. A method for drying paper, comprising

passing a paper web to be dried over a mantle face of a large-diameter flow-through cylinder,

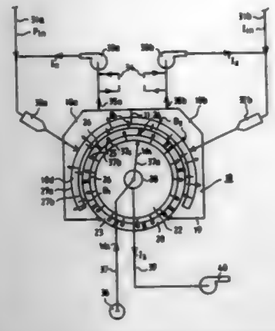
applying a set of drying-gas jets onto the web to evaporate water in the web, said jets being applied as the web passes over said mantle face,

removing a part of the evaporated water from the web

through a blowing-on hood outward away from said mantle face,

cooling said mantle face of the flow-through cylinder,

providing negative pressure in an interior of said cylinder to draw a remaining part of the evaporated water in the web toward said mantle face such that the remaining part of the evaporated water condenses on said mantle face, and



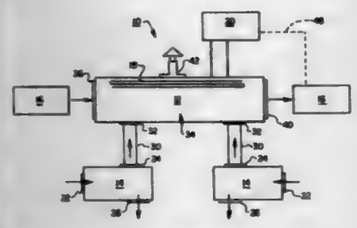
drawing the condensed water from said mantle face through perforations in said mantle face to continuously seal said perforations over the entire circumference of said cylinder and maintain the negative pressure in the interior of said cylinder.

5,383,289

TEXTILE DRYING SYSTEM

Phillip S. Webb; Andrew R. Messner, both of Galax; John A. Street, Fries, all of, and Richard S. Gardner, Mexico City, Mexico, assignors to Sara Lee Corporation, Winston-Salem, N.C.

Filed May 28, 1993, Ser. No. 68,209
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—449 **8 Claims**



6. A method for drying textiles comprising:

(a) loading textiles into an enclosed dryer;

(b) drawing atmospheric air into a dehumidifier to condition the atmospheric air by dehumidifying and heating the atmospheric air;

(c) directing the conditioned air from the dehumidifier into the dryer so as to dry textiles in the dryer;

(d) heating heating elements positioned within the dryer to heat air located within the dryer so that the air within the dryer is heated so as to dry textiles in the dryer; and

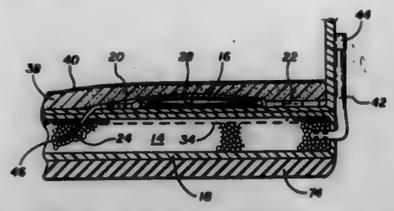
(e) exhausting substantially all the saturated air from the dryer directly into the atmosphere.

5,383,290

CONFORMABLE SHOE WITH VACUUM FORMED SOLE

Tracy E. Grim, 3010 W. Boston Ct., Broken Arrow, Okla. 74012

Filed Oct. 23, 1992, Ser. No. 965,176
Int. Cl.[6] A43B *7/14*
U.S. Cl. 36—93 **16 Claims**



1. A conformable shoe assembly including a vacuum formed configuration, comprising:

a shoe body having a flexible sole;

said shoe assembly further including an inner sole within said shoe body formed of a sealed bladder, said inner sole including means for inherently retaining its shape and remaining conformed to its initial shape at the time of evacuation, under partial vacuum conditions, said means including resilient compressible particulate material within said bladder;

a vacuum pump in the sole of said shoe assembly coupled to withdraw air from said sealed bladder;

means for actuating said pump to withdraw air from said bladder when the user of the shoe assembly walks or runs; and

said shoe assembly including means for permitting removal of the shoe from a foot and remounting of the shoe on the foot while the partial vacuum is maintained;

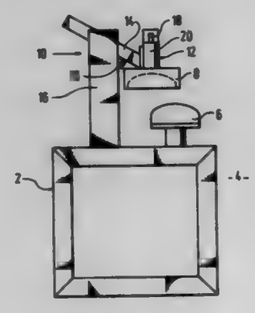
whereby said inner sole conforms to the initial shape of the user's foot and retains this configuration until the partial vacuum in said sole is released.

5,383,291

PRESSING MACHINE WITH LINEAR OBLIQUE AND VERTICAL STROKES

Werner Schmitt, Mömbris, Germany, assignor to Brisay Maschinen-GmbH, Aschaffenburg, Germany

Filed Jan. 18, 1994, Ser. No. 181,788
Claims priority, application Germany, Jan. 19, 1993, 9300634
Int. Cl.[6] D06F *71/14*
U.S. Cl. 38—31 **8 Claims**



1. A pressing machine, comprising:

a stand;

a bottom form located on the stand for receiving material to be pressed from an operating side of the pressing machine;

a top form which is lowered onto and lifted off of the bottom form; and

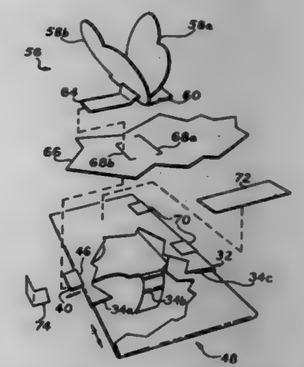
a guide for moving the top form, in a first stroke from a first position linearly and obliquely downwards towards the operating side to a second position above the bottom form and then in a second stroke from the second position linearly vertically downward onto the bottom form to a third position and, in a third stroke, lifting the top form linearly vertically upward off the bottom form from the third position to a fourth position above the bottom form, and then in a fourth stroke obliquely upwards away from the fourth position to the first position.

5,383,292

ALTERNATING MOTION DEVICE FOR ANIMATING GRAPHICAL STRUCTURES

David A. Whittredge, 7 Aberdeen Rd., Arlington, Mass. 02174

Filed Feb. 3, 1993, Ser. No. 13,040
Int. Cl.[6] G09F *1/08*
U.S. Cl. 40—124.1 **13 Claims**



1. A device for animating graphical structures comprising:

a guidance structure that provides constant directional retention for a reaction member, a reaction member slidably connected to said guidance structure and having a track, said track defining a substantially zig-zag path,

a tracking member that is movably connected to said guidance structure and that slidably fits into said track of said reaction member and movably responds to changes in direction of the track,

and a movable graphical structure that is flexibly connected to said tracking member and connected to said guidance structure.

5,383,293

PICTURE FRAME ARRANGEMENT

John D. Royal, 606 Old Jersey, College Station, Tex. 77840

Division of Ser. No. 935,791, Aug. 27, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 134,056
Int. Cl.[6] B44C *5/02*
U.S. Cl. 40—158.1 **4 Claims**

1. A picture framing arrangement comprising in combination:

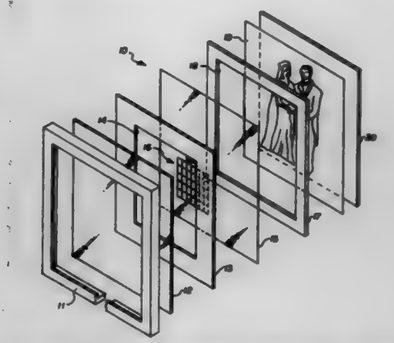
a picture frame having a peripheral frame defining an opening with a recessed ledge-shaped surface on its back side surrounding the opening;

a transparent plate having front and back surfaces installed within said ledge-shaped surface of said picture frame;

a planar mat board having front and back surfaces received within said ledge-shaped surface of said picture frame behind said transparent plate, and having an opening surrounded by side portions of said mat board defining a first picture viewing opening;

a thin transparent film secured to the back surface of said mat board and covering said mat board first picture viewing opening, said thin transparent film having a first image imprinted thereon positioned within said first picture viewing opening;

at least one planar spacer board of predetermined thickness having front and back surfaces received within said ledge-shaped surface of said picture frame and having an opening surrounded by side portions of said spacer board defining a second picture viewing opening;



a picture or flat printed material installed within said ledge-shaped surface of said picture frame behind said at least one spacer board and having a second image imprinted thereon positioned within said second picture viewing opening; and

said at least one spacer board being of sufficient thickness to space said transparent film a distance in front of said said picture or printed material such that said first image and said second image have different focal planes and produce a three-dimensional effect when a viewer focuses their eyes on said second image imprinted on said picture or printed material.

5,383,294

VARIABLE NUMBER PLATE FIXING FRAME FOR VEHICLE

Shan T. Shen, Taipei Hsien, Taiwan, Prov. of China, assignor to Janchy Enterprise Co., Ltd., Taipei Hsien, Taiwan, Prov. of China

Filed Sep. 15, 1993, Ser. No. 120,801
Int. Cl.[6] G09F *7/00*
U.S. Cl. 40—209 **1 Claim**

1. A number plate fixing frame for use on a vehicle, comprising:

a main frame body;

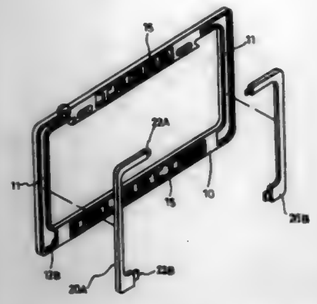
a plurality of side brackets two of which can be selected to associate with said main frame body;

said main frame body having at the right and left side thereof respectively a receiving cavity matching with a shape of each said side bracket so as to permit each said side bracket to be located therein;

each said side bracket having a tenon at each end thereof;

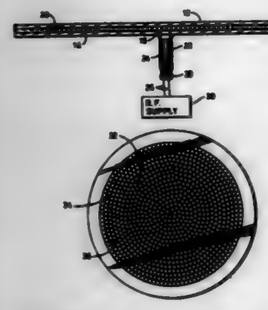
each said cavity having a mortise at each end thereof in correspondence to each said tenon of said side brackets so that said side brackets are located in said cavities with said

tesons firmly engaged with said mortises as said side brackets are located in said cavities;



a recess being disposed at the upper and lower edges of said main frame body for mounting of decoration stickers.

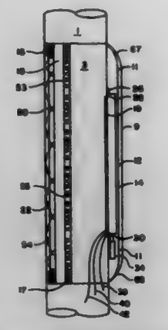
5,383,295
LUMINOUS DISPLAY DEVICE
Wayne P. Strattman, 791 Tremont St., E817, Boston, Mass. 02118
Filed Dec. 21, 1992, Ser. No. 994,627
Int. Cl.[6] H01J *17/16*
U.S. Cl. 40—545 2 Claims



1. A luminous display device comprising a sandwich of first, second and third plates fused together, the first and third plates being substantially similar and the second plate having a major portion of its central area removed, whereby a relatively flat chamber constituting an interior volume is formed, a layer of beads being distributed throughout said interior volume whereby myriad paths through said volume are formed, an ionizable gas filling said interior volume, said third plate having an opening formed therethrough providing restricted access to said interior volume, and means for initiating ionization of said gas including a tubulation sealed centrally to said third plate and having an internal opening in communication with said opening formed in said third plate, an electrode mounted on leads sealed in said tubulation, and a source of electrical power connected to said leads.

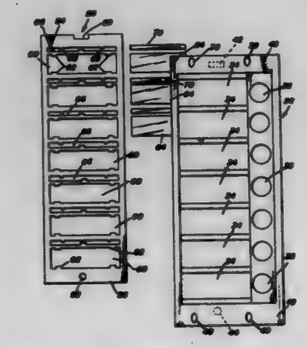
5,383,296
FLEXIBLE DISPLAY BANNER
Elizabeth J. Vecchione, and J. Vecchione, Jr., both of 4010 Stella Ct., Richmond, Va. 23234
Filed Dec. 22, 1992, Ser. No. 995,065
Int. Cl.[6] G09F *17/00*
U.S. Cl. 40—604 10 Claims

1. A display banner including:
a) a non-stretchable panel having on an exterior surface thereof a containment pouch comprising upper, lower and two side panels, all being opaque,
b) a transparent panel which borders on and is affixed to the containment pouch at four edges,
c) a retaining flap attached to the interior surface of the



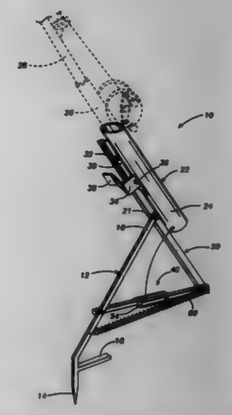
banner along an upper, a lower and one side edge, having hook and loop fastening means along another side edge, and
d) a message, inserted through the fastening means, hung from a hook and resting on a retention shelf so that it is visible through the transparent panel.

5,383,297
VENDOR SELECTION PANEL ASSSEMBLY
Don S. Summerville, Snellville; Lionel D. Gillespie, and Steven C. Gamper, both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Jan. 29, 1992, Ser. No. 827,275
Int. Cl.[6] G09F *7/02*
U.S. Cl. 40—611 9 Claims



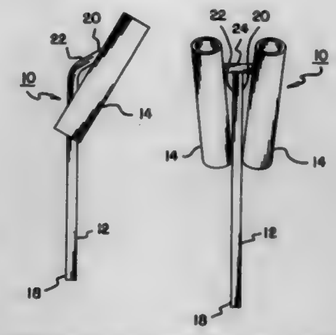
1. A product selection front panel assembly for a vending machine, comprising:
a damage resistant front selection panel for a vending machine and having a plurality of substantially equal sized, generally rectangular, mutually aligned label viewing windows for reading at least one indicia bearing label located behind said panel;
a label carrier member secured to a rear surface of said front selection panel, having a respective plurality of frame openings and label holding means in registration with said label viewing windows, said label holding means comprising a plurality of tab type elements selectively located around an inner perimeter edge of said frame openings;
said front selection panel further having a respective plurality of selector push button apertures arranged in a column adjacent said label viewing windows and said frame openings;
a generally flat transparent panel member located between said front selection panel and said label carrier member and including a plurality of selector push button apertures in registration with said push button apertures in said front selection panel; and
means for holding said front selection panel, said label carrier member and said flat transparent panel member together.

5,383,298
FISHING ROD HOLDER WITH HOOK SETTING TRIGGER
Steve J. Engel, 14866 El Capitan, Delhi, Calif. 95315
Filed Jan. 3, 1994, Ser. No. 176,961
Int. Cl.[6] A01K *97/12, 91/06*
U.S. Cl. 43—15 12 Claims



1. A holder for a fishing rod to automatically set a hook in fish or other aquatic game and in which the hook is attached to the end of a fishing line, the fishing rod having a butt end together with a tip end which supports the fishing line, the holder comprising the combination of a post adapted for mounting on a ground location or other support, a beam mounted on the post for pivotal movement about a horizontal axis with the beam having upper and lower ends which are positioned on opposite sides of the horizontal axis, means for constraining the beam to pivot about said axis between a waiting position and a released position, with said upper end, when the beam is in its waiting position, extending in an upward direction while the lower end extends downwardly at a predetermined included angle with respect to the post, support means for releasably supporting the butt end of the fishing rod on said upper end of the beam, collapsible linkage means convertible between a set position for forming a rigid link which connects the lower end of the beam with the post and a collapsed position for enabling the beam to pivot about the horizontal axis and move toward said released position, trigger means for moving the linkage means from the set position responsive to a pulling force on the fishing line which results from the fish or other aquatic game striking the hook, and force biasing means for applying a bias force on the beam for moving the linkage means to the collapsed position and for urging said upper end of the beam in a direction toward the released position, when the collapsible linkage means is moved from its set position, and for moving the tip end of the rod in a direction which applies a vigorous pulling force on the fishing line to set the hook in the fish or other aquatic game.

5,383,299
FISHING ROD HOLDERS
Dehner M. Smelker, 1126 Calvert St., Colorado Springs, Colo. 80904
Filed Oct. 4, 1993, Ser. No. 130,797
Int. Cl.[6] A01K *97/10*
U.S. Cl. 43—21.2 1 Claim



1. A device for holding two fishing rods simultaneously while fishing consisting of:
a vertically positionable post, the post having a lower end insertable into the ground at a location for fishing, the post also having an upper end, the post also having a bend between the upper end and lower end to provide an upper extent formed at an angle of about 45 degrees with respect to the vertical and a transverse horizontal component at the upper end of the upper extent adapted to be held by the person fishing to insert the lower end into the ground through the application of a downward force, the post having an intermediate extent between the bend and the lower end to orient the upper extent at an elevation to locate the lower portion of a fishing rod at a convenient height for the person fishing;
a pair of cylindrical tubes with open upper ends and lower ends and axes along their lengths fixedly attached at their lower ends to the post beneath the bend to orient the tubes with their axes at a common angle of between about 30 and 60 degrees from the vertical and with the axes of the tubes being rotationally displaced at an angle of between about 15 and 30 degrees whereby two fishing rods supported by the tubes will extend at a proper angular orientation with respect to the horizontal and at a proper angular orientation with respect to each other.

5,383,300
LIGHTWEIGHT ROLLER GUIDE AND TIP FOR FISHING RODS
Gregory S. Stotesbury, and Ian U. Fettes, both of Costa Mesa, Calif., assignors to AFTCO Mfg. Co., Inc., Irvine, Calif.
Division of Ser. No. 926,831, Aug. 7, 1992, Pat. No. 5,276,991.
This application Oct. 8, 1993, Ser. No. 134,042
Int. Cl.[6] A01K *87/04*
U.S. Cl. 43—24 6 Claims

1. A line guide for mounting on fishing rod blanks, said guide comprising:
(a) a roller body or frame, said body having front, rear and side portions, and also having a bottom region,
(b) roller means on said body to guide a fishing line therethrough in low friction manner, and
(c) a single foot extending outwardly from said body and adapted to be secured to the blank of a fishing rod,
said body not having any other foot extending therefrom that is adapted to be secured to the blank of a fishing rod, said single foot and said body being so related to each other that when said body, roller means and foot

are disposed on the upper side of a horizontal fishing rod blank, and said foot is fixedly secured to said blank, said body is not directly above any substantial portion of said foot,



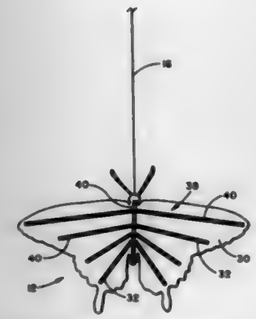
there being no upwardly-extending connector between said foot and said bottom region of said body, said bottom region of said body being close to said blank when said body, roller means and foot are thus mounted on the upper side of a horizontal fishing rod blank.

5,383,301

DECORATIVE INSECT TRAP

Susan E. Babb, R.D. 1 Box 313, New Hampton, N.Y. 10958

Filed Nov. 29, 1993, Ser. No. 158,400
Int. Cl.[6] A01M *1/14*
U.S. Cl. 43—114 3 Claims



1. A decorative insect trap, comprising:

a substantially laminar member;

said substantially laminar member having a peripheral border that presents a viewer thereof with a decorative representation of a silhouette of an insect;

an insect trapping adhesive applied to at least one surface of said substantially laminar member, said insect trapping adhesive being applied in a decorative pattern; said decorative pattern comprising a plurality of discrete and spatially separated individual lines; and

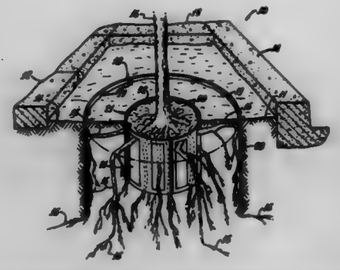
a peel away backing member overlaying said insect trapping adhesive.

5,383,302

APPARATUS AND METHOD FOR GROWING STRONGLY-ROOTED TREES, AND PREVENTING ROOT DAMAGE TO HARDSCAPES

Ronald F. Hill, 21322 Bulkhead Cir., Huntington Beach, Calif. 92646

Filed Oct. 8, 1992, Ser. No. 958,271
Int. Cl.[6] A01G *1/00*
U.S. Cl. 47—78 21 Claims



1. A combination tree root disbursement and tree root barrier system, which comprises:

a hardscape permanently disposed on the ground,

said hardscape being of a type which can be damaged by tree roots,

a tree planted in the ground in sufficiently close proximity to said hardscape that roots from said tree could, in the absence of a root barrier, reach and damage said hardscape,

a root barrier disposed in the ground between said tree and said hardscape to prevent roots from said tree from reaching and damaging said hardscape, and

a root disbursement element disposed in the ground between said tree and said root barrier,

said root disbursement element being shaped to disburse the roots from said tree and to cause a smaller proportion of the roots from said tree to engage said root barrier than would be the case if said root disbursement element were not present.

5,383,303

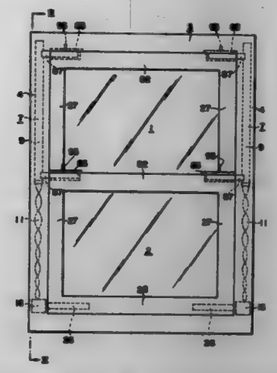
WINDOW

Yoshikazu Nakanishi; Kenkichi Matsubara, and Tamotsu Nakazawa, all of Tokyo, Japan, assignors to Nakanishi Engineering Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 926,038
Claims priority, application Japan, Dec. 4, 1991, 3-47683
Int. Cl.[6] E05D *15/22*
U.S. Cl. 49—181 21 Claims

1. A window comprising, a window frame having a head and sill oppositely disposed, and side jambs oppositely disposed; a window sash slidable upwardly and downwardly along the side jambs of the window frame; a counterbalance having a coiled torsion spring counter balancing the window sash for keeping the window sash in a desired position; a first sliding block connected to the counterbalance and the window sash and slidable upwardly and downwardly along a side jamb of the window frame; adjusting means on said first sliding block for adjusting a counter balancing force of the torsion spring; and

said adjusting means comprising an adjusting shaft rotatably mounted on said first sliding block for variably adjusting torsion of said torsion spring to adjust the counter balancing force of the torsion spring, means on said first sliding block for defining a cam face, a selectively operable braking member disposed rotatable circumferentially of said rotatable adjusting shaft and having a surface selectively coactive with said cam face; whereby when said braking member is selectively rotated said cam face applies said braking member against the rotatable adjusting shaft for braking said adjusting shaft, and said braking member is



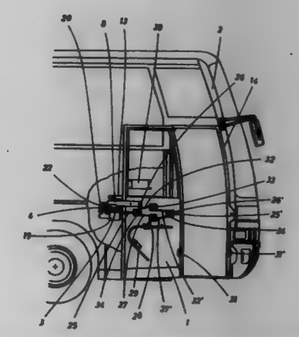
rotatable in an opposite direction for releasing said adjusting shaft for rotation.

5,383,304

SLIDING DOORS

Antonio Codina Soley, Sant Quirze No. 11, 08201 Sabadell, Barcelona, Spain

Filed Aug. 17, 1993, Ser. No. 107,080
Claims priority, application Spain, Oct. 6, 1992, 9201975; Feb. 24, 1993, 9300362
Int. Cl.[6] E05D *15/10*
U.S. Cl. 49—215 14 Claims



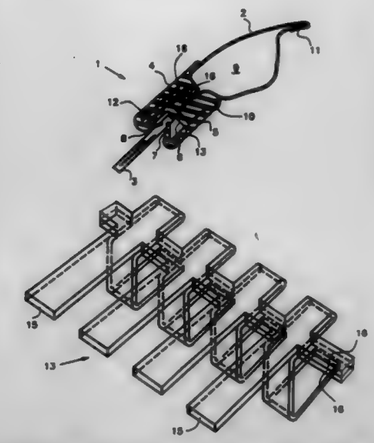
1. Apparatus for automatic opening and closure of a sliding door relative to a door frame of the type in which movement of the door between open and closed positions comprises a longitudinal movement substantially parallel to the door frame and a transverse movement perpendicular thereto, the apparatus comprising an endless drive belt, coupling means connecting the door to the belt and drive means for moving the belt to effect opening and closure of the door, wherein the belt extends between two pulleys including a first pulley having an axle which is fixed in relation to the door frame and a second pulley having an axle mounted for movement along an arcuate path towards and away from the door frame.

5,383,305

REINFORCEMENT FOR A SEALING STRIP AND A SEALING STRIP INCLUDING SUCH REINFORCEMENT

Henri Guillon, Saint-Maurice sur Fessard, France, assignor to Hutchinson, Paris, France

Filed Apr. 23, 1993, Ser. No. 52,477
Claims priority, application France, Apr. 30, 1992, 92 05379
Int. Cl.[6] E06B *7/16*
U.S. Cl. 49—440 7 Claims



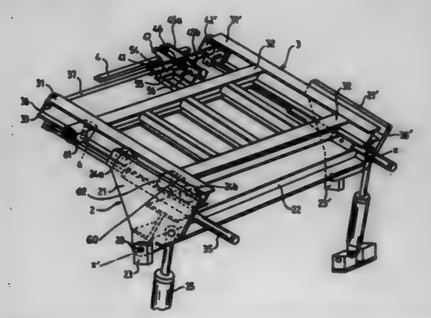
1. Reinforcement for a sealing strip, in particular for a motor vehicle, the reinforcement comprising a metal strip comprising rung members that are interconnected by at least two interconnecting webs, wherein the reinforcement is folded so as to include at least one superposition along an entire length of at least two webs for a given pair of adjacent rung members so as to facilitate bulging and edgewise bending of the reinforcement.

5,383,306

CLEANING APPARATUS FOR A CYLINDRICAL ROLL, AND IN PARTICULAR A MILL ROLL

Joseph Michalon, Chavillon/Saisigneux, and Gérard Bertholon, Saint-Etienne, both of France, assignors to Clecim, Cergy-Pontoise, France

Filed Jan. 6, 1993, Ser. No. 2,504
Claims priority, application France, Jan. 6, 1992, 92 00045
Int. Cl.[6] B24B *5/37*
U.S. Cl. 451—106 25 Claims



1. Cleaning and polishing apparatus for rolls in contact with a metal strap moving in a longitudinal direction in an installation comprising a set of superposed rolls with parallel axes,

rotary-mounted, each on two bearings carried by two vertical stands of a fixed supporting cage located on both sides of said rolls, said apparatus comprising:

(a) at least one wiping tool extending parallel to said axes of said rolls;

(b) a device supporting said at least one wiping tool, said device being mounted for sliding movement between a forward position and a backward position on straight guiding means provided on a cradle and defining an average sliding plane of said supporting device parallel to said axes of said rolls, said supporting device consisting of a rigid rectangular frame having a longitudinal length greater than a length of said sliding guiding means so that, in said working position of said cradle, said frame extends to a cantilevered forward position, beyond said guiding means, until a front section of said frame carrying said wiping tool is located close to said roll, and said front section is returned to a level of said cradle in said backward position of said frame in order to allow said cradle to pivot to said maintenance position along said stands of said cage;

(c) said cradle being mounted on both said stands of said cage for pivoting movement around a pivoting axis parallel to said axis of said rolls, said cradle comprising two parallel spaced flanges rigidly linked by a crossbeam;

(d) each of said flanges comprising two sections extending on both sides of said crossbeam, namely, an external widened section oriented to said strap and on which are provided said corresponding straight guiding means and an internal section oriented to said cage and on which is fixed a journal defining said pivoting axis;

(e) said journals being rotary-mounted, respectively on two bearings fixed, respectively, on both stands of said cage and located so that said cradle may pivot between a working position in which the sliding plane of said supporting device is oriented to said roll to be cleaned and a maintenance position in which said sliding plane is removed from the roll and the supporting device is located along both stands of said cage, slightly outside said cage;

(f) sliding means for control of said supporting device between a forward application position of said tool on said roll and a backward position; and,

(g) control means for said cradle pivoting around said pivoting axis, between said maintenance position and said working position;

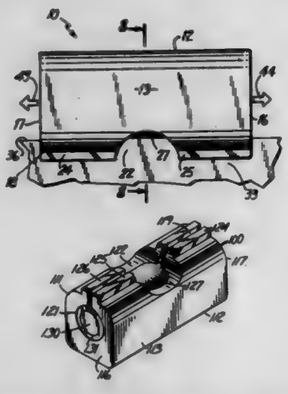
(h) said wiping tool being mounted for movement parallel to itself on said front section of the supporting device via an articulated control means to move said tool forward outside said supporting device to apply it on said roll, and to retract said tool backward out of contact with said roll.

5,383,307
SKATE BLADE EDGE RESURFACER

Bradley J. Anderson, Alexandria, Minn., assignor to Edge Specialties, Inc., Alexandria, Minn.

Continuation-in-part of Ser. No. 44,749, Apr. 14, 1993. This application Jan. 3, 1994, Ser. No. 176,464
Int. Cl.[6] B24D *5/00*
U.S. Cl. 451—545 28 Claims

1. A device for sharpening the blade of an ice skate comprising: a body having end walls and a top wall joined to the opposite end walls, a longitudinal bore open to each end wall, and a longitudinal slot extended normal to the top wall and open to the bore and each end wall for accommodating the blade, lip means projecting upwardly normal to the top wall and adjacent opposite sides of the slot, cylindrical means located in the bore, the cylindrical means having a member and sleeve means attached to the member engageable with a blade of a skate located in the slot to sharpen the blade, bearing means located in the bore in each end wall, said member having ends rotatably mounted on the bearing means thereby rotatably supporting the cylindrical means on the bearing means, means removably mounted on the body for holding the bearing means in a fixed position within said bore to prevent rotational and longitudinal movement of the bearing means relative to the body, and a transverse groove extended into the

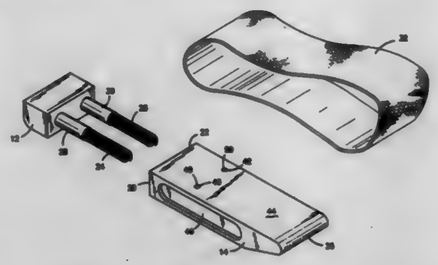


top wall whereby the cylindrical means can be manually rotated within said bore to position a selected portion of the sleeve means adjacent the slot.

5,383,308
SANDING BLOCK

Marvin Beloff, 133 Eaton Ave., Meriden, Conn. 06451, and Statis J. Pappas, 718 Old Colony Rd., Meriden, Conn. 06450

Filed Apr. 5, 1994, Ser. No. 223,048
Int. Cl.[6] B24D *15/02*
U.S. Cl. 451—519 2 Claims



1. A sanding block comprising:

A pair of coplanar aligned blocks having opposed inner ends for selectively carrying an endless belt over one coplanar side of said coplanar blocks, said endless belt being removably attached thereto;

means interiorily of said pair of blocks affording free relative movement of said pair of blocks away from each other to a point of inseparation and toward each other to an abutting position of said inner ends;

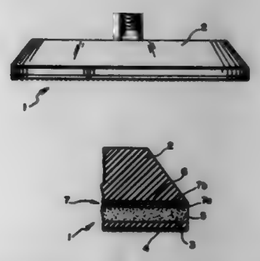
spring means in one of said blocks to normally urge said one block into spaced apart relationship; and

operable means between said inner ends for limiting movement of said ends away from each other to prevent complete separation of said blocks from each other, said operable means comprising screws placed in registration with said spring means at one of said ends and dowel pins glued to said one block at another of said ends.

5,383,309
ABRASIVE TOOL

Bruno Sampietro, Milan, Italy, assignor to Norton Company, Worcester, Mass.

Continuation of Ser. No. 999,257, Dec. 31, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 150,325
Claims priority, application Italy, Jul. 9, 1992, MI92U000684
Int. Cl.[6] B24D *11/02*
U.S. Cl. 451—533 6 Claims

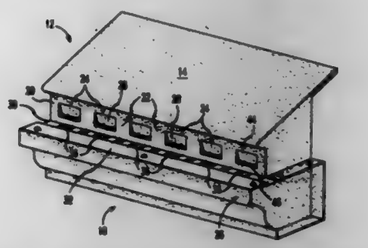


1. An abrasive tool comprising an abrasive-containing layer comprising a flexible support having a layer of abrasive particles bonded thereto and a fabric substrate adapted for hook and loop attachment to a support plate, and a resilient foamed polyurethane layer having a density between about 20 and about 30 kg/m^3 located between and adhered to the abrasive-containing layer and the fabric substrate.

5,383,310
DEBRIS-FREE RAIN GUTTER COVER SYSTEM

John A. Sapia, 69 Locust Point Rd., Locust, N.J. 07760

Filed Nov. 3, 1993, Ser. No. 145,105
Int. Cl.[6] E04D *13/00*
U.S. Cl. 52—12 13 Claims



1. A rain gutter cover system of predetermined material for a hollow gutter of the type which is secured to the facia board of a structure, and which gutter incorporates a trough culminating in a defined front lip for receiving rainwater, said system further including rain gutter cover comprising:

an upwardly pitched top surface extending rearwardly to reach the facia board of said structure;

a bottom surface extending towards the front lip of said gutter, and with said bottom surface extending in a horizontal plane below the front lip of said gutter;

a downwardly pitched front surface extending between said top and bottom surfaces;

a first row of spaced-apart, interrupted slots running horizontally along said downwardly pitched front surface;

a plurality of rearwardly and downwardly extending flaps provided within said first row of spaced-apart interrupted slots for diverting rainwater into said gutter;

a second row of spaced-apart interrupted slots running horizontally along said bottom surface for diverting rainwater into said gutter which eludes said flaps;

with said first row of spaced-apart interrupted slots including upper and lower edges in horizontal planes above said front lip of said gutter;

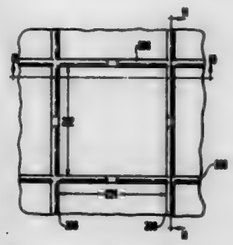
and with said second row of spaced-apart interrupted slots including forward and rearward edges, at least one of which is in a horizontal plane below said front lip of said gutter;

whereby received rainwater flows along said top, front and bottom surfaces, and through said first and second rows of spaced-apart interrupted slots, into the trough of said gutter.

5,383,311
LINED STRUCTURE AND LINER

James K. Strickland, Jacksonville, Fla., assignor to Strickland Industries, Inc., Jacksonville, Fla.

Division of Ser. No. 015,166, Feb. 11, 1993, Pat. No. 5,303,518. This application Oct. 8, 1993, Ser. No. 133,286
Int. Cl.[6] E04B *1/64*; E02D *29/14*
U.S. Cl. 52—20 15 Claims



1. A lined structure of settable material having a plastic liner for lining and protecting a surface of the structure, said liner comprising:

a first side; and

a second side opposed from said first side, said second side having a plurality of spaced raised projections adapted to be embedded within the protected surface;

wherein said raised projections are hollow;

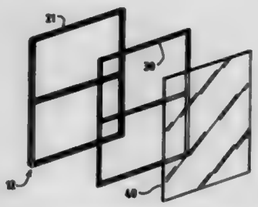
wherein the plastic material composing the liner is resistant to corrosion; and

wherein each projection includes longitudinally spaced gaps and the settable material enters the gaps and at least partially fills the hollow raised projections.

5,383,312
CONTAMINANT SHIELD

Daniel M. St. Louis, West Bloomfield, and Ricky D. Schmidt, Macomb, both of Mich., assignors to Haden Schweitzer Corporation, Madison Heights, Mich.

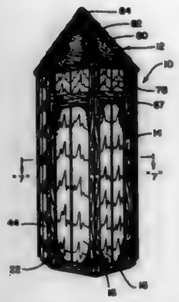
Filed Nov. 8, 1993, Ser. No. 148,894
Int. Cl.[6] E04B *1/12*
U.S. Cl. 52—63 9 Claims



1. A contaminant shield having a top, two sides, and two opposing open ends, comprising:

a modular frame serving as the structural support for the shield and including a plurality of interconnected, substantially rigid frame members having inner and outer surfaces;
thin flexible sheeting for covering the top and sides of the shield;
an adhesive medium having inner and outer opposing adhesive surfaces, the inner surface of the adhesive medium being applied to at least a portion of the outer surface of the frame members; the adhesive medium being substantially resistant to visible creep at ambient temperatures between about 100° –160° F., and having an ultimate tensile strength greater than the ultimate tensile strength of the sheeting; and
the sheeting being affixed to the outer surface of the adhesive medium.

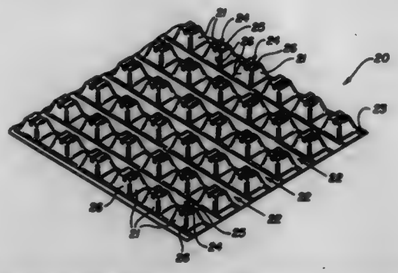
5,383,313
MINI STORAGE SILO
Ronald V. Deeke, 110 Glen Ellyn Rd. (I.N.), and Gary A. Deeke, 110 Glen Ellyn Rd. (G.S.), both of Bloomingdale, Ill. 60108
Filed Aug. 3, 1992, Ser. No. 924,222
Int. Cl.[6] E06B *1/06*
U.S. Cl. 52—82 23 Claims



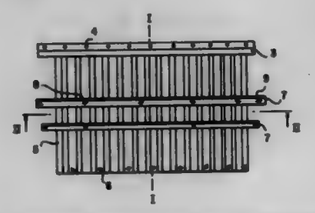
1. A mini storage silo structure for exterior use in confined spaces, said structure comprising a tall, octagonal in cross section structure having a frame and side wall panels mounted on six consecutive sides of eight sides thereof, the frame including six angularly related side wall panel frames, the frame further including a pair of angularly related door frame structures, the door frame structures being angularly mounted on the structure and leaving an open corner which enables an expanded door opening to be provided, swing apart doors hingedly mounted on the remaining two sides which doors when closed are disposed in an angled attitude toward one another to provide the structure with the octagonal cross section, a top octagonal frame section mounted horizontally on the frame, an octagonal base plate mounted to the top octagonal frame section, a conical roof assembly mounted to said top octagonal frame section and said base plate, an octagonal base upon which a floor is mounted, a plurality of elongated upright frame sections extending upwardly and mounted between said floor and said top octagonal frame section, and further having a plurality of semioctagonal shelves mounted therein.

5,383,314
DRAINAGE AND SUPPORT MAT
Henry M. Rothberg, Woodbridge, Conn., assignor to Laticrete International, Inc., Bethany, Conn.
Filed Jul. 19, 1993, Ser. No. 95,017
Int. Cl.[6] E02D *19/00*
U.S. Cl. 52—169.5 10 Claims

1. A drainage and support mat used in roof and deck construction, comprising a water-impermeable sheet having a number of spaced-apart, truncated protuberances, and means defining channels running between said truncated protuberances for providing for drainage of fluids from said mat, each of said truncated protuberances having a generally flat upper surface that tends to accumulate fluid, said fluid being conveyed from said generally flat upper surface of each truncated protuberance by means defining slots running across and traversing each of said upper surfaces of said truncated protuberances, said slots forming a star-shaped pattern that conveys water off said generally flat upper surface of said truncated protuberances to said channels running between said truncated protuberances.



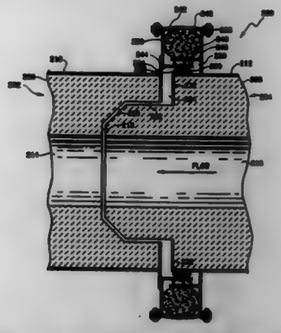
5,383,315
HURRICANE SHUTTER REINFORCEMENT AND METHOD
Richard Birs, 7623 NW. 74 Terrace, Tamarac, Fla. 33321
Filed Sep. 27, 1993, Ser. No. 127,232
Int. Cl.[6] E06B *3/32*
U.S. Cl. 52—202 13 Claims



1. An improved hurricane shutter assembly for protecting an opening of a building, of the type in which a plurality of corrugated panels are attached between a header above the opening and a sill below the opening, and in which the corrugated panels extend beyond lateral edges of the opening for covering substantially the entire opening, wherein the improvement comprises:
a reinforcement bar extending between the header and the sill of the opening to be covered, and means for attaching said reinforcement bar to a wall structure disposed laterally of the opening.

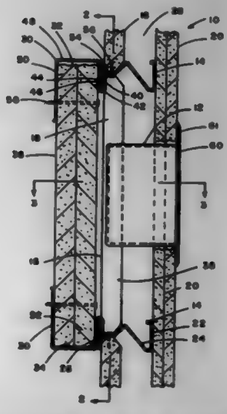
5,383,316
LOOP SEAL EXPANSION JOINT
James Burke, Mesa County, Colo., and Ed Linck, Kemah, Tex., assignors to Pyropower Corporation, San Diego, Calif.
Continuation-in-part of Ser. No. 697,111, May 8, 1991, which is a continuation-in-part of Ser. No. 598,250, Oct. 16, 1990, Pat. No. 5,311,715. This application Oct. 9, 1991, Ser. No. 773,217
Int. Cl.[6] E04H *12/28*
U.S. Cl. 52—218 9 Claims

1. An expansion joint in combination with and joining a first flue and a second flue in adjacent relation at a flue junction, comprising:
a sealing chamber extending between the first and second flues, defined by a first side wall mounted to the first flue, a second side wall mounted to the second flue, a flexible outer wall mounted to and extending between said first and second side walls, and an inner wall defined by one of the first and second flues;
a baffle plate mounted to one of said first or second side walls and extending toward the other of said first or second side walls;



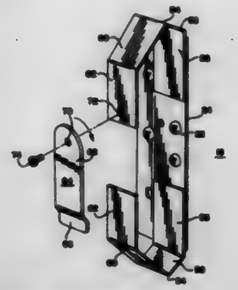
said baffle plate defining a labyrinth passage between the flue junction and said sealing chamber flexible outer wall; and
said baffle plate being slideably mounted to said first side wall and said expansion joint further including a second baffle plate spaced radially outwardly from said slideably mounted baffle plate and fixedly mounted to said second side wall.

5,383,317
SHAFT WALL CAVITY EXTENSION
Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.
Filed Feb. 8, 1993, Ser. No. 14,596
Int. Cl.[6] E04F *17/08*
U.S. Cl. 52—220.2 20 Claims



1. The method of making a hollow wall with multiple cavity widths comprising the steps of erecting a wall having an outer side and an inner side and a plurality of elongate metal horizontal studs, wallboards affixed to said metal studs on said outer side of said wall, and primary core boards mounted against said studs in spaced parallel relation to said wallboards, forming a primary cavity between said core boards and said wallboards having a width equal to a first dimension, omitting a portion of said core board, affixing a section of core board on said inner side of said wall over said omitted portion, said section overlying and covering said section, whereby a section cavity is formed between said wallboard and said section, said section cavity being wider than said primary cavity.

5,383,318
RACEWAY CABLE RETENTION AND ACCOMMODATION APPARATUS
James O. Kelley, Spring Lake, and John G. Otto, Grandville, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Nov. 4, 1992, Ser. No. 971,355
Int. Cl.[6] E04F *19/04*
U.S. Cl. 52—287.1 29 Claims

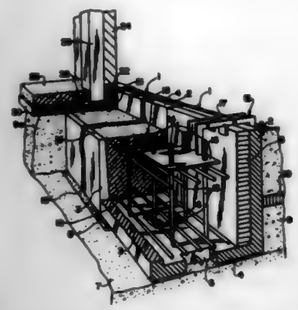


1. A panel system, comprising:
a support surface;
a C-shaped bracket, wherein said C-shaped bracket is mounted to said support surface; and
a cover attached to said C-shaped bracket, wherein said C-shaped bracket comprises a blocking element to cover a gap defining a planar surface defined by said C-shaped bracket, wherein said blocking element pivots about an axis substantially perpendicular to said planar surface defined by said gap.

5,383,319
METHOD OF ERECTING A FOUNDATION STRUCTURE FOR A BUILDING SUBSTRUCTURE
Stig Sörqvist, Pl. 2790, S-662 00 Åmål, Sweden
PCT No. PCT/SE91/00373, § 371 Date Jan. 28, 1993, § 102(e) Date Jan. 28, 1993, PCT Pub. No. WO91/19055, PCT Pub. Date Dec. 12, 1991
PCT Filed May 27, 1991, Ser. No. 952,741
Claims priority, application Sweden, May 30, 1990, 9001934
Int. Cl.[6] E02D *27/00*; E04G *21/12*
U.S. Cl. 52—741.1 5 Claims

1. A method for erecting a foundation structure for a building substructure, comprising:
(a) in an excavation having a bed of particulate substratum material having an upper surface that is porous to wet concrete, laying out an array of preformed joists each having two transversely spaced mutually parallel upright, longitudinally extending side flanges integrally interconnected at respective bottoms thereof by a horizontal web having a series of longitudinally spaced apertures formed vertically therethrough, on respective supports, so that said joists are disposed butt end to butt end within said array, with said webs thereof spaced above said upper surface of said particulate substratum material;
(b) backfilling particulate backfill material against said both of said side flanges of each said joist from outside of each said joist;
(c) pouring wet concrete into said array of joists from above, between said side flanges of respective ones of said joists, so that some of said wet concrete flows down through said

apertures and into said bed of particulate substratum material, and so as to fill upwardly open space defined within said joists up to an upper edge of at least one of said side



flanges of each said joist, thereby uniting said joists of said array, and providing concrete supports for said joists from said bed at respective ones of said apertures; and

(d) allowing said wet concrete to set.

5,383,320

TOOL FOR POSITIONING JOIST HANGER ON HEADER

Steven W. Sorton, P.O. Box 221851, Carmel, Calif. 93922

Filed Jun. 1, 1993, Ser. No. 70,143
Int. Cl.[6] G01G *3/30*
U.S. Cl. 52—749 11 Claims



1. A tool for use in mounting a metallic joist hanger to a header having a side face comprising:

first and second members, said first member having a generally vertical slot, said second member having a lower surface adapted to rest on an upper face of the header, the hanger adapted to be secured to the header, the first member being adjacent to a side of the second member and to be located adjacent to a side face of the header when the second member is on said header, said first member having a magnetic structure thereon for magnetically coupling a joist hanger thereto to allow the joist hanger to be positioned adjacent to the side face of the header when the first member is adjacent to the side face;

means on said second member, including a pair of spaced shoulders for adjustably engaging the first member; and

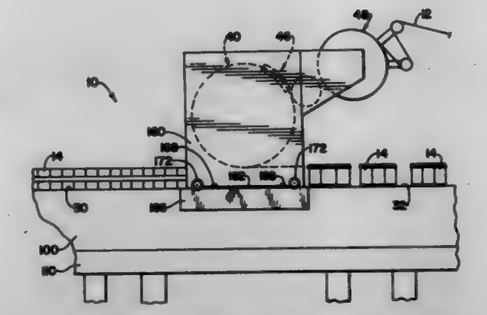
fastening means for adjustably securing the first member to the second member.

5,383,321

MACHINE FOR APPLYING CARRIER STOCK TO CONTAINERS, SUCH AS BEVERAGE CANS, SELECTIVELY IN RIM-APPLIED OR SIDE-APPLIED CARRIER POSITION

Stanely R. Krogman, Bartlett, and Kevin D. Moore, Hoopeston, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 21, 1993, Ser. No. 80,571
Int. Cl.[6] B65B *27/04, 53/00*
U.S. Cl. 53—48.4 9 Claims



1. A machine for applying carrier stock to substantially identical containers in a rectangular array, the carrier stock being of a type made from resilient polymeric material with band segments defining container-receiving apertures in a rectangular array, each container being of a type having an upper rim of a given diameter and a side wall of a larger diameter, the machine comprising

(a) means for conveying the containers in a horizontal, longitudinal direction of movement, in longitudinal rows,

(b) means for applying the carrier stock to the containers by receiving the carrier stock, stretching the carrier stock transversely, at right angles to the direction of movement of the containers, and moving the carrier stock downwardly past the upper rims of the containers as the containers are conveyed, and

(c) means for adjusting relative positions of the conveying and applying means so as to enable the applying means to apply the carrier stock to the containers in a selected one of two positions, namely a rim-applied carrier position, in which the carrier stock engages the containers near the upper rims, and a side-applied carrier position, in which the carrier stock engages the containers along the side walls,

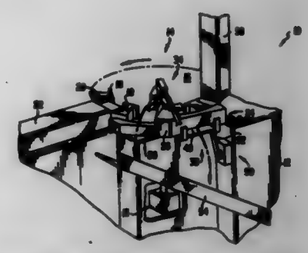
wherein the applying means comprises a wheel assembly rotatable on a transverse axis, which extends at right angles to the direction of movement of the containers, the wheel assembly including a first wheel and a second wheel spaced along the transverse axis from the first wheel, the first and second wheels having jaws in transversely opposed pairs, the jaws constituting means for receiving the carrier stock, stretching the carrier stock transversely as the second jaws are moved away from the first jaws, and moving the carrier stock downwardly past the upper rims of the containers as the wheel assembly is rotated and the containers are conveyed past the rotating assembly, and wherein the adjusting means comprises means for moving the wheel assembly longitudinally of the direction of movement of the containers.

5,383,322

SINGLE PACK REJECT MECHANISM FOR CIGARETTE PACKAGING MACHINE AND METHOD

Joseph L. Collins, Jr., Clemmons; Michael A. Warren, Tobaccoville; Charles F. Demey, III, New Bern, and Clifford R. Marritt, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jul. 19, 1993, Ser. No. 93,375
Int. Cl.[6] B07C *5/00*; B65B *57/00*
U.S. Cl. 53—53 30 Claims



22. A method of rejecting a defective pack from a cigarette packaging machine in which the packs are stacked into a plurality of two pack stacks each with a top pack and a bottom pack, comprising the steps of;

identifying defective top and bottom packs of said two pack stacks;

conveying said two pack stacks past a first rejection station and a second rejection station downstream of said first rejection station;

rejecting only defective top packs of said two pack stacks at said first rejection station;

rejecting defective bottom packs of said two pack stacks at said second rejection station; and

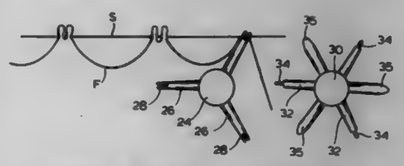
supplying make-up packs to said stacks downstream of said second rejection station to replace the top and bottom packs rejected at said first and second rejection stations.

5,383,323

MULTICONTAINER PACKAGING SYSTEM

Miroslav H. Lewczuk, 3660 Oxford Ave., Bronx, N.Y. 10463

Filed May 10, 1993, Ser. No. 59,915
Int. Cl.[6] B65B *27/04, 61/14*
U.S. Cl. 53—398 9 Claims



1. A method of forming multicontainer packages, the method comprising the steps of:

a) longitudinally advancing a plurality of containers in a predetermined array having a predetermined transverse width through a packaging station underneath a flexible harness strip having a plurality of loops and formed between the loops with small-diameter throughgoing anchor holes;

b) poking a thin and highly flexible film having a transverse width substantially greater than the transverse width of the array through the anchor holes so as to anchor the film to the harness strip and positioning the harness strip and film with the film under the harness strip and above the array; and

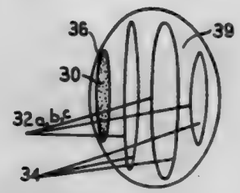
c) thereafter pressing the harness strip down on the film anchored to it and the harness strip and film down on the containers in the station and thereby fitting the loops over the respective containers while forming in the film at each container a pocket snugly engaging over the respective container and held tight around the respective container by the respective loop.

5,383,324

METHOD FOR MANUFACTURING AND STORING STABLE BICARBONATE SOLUTIONS

Alain Segers, Huizingen; Dirk Faict, Asse-ede; Annick Dupouchelle, Bruxelles; Jean-Pierre Hartman, Rode, and Francesco Peluso, Heverlee, all of Belgium, assignors to Baxter International Inc., Deerfield, Ill.

Filed Apr. 23, 1993, Ser. No. 52,260
Int. Cl.[6] B65B *29/06, 55/18*
U.S. Cl. 53—425 18 Claims



1. A method for stabilizing bicarbonate solutions, the method comprising the steps of:

housing a bicarbonate solution in a container made of a material permeable to carbon dioxide, wherein the container allows carbon dioxide to pass therethrough and further wherein the container is housed in an overpouch; and

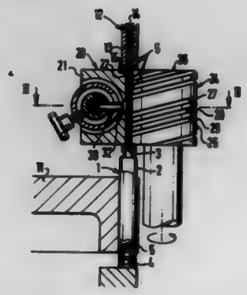
stabilizing the bicarbonate solution with a device consisting of a body housing a carbon-dioxide producing substance that includes a solid material which upon contact with water generates carbon dioxide.

5,383,325

DEVICE FOR FEEDING SPHERICAL BODIES INTO A CONTAINER

Helmut Schott, Satteldorf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 21, 1993, Ser. No. 50,784
Claims priority, application Germany, Jun. 12, 1992, 4219223
Int. Cl.[6] B65B *5/10, 35/06, 35/26, 57/20*
U.S. Cl. 53—500 10 Claims



1. A device for cyclic feeding of a specific number of spherical bodies into a container (1), said device having a supply conduit (13), in which a plurality of spheres (5) are stored in a row aligned next to each other, a metering member disposed between a lower end of said supply conduit and said container that cyclically takes up a specific number of spheres one at a time from the supply conduit and guides said spheres into a

guide conduit leading to a container, a monitoring system for detecting the guided spheres, the supply conduit and the metering member are formed by a straight guide track (22) juxtaposed worm spirals (27, 28, 29) of a worm conveyor (24) of a cylinder (25) having an axis parallel to an axis of the guide track and which rotates about said parallel axis, the spheres (5) are conveyed to the worm spirals (27, 28, 29) on an upper end (26) of the worm conveyor (24) so that the end (26) of the worm conveyor (24) intermittently covers the underside of the longitudinal bore (14) of the supply conduit (13), so that the spheres (5) received from the supply conduit (12) during rotation of the worm conveyor (24) are form-fittingly guided between the guide track (22) and the spirals (27, 28, 29) to an opening (3) of the container (1).

5,383,326

SHEET MATERIAL GRIPPING SYSTEM

Ralph T. Dean, Englewood, and Richard D. Valentine, Hillsboro, both of Ohio, assignors to Premark FEG Corporation, Wilmington, Del.

Filed Nov. 24, 1993, Ser. No. 157,878
Int. Cl.[6] B65B *53/00, 41/12*
U.S. Cl. 53—556 **21 Claims**



1. A gripping device for firmly grasping an edge of thin sheet material and retaining said grasp while said sheet material is placed under tension essentially in its own plane, said device comprising a first gripping finger on one side of said plane and a second gripping finger on the opposing side of said plane, at least one of said fingers being movable toward and away from said plane between an open sheet-releasing position and a closed sheet-grasping position, opposing resilient sheet gripping members on distal ends of said fingers, said gripping member on said first finger having an irregular sheet-contacting surface and being of a relatively high durometer and said gripping member on said second finger having a relatively flat sheet-contacting surface and being of a durometer lower than said gripping member on said first finger to cause sheet material gripped between said surfaces to conform to the shape of the irregular surface when the gripping fingers are moved to their closed position, the improvement comprising means for physically attaching said lower durometer gripping surface to said second gripping finger, including:

at least the distal end of said second gripping finger being relatively thin and flat and having a pair of closely spaced shouldered through-holes extending therethrough perpendicularly to said flat distal end; and

said lower durometer gripping member comprising:

a). a readily compressible gripper pad having a side facing said sheet material which side includes said relatively flat sheet-contacting surface;

b). a body portion supporting said pad from the side thereof remote from said sheet material; and

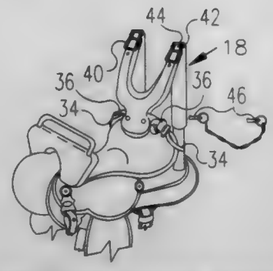
c). a pair of resilient pad anchoring means connected to said body portion opposite said pad and being spaced apart the same as the spacing between said through-holes, each of said anchoring means including a column portion of a size and length corresponding to the size and length of a smaller-diameter portion of the through-hole in which it is to be received, an anchoring head portion of a size greater than said smaller-diameter portion of said through-hole, said anchoring head portion being sufficiently compressible to squeeze through said smaller-diameter portion, and a pull stem extending outwardly from said anchoring head portion perpendicularly away from the sheet-contacting surface for a length enabling said stem to be threaded through a through-hole, manually gripped and physically pulled to apply a force to said head portion for urging said head portion therethrough to firmly anchor said head portion in said shouldered through-hole.

5,383,327

THERAPEUTIC SADDLE FOR HANDICAPPED PERSONS

Guy V. Dohln, Rte. 2, Box 244, Rupert, Id. 83350

Filed Sep. 7, 1993, Ser. No. 116,851
Int. Cl.[6] B68C *1/02*
U.S. Cl. 54—44.1 **16 Claims**



12. A restraining saddle harness for handicapped persons comprising:

a. a seat having a pommel on a forward end and a cantle on a back end;

b. a pair of vertical structural members affixed to a back jockey behind the seat cantle;

c. a pair of padded backrests removably affixed to the vertical structural members by a pair of pin means; and

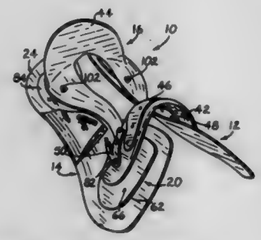
d. a waist belt removably affixed to the pair of pin means.

5,383,328

SADDLE TREE ASSEMBLY HAVING MULTIPLE PROGRESSIVELY LOADED ADJUSTMENTS

Roy L. Brown, Nevada, Mo., assignor to Ortho-Flex Saddle Co., Inc., Nevada, Mo.

PCT No. PCT/US91/05786, § 371 Date Aug. 26, 1993, § 102(e) Date Aug. 26, 1993, PCT Pub. No. WO92/12094, PCT Pub. Date Jul. 23, 1992
PCT Filed Aug. 15, 1991, Ser. No. 87,788
Int. Cl.[6] B68C *1/04*
U.S. Cl. 54—44.3 **14 Claims**



1. A saddle tree assembly comprising:

a pair of laterally spaced apart flexible skirts adapted to overlie a horse's back;

a tree frame supported by said skins and positioned in overlying, spanning relationship thereon; and

means operably coupling said frame to said skirts, including adjustment structure for selectively shifting at least certain portions of said tree frame toward and away from at least one of said skirts, in order to adjust said tree frame to accommodate the physical characteristics of a specific horse,

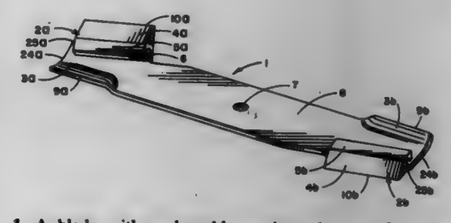
said adjustment structure comprising a threaded fastener operably coupling said tree frame to said skirts and including an elongated screw passing through one of said frame and skirts and being rotatable relative thereto but fixed against axial movement, an elongated, annular, internally and externally threaded connector, and means for threadably securing the other of said frame and skirts to the connector for receiving said screw, said screw and connector being fixed against relative movement, whereby rotation of said screw will effect corresponding rotation of said connector and consequent movement of the frame or skirts.

5,383,329

ROTARY LAWN MOWER BLADE WITH REPLACEABLE CUTTING EDGE

Harold P. Cornell, III, Orlando, and Philip T. Wergiaz, Winter Springs, both of Fla., assignors to Switchblade, Inc., Orlando, Fla.

Filed May 16, 1994, Ser. No. 243,386
Int. Cl.[6] A01D *34/00*
U.S. Cl. 56—255 **8 Claims**



1. A blade with replaceable cutting edges on forwardly rotating cutting surfaces of the blade for mounting to powered rotary lawn mowers comprising:

an elongated blade having top and bottom surfaces, two tips, a centrally located hole for attachment to an engine shaft and a set of grooves and steps along a flange on both of its forwardly rotating cutting surfaces near the tip of the blade; and

replaceable cutting edge components having a flat bottom surface and a top surface inclined to a sharp cutting surface at a forwardly facing cutting end, said component having a notched channel between the top and bottom surfaces, said channel notched with a set of grooves and steps complementary to the grooves and steps on the blade so that the cutting edge component can be slidably mounted onto the blade.

5,383,330

HAND-HELD EDGER

Yoetsu Yokocho; Ohme; Michiyasu Kawano, Fuchu, and Fumihiko Aiyama, Musashimurayama, all of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Jan. 3, 1994, Ser. No. 176,666
Claims priority, application Japan, Jan. 21, 1993, 5-001225[U]
Int. Cl.[6] A01D *34/47, 34/84;* A01G *3/06*
U.S. Cl. 56—256 **2 Claims**

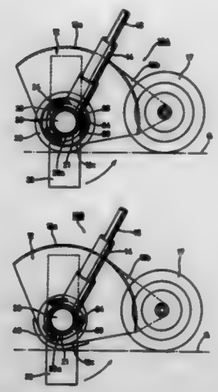
1. A hand-held edger comprising:

a supporting rod 14 one end of which is connected to a prime mover, a gear box 20 connected to the other end of said supporting rod 14, a rotary blade 22 which is driven by power transmitted from said prime mover via said gear box 20, a safety cover member 12 which covers said rotary blade 22, and a traveling wheel 17 journal-supported by a rear portion 12*b* behind said gear box 20;

wherein a ring-shaped traveling auxiliary wheel 30 is rotatably mounted over the circumference of said gear box 20.

2. A hand-held edger comprising:

a supporting rod 14 one end of which is connected to a prime mover, a gear box 20 connected to the other end of said supporting rod 14, a rotary blade 22 which is driven by



power transmitted from said prime mover via said gear box 20, a safety cover member 12 which covers said rotary blade 22, and a traveling wheel 17 journal-supported by a rear portion 12*b* behind said gear box 20;

wherein a ground contact guide member 40 or 50 made of a material excellent in abrasion resistance and having a curved ground contact surface is disposed below the lower surface 20*a* of said gear box 20.

5,383,331

COMPOSITE COMPRISING STAPLE FIBER AND FILAMENT YARN

Charles W. Proctor, 1912 Lafayette Ave., Greensboro, N.C. 27408

Filed Jun. 11, 1992, Ser. No. 896,819
Int. Cl.[6] D02G *3/36, 3/02*
U.S. Cl. 57—225 **10 Claims**



1. A composite yarn, comprising:

a staple fiber component formed by drafted sliver;

a filament yarn component formed by applying tension to a filament yarn initially having a crimp such that said crimp is temporarily substantially removed, said filament yarn having a first predetermined thickness in a relaxed state,

wherein said staple fiber component and said pretensioned filament yarn component are combined by spinning while said tension is applied to said filament yarn to stretch said

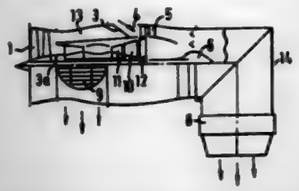
filament yarn to a second thickness that is less than said first thickness, said staple fiber substantially covers the filament yarn component and confines the filament yarn component to said second thickness, said filament yarn is a stretch textured multifilament yarn.

5,383,332

GAS TURBINE ENGINES

Robert G. Angel, Farnham, United Kingdom, assignor to British Aerospace plc, London, England

Filed Jun. 19, 1987, Ser. No. 68,479
Claims priority, application United Kingdom, Jun. 21, 1986, 8615184
Int. Cl.[6] F02K *1/00*
U.S. Cl. 60—228 14 Claims



1. A variable cycle gas turbine bypass engine, comprising:
a main ambient air inlet and an outlet;
a compressor disposed between said main inlet and said outlet;
a housing for said compressor;
a bypass duct currounding said housing;
a first fan located at said inlet to the engine and effective to provide air to said compressor and to said bypass duct;
a turbine section including a turbine for driving said compressor;
a controllable area auxiliary ambient air intake located in said bypass duct downstream of said inlet;
a second fan located in said bypass duct downstream of said auxiliary air intake and connected to be driven by a turbine in said turbine section;
bypass duct blocking means located in said bypass duct between said first and said second fans; and
control means for selectably operating said bypass duct blocking means and said auxiliary air intake to vary in operation the bypass ratio of the engine.

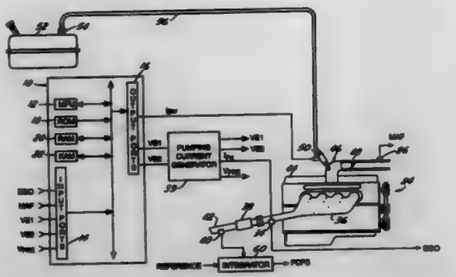
5,383,333

METHOD FOR BIASING A HEGO SENSOR IN A FEEDBACK CONTROL SYSTEM

Eleftherios M. Logothetis, Birmingham; Douglas R. Hamburg, Bloomfield Hills; Jeffrey A. Cook, and Lajos Rimai, both of Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 6, 1993, Ser. No. 132,267
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—276 13 Claims

1. A system for maintaining engine air/fuel operation within the efficiency window of a catalytic converter positioned in the engine exhaust, comprising:
an exhaust gas oxygen sensor positioned upstream of the converter comprising first and second electrodes, said exhaust gas oxygen sensor having an output with a step change between first and second output states at a selected air/fuel ratio determined by a biasing means;
fuel control means for adjusting fuel delivered to the engine in response to said step change to maintain engine air/fuel operation on average at said selected air/fuel ratio;
error means for generating an error signal related to variance between said selected air/fuel ratio and the converter efficiency window; and



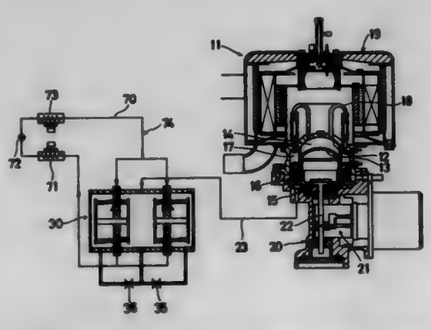
said biasing means being responsive to said error signal for shifting said step change and said selected air/fuel ratio to means for generating current flow in said first electrode.

5,383,334

COMPRESSOR INTEGRAL WITH STIRLING ENGINE

Takeyoshi Kaminishizono, Chiryu; Tetsumi Watanabe, Okazaki, and Yutaka Momose, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 15, 1993, Ser. No. 76,639
Claims priority, application Japan, Jun. 22, 1992, 4-162767
Int. Cl.[6] F02G *1/043*
U.S. Cl. 60—517 13 Claims



4. A compressor integral with a Stirling engine having a pressure space, comprising:
a housing;
a first chamber defined in the housing and receiving a variable pressure in the pressure space of the Stirling engine;
a second chamber defined in the housing and being connected to the first chamber via an orifice; and
means for introducing and discharging a coolant with respect to the second chamber depending on a pressure difference between the first chamber and the second chamber.

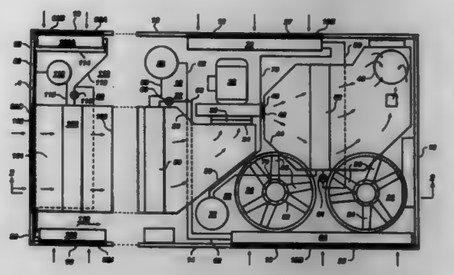
5,383,335

METHOD AND APPARATUS FOR SUPPLYING PRECONDITIONED AIR TO A PARKED AIRCRAFT

Gordon K. Anderson, Tustin; Noam Kreymer, Anaheim, both of Calif., and Tom E. Tatham, Ogden, Utah, assignors to Paccmo Abex Corporation, Ogden, Utah

Filed Oct. 19, 1993, Ser. No. 139,223
Int. Cl.[6] F25D *17/06*
U.S. Cl. 62—89 21 Claims

1. In a preconditioned air unit for parked aircraft having an air inlet, a blower fan, a condenser, an evaporator and a condenser fan, the improvement comprising: a booster module configured mechanically to be detachably associated with said preconditioned air unit, said booster module having a housing, an auxiliary evaporator connected to an auxiliary condenser connected to an auxiliary compressor and a



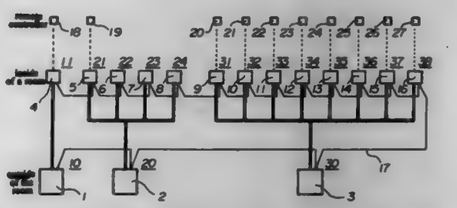
plenum; said plenum being positioned in fluid communication with said air inlet of said preconditioned air unit;
wherein said auxiliary condenser is in fluid communication with said condenser fan of said preconditioned air unit whereby said auxiliary condenser is cooled by the operation of said condenser fan of said preconditioned air unit.

5,383,336

AUTOMATIC CONTROL ADDRESS SETTING TYPE DISTRIBUTIVELY ARRANGED AIR CONDITIONER GROUP APPARATUS

Keiji Nishida; Masayuki Kusakura, and Junichi Mockida, all of Ohizumi, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Nov. 9, 1993, Ser. No. 149,651
Claims priority, application Japan, Nov. 11, 1992, 4-301161
Int. Cl.[6] F25B *7/00*; F24F *3/00*
U.S. Cl. 62—115 7 Claims



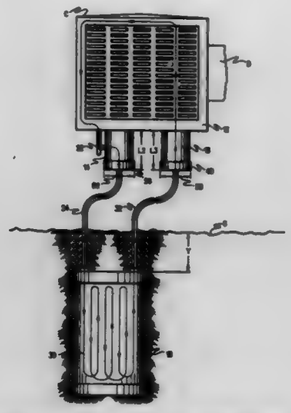
1. A method of setting addresses for an apparatus including plural groups of air conditioners distributively arranged at remote locations wherein each group consists of a plurality of units on the heat source side and a plurality of units on the utilization side located remote from each other and connected to each other via a plurality of heat source fluid pipings extending therebetween and communication addresses are mutually set for said units on the heat source side and said units on the utilization side at the time of starting of a controlling operation to be performed between said units on the heat source side and said units on the utilization side, comprising:
a signal line forming procedure for forming communication signal lines for all the units including said units on the heat source side and said units on the utilization side involved in said plural groups with a single signal line;
a heat source fluid flowing procedure for flowing a heat source fluid through said, heat source fluid pipings for each group;
a fluid flow detecting procedure for detecting physical variation attributable to the flowing of said heat source fluid in said units on the utilization side to thereby obtain a detection output; and
an address setting procedure for setting said addresses based on said detection output.

5,383,337

METHOD AND APPARATUS FOR PRECOOLING WATER SUPPLIED TO AN EVAPORATIVE COOLER WITH A SUBTERRANEAN HEAT EXCHANGER

Edward R. Baker, 22051 South Ave., Corning, Calif. 96021

Filed Jan. 28, 1994, Ser. No. 189,073
Int. Cl.[6] F25D *23/12*
U.S. Cl. 62—121 20 Claims



10. A method of precooling water supplied to an evaporative cooler including a water pan, comprising the steps of:
securing an inlet reservoir in fluid communication with said pan for draining water from said pan by gravity flow;
connecting a water supply line in fluid communication with said inlet reservoir and providing a valve for maintaining a predetermined water level in said inlet reservoir;
providing a subterranean vessel containing a cooling coil, connecting an inlet of said cooling coil to an outlet of said inlet reservoir and disposing an outlet of said cooling coil for discharge within said vessel;
securing an outlet reservoir below said pan and providing a pump within said outlet reservoir, connecting an outlet of said pump for supplying water to said evaporative cooler; and
providing a return line including an inlet disposed in said vessel and connecting an outlet of said return line to an inlet of said pump in said outlet reservoir for returning cooled water from said vessel to said evaporative cooler.

5,383,338

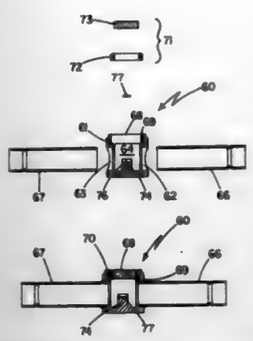
IN-LINE SIGHT INDICATOR

Benjamin Bowsky, and George J. Sciuto, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 17, 1993, Ser. No. 168,234
Int. Cl.[6] F25B *49/00*
U.S. Cl. 62—125 11 Claims

1. An in-line sight indicator for a fluid system comprising an indicator housing having a chamber with spaced flow inlet and outlet passages communicating therewith, each of said passages being connected to a fluid conduit;
visually transparent sight means disposed in the wall of said housing;
an indicator element support member disposed and positioned in said housing chamber in fixed position to support an indicator element in said housing chamber in spaced

relation from said visually transparent sight means so as to be substantially in-line with and intermediate the flow of a fluid stream flowing from said inlet to said spaced outlet passage; and,



an indicator element mounted on said support member, said element being chemically responsive to a fluid in said fluid system to provide a visible color change in the event of a preselected range of change in the fluid in said system.

5,383,339

SUPPLEMENTAL COOLING SYSTEM FOR COUPLING TO REFRIGERANT-COOLED APPARATUS

William D. McCloskey, Baltimore, Md., and Thomas W. Brady, Westchester, Ill., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Dec. 10, 1992, Ser. No. 988,656
Int. Cl.[6] F25D *3/00*
U.S. Cl. 62—239.5 **28 Claims**

temperature of said frozen phase change material, which frozen phase change material temperature is less than said first refrigerant temperature in said first refrigerant circuit;

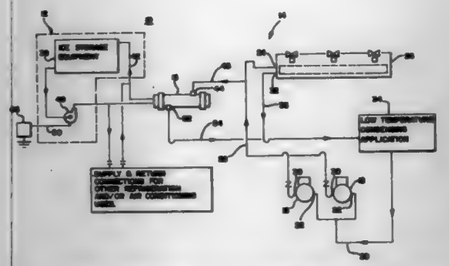
means for connecting;

means for coupling having a first fluid path and a second fluid path, which coupling means is operable as means for exchanging heat and is connected by said connecting means in one of a parallel and a series arrangement with said first refrigerant circuit and said thermal storage means, said coupling means operable to receive said first refrigerant at said first temperature from said refrigerant circuit, which first temperature is greater than said second temperature, in one of said first and second fluid paths for flow through said coupling means before communication and return of said first refrigerant to said first refrigerant circuit and said evaporator of said refrigerant-cooled apparatus;

means for pumping said phase change material connected between the other of said coupling means first and second fluid paths and said housing output port to communicate said phase-change fluid material from said housing to said other fluid path of said first and second fluid paths in said coupling means;

said connecting means connecting said other of said first and second fluid paths and said housing input port to return said phase change fluid to said housing from said coupling means;

said phase change material fluid at said second temperature in said coupling means other fluid path operable to exchange heat with said refrigerant in said one fluid path to reduce the temperature of said first refrigerant in said circuit ahead of said refrigerant-cooled apparatus to a third temperature less than said first temperature to expand the operating range of the refrigerant circuit of said refrigerant-cooled apparatus by operation with a refrigerant at a temperature less than said first temperature.



1. A supplemental cooling system couplable to at least one assembly with a refrigerant-cooled apparatus having a first refrigerant circuit with a first refrigerant and an evaporator, said supplemental cooling system operable to receive said first refrigerant at a first temperature ahead of said apparatus and to reduce the refrigerant first temperature, said supplemental cooling system comprising:

means for providing a refrigerant to cool a fluid, said refrigerant-providing means being one of said first refrigerant circuit and a second refrigerant circuit;

means for thermal storage having a housing with an output port and a return port,

a phase change material fluid in said housing,

means for freezing said phase change material, which freezing means is positioned in said housing and connected to said refrigerant-providing means to freeze at least a portion of said phase change material fluid at a second temperature and to cool said remaining portion of said fluid material in said housing to approximately the second

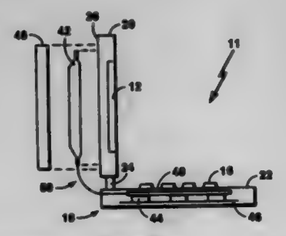
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5,383,340

TWO-PHASE COOLING SYSTEM FOR LAPTOP COMPUTERS

Ralph I. Larson, Bolton, Mass.; Richard L. Phillips, Alachua, Fla., and Alan F. Beane, Gilford, N.H., assignors to Aavid Laboratories, Inc., S. Lancaster, Mass.

Filed Mar. 24, 1994, Ser. No. 217,387
Int. Cl.[6] F25D *23/12*
U.S. Cl. 62—259.2 **31 Claims**



25. A laptop computer including:

A. a case with a lid for housing a screen and a base for housing a keyboard and heat producing electronic circuitry; and

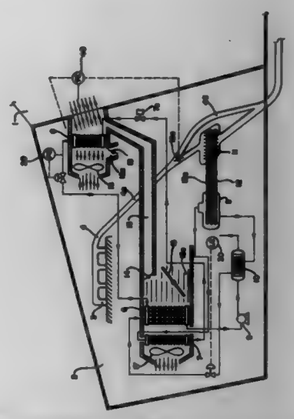
B. a two-phase cooling system with an interconnected evaporator and condenser, the evaporator residing in close proximity to the heat producing circuitry and the condenser being supported by the lid.

5,383,341

REFRIGERATION, HEATING AND AIR CONDITIONING SYSTEM FOR VEHICLES

Avigdor Zur, and Itzhak Shechtman, both of Haifa, Israel, assignors to Uri Rapoport, Elmhurst, Ill.

Continuation-in-part of Ser. No. 918,846, Jul. 21, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,238
Claims priority, application Israel, Jul. 23, 1991, 098938
Int. Cl.[6] F25B *15/00*; B60H *3/00*
U.S. Cl. 62—476 **12 Claims**



1. A system structured and dimensioned for incorporation into a motorized vehicle for air conditioning a passenger compartment of said vehicle comprising:

(a) a generator heated by heat of waste gases passing through an exhaust conduit, said generator contains a mixture of two intermiscible components consisting essentially of a first more volatile component selected from the group consisting of methyl alcohol, ethyl alcohol, ammonia, acetone, ethyl acetate, methyl acetate, methyl acetate-water azeotrope, tetrahydrofuran and mixtures thereof, and a second less volatile component selected from the group consisting of NaSCN, $ZnCl_2$, LiBr, $LiNO_3$ and mixtures thereof, said more volatile first component producing vapor when heated in said generator, said vapor serving as a refrigerant, and a concentrated solution of said less volatile second component in said more volatile first component serving as an absorbent for said vapor;

(b) means for transporting said refrigerant vapor from said generator to a condenser, wherein said refrigerant vapor condenses to provide a heating effect;

(c) means for transporting said condensed refrigerant from said condenser via a pressure reducing means to an evaporator, wherein said refrigerant expands to a vapor to provide a cooling effect;

(d) means for transporting said refrigerant vapor from said evaporator to an absorber, and means for transporting said absorbent from said generator to said absorber, wherein said absorbent absorbs said refrigerant vapor to produce an absorbent-refrigerant mixture and provide a heating effect;

(e) means for transporting said absorbent-refrigerant mixture from said absorber back to said generator;

(f) means for subjecting air to the heating effect provided by said absorber and said condenser to cool said absorber and said condenser and to obtain heated air;

(g) means for subjecting air to the cooling effect provided by said evaporator to obtain cooled air;

(h) means for mixing proportions of said cooled air and said heated air to obtain a conditioned air of a desired temperature and supplying said conditioned air to the passenger compartment;

(i) at least one heat pipe structured and dimensioned for interconnection between said generator and said exhaust conduit, said heat pipe having an evaporator section and a condenser section;

(j) said evaporator section being structured and dimensioned for insertion into an internal receiving portion of said exhaust conduit to contact and extract heat from said waste gases flowing through said receiving portion;

(k) a transfer medium for transferring heat from said evaporator section to said condenser section; and

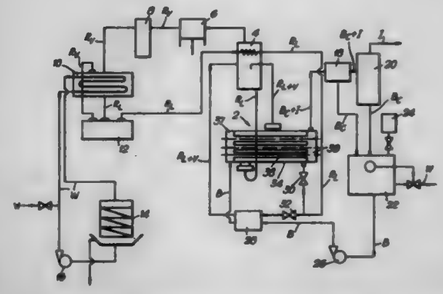
(l) said condenser section being structured and dimensioned for insertion into said generator to contact and distribute heat to the absorbent-refrigerant mixture.

5,383,342

METHOD AND INSTALLATION FOR CONTINUOUS PRODUCTION OF LIQUID ICE

Arie El-Boher, Metar; Michael Z. Pechatnikov, Beer-Sheva; Boris M. Mesin, Ofakim; Semion M. Novak, Kiryat Yam, and Uri Kabiri, Givatayim, all of Israel, assignors to Ontec Ltd., Beer-Sheva, Israel

Filed May 11, 1993, Ser. No. 60,777
Claims priority, application Israel, May 14, 1992, 101862
Int. Cl.[6] B01D *9/04*
U.S. Cl. 62—532 **23 Claims**



1. A method for continuous production of liquid ice, comprising the steps of:

providing a solution of a predetermined concentration, having a below-zero cryoscopic temperature;

withdrawing said solution from a circulation tank and passing it through at least one tubular element, the outer wall surface of which is in direct thermal contact with a boiling refrigerant in an evaporator-crystallizer, heat exchange with which refrigerant, across the wall of said tubular element, causes the solution layer adjacent to the inside surface of said tubular element to cool down and to produce ice crystal nuclei adhering to said inside surface;

leading liquid-particles-containing refrigerant vapor produced by said boiling refrigerant from said evaporator-crystallizer to a liquid separator and returning the liquid refrigerant thus separated to said evaporator-crystallizer;

applying means to remove said ice crystal nuclei from said inside surface and to distribute them as well as said wall-adjacent cooled-down solution layer substantially uniformly throughout the entire volume of said tubular element to promote formation of ice crystal nuclei and of small, pure ice crystals throughout said volume;

removing said nuclei and said pure ice crystals together with concentrated solution from said tubular element;

separating said ice crystals from said concentrated solution, and

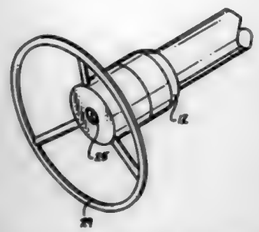
returning said concentrated solution to said circulation tank and restoring the concentration thereof to its predetermined value.

5,383,343
HEART TOOL PENDANT
Chris H. Thach, 3525 Keith St. NW., Suite L, Cleveland, Tenn. 37312-4354
Filed Apr. 29, 1994, Ser. No. 235,544
Int. Cl.[6] A44C *13/00*
U.S. Cl. 63—1.1 14 Claims



1. A decorative tool pendant, comprising:
(a) a frame member having first and second intersecting passages extending therethrough, the first passage being cylindrical and extending between opposite extremities of the frame member;
(b) a tool member having an elongate cylindrical envelope and being axially slidable within the first passage, the tool member being sufficiently long for projecting simultaneously from opposite ends of the first passage, a tool surface being formed within the envelope for operation on a workpiece, a locating surface extending between opposite sides of the tool member, the tool member being engageable with the frame member with portions of the tool member that are coincident with the cylindrical envelope contacting the first passage of the frame member, the tool member being locatable with the locating surface aligned with the second passage of the frame member in a first position wherein at least a portion of the tool surface is located within a perimeter surface of the frame member, and a second position wherein the tool surface is fully exposed for operation on the workpiece; and
(c) a connector for selectively retaining the tool member in one of the two positions, the connector engaging the second passage of the frame member and the locating surface of the tool member, a connector passage extending through the pendant for suspension thereof by an external device when the tool member is located in the first position by the connector.

5,383,344
STEERING WHEEL LOCK ASSEMBLY
Robert G. Zambell, 86-C Wavecrest Ave., Winfield, N.J. 07036
Filed Jun. 1, 1993, Ser. No. 69,751
Int. Cl.[6] E05B *13/08*; B60R *25/02*
U.S. Cl. 70—209 2 Claims



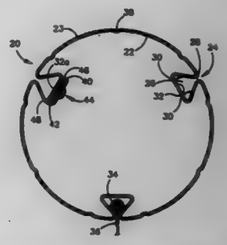
1. A steering wheel lock assembly, comprising,
a steering wheel support tube, having a steering wheel shaft rotatably directed through the support tube, with the steering wheel shaft including a shaft threaded end portion protecting beyond the support tube, with the shaft coaxially aligned along a predetermined axis, with a mounting plate having a mounting plate central bore arranged for engagement with the steering wheel shaft threaded end portion, the mounting plate orthogonally oriented relative to the predetermined axis, with a mounting hub having a mounting hub extension tube coaxially aligned along the predetermined axis, with the mounting hub having a mounting hub first end and a mounting hub second end, the mounting hub first end including a mounting hub cavity directed into the mounting hub through the mounting hub first end receiving the mounting hub cavity fixedly secured relative to the steering wheel shaft, and
a steering wheel hub mounting a steering wheel about the steering wheel hub, with the steering wheel including a steering wheel hub cavity receiving the mounting hub and the extension tube therewithin, with the mounting hub cavity including mounting hub cavity lock plate cavities, with the lock plate cavities in communication with the locking means mounted to the mounting hub extension tube for selective locking of the mounting hub extension tube to the steering wheel hub,
the lock means includes a plurality of lock plates orthogonally oriented relative to the predetermined axis, with the lock plates reciprocatably received within the mounting hub extension tube, and a lock tumbler rotatably mounted within the mounting hub extension tube, having a lock tumbler actuator rod, the actuator rod includes a cam member fixedly mounted to the actuator rod, with the cam member oriented between the lock plates in contiguous communication with the lock plates, whereupon rotation of the cam member effects selective reciprocation of the lock plates relative to the mounting hub for selective reception within the lock plate cavities, and a spring member directed between the lock plates to maintain the lock plates in biased orientation relative to one another.

5,383,345
FLAT KEY WITH INTERCHANGEABLE SHAFT
Christine Kallinger-Prskawetz-Jacobsen, Thaliastrasse 38, A-1160 Wien, Austria
Filed Apr. 5, 1993, Ser. No. 42,717
Claims priority, application Austria, Apr. 9, 1992, 748/92
Int. Cl.[6] E05B *19/04*
U.S. Cl. 70—395 4 Claims



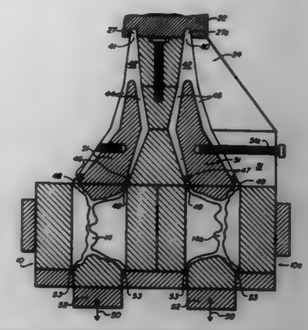
1. A flat key comprising a flat head (2), a shaft (1), and a small plate (7) with pins (8) depending from a face of the small plate (7) the shaft (1) adapted to be inserted into the flat head (2) and to be releasably fixed therein, wherein the head (2) is made in one piece and has a narrow side with a slot (5) therein, and the shaft (1) is adapted to be inserted into the slot (5) entering from the narrow side of the head (2), the shaft (1) and the head (2) comprising matching apertures (3, 4) through which the pins (8) associated with the small plate (7) can be inserted to bring about a releasable connection of the shaft (1) to the head (2), wherein in order to secure the small plate (7) against inadvertent withdrawal by the removal of pins (8) from the apertures (3, 4) a clamping plate (6) is provided which is inserted into the slot (5) together with the shaft (1) and which has formations which engage matching formations of the pins (8) with a snap action.

5,383,346
ROLLER TUBE FOR AWNING AND METHOD OF FORMING
Ronald A. Laffler, Sturgis, and Thomas DeVourney, Muskegon, both of Mich., assignors to White Consolidated Industries, Cleveland, Ohio
Division of Ser. No. 131,305, Oct. 4, 1993. This application May 25, 1994, Ser. No. 249,240
Int. Cl.[6] B21D *39/02*
U.S. Cl. 72—51 5 Claims



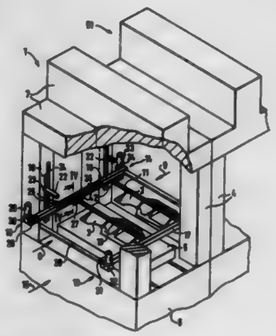
1. A method of forming a roller tube for an awning, comprising the steps of:
roll forming a sheet of rigid material having two generally parallel longitudinal edges into an elongated, generally cylindrical tube having an inner surface defining a circumference;
forming a channel in the tube by bending one edge inwardly to form a first side wall; bending the one edge back outwardly along a line closer to the one edge to form a base wall spaced radially inwardly from the inner circumference; and bending the other edge inwardly to form a second side wall; and
forming a seam which closes the tube by bending the one edge inwardly; folding back the other edge to form a hook; inserting the one edge into the hook; and folding back the one edge to form a second hook so as to engage the hooks in an interlocking arrangement along the base wall.

5,383,347
CONTINUOUS EXTRUSION OF COMPLEX ARTICLES
Alfredo V. Riviere, Calle el Lindero, Quinta Aurat Cerro Verde, 20, Caracas, Venezuela, and Navtej S. Saluja, 26 Heath Rd., #3, Arlington, Mass. 02174
Filed May 21, 1993, Ser. No. 65,616
Int. Cl.[6] B21C *31/00*
U.S. Cl. 72—260 46 Claims



1. A frictional extrusion apparatus for continuous extrusion of shaped articles, comprising:
a frictional extrusion source;
at least one chamber for holding frictionally extruded material received from the extrusion source;
means defining a plurality of die chambers, each said die chamber receiving extruded material from the holding chamber;
means for directing extruded material from the holding chamber to each die chamber of said plurality of die chambers for selectively filling each said die chamber with extruded feed material; and
means for monitoring filling of each die chamber of said plurality of die chambers with extruded feed material, the directing means responsive to the monitoring means.

5,383,348
PRESS COMPRISING A TRANSFER DEVICE FOR SHEET METAL PARTS
Wolfgang Michael, Göppingen; Karl Traulsen, Wäschenbeuren; Peter Klemm, Stuttgart; Burkhardt Schumann, Ottenbach; Hans Hofele, and Walter Rieger, both of Göppingen, all of Germany, assignors to L. Schuler GmbH, Goeppingen, Germany
Filed Nov. 5, 1993, Ser. No. 147,524
Claims priority, application Germany, Nov. 5, 1992, 4237313
Int. Cl.[6] B21D *43/05*
U.S. Cl. 72—405 10 Claims



1. A press, comprising:
a press frame;
at least one vertically movable press slide that forms sheet metal parts while interacting with tools;
an least one transfer device with holding devices which hold and transfer the sheet metal parts through movement of the holding devices vertically and horizontally along a passage direction, each transfer device including:
at least one transport device extending in the passage direction;
vertically movable horizontal guide strips in the press frame which extend at least along a partial length of a transfer movement of the sheet metal parts and extend in front of and behind the tool or the press slide, the holding devices being displaceable in the guide strips, and each of the guide strips having structural members which receive, bear and guide the transport device;
vertical guides coupled to the press frame and the guide strips;
a first adjusting device coupled to the guide strips and which lifts and lowers the guide strips in the vertical guides; and
a second adjusting device, separate from the first adjusting device, coupled to the transport device and which moves the transport device to thereby move the holding devices along the passage direction;
wherein a plurality of the transfer devices are provided, with one transfer device respectively with at least one

holding device provided for each transfer movement of the sheet metal parts from a removal position to a depositing position.

5,383,349

DENSITOMETER

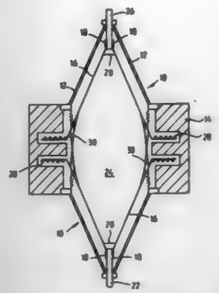
Barrie Blake-Coleman, Salisbury, United Kingdom, assignor to Public Health Laboratory Service Board, London, England

Filed Feb. 18, 1992, Ser. No. 834,235

Claims priority, application United Kingdom, Aug. 17, 1989, 8918766; Dec. 29, 1989, 8929330

Int. Cl.[6] G01N *9/00*

U.S. Cl. 73—32 A **7 Claims**



1. A liquid densitometer comprising a base; a diaphragm suspended in the base for vibrational movement relative thereto; electromagnetic coupling means having cooperating elements mounted respectively on the base and the diaphragm and having an electrical terminal such that said vibrational movement of the diaphragm is excited on the application of a periodic electrical signal thereto; a positive feedback loop deriving an electrical signal representative of displacement of the diaphragm and applying said representative electrical signal to said electrical terminal to drive the diaphragm into vibrational resonance; a sample chamber for receiving a fixed volume of a liquid sample and associated with the diaphragm to load massively the diaphragm in accordance with the density of the sample; means for measuring the resonant frequency of vibration of the diaphragm and means for comparing said measured frequency with a predetermined frequency of vibration at a known massive loading of the diaphragm to obtain therefrom a measure of the density of the sample.

5,383,350

SENSOR AND METHOD FOR DETECTING MISFIRES IN INTERNAL COMBUSTION ENGINES

David E. Bennett, Lake Lillian, and Jeffrey G. Hopman, Olivia, both of Minn., assignors to Gas Research Institute, Chicago, Ill.

Filed Jan. 13, 1994, Ser. No. 180,678

Int. Cl.[6] G01M *15/00*; F02P *17/00*

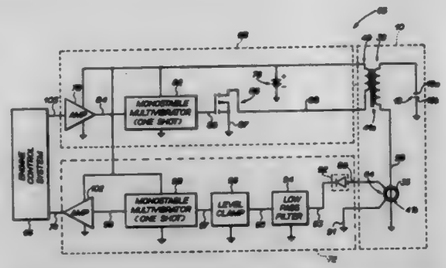
U.S. Cl. 73—35 **30 Claims**

1. A sensor for detecting misfires in internal combustion engines, comprising:

electrodes forming a spark gap, arranged to be situated in exhaust from an internal combustion engine;

an ignition transformer having a primary ignition coil and a secondary ignition coil, said primary ignition coil for receiving power, said secondary ignition coil for applying an electric field between said electrodes in response to the power, said primary and secondary ignition coils being structured so that said electric field has a magnitude sufficient to cause an arc across said electrodes in the absence of unburned gases in the exhaust and insufficient to cause the arc in the presence of the unburned gases; and

a detection transformer having a toroidal secondary detection coil arranged along and centered about an axis of said secondary ignition coils, said toroidal secondary detection coil being magnetically coupled to a circuit path comprising said electrodes, said toroidal secondary detection coil for sensing current in said circuit path and for providing an arc detection output indicative of the current;



whereby proper ignition in the internal combustion engine is indicated by said arc detection output of said detection transformer when the arc is generated across said electrodes, and a misfire is indicated by said arc detection output of said detection transformer in the absence of the arc.

5,383,351

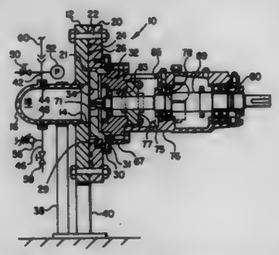
PUMP SEAL TEST APPARATUS AND METHOD

Michael Kotlyar, Rancho Palos Verdes, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 12, 1993, Ser. No. 150,924

Int. Cl.[6] G01M *3/28*; F04B *51/00*

U.S. Cl. 73—40 **5 Claims**



1. Apparatus for testing seal assemblies for fluid handling machines such as pumps and the like comprising:

a first generally cylindrical flange member and a housing part secured to said first flange member and forming an interior chamber;

conduit means in communication with said housing part for introducing pressure fluid into said chamber;

a second, generally cylindrical flange member adapted to be removably secured to said first flange member in fluid tight engagement therewith;

means on said second flange member for supporting a casing of a fluid handling machine including a seal assembly supported in said casing; and

means for regulating the pressure of pressure fluid introduced into said chamber to act on said seal assembly to test said seal assembly for fluid leakage therefrom.

5,383,352

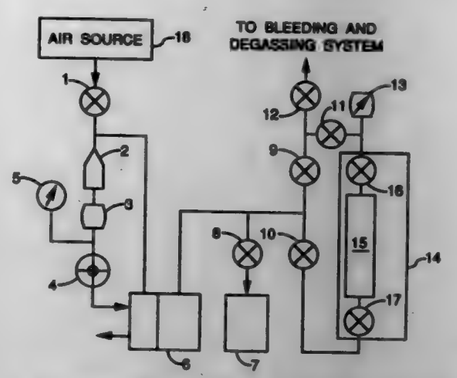
METHOD FOR THE MEASUREMENT OF BULK MODULUS AND PRESSURE VISCOSITY OF LIQUIDS

Arthur A. Krawetz, Evanston; Pricha Klinsutthe, Darien; Phat A. Phan, Skokie, all of Ill., and Quyet Phung, Orange, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 26, 1994, Ser. No. 188,169

Int. Cl.[6] G01N *33/28, 11/04*

U.S. Cl. 73—54.01 **5 Claims**



5. In a system for measuring the isothermal secant bulk modulus B_I of a liquid in a vessel on a pressure-volume-temperature relationship at a constant volume corrected for changes in vessel volume due to elevated pressure and temperature, a method comprising the steps of:

entirely filling said vessel with said liquid;

calibrating the volume of the vessel at various pressures and temperatures from atmospheric pressure and ambient temperature to various elevated temperatures and pressures to determine data relative to the final volume $V_{T,P}^{f}$, at any given pressure and temperature, and using said data to establish a calibration curve;

determining the volume V_T of the vessel at atmospheric pressure and temperature T;

determining the weight W_T of the liquids at temperature T and 1 atmosphere;

determining the density D_T of the liquid at temperature T and 1 atmosphere; determining the volume V_T^l of the liquid at temperature T and 1 atmosphere;

determining the volume V_T^l of the amount of liquid inside the vessel at temperature T and pressure P after correction for expansion of the vessel due to pressure, where:

$$V_T^l = \frac{W_{T,P} - \Delta v_{T,P}^{corr} \cdot D_{T,P}}{D_T}$$

where:

$W_{T,P}$ is the weight of the liquid at temperature T and pressure P;

$\Delta v_{T,P}^{corr}$ is the change in volume of the vessel at temperature T and elevated pressure P;

$D_{T,P}$ is the density of the liquid at T and P and is equal to $W_{T,P}/v_{T,P}=v_T+v_{T,P}^{corr}$ and solving the equation

$$B_l = -\frac{\Delta P \cdot W_{T,P} \cdot v_T}{v_T \cdot (W_T - W_{TP}) + W_T \cdot \Delta v_{T,P}^{corr}}.$$

5,383,353

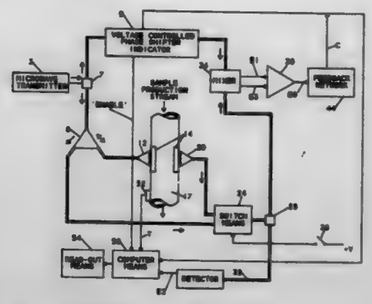
MEANS AND METHOD FOR ANALYZING A PETROLEUM STREAM

John D. Marrelli, Houston; Dale F. Brost, Sugar Land; Farhan Siddiqui, Katy; Lisa L. Pepin, Sugar Land, and Joseph D. Stafford, Bellaire, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 21, 1991, Ser. No. 718,665

Int. Cl.[6] G01N *22/04*

U.S. Cl. 73—61.43 **6 Claims**



1. Means of analyzing a petroleum stream having oil, water, and solids of one species comprising:

providing means for providing microwave energy to the petroleum stream,

receiving means for receiving microwave energy from the petroleum stream, and

output means connected to the providing means and to the receiving means for providing at least one output, utilizing the provided microwave energy, the received microwave energy and known values for 100 percent oil, 100 percent solids, and 100 percent water, corresponding to a ratio of solids to liquid.

5,383,354

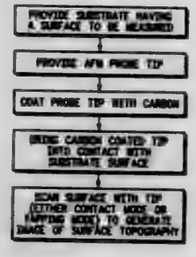
PROCESS FOR MEASURING SURFACE TOPOGRAPHY USING ATOMIC FORCE MICROSCOPY

Bruce B. Doris, and Rama I. Hegde, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1993, Ser. No. 172,974

Int. Cl.[6] G01B *5/28*

U.S. Cl. 73—105 **28 Claims**



1. A process for measuring surface topography using atomic force microscopy, comprising the steps of:

providing a specimen having a surface;

providing an atomic force microscopy probe having a probe tip, wherein the probe tip is externally coated with a film of carbon;

bringing the carbon coated probe tip into contact with the surface of the specimen; and

scanning the surface with the carbon coated probe tip to

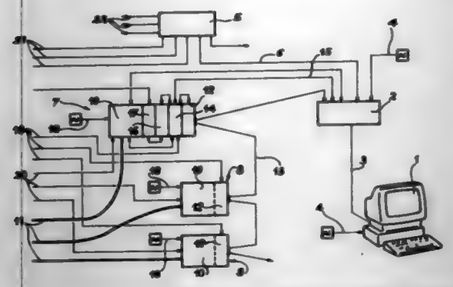
generate an image of the surface topography, wherein the probe tip intentionally contacts the surface of the specimen during the step of scanning.

5,383,355

GAS TURBINE ENGINE INSPECTION SYSTEM

Jean-Marc R. Baloras, Gometz le Chatel; Hermano Grossi, Villeparisis, and Didier G. Moreau, Fouju, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma" , Paris, France

Filed May 5, 1993, Ser. No. 56,889
Claims priority, application France, May 6, 1992, 92 05558
Int. Cl.[6] G01L *3/26, 5/13;* G01M *15/00*
U.S. Cl. 73—117.3 8 Claims



1. A system for inspecting a gas turbine engine, the system comprising:

a plurality of probes for measuring engine characteristics of the engine at various locations of the engine, the probes being mounted on openings on the gas turbine engine through which a gas flows;

displacement mechanisms operationally connected to said probes for displacing the probes;

drive motors connected to said displacement mechanisms through transmission mechanisms for driving said displacement mechanisms;

a control computer for emitting probe displacement instructions;

converters for converting said displacement instructions into starting pulses for said drive motors; and

position transducers on said displacement mechanisms, said position transducers being connected to said control computer by a conditioning means for indicating a position of said probes.

5,383,356

MASS AIR FLOW SENSOR ARRANGEMENT HAVING INCREASED DYNAMIC RANGE

Lawrence A. Zurek, Mt. Clemens; Michele T. Kosztowny, Dearborn, and Lorna J. Clowater, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

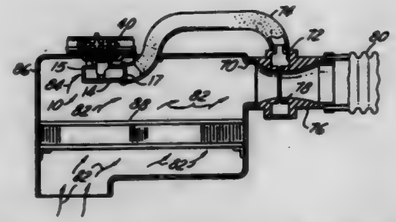
Filed Apr. 8, 1993, Ser. No. 43,719
Int. Cl.[6] G01M *15/00;* G01F *1/68*
U.S. Cl. 73—118.2 12 Claims

1. A mass air flow sensor arrangement for measuring the mass air flow through a main duct of an air intake system of an internal combustion engine, said mass air flow sensor system comprising:

a sensor mount attachable to said main duct, said sensor mount having an air flow conduit disposed inside said main duct in a slow air flow region within said main duct, said air flow conduit having an inlet end and an outlet end;

a mass air flow sensor mounted on said sensor mount, said mass air flow sensor having a sensing head extending into said air flow conduit to sense the mass air flow through said air flow conduit;

a venturi disposed in said main duct at a location displaced downstream from said outlet end of said air flow conduit, said venturi having a reduced diameter region generating a reduced pressure proportional to the mass air flow through said venturi; and



means for connecting said outlet end of said air flow conduit to said reduced diameter region of said venturi to produce an air flow through said air flow conduit proportional to said mass air flow through said venturi.

5,383,357

MASS AIR FLOW SENSOR DEVICE

John A. Doll, 7304 Greenlawn, Louisville, Ky. 40222

Filed Dec. 20, 1993, Ser. No. 169,069
Int. Cl.[6] G01P *5/00;* G01F *1/68*
U.S. Cl. 73—118.2 12 Claims

1. A mass air flow sensor for determining the mass of air flowing therethrough to control the operation of an internal combustion engine, comprising:

a) a housing defining a converging-diverging air flow-through passage from an air inlet opening at one end of the housing to an air outlet opening at the other end of the housing;

b) an electronic fixed negative side wheatstone bridge circuit comprising:

an air heating resistor element in a first arm of the bridge circuit, the air heating resistor element being located at the throat of the air flow-through passage;

an air temperature sensing thermistor in a third arm of the bridge circuit, the thermistor being located in the air flow-through passage proximate the air inlet opening;

a first fixed value resistor in a second arm of the bridge circuit;

a second fixed value resistor in a fourth arm of the bridge circuit;

a voltage input applied to the juncture of the first and third arms of the bridge circuit; and,

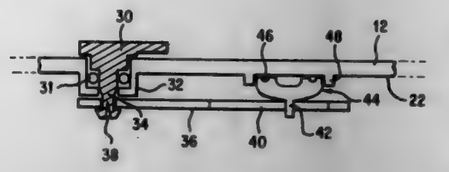
a first voltage output from the juncture of the first and fourth arms of the bridge circuit to an engine control module controlling the operation of the internal combustion engine.

5,383,358

CAPILLARY ACTION DEVICE FOR REMOVING CONDENSATION FORMED ON THE INSIDE SURFACE OF THE WINDOW OF A FLOWMETER

Serge Hamon, Macon, France, assignor to Schlumberger Industries, S.A., Montrouge, France

Filed May 24, 1993, Ser. No. 65,000
Claims priority, application France, Jun. 10, 1992, 92 07170
Int. Cl.[6] G01F *15/14*
U.S. Cl. 73—273 7 Claims



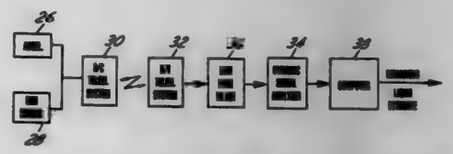
1. A device for removing condensation from the inside surface of a flowmeter window, comprising a movable skid provided with a gutter which bears against the inside surface of the window and which removes the condensation by capillary action.

5,383,359

DETERMINING LIQUID FILL FRACTION ON A SPACECRAFT

A. Dorian Challoner, Manhattan Beach, and Arthur C. Or, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 2, 1992, Ser. No. 984,146
Int. Cl.[6] G01F *23/22*
U.S. Cl. 73—290 R 18 Claims



1. An apparatus for determining the volume of a liquid contained within at least two rigid tanks disposed within a spacecraft, the tanks revolving about an axis about which they are rigidly and axisymmetrically disposed, the apparatus comprising:

predicting means for nonempirically predicting, for a number of possible quantities of liquid in the tanks, frequency, amplitude and phase oscillatory constituents of the spacecraft resulting from a small acceleration about its equilibrium position;

actuating means for applying force or torque to the spacecraft to produce the relatively small acceleration;

measuring means for measuring frequency, amplitude and phase oscillatory constituents resulting from the relatively small acceleration of the spacecraft; and

comparing means for comparing the predicted frequency, amplitude and phase oscillatory constituents with those measured, a match thereby identifying the quantity of liquid in said tanks.

15. A method for determining the volume of a liquid contained within at least one pair of rigid tanks disposed within a spacecraft, the tanks revolving about an axis about which they are rigidly and axisymmetrically disposed, the method comprising the steps of;

predicting nonempirically, for a number of possible quantities of liquid in the tanks, frequency, amplitude and phase oscillatory constituents of the spacecraft to a small acceleration about its equilibrium position;

applying a force to the spacecraft to produce the relatively small acceleration thereof;

measuring frequency, amplitude and phase oscillatory constituents resulting from the relatively small acceleration of the spacecraft; and

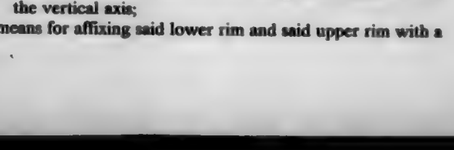
comparing the predicted frequency, amplitude and phase oscillatory constituents with those measured, a match thereby identifying the quantity of liquid in the tanks.

5,383,360

COLUMN-TYPE LEVEL INDICATOR FOR TANKS AND THE LIKE, COMPRISING MEANS FOR ITS OUTWARD APPLICATION

Alberto Bertani, Milan, Italy, assignor to Elesa S.P.A., Italy

Filed Oct. 14, 1993, Ser. No. 136,966
Claims priority, application Italy, May 5, 1993, MI93U000372
Int. Cl.[6] G01F *23/02*
U.S. Cl. 73—323 2 Claims



1. Column-type level indicator to be applied on a wall of a tank or container for liquids in order to measure liquid level, said level indicator comprising a transparent indicator column (1) having a cavity (2) and a rear wall, fixing screws (4, 5) having shafts passing through said cavity and rear wall of said indicator column (1) for insertion through associated holes in said tank wall, said shafts of said fixing/screws having axial and transverse holes for communicating said cavity with an interior of the tank to allow said liquids to flow into and out of the indicator column (1), a bushing (8) of yielding material associated with each of said screws (4, 5) for extending through said associated holes in said tank, said bushing partially housed in a seat (7) formed in the rear wall of the indicator column (1), a nut (9) associated with each of said screws (4, 5) and engaging said bushing (8), said nut (9) having an outside diameter generally equal to an outside diameter of said bushing (8) and having means outwardly deform said bushing upon rotation of said screw (4, 5) to fix and seal said indicator column to said tank wall.

5,383,361

WHEEL BALANCE MEASURING APPARATUS

Shigeru Matumoto, Tokyo, Japan, assignor to Kokusai Keisokuki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,892
Claims priority, application Japan, Feb. 26, 1992, 4-075292; Feb. 26, 1992, 4-075293; Feb. 26, 1992, 4-075294
Int. Cl.[6] G01M *1/04*
U.S. Cl. 73—471 13 Claims

10. A wheel balance measuring apparatus which comprises:

a frame;

a hollow rim support shaft supported by said frame through a bearing so as to be rotatable about a vertical axis;

means for rotating said hollow rim support shaft;

a lower rim mounted on said hollow rim support shaft;

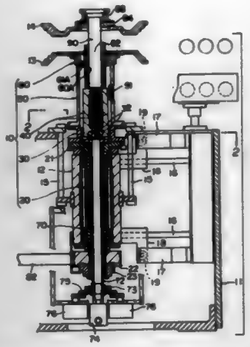
an upper rim positioned above and confronting with said lower rim, so as to be shiftable along and rotatable about the vertical axis;

means for affixing said lower rim and said upper rim with a

wheel whose balance is to be tested sandwiched therebetween;

a detecting means connected to said bearing for detecting displacement load of said bearing, which is caused due to weight unbalance of a rotating tested wheel; and

a connecting means for connecting said bearing and said



detecting means in such a manner that the connecting means has high rigidity in a detection direction of said detecting means and low rigidity in other directions;

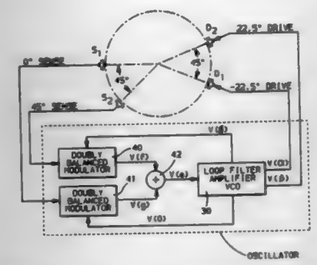
whereby the tested wheel is sandwiched between said upper and lower rims and is rotated together for measuring dynamic balance of said tested wheel on the basis of the displacement load detected by said detecting means.

5,383,362

CONTROL FOR VIBRATORY GYROSCOPE

Michael W. Putty, East Detroit, and David S. Eddy, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 1, 1993, Ser. No. 11,554
Int. Cl.[6] G01P *15/08, 15/125, 15/14*
U.S. Cl. 73—505 **10 Claims**



7. A control for a vibratory gyroscope having a vibratory member defining a substantially circular waveguide capable of supporting high-Q radial vibration in a standing wave pattern about an axis comprising, in combination:

a unidirectional driver for generating a reference signal effective to excite a resonant traveling wave in said circular waveguide;

a unidirectional receiver responsive to the traveling wave and effective to produce a pair of resonant traveling wave phase components;

means responsive to said resonant traveling wave phase components and said reference signal phase components for producing a phase error signal; and

a phase locked loop responsive to said phase error signal for regulating said reference signal by forcing said phase error signal to zero to thereby keep the phase of the reference signal locked to the phase of the resonant traveling wave.

5,383,363

INERTIAL MEASUREMENT UNIT PROVIDING LINEAR AND ANGULAR OUTPUTS USING ONLY FIXED LINEAR ACCELEROMETER SENSORS

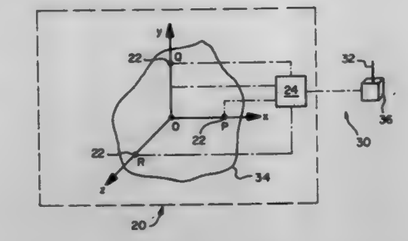
David M. Kulmaczewski, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 10, 1993, Ser. No. 17,403
Int. Cl.[6] G01P *3/04*
U.S. Cl. 73—510 **17 Claims**

1. An inertial measurement unit for measuring the angular acceleration of a body about a first axis where the body has a first, second and third axis that are substantially mutually orthogonal and intersect at an origin point, said unit comprising:

a plurality of linear accelerometers in fixed positions relative to the body, each of said linear accelerometers having a sensitive axis for producing linear accelerometer signals, the plurality of linear accelerometers including a first accelerometer with its sensitive axis positioned to measure the linear acceleration of the origin point along the second axis, a second accelerometer with its sensitive axis positioned to measure the linear acceleration of the origin point along the third axis, a third accelerometer with its sensitive axis positioned to measure the linear acceleration along the third axis of a second point on the second axis, and a fourth accelerometer with its sensitive axis positioned to measure the linear acceleration along the second axis of a third point on the third axis; and

processor means for receiving said linear accelerometer signals and calculating from said signals output values related to at least the angular motion of said body about said first axis.



5,383,364

THREE-AXIS ACCELERATION SENSOR VARIABLE IN CAPACITANCE UNDER APPLICATION OF ACCELERATION

Masaji Takahashi, and Yuji Kondo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

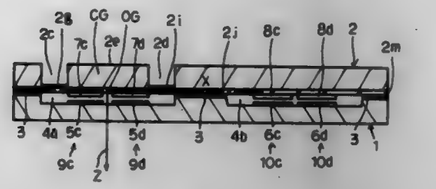
Filed Nov. 6, 1992, Ser. No. 972,537
Claims priority, application Japan, Nov. 21, 1991, 3-305176
Int. Cl.[6] G01P *15/125*
U.S. Cl. 73—517 R **8 Claims**

1. An acceleration sensor comprising:

a) a first semiconductor substrate having a rigid frame, a plurality of deformable beams connected with said rigid frame, and a weight portion supported by said plurality of deformable beams and having the center of gravity spaced from neutral planes of said plurality of deformable beams, the neutral plane being free from an extension and a shrinkage under a bending moment exerted on the deformable beam, wherein the bending moment is created by an acceleration being exerted on said weight portion resulting in the selective deformation of said plurality of deformable beams;

b) a second semiconductor substrate bonded to said rigid frame, and substantially more rigid than said plurality of deformable beams;

c) a plurality of movable electrodes attached to said weight portion; and



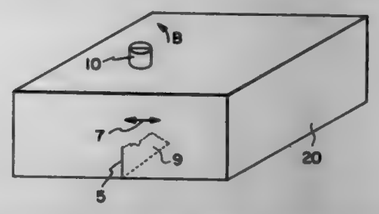
d) a plurality of first stationary electrodes attached to said second semiconductor substrate, and opposite to said plurality of movable electrodes for forming a plurality of variable capacitors, the capacitances of said plurality of variable capacitors being independently measurable for determining the magnitudes of components of said acceleration.

5,383,365

CRACK ORIENTATION DETERMINATION AND DETECTION USING HORIZONTALLY POLARIZED SHEAR WAVES

Jonathan D. Buttram, Villamont, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 17, 1992, Ser. No. 947,123
Int. Cl.[6] G01N *29/04, 9/24*
U.S. Cl. 73—598 **8 Claims**



1. A method for detecting a crack in a material and determining an orientation of the crack, the method comprising the steps of:

placing a transducer at a location on a surface of the material;

propagating a horizontally polarized shear wave from the transducer at an angle perpendicular to an opposite surface of the material;

reflecting the horizontally polarized shear wave off the opposite surface of the material;

receiving the horizontally polarized shear wave reflected off the opposite surface by the transducer;

converting the horizontally polarized shear wave received by the transducer into a first signal having a first strength;

interpreting the first signal for determining the presence of the crack such that the first signal having a weak strength indicates the presence of the crack;

rotating the transducer in a rotating direction about an axis through the location on the surface of the material for determining the orientation of the crack;

propagating the horizontally polarized shear wave in the rotating direction;

reflecting the horizontally polarized shear wave off the opposite surface of the material in the rotating direction;

receiving the horizontally polarized shear wave reflected off of the opposite surface in the rotating direction by the transducer;

converting the horizontally polarized shear wave received by the transducer into a second signal having a second strength; and

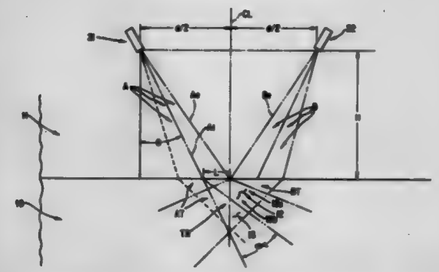
interpreting the second signal for determining the orientation of the crack such that a second signal having a weak strength indicates the orientation of the crack.

5,383,366

ULTRASONIC TWO PROBE SYSTEM FOR LOCATING AND SIZING

Errol E. Wallingford, Sydenham, Canada, and Robert DeNale, Arnold, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1992, Ser. No. 966,825
Int. Cl.[6] G01N *9/24, 29/04*
U.S. Cl. 73—602 **14 Claims**



1. A method for detecting discontinuities within a material under test, comprising the steps of:

generating an ultrasonic pulse, at a pulse reference time, towards a surface of a material under test, said pulse incident to the surface along a diverging main generating beam of a transmit probe at a beamcenter angle Θ;

receiving a reflected ultrasound energy along a main receiving beam of a receiving probe, a beamcenter of said main receiving beam having an included angle of 2×Θ with said beamcenter of said main generating beam, and outputting a signal corresponding to said received ultrasound energy;

sampling said output signal at a predetermined sampling rate and outputting a corresponding sample data stream;

storing first scan data, consisting of a series of M consecutive datum from said sample data stream over a predetermined interval relative to said pulse reference time, wherein said storing includes storing index data indicating a position of each datum within said series;

retrieving data from among said first scan data and identifying a position of a reference datum within said series;

identifying data points from within said first scan data having an amplitude above a predetermined flaw echo amplitude; and

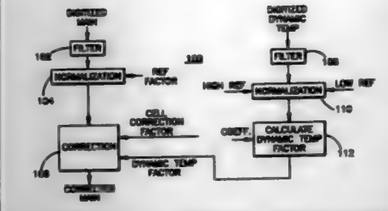
based on a time-of-flight difference between said sampling of said identified data points and said reference datum, generating and outputting first depth cell data, said first depth cell data indicative of a depth dimension to a discontinuity within the material under test.

5,383,367

DYNAMIC TEMPERATURE COMPENSATION FOR A PRESSURE CELL

Pierre Bertrand, Igny, France; Tourang Birangi, Eastlake, and Joseph C. Nemer, Mayfield Heights, both of Ohio, assignors to Elsag International N.V., Amsterdam Zuidoost, Netherlands

Filed Oct. 18, 1993, Ser. No. 139,246
Int. Cl.[6] G01L *19/04*; G01C *25/00*
U.S. Cl. 73—708 **15 Claims**



1. A computer based method for use with a means for sensing differential pressure, said method comprising the steps of:

a) connecting first network means to said differential pressure sensing means, said first network means responsive to a drive signal for providing a signal representative of the difference in temperature across said differential pressure sensing means;

b) applying said drive signal to said differential pressure sensing means and said first network means, said differential pressure sensing means responsive to said drive signal for providing a signal representative of said differential pressure sensed by said differential pressure sensing means;

c) converting in analog to digital converting means said signal representative of said sensed differential pressure and said signal representative of said temperature difference across said differential pressure sensing means to digital signals; and

d) correcting in computing means said digital signal representative of said sensed differential pressure comprising the steps of:

i) calculating in said computing means a dynamic temperature factor signal by multiplying said digital signal representative of said temperature difference across said differential pressure sensing means by a coefficient based on measurements made of the affect of said temperature difference across said differential pressure sensing means on said differential pressure sensing means; and

ii) subtracting in said computing means from said signal representative of the sensed differential pressure said dynamic temperature factor signal.

5,383,368

DEFLECTION SENSOR FOR ROBOT LINKS

Ernest Franke; Ashok Nedungadi, and Glynn Bartlett, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Nov. 16, 1992, Ser. No. 977,091
Int. Cl.[6] G01L *1/24*
U.S. Cl. 73—800 **1 Claim**

1. A robot arm link, comprising:

a flexible body having a first end and a second end;

a light source located at said first end providing light to said second end;

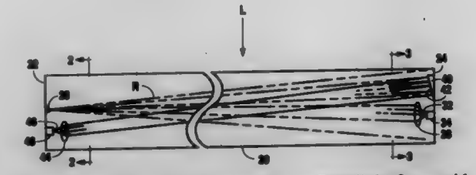
at least two position sensitive detectors located at said second end and displaced a known distance apart;

at least two lenses, each said lens corresponding to a corresponding one of said position sensitive detectors, wherein each said lens includes an optical axis which is positioned to receive light from said light source and to focus the received light into a light spot on said corresponding one of said position sensitive detectors, wherein when said body is flexed causing said first end to generally move in X and Y directions in a plane normal to the longitudinal axis of said body, the light received by said lenses is correspondingly translated with respect to each said optical axis of each said lens correspondingly displacing said light spots on said position sensitive detectors;

a mirror located at said second end;

a third position sensitive detector located at said first end;

a third lens corresponding to said third position sensitive detector, said third lens having an optical axis;



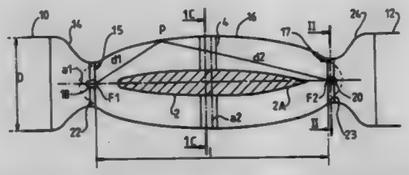
wherein said mirror is positioned to reflect light from said light source towards said third lens, and said optical axis of said third lens is positioned to receive the reflected light from said mirror and to focus the light into a light spot on said corresponding third position sensitive detector, wherein when said body is flexed causing said first end to rotate and experience pitch and yaw movement relative to said second end, said reflected light rays are correspondingly translated with respect to said optical axis of said third lens correspondingly displacing said light spot on said third position sensitive detector.

5,383,369

DEVICE FOR MEASURING THE VELOCITY OF A FLUID

Butrus Khuri-Yakub, Palo Alto, Calif.; Patrice Ligneul, Chaville and Jean-Luc Boulanger, Montrouge, all of France, assignors to Schlumberger Industries, Montrouge, France

Continuation of Ser. No. 961,585, Oct. 15, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 231,864
Claims priority, application France, Oct. 25, 1991, 91 13299
Int. Cl.[6] G01F *1/00*
U.S. Cl. 73—861.29 **16 Claims**



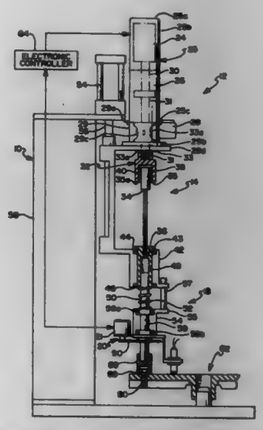
1. A device for measuring the velocity of a fluid travelling through a pipe (10), comprising a flow conduit having a first ultrasonic transducer (18) and a second ultrasonic transducer (20) and a measurement chamber (16), in which the measurement chamber (16) is shaped as a revolution ellipsoid having first and second focal points along an ellipsoidal major axis which is able to reflect ultrasound, said first transducer being located at said first focal point (F1) and said second transducer being located at said second focal point (F2) of the ellipsoid.

5,383,370

DEVICE FOR VERIFYING A MINIMUM TORQUE VALUE

Kenneth D. Abramson, Bloomfield, and Tetsuo Abe, Rochester Hills, both of Mich., assignors to Sanyo Machine America Corporation, Rochester Hills, Mich.

Filed Apr. 9, 1991, Ser. No. 682,638
Int. Cl.[6] G01L *3/10*
U.S. Cl. 73—862.23 **14 Claims**



1. A device for verifying a minimum value of a torque which has been applied to a workpiece, comprising:

(a) a workpiece engaging member;

(b) means for rotating the workpiece engaging member;

(c) means for sensing torque being applied to the workpiece;

(d) a torsion bar disposed intermediate the means for rotating and the workpiece engaging member;

(e) means for sensing any rotation of the workpiece after engagement with the workpiece engaging member; and

(f) a one-way clutch interposed between the means for rotating and the torsion bar, the torsion bar having a first end secured to the clutch, the clutch preventing rotation of the torsion bar upon the stopping of the means for rotating; and

wherein the torsion bar absorbs the inertia of the means for rotating upon the stopping thereof.

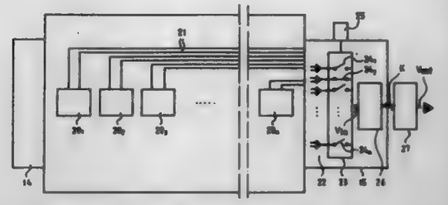
5,383,371

METHOD AND DEVICE FOR MEASUREMENT OF THE NIP FORCE AND/OR NIP PRESSURE IN A NIP FORMED BY A REVOLVING ROLL OR A BAND THAT IS USED IN THE MANUFACTURE OF PAPER

Jyrki Laitinen, Jyväskylä, Finland, assignor to Valmet Paper Machinery, Incorporated, Helsinki, Finland

Filed Oct. 14, 1992, Ser. No. 960,725
Claims priority, application Finland, Oct. 14, 1991, 914829
Int. Cl.[6] G01L *5/00*
U.S. Cl. 73—862.55 **15 Claims**

1. Method for measuring the nip force and/or nip pressure in a nip (N) formed by a revolving roll or a band used in the manufacture of paper, the method comprising the steps of using a series of measurement detectors ($20_1 \ldots 20_n$) that are polyvinylidenedifluoride-film detectors, placing the detectors on the roll in a straight line across a substantial width (W_0) of the paper web (W) in the transverse direction of the revolving roll or the band, passing the measurement signals received from the different detectors (20) to a switching unit (23) whose connectors ($24_1 \ldots 24_n$) are controlled so that, through the switching unit (23), the signal of each measurement detector ($20_1 \ldots 20_n$) is alternatingly connected to a telemeter transmitter (26) placed in connection with the revolving roll 10 or equivalent, transmitting the series of measurement signals ($V_{in1} \ldots V_{inn}$) by means of said telemeter transmitter (26) wirelessly to a stationary telemeter receiver (27) placed outside the revolving roll (10), measuring the distributions of the compression pressure in the nip (N) in both the machine direction (P_M) and in the transverse direction (P_T) and, in the transverse direction, using n=3–20 measurement points and an equal number n of measurement detectors (20).

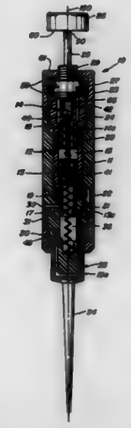


5,383,372

PIPETTE

Humayun Qureshi, Wayland, and Donald Schwartz, Marblehead, both of Mass., assignors to DRD Diluter Corp., Danvers, Mass.

Continuation of Ser. No. 956,906, Oct. 2, 1992, abandoned, which is a continuation of Ser. No. 571,081, Aug. 22, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 81,487
Int. Cl.[6] G01N *1/14*; B01L *3/02*
U.S. Cl. 73—864.17 **7 Claims**



1. A pipette for obtaining a precise measured dose of a liquid, said pipette comprising a first and second piston mounted for reciprocal movement in a chamber,

first resilient means for permitting first movement in a first direction of said first and second pistons to displace a defined volume of a material contained in said chamber,

second resilient means for permitting further movement in said first direction of said second piston in said chamber while said first piston has stopped movement,

whereby said first movement can define said precise measured dose,

said first and second pistons being axially aligned and of different diameter to define a desired said precise dose,

said first resilient means comprises a spring capable of being resiliently compressed by a first force,

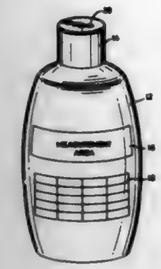
said second resilient means comprises a second spring capa-

ble of being compressed by a second force greater than said first force,
and said further movement can provide an air blowout.

5,383,373
METHOD FOR MEASURING TOPICAL DOSAGE DISPENSED

John H. Knowles, Jr., Essex, Mass., and DeeAnn I. Yabusaki, Lodi, Calif., assignors to LittlePoint Corporation, Cambridge, Mass.

Filed Dec. 8, 1992, Ser. No. 988,224
Int. Cl.[6] G01F *13/00*
U.S. Cl. 73—865.8 **6 Claims**

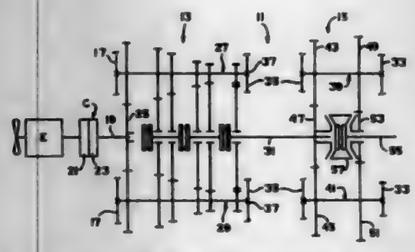


1. A method for measuring the dosage of a topical preparation dispensed from a container, comprising:
applying the preparation to the skin in a pattern shaped and sized to resemble an identified area displayed on the container;
comparing the pattern of preparation dispensed on the skin to the identified measurement area to determine the dosage of the preparation dispensed.

5,383,374
COUNTERSHAFT DRIVEN AUXILIARY DRIVE UNIT

Joseph D. Reynolds, Climax, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 5, 1993, Ser. No. 58,166
Int. Cl.[6] F16H *37/00*
U.S. Cl. 74—15.66 **23 Claims**

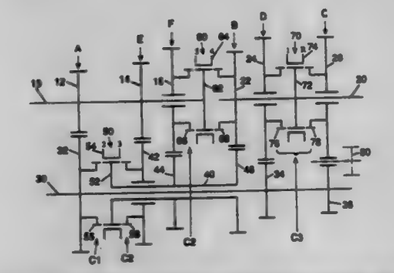


1. A compound change gear transmission comprising a change gear main transmission section connected in series with an auxiliary transmission section; one of said main and auxiliary transmission sections comprising a front section, and the other of said main and auxiliary transmission sections comprising a rear section; said front section comprising a transmission input shaft, and at least one countershaft, constantly driven by said transmission input shaft; and said rear section comprising a transmission output shaft rotatably disposed within a rear section housing, said rear section housing including a rear wall portion; a power-take-off device mounted to said rear wall portion, and adapted to receive input torque from said front section countershaft; characterized by:
(a) said power-take-off device including a power-take-off input shaft extending generally axially, through said rear wall portion, and including a forward end portion, disposed adjacent a rearward end portion of said front section countershaft;
(b) clutch means operably associated with said rearward end portion of said front section countershaft and said forward end portion of said power-take-off input shaft, and movable between a first position (FIG. 3) permitting relative rotation between said countershaft and said power-take-off input shaft, and a second position connecting said power-take-off input shaft for rotation with said countershaft; and
(c) said power-take-off device including actuator means extending through said rear wall portion, operably associated with said clutch means and operable in response to the presence of an input signal to move said clutch means from said first position to said second position.

5,383,375
GEAR SPEED CHANGE SYSTEM WITH TWO COUNTER SHAFTS

Shinji Ogawa; Tomoyuki Kanou, and Yusuke Horiuchi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 2, 1993, Ser. No. 85,047
Claims priority, application Japan, Jul. 2, 1993, 4-199087
Int. Cl.[6] F16H *3/097*
U.S. Cl. 74—330 **10 Claims**

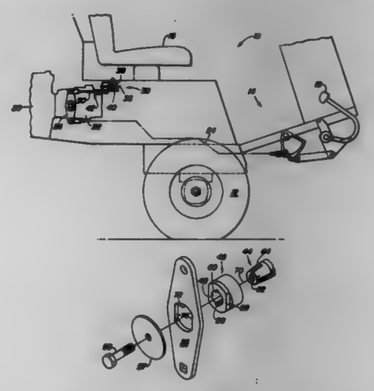


1. A gear speed change system comprising an input shaft, an output shaft coaxial therewith, a first counter shaft disposed parallel to said input and output shafts, and a second counter shaft coaxial with said first counter shaft;
one of said first and second counter shafts and said input shaft being coupled to each other at all times by a gear set having gears respectively rotatable in unison with said one counter shaft and said input shaft and meshing with one another;
the other one of said first and second counter shafts and said output shaft being coupled to each other at all times by a gear set having gears respectively rotatable in unison with said other counter shaft and said output shaft and meshing with one another;
said one counter shaft coupled at all times to said input shaft and said output shaft being coupled to each other by a gear set having at least one gear rotatable relative to said one counter or output shaft;
said other counter shaft coupled at all times to said output shaft and said input shaft being coupled to each other by a gear set having at least one gear rotatable relative to said other counter or input shaft;
a first clutch being provided such as to be capable of being switched between states of allowing and inhibiting the rotation of said gear rotatable relative to said one counter or output shaft;
a second clutch being provided such as to be capable of being switched between states of allowing and inhibiting the rotation of said gear rotatable relative to said other counter or input shaft;
a third clutch being provided such as to be capable of being switched between states of allowing and inhibiting the relative rotation of said first and second counter shafts to each other.

5,383,376
HYDROSTATIC TRANSMISISON CONTROL STRUCTURE

Christopher S. Thorman, Beaver Dam; James A. Swartzendruber, and Frank K. O'Toole, both of West Bend, all of Wis., assignors to Deere & Company, Moline, Ill.

Filed Aug. 12, 1993, Ser. No. 105,559
Int. Cl.[6] G05G *1/14*; B25G *3/28*
U.S. Cl. 74—474 **17 Claims**

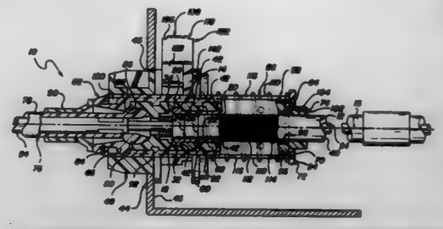


1. For use with a vehicle including
a hydrostatic transmission with a swash plate moveable between first, second and third positions which correspond respectively to forward, neutral and reverse vehicle drive configurations and a tapered shaft coupled with the swash plate for moving it between its first, second and third positions and
a lever means adapted to rotatably swing the shaft and move the swash plate between its positions:
an improved means for precisely coupling the lever means with the shaft comprising;
a first positioning surface carried near the edge of a recess provided in the lever means;
hub means with a tapered opening formed therein having a central axis, the opening adapted to be slidably received on the tapered shaft,
the hub means further including an end portion receivable within the recess the lever means, said end portion including a second positioning surface having an elongated portion that is radially spaced from the central axis, the second positioning surface being engagable with the first positioning surface when the end portion of the hub means is received in the recess of the lever means, and means operatively interconnecting the hub means with the shaft whereby movement of the lever means effects swinging movement of the shaft.

5,383,377
ROTATABLE ISOLATED END FITTING

Randy J. Boike, Clarkston, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

Filed Aug. 25, 1993, Ser. No. 112,574
Int. Cl.[6] F16C *1/10*
U.S. Cl. 74—502 **23 Claims**



1. A motion transmitting remote control assembly (10) of the type for transmitting motion along a curved path, said assembly (10) comprising:
a conduit (12) having an end (14);
a flexible motion transmitting core element (54) having a length and a central axis (16) and movably supported along said length within said conduit (12);
support member (48) rotatably disposed about said conduit (12) for attaching said conduit end (14) to a support structure (46);
isolation means (56) disposed between said support member (48) and said conduit end (14) for dampening vibrations and shocks transmitted between the support structure (46) and said conduit end (14) and fixed against translational movement relative to said conduit end (14);
characterized by a circumferential anti-stick surface (104) contiguous with said isolation means (56) and allowing said conduit end (14) to rotate relative to the support structure (46).

5,383,378
DRIVEN AXLE

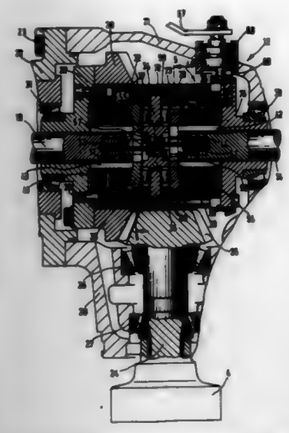
Michael Paul, Passau; Eberhard Wilks, Hutthurm, and Bernd Mamerow, Hamburg, all of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Germany

PCT No. PCT/EP91/02054, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993, PCT Pub. No. WO92/08069, PCT Pub. Date May 14, 1992
PCT Filed Oct. 30, 1991, Ser. No. 39,422
Claims priority, application Germany, Nov. 2, 1990, 4034884
Int. Cl.[6] F16H *35/04*
U.S. Cl. 74—650 **5 Claims**

1. A driven, rigid and steered axle having first and second output shafts (13, 14) being coaxially supported by an axle housing (21, 22); each of said first and second output shafts (13, 14) having one end thereof driving a wheel (17, 18), via a double-crossed joint (15, 16), and an opposite end thereof being rotatable with but axially movably relative to a pair of internal disc carriers (42, 43), each of said pair of internal disc carriers (42, 43) supporting a plurality of internal discs positioned to engage with a plurality of external discs being supported by a mating pair of external disc carriers, said pair of external disc carriers being operatively connected with an input shaft (4) via a rotatable housing (32) to provide driving power to the wheels; said pair of internal disc carriers (42, 43), said pair of external disc carriers and said internal and external discs forming a pair of disc sets (40, 41); an expansion device (34, 38, 39), having a supporting element (34) firmly connected with said housing (32), being positioned between said pair of disc sets (40, 41); an annular piston (38 or 39) being positioned between said support element (34) and each of said pair of disc sets (40, 41); a first set of ramps (R1, R2) being provided on said supporting element (34) and extending in a direction of rotation,

said first set of ramps (R1, R2) co-acting with a second set of ramps (K1, K2) provided on said annular pistons (38, 39); and a device (60) for allowing only limited torsion between said annular pistons (38, 39);

wherein each of said first and second output shafts (13, 14) actuates, by virtue of longitudinal displacement of the output shaft due to a desired steering angle, a snap-in catch which, starting at a desired steering angle, maintains said expansion device in a neutral position; and



said snap-in catch comprises two locking elements (44, 45) which are rotate with but are axially movable with respect to said supporting element (34), each of said two locking elements (44, 45) respectively co-acts with one of said annular pistons (38 or 39) via shift teeth (56 or 57) carried by said locking element, and each of said two locking elements (44, 45) is respectively actuated by one of said first and second output shafts (13 or 14).

5,383,379

HYDRAULIC PRESSURE CONTROL FOR AUTOMATIC TRANSMISSION

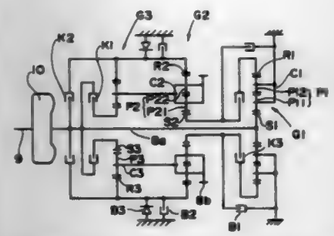
Tsunefumi Niiyama, Kamifukuoka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 894,776, Jun. 5, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 150,577

Claims priority, application Japan, Jun. 7, 1991, 3-164023; Jun. 7, 1991, 3-164024; Jun. 7, 1991, 3-164025

Int. Cl.[6] F16H *61/14*

U.S. Cl. 74—733.1 **15 Claims**



1. A hydraulic pressure control apparatus for an automatic transmission, comprising:

a hydraulic pressure source for producing a controlling hydraulic pressure;

hydraulically operated engaging means for being engaged in response to the controlling hydraulic pressure from said hydraulic pressure source;

two solenoid-operated valve means disposed in series with each other in a hydraulic passage between said hydraulic pressure source and said hydraulically operated engaging means and independently operable in response to respective control signals, for controlling the supply of the controlling hydraulic pressure to said hydraulically operated engaging means; and

said two solenoid-operated valve means being responsive to said respective control signals for being opened to supply the controlling hydraulic pressure from said hydraulic pressure source to said hydraulically operated engaging means to engage the hydraulically operated engaging means, and wherein when at least one of said two solenoid-operated valve means is closed, the supply of controlling hydraulic pressure from said hydraulic pressure source to said hydraulically operated engaging means is disrupted and said hydraulically operated engaging means is connected to a drain, thereby positively disengaging said engaging means.

5,383,380

MATERIAL CUTTING MACHINE FOR SLICING A CYLINDER

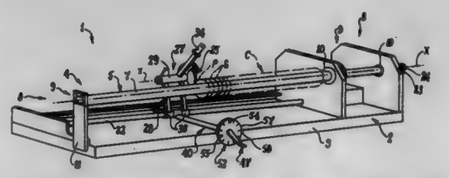
Maurice Sartori, Victoria, Australia, assignor to B. J. Mackie and Co. (Aust.)Pty. Ltd., Victoria, Australia

Filed Jan. 22, 1993, Ser. No. 7,527

Claims priority, application Australia, Jan. 23, 1992, PL0541

Int. Cl.[6] B23B *5/14, 21/00*

U.S. Cl. 82—70.1 **21 Claims**



1. A machine for cutting slices from a cylinder of material, comprising:

a machine frame;

a holding means on the frame for holding a cylinder of material for driven rotation about a central longitudinal axis, the holding means including an elongate mandrel supported for rotation about the central longitudinal axis and a holding mechanism for releasably securing a material cylinder concentrically positioned on the mandrel so as to rotate with the mandrel;

a means for rotating the mandrel about the central longitudinal axis;

a cutting blade for cutting a material cylinder, secured to the mandrel, into material slices;

a carriage assembly having the cutting blade carried thereon, and being mounted on the machine frame for movement relative thereto in order to shift the cutting blade to selected axial cutting locations along the mandrel at which a material cylinder secured thereto is to be cut into slices; and

a drive mechanism connected to the carriage assembly and being operable for moving the carriage assembly in directions along the mandrel in order to shift the cutting blade to the axial cutting locations, the drive mechanism including:

an elongate track mounted on the machine frame;

a drive wheel mounted for movement with the carriage assembly and engaging the elongate track, the drive wheel being rotatable during engagement with the elongate track to rotate along the track and thereby move the carriage assembly along the mandrel to shift the cutting blade to selected cutting locations;

a drive handle manually grippable for movement which manually moves the carriage assembly in either direction along the mandrel to shift the blade to a selected cutting location; and

a clutch mechanism selectively drivingly connecting the drive wheel and drive handle, the clutch mechanism being operable to drivingly connect the handle with the drive wheel upon manual rotation of the handle in one direction and to disconnect the handle for rotation free of the drive wheel in an opposite direction, whereby during engagement of the drive wheel with the elongate track repeated alternate rotary movement of the drive handle in the two directions incrementally rotates the drive wheel along the elongate track causing incremental movement of the carriage assembly in one direction only along the mandrel.

5,383,381

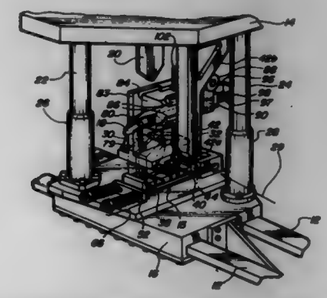
DOUBLE CUT DIE SET

John Graham, Sterling Heights, Mich., assignor to Alpha Industries, Inc., Novi, Mich.

Continuation of Ser. No. 1,768, Jan. 8, 1993, abandoned. This application Dec. 22, 1993, Ser. No. 173,965

Int. Cl.[6] B26D *1/60*

U.S. Cl. 83—385 **20 Claims**



1. A cut-off die set used to sever sections of an elongated workpiece comprising:

upper and lower platens interconnected for reciprocal motion;

a shearing blade mounted to the upper platen;

a support mounted to said lower platen;

a notching blade;

a notching blade holder releaseably connected to said support, such that said notching blade holder may be adjustably positioned on said support;

means for adjusting the position of said notching blade holder on said support wherein said means remains stationary during said notching stroke and said support remains stationary;

a pair of opposed jaws for engaging the workpiece;

first and second mounting members, said jaws mounted to said first and second mounting members wherein said first and second mounting members are operative to move said jaws between an open, released position and a closed, clamped position;

first and second cam followers connected to said first and second mounting members;

a third cam follower mounted to said notching blade holder; and

a cam having first, second and third cam surfaces thereon, said first, second and third cam followers engaging said first, second and third cam surfaces respectively, such that movement of said cam displaces said cam followers in a timed relationship.

5,383,382

SAW TABLE WITH RELEASABLE LOCKING DEVICE

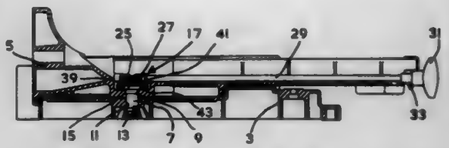
Andrea Garuglieri, Colle Brianza, and Giovanni A. Foici, Briosco, both of Italy, assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 25, 1993, Ser. No. 111,692

Claims priority, application United Kingdom, Aug. 28, 1992, 9218299

Int. Cl.[6] B23D *45/14*

U.S. Cl. 83—471.3 **9 Claims**



6. A saw table assembly for making highly accurate angled saw cuts over a prolonged period of time comprising in combination:

(a) means forming a fixed table,

(b) means forming a pivotable table, said pivotable table having a central portion extending parallel to and spaced from said fixed table,

(c) pivot means connected to said fixed table and extending through said central portion of said pivotable table and forming a pivot axis about which said pivotable table pivots to set the angle of the saw cut,

(d) said pivot means including a conical surface portion, said conical surface portion extending concentrically about said pivot axis, and

(e) clamping means for clamping said pivotable saw table in selected pivoted positions relative to said fixed table, said clamping means; positioned such as to engage said conical surface portion when said clamping means engage said conical surface portion, said conical surface portion and said clamping means being positioned such as to force said pivotable and fixed tables into frictional engagement with each other to secure said pivotable table at a selected angle for a saw cut.

5,383,383

TOOL MOUNTING MEANS AND IMPLEMENT THEREFOR

Andrea Garuglieri, Colle Brianza, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Jul. 2, 1993, Ser. No. 86,479

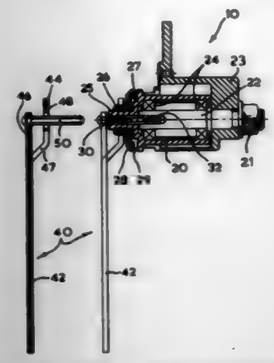
Claims priority, application United Kingdom, Jul. 4, 1992, 9214269

Int. Cl.[6] B26D *1/12*

U.S. Cl. 83—666 **4 Claims**

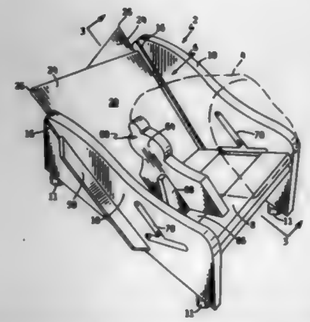
1. A power tool comprising a housing, a shaft fixed in the housing, a drive spindle in the form of a sleeve journalled for rotation on said shaft, said drive spindle having a threaded end, a tool having an aperture for engagement with said threaded end of the spindle, screw means to engage said threaded end and clamp said tool to said spindle, a first bore of non-circular cross-section in said threaded end of the sleeve, a second concentric bore of non-circular cross-section in the end of said

shaft, whereby an implement of corresponding non-circular cross-sections is insertable through said threaded end of the



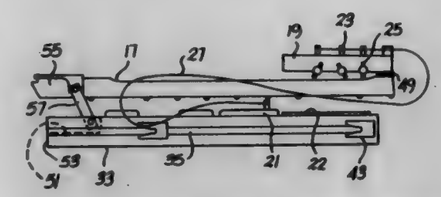
spindle and engaging said bores to lock rotationally said spindle and shaft.

5,383,384
FOOD PRODUCT SLICER
Clarence Dennis, 2332 Field Stone Dr., Meadota Heights, Minn. 55120
Filed Aug. 5, 1993, Ser. No. 102,545
Int. Cl.[6] B26D *1/10*
U.S. Cl. 83—762 **14 Claims**



2. A food product slicer for use with a knife for cutting slices of food product from a loaf of food product, which comprises:
(a) a bottom wall on which a loaf of food product may be laid for cutting a slice of food product off one end of the loaf;
(b) an upright end wall secured to the bottom wall and extending upwardly therefrom, wherein the end wall includes a front face against which the one end of the loaf may be abutted when cutting a slice off the one end of the loaf;
(c) means fixed relative to the end wall for guiding a knife blade in a direction parallel to the end wall for cutting a food product slice having a first predetermined thickness equal to the distance between the front face of the end wall and the knife guiding means; and
(d) means for selectively adjusting the thickness of the food product slices, the thickness adjusting means comprising a plurality of thickness adjustment plates which are suited to be placed against the front face of the end wall in any desired number to provide slices having multiple adjusted thicknesses depending upon the number of adjustment plates so placed, whereby a food product slice can be selectively cut having a first adjusted thickness when one adjustment plate is placed against the front face of the end wall, and a second adjusted thickness when two adjustment plates are placed against the front face of the end wall, and so on; and
(e) wherein each adjustment plate has an upper handle forming portion located above a top edge of the end wall when the adjustment plate is placed against the end wall for allowing a user to grip more easily the adjustment plates when inserting or removing the adjustment plates from engagement with the end wall, and wherein the handle forming portion protrudes upwardly at one side of each adjustment plate to allow the handle forming portions of adjacent adjustment plates to be staggered relative to one another by reversing adjacent adjustment plates relative to one another as they are placed against the end wall, whereby the handle forming portion of a first adjustment plate may be first placed adjacent one side of the end wall, and the handle forming portion of a second adjustment plate may then be placed adjacent an opposed side of the end wall when the second adjustment plate is reversed relative to the first adjustment plate, and so on.

5,383,385
COLLAPSIBLE GUITAR HAVING PIVOTAL HEAD
Clifford W. Gilbert, 305 S. Jackson St., Bay City, Mich. 48708
Filed May 28, 1993, Ser. No. 68,158
Int. Cl.[6] G10D *1/08*
U.S. Cl. 84—267 **17 Claims**

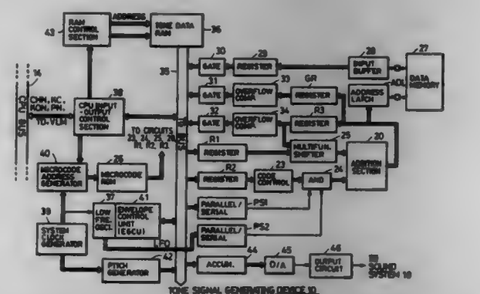


1. A collapsible guitar comprising an elongated guitar body having a longitudinal axis and a transverse axis; said body having an upper face and a lower face; an elongated neck extending from said guitar body on the longitudinal axis; a pegboard connected to said elongated neck remote from the guitar body; string anchorage means on the upper face of said guitar body; a plurality of adjustable string anchorage pegs on said pegboard; a plurality of guitar strings extending from said string anchorage means along said neck to said anchorage pegs adjacent said upper face; and a first pivotal connection between said guitar body and one end of said neck; said first pivotal connection being located so that the neck can be overturned onto the upper face of the guitar body without detaching the guitar strings from said anchorage means or said pegs, a second pivotal connection between the opposite end of the neck and the pegboard such that the pegboard can be overturned onto the neck to reduce the overall length of the neck and the pegboard.

5,383,386
TONE SIGNAL GENERATING DEVICE
Masaki Kudo, and Tokio Shirakawa, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan
Continuation of Ser. No. 637,298, Jan. 3, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 46,394
Claims priority, application Japan, Jan. 5, 1990, 2-312
Int. Cl.[6] G10H *7/08*
U.S. Cl. 84—622 **13 Claims**

1. A tone signal generating device which comprises:
addition means, having two or more addition circuits, for performing an operation according to a first or second operation style in response to a first control signal,

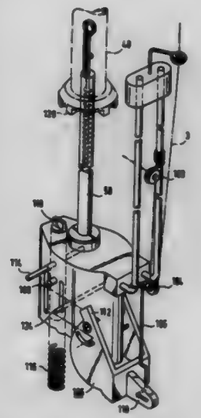
wherein different operations are performed in parallel in the respective addition circuits in said first operation style and a common operation is performed in said addition circuits in said second operation style;
memory means for storing data to be inputted to said addition means;
processing means for variably performing a logical processing on output data of said memory means in accordance with a second control signal and giving the data to said addition means;
data storage means for storing waveform sample data; and
control means for controlling introduction of data to said memory means and generation of said first and second control signals in correspondence to respective desired operations so that plural kinds of operations for tone signal generation may be respectively performed, the data to be introduced to said memory means and contents of the logical processing of said processing means being deter-



mined in accordance with a control by said control means, so that said addition means can be shared for at least first and second kinds of operations for the tone signal generation, said first kind of operation being an operation for generating an address signal for accessing said data storage means, said first control signal designating said second operation style for said first kind of operation, said second kind of operation being an operation for processing waveform sample data read out from said data storage means in response to said address signal, said first control signal designating said first operation style for said second kind of operation; and
serial multiplier supplying means for supplying serial multiplier data for respective ones of said addition circuits when said first operation style is designated so that respective addition circuits each function as part of a different multiplication operator to effect said second kind of operations.

5,383,387
APPARATUS AND METHOD FOR PRODUCING BRAIDED SUTURE PRODUCTS
Michael P. Chesterfield, Norwalk, Conn.; Josep Serra, Barcelona, Spain, and Ilya Koyfman, Orange, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 569,079, Aug. 17, 1990, abandoned. This application Jun. 4, 1993, Ser. No. 72,344
Int. Cl.[6] D04C *3/14, 3/24*
U.S. Cl. 87—56 **20 Claims**

1. An apparatus for continuously braiding fine denier yarns made of fine filaments to form a final braided suture product which comprises:
a) a frame;
b) a plurality of bobbin holders;
c) a bobbin holder support for supporting said plurality of bobbin holders, each said holder supporting a bobbin containing fine denier yarn;
d) means for directing said plurality of bobbin holders and said bobbins through predetermined paths while dispensing yarn from each bobbin;
e) a first yarn guide fixed with respect to each said bobbin holder to receive and guide said fine denier yarn from said bobbin;
f) a second yarn guide associated with each said bobbin holder and positioned and adapted for reception and guiding of said fine denier yarn from said first yarn guide toward a common braiding zone, said second yarn guide being movable in response to yarn tension;

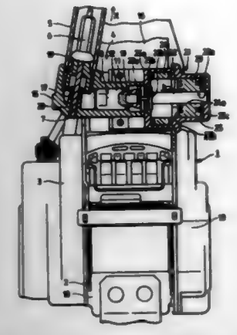


g) means for applying controlled tension to said final braided product within predetermined ranges to permit formation of a braided suture product of predetermined construction and appearance while causing tension to be applied to said fine denier yarns prior to formation of said final braided suture product; and
h) means associated with each said second yarn guide to control the tension on said fine denier yarns to about 7 grams or less as said yarn is dispensed from said associated bobbin so as to permit braiding said yarns without breakage of said fine filaments.

5,383,388
STARTING DEVICE
Katsuyasu Ono, Kanagawa, Japan, assignor to NSK Ltd., Tokyo, Japan
Filed Sep. 3, 1993, Ser. No. 115,827
Claims priority, application Japan, Oct. 5, 1992, 4-074679[U]
Int. Cl.[6] B60R *21/32, 21/26*; H01H *35/14*
U.S. Cl. 89—1.14 **20 Claims**

11. A starting device for a seat belt tightening device which, upon collision of a vehicle equipped with said seat belt tightening device, is driven by gas pressure to turn the winding shaft of a retractor to pull in a seat belt, in which, in response to an acceleration higher than a predetermined value, a detonator is struck to activate a gas generator, comprising:
an igniting pin adapted to move towards said detonator to collide with said detonator so as to ignite said detonator;
an inertial body made of a cylindrical permanent magnet, said inertial body having a through-hole along a central axis in which said igniting pin is loosely inserted;
an annular permanent magnet, the inside diameter of which

is larger than the outside diameter of said inertial body; and



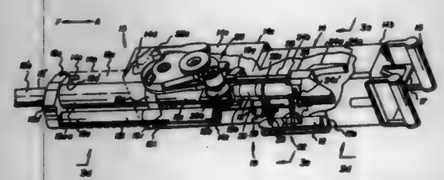
a trigger casing accommodating said igniting pin, said inertial body, and said annular permanent magnet.

5,383,389

AMMUNITION INDEXING MECHANISM

Peter C. Wolff, Georgia; Stephen J. Bullis, Colchester, and Larry W. Hayes, Burlington, all of Vt., assignors to Martin Marietta Corporation, Philadelphia, Pa.

Filed Jun. 29, 1993, Ser. No. 83,534
Int. Cl.[6] F41A *9/30, 9/37*
U.S. Cl. 89—33.04 13 Claims



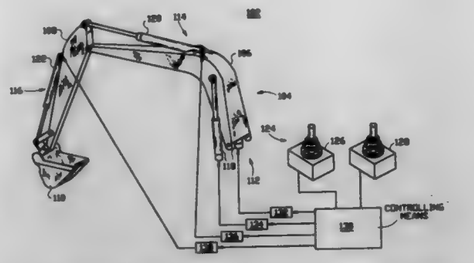
1. A cartridge indexing mechanism for a weapon having a barrel assembly with a chamber in which is fired a cartridge, responsive to actuation of a trigger mechanism, comprising:
- a receiver having a pair of opposed feedports;
- means for selecting one of said feedports through which to pass at least one cartridge for loading into said chamber;
- a rotary, mechanism for moving through a selected index angle each ammunition cartridge entering through the selected feedport; and
- torque means for storing energy, responsive to a selected movement of said barrel assembly, until released to operate said rotary mechanism to move, for each selected barrel assembly movement, one cartridge sequentially to a position aligned with said firing chamber, where said torque means includes: a torque rod having a first end fixedly mounted to said receiver and a second end opposite said first end; a wing cam member affixed to said torque rod second end and having first and second complementary camming wings; and first and second cam rollers, only one of which is moved into abutment with an associated one of said camming wings responsive to the selection of an associated feedport, and adapted to rotate the abutting cam wing responsive to said selected barrel assembly movement.

5,383,390

MULTI-VARIABLE CONTROL OF MULTI-DEGREE OF FREEDOM LINKAGES

Michael S. Lukich, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 23, 1993, Ser. No. 82,644
Int. Cl.[6] F15B *13/16;* F16D *31/02*
U.S. Cl. 91—361 29 Claims



1. An apparatus for controllably actuating a work implement, the work implement having at least a first linkage and a second linkage, comprising:
- means for producing a control signal;
- means for sensing the position and velocity of the first linkage and responsively producing a first position signal and a first velocity signal;
- means for sensing the position and velocity of the second linkage and responsively producing a second position signal and a second velocity;
- controlling means for receiving said control signal, said first and second position signals and said first and second velocity signals and producing a first command signal (C_1) as a function of said control signal, said first and second position signals and said first and second velocity signals;
- means for receiving said first command signal (C_1) and responsively actuating said first linkage as a function thereof; and
- wherein said first command signal is adapted to minimize dynamic coupling between the first actuating means and the second linkage.

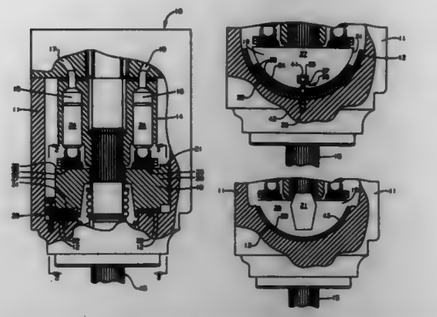
5,383,391

CRADLE BEARING ARRANGEMENT FOR AXIAL PISTON HYDRAULIC DEVICES

James C. Goode, Morris, and Claude H. Werner, Manhattan, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 21, 1994, Ser. No. 210,487
Int. Cl.[6] F01B *3/00;* F16H *23/00*
U.S. Cl. 92—12.2 4 Claims

1. An axial piston variable displacement hydraulic device comprising:
- a housing defining laterally spaced first and second concave arcuate surfaces;
- a swashplate positioned in the housing and having opposite sides with one side being subjected to loads higher than loads imposed on the other side, the swashplate having a first convex arcuate surface at the one side of the swashplate and a second convex arcuate surface at the other side of the swashplate;
- an arcuate roller bearing assembly positioned between the first concave arcuate surface and the first convex arcuate surface; and



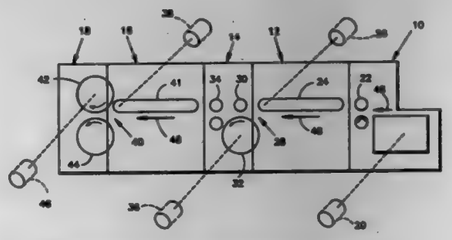
- an arcuate sleeve bearing positioned between the second concave arcuate surface and the second convex arcuate surface.

5,383,392

SHEET REGISTRATION CONTROL

James M. Kowalewski, Baltimore; Solomon D. Kaplan, Owings Mills, and Boris M. Katz, Baltimore, all of Md., assignors to Ward Holding Company, Inc., Wilmington, Del.

Filed Mar. 16, 1993, Ser. No. 33,097
Int. Cl.[6] B41F *5/02, 1/28*
U.S. Cl. 101—183 13 Claims



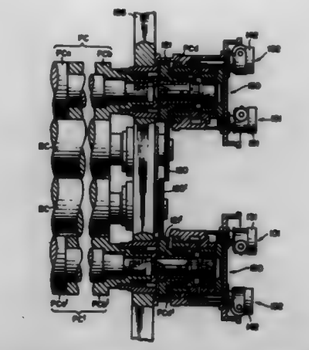
1. A sheet processing apparatus, comprising:
- a first sheet processing section;
- a second sheet processing section;
- a transfer section positioned entirely between said first and second sections;
- drives connected to said first and second sections;
- at least one motor connected to said transfer section and operable independently of said drives to operate said transfer section at a predetermined line speed;
- sensor means, associated with said transfer section, for sensing a sheet in said transfer section and providing a signal indicative of registration of the sheet in the transfer section; and
- control means for determining from said signal whether the sheet is in register with said second section, and if not, then increasing and immediately decreasing the speed of said transfer section relative to said line speed to adjust the registration of the sheet while in the transfer section to cause the sheet to enter said second section in register therewith.

5,383,393

MULTICOLOR LITHOGRAPHIC ROTARY PRESS

Koichi Ueda; Yuzo Kawarazaki, both of Shizuoka; Noriyuki Shiba, Tokyo, and Masayoshi Sato, Kawasaki, all of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed May 14, 1993, Ser. No. 61,005
Claims priority, application Japan, Jul. 29, 1992, 4-222019
Int. Cl.[6] B41F *5/06, 5/10*
U.S. Cl. 101—220 5 Claims



1. A multicolor lithographic rotary press comprising:
- a plurality of printing sections vertically arranged along a traveling line of paper web;
- a plurality of register adjusting means for correcting register errors;
- a paper drawing means for drawing the paper web through the printing sections; and
- a plurality of width adjusting means for adjusting the width of the paper web;
- wherein each of said printing sections further includes at least one divided plate cylinder having a plurality of divided sections, each said divided section being independently moved in at least one of an axial direction and a circumferential direction;
- wherein said paper drawing means is arranged downstream of said printing sections and includes at least one roller member whose circumferential surface is in contact with the paper web to apply a drawing force to the paper web;
- wherein each said width adjusting means is arranged between a respective two sets of said printing sections to apply an adjusting force to the paper web; and
- wherein said register adjusting means is mechanically connected to each of said divided plate cylinders in said printing sections, and includes an adjusting mechanism for actuating said divided sections individually in response to a control unit connected to a sensor for detecting lines and images printed on the paper web by each of said printing sections.

5,383,394

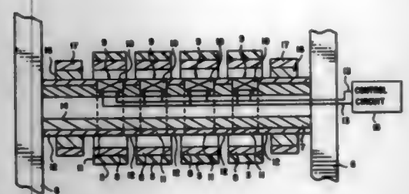
APPARATUS FOR SUPPLYING INK TO PRINTING MACHINE

Masayuki Izume, Kyoto, Japan, assignor to I. mar Planning, Inc., Kyoto, Japan

PCT No. PCT/JP93/00017, § 371 Date Feb. 16, 1994, § 102(e) Date Feb. 16, 1994, PCT Pub. No. WO93/13944, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 8, 1993, Ser. No. 108,731
Claims priority, application Japan, Jan. 10, 1992, 4-003239
Int. Cl.[6] B41F *31/14, 31/38*
U.S. Cl. 101—350 6 Claims

1. An apparatus for supplying ink to a printing machine comprising an ink fountain roller and an ink distributing roller

supported by a frame so as to be parallel to each other, and a plurality of vibrating rollers divided axially of the ink fountain roller and the ink distributing roller and disposed therebetween as arranged at a spacing axially thereof, each of the vibrating rollers being individually positionable alternatively at one of two positions between the ink fountain roller and the ink distributing roller so as to be changeable in the state of contact thereof with the ink fountain roller and the ink distributing roller; characterized in that a fixed shaft fixed to the frame extends through interiors of a plurality of tubular portions of the vibrating rollers with a clearance therebetween in the



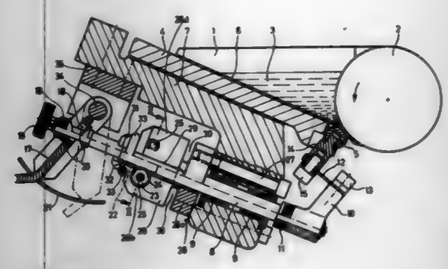
radial direction, a permanent magnet being provided on an inner peripheral portion of each of the vibrating rollers, a magnetic device including an electromagnet being provided on an outer peripheral portion of the fixed shaft inside each vibrating roller, each of the vibrating rollers being individually positionable alternatively at one of the two positions in the state where the permanent magnet of each vibrating roller and the magnetic device of the fixed shaft are individually opposed to each other with a predetermined clearance therebetween in the radial direction by a change-over of the state of current supply to the electromagnet of each magnetic device.

5,383,395

DEVICE FOR ADJUSTING THE SUPPLY OF INK IN THE VARIOUS INK ZONES OF A PRINTING PRESS

Rainer Buschulte, Bad Schönborn, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Dec. 15, 1993, Ser. No. 168,532
Claims priority, application Germany, Dec. 17, 1992, 4242744
Int. Cl.[6] B41F *31/04*
U.S. Cl. 101—365 **18 Claims**



1. A printing press comprising:
a frame;
a plate cylinder rotatably mounted on said frame, the plate cylinder having a printing width;
a plurality of ink applicator rollers for being engaged with said plate cylinder and for applying ink to said plate cylinder;
a plurality of inking rollers for applying ink to said plurality of ink applicator rollers;
said plate cylinder having a printing width for accommodating ink, and said plurality of inking rollers having an inkable width corresponding to the printing width of said plate cylinder;
means for supplying ink to said plurality of inking rollers; and
said means for supplying ink comprising;
means for holding a supply of ink;
a receiving roller for receiving ink from said ink supply means and for distributing the ink to said plurality of inking rollers, said receiving roller having an inkable width corresponding to the inkable width of said plurality of inking rollers;
metering means for determining an amount of ink received by said receiving roller, said metering means comprising a first member disposed adjacent said receiving roller and movable with respect to said receiving roller to define an ink gap between said receiving roller and said first member, said ink gap corresponding to a thickness of ink deposited on said inking roller;
means for finely adjusting said metering means to finely adjust said metering means and precisely determine the amount of ink received by said receiving roller; and
means for overriding said fine adjustment means to coarsely adjust said metering means, said coarse adjusting being substantially coarser than said fine adjusting; said means for finely adjusting comprises:
a threaded rod having threads disposed therearound, said threaded rod defining a longitudinal axis, and said threaded rod being movable in an axial direction along said longitudinal axis, said first member being connected to said threaded rod to move along with said threaded rod;
a second member having threads for engaging said threads of said threaded rod;
means for retaining said threads of said second member in a substantially fixed position; and
means for rotating said threaded rod to move said threaded rod over said second member in said axial direction to move said first member with respect to said receiving roller; and
said means for overriding said fine adjustment means comprises means for releasing said means for retaining to axially displace said threads of said second member in said axial direction;
said second member comprises at least one toothed gear;
said means for retaining comprises clamp means for frictionally engaging said at least one toothed gear and retaining said toothed gear from rotating; and
said means for releasing comprises lever means for applying an axial force on said threaded rod to move said threaded rod in said axial direction, said lever means being configured to apply an axial force sufficient to overcome said frictional engagement and rotate said toothed gear to displace said threads of said second member in said axial direction.

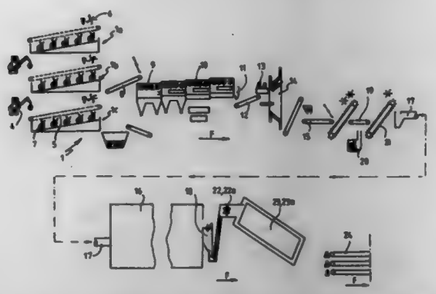
5,383,396

PROCESS AND INSTALLATION FOR THE PREPARATION OF FROZEN VEGETABLES

Luc Darbonne, Milly La Foret, France, assignor to Societe de developpement de l'industrie agro-alimentaire et de la pepiniere europeenne-SODIAPE, Milly La Foret, France

Division of Ser. No. 741,641, Aug. 7, 1991, Pat. No. 5,252,347.
This application Jul. 30, 1993, Ser. No. 99,410
Claims priority, application France, Aug. 8, 1990, 90 10152
Int. Cl.[6] A23N *1/00*
U.S. Cl. 99—537 **15 Claims**

1. An apparatus for the preparation of frozen vegetables, starting from a feed of fresh vegetables in bulk; and a feed of empty packages, comprising from upstream in the downstream direction:
a washing device for washing the fresh vegetables received from an exit of the feed of fresh vegetables and producing washed vegetables, and a drying device arranged to receive the washed vegetables for spin-drying the washed vegetables to produce dried vegetables;
a freezing device arranged to receive dried vegetables for freezing the dried vegetables to a frozen state;
at least one exerting device for exerting on the dried vegetables in the frozen state sufficient mechanical stresses to allow them to be broken into a plurality of fractions;



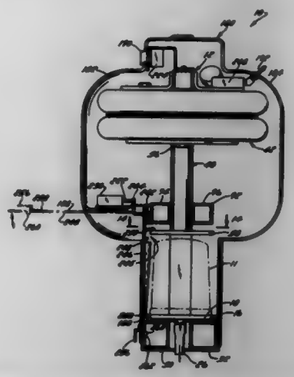
at least one sorting device located at an exit of the exerting device to separate the fractions from one another, the fractions being in the frozen state;
a device for packaging at least one of the fractions which are in the frozen state; and
means for disposing another one of the fractions coming from an exit of the sorting device.

5,383,397

OIL FILTER CRUSHING APPARATUS

Timothy J. Battles, Mequon, and Harold E. Hollnagel, Milwaukee, both of Wis., assignors to KCS Industries Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 57,580, May 6, 1993, Pat. No. 5,337,656. This application Aug. 3, 1993, Ser. No. 100,869
Int. Cl.[6] B30B *15/16, 9/02, 1/38*
U.S. Cl. 100—51 **21 Claims**



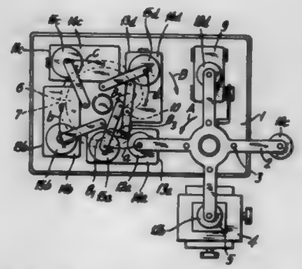
21. An apparatus for crushing oil filters, the apparatus comprising:
a frame having a base for supporting an oil filter or the like on end;
a ram movably mounted within the frame, the ram being configured to move between an unactuated position and an actuated position towards said base;
an air spring mounted within said frame, the air spring including an elastic flex member configured to receive said pressurized gas, wherein upon receipt of said pressurized gas said air spring expands and exerts a force against said ram to move said ram toward said actuated position;
a pressurized gas inlet member connected to the air spring to allow pressurized gas flow into the air spring; and
a pneumatic timer including an air line and a bleed orifice connected between said pressurized gas inlet and said air spring to control the length of time pressurized gas is supplied to said air spring, wherein the timing is controlled by the volume of said air line and the size of said bleed orifice.

5,383,398

MULTIPLE-COLOR TAMPON PRINTING MACHINE

Georg Binnen, Wiesäcker 4, D-7104 Obersulm 1, Germany

Filed Nov. 24, 1992, Ser. No. 980,634
Claims priority, application Germany, Nov. 25, 1991, 9114645[U]; Nov. 5, 1992, 9215067[U]
Int. Cl.[6] B41F *17/00*; B41K *3/54*
U.S. Cl. 101—41 **23 Claims**



1. A multiple-color tampon printing machine comprising a tampon carrier member supporting a plurality of tampons, means for moving the tampon carrier member in a step-by-step rotating movement about a first axis, a stereotype plate carrier member being rotatably mounted about a second axis which extends parallel to the first axis, a plurality of stereotype plates being mounted on the stereotype plate carrier member, each stereotype plate having a surface, further comprising means for cyclically moving the stereotype plate carrier member in a step-by-step rotating movement synchronously with the tampon carrier member, wherein the stereotype plate surface of one of the stereotype plate carrier members, a printing material holding device, and a tampon cleaning device are mounted in a common plane and in a circle around the tampon carrier member at predetermined locations relative to the tampon carrier member, means for raising and lowering the tampon carrier member at predetermined fixed positions of rotation corresponding to the locations of the stereotype plate surface, the tampon printing machine further comprising a cyclically operating inking device for applying printing ink on the surfaces of the stereotype plates, such that, with the printing material being held stationary, during each step of the rotating movement of the tampon carrier member, a first of the tampons picks up a printing image from the one of the stereotype plates after having been inked by the inking device, a second of the tampons preceding the first tampon prints a printing image onto the printing material, and a third of the tampons following the first tampon is cleaned by the tampon-cleaning device until all tampons have printed a printing image on the printing material, wherein the inking device comprises a plurality of ink containers, the number of ink containers corresponding to the number of stereotype plates, each ink container being bell-shaped and open toward the surface of the stereotype plate, each ink container having at the stereotype plate surface a wiping edge, each ink container further comprising a guide mechanism for moving the ink container back and forth on the stereotype plate surface for cyclically applying ink to the stereotype plate surface and for moving the ink container away

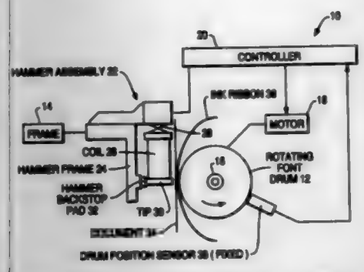
from the stereotype plate surface before one of the tampons picks up the printing image.

5,383,399

ZERO HAMMER ADJUSTMENT DRUM PRINTER CONTROL TECHNIQUE

Trevor J. Germaa, Waterloo, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 27, 1993, Ser. No. 127,027
Int. Cl.[6] B41T *9/36*
U.S. Cl. 101—93.01 **9 Claims**



1. A method for electronically adjusting the firing time of a firing coil used to impact a hammer against a selected character in a printer having characters on a moveable member, with the moveable member being positioned to present a selected character at a printing station in the printer, and with the selected character being printed on a document through impacting the hammer against the document and the selected character when the firing coil is electrically energized, said method comprising the steps of:

(a) energizing the coil for the hammer to be fired; and

(b) monitoring the back electromotive force (EMF) of the coil as the hammer moves towards the selected character to detect when the back EMF reverses direction as a result of the hammer rebounding from impacting against the selected character;

(c) determining an actual flight time of the hammer by measuring an elapsed time between the energizing of the coil and the time when the back EMF reverses direction;

(d) storing in a memory a last predetermined number of flight times for said hammer;

(e) using an average of the last predetermined number of flight times as the flight time when deciding when to energize the coil for the hammer; and

(f) using most recent consecutive outputs from a position sensor relative to timing marks associated with the moveable member to determine a velocity for the moveable member just prior to energizing the coil for the hammer to be fired so as to provide an activation delay prior to energizing the coil, with the velocity being expressed as a length of time between said most recent consecutive outputs, and with the activation delay being determined by subtracting the average flight time from said length of time.

5,383,400

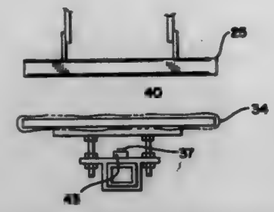
ARTICLE DETECTOR FOR PRINTING PRESS

Aleksander Szyszko, Carol Stream, Ill., assignor to M & R Printing Equipment, Inc., Glen Ellyn, Ill.

Filed Oct. 2, 1990, Ser. No. 591,971
Int. Cl.[6] B41F *15/18*
U.S. Cl. 101—126 **7 Claims**

1. An improved printing press of the type having a plurality of beds having a top surface, means for flooding ink onto a screen placed on the bed, and means for removing excess ink from the screen both located at a printing station of the printing press, wherein the improvement comprises:

means for sensing the presence or absence on the bed of an article to be printed, said sensing means comprising a light source, means for reflecting light generated by said light source, and means for detecting light reflected by said reflecting means, wherein said light reflective means is adapted to reflect light generated by said light source in the absence of an article to be printed on the bed such that



the reflected light is detected by said detection means, said light reflective means being attached to the underside of the bed and said light source and said detection means are positioned generally beneath said reflective means; and

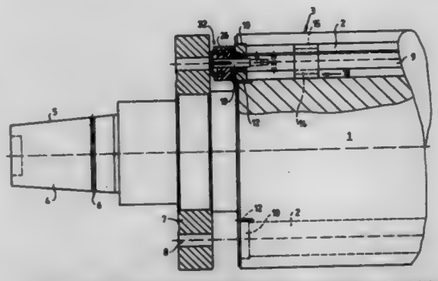
means for preventing printing on the bed at all print stations of the printing press in the absence of any article to be printed on the bed.

5,383,401

ACTUATING DEVICE FOR CLAMPING ARRANGEMENT FOR PRINTING PLATES IN ROTARY PRINTING PRESSES

John M. Brotzman, Freeport, Me., assignor to Heidelberg Druckmaschinen AG, Heidelberg, Germany

Filed Feb. 22, 1994, Ser. No. 200,164
Int. Cl.[6] B41F *21/00*
U.S. Cl. 101—415.1 **14 Claims**



1. An actuating device for clamping arrangements for lithographic plates in rotary printing presses including a printing unit cylinder provided with at least one opening extending in an axial direction, in which actuating means fastened at the ends of the printing unit cylinder allow for tightening the lithographic plates on the surface of the printing unit cylinder and the actuating means are operable by an actuating unit fastened to one or both ends of the printing unit cylinder, characterized in that:

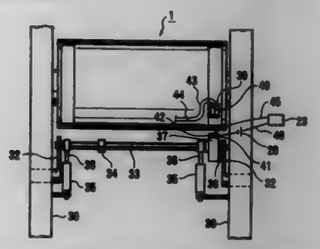
the actuating unit (32) includes an overrunning clutch (30) which determines the rotational position of an actuating shaft (9), said actuating unit being spring-biased and comprising an axially movable component (27).

5,383,402

APPARATUS FOR MOUNTING PLATE ON PLATE CYLINDER

Hiroshi Takano, and Takeshi Aoai, both of Ibaraki, Japan, assignors to Komori Corporation, Tokyo, Japan

Continuation of Ser. No. 5,477, Jan. 15, 1993, abandoned. This application Mar. 10, 1994, Ser. No. 209,607
Claims priority, application Japan, Jan. 17, 1992, 4-025993
Int. Cl.[6] B41F *27/12, 33/00*
U.S. Cl. 101—415.1 **3 Claims**



1. An apparatus for mounting a plate on a plate cylinder, comprising:

a plate lockup device provided in a gap formed in a circumferential surface of a plate cylinder;

detecting means which is electrically rendered conductive by an insertion end of a plate inserted to a gripper surface of said plate lockup device, thereby detecting insertion of the plate, said detecting means being provided to said plate cylinder serving as a rotary member;

indicator means for confirming and indicating insertion of the plate on the basis of an output from said detecting means, said indicator means being provided to a stationary portion of a machine frame; and

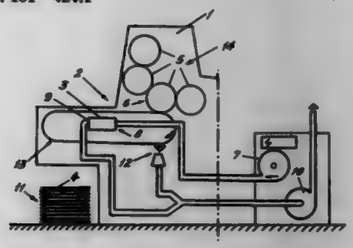
connecting means for connecting said detecting means and said indicating means, said connecting means comprising a pair of contacts formed on the plate cylinder and a pair of contact members provided on the stationary portion of said machine frame, said pair of contact members being brought into tight contact with said pair of contacts when the plate is inserted to said plate lockup device to be gripped.

5,383,403

ARRANGEMENT IN AN INFRARED DRYER FOR A SHEET OFFSET PRESS

Per Nordvall, Transås, Sweden, assignor to IVT Graphics AB, Transås, Sweden

PCT No. PCT/SE91/00334, § 371 Date Nov. 10, 1992, § 102(e) Date Nov. 10, 1992, PCT Pub. No. WO91/17890, PCT Pub. Date Nov. 28, 1991
PCT Filed May 10, 1991, Ser. No. 949,240
Claims priority, application Sweden, May 11, 1990, 9001733
Int. Cl.[6] B41F *35/00*
U.S. Cl. 101—424.1 **1 Claim**



1. An infrared drier for a sheet offset press, the drier being situated under ink rolls of the press, the drier comprising:

an infrared battery having opposed ends, under which printing sheets are arranged to be fed for drying ink fields on the sheets;

an air cooling system for cooling the infrared battery, the cooling system including a supply air fan for blowing air into one end of the infrared battery and an exhaust fan for removing heated air from the other end of the infrared battery; and

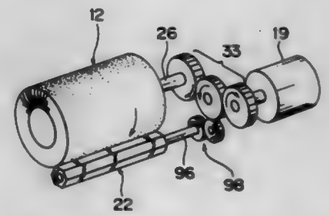
an exhaust station communicating with the exhaust fan for removing heated air from the ink rolls of the press and from a region adjacent the infrared battery.

5,383,404

PRINTING CYLINDER CLEANING APPARATUS

Tsutomu Nambu, Tokyo, Japan, assignor to Nikka Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1994, Ser. No. 236,035
Claims priority, application Japan, Jul. 15, 1993, 5-043657[U]
Int. Cl.[6] B41F *35/02*; B41L *41/02*
U.S. Cl. 101—425 **12 Claims**



12. A printing cylinder cleaning apparatus for cleaning a surface of a printing cylinder by rotationally engaging a brush roll to the cylinder in a printing machine, comprising:

a dry-type brush roll operative in a dry state without using a cleaning liquid, said brush roll having brush fibers planted and opposed to said printing cylinder for movements to and away from a position where said brush fibers contact a surface of said printing cylinder, said brush fibers each being a buckled fiber bent in zigzags;

rotational driving means for rotating said brush roll;

a casing containing said brush roll;

a scraper contained in said casing and supported in biting contact with said brush roll;

rotation transmitting means coupled to said rotational driving means to rotate said scraper; and

a dust collector contained in said casing to receive dust removed by said scraper, and including a dust outlet opening at a portion of said casing and supplied with an evacuating negative pressure, and air blowing means for making an air flow near a bottom of said casing to float and direct dust removed by said brush fibers toward said dust outlet.

5,383,405

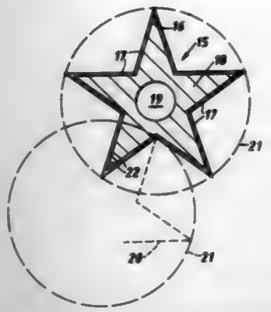
EXPLOSIVE LINES

John R. Everest, 8 Torbrook Close, Bexley Kent DA5 1ES, Great Britain

PCT No. PCT/GB91/01921, § 371 Date Aug. 27, 1993, § 102(e) Date Aug. 27, 1993, PCT Pub. No. WO92/08096, PCT Pub. Date May 14, 1992
PCT Filed Nov. 1, 1991, Ser. No. 50,054
Claims priority, application United Kingdom, Nov. 1, 1990, 9023730
Int. Cl.[6] F42B *3/093*; C06C *5/04*
U.S. Cl. 102—275.8 **8 Claims**

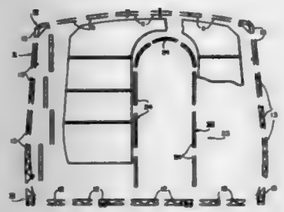
1. An explosive line comprising a pliable impervious outer casing and a filling of explosive material within the casing, the casing being such that the outer surface thereof has a plurality

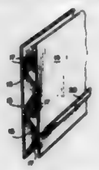
of generally flat faces, and the explosive material within the casing including an internal hollow shaping along its length,



said hollow shaping being surrounded entirely by said explosive material.

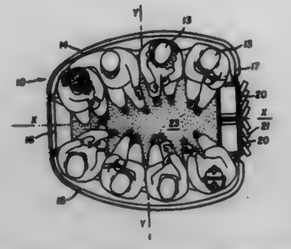
5,383,406
BODY STRUCTURE FOR RAILWAY VEHICLES
Pietro Vasolo; Alberto Magnani, both of Torino; Emilio Debbia, Savigliano; Claudio Guglielsi, Torino; Luigi Ceccio, and Luciano Gerbaudo, both of Savigliano, all of Italy, assignors to Fiat Ferroviaria S.p.A., Torino, Italy
Filed Jul. 23, 1993, Ser. No. 94,979
Claims priority, application Italy, Dec. 29, 1992, TO92 A 001054
Int. Cl.[6] B61D *17/00*
U.S. Cl. 105—401 **8 Claims**





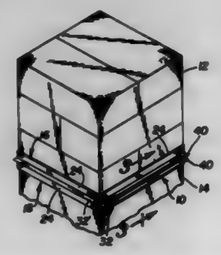
1. Body structure for railway vehicles, comprising a load bearing body-work defining a platform, body sides and a roof of the body, each constituted by hollow structural panels extending longitudinally and substantially continuously over the entire length of the body, each of said panels having respective longitudinal edges and being solely formed by an inner wall, an outer wall and intermediate longitudinal baffles, said baffles having a substantially corrugated disposition with generating lines parallel to one another, said baffles connecting said inner and outer walls to each other, the longitudinal edges of each structural panel being rigidly connected to the corresponding longitudinal edges of the adjacent structural panels so as to define a tubular body, said body structure further comprising inner transverse structural member connected to the body for stabilising said tubular body.

5,383,407
CABLEWAY CABINS FOR TRANSPORT OF PASSENGERS
Jean Souchal, Grenoble, France, assignor to Pomagalski S.A., France
Filed Jul. 28, 1993, Ser. No. 98,037
Claims priority, application France, Aug. 20, 1992, 92 10336
Int. Cl.[6] B61B *7/00*
U.S. Cl. 105—149.1 **7 Claims**



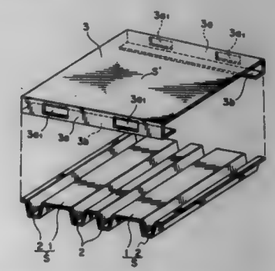
1. A cableway cabin for transport of passengers along a closed loop which includes a cable and a transfer rail extending along a curved section of the closed loop, comprising:
a cabin body including a floor, a roof, and outer walls joining said floor and roof to each other, said outer walls including a front wall, a rear wall, an outer lateral wall and an inner lateral wall, said outer and inner lateral walls joining said front and rear walls to each other;
an arm for connection of the cabin body to the closed loop;
a door provided along said outer lateral wall to allow passage of passengers into the cableway cabin; and
front and rear seating means for seating passengers along said front and rear walls, respectively, said front and rear seating means having seat backs disposed along said front and rear walls, respectively, such that the passengers are seated to face each other;
wherein said cabin body is asymmetrical with respect to a first vertical median plane, said first vertical medium plane bisecting said front and rear walls and extending along the direction of travel of the cableway cabin along the closed loop, said outer lateral wall having a width greater than that of said inner lateral wall, and an area is provided between the front and rear seating means and adjacent the inner lateral wall which is just sufficient for feet of the passengers.

5,383,408
PROTECTIVE SLIP PALLET AND METHOD
Ronald S. Searcy, 2893 W. 132nd Ave., Thornton, Colo. 80241
Filed Oct. 11, 1991, Ser. No. 775,207
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.1 **15 Claims**



1. A protective slip pallet for supporting a box load comprising:
a sheet of material having an upper surface for contacting a boxload stacked on said sheet, said sheet also having an underside surface, said sheet also including at least one protective tab means for folding along an edge of said sheet to protect a side of the box load from being damaged, each tab means having an upper surface for facing a box load side and an underside surface for facing away from the box load side when said tab means is folded up against the box load side; and
tab folding means extending from said underside surface of at least one of said tab means for folding said tab means upwardly against a box load side to protect the box load.

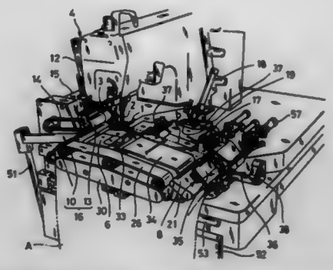
5,383,409
CORRUGATED BOARD PALLET
Hiroshi Hayakawa, 4-42-1, Daisawa, Setagaya-ku, Tokyo, 155, Japan
Filed Jun. 28, 1993, Ser. No. 82,697
Claims priority, application Japan, Jun. 30, 1992, 4-045515[U]
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 **7 Claims**



1. A corrugated board pallet comprising:
a structural reinforcing member constructed from a corrugated board sheet, said structural reinforcing member having an upper surface and a first and a second end;
a plurality of parallel structural reinforcing bends formed in said structural reinforcing member, said plurality of structural reinforcing bends defining channels which extend below said upper surface of said structural reinforcing member said channels extending from said first end to said second end;
a load carrying member made of a corrugated board sheet, said load carrying member connected to said upper surface of said structural reinforcing member and including opposing end portions which are bent to form receiving plates, which entirely cover said first and second of the structural reinforcing bends, and feet which cover at least a portion of a bottom side of the structural reinforcing member and are fixed thereto; and
openings in the receiving plates for receiving forks of a forklift vehicle.

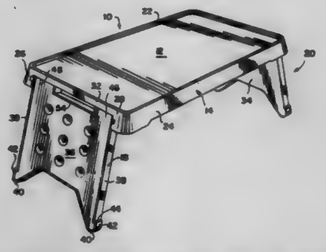
5,383,410
AUTOMATIC APPARATUS FOR HEMMING A TUBULAR WORKPIECE
Hirochika Mukai; Tomoyuki Nakajo, and Toshikito Negoro, all of Osaka, Japan, assignors to Pegasus Sewing Machine Mfg. Co., Ltd., Osaka, Japan
Filed Dec. 22, 1993, Ser. No. 171,736
Claims priority, application Japan, Apr. 21, 1993, 5-094380
Int. Cl.[6] D05B *35/02, 35/10*
U.S. Cl. 112—63 **5 Claims**

5. An automatic hemming apparatus comprising a sewing machine with a sewing bed, support members provided horizontally in front and rear sides of the sewing bed, a workpiece feeder for transporting a tubular workpiece placed over the front and rear support members in a feeding direction along the sewing bed from the front to rear side thereof, an edge detecting sensor for detecting a circular edge of the tubular workpiece, a workpiece guide disposed between the sewing bed and the front support member for folding the circular edge to an inside of the tubular workpiece when the workpiece is transported in the feeding direction and an edge position controller placed in the vicinity of the front support member for controlling a position of the circular edge in a direction across the



feeding direction of the workpiece, said automatic hemming apparatus further comprises a folding confirmation sensor for detecting that the circular edge is folded over by the workpiece guide and a driving member reponsive to a detection signal from the folding confirmation sensor for moving said edge detecting sensor to a folded line detecting position.

5,383,411
COMBINATION TRAY, BED TRAY AND BATHROOM TRAY
Leonard P. Tomaka, #4817 175 E. Delaware Pl., and Larry M. Dreyfus, #4819 175 E. Delaware Pl., both of Chicago, Ill. 60611
Filed Mar. 26, 1993, Ser. No. 37,900
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—129 **11 Claims**



1. A combination serving tray, bed tray, and bathtub tray assembly which comprises:
a tray having a flat surface including longitudinally spaced end portions providing a serving surface for objects to be placed thereon, a support including a planar surface area for each of said end portions, interchangeable pivot and stop means provided at one end of each support and an adjacent end of said tray for permitting swinging of said support from a closed position underneath the tray, in which position the support is substantially parallel to the tray surface, downward into a vertical position and beyond into a slight overcenter, open position, in which position the support is generally upright and is restrained in such position to hold the tray at a predetermined height, and means located on the bottom of said tray for retaining and guiding the supports relative to the tray while in the closed position, but permitting outward movement of the supports relative to the tray surface to provide an additional serving surface and an extended length to permit the tray to be positioned on a support structure equal to the extended length of the tray provided by said supports.

5,383,412

EMBROIDERY SEWING MACHINE

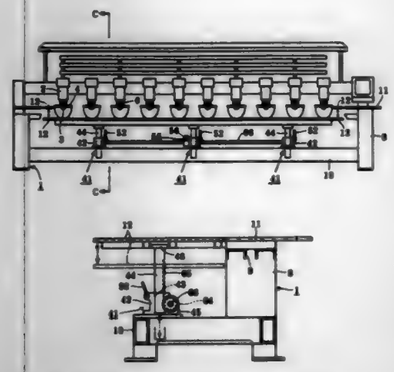
Hisato Sakakibara; Kou Shinoda, and Yoshihiro Murata, all of Ichinomiya, Japan, assignors to Kabushikikaisha Barudan, Ichinomiya, Japan

Filed Mar. 4, 1993, Ser. No. 28,698

Claims priority, application Japan, Mar. 21, 1992, 4-94797; Aug. 28, 1992, 4-253964; Dec. 28, 1992, 4-359815; Dec. 29, 1992, 4-360742

Int. Cl.[6] D05C *3/02*

U.S. Cl. 112—78 **26 Claims**



1. An embroidery sewing machine, comprising:
a machine frame;
at least one cylindrical bed connected to said machine frame;
a fixed table;
at least one embroidery frame adapted to support a first portion of a cloth workpiece in a manner which permits said workpiece to be sewn;
a driving frame mounted on said fixed table for moving said at least one embroidery frame in one plane; and
an up-and-down table disposed beneath said at least one embroidery frame and mounted for movement between an upward position roughly level with said cylindrical bed and at least two downward positions disposed beneath the upward position, said up-and-down table adapted to provide support to a second portion of said cloth workpiece which hangs below said embroidery frame and being provided separately from said fixed table so that said embroidery frame remains in said one plane as said up-and-down table is moved;
means for supporting said up-and-down table at different vertical positions including said upward position and said at least two downward positions; and
means cooperable with said supporting means for selectively holding said up-and-down table at said upward position and said at least two downward positions.

5,383,413

EMBROIDERY PATTERN PROCESSING APPARATUS

Kazutoshi Hayashi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

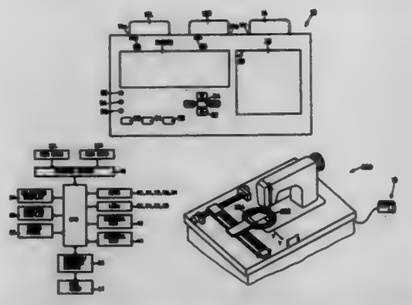
Filed Aug. 10, 1993, Ser. No. 103,661

Claims priority, application Japan, Sep. 7, 1992, 4-238554

Int. Cl.[6] D05B *21/00*; D05C *9/04*

U.S. Cl. 112—121.12 **36 Claims**

22. A sewing system comprising:
(A) an embroidery pattern processing apparatus including:
a reading device which reads a plurality of sets of embroidery data from a plurality of external memories, each of said sets of embroidery data defining an embroidery pattern to be formed by a sewing machine;
a selection display which displays the embroidery pattern of said each set of embroidery data read by said reading device;
a manually operable selecting device for selecting a plurality of embroidery patterns from the embroidery patterns displayed on said selection display, said selecting device including a manually operable pattern-specifying member for specifying one of the embroidery patterns displayed on said selection display so that said selecting device selects



said one embroidery pattern specified by said pattern-specifying member;
a writing device which writes, in an embroidery pattern memory, the sets of embroidery data for the embroidery patterns selected by said selecting device from said external memories; and
(B) a sewing machine which forms the selected embroidery patterns according to the sets of embroidery data written in the embroidery pattern memory.

5,383,414

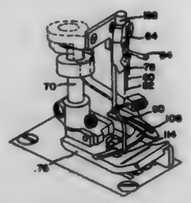
APPARATUS FOR MAKING A THREE NEEDLE STITCH WITH COVER THREAD

Frank F. Winter, Prospect Heights, and James M. Karabe, Jr., Rockford, both of Ill., assignors to Union Special Corporation, Huntley, Ill.

Filed May 17, 1993, Ser. No. 63,096

Int. Cl.[6] D05B *1/20, 57/06*

U.S. Cl. 112—162 **12 Claims**



1. A stitch forming mechanism for forming a flat seam comprising:
three needles reciprocating in a vertical plane and each carrying a needle thread,
a throat plate having a work supporting surface lying in a horizontal plane and having openings for passage of said plurality of needles therethrough,
three loopers disposed beneath said throat plate for cooperation with said needles to form three parallel rows of stitches, each looper carrying a looper thread,
a spreader operating above said throat plate for casting a cover thread into loops, and
an auxiliary spreader connected to and cooperating with said spreader to form said cover thread loops in a configuration for penetration, on both sides of said cover thread loops, by said three reciprocating needles.

5,383,415

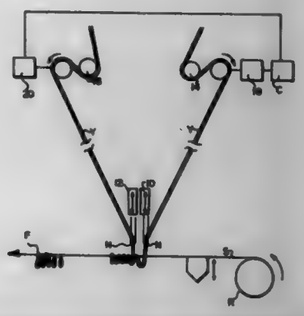
TEXTURED SURFACE EFFECT FABRIC AND METHODS OF MANUFACTURE

William P. Padgett, III, Rome, Ga., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 21, 1992, Ser. No. 995,297

Int. Cl.[6] D05C *15/04*

U.S. Cl. 112—266.2 **8 Claims**



1. A method of manufacturing a tufted pile fabric comprising the steps of:
providing front and back needle bars spaced one from another in a warp direction with each bar carrying a plurality of needles spaced from one another in the weft direction with at least one needle bar movable in a weft direction relative to another of said needle bars;
supplying a plurality of yarns to a single feed roll for each of the front and back needle bars, respectively;
stitching a plurality of yarns into a substrate by operation of the needle bars to form a tufted pile fabric;
controlling yarn feed to said needle bars during stitching to provide a warpwise pattern effect in the tufted pile fabric with immediately adjacent tufts in warpwise rows thereof having different heights relative to the substrate and to one another, including (i) providing a single servomotor for driving each yarn feed roll and (ii) incrementally advancing each said yarn feed roll under control of said servomotor to provide the warpwise pattern effect in the tufted pile fabric; and
controlling the movement of said one needle bar in the weft direction to effect a difference in height between next-adjacent stitches in the weft direction, thereby providing warpwise and weftwise patterning effects.

5,383,416

THREAD CLAMPING AND CUTTING APPARATUS FOR THE REAR OR LOWER THREAD OF AN EMBROIDERING MACHINE

Jürg Heuz, Romanshorn; Max Schreiber; Armin Kobler, both of Arbon, all of Germany; Karl W. Wiest, Götzis, Austria, and Livio Seim, Berg, Germany, assignors to Saurer Sticksysteme, Arbon, Switzerland

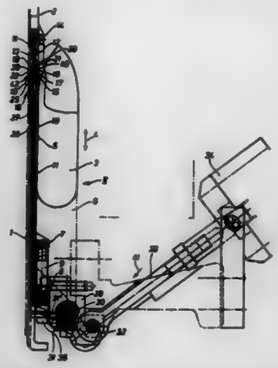
Filed Sep. 17, 1992, Ser. No. 946,280

Claims priority, application Germany, Nov. 8, 1991, 9113900[U]; Feb. 1, 1992, 4202891

Int. Cl.[6] D05B *65/00*

U.S. Cl. 112—298 **12 Claims**

1. A device for clamping and cutting a rear or lower thread in an embroidery machine comprising a stitch plate having a stitch hole, a shuttle guide and a shuttle displaceably mounted in the shuttle guide, the clamping and cutting device comprising a device for clamping said thread and a device for cutting said thread, said clamping and cutting device being located in the region of the stitch hole, the cutting device comprising a cutting blade having a cutting edge for cutting said thread in a cutting direction, the clamping device comprising a clamping gap for clamping the thread located downstream of the cutting blade in the cutting direction, the clamping gap being oriented perpendicular to the cutting blade of the cutting device,



whereby the thread is moved into the clamping gap by means of the cutting device and subsequently cut by said cutting device.

5,383,417

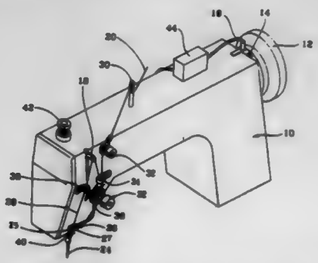
NEEDLE THREAD STITCH FORMATION MONITOR

Paul E. Norrid, 317 St. Andrew's Dr., Franklin, Tenn. 37064

Continuation-in-part of Ser. No. 966,386, Oct. 26, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 197,618

Int. Cl.[6] D05B *51/00*

U.S. Cl. 112—278 **13 Claims**



1. A thread monitoring apparatus for a sewing machine to monitor needle thread feed occurring under the throat plate of a sewing machine to detect skipped stitches including skipped stitches not resulting from broken threads, said sewing machine having operational cycles including a needle thread gathering cycle and a stitch formation cycle including a needle thread loop handling portion, said sewing machine including:
a needle;
thread take-up means mounted on said sewing machine;
a throat plate having a needle thread handling device mounted thereunder;
a source of needle thread disposed for moving in a predetermined path;
a rotatable shaft for imparting synchronous, vertical movement to said needle; and
said monitoring apparatus being mounted above and remote from said throat plate and comprising:
indicating means carried by said shaft for rotation therewith, said indicating means disposed for rotation through a predetermined arcuate distance during the stitch formation cycle, said predetermined arcuate distance being the distance said indicating means rotates during said needle thread loop handling portion of said

stitch formation portion of said operational cycle wherein said thread is disposed for tensioning between said take-up device and the eye of said needle responsive to said take-up device moving upwardly to tension said thread between said thread loop handling device and said take-up device,

detecting means for detecting when said indicating means is rotating through said predetermined distance during said needle thread loop handling portion of said stitch formation cycle and for providing a first electrical signal indicative thereof,

thread position sensing means including a thread sensing device secured to said machine above said throat plate, said thread sensing means being disposed for detecting positional changes of said thread at a position adjacent to said thread sensing device when said thread deviates from said predetermined path responsive to said thread loop handling device not forming a proper stitch although needle thread may be present at said thread loop handling portion of said stitch formation cycle, said thread sensing device disposed for providing a second electrical signal in response to said positional changes of said thread adjacent to said thread sensing device and for providing a third electrical signal during travel of said thread in said predetermined path,

signal generating means for receiving said first and second and third electrical signals and for generating discrete output signals responsive to reception of said first, second, and third electrical signals, and

control circuit means for receiving said discrete output signals for processing thereof, whereby signals indicative of said positional changes of said thread, and therefore indicative of improper thread formation, are outputted therefrom to shut down machine operation or to provide a warning of improper stitch formation.

5,383,418

TOP FEED SYSTEM WITH TOOTHED BELT AND CLUTCH

Charles Block, North Bellmore, and Leon Mintz, Syosset, both of N.Y., assignors to Joseph Galkin Corporation, Hicksville, N.Y.

Continuation of Ser. No. 758,239, Sep. 10, 1991, Pat. No. 5,152,237, which is a continuation of Ser. No. 627,943, Dec. 13, 1990, abandoned, which is a continuation of Ser. No. 515,392, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 409,205, Sep. 19, 1989, abandoned, which is a continuation of Ser. No. 307,759, Feb. 7, 1989, abandoned, which is a continuation of Ser. No. 185,734, Apr. 25, 1988, abandoned, which is a continuation of Ser. No. 18,270, Apr. 24, 1987, abandoned, which is a continuation of Ser. No. 894,188, Aug. 7, 1986, abandoned, which is a continuation of Ser. No. 821,373, Jan. 22, 1986, abandoned, which is a continuation of Ser. No. 773,395, Sep. 6, 1985, abandoned, which is a continuation of Ser. No. 571,257, Jan. 16, 1984, abandoned. This application Sep. 14, 1992, Ser. No. 944,864

Int. Cl.[6] D05B *27/04, 29/06*

U.S. Cl. 112—304 **5 Claims**

1. A material feeding system for cooperative use with a first feed means movably responsive to a first drive means, a sewing area including and immediately adjacent at least one sewing needle wherein sewing is accomplished, the improvement comprising, in combination:

a cloth plate having a working surface plane over which an advancing fabric travels,

a continuous belt formed with a plurality of spaced toothed portions which include gripping surfaces and which are on a side facing toward said working surface plane, and

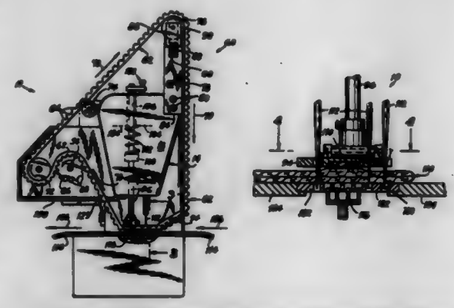
belt drive means responsive to said first drive means for moving said belt along a path,

a throat plate situated adjacent to said cloth plate having at least one hole therein through which said at least one needle passes after passing through said fabric work piece,

a machine drive means,

said belt drive means including clutch means for converting input motion from said first drive means to substantially intermittent rotational output motion of a shaft member in a single rotational drive direction said machine drive means including adjustment means to vary in a predetermined manner said output motion to be substantially synchronized with respect to the motion of said first feed means,

said continuous belt in cooperation with said first feed means comprising second feed means for reliably gripping and



advancing upper and lower surfaces of a fabric work piece into, through and out of said sewing area; and a material stripper having an opening fitted closely around said path of said feed drive means in a location to prevent fouling of said fabric work piece after it leaves said presser means, cloth plate, and throat plate to permit a cooling transfer of any heat that builds up in said belt as a result of the travel of said belt and said fabric work piece through said sewing area, by convection from said belt to the environment about said belt after it leaves the region of said presser means said cloth plate and throat plate.

5,383,419

WATERCRAFT TRIM SYSTEM

Ewell E. Stevens, 2450 Wooded Acres Dr., Sagle, Id. 83860

Filed Oct. 26, 1993, Ser. No. 143,303

Int. Cl.[6] B63B *1/22*

U.S. Cl. 114—286 **46 Claims**



1. A watercraft trim system for mounting upon a vessel having a hull with a stern, bow, port side and starboard side, comprising:

a first trim flap mounted adjacent the stern of the vessel toward the starboard side;

a second trim flap mounted adjacent the stern of the vessel toward the port side;

a first pneumatic operator connected to the first trim flap and the vessel to allow adjustable positioning of the first trim flap relative to the hull;

a second pneumatic operator connected to the second trim flap and the vessel to allow adjustable positioning of the second trim flap relative to the hull;

a first pressure modulator in fluid communication with the first pneumatic operator for controllably varying pressure supplied to the first pneumatic operator; said first pressure modulator comprising a first pressure source connected to controllably supply presaurized gas to the first pneumatic operator, and a controllable first pressure relief valve for controllably relieving pressure supplied to the first pneumatic operator;

a second pressure modulator in fluid communication with the second pneumatic operator for controllably varying pressure supplied to the second pneumatic operator; said second pressure modulator comprising a second pressure source connected to controllably supply pressurized gas to the second pneumatic operator, and a controllable second pressure relief valve for controllably relieving pressure supplied to the second pneumatic operator;

an automatic control system which senses to provide information indicating attitude of the vessel and controls the first and second pressure modulators to automatically adjust attitude of the vessel when moving through the water.

5,383,420

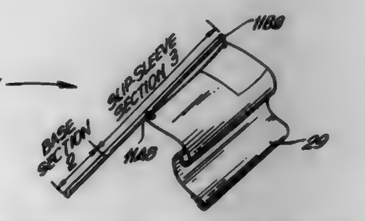
POLE STRUCTURE FOR SUPPORTING A FLAG WITHOUT FURLING THEREABOUT

David Dundorf, 388 Shelbourne Ter., Ridgewood, N.J. 07450

Filed Jun. 16, 1993, Ser. No. 77,790

Int. Cl.[6] G09F *17/00*

U.S. Cl. 116—174 **10 Claims**



1. A flag pole structure having a longitudinal extent and capable of supporting a flag, said flag pole structure comprising:

a pole having a base portion and an upper end portion, said base portion being supportable with respect to a stationary mount;

a first bearing collar, mounted about said pole and between said base portion and said upper end portion of said pole, and having a first cylindrical sleeve bearing surface, a first cylindrical sleeve engaging surface, and a cylindrical flange disposed between said first cylindrical sleeve bearing surface and said cylindrical sleeve engaging surface;

a base collar fixedly mounted about said base portion of said pole and having a second cylindrical sleeve engaging surface;

a second bearing collar fixedly mounted about said pole at said upper end portion of said pole, and having a second cylindrical sleeve bearing surface;

a stationary sleeve of rigid construction, disposed about said base portion of said pole, and having an outer diameter and first and second interior surfaces adapted to engage against said first and second cylindrical sleeve engaging surfaces, respectively, so that said stationary sleeve is stationarily disposed with respect to said pole;

a rotatable sleeve of rigid construction, disposed about said upper end portion of said pole, and having an outer diameter and first and second interior end surfaces adapted to bear against said first and second cylindrical sleeve bearing surfaces, respectively, so that said rotatable sleeve is free to rotate about said upper end portion of said pole, said outer diameter of said rotatable sleeve being substantially equal to said outer diameter of said stationary sleeve along the entire extent of said flag pole structure; and

first and second flag support elements disposed along said rotatable sleeve in a spaced apart relationship, for operably connecting a flag to said rotatable sleeve so that, in response to the flow of wind over said flag, said flag and said rotatable sleeve are free to rotate together about said pole without becoming furled about said pole.

5,383,421

METHOD FOR FORMING BETA-SILICON CARBIDE WHISKERS, SINGLY OR IN A MATRIX, USING AN ORGANOTITANIUM COORDINATION COMPOUND CATALYST

Stephen D. Dunmead, and Kevin E. Howard, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 19, 1993, Ser. No. 64,527

Int. Cl.[6] C30B *1/10*

U.S. Cl. 117—4 **15 Claims**

1. A method for forming beta-silicon carbide whiskers, said method comprising heating a solid silicon source and a carbon source in the presence of a titanium catalyst, wherein said silicon source is silicon nitride powder and said titanium catalyst is selected from the group consisting of organotitanium coordination compounds and titanium-containing materials other than the organotitanium coordination compounds.

5,383,422

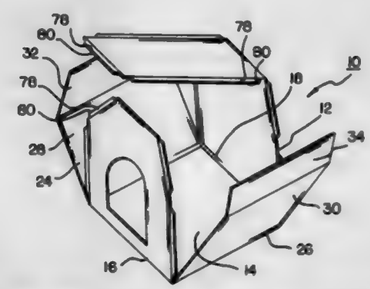
DISPOSABLE CARDBOARD DOGHOUSE OF COLLAPSIBLE CONSTRUCTION

Rosie L. Morris, P.O. Box 793, LaMarque, Tex. 77568

Filed Feb. 16, 1994, Ser. No. 197,333

Int. Cl.[6] A01K *1/03*

U.S. Cl. 119—19 **6 Claims**



2. A disposable doghouse of a collapsible construction comprising:

a single piece of material with a bottom section having front and rear short sides and having long sides and with additional flaps integral with the sides of the bottom section;

the additional flaps including two side flaps integral with the long sides of the bottom section, each side flap consisting of a side section integral with the bottom section at one end and a roof section at the other end, demarcated by fold lines, the side section having lateral edges and inboard and outboard edges and the roof section having lateral edges and inboard and outboard sections;

the additional flaps also including a front flap integral with a front side of the bottom section, comprised of plural sides including two lateral sides perpendicular to the bottom section, integral with diagonal sides set at an angle to the

lateral sides of the front section and integral with a short side, the front flap also including a pre-cut door formed entirely within the front flap; and

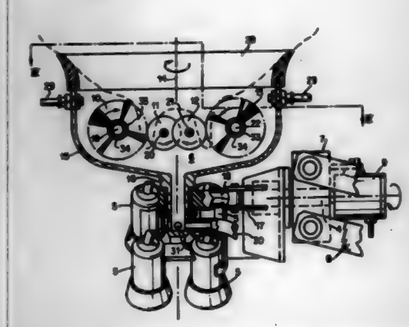
the additional flaps further including a back flap integral with the rear side of the bottom section, consisting of a back section and roof section, the back section consisting of two long sides perpendicular to the bottom section with two intermediate sides set at an angle to the long sides, integral with the roof section.

5,383,423

IMPLEMENT FOR CLEANING TEATS FOR MILK-PRODUCING ANIMALS

Cornelis van der Lely, 7 Bruchemrain, CH-6300 Zug, Netherlands

Filed Jun. 4, 1993, Ser. No. 70,935
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—158 **35 Claims**



1. An apparatus for cleaning teats of milk producing animals, such as cows, which comprises:

a computer, cleaning means controlled by said computer to be received by the animal's udder and teats which are cleaned thereby;

a fluid supply member included in said cleaning means, said supply member providing cleaning fluid received by said udder and teats for cleaning same; and

monitoring means for determining the amount of contamination of the fluid used for cleaning said udder and teats, and for terminating the fluid flowing from said fluid supply member when the contamination of said fluid is determined by said monitoring means to fall below a predetermined amount of contamination.

5,383,424

METHOD AND APPARATUS FOR INCREASING THE QUANTITY AND IMPROVING THE QUALITY OF HATCHLINGS INCUBATED AND HATCHED UNDER ARTIFICIAL CONDITIONS BY EXPOSING THE EGGS TO NATURAL SOUNDS

Matthew R. Foster, Cambridge; Bruce Greenlees, Dundas, and Ian J. H. Duncan, Guelph, all of Canada, assignors to The Marmon Corporation of Canada, Ltd., Canada

Division of Ser. No. 991,683, Dec. 16, 1992, Pat. No. 5,251,574.
This application Jul. 27, 1993, Ser. No. 97,742
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—174 **1 Claim**

1. An apparatus improving the yield of hatchlings from eggs incubated and hatched under artificial conditions comprising:

A. a bird nest in a suitably isolated location which is conducive to natural, undisturbed incubation, hatching and brooding by a maternal hen,

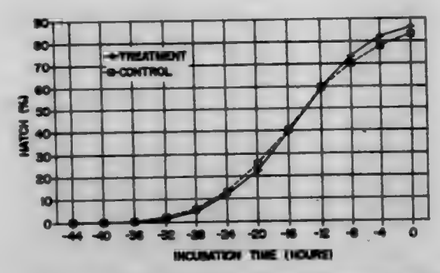
B. a recorder for recording sounds,

C. microphone means located in or above said nest for receiving for recording by said recorder all sounds produced by the hen, during the incubation, hatching and brooding by said maternal hen,

D. recorder control means for causing said recorder to record during portions of two or more periods during said incubation, hatching and brooding by said maternal hen,

E. playback means for playing back said recordings made by said recorder,

F. playback control means for causing said playback means to playback said recording during portions of two or more periods during said incubation, hatching and brooding by



said maternal hen during said entire corresponding periods for eggs incubating and hatching under artificial conditions, and

G. speaker means coupled to said playback means for reproducing said recorded sounds such that said eggs incubating and hatching under artificial conditions are exposed thereto,

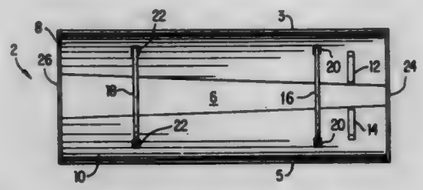
whereby the spread of time over which the hatchling emerge from eggs incubated and hatched under artificial conditions is reduced as is the stress experienced by both the unhatched embryos and by the hatchlings.

5,383,425

ANIMAL RESTRAINT DEVICE

Gary W. Bleacher, Lambertville, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Dec. 31, 1993, Ser. No. 999,492
Int. Cl.[6] A61D *3/00*
U.S. Cl. 119—729 **21 Claims**



1. An animal restraint device comprising:

a longitudinally extending housing defining a pair of opposed lateral sidewalls;

a pair of longitudinally extending stationary elements disposed within said housing, one of said stationary elements being positioned adjacent to one of said lateral sidewalls and the other of said stationary elements being positioned adjacent to said other of said lateral sidewalls, each of said stationary elements having an inwardly sloping surface for defining a channel therebetween; and

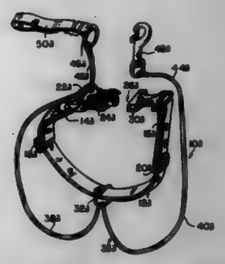
said housing having a bottom surface, said bottom surface being substantially level and oriented along a substantially horizontal plane, at least a portion of said bottom surface defining an opening between said pair of longitudinally extending stationary elements, said opening extending substantially along said entire bottom surface.

5,383,426

NON-CHOKING STRAIN-REDUCING DOG HARNESS

Mark J. Krauss, East Greenwich, R.I., assignor to American Cord & Webbing Co., Inc., Woonsocket, R.I.

Continuation-in-part of Ser. No. 141,115, Oct. 21, 1993, Pat. No. 5,325,819. This application Jan. 18, 1994, Ser. No. 183,171
The portion of the term of this patent subsequent to Jul. 5, 2011, has been disclaimed.
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—793 **10 Claims**



8. A dog harness adapted to be attached to a dog and coupled with a leash comprising:

a split collar having two ends for placing around the neck of a dog and having a front and a rear, a front ring on the front of the collar and a releasable buckle attached to the ends of the collar with a buckle male member attached to one end and a buckle female member attached to the other end, a rear ring means attached to the collar at an end thereof;

a cord passing through the front ring to form a pair of loops to be disposed within the foreleg pits of the dog, the cord having a free end passing through the rear ring means, and a fastener attached to a free end of the cord for releasably attaching to the rear ring means;

whereby when the leash and harness are unstrained the cord loops are loose and do not apply pressure to the foreleg pits of the dog, and when the leash and harness are strained, the cord loops apply pressure to the foreleg pits of the dog causing the dog to react to decrease the pressure.

5,383,427

TWO-CYCLE, AIR-COOLED UNIFLOW GASOLINE ENGINE FOR POWERING A PORTABLE TOOL

Lloyd H. Tuggle; Imack L. Collins, and Jeffrey G. Sadler, all of Shreveport, La., assignors to WCI Outdoor Products, Inc., Cleveland, Ohio

Filed Jul. 19, 1993, Ser. No. 94,604
Int. Cl.[6] F02B *75/06*
U.S. Cl. 123—51 BA **31 Claims**

1. A portable tool having an engine with improved exhaust emissions, comprising:

a work implement supported on a means for mounting;

handles coupled to a means for manually maneuvering the work implement;

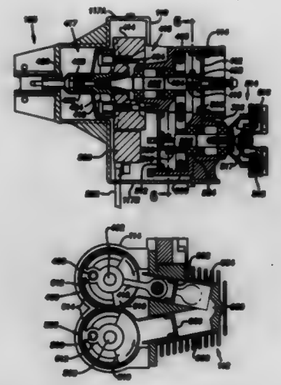
a two-stroke, spark-ignited uniflow engine coupled to the work implement, the engine including;

a first piston mounted for reciprocal, linear movement within a first cylinder, the first cylinder including a plurality of scavenge ports;

a second piston mounted for reciprocal, linear movement within a second cylinder, the second cylinder including an exhaust port;

a common combustion chamber joining the first and second cylinders for establishing a flow of fresh charge and exhaust in the cylinders substantially in one direction from the scavenge port toward the exhaust port; wherein the first and second cylinders and the common combustion chamber form a "U" shape and wherein trapping efficiency of the cylinders is improved;

a common crankcase wherein the first and second pistons are respectively coupled to first and second crankshafts that are coupled to deliver power to the work implement, said first and second crankshafts being coupled for mutual counter-rotation and extending in opposite, but parallel directions;



a muffler mounted to the second cylinder and in fluid communication with the exhaust port for receiving exhaust gases;

a carburetor mounted adjacent the common crankcase for delivering a mixture of fuel and air to the crankcase, the carburetor being generally remote from the muffler; and

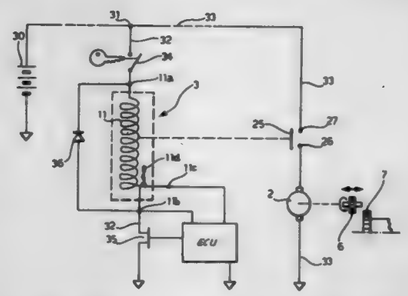
a fan driven by the engine for blowing cooling air past the first and second cylinders for cooling the engine.

5,383,428

STARTER SYSTEM FOR AN INTERNAL COMBUSTION ENGINE AND A SOLENOID USABLE IN THE STARTER SYSTEM

Giancarlo Fasola, Milan, and Mario Bassi, Cassina de' Pecchi, both of Italy, assignors to Industrie Magneti Marelli S.p.A., Milan, Italy

Filed Mar. 22, 1993, Ser. No. 34,275
Claims priority, application Italy, Mar. 24, 1992, TO92A000250
Int. Cl.[6] F02N *11/08*
U.S. Cl. 123—179.3 **14 Claims**



1. A starter system for an internal combustion engine, particularly for motor vehicles, including:

a direct-current voltage supply;

an electric starter motor for rotating a movable pinion;

an electromagnetic operating device including a solenoid and an associated movable core which, as a result of the passage of a current through the solenoid, moves from a rest position to an operating position, giving rise to a corresponding movement of the pinion towards an operating position in which the pinion can be coupled for rotation with a rotary member of the internal combustion engine, and to the supply of current to the electric starter motor;

control means for controlling connection of the electromagnetic operating device to the voltage supply and the passage of the current through the solenoid, the control means including a controlled-conduction device connected in series with the solenoid, and a control unit for driving the controlled-conduction device in a predetermined manner; and

sensor means for measuring the current flowing through the solenoid, wherein the current flowing through the solenoid is indicative of any variation of the speed of movement of the movable core and of the pinion;

the control unit being connected to the sensor means and arranged to drive the controlled-conduction device in such a manner that the current flowing through the solenoid causes the speed of said pinion to be below a predetermined value, when the pinion reaches its operating position.

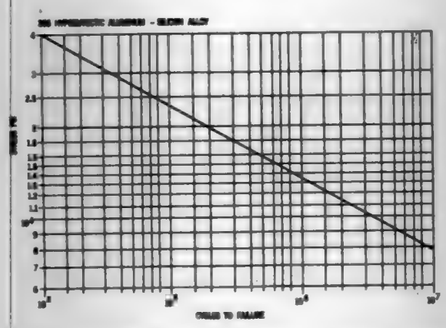
11. A solenoid, particularly for use in an electromagnetic operating device usable in a starter system for the internal combustion engines of motor vehicles, comprising an electrical wire wound substantially in a helix, wherein a portion of the wire is bent so as to be substantially U-shaped and is disposed in such a manner that, in operation, the magnetic flux linkage with the portion is low or essentially zero; the ends of the portion being accessible to enable the measurement, in use, of the voltage drop in the portion, which is indicative of the intensity of a current flowing in the solenoid.

5,383,429

HYPEREUTECTIC ALUMINUM-SILICON ALLOY CONNECTING ROD FOR A TWO-CYCLE INTERNAL COMBUSTION ENGINE

Raymond J. Donahue, Fond du Lac; Terrance M. Cleary, Allenton, and Terry D. Stinson, Oakfield, all of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Feb. 23, 1994, Ser. No. 200,640
Int. Cl.[6] F02F *7/00*; G08G *1/00*
U.S. Cl. 123—197.3 **7 Claims**



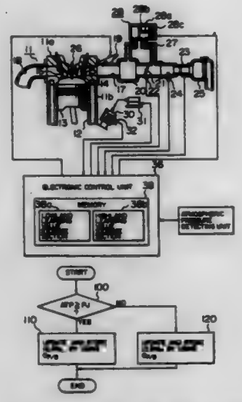
1. In a two-cycle internal combustion engine, an engine block having at least one cylinder, a piston slidable within the cylinder, and a connecting rod connected to said piston, said connecting rod being composed of a hypereutectic aluminum-silicon alloy containing by weight from 12% to 30% silicon, 0.4% to 1.0% magnesium, less than 1.45% iron, less than 0.3% manganese, less than 0.37% copper, and the balance aluminum.

5,383,430

ROTATIONAL SPEED CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Naoyuki Kamiya, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 28, 1993, Ser. No. 98,032
Claims priority, application Japan, Jul. 30, 1992, 4-203938
Int. Cl.[6] F02M *3/00*
U.S. Cl. 123—339 **8 Claims**



1. A rotational speed control apparatus for internal combustion engines, comprising:

atmospheric pressure presumptive computation means for computing a presumed atmospheric pressure indirectly based on a predetermined control value and a detection value which vary with a change of a driving state of an internal combustion engine;

an idling speed control valve provided in a bypass to bypass a throttle valve of said internal combustion engine and capable of controlling an opening degree of said bypass;

a reference control quantity computing means for computing a reference control quantity of said idling speed control valve in accordance with said presumed atmospheric pressure;

feedback correction quantity computing means for computing a feedback correcting quantity for said reference control quantity as a function of a detected rotational speed to control said detected rotational speed at a desired rotational speed which is set in accordance with a temperature of said internal combustion engine;

idling speed control learning value storage means for sequentially updating and storing said feedback correcting quantity as an idling speed control learning value, when said feedback correcting quantity has been stabilized within a predetermined range, said idling speed control learning value storage means including a lowland learning value storage section for storing said idling speed control learning value obtained in said lowland corresponding area as a lowland idling speed control learning value and a highland learning value storage section for storing said idling speed control learning value obtained in said highland corresponding area as a highland idling speed control learning value;

idling speed control valve drive control means for driving said idling speed control valve based on said reference control quantity; said feedback correcting quantity and said idling speed control learning value; means,

high/low pressure area determining means for discriminating between a lowland corresponding area and a highland corresponding area depending on whether or not said presumed atmospheric pressure is equal to or higher than a predetermined atmospheric pressure corresponding to a highland; and

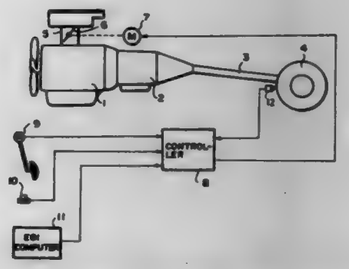
idling speed control learning value selection means for selecting said lowland idling speed control learning value when a result of said discrimination by said high/low pressure area determining means indicates said lowland corresponding area, and for selecting said highland idling speed control learning value when said result of said discrimination by said high/low pressure area determining means indicates said highland corresponding area, respectively, as an idling speed control learning value for use in a next feedback correcting quantity computation by said feedback correction quantity computing means.

5,383,431

ENGINE OUTPUT CHARACTERISTIC CONTROL SYSTEM FOR VEHICLE

Eiji Nishimura, and Akiko Honda, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 2, 1993, Ser. No. 24,778
Claims priority, application Japan, Mar. 6, 1992, 4-49663
Int. Cl.[6] F02D *41/10*
U.S. Cl. 123—399 **16 Claims**



1. An engine output characteristic control system for a vehicle comprising

an accelerator depression detecting means which detects the amount of depression of the accelerator pedal,

an engine output regulating means which controls the output of the engine in response to movement of an accelerator pedal,

an engine output characteristic setting means for setting engine output characteristics which determine a target engine output for a given amount of depression of the accelerator pedal, and

a controller which causes the engine output regulating means to control the engine output to a target engine output determined according to the engine output characteristics on the basis of the amount of depression of the accelerator pedal detected by the accelerator depression detecting means,

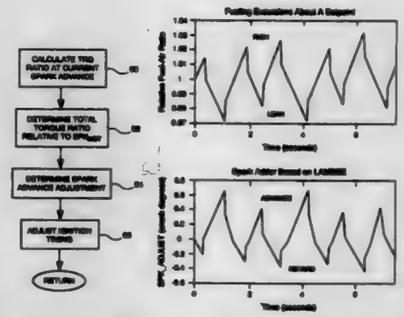
wherein said engine output characteristic setting means sets the engine output characteristics in response to a demand for higher running performance so that the accelerator depression fluctuation rate is minimized, estimates the actual fuel consumption rate, and changes the throttle control gain so that the estimated actual fuel consumption rate converges on a target value.

5,383,432

METHOD AND APPARATUS FOR CONTROLLING IGNITION TIMING BASED ON FUEL-AIR COMPOSITION DURING FUEL EXCURSIONS

Michael J. Cullen, Northville; Thomas S. Gee, Canton; Thomas A. Schubert, Novi; Ross D. Pursifull, Dearborn, and Allan J. Kotwicki, Sterling Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 88,295
Int. Cl.[6] F02M *7/00*
U.S. Cl. 123—406 **18 Claims**



1. For use in a vehicle having an internal combustion engine including an electronic fuel and spark control module, a method of controlling ignition timing during alternating rich and lean excursions of fuel-air composition, the method comprising:

reducing spark advance instantaneously during a rich fuel-air composition excursion; and

increasing spark advance instantaneously during a lean fuel-air composition excursion, the spark advance being reduced and increased such that the engine is controlled to obtain at least one of improved engine efficiency or improved vehicle driveability by reducing engine torque fluctuations associated with the alternating rich and lean fuel-air composition excursions.

5,383,433

MICROPROCESSOR-CONTROLLED INDUCTIVE IGNITION SYSTEM

John A. Florenza, II, Slinger, assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed May 19, 1993, Ser. No. 64,498
Int. Cl.[6] F02P *5/00*
U.S. Cl. 123—416 **16 Claims**

1. An ignition system for an internal combustion engine, comprising:

a primary winding;

a secondary winding in magnetic flux communication with said primary winding and interconnected with an ignition device;

an inductive ignition circuit for operating said engine below a predetermined speed, including:

first means for generating a changing magnetic field and for generating a first switch control signal;

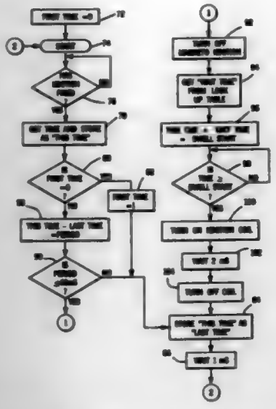
first switch means, interconnected with said primary winding for switching said primary winding on or off in response to said first switch control signal;

a processor-controlled ignition circuit for operating said engine above said predetermined speed, including:

means for sensing a first event functionally related to a first turn off time of said primary winding, and for sensing a second event functionally related to a second turn off time of said primary winding;

means for determining the elapsed time between said first event and said second event;

means for comparing said elapsed time with a predetermined time that is functionally related to said predetermined speed; and



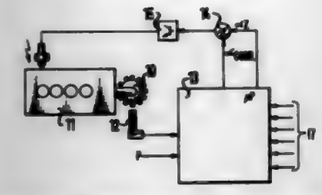
means for causing said primary winding to be turned on if said elapsed time is less than said predetermined time, and for thereafter causing said primary winding to be turned off.

5,383,434

METHOD OF DAMPING ENGINE VIBRATIONS

Karl-Heinz Kugler, and Karlheinz Riedel, both of Vaihingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 6, 1993, Ser. No. 87,918
Claims priority, application Germany, Jul. 8, 1992, 4222298
Int. Cl.[6] F02P *5/06*
U.S. Cl. 123—419 **6 Claims**



1. A method of damping bucking oscillations of a spark ignition engine, comprising the steps of:

measuring engine rotational speed (n);

reducing the torque of said engine at increases in engine rotational speed;

increasing the torque of said engine at decreases in engine rotational speed;

namely by periodically measuring the instantaneous load (p) of said engine;

temporarily storing a first value (p1) representative of said load;

comparing said first value against a second value (p2) representative of a subsequently measured load;

establishing (21) a third value (Δp) representative of the difference between said first and second values;

adjusting (24) the ignition angle as a function of said third value and of said engine rotational speed (n); and

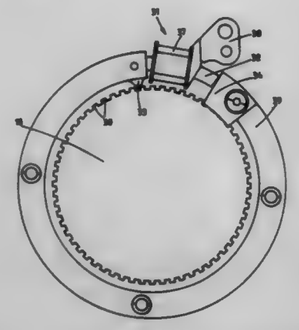
limiting (26) said adjustment of said ignition angle in order to avoid excessive change in engine rotational speed.

5,383,435

FUEL PUMPING APPARATUS

Ronald Phillips, Middlesex, England, assignor to Lucas Industries, England

PCT No. PCT/GB92/01414, § 371 Date Jan. 21, 1994, § 102(e) Date Jan. 21, 1994, PCT Pub. No. WO93/03270, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 31, 1992, Ser. No. 185,782
Claims priority, application United Kingdom, Aug. 6, 1991, 9116918
Int. Cl.[6] F02M *41/14*
U.S. Cl. 123—450 **9 Claims**



1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine comprising a housing (10) a cam actuated pumping plunger (14) slidable in a bore, means (11) for distributing fuel discharged from the bore during successive inward movement of the plunger to a plurality of outlet ports (21) in turn, a plunger actuating mechanism comprising a first part (18) which is mounted for rotation in the housing and which in use is driven in timed relationship with an associated engine to actuate the plungers, and a second part (17) mounted in the housing and being angularly adjustable therein about the axis of rotation of the first part to enable the timing of inward movement of the plunger to be varied and a transducer mounted on said second part and responsive to indicia on said first part characterised in that the transducer comprises first and second pole components (33, 34, 40, 41, 50), a magnet (36, 42, 51) acting to polarize said components to opposite magnetic polarity, the magnet and said components being mounted on said second part (17) and forming a magnetic circuit with said first part, said first part (18) and the one (33, 40, 50) of said components being shaped so that the flux flow in said magnetic circuit varies in a cyclic manner as the first part rotates in use, and a sensing coil (37, 43, 49) mounted on the housing (10) of the apparatus and surrounding a portion of the magnetic circuit to provide the output signal of the transducer.

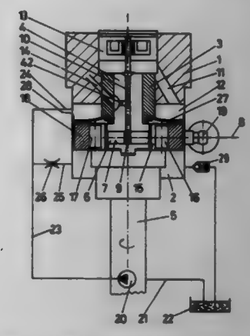
5,383,436

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Wolfgang Fehlmann, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 25, 1994, Ser. No. 201,958
Claims priority, application Germany, May 11, 1993, 4315646
Int. Cl.[6] F02M *41/00*
U.S. Cl. 123—450 **21 Claims**

1. A fuel distributor injection pump for internal combustion engines, having at least one pump piston (6) that is guided in a pump cylinder (7), a pump work chamber (9) on one end of said at least one pump piston and on its other end said at least one pump piston is operatively connected to a cam drive disposed in a cam drive chamber (2) supplied with lubricating fluid, for the execution of pumping and intake strokes; a movable wall (27) that encloses a suction chamber (12), supplied from a fuel source and filled with fuel, in the interior of the fuel injection pump and said movable wall dividing said suction chamber from the cam drive chamber (2), from said suction chamber (12) fuel being delivered to the pump work chamber (9) in an intake stroke of the pump piston (6) and fuel to said suction chamber (12) controlled by a magnet valve (13) that is disposed in a relief conduit (10) of the pump work chamber (9), remaining fuel pumped by the pump piston (6) relieved at an end of a controlled pumping stroke of the pump piston by said magnet valve (13) that is effective for injection, the pump cylinder (7) disposed with its axis in a radial plane (8) of a rotationally driven distributor (4), which is guided in a cylin-



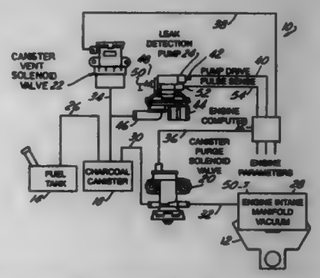
der liner (3) placed in the housing of the fuel injection pump, a cam ring (18) encompassing the distributor (4) disposed in the radial plane (8) in which the pump cylinder (7) is located, a cam race (17) is oriented toward the pump piston (6) and protruding from the pump cylinder (7), between said cam race and the pump piston, a pump tappet (15) is disposed, such that the fuel pressure in the suction chamber (12), during operation of the fuel injection pump, is always greater than the fluid pressure in the cam drive chamber (2), so that the pump piston follows the cam race (17) as a result of the pressure difference between the suction chamber pressure and the cam drive chamber pressure.

5,383,437

INTEGRITY CONFIRMATION OF EVAPORATIVE EMISSION CONTROL SYSTEM AGAINST LEAKAGE

John E. Cook; Murray F. Busato, both of Chatham, Canada; Gary L. Casey, Troy, and John D. Hanson, Bloomfield Hills, both of Mich., assignors to Siemens Automotive Limited, Chatham, Canada

Filed Dec. 23, 1992, Ser. No. 995,484
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—520 **33 Claims**



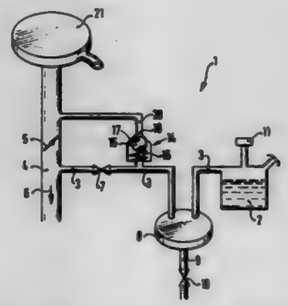
1. An automotive vehicle comprising an internal combustion engine and a fuel system for said engine which comprises a fuel tank for storing volatile liquid fuel for the engine and an evaporative emission control system which comprises a collection canister that in cooperative combination with head space of said tank cooperatively defines an evaporative emission space wherein fuel vapors generated from the volatilization of fuel in said tank are temporarily confined and collected until periodically purged by means of a canister purge valve to an intake manifold of the engine for entrainment with induction flow of combustible mixture into combustion chamber space of the engine and ensuing combustion in said combustion chamber space, valve means via which said evaporative emission space is selectively communicated to atmosphere, said vehicle further comprising means, including pump means, for distinguishing between integrity and non-integrity of said evaporative emission control system, under conditions conducive to obtaining a reliable distinction between such integrity and non-integrity, against leakage of volatile fuel vapor from that portion thereof which includes said tank, said canister, said valve means, and said canister purge valve, characterized in that said pump means comprises a positive displacement reciprocating pump having a mechanism that, while said valve means is closed to prevent communication of said evaporative emission space to atmosphere and while said canister purge valve is closed to prevent communication of said evaporative emission space to said intake manifold, executes reciprocating motion comprising an intake stroke and a compression stroke and that comprises means to intake air during each occurrence of the intake stroke for creating a measured charge volume of air at given pressure and means to compress said measured charge volume of air to pressure greater than such given pressure and force a portion thereof into said evaporative emission space on each occurrence of the compression stroke wherein said means to compress said measured charge volume of air to pressure greater than such given pressure and force a portion thereof into said evaporative emission space on each occurrence of the compression stroke comprises mechanical spring means to which energy is imparted during an intake stroke and which releases energy during a compression stroke.

5,383,438

TANK VENTING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Andreas Blumenstock, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 4, 1994, Ser. No. 177,817
Claims priority, application Germany, Feb. 5, 1993, 4303309
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—520 **9 Claims**



1. A tank venting system for a mixture-compressing internal combustion engine with externally supplied ignition, having an intake conduit (4), an air filter (21) connected with said intake conduit, a throttle valve (5) in said intake conduit downstream of said air filter, a fuel tank (2) that communicates via a tank venting line (3) with the intake conduit (4) downstream of said throttle valve; a tank venting valve (7) disposed in the tank venting line; a negative pressure protection valve (14) which bypasses said throttle valve and protects the tank venting system from an imposition of an inadmissibly pronounced

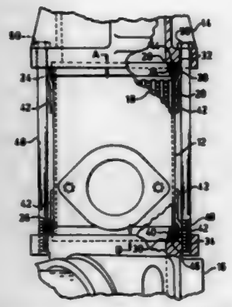
negative pressure, the negative pressure protection valve (14) is connected with said intake conduit upstream of said throttle valve (5) and is preceded by the intake air filter (21) of the engine, so that with the negative pressure protection valve (14) open, a pressure equalization between the atmosphere and the tank venting system (1) takes place by means of the intake air filtered by the intake air filter (21).

5,383,439

AIR INLET AFTERCOOLER MOUNTING AND SEALING SYSTEM

Allyn P. Bock, West Lafayette, Ind., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 26, 1993, Ser. No. 143,206
Int. Cl.[6] F02D *29/04*
U.S. Cl. 123—563 **10 Claims**



1. A heat exchanger mounting and sealing system for use with the air intake of an internal combustion engine, comprising:

first manifold means for receiving pressurized intake air to be distributed to an internal combustion engine;

second manifold means, disposed downstream of said first manifold means, for receiving the pressurized intake air from said first manifold means and distributing the pressurized intake air to the internal combustion engine;

heat exchanger means, disposed between said first manifold means and said second manifold means, for extracting heat from the pressurized intake air, said heat exchanger means including inlet means for receiving the pressurized intake air from said first manifold means and outlet means for exhausting cooled pressurized intake air to said second manifold means;

first resilient sealing means for sealing between said inlet means and said first manifold means;

second resilient sealing means for sealing between said outlet means and said second manifold means; and

clamping means for clamping said first resilient sealing means, said heat exchanger means and said second resilient sealing means between said first manifold means and said second manifold means, said clamping means including means for clamping said first manifold means to said second manifold means at an assembly clamp load independent of the sealing clamp load across said first resilient sealing means and said second resilient sealing means;

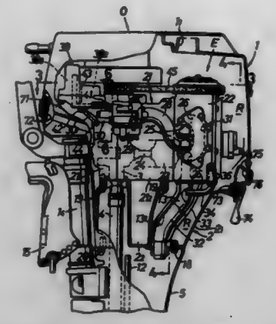
wherein said clamping means includes spacing means for spacing said first manifold means a predetermined distance from said second manifold means, said predetermined distance together with the assembly stack of said first resilient sealing means, said heat exchanger means and said second resilient sealing means defining the sealing clamp load across said first resilient sealing means and said second resilient sealing means.

5,383,440

BLOW-BY GAS CIRCULATING SYSTEM FOR 4-CYCLE ENGINE

Kouji Koishikawa; Motoyoshi Shishido, and Toyokazu Kawasaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 120,961
Claims priority, application Japan, Sep. 16, 1992, 4-246912; Aug. 31, 1993, 5-216362
Int. Cl.[6] F01M *13/04*; B63H *21/26*
U.S. Cl. 123—572 **4 Claims**



1. A blow-by gas circulating system for a 4-cycle engine, comprising an engine block supporting a crankshaft substantially vertically, a carburettor mounted in an intake passage connected to a combustion chamber within a cylinder head coupled to said engine block, an intake device fixed upstream of said carburettor by a fixing means, an oil separating chamber provided in an upper portion of said engine block, and a blow-by gas passage connecting said oil separating chamber and a connecting means provided on said intake device, wherein said intake device is a member substantially cylindrical in section, having, on its lower surface, said connecting means to which an end of the blow-by gas passage is connected in a downwardly directed fashion, and having a mounting flange joined to said carburettor at one end thereof and a downwardly directed opening at the other end thereof, said intake device being fixed at left and right opposite sides of said mounting flange thereof to said carburettor at a position level with or higher than said oil separating chamber by said fixing means.

5,383,441

ADJUSTABLE ARROW REST ASSEMBLY

L. Lawrence Lightcap, Jr., 509 Main St., Peansburg, Pa. 18073

Filed May 27, 1993, Ser. No. 68,640
Int. Cl.[6] F41B *5/22*
U.S. Cl. 124—44.5 **19 Claims**

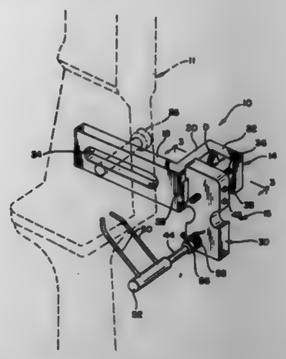
1. An arrow rest apparatus, comprising:

a mounting element selectively mountable to an archery bow, wherein said mounting element includes an abutment surface;

an arrow support assembly having a rigid element extending therefrom, wherein said rigid element extends a predetermined distance from said arrow support assembly; and

connecting means for selectively connecting said arrow support assembly to said mounting element, wherein said arrow support assembly can be linearly and reciprocally moved in relation to said mounting element from a first position where said rigid element abuts against said abutment surface to a second position where said arrow support assembly disengages from said mounting element;

adjustment means for selectively adjusting said predetermined distance that said rigid element extends from said arrow support assembly, thereby adjusting the relative position of said arrow rest assembly and said mounting element when said arrow rest assembly is at said first position, and enabling said arrow support assembly and said mounting element to be oriented in a positional relationship preferred by an archer, said adjustment means being independent of said connecting means wherein said arrow support assembly and said mounting element automatically assume said positional relationship as said arrow support assembly is connected to said mounting element and said rigid element abuts against said abutment surface.

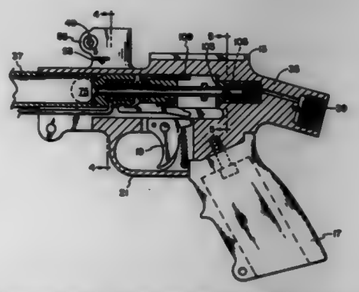


5,383,442

PUMP ACTION MARKING PELLET GUN

Dennis J. Tippmann, 12708 Parent Rd., Fort Wayne, Ind. 46809

Filed Jun. 10, 1992, Ser. No. 896,575
Int. Cl.[6] F41B *11/06, 11/32*
U.S. Cl. 124—76 **19 Claims**



1. A compressed gas powered gun for discharging relatively fragile projectiles and, upon the discharge of one projectile, manually actuable to position another projectile in a location within the gun to be subsequently discharged therefrom comprising:

a receiver;

a compressed gas source fastened to the receiver;

a projectile supply hopper coupled to the receiver and containing a plurality of projectiles, each projectile having a generally circular cross-sectional configuration;

an elongated barrel connected to the receiver through which projectiles may be sequentially discharged;

means including a user actuable trigger for selectively supplying compressed gas from the source to expel a projectile through the barrel;

means for sequentially aligning projectiles from the supply hopper with the barrel including a feed tube formed as an integral portion of the receiver and a slide portion reciprocable within the receiver between a first position to allow a projectile to pass from the feed tube into alignment with the barrel, and a second position to prevent a projectile from passing from the feed tube into alignment with the barrel; and

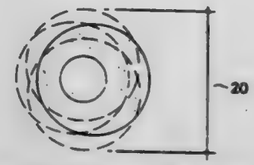
a forestock coupled to the slide portion of the means for sequentially aligning and manually movable along the barrel in the direction of elongation thereof to position a projectile from the feed tube in a location within the gun to be subsequently discharged therefrom.

5,383,443

DIAMOND WIRE SAWS

Marc O. R. G. Buyens, 14 Mann Street, Rieboeckstad, Orange Free State, South Africa

Filed Mar. 31, 1993, Ser. No. 41,229
Claims priority, application South Africa, Mar. 31, 1992, 92/2337
Int. Cl.[6] B28D *1/08*
U.S. Cl. 125—21 **8 Claims**



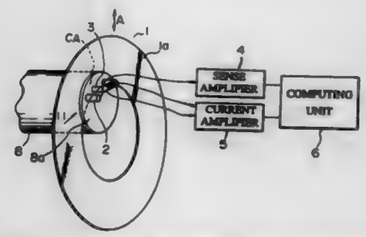
1. A wire saw comprising a single wire and a plurality of beads mounted in spaced apart relationship on the wire, the wire passing through an off-centre hole extending through each bead so that each bead completely surrounds the wire in an eccentric manner, and at least some of the beads being rotationally offset with respect to the other beads.

5,383,444

SLICING MACHINE

Yoshihiko Kimura, Ibaraki, Japan, assignor to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 860,097, Mar. 30, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 54,267
Claims priority, application Japan, Sep. 30, 1991, 3-252576
Int. Cl.[6] B28D *1/04*
U.S. Cl. 125—13.02 **18 Claims**



1. A slicing machine for cutting a workpiece into slices, comprising:

(a) a circular-shaped internal rotary blade made of a ferromagnetic material, having an opening in a center thereof, and having a cutting edge at an inner peripheral margin thereof;

(b) blade rotating means for maintaining tension in said blade and for rotating said blade around a central axis thereof;

(c) work supporting means for supporting said workpiece and for positioning said workpiece inside said opening of said blade;

(d) moving means for moving at least one of said work

supporting means and said blade rotating means to slice said workpiece by said blade;

(e) center blade-position detecting means for generating a signal in response to an amount of displacement, from an initial position, of a cutting area of said blade to be inserted in said workpiece, wherein said center blade-position detecting means is arranged opposite said cutting area of said blade so that a partially cut slice of said workpiece is disposed between said center blade-position detecting means and said cutting area of said blade during a cutting operation of said workpiece;

(f) center magnetic force generating means arranged opposite said cutting are of said blade, for generating a magnetic force to effectuate a displacement of said cutting area of said blade, said center magnetic force generating means being controllable to vary a magnitude of said magnetic force applied to said blade and thus an amount of deformation of said cutting area from said initial position, for generating an initial magnetic force to effectuate an initial deformation of said cutting area of said blade and to position said cutting area in said initial position prior to said cutting operation, wherein said partially cut slice is disposed between said center magnetic force generating means and said cutting area of said blade during said cutting operation; and

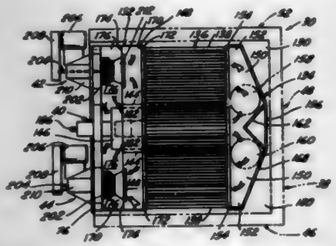
(g) controlling means for controlling said magnetic force generated by said center magnetic force generating means to control said amount of displacement of said cutting area from said initial position, said controlling means being responsive to said signal generated by said center blade-position detecting means to increase said deformation of said blade relative to said initial deformation and thereby magnetically bias said cutting area in a first direction with respect to said initial position of said cutting area when said cutting area is displaced in a second direction opposite said first direction as a result of said cutting operation, said controlling means decreasing said magnetic force generated by said center magnetic force generating means to reduce said deformation of said cutting area relative to said initial deformation and thereby permit said cutting area to move in said second direction opposite said first direction when said cutting edge is displaced in said first direction as a result of said cutting operation.

5,383,445

INDIRECT HEATER

James M. Dixon, Washington, Mich., assignor to Tri-Mark Metal Corporation, Detroit, Mich.

Filed Sep. 27, 1993, Ser. No. 127,251
Int. Cl.[6] F24H 3/02
U.S. Cl. 126—110 R 29 Claims



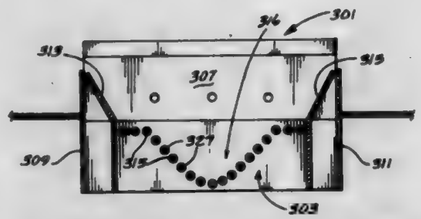
1. A heater for indirectly heating a stream of fluid with a burner comprising: a heat exchanger having a bundle of a plurality of tubes for transferring heat from gases heated by a burner and passing through the interior of said tubes to a stream of fluid passing around the exterior of said tubes, a first header communicating with the interior of said tubes of said bundle adjacent one end thereof, a second header communicating with the interior of said tubes of said bundle adjacent the other end thereof, an imperforate burner tube extending through said first header and said bundle of tubes and communicating with said second header, said burner tube having a first end opening exteriorly of said first header and a second end opening into said second header, an imperfoate burner sleeve telescopically received in said burner tube and having a first end opening exteriorly of said first header and associated with the burner to receive the open flame and products of combustion of the burner in said sleeve, and a second open end of said sleeve communicating with said second header to discharge hot gases heated by the burner, said burner sleeve having a smaller outside diameter than the inside diameter of said burner tube so that they define an annular space between them, and a recirculation fan operably associated with said heat exchanger to recirculate the heated gases through said burner sleeve, said annular space between said burner sleeve and burner tube and the interior of said tubes of said bundle of said heat exchanger.

5,383,446

SELF CONCENTRATING COMBUSTION GRATE FOR PELLET FUELED STOVES

Oliver J. Whitfield, Bow, Wash., assignor to Pyro Industries, Inc., Burlington, Wash.

Continuation-in-part of Ser. No. 805,495, Dec. 11, 1991, Pat. No. 5,295,474, which is a continuation-in-part of Ser. No. 745,204, Aug. 14, 1991, Pat. No. 5,137,010. This application Aug. 9, 1993, Ser. No. 104,218
Int. Cl.[6] F23H 13/00
U.S. Cl. 126—152 R 24 Claims



1. A grate assembly for use in a stove fueled by biomass pellets, the grate assembly comprising:

a plurality of elongate rods positioned in a parallel arrangement, the distance between adjacent rods being sufficient to prevent unburned biomass pellets from falling between adjacent rods; and

a trough defined by the elongate rods for concentrating the unburned biomass pellets.

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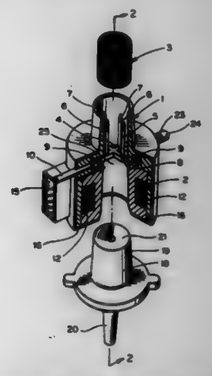
DEVICE FOR WARMING AND MOISTENING GASES HAVING BOTH AN ACTIVE AND PASSIVE HEAT EXCHANGER.

Volker Lang, Zugspitzstrasse 52, Ganting, Germany 8035

PCT No. PCT/EP91/02060, § 371 Date Jun. 6, 1993, § 102(e) Date Jun. 6, 1993, PCT Pub. No. WO92/07601, PCT Pub. Date May 14, 1992
PCT Filed Oct. 31, 1991, Ser. No. 50,145
Claims priority, application Germany, Nov. 2, 1990, 4034969; Aug. 6, 1991, 4126028
Int. Cl.[6] A62B 18/08; A61M 16/00; F23D 11/00; F24J 3/00
U.S. Cl. 128—201.13 7 Claims

1. An apparatus for warming and moistening gases, more particularly breathing gases during artificial respiration, including the combination of at least one passive heat and moisture exchanger and at least one active warming and moistening device, said apparatus comprising:

a housing, a heat and moisture exchanger insert mounted in said housing and operating as a passive heat and moisture exchanger and as an active heat and moisture exchanger, said housing including a first housing part having an annular channel and a second housing part with a cruciform insert arranged between said first housing part and said second housing part, said cruciform insert including channels connected with said annular channel of said first housing part and said cruciform insert having tubelets in communication with said annular channel, said tubelets having open ends communicating with said heat and moisture exchanger insert.

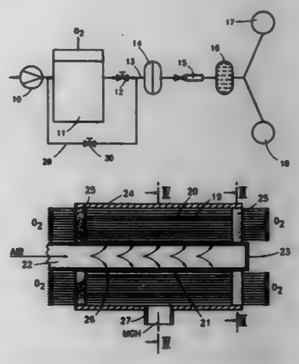


5,383,448

APPARATUS FOR PRODUCING A HYPOXIC GASEOUS MIXTURE USING HOLLOW FIBERS OF POLY-4-METHYL-PENTHENE-1

Elena N. Tkatchouk; Tatiana N. Tsyganova, both of Moscow, Regula Staebler, Vernier, Switzerland, assignors to Tradotec, S.A., Vernier, Switzerland

Division of Ser. No. 898,072, Jun. 12, 1992, Pat. No. 5,207,623. This application May 3, 1993, Ser. No. 56,679
Claims priority, application European Pat. Off., Jun. 12, 1991, 91810445.6
Int. Cl.[6] A62B 7/10, 23/02; B01D 53/22; G05B 1/00
U.S. Cl. 128—205.11 3 Claims



1. Apparatus for producing a hypoxic gaseous mixture comprising:

means for compressing air;

an oxygen-depleting means for removing a portion of oxygen from compressed air produced by said compressing means to produce a hypoxic gas, said oxygen-depleting means comprising an elongate chamber having a first end and a second end, an inlet at said first end, a side outlet, a tube having perforations extending longitudinally of said chamber and communicating with said inlet, a multiplicity of hollow fibers extending longitudinally of said chamber, means for closing said first and second ends of said chamber, means for directing air compressed by said air compressing means into said oxygen-depleting means through said inlet, said compressed air flowing through said inlet, into said tube, and communicating with said hollow fibers through said perforations in said tube, a portion of the oxygen in said compressed air flowing through said perforations and said hollow fibers to the surrounding environment, and leaving hypoxic gas in said tube and chamber, said hypoxic gas flowing out of said oxygen-depleting means through said outlet;

wherein said hollow fibers are more permeable to oxygen than to nitrogen and are made of poly-4-methyl-penthene-1;

means for filtering hypoxic gas produced by said oxygen-depleting means;

means for humidifying hypoxic gas produced by said oxygen-depleting means;

means for delivering hypoxic gas to a patient;

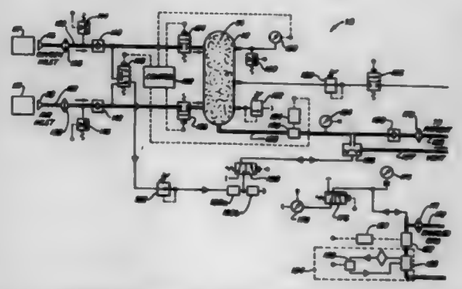
said apparatus further comprising means for alternating delivery of said hypoxic gas and said compressed air to a patient comprising a bypass line connected to said means for directing said compressed air and in parallel to said oxygen-depleting means, said bypass line connected to said outlet of said oxygen-depleting means, said means for alternating delivery of said hypoxic gas and said compressed air including a first valve in said bypass line for controlling flow of compressed air, and a second valve connected to said outlet of said oxygen-depleting means.

5,383,449

VENTILATOR CONTROL SYSTEM FOR MIXING AND DELIVERY OF GAS

Lester Forare, San Diego; Paul Fennema, Fallbrook, and Roger Gagne, Carlsbad, all of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation of Ser. No. 2,690, Jan. 11, 1993, Pat. No. 5,299,568, which is a continuation of Ser. No. 793,242, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 370,018, Jun. 22, 1989, abandoned. This application Sep. 28, 1993, Ser. No. 128,546
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.
Int. Cl.[6] A62B 9/02; G05B 1/00
U.S. Cl. 128—205.11 8 Claims



1. A ventilator system for the intermittent delivery of respiratory gas to a patient comprising:

a rigid, fixed wall pressure containment vessel;

first and second inlet ports connected to said vessel, with each said inlet, port being in fluid communication with corresponding first and second separate sources of first and second respective component gases to be combined in a desired ratio to form said respiratory gas, said component gases having an initial known ratio, with said first and

second inlet ports having associated corresponding first and second inlet valves for individually controlling the flow of each said component gas through said inlet ports to said vessel;

outlet means to connect said vessel in fluid communication with the patient;

sensor means to determine onset and completion of inhalation by the patient, to sense the pressure of said respiratory gas in the containment vessel following said completion of inhalation by of the patient, and to generate a differentiated pressure signal representing a rate of change of pressure in said containment vessel over a period of time;

inlet flow control means to sequentially control the flow of said first component gas into said containment vessel in response to said determination of completion of inhalation by the patient through said first inlet port while said second inlet port is closed, and to control the flow of said second component gas through said second inlet port while said first inlet port is closed, in a desired ratio responsive to the pressure of gas sensed in the containment vessel, including means for determining a desired pressure change value for each said component gas in said containment vessel corresponding to the number of moles of each said component gas required to fill said vessel with said desired ratio of said component gases to a desired fill pressure based upon a total pressure and said initial known ratio of component gases in said vessel, and means for determining an actual ratio of said component gases in said respiratory gas in said vessel based upon sensed changes in pressure of said component gases introduced into said containment vessel; and

outlet flow control means electrically connected to said sensor means to control the flow of said respiratory gas through the outlet means following said onset of inhalation in a predetermined manner responsive to said differentiated pressure signal based upon the rate of change in the pressure of gas sensed in the containment vessel.

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LIQUID SHIELD VISOR FOR A SURGICAL MASK

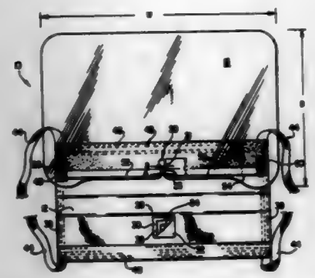
Vance M. Hubbard, and Welton K. Branson, both of Bedford, Tex., assignors to TCNL Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 661,435, Feb. 25, 1991, Pat. No. 5,150,703, which is a continuation of Ser. No. 268,558, Nov. 8, 1988, Pat. No. 5,020,533, which is a continuation-in-part of Ser. No. 104,807, Oct. 2, 1987, Pat. No. 4,920,960. This application May 19, 1992, Ser. No. 886,386

The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.

Int. Cl.[6] A62B *18/08;* **A61F** *11/00, 9/02;* **A41D** *13/00*

U.S. Cl. 128—206.23 **5 Claims**



1. A method for manufacturing a liquid shield to protect the eyes of a wearer, comprising the steps of:

forming a mask dimensioned to fit over the mouth and nose of a wearer;

fixing a malleable strip along an upper edge of said mask;

fixing a plastic visor to the mask only at extreme ends of the mask and the visor to extend over and protect the eyes of the wearer from liquids directed at the eyes from exterior said visor; and

forming a cutout proximate the center of the visor adjacent the mask to facilitate the gradual and approximate conformance of the visor to the face of the wearer and to reduce the likelihood of reflections, said step of forming a cutout comprises forming a notch including a slot and an enlarged portion at the upper end of the slot.

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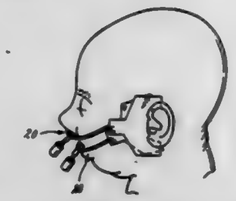
ENDOTRACHEAL TUBE STABILIZATION DEVICE

David M. DeIulio, 9744 SW. 125 Terrace, Miami, Fla. 33176

Filed Jun. 10, 1991, Ser. No. 713,121

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.17 **7 Claims**



1. An apparatus for stabilizing an endotracheal tube inserted in either the nose or mouth of a patient, said stabilization apparatus comprising a wire having opposing first and second terminal ends, means for securing said first and second terminal ends of said wire substantially adjacent the ears of the patient so that said wire spans the patient's face proximate the nose or mouth and is held in place a spaced distance thereabove, and means for securing said wire to said endotracheal tube.

5,383,452

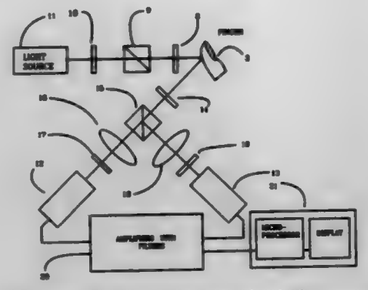
METHOD, APPARATUS AND PROCEDURE FOR NON-INVASIVE MONITORING BLOOD GLUCOSE BY MEASURING THE POLARIZATION RATIO OF BLOOD LUMINESCENCE

Janusz Buchert, 265 Cabrini Blvd., #6E, New York, N.Y. 10040

Filed Jul. 1, 1993, Ser. No. 86,236

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **8 Claims**



2. An instrument for non-invasive blood glucose measurements based on a state of polarization of native luminescence from blood comprising:

a. means for illuminating a blood carrying tissue with a beam of monochromatic, polarized light, and causing the blood in said tissue to emit native luminescence light,

b. means for detecting said emitted native luminescence light from the blood at a predetermined wavelength,

c. means for detecting the state of polarization of the emitted native luminescence light from the blood, and

d. means for correlating the polarization state of the emitted native luminescence light from said blood with blood glucose concentration.

5,383,453

METHOD FOR MANUFACTURING AN OPTICAL PROBE

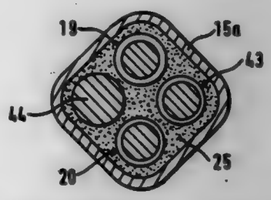
Bernhard Fischer, Leonberg; Martin Wunderling, Boeblingen, and Martin Guenther, Wildberg, all of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 26, 1991, Ser. No. 749,697

Claims priority, application European Pat. Off., Sep. 17, 1990, 90117845

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—634 **12 Claims**



1. A method for manufacturing an optical probe for the invasive measurement of blood parameters in a biologic circulatory system comprising the steps of:

assembling an optical probe comprising a diffusion zone with a dye-containing gel that is optically sensitive to blood parameters, one or more sensing means having an end optically connected to said gel, a tube having an outside and an inside enclosing said sensing means except at said end, and a sheath having an outside and an inside enclosing said end and said gel and in contact with a portion of said tube, said sheath having a looping angle of circumference in relation to each of said sensing means;

deforming said sheath with respect to its original cross-section at least in a region wherein said sheath contacts said tube such that the looping angle of circumference of the sheath in relation to at least one of said sensing means is increased.

5,383,454

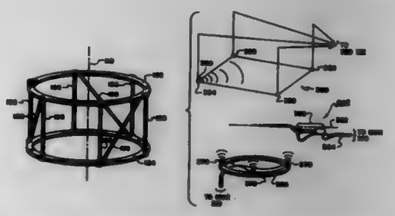
SYSTEM FOR INDICATING THE POSITION OF A SURGICAL PROBE WITHIN A HEAD ON AN IMAGE OF THE HEAD

Richard D. Bucholz, St. Louis, Mo., assignor to St. Louis University, St. Louis, Mo.

Continuation of Ser. No. 600,753, Oct. 19, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 909,097

Int. Cl.[6] A61B *5/103*

U.S. Cl. 128—653.1 **20 Claims**



1. A system for indicating a location within a body of a patient, said system comprising:

reference points means having a position in fixed relation to the body for providing reference points;

means for generating images of the body, said images including reference images corresponding to the reference points means;

reference means having a location outside the body for providing a reference;

a surgical probe including a tip having a position;

first means for determining the position of the tip of the surgical probe relative to the reference means;

second means for determining the position of the reference points means of the body relative to the reference means so that the position of the tip relative to the reference points means of the body is a known position;

means for translating the known position of the tip of the surgical probe to provide a translated position within a coordinate system corresponding to the images of the body; and

means for displaying an image of the body to provide a displayed image which corresponds to the translated position of the tip of the surgical probe.

5,383,455

APPARATUS FOR THE GENERATION OF FOCUSSED ACOUSTIC PRESSURE OR SHOCK WAVES FOR THERAPEUTICAL APPLICATIONS WITH AN X-RAY LOCATING DEVICE

Ulrich Hagelauer, Bottighofen, Germany, assignor to Storz Medical AG, Kreuzlingen, Germany

PCT No. PCT/EP92/00651, § 371 Date Jan. 22, 1992, § 102(e) Date Jan. 22, 1992, PCT Pub. No. WO92/17119, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 24, 1992, Ser. No. 952,706

Claims priority, application Germany, Mar. 24, 1991, 4109598

Int. Cl.[6] A61B *6/00, 17/22*

U.S. Cl. 128—653.1 **30 Claims**



1. An apparatus for destroying a concretion in a patient with focussed pressure waves, the apparatus comprising:

a pressure wave source for generating focussed pressure waves focussed at a pressure wave focal point for destroying a concretion in a patient;

an X-ray source for emitting X-rays;

an X-ray receiver for receiving the X-rays from the X-ray source; and

an aiming device for enabling the concretion to be positioned at the pressure wave focal point, the aiming device being disposed in an X-ray path between the X-ray source and the X-ray receiver for projecting a pattern on the X-ray receiver when the X-ray source emits X-rays, the aiming device having a structure such that the pattern projected on the X-ray receiver is independent of a location of the X-ray source and the X-ray receiver, and such that a line connecting the X-ray source and a center of the pattern projected on the X-ray receiver always extends through a fixed point in space outside the aiming device, the fixed point in space outside the aiming device being located at a predetermined position relative to the pressure wave focal point.

5,383,456

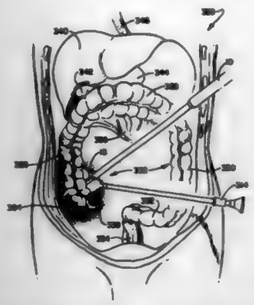
RADIATION-BASED LAPAROSCOPIC METHOD FOR DETERMINING TREATMENT MODALITY

Mark W. Arnold, London, and Marlin O. Thurston, Columbus, both of Ohio, assignors to The Ohio State University Research Foundation, Columbus and Neoprobe Corporation, Dublin, both of Ohio

Continuation-in-part of Ser. No. 992,617, Dec. 18, 1992. This application Mar. 17, 1994, Ser. No. 214,814

Int. Cl.[6] A61B *1/04, 6/00, 10/00*

U.S. Cl. 128—653.1 **6 Claims**



1. A method for determining a treatment modality for neoplastic tissue within the peritoneal cavity of a patient, comprising the steps of:

administering to said patient an effective amount of radiolabelled locator which specifically binds a marker produced by or associated with neoplastic tissue;

permitting said radiolabelled locator to preferentially concentrate at any said marker to an extent increasing a ratio of photon emissions from said marker to background photon emissions in said patient;

after said concentration, insufflating said peritoneal cavity and providing access thereto through a plurality of cavity access cannulas;

providing a real time laparoscopic camera arrangement with a display for visualization of select regions of said cavity by access through one of said cannulas;

providing a laparoscopic radiation detection system including:

a base portion engageable by a surgeon,

an elongate accessing tube fixed to said base portion, dimensioned for slidable insertion through a select one of said cannulas and with a length along a central axis effective to access neoplastic tissue within said peritoneal cavity, having a passageway extending therethrough, and a detector support portion, including a window through which said photon emissions may pass,

a crystal mount having a crystal receiving portion positioned at said detector support portion in adjacency with said window,

a crystal having a rearward surface supported upon said crystal receiving portion to position a forward surface thereof in adjacency with said window and responsive to said photon emissions passing through said window to derive an output;

a transmission assemblage extending from said crystal through said passageway for transmitting said output, and

a signal treatment and control assembly coupled with said transmission assemblage for receiving and electrically treating said output to provide perceptible output signals representing those photon emissions at predetermined count levels above count levels of said background photon emissions;

visually surveying the colon within said cavity by accessing said camera arrangement thereto through a select one of said access cannulas and detecting any visual indication of neoplastic tissue;

carrying out a radionuclide survey of the colon within said cavity by manipulating said elongate accessing tube of said radiation detection system through a select one of said access cannulas to maneuver said window along and in substantial adjacency with said colon under visualization at said camera arrangement display to detect and differentiate tissue at which said locator has concentrated by correlation of said perceptible output signals to the position of said window with respect to said colon;

carrying out a radionuclide survey of lymph nodes within said cavity by manipulating said elongate accessing tube of said radiation detection system through a select one of said cannulas to maneuver said window under visualization at said camera arrangement display into substantial adjacency with said lymph nodes to detect and locate a lymph node or other metastatic disease at which said locator has concentrated by correlation of said perceptible output signals to the position of said window; and

determining the said treatment modality based upon said visual survey of the colon and by said radionuclide surveys of the colon and lymph nodes.

5,383,457

METHOD AND APPARATUS FOR PROCESSING IMAGES

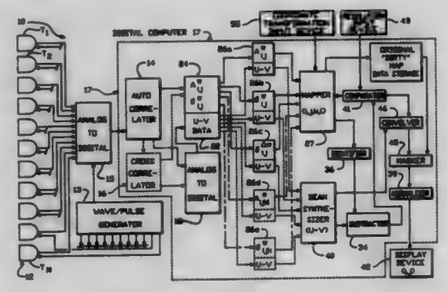
Nathan Cohen, Belmont, Mass., assignor to National Fertility Institute, San Francisco, Calif.

Continuation-in-part of Ser. No. 508,131, Apr. 16, 1990, which is a continuation-in-part of Ser. No. 341,047, Apr. 20, 1987, abandoned. This application Jan. 2, 1992, Ser. No. 815,509

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[6] A61B *8/00;* **G01N** *29/00*

U.S. Cl. 128—660.07 **36 Claims**



1. A method of producing an image of an object having a reduced noise component comprising the steps of:

positioning imaging transducer device for receipt of a sufficient number of image signals from said object to permit an image of said object to be produced;

transforming said image signals into an original data set;

processing said original data set, while storing the values of said original data set in a storage device, by a noise deconvolving process producing a processed data set in which said noise component is reduced as compared to said original data set in said storage device and a processing noise component has been introduced into said processed data set;

thereafter reducing said processing noise component in said processed data set by multiplying the value of individual data in said processed data set by the value of corresponding individual data in said original data set as stored in said storage device; and

thereafter displaying data resulting from said reducing step as an echographic image.

5,383,458

Patent Not Issued For This Number

5,383,459

ULTRASONIC THERAPY APPARATUS

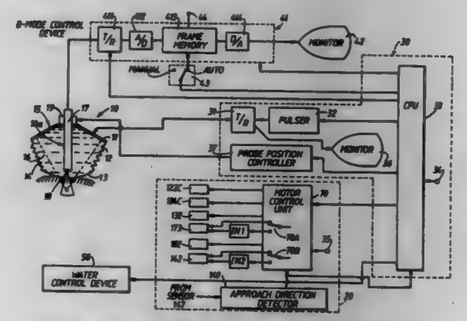
Nobuyuki Iwama; Kiyoshi Okazaki, both of Tochigi, and Yasuhiro Kanaya, Gunma, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 29, 1992, Ser. No. 875,786

Claims priority, application Japan, May 1, 1991, 3-100160; Nov. 15, 1991, 3-300292

Int. Cl.[6] A61B *17/22*

U.S. Cl. 128—660.03 **2 Claims**



1. An ultrasonic treatment apparatus comprising:

an applicator including means for generating an ultrasound treatment wave for an object to be treated;

an ultrasonic probe arranged in the applicator and includes means for acquiring tomographic image information of the object;

an applicator support assembly supporting the applicator such that the applicator is movable in several directions;

means for changing an approach direction of the applicator between a downward approach and an upward approach against the object in order to achieve suitable treatment of the object to be treated;

monitor means for displaying the tomographic image information of the object supplied from the ultrasonic probe;

approach direction indicating means for indicating a condition of the approach direction of the applicator, the approach direction being either a downward approach or an upward approach with respect to the object on the monitor means; and

a turnover switch which is manually operated by an operator wherein said approach direction indicating means is controlled based on said turnover switch.

5,383,460

METHOD AND APPARATUS FOR ULTRASOUND IMAGING AND ATHERECTOMY

Yue-Teh Jang, and Axel F. Brisken, both of Fremont, Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.

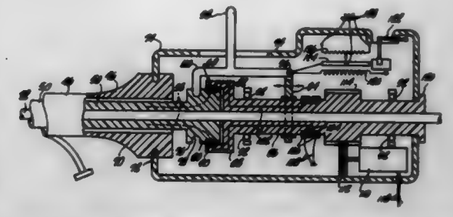
Filed Oct. 5, 1992, Ser. No. 956,622

Int. Cl.[6] A61B *8/12, 17/32*

U.S. Cl. 128—660.03 **4 Claims**

1. In a method for ultrasonic imaging of the type including the step of rotating a transducer within a housing having a window, the improvement comprising the steps of:

detecting when the transducer is at the center of the window; and



displaying an image derived from reflections received by the transducer, when the transducer is at the center of the window.

5,383,461

ULTRASONIC DIAGNOSTIC SYSTEM

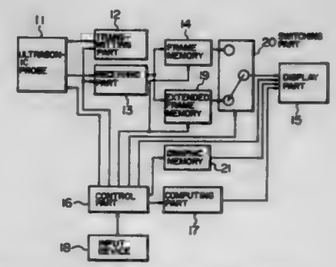
Seiji Aoki; Ryuichi Katou, and Yasuhiro Nakamura, all of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 15, 1993, Ser. No. 151,803

Claims priority, application Japan, Nov. 25, 1992, 4-314807

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.07 **6 Claims**



1. An ultrasonic diagnostic system comprising:

an ultrasonic probe, having a longitudinal axis, for transmitting and receiving ultrasonic waves in (i) a radial plane orthogonal to said longitudinal axis, to obtain a longitudinal section of an object to be examined and (ii) longitudinal planes, including said longitudinal axis, to obtain crosswise sections of said object to be examined;

means, operatively associated with said ultrasonic probe, for transmitting signals to said ultrasonic probe so that said ultrasonic probe transmits said ultrasonic waves;

receiving means, operatively associated with said ultrasonic probe, for receiving signals from said ultrasonic probe corresponding to said ultrasonic waves received by said ultrasonic probe and generating output signals in response thereto;

a frame memory, operatively associated with said receiving means, for converting said output signals from said receiving means into image data representative of tomographic images in each of said radial and longitudinal planes;

an extended memory, operatively associated with said frame memory, for successively storing said image data obtained by said frame memory;

control means, operatively associated with said ultrasonic probe, said frame memory and said extended memory, for controlling said ultrasonic probe to transmit ultrasonic waves in a selected one of said radial plane and said longitudinal planes and for controlling operation of said frame memory and said extended memory;

input means control means, for inputting instructions to said control means to control said ultrasonic probe to transmit said ultrasonic waves in a selected one of said longitudinal planes; and

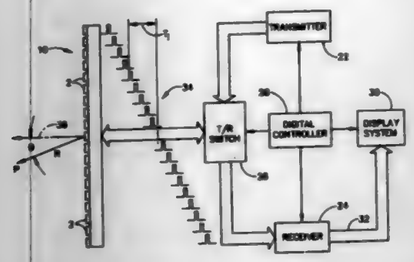
means, operatively associated with said extended memory, for computing areas of said crosswise sections, of said object to be examined, in said tomographic images from said image data stored in said extended memory and for computing a cubage of said object to be examined from the computed areas of said crosswise sections.

5,383,462

WIDEBAND TIME-DOMAIN CROSS-CORRELATION METHOD USING BASEBAND DATA

Anne L. Hall, New Berlin, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 24, 1993, Ser. No. 157,807
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—661.08 **20 Claims**



1. A method for estimating the velocity of flow containing a cloud of ultrasound scatterers, comprising the steps of:

firing a first ultrasound beam at a first instant of time, said first ultrasound beam being directed along a path of propagation through said flow;

detecting the ultrasound reflected by said scatterers to form first through n-th echo signals of said first firing, said first through n-th echo signals being respectively the result of scattering in first through n-th range cells at first through n-th ranges along said path of propagation, where n is a positive integer greater than unity;

quadrature demodulating said first through n-th echo signals of said first firing to form a first set of baseband data;

sampling said first set of baseband data at a predeterimined sample rate;

firing a second ultrasound beam along said path of propagation at a second instant in time, the period of time between said first and second instants of time constituting an interfiring period;

detecting the ultrasound reflected by said scatterers to form first through n-th echo signals of said second firing, said first through n-th echo signals being respectively the result of scattering in said first through n-th range cells;

quadrature demodulating said first through n-th echo signals of said second firing to form a second set of baseband data;

sampling said second set of baseband data at said predetermined sample rate;

selecting sampled baseband data from said first set which corresponds to a first group of adjacent range cells and from said second set which corresponds to a second group of adjacent range cells, said second group being displaced relative to said first group by a lag selected from a predetermined series of lags;

pre-rotating said sampled baseband data selected from said second set to be in phase in the complex plane with said sampled baseband data selected from said first set;

computing the complex correlation function correlating said sampled baseband data selected from said first set with said sampled baseband data selected from said second set for each lag in said predetermined series of lags;

determining which one of said predetermined series of lags corresponds to the maximum correlation between the real parts of said complex correlation function with minimum absolute phase; and

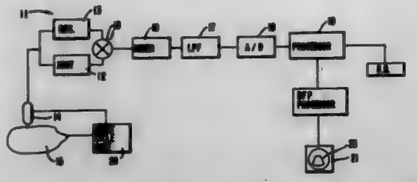
computing an estimated flow velocity as a function of said determined lag value and said interfiring period.

5,383,463

MAPPING OF FLOW PARAMETERS

Zvi Friedman, c/o Elscint Ltd. P.O. Box 550, Haifa 31004, Israel

Filed Aug. 2, 1993, Ser. No. 100,163
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—661.09 **9 Claims**



1. A color Doppler ultrasound diagnostic imaging method that provides blood flow parameters for diagnosing a detected mass, said method comprising the steps of:

selecting a region of interest encompassing said mass; transmitting ultrasound signals along a plurality of beams traversing said selected region of interest;

determining a plurality of point locations to define gated sections along each of said plurality of beams where said beams traverse blood vessels;

applying a train of Doppler pulses along each of said beams individually during a complete heart cycle, then applying a train of Doppler pulses to a subsequent beam, said pulses to be transmitted to said blood vessels at said point locations to impinge on blood in said blood vessels;

receiving spectral Doppler signals from said blood in said blood vessels at said point locations; and

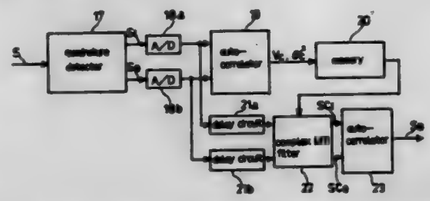
converting said spectral Doppler signals to a selected blood flow parameter.

5,383,464

ULTRASONIC DOPPLER DIAGNOSTIC SYSTEM

Akira Shibe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 26, 1992, Ser. No. 904,647
Int. Cl.[6] A61B 8/06
U.S. Cl. 128—661.09 **8 Claims**



1. An ultrasonic doppler diagnostic system for obtaining blood flow information from a human body under examination by transmitting ultrasound signals into the human body and receiving a received signal reflected therefrom, said ultrasonic doppler diagnostic system comprising:

clutter information detecting means for detecting at least one of a moving velocity signal and its variance of clutter components from said received signal;

clutter information removing means for selectively removing clutter component information, carried in said received signal, from said received signal responsive to said one of said moving velocity signal and said variance obtained in said clutter information detecting means and for producing a clutter-removed, received signal; and

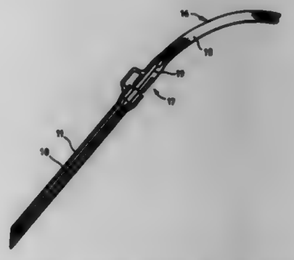
blood flow information detecting means for detecting said blood flow information from said received signal, responsive to said clutter-removed, received signal detected in said clutter information removing means.

5,383,465

ULTRASONIC INSTRUMENT

Jan Lesny, Tarrants, Stoborough, Wareham, Dorset BH20 5AJ, and Joseph D. Aindow, 6 High Street, Sydling, Dorchester, Dorset DT2 9PB, both of Great Britain

PCT No. PCT/GB90/01977, § 371 Date Aug. 11, 1992, § 102(e) Date Aug. 11, 1992, PCT Pub. No. WO91/08706, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 18, 1990, Ser. No. 861,900
Claims priority, application United Kingdom, Dec. 18, 1989, 8928533
Int. Cl.[6] A61B 8/06
U.S. Cl. 128—662.05 **8 Claims**



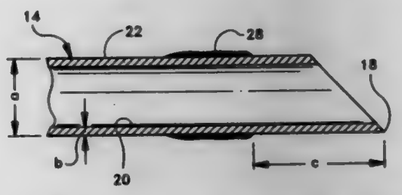
1. An ultrasonic invasive instrument comprising a device having an ultrasonic sensor secured at or near a first end of the device for insertion into the body, and two electrically conductive paths extending form the sensor to a second end of the device for connection to electronic circuitry, the sensor having first and second electrode surfaces, at least one of which surfaces is capable of being electrically connected to a said respective conductive path by an ohmic or capacitive conductive fluid.

5,383,466

INSTRUMENT HAVING ENHANCED ULTRASOUND VISIBILITY

Lawrence Partika, Bridgewater, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 14, 1993, Ser. No. 62,917
Int. Cl.[6] A61B 10/00
U.S. Cl. 128—662.03 **20 Claims**



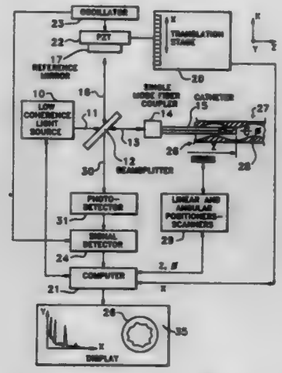
1. A medical instrument for ultrasonic imaging comprising an elongate probe for insertion into a patient and at least one discrete deposit of ultrasonically reflectable material affixed to an exterior surface of the probe, said deposit displaying a substantially smooth outer surface, said ultrasonically reflectable material including a matrix of gas bubbles contained therein for reflecting ultrasonic energy.

5,383,467

GUIDEWIRE CATHETER AND APPARATUS FOR DIAGNOSTIC IMAGING

Michael L. Auer, Chanhassen; Victor I. Chornenky, Edina; Peter T. Fettig, St. Louis Park; Richard C. Gunderson, Maple Grove; Jeffrey A. McBroom, Champlin, and James S. Sharrow, Bloomington, all of Minn., assignors to SpectraScience, Inc., Minnetonka, Minn.

Filed Nov. 18, 1992, Ser. No. 977,985
Int. Cl.[6] A61B 6/00
U.S. Cl. 128—664 **42 Claims**



1. Tissue diagnostic apparatus comprising;

a guidewire/optical fiber catheter having a proximal end and a distal end, and having elongated guidewire means for serving as a guide wire and elongated light conducting optical fiber means for illuminating tissue that is adjacent to the distal end of said guidewire/optical fiber catheter, to thereby produce reflected illumination from the tissue,

a low coherent source of illumination adjacent the proximal end of said guidewire/optical fiber catheter,

beam splitting means intermediate said source of illumination and the proximal end of said guidewire/optical fiber catheter,

said beam splitting means operating to provide a first beam path that extends into the proximal end of said guidewire-/optical fiber catheter, and operating to provide a second beam path extending from said beam splitting means,

said beam splitting means also operating to receive reflected illumination from said distal end of said guidewire/optical fiber catheter, and to direct said reflected illumination along a third beam path extending from said beam splitting means,

a moveable mirror in said second beam path,

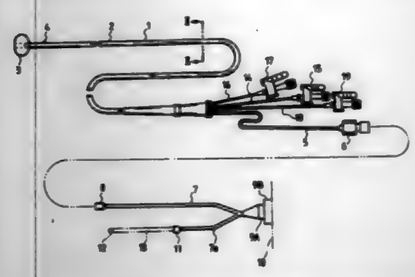
motive means operable to move said movable mirror to a sequence of positions to thereby vary the length of said second beam path, and

illumination interferometer means operable to receive said reflected illumination from said third beam path and to receive illumination from said second beam path, said interferometer means being operable to provide an output comprising an amplitude signal plot as a function of said sequence of positions of said movable mirror.

5,383,468
CARDIAC OUTPUT AND RIGHT VENTRICULAR EJECTION FRACTION SYSTEM

Tadashi Nakayama; Kohei Ono; Shinji Yamamori; Hidehiro Hosaka; Yoji Sato; Shiniti Shioya, all of Tokyo, and Takasuke Imai, Gunma, all of Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 783,930
Claims priority, application Japan, Oct. 31, 1990, 2-295044
Int. Cl.[6] A61B *5/029*
U.S. Cl. 128—713 3 Claims

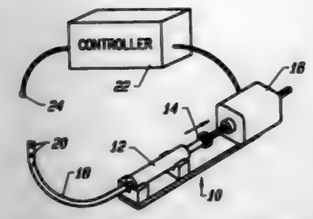


1. A cardiac output and right ventricular ejection fraction system comprising:
a catheter, having an indicator injection portion which is located at the right ventricle, adapted to be inserted intravascularly into a patient and retained therein;
thermal detector means, mounted on a distal portion of said catheter, for detecting the temperature of blood ejected from said right ventricle;
signal processor means for calculating said right ventricular ejection fraction from a thermodilution curve obtained by detecting variation of said blood temperature measured by said thermal detector means when an indicator is inserted into the right ventricle through said catheter; and
data input means for inputting data to said signal processor means;
wherein said data includes an insert length of said catheter.

5,383,469
NEONATAL HEMOLYSIS DETECTION USING END-TIDAL BREATH SAMPLER AND ANALYZER APPARATUS

Hendrik J. Vreman, Los Altos, and David K. Stevenson, Palo Alto, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation of Ser. No. 829,843, Jan. 31, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,142
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—719 1 Claim

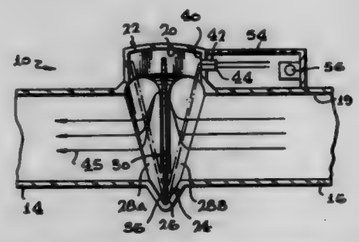


1. A method of detecting neonatal hemolysis without the requirement for laboratory analysis by automatically collecting neonatal end tidal breath for carbon monoxide analysis with minimal human intervention comprising the steps of:
a) providing a syringe and plunger for collecting end tidal breath,
b) connecting one end of a catheter to said syringe and placing another end of said catheter in the nostril of an infant,
c) electronically determining rate of exhalation of breath,
d) automatically incrementally withdrawing said plunger from said syringe and collecting end tidal breath,
e) automatically controlling the withdrawal of said plunger in response to the exhalation of breath, said withdrawal being automatically delayed to near the end tidal breath as determined by exhalation rate, and
f) analyzing said end tidal breath for carbon monoxide content as a measure of neonatal hemolysis.

5,383,470
PORTABLE SPIROMETER

Kenneth Kolbly, Barstow, Calif., assignor to Steve Novak, Burmuda Dunes, Calif.

Filed Sep. 20, 1993, Ser. No. 126,702
Int. Cl.[6] A61B *5/087*
U.S. Cl. 128—725 6 Claims

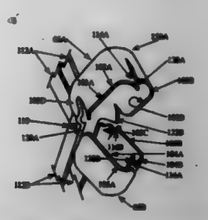


1. A portable spirometer for measuring a respiration rate of a patient comprising:
a housing having a top and bottom and first and second ends, said housing having an air passage extending therethrough said first and second ends;
an air flow sensing plate having top and bottom portions movably mounted within said passage, said plate pivotally mounted by said bottom portion at said bottom of said housing and said top portion of said plate extending to said top of said housing, said plate movable forwards and backwards in response to the directional flow of air in said passage as the patient breaths in and out said first end, said plate sufficiently smaller than said passage such that air can flow in said passage about said plate;
position sensing means mounted within said housing for sensing the position of said air flow sensing plate, said position sensing means providing a first output signal when said air flow sensing plate moves forward and backwards;
circuit means coupled to said sensing means for counting the number of times per unit time said air flow sensing plate moves forward and backwards and providing a second signal proportional to the respiration rate; and
display means coupled to said circuit means and receiving said second output signal for displaying the respiration rate.

5,383,471
SURGICAL BIOPSY INSTRUMENT

David M. Funnell, 19 Westcott Rd., Hopedale, Mass. 01747-1824

Continuation of Ser. No. 866,430, Apr. 10, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 107,331
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—751 16 Claims

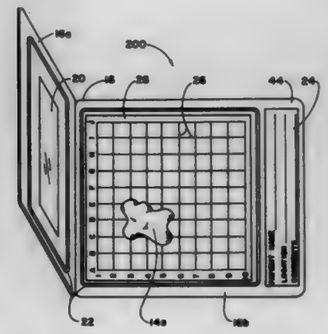


1. An apparatus for use in cutting and removing a selected tissue sample from a tissue mass, said apparatus comprising:
a first jaw having a rear portion and a front portion, and including at least two cutting members, each cutting member having an interior and an exterior surface,
the first cutting member extending from the rear portion of the jaw towards the front portion of the jaw but terminating at a forward short of said front portion, a cutting edge of said first such cutting member being formed on its exterior surface,
the second cutting member being located so that it extends from next adjacent the forward end of said first cutting member towards the front portion of the jaw, a cutting edge of the second cutting member being formed on its interior surface,
said cutting members being disposed in laterally offset relationship to one another with their respective cutting edges being aligned so as to form a substantially continuous first cutting surface without a lateral offset;
a second jaw having a rear portion and a front portion, and including at least a third and a fourth cutting member, each cutting member having an interior and an exterior surface,
the third cutting member extending from the rear portion of the second jaw towards the front portion of the second jaw but terminating at a forward end short of said front portion, a cutting edge of said third cutting member being formed on its interior surface,
the fourth cutting member being located so that it extends from next adjacent the forward end of said third cutting member towards the front portion of the second jaw, a cutting edge of the fourth cutting member being formed on its exterior surface,
said third and fourth cutting members being disposed in laterally offset relationship to one another with their respective cutting edges being aligned so as to form a substantially continuous second cutting surface without a lateral offset; and
means for moving at least one of said jaws towards the other jaw so that the respective cutting edges on said first and second jaws may be repositioned from a first position in which the cutting edges forming the first cutting surface are completely disengaged from the cutting edges forming the second cutting surface, to a second position wherein the cutting edges comprising the first cutting surface are fully in engagement with the cutting edges comprising the second cutting surface, and wherein as said cutting edges are progressively moved from said first into said second position, the exterior surface on the first cutting member of said first jaw confronts and then engages the interior surface on the juxtaposed third cutting member of said second jaw, and the interior surface on the second cutting member of said first jaw confronts and then engages the exterior surface on the juxtaposed fourth cutting member of said second jaw, the engagement of said cutting surfaces proceeding in a progressive fashion from no engagement at an open jaw position to maximum engagement at a closed jaw position, whereby racking of the cutting members is prevented as soon as the cutting edges on the first and third cutting members begin to become engaged while said jaws are still partially open, and the anti-racking ability of said apparatus continues to increase as the second and fourth cutting members are progressively engaged and said jaws are brought towards the closed jaw position.

5,383,472
METHOD AND APPARATUS FOR HANDLING OF BIOPSY TISSUE SPECIMEN

Mark T. Devlin, and Moustapha B. Zerhouni, both of Computerized Imaging Reference Systems, Inc., 2428 Almeda Ave., Suite 212, Norfolk, Va. 23513

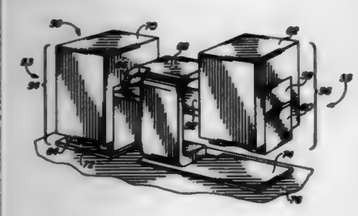
Filed Jul. 22, 1993, Ser. No. 94,749
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—771 18 Claims



1. A specimen handling apparatus comprising:
a closeable first container;
wherein said first container comprises a top member and a bottom member, and further comprising an interior chamber between said top member and said bottom member when said first container is in a closed position;
said top member of said first container having a top surface and a bottom surface and a first edge; and,
said bottom member of said first container having a top surface and a bottom surface and a first edge;
hinge means for attaching said first edge of said top member of said first container to said first edge of said bottom member of said first container;
a specimen blotter member disposed adjacent said top surface of said bottom member of said first container;
said specimen blotter member comprising a fluid-absorbent material and having a substantially flat top surface;
a radiographically opaque grid attached to said top surface of said specimen blotter member;
first sealing means by which said interior chamber of said first container is made liquid-tight when said top member of said first container is in a closed position;
said interior compartment of said first container being adapted to contain a specimen between and in contact with said top surface of said specimen blotter member and said bottom surface of said top member of said first container when said first container is in a closed position;
wherein said top member of said first container comprises either a transparent or a translucent material, such that said grid attached to said top surface of said specimen blotter is visible when said first container is closed;
and wherein said sealing means comprises;

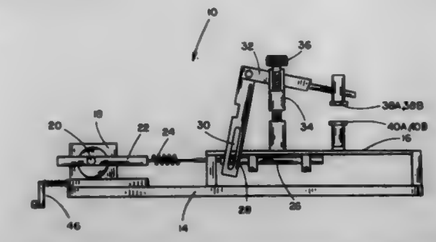
an endless convex ridge on said top surface of said bottom member of said first container;
and an endless concave groove on said bottom surface of said top member of said first container;
wherein said endless convex ridge is adapted to mate with said endless concave groove when said first container is in a closed position;
and wherein said endless convex ridge encircles said specimen blotter member;
and further comprising a resealable, liquid impermeable second container;
an absorbent member disposed within said second container;
and means to introduce pigment into said second container.

5,383,473
RATE-RESPONSIVE IMPLANTABLE STIMULATION DEVICE HAVING A MINIATURE HYBRID-MOUNTABLE ACCELEROMETER-BASED SENSOR AND METHOD OF FABRICATION
Sheldon B. Moberg, Kagel Canyon, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.
Filed May 10, 1993, Ser. No. 59,698
Int. Cl.[6] GO1P 15/09
U.S. Cl. 128—782 **24 Claims**



24. A body motion detecting accelerometer for mounting on a desired flat surface in a pacemaker, the accelerometer comprising:
first and second supports for supporting the accelerometer on the desired flat surface;
a cantilever beam having a fixed end and a free end, the fixed end being secured to the first support, the beam comprising beam material having first and second sides, such sides having electrical characteristics that vary as a function of mechanical stresses induced in the beam material caused by deflections of the beam, said first support being electrically coupled to the first side of the beam material, the first support having a support portion for contact with the desired flat surface, said second support being mechanically coupled to the first support and electrically coupled to the second side of the beam material, the second support having a support portion depending from the first support for contact with the desired flat surface; and
a mass coupled to the free end of the cantilever beam, the beam material being of sufficient rigidity to maintain the mass freely suspended, the beam material deflecting under the load created by the mass resulting from bodily accelerations associated with physical activity.

5,383,474
APPARATUS FOR STUDYING THE EFFECTS OF COMPRESSIVE AND TENSILE BENDING STRAINS ON BONES
Mohammed P. Akhter, and Robert R. Recker, both of Omaha, Nebr., assignors to Creighton University Office of Technology Licensing, Omaha, Nebr.
Filed Oct. 12, 1993, Ser. No. 134,446
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—782 **1 Claim**



1. An apparatus for applying compressive and tensil bending loads on bones comprising:
(a) a frame having a work surface;
(b) driving means for producing rotational force at controllable frequencies mounted to said frame;
(c) conversion means connected to said driving means for converting rotational force to linear force;
(d) articulating arm means having a first end operably connected to said conversion means and a second end pivotably connected to at least a pair of upper pads, each member of the pair of said upper pads being spaced at a sufficient distance from the other member of the pair so that the two members of the pair of said pads provide contact at distinct points on the upper lateral surface of an animal bone located below said upper pair of pads;
(e) at least a pair of lower pads mounted on said work surface such that an animal bone may be placed across and supported by said lower pair of pads at points between the distal and proximal bone ends, each member of the said lower pair of pads being spaced at a sufficient distance from the other member such that the points of contact between the lower surface of the said bone and the members of said lower pads are closer to the proximal and distal ends of the bone than the points of contact between the upper surface of the bone and the members of said upper pair of pads; whereby, activation of the said driving force causes said upper pair of pads to exert compressive bending strain on the lateral surface of said bone and simultaneously causes said lower pair of pads to exert tensile bending strain on the medial surface of said bone.

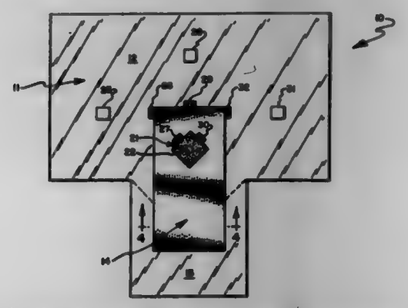
5,383,475
SNORE DETERRING BELT
Ronald J. Austin, 6 Hawkridge Ave., Markham, Ontario, Canada L3P 1V6
Filed Mar. 14, 1994, Ser. No. 209,715
Int. Cl.[6] A61F *5/56, 5/37*
U.S. Cl. 128—848 **8 Claims**



1. A belt to be worn by a person while sleeping for deterring snoring, comprising

an elongated flexible belt member operative for being worn around the chest area of the person, said belt member being moulded of a plastic material,
a plurality of well means integrally formed in a substantially middle portion of said belt member, said well means being located in a single row over said middle portion and being located over the back of the person wearing said belt member, said well means having compressible side walls,
a plurality of upstanding substantially semi-rigid cone members integrally formed in a base portion of each of said well means, said cone members having a height slightly lower than the depth of the side walls of said well means when said side walls are in a normal uncompressed state.

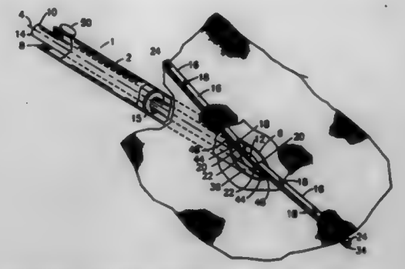
5,383,476
SURGICAL DRAPE FOR SURGERY ON AN EXTREMITY
Clayton Peimer, 651 Lebrun Rd., Amherst, N.Y. 14226, and Susan M. Bohn, 1035 Beach Rd., Apt. D-12, Cheektowaga, N.Y. 14225
Filed May 24, 1994, Ser. No. 248,411
Int. Cl.[6] A61B *19/00, 19/08*
U.S. Cl. 128—849 **5 Claims**



1. A universal drape for extremity surgery, comprising:
a base sheet large enough to cover an entire person of any size having a main area and an extension area;
a longitudinal work surface having upper and lower portions, and having an upper surface, said upper portion positioned on said main area and said lower portion positioned on said extension area, said upper surface being substantially tear resistant and non-slippery;
a dam of elastomeric material having a circular first adjustable opening of substantially one and one-quarter inch diameter at rest, said dam positioned on said work surface upper portion so said distance between said dam and the upper edge of said work surface upper portion is at least twelve inches and any extremity placed through said first opening can rest completely on said work surface, said dam oriented with its longest dimension generally parallel to the longitudinal axis of said work surface;
cord stays positioned on the edge of said dam, the edge of said work surface and said base sheet.

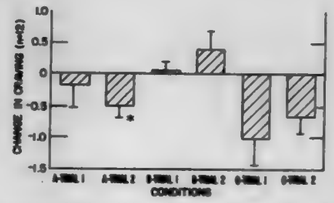
5,383,477
METHOD AND APPARATUS FOR LAPAROSCOPIC REPAIR OF HERNIAS
Ralph A. DeMatteis, 1201 5th Ave. N., Ste. 400, St. Petersburg, Fla. 33705
Continuation of Ser. No. 740,002, Aug. 2, 1991, abandoned. This application Aug. 4, 1993, Ser. No. 101,960
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—898 **10 Claims**

1. A hernia repair mesh applicator for introducing a section of surgical mesh into the abdominal cavity of a hernia patient and positioning such mesh over a hernia defect in the abdominal wall, such applicator comprising:
an outer cylinder having opposed first and second axial ends and having a predefined central axis, said outer cylinder being insertable through a trochar extending into the abdomen of the patient;
an inner member mounted for movement within said outer cylinder generally parallel to said central axis, said inner member including opposed first and second axial ends;
at least one element attached proximal said first end of said inner member, wherein said element is movable between a first position extending generally parallel to said central axis, and a second position extending at an angle to said central axis;
a surgical repair mesh releasably attached to said element;



a releasable attaching means attaching said surgical repair mesh to said element; and
means for selectively moving said element between said first position and said second position;
wherein movement of said element to said second position extends at least a portion of said surgical repair mesh in a generally planar manner, and wherein said releasable attaching means releases said mesh from said element, without destruction of said element, upon movement of said element to said second position, by a user of said applicator, and wherein said surgical repair mesh is spread over a hernia defect to be repaired.

5,383,478
LOW TAR AND LOW NICOTINE CIGARETTE ADAPTED TO PROVIDE ENHANCED SMOKING SATISFACTION
Jed E. Rose, and Frederique M. Behm, both of Durham, N.C., assignors to Duke University, Durham, N.C.
Filed Jan. 12, 1993, Ser. No. 3,569
Int. Cl.[6] A24C *1/18*
U.S. Cl. 131—274 **10 Claims**



1. A method for improving the desirability of smoking a low tar and low nicotine cigarette by simulating respiratory tract sensations in a user substantively similar to those obtained by inhalation of tobacco smoke from a conventional cigarette, said method comprising:
(a) providing an irritant selected from the group consisting of one or more constituents from black and/or red pepper, capsaicinoids, and mixtures of the foregoing in the tobacco of a low tar and low nicotine cigarette in an amount of about 0.10 to 100 milligrams of irritant per gram of tobacco;
(b) igniting said cigarette tobacco; and

(c) inhaling from said cigarette so as to introduce at least a portion of said irritant to the respiratory tract of the user, and reduce craving for a cigarette and discourage compensatory increases in smoking by the user;

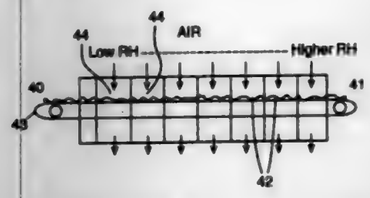
whereby the respiratory tract sensations created by said irritant simulate those created by tobacco smoke from a conventional cigarette so as to increase the satisfaction provided by said cigarette.

5,383,479

PROCESS FOR ADJUSTING THE MOISTURE CONTENT OF TOBACCO

Warren D. Winterson, Midlothian; John C. Crump, III, Richmond, and Eugene B. Fischer, Chester, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,035
Int. Cl.[6] A24B 3/04
U.S. Cl. 131—303 **24 Claims**



1. A process for increasing the moisture content of tobacco which comprises the steps of:

(a) contacting tobacco with an air stream having a relative humidity near the equilibrium conditions of the tobacco, and

(b) increasing the relative humidity of the air stream contacting the tobacco to increase the moisture content of the tobacco in such a manner that the relative humidity of the air stream contacting the tobacco is maintained near the equilibrium conditions of the tobacco until the desired moisture content of the tobacco is achieved.

5,383,480

HAIR WAVING DEVICE AND METHOD

Belinda Clyburn, 13 Hewitt La., Sicklerville, N.J. 08081

Filed Apr. 19, 1994, Ser. No. 228,746
Int. Cl.[6] A45D 7/04, 2/00
U.S. Cl. 132—207 **16 Claims**



1. A method to form parallel waves of hair molded outwardly from a person's scalp and extending across the person's head, the method comprising:

(A) providing a device comprising:

(i) a band comprising a length sufficient to extend in a ring around the person's head,

(ii) means to lengthwise adjustably hold the band around the person's head,

(iii) a plurality of flexible members, each member comprising first and second ends, a length and a continuous lengthwise surface, and

(iv) attachment means to attach the first ends of the members juxtaposed along a first section of the band and attach the second ends of the members juxtaposed along a second section of the band,

wherein positions of the first and second sections along the length of the band, the attachment means and the length of each member place each of the members in an arcuate shape and the members in a parallel relationship with each other to fit the continuous lengthwise surface of each member snugly against the person's head when the band is attached on the person's head,

(B) applying setting means to the person's hair and combing the person's hair in a chosen direction exposing a line of roots of the hair,

(C) placing the device on the person's head by extending the band in a ring around the person's head, while aligning the lengths of the members snugly against the hair and across the top of the head parallel with the line of roots,

(D) with said means holding the band to the head,

(E) applying pressure and pushing a flexible member downwardly and toward the line of roots forming a wave of hair in front of the moving flexible member,

(F) forming a wave of hair in front of each flexible member, and

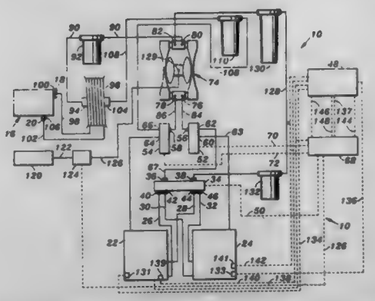
(G) drying the hair to cause the setting means to set the waves in the molded wave shape.

5,383,481

SYSTEM FOR CLEANING INTERNAL COMBUSTION ENGINES

Erik Waelput, 6530 Sattes Dr., Rancho Palos Verdes, Calif. 90274, assignor to Erik Waelput, Rancho Palos Verdes; Peter Hollub, Sunset Beach and Joseph Lentini, Huntington Beach, all of Calif.

Filed Oct. 30, 1992, Ser. No. 969,387
Int. Cl.[6] B08B 9/08
U.S. Cl. 134—56 R **25 Claims**



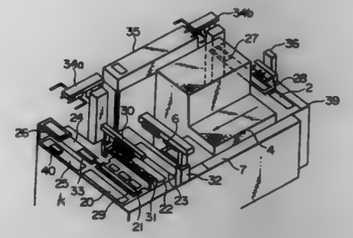
11. Apparatus for cleaning a lubrication system of an internal combustion engine having an oil drain opening and an oil filter opening, the apparatus comprising means for connecting an inlet of the apparatus with the oil drain opening, means for connecting an outlet from the apparatus to the oil filter opening, a first reservoir tank for a first cleaning fluid, a second reservoir tank for a second cleaning fluid, a pump for flushing cleaning fluid to the oil filter opening through a lubrication system of an internal combustion engine and for returning the cleaning fluid from a lubrication system of the engine through the oil drain opening, tank selection valve means, control means for the valve means for alternatively coupling one of the cleaning fluid reservoir tanks through the valve means to the pump to supply cleaning fluid from the first reservoir tank to the oil filter opening and to feed and to receive back from the drain opening in the first reservoir tank substantially all the supplied cleaning fluid while the second reservoir tank is isolated by the valve means from the pump, and wherein in a first cleaning mode the first reservoir tank only is used in a first cleaning cycle and in a second cleaning cycle, and wherein in a second cleaning mode, the first reservoir and the second reservoir are both used such that in the second cleaning mode there is a first cleaning cycle wherein the first reservoir tank is used and in a second cleaning cycle of the second cleaning mode the second reservoir is used.

5,383,482

SEMICONDUCTOR PROCESSING APPARATUS AND MODULE

Yoshiaki Yamada; Junji Iwasaki, and Masashi Ohmori, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1992, Ser. No. 970,471
Claims priority, application Japan, Jul. 30, 1992, 4-204068
Int. Cl.[6] B08B 3/02
U.S. Cl. 134—66 **5 Claims**



4. A semiconductor processing equipment module comprising:

plural pieces of semiconductor processing equipment including ID-card removing means for removing an attached ID card from a case containing semiconductor wafers;

ID-card holding means for holding said removed ID card;

processing means for processing the semiconductor wafers in the case;

a loader for removing semiconductor wafers to be processed from said case and placing said semiconductor wafers in said processing means;

ID-card attaching means for retrieving an ID card corresponding to processed semiconductor wafers from said ID-card holding means and attaching said ID card to said case; and

an unloader for taking processed semiconductor wafers from said processing means and placing said semiconductor wafers into said case;

case stocking means for stocking cases; and

case carrying means for carrying cases between said plural pieces of semiconductor processing equipment and said case stocking means.

5,383,483

ULTRASONIC CLEANING AND DEBURRING APPARATUS

Yoshihide Shibano, 1629-1-12, Oyama-cho, Machida-shi, Tokyo, Japan

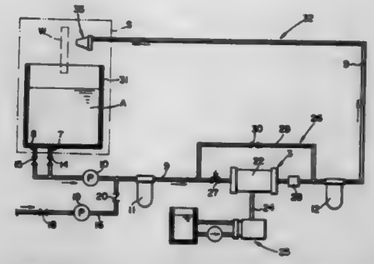
Division of Ser. No. 960,876, Oct. 14, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 181,875
Int. Cl.[6] B08B 3/02
U.S. Cl. 134—111 **3 Claims**

1. An apparatus for ultrasonically cleaning and deburring a workpiece, comprising:

a cleaning station for holding a workpiece therein, said cleaning station having a solution reservoir for storing a cleaning solution;

supply means for supplying the cleaning solution from said solution reservoir to the workpiece held in said cleaning station, said supply means comprising a cleaning solution supply passage extending from said solution reservoir for passage of the cleaning solution therethrough, said supply means further comprising a spray gun connected to a downstream end of said cleaning solution supply passage, said spray gun having a solution retaining chamber therein and a nozzle opening disposed at one end of said chamber, said nozzle opening being positioned in confronting relationship to said workpiece, wherein the cleaning solution is supplied into said chamber and thereafter ejected through said nozzle opening to the workpiece held in said cleaning station, wherein all of said cleaning solution stored in said solution reservoir is circulated through said supply passage and said spray gun to said workpiece and returned to said solution reservoir;

ultrasonic radiating means disposed in said solution retaining chamber of said spray gun for radiating ultrasonic energy into the cleaning solution to cavitate the cleaning solution



in said chamber, whereby a cavitated cleaning solution is supplied to the workpiece through said nozzle opening and the workpiece is cleaned and deburred by the cavitated cleaning solution; and

deaerating means for deaerating the cleaning solution to be supplied to the workpiece, said deaerating means comprising:

a casing disposed in said cleaning solution supply passage for passing the cleaning solution therethrough;

gas separating membranes disposed in said casing and having passages defined therein for passage of the cleaning solution therethrough; and

evacuating means for evacuating said casing to deaerate the cleaning solution flowing through said passage by drawing a gas contained in said cleaning solution through walls of said gas separating membranes.

5,383,484

STATIC MEGASONIC CLEANING SYSTEM FOR CLEANING OBJECTS

Huw K. Thomas, West Chester; Roger A. Carolin, Malvern; Heinrich S. Erhardt, Downingtown, and Christopher F. McConnell, Berwyn, all of Pa., assignors to CFMT, Inc., Wilmington, Del.

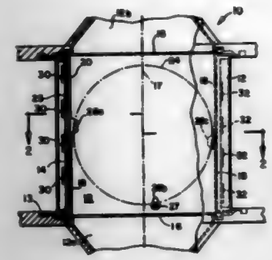
Filed Jul. 16, 1993, Ser. No. 93,116
Int. Cl.[6] B08B 3/12
U.S. Cl. 134—184 **15 Claims**

1. A static megasonic cleaning system for cleaning a plurality of objects having an exterior surface and a major plane, said system comprising:

(a) a cassetteless vessel having an internal cavity for receiving the plurality of objects and for receiving a fluid, said internal cavity being defined by an internal surface; and

(b) an array of megasonic transducers mounted on said vessel outwardly of said internal surface, each transducer emitting a focused beam of megasonic energy into said

cavity, the plurality of transducers being arranged so that the emitted beams extend generally parallel to the major



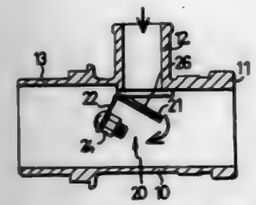
plane of the objects and collectively envelop the entire exterior surface of each object.

5,383,485

VALVE FOR THREE-WAY TUBINGS

Herman Lai, No. 25, Da Jin Street, Taichung, Taiwan, Prov. of China

Filed Dec. 13, 1993, Ser. No. 165,196
Int. Cl.[6] F16K *15/18*
U.S. Cl. 137—102 **1 Claim**



1. A three-way tubing comprising an outlet, an inlet and an opening communicating with one another, said inlet being provided for allowing water flowing through said outlet and being formed between said outlet and said opening and located in an upper portion of said tubing, said opening being arranged for allowing water flowing through said outlet, a pair of slots formed in said tubing, said slots each including a cavity formed therein and facing toward said opening, a valve including a board and a panel solidly secured together at a shaft, said shaft including two ends engaged in said slots via said cavities so as to pivotally support said valve in said tubing, said panel being facing toward said opening and being acted said water flowing from said opening, a weight fixed to said panel, said board being forced to close said inlet when water from said opening acts on said panel, and said board being pushed away from said inlet when water flows through said inlet and when said outlet is closed such that water is caused to flow through said opening.

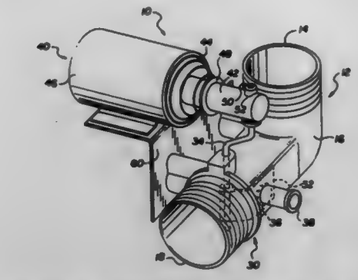
5,383,486

METHOD OF OPERATING A WAREWASHER DRAIN VALVE

Charles E. Warner, Troy; Richard W. Cartwright, Piqua, and James M. Straughn, Troy, all of Ohio, assignors to Premark FEG Corporation, Wilmington, Del.

Filed Apr. 26, 1994, Ser. No. 233,380
Int. Cl.[6] F16K *51/00*
U.S. Cl. 137—15 **9 Claims**

1. A method for operating a warewasher drain valve, the valve being situated in a first pipe having a first end into which fluid flows from a sump and a second end from which fluid flows to a wash apparatus, a drain pipe opening on the first pipe through which fluid is pumped from the warewasher, the valve including a valve cover, operating from a first position closing the drain pipe which permits fluid to flow from the first end of the pipe to the second end of the pipe to a second position in which the drain pipe is open and fluid is pumped



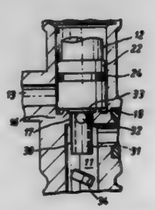
from the first pipe through the drain, the method comprising the step of rapidly reciprocating the valve cover between the first position and the second position to dislodge debris which may become trapped by the valve cover.

5,383,487

REFILL-PREVENTION VALVE

William Hsue, 9Fl.-3, No. 374, Sec. 2, Pa Teh Rd., Taipei, Taiwan, Prov. of China

Filed Mar. 29, 1994, Ser. No. 219,256
Int. Cl.[6] B65D *47/02*
U.S. Cl. 137—315 **5 Claims**



1. A refill-prevention valve comprising:

a housing comprising a first tubular section defining a first passage, a second tubular section axially projecting from the first tubular section and defining a second passage being in fluid communication with the first passage, a third tubular section transversely projecting from the second tubular section and defining a third passage being in fluid communication with the second passage, and an annular flange which is formed on an internal surface of the housing between the first and second tubular sections and which defines an aperture;

an annular plug being received in the aperture defined in the annular flange;

a sleeve defining an aperture, an open end being disposed on the annular plug, a closed end and a disk formed on the closed end; and

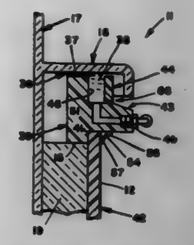
a plunger being slidably received in the second passage for pushing the sleeve into the aperture defined in the annular flange and for pushing the annular plug out of the aperture defined in the annular flange.

5,383,488

APPARATUS AND METHOD FOR PROTECTING CHEMICAL BATH SEALS

Kenneth C. Struven, San Carlos, Calif., assignor to Imtec Products, Inc., Sunnyvale, Calif.

Filed Jan. 31, 1994, Ser. No. 188,817
Int. Cl.[6] F16K *49/00*
U.S. Cl. 137—340 **10 Claims**



1. A method of protecting a chemical bath seal which extends between bath components formed of dissimilar materials and which is subjected to heat and wherein said bath produces fumes that can adversely affect the material of which said seal is formed and wherein said seal is at a location on said bath that is open to the external environment of said bath and which is exposed to said fumes, comprising the steps of directing a flow of liquid to said open location and maintaining a body of said flowing liquid at said open location including maintaining said liquid body in contact with each of said components at said open location to isolate said seal from said external environment.

2. In a chemical bath for immersing articles in hot chemical, said bath having a receptacle for containing said chemical and for receiving said articles and having a casing with a chamber therein in which at least a portion of said receptacle is seated and further having sealing material which contacts both said receptacle and said casing to form an airtight seal therebetween, said sealing material being at a region of said bath that is open to the external environment of said bath, the improvement comprising:

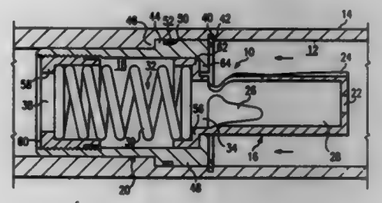
at least one flow conduit extending to said region that is open to the external environment, means for transmitting a flow of liquid to said region through said conduit and seal protection means for forming said liquid at said region into a body of flowing liquid which is exposed to said external enironment at said region of said bath and which isolates said sealing material from said external environment.

5,383,489

FLOW CONTROL VALVE WITH ENHANCED FLOW CONTROL PISTON

Farhad Golestan, Dallas, and John M. Trantham, Irving, both of Tex., assignors to Flow Design, Inc., Dallas, Tex.

Filed Oct. 26, 1993, Ser. No. 143,308
Int. Cl.[6] G05D *7/01*
U.S. Cl. 137—504 **23 Claims**



1. A flow control valve comprising:

a valve body having a longitudinal bore with a first flow passage extending therethrough;

a piston slidably disposed within the bore for varying the fluid flow area of the first flow passage through the control valve, the piston having a side wall and an end wall defining a second flow passage;

at least one longitudinal flow channel formed in the side wall having an up stream end and a down stream end, the up stream end adjacent to the end wall and an associated orifice extending through the side wall intermediate the ends thereof, the longitudinal flow channel for allowing fluid communication with the associated orifice;

an annular shoulder formed on the valve body adjacent to the exterior of the piston whereby movement of the piston in response to changes in differential pressure across the valve body provides a substantially constant fluid flow over a selected range of pressure differentials;

the longitudinal flow channel having a width and a depth formed along the exterior of the side wall; and

the longitudinal flow channel having a varying depth.

5,383,490

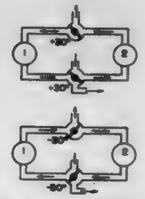
Patent Not Issued For This Number

5,383,491

DUAL TANDEM FLOW DIVERTER VALVE SYSTEM

David D. Heilman, 45 Tulip Ct., Geneseo, Ill. 61254

Filed Jan. 19, 1994, Ser. No. 183,414
Int. Cl.[6] F16K *11/076*
U.S. Cl. 137—597 **6 Claims**



1. A dual tank flow diverting system comprising: a valve block having upper and lower surfaces, front and back surfaces and left and right surfaces, said block having an internal passage in connection with said front and back surfaces, a main inlet passage and a main outlet passage, said passages connecting said upper wall with said internal passage, a left exit passage connecting said left wall and said internal passage, a left inlet passage connecting said left wall with said internal passage, a right inlet passage connecting said right wall with said internal passages and a right exit passage connecting said right wall with said internal passage, and two outlet passages connecting said bottom wall with said internal passage, a first diverter valve fixed for rotation within said internal passage and having a removed portion for fluid connection with said left inlet passage, said right inlet passage and said main inlet passage, a second diverter valve fixed for rotation within said internal passage and having a removed portion for fluid connection with said left exit passage, said right exit passage and said main outlet passage; said first diverter valve having a second removed portion extending about 135° around said first diverter valve.

5,383,492

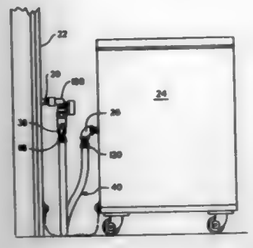
GAS CONNECTOR ASSEMBLY

Evan J. Segal, Pittsburgh, Pa., assignor to Dormont Manufacturing Co., Export, Pa.

Continuation-in-part of Ser. No. 111,717, Aug. 25, 1993, abandoned. This application Jan. 6, 1994, Ser. No. 178,023

Int. Cl.[6] F16L *37/28*

U.S. Cl. 137—614.06 **33 Claims**



1. An apparatus for delivering natural gas or liquid propane under pressure from a fixed gas source to a gas appliance, the gas appliance being mounted on casters and being movable to and away from the fixed gas source, the apparatus comprising:

a) a unitary valve assembly member having a first end portion and a second end portion, the first end portion being directly connected to the fixed gas source, the unitary valve assembly member further comprising:

i) a ball valve being located at the first end portion;

ii) operating means being located at the first end portion and being positioned on an exterior surface of the unitary valve assembly member, the operating means for manually moving the ball valve from an open positioned to a closed position where the ball valve in the open position allows the natural gas or liquid propane to flow through the ball valve and the ball valve in the closed position prevents the natural gas or liquid propane from flowing through the ball valve;

iii) a check valve being located at the second end portion; and

iv) a quick disconnect coupling being located at the second end portion; and

b) a connector having a first end and a second end, the connector first end being connected to the unitary valve assembly member second end portion, the connector second end being connected to the gas appliance.

5,383,493

TUBE SWITCH

Otto Brandauer, Muehlacker, and Gerhard Goth, Benningen, both of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Oct. 26, 1993, Ser. No. 141,666

Claims priority, application Germany, Oct. 26, 1992, 4235860

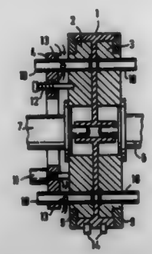
Int. Cl.[6] F16K *11/06*

U.S. Cl. 137—625.46 **12 Claims**

1. An arrangement for distribution of material flows in tube systems, comprising:

at least two mutually parallel and movable disks which have at least two through-holes;

at least two flexible tubes fastened to at least two of these movable disks;



wherein, by relative movements of the disks with respect to one another, different connections are achievable by which the material flows are distributed.

5,383,494

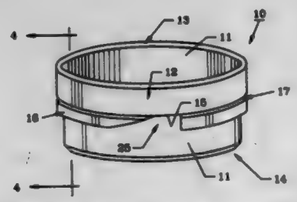
HOSE END CAP WITH PIVOTAL LOCK

Donald R. Caine, Greensboro, N.C., assignor to Camco Manufacturing, Inc., Greensboro, N.C.

Filed Jun. 25, 1993, Ser. No. 81,118

Int. Cl.[6] F16L *35/00*

U.S. Cl. 138—87 **19 Claims**



1. An open hose end cap to allow fluid flow therethrough comprising:

(a) an inner wall;

(b) an outer wall, said inner wall joined to said outer wall, said inner wall concentric with said outer wall and forming a space to receive a hose end therebetween; and

(c) a pivotal member attached to said outer wall by a hinge for movement between said inner wall and said outer wall to secure a hose end therebetween.

5,383,495

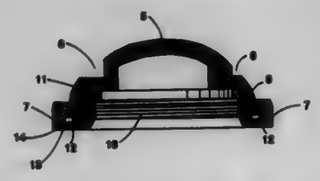
STAINLESS STEEL SECURITY CAP FOR FIRE HYDRANTS

Paul G. Kennedy, Horseheads, N.Y., assignor to Penn Troy Machine Co., Inc., Troy, Pa.

Filed Jun. 21, 1993, Ser. No. 80,846

Int. Cl.[6] F16L *55/10*; E03B *9/06*

U.S. Cl. 138—89 **8 Claims**



1. A security hydrant cap for a fire hydrant outlet being mounted to and removed from the hydrant outlet by a specialized tool, the cap comprising:

a) a generally cylindrical central body portion having inner and outer ends and a cylindrical body therebetween;

b) the outer end of the central body portion having a domed surface with a plurality of grooves adapted to mate with the specialized tool for removal of the cap thereby;

c) the inner end of the central body portion having a threaded cavity axially centered on the axis of the central body portion, the diameter and threading of the cavity being adapted to mount onto the hydrant outlet;

d) a cylindrical slip ring having an inner diameter larger than the outer diameter of the cylindrical body, and a width at least equal to the width of the cylindrical body, whereby the slip ring is adapted to slide over the cylindrical body and cover substantially all of the cylindrical body,

e) means for rotatably securing the slip ring to the cylindrical body, whereby the slip ring and the cylindrical body are locked together along the axis of the cylinder, while the slip ring remains free to rotate about the axis;

f) the slip ring being made of stainless steel.

5,383,496

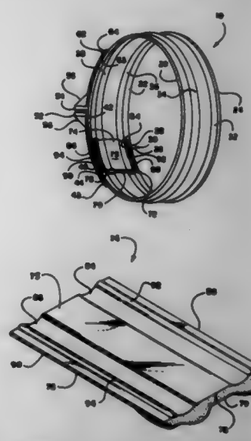
COUPLING WITH OFFSET CLOSURE

Donald Y. Bridges, 3014 Creek Ct., Roswell, Ga. 30075, and Charles W. Fisher, Lawrenceville, Ga., assignors to Donald Y. Bridges, Roswell, Ga.

Continuation-in-part of Ser. No. 978,770, Nov. 19, 1992, Pat. No. 5,295,716, which is a continuation-in-part of Ser. No. 861,940, Apr. 2, 1992, Pat. No. 5,286,064. This application Dec. 3, 1993, Ser. No. 160,956

Int. Cl.[6] F16L *21/02*

U.S. Cl. 138—99 **4 Claims**



4. A pipe coupling for sealing a leak location in a pipe or pipeline by compressing annular gasket members against the pipe or pipeline around the leak location, the pipe coupling comprising:

a cylindrical member having an inner surface, an outer surface, and an axial split defined by a first axial edge and a second axial edge;

means for joining said first and second axial edges such that the cylindrical member compresses the annular gasket members against the pipe or pipeline; and

an axial gasket member adjacent the axial split for preventing passage of fluid from between the annular gasket members to the outer surface of the cylindrical member through the axial split, the axial gasket member comprising a sealing plate positioned between the axial split and the pipe or pipeline when the pipe coupling is closed, wherein the sealing plate has an inner surface, an outer surface, first and second circumferential edges at opposite ends, and first and second stop members attached to the inner surface of the sealing plate proximate the first and second circumferential edges, respectively, for preventing outward movement of the annular gasket members.

5,383,497

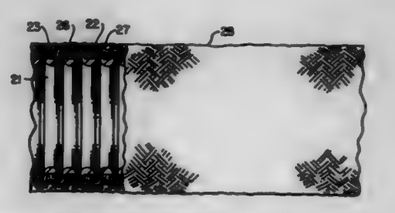
FLEXIBLE HOSE CONSTRUCTION HAVING AN INNER CORRUGATED HOSE MADE OF POLYMERIC MATERIAL

Jeffrey J. Winter, Ocala, Fla.; Homer N. Holden, Sylva, N.C., and James L. Lawrence, Ocala, Fla., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 906,814, Jun. 30, 1992, Pat. No. 5,256,233, which is a division of Ser. No. 759,023, Sep. 13, 1991, Pat. No. 5,145,545, which is a continuation of Ser. No. 405,487, Sep. 11, 1989, Pat. No. 5,089,074. This application Jul. 29, 1993, Ser. No. 99,276

Int. Cl.[6] F16L *11/08*

U.S. Cl. 138—122 **4 Claims**



1. In a flexible hose construction comprising an inner corrugated hose made of polymeric material and having a plurality of outwardly convex projections with recesses therebetween, an outer sleeve of reinforcing material disposed in telescoping relation on said inner hose, and an outer sleeve of polymeric material disposed in telescoping relation on said sleeve of reinforcing material, the improvement comprising a tube of polymeric material disposed between said sleeve of reinforcing material and said inner hose and extending in a generally straight-line manner from projection to projection of said inner hose so as to tend to prevent said sleeve of reinforcing material from entering into said recesses of said inner hose an amount that would tend to substantially reduce the flexibility characteristics of said inner hose, said tube having been extruded onto said inner hose before said sleeve of reinforcing material was disposed thereon, said tube having substantially constant inner and outer diameters, said inner hose having been formed from thermoplastic material, said tube of polymeric material having been formed from thermoplastic material, said outer sleeve of polymeric material having been formed from thermoplastic material, said tube of polymeric material having been bonded to said projections of said inner hose by the extruding thereof, said sleeve of polymeric material having been bonded to said tube of polymeric material through said sleeve of reinforcing material, by said sleeve of polymeric material having been extruded onto said sleeve of reinforcing material whereby said tube of polymeric material holds said sleeves and said hose together.

5,383,498

CYLINDER RUPTURE VESSEL WITH CYLINDER ROTATION MECHANISM AND RUPTURE MECHANISM

Charles C. Matters, Clermonte, and Dan A. Nickens, Windermere, both of Fla., assignors to Earth Resources Corporation, Ocoee, Fla.

Filed Dec. 13, 1993, Ser. No. 165,692

Int. Cl.[6] B65B *31/00*; B67B *7/24*

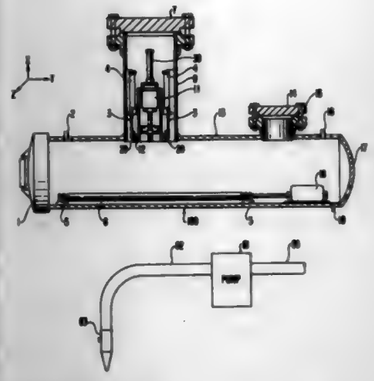
U.S. Cl. 141—1 **33 Claims**

1. In a cylinder rupture vessel comprising an enclosed cham-

ber and a laser, a method of gaining access to the interior of a target container comprising the steps of:

locating a target container in the enclosed chamber;

sealing the enclosed chamber;



activating the laser; and

causing relative movement between the target container and the laser to enable the laser to remove a section of the target container.

5,383,499

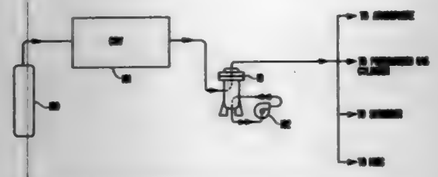
SYSTEM FOR REMOVAL OF UNKOWN, CORROSSIVE, OR POTENTIALLY HAZARDOUS GASES FROM A GAS CONTAINER

Charles C. Mattern, Wintergarden, Fla., assignor to Earth Resources Corporation, Ocoee, Fla.

Filed May 4, 1992, Ser. No. 877,736

Int. Cl.[6] B67B 7/00; F04F 5/00

U.S. Cl. 141—51 **9 Claims**



6. A pump for pumping gas comprising:

at least one pressure vessel containing a fluid,

at least one venturi eductor disposed within the pressure vessel and at least partially immersed in the fluid within the at least one pressure vessel,

at least one gas inlet port extending through the at least one pressure vessel and in fluid communication with the at least one venturi eductor,

at least one fluid inlet port extending through the at least one pressure vessel and in fluid communication with the at least one venturi eductor;

at least one venturi outlet port for accepting the flow of a mixture of gas and fluid, the at least one venturi outlet port being in fluid communication with the at least one venturi eductor and positioned above the fluid within the at least one pressure vessel,

at least one gas outlet port extending through the at least one pressure vessel and positioned above the fluid within the at least one pressure vessel,

at least one fluid outlet port extending through the at least one pressure vessel, and

means for separating gas from the mixture of gas and fluid flowing from the at least one venturi outlet port and essentially preventing the exhaust of fluid through the at least one gas outlet,

whereby the flow of the fluid into the at least one fluid inlet port and out of the at least one fluid outlet port creates a vacuum which draws the gas through the at least one gas inlet port, through the at least one venturi outlet port and separating means, and out the at least one gas outlet port without the interaction of the gas with any moving, mechanical parts within the pump.

5,383,500

AUTOMATIC REFUELLING SYSTEM

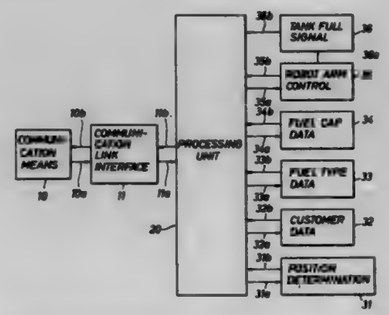
Sieco Dwars; Cornelis van Ouwerkerk, and Caspar Verhaagen, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 8, 1993, Ser. No. 27,978

Claims priority, application European Pat. Off., Mar. 19, 1992, 92200800

Int. Cl.[6] B67D 5/00

U.S. Cl. 141—98 **16 Claims**



1. A system for control of automatic refueling of automotive vehicles parked alongside a fuel dispenser unit, the system comprising:

(a) a communication means for starting, monitoring and finishing a refueling procedure, said refuelling procedure including a starting step, a fuel supply step and a finishing step, the communications means being arranged within a vehicle to be refueled such that during the refuelling procedure the communications means is functional to control the refuelling procedure, the communications means also being functional to stop the fuel supply step by transmitting from the vehicle an interruption data signal;

(b) operating control units for controlling operating functions involved within said refuelling procedure, the operating functions being carried out by respective operating units having the capability of performing the operating functions on vehicle fuel systems which have different refuelling configurations;

(c) a processing unit for processing data signals from the vehicle and directing the processed data signals to and from said operating control units which control said respective operating units in executing the refuelling procedure;

(d) wherein the data signals comprise first and second data signals, said first data signals comprising fill pipe data, fuel cap position data, fuel type data and cap lock data, and said second data signals comprising customer identification data and customer bank account data; and

(e) wherein the starting step includes processing the first and second data signals to determine whether the operating units are compatible with the vehicle's fill pipe, fuel cap position, fuel type and cap lock such that the operating units can refuel the vehicle and whether automatic payment can be made for the fuel, should the starting step determine that the operating units are capable of refuelling the vehicle and payment can automatically be made, the starting step approves the starting of the fuel supply step, otherwise the starting step aborts the refuelling procedure;

(f) wherein the communication means includes a transmitter/receiver means for transmitting and receiving signals, the transmitter/receiver means being located on the fuel dispenser unit and also being arranged within a rear light unit of the vehicle and wherein said fill pipe data signals, said fuel cap position data signals, said fuel type data signals, and said cap lock data signals are transmitted by the transmitter/receiver means on the vehicle and received by the transmitter/receiver means on the fuel dispenser unit.

5,383,501

Patent Not Issued For This Number

5,383,502

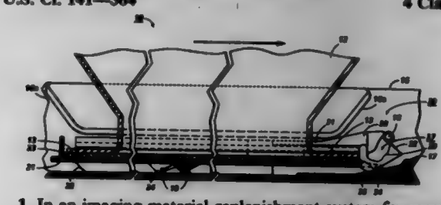
AUTOMATIC TONER DISPENSER LID LATCHING AND UNLATCHING SYSTEM

Duane H. Fisk, Whitesville, and David B. Playfair, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1993, Ser. No. 161,297

Int. Cl.[6] G03G 15/06

U.S. Cl. 141—364 **4 Claims**



1. In an imaging material replenishment system for providing imaging material for a reproduction apparatus, wherein the imaging material is provided in an imaging material container, and wherein said imaging material container is removably insertable into an insertion guide for a reproduction apparatus, and wherein said imaging material container has a containment lid which is automatically at least partially removed from said imaging material container upon the insertion of said imaging material container into said insertion guide to allow removal of imaging material from said imaging material container; the improvement wherein:

said containment lid has a lid latching member normally latching said containment lid to said imaging material container in a material containment position to prevent removal of said containment lid; and

said insertion guide includes a latch engaging member engaging and moving said lid latching member as said imaging material container is inserted into said insertion guide, said engagement unlatching said containment lid from said imaging material container so that upon further insertion of said imaging material container into said insertion guide said containment lid is removed from said imaging material container and held by said insertion guide until said imaging material container is removed from said insertion guide, said containment lid being automatically re-latched by said latch engaging member moving said lid latching member in said material containment position of said imaging material container upon removal of said imaging material container from said insertion guide, wherein said lid latching member includes at least one ramp surface engaging said latch engaging member, and a latching notch normally latched to said imaging material container; and said latch engaging member of said insertion guide cams up said ramp surface to disengage said latching notch of said lid latching member from said imaging material container.

5,383,503

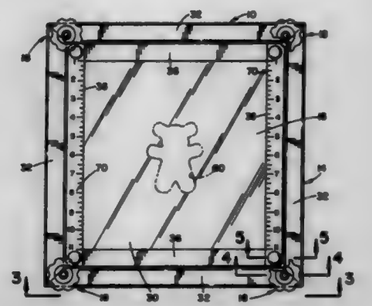
ROUTER GUIDE ASSEMBLY

Keith W. Johnson, 102 E. Aurora Rd., Northfield, Ohio 44067

Filed Feb. 15, 1993, Ser. No. 17,863

Int. Cl.[6] B27M 3/00

U.S. Cl. 144—144.5 R **7 Claims**



1. Apparatus for guiding the movement of a hand held router relative to a workpiece comprising:

support means defining an upwardly facing base adapted to underlie and support a workpiece to be routed;

a plurality of parallel guide posts extending upwardly from the support means at widely spaced locations;

a rigid frame having an open central portion, the rigid frame being mounted on the guide posts for guided sliding movement toward and away from the base to overlie a workpiece supported on the base;

biasing means associated with the guide posts for biasing the rigid frame away from the base;

clamp means adapted for moving the rigid frame toward the base and clamping the frame into engagement with the uppermost surface of a workpiece supported on the base; and,

a router guide template having a predetermined pattern formed therethrough, the guide template being removably connected in the open central portion of the rigid frame at a location to substantially engage the uppermost surface of a workpiece support on the base when the rigid frame is clamped into engagement therewith.

5,383,504

FLEXIBLE STATION FOR CUTTING VENEER FROM WOOD LOGS

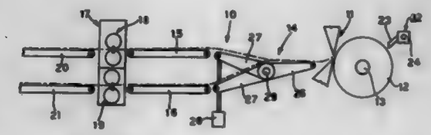
Lorenzo Cremona, Monza, Italy, assignor to Angelo Cremona & Figlio S.p.A., Milan, Italy

Filed Nov. 15, 1993, Ser. No. 151,684

Claims priority, application Italy, Dec. 3, 1992, MI92 A 002765

Int. Cl.[6] B27L 5/02, 5/08

U.S. Cl. 144—215 **9 Claims**



1. A veneer cutting station for a wood log comprises a veneer cutting machine, said machine comprising:

a blade for producing a continuous sheet of rotary-cut veneer;

means for cutting said sheet transversely, and

at least one incising blade arranged for cutting the rotary-cut veneer sheet longitudinally in a predetermined position of its width to form parallel strips of rotary-cut veneer,

wherein downstream of the veneer cutting machine said veneer cutting station further comprises:

means for deflecting the rotary-cut veneer strips, said deflecting means comprising running tables for supporting each of said strips of rotary-cut veneer on one of a plurality of superimposed paths, and

a cutter in each path for cutting the veneer transversely into cut strips.

5,383,505

GOLF BAG COVER HAVING A REMOVABLE TOP

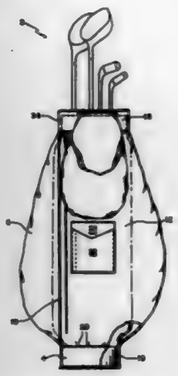
Louis M. Cordasco, Jr., 8 Wyman St. North, Rye Brook, N.Y. 10573

Continuation-in-part of Ser. No. 743,168, Aug. 9, 1991, Pat. No. 5,220,950. This application Apr. 30, 1993, Ser. No. 55,735

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[6] A63B *55/00*

U.S. Cl. 150—159 **39 Claims**



24. A pliable and foldable protective cover for covering an entire golf bag having a plurality of storage sections, a neck and a base and being adapted to store a plurality of golf clubs comprising:

a base portion of a diameter and size for said golf bag to fit therein;

a baggy middle portion connected to said base portion for accommodating all storage sections of the golf bag, and having a first middle portion opening for allowing said golf bag to be inserted therein, with the base of said golf bag fitting into said base portion of said cover;

a top portion, including means for at least partially removing and, for being connected to an uppermost edge of said middle portion, said top portion having sides, a bottom edge and an uppermost area, and having a height sufficient for covering said plurality of golf clubs stored in said golf bag, and further having first and second top portion openings, said first top portion opening for allowing access to said plurality of golf clubs, and second top portion opening positioned across the uppermost area of said top portion and extending along a side of said top portion, with said first and second top portion openings being transverse relative to one another; and

means forming a part of said cover disposed generally between said middle and top portions for securing in conjunction with said base portion said cover to said golf bag, so as to position and maintain said cover in said place about said golf bag; whereby said protective cover may be retained on said golf bag even with the top portion partially removed or when completely removed may be collapsed and stored in said golf bag.

5,383,506

PNEUMATIC TIRE HAVING REDUCED NOISE

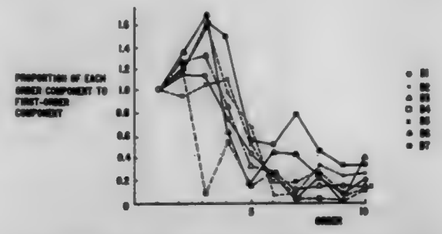
Tomohiko Kogure, Kanagawa, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 350,175, May 8, 1989, abandoned. This application Aug. 13, 1992, Ser. No. 929,054

Claims priority, application Japan, May 11, 1988, 63-112545

Int. Cl.[6] B60C *11/03*

U.S. Cl. 152—209 R **6 Claims**



1. A pneumatic tire having a tread surface comprised of a plurality of tread design elements having different pitch lengths arranged to extend around the circumference of the tread surface, at least one series of said tread design elements defining a fundamental period, each said series beginning with a first appearing element having a pitch of the shortest pitch length P_{min} and including at least one element having a pitch of the longest pitch length P_{max} between said element having the pitch of P_{min} and a second appearing element having a pitch of P_{min} in a next period, each said fundamental period beginning with said pitch of P_{min} and ending with a pitch located immediately before said pitch of P_{min} located first in the next period, wherein (1) each said fundamental period is a pitch arrangement such that when Fourier expansion of a stepped waveform formed by pitch lengths as abecissas and reciprocals of the pitch lengths as ordinates is conducted, the proportion of components of each higher order in the range of a second order to a fourth order relative to the first-order component is 80 to 200%, (2) the number of said fundamental periods is 1 to 4, (3) the length of said pitch arrangement(s) of all of said fundamental periods of said tire is 60% or more of the total circumferential length of the tire, and (4) the length of each said fundamental period is at least 1/7 of the total circumferential length of the tire.

5,383,507

PNEUMATIC RADIAL TIRES INCLUDING WAVED REINFORCING ELEMENTS BETWEEN BELT AND CARCASS

Kiyoshi Sato, and Yoshihide Kohno, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 873,828

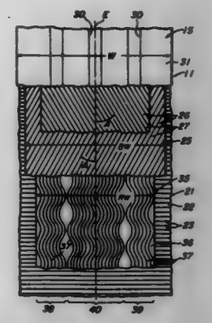
Claims priority, application Japan, Apr. 27, 1991, 3-124874

Int. Cl.[6] B60C *9/18, 9/20*

U.S. Cl. 152—527 **12 Claims**

1. A pneumatic radial tire comprising; a toroidal carcass layer having a number of radially extending cords buried therein, a belt layer arranged on a radially outer side of said carcass layer and containing a number of substantially inextensible cords inclined to an equatorial plane of the tire, and a reinforcing layer arranged between said carcass layer and said belt layer and containing a number of reinforcing elements, said reinforcing elements extending in parallel to said tire equatorial plane as a whole and being waved at a substantially equal wavelength, wherein a phase of a plurality of the reinforcing elements among all the reinforcing elements buried in said reinforcing layer is different from that of the remaining reinforcing element or elements in that reinforcing layer, such

that forces influencing the carcass layer are dispersed in the circumferential direction or offset to one another such that a



waved amount of the carcass is reduced to suppress uneven deformation of the outer surface of sidewall portion.

5,383,508

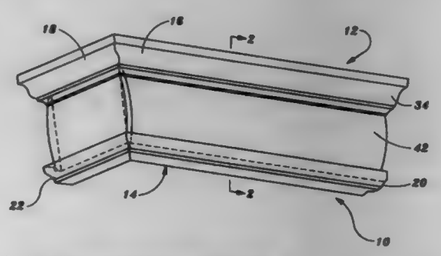
VALANCE STRUCTURE

Pamela C. Pavlica, 3218 Mount Diablo St., Concord, Calif. 94518, and William W. Schirmer, 273 Gladys Dr., Pleasant Hill, Calif. 94523

Filed Jun. 15, 1993, Ser. No. 77,027

Int. Cl.[6] E06B *9/00*

U.S. Cl. 160—38 **3 Claims**



1. A valence structure, comprising:

an upper portion defining an upper channel which opens downwardly when said valence structure is mounted in its operative position adjacent the upper edge of a window, said upper channel being comprised of a major segment which is substantially parallel to the wall containing said window and at least one minor segment which extends toward said wall from said major segment;

a lower portion defining a lower channel which opens upwardly when said valence structure is mounted in its operative position adjacent the upper edge of a window, said lower channel being comprised of a major segment which is substantially parallel to the wall containing said window and at least one minor segment which extends toward said wall from said major segment and is of lesser depth than said upper channel;

an intermediate portion which maintains said upper portion and said lower portion in predetermined juxtaposition wherein each segment of said lower channel confronts a corresponding segment of said upper channel; and

a carrier for carrying decorative material comprising a first substantially rigid panel and at least one other substantially rigid panel hingedly attached thereto;

said carrier being emplaceable in said upper and lower channels by manually positioning said at least one other panel with respect to said first panel at an angle substantially equal to the angle between said major channel segments and said minor channel segments, thrusting the upper edge of said first panel into said major segment of said upper channel, rotating said carrier about said major segment of said upper channel until the lower edge of said first panel overlies said major segment of said lower channel and said at least one other panel overlies said at least one minor segment of said lower channel, and allowing the lower edges of said panels to drop into their corresponding segments of said lower channel without becoming disengaged from their corresponding segments of said upper channel.

5,383,509

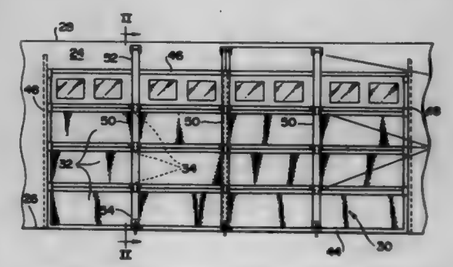
KIT FOR DOOR REINFORCEMENT

Thomas W. Gaffney, 4911 Third Ave., NW., and Thomas E. Killen, 6950 Hunters Rd., both of Naples, Fla. 33999

Filed Aug. 6, 1993, Ser. No. 103,447

Int. Cl.[6] E05D *15/26*

U.S. Cl. 160—209 **28 Claims**



1. Apparatus for reinforcing sectional overhead doors against wind damage, unauthorized entry and the like, when such a door is installed in a building having a floor and a wall with an opening therein to be closed by such a door, and when such a door carries one or more devices the inside thereof having openings formed therein such as hinges with hollow pins in the knuckles thereof, comprising;

(a) at least one elongated removably securable reinforcement component having top and bottom ends, said component being adapted for substantially vertical disposition on the inside of and adjacent to a closed sectional overhead door,

(b) means for releasably securing said bottom end of said component in a fixed position to a floor inside of and adjacent to such a closed door to prevent inward movement of a closed door,

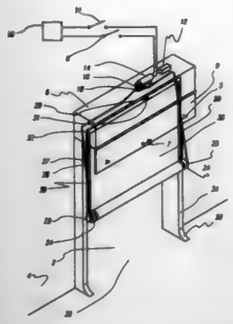
(c) means for releasably securing said top end of said reinforcement component in a fixed position to a building having such a closed door to prevent inward movement of such a closed door, and

(d) means for releasably securing said reinforcement component intermediate said top and bottom ends thereof to such a closed door, including a member adapted to be connected to said reinforcement component and which has a finger portion adapted to be inserted into an opening of a device carried on the inside of such a closed door to restrict movement of such a door outwardly.

5,383,510
APPARATUS AND METHOD FOR RAPIDLY AND RELIABLY SEALING OFF CERTAIN OPENINGS IN RESPONSE TO SMOKE, NOXIOUS FUMES OR CONTAMINATED AIR

Thomas H. Allen, 2004 N. Tenth St., Boise, Id. 83702

Continuation of Ser. No. 933,491, Aug. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 744,079, Aug. 12, 1991, Pat. No. 5,195,594. This application Apr. 11, 1994, Ser. No. 225,508
Int. Cl.[6] E06B *9/56*
U.S. Cl. 160—310 48 Claims

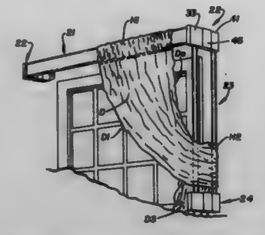


1. An apparatus for rapidly and reliably sealing off an opening defined at a lower limit by a floor in response to smoke, noxious fumes, or contaminated air, comprising:
a curtain of temperature, chemical or radiation resistant flexible material reinforced to limit ripping of the curtain if penetrated or punctured;
a flexible magnetic strip means attached to and extending along each of the left and right edges of the curtain;
an expansion means attached to the curtain to allow expanding movement of the curtain in response to differential pressure after deployed;
a fire resistive container located adjacent to an upper limit of the opening;
a reel means initially positioned within the container and upon which the curtain is wound in preparation for deployment, the reel means being movable downward and upward across the opening, the reel means being rotated to unroll the curtain from the reel means in a position adjacent to the opening as the reel means moves downward, and rotated to subsequently rewind the curtain onto the real means as the reel means moves upward to allow passage through the opening;
a powered, automatic drive means connected to the reel means to brake the downward movement of the reel means and rotate the reel in one rotational direction as the reel moves downward to unroll the curtain and to move the reel means upward and rotate the reel in an opposite rotational direction as the reel means moves upward to rewind the curtain onto the reel means;
a deployment control means which stops the drive means to limit the downward movement of the reel means and the unrolling of the curtain when the curtain is at a position adjacent to the floor;
a rewind control means which stops the drive means to limit the upward movement of the reel means and the rewinding of the curtain onto the reel means;
a bottom seal means which resists air leakage between the curtain and the floor when the curtain is positioned adjacent to the floor;
a ferrous metal frame means attached to the wall directly adjacent to each of the left and right sides of the opening, the curtain being sized such that as the curtain unrolls from the reel means as the reel means moves downward, the flexible magnetic strip means attached to each edge of the curtain is magnetically attached to a corresponding one of the frame means; and
a ferrous metal seal means located at the junction of a lower end of each of the frame means and against the floor such that when the curtain is positioned adjacent to the floor the flexible magnetic strip means attached to each edge of the curtain is magnetically attached to a corresponding one of the seal means to resist air leakage between the curtain and the seal means.

5,383,511
SUPPORT ROD ASSEMBLY FOR DRAPERY PANELS

Angelo M. Marasco, Madison, Wis., assignor to Springs Window Fashions Division, Inc., Middleton, Wis.

Filed Jun. 21, 1993, Ser. No. 78,688
Int. Cl.[6] A47H *1/00*
U.S. Cl. 160—330 15 Claims



1. A support rod assembly for drapery panels and the like comprising: elongated horizontal rod means, first and second upper bracket means each having means at a rear end thereof adapted to be mounted on a wall and means adjacent a forward end thereof for supporting an end of said horizontal rod means, a first vertical rod means, means on the first upper bracket means for supporting an upper end of the vertical rod means, first lower bracket means having means at a rear end thereof adapted for mounting on a wall, means on the first lower bracket means for supporting a lower end of the first vertical rod means, a rear vertical rod means, means on said first upper bracket means for supporting an upper end of the rear vertical rod means at a location rearwardly of the first vertical rod means, and means on the first lower bracket means for supporting a lower end of the rear vertical rod means at a location rearwardly of the first vertical rod means.

5,383,512
METHOD FOR FABRICATING A SUBSTRATE HAVING SPACED APART MICROCAPILLARIES THEREON

Eric E. Jarvis, Boulder, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 9,853, Jan. 27, 1993, abandoned. This application May 24, 1993, Ser. No. 65,777
Int. Cl.[6] B22D *23/00*
U.S. Cl. 164—46 6 Claims

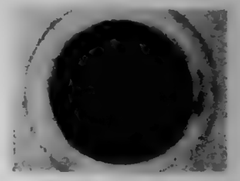


1. A method for manufacturing a self-supporting substrate having a plurality of spaced needles projecting outwardly from a major surface of said substrate, the method comprising the steps of:
(a) providing a porous polycarbonate membrane having a plurality of pores extending therethrough wherein said pores have a diameter of about 0.1 to 5 microns; and wherein said membrane has a thickness of about 5 to 10 microns;
(b) depositing a metal onto a major surface of said membrane in a manner such that a layer of the metal is formed on said major surface of said membrane, and wherein the metal extends into the pores to form said plurality of spaced needles wherein said membrane is disposed at an angle relative to the metal being deposited, and rotated such that said formed needles comprise nucricaoukkarues; and
(c) dissolving said membrane in solvent to leave a self-supporting metal substrate with said needles projecting outwardly therefrom.

5,383,513
HARD FACING CASTING SURFACES WITH WEAR-RESISTANT SHEETS

Gopal S. Revankar, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Continuation-in-part of Ser. No. 822,904, Jan. 21, 1992, Pat. No. 5,267,600. This application Apr. 29, 1993, Ser. No. 53,697
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[6] B22D *19/14, 19/08*
U.S. Cl. 164—97 20 Claims



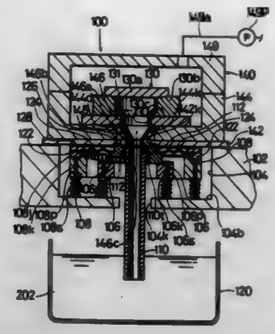
1. A method for impregnating a metal product with a hard wear-resistant surface layer comprising:
(a) providing a wear-resistant layer in the form of a sintered sheet having a pattern comprising a plurality of ridges on one surface thereof, which pattern facilitates the metallurgical bonding strength between the sheet and a metal melt;
(b) attaching the wear-resistant layer to a mold surface; and
(c) casting the metal melt at an effective temperature to produce a metal product having a wear-resistant material surface layer which metal is selected so as to metallurgically bond with the wear-resistant layer.

5,383,514
VACUUM CASTING APPARATUS

Masahiro Taguchi, Nagoya; Yoshiro Hayashi, Toyota; Ryuichi Masuda, Okazaki, and Yoshio Ekino, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jun. 7, 1993, Ser. No. 72,999
Claims priority, application Japan, Jun. 12, 1992, 4-179198
Int. Cl.[6] B22D *18/06*
U.S. Cl. 164—255 5 Claims

1. A vacuum casting apparatus including a casting die having a cavity and an enclosure encapsulating said casting die, said enclosure being evacuated to depressurize said cavity so that molten metal is drawn into said cavity from a reservoir tank positioned outside said enclosure, comprising:
a molten metal passage for delivering the molten metal into a sprue of said casting die encapsulated in said enclosure from outside of said enclosure;
a cylindrical stoke for communicating said molten metal passage with said reservoir tank, said stoke having an inner bore for flowing the molten metal;
a main flange for biasing one end of said stoke to one end of a member on which said molten metal passage is formed;
an auxiliary flange positioned around said main flange, said auxiliary flange including a sealing member contacting a surface of said enclosure; and

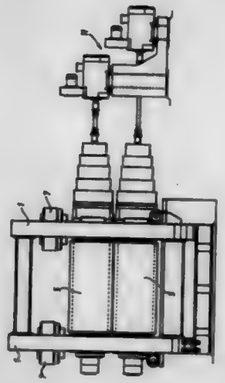


a flexible plate member positioned between said main flange and said auxiliary flange, for air tightly closing a space between said main flange and said auxiliary flange.

5,383,515
TWIN ROLL CASTING

Peter G. Grocock, Wareham, and Philip M. Thomas, West Moors, both of England, assignors to Davy McKee (Poole) Limited, Dorset, England

PCT No. PCT/GB91/01323, § 371 Date Mar. 2, 1993, § 102(e) Date Mar. 2, 1993, PCT Pub. No. WO92/02320, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 2, 1991, Ser. No. 971,762
Claims priority, application United Kingdom, Aug. 3, 1990, 9017042
Int. Cl.[6] B22D *11/06*
U.S. Cl. 164—480 2 Claims



1. A method of casting a light metal alloy to form a strip comprising the steps of:
arranging a pair of cylindrical cooled rolls with their longitudinal axes inclined to each other but in parallel planes and with a gap between the rolls;
introducing molten light metal alloy through a nozzle into the gap between the rolls;
counter-rotating the rolls about their longitudinal axes to roll the metal which solidifies in contact with the rolls into a

strip having a pair of opposite faces which exits from the roll gap;

said rolls causing scrubbing forces to be applied to the opposite faces of the strip said forces being sideways to the direction of movement of the strip out of the gap between the rolls to prevent the strip from sticking to either of the rolls.

5,383,516

HEAT EXCHANGER APPARATUS

Mircea Dinulescu, Groen van Prinstererlaan 37, NL-2271 EM Voorburg, Netherlands

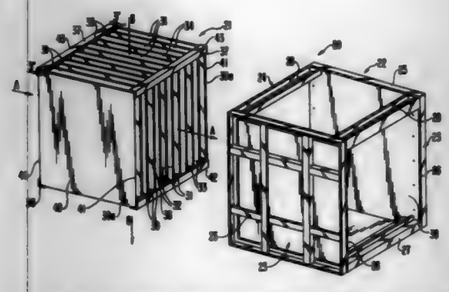
PCT No. PCT/NL91/00236, § 371 Date May 24, 1993, § 102(e) Date May 24, 1993, PCT Pub. No. WO92/09859, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 21, 1991, Ser. No. 66,078

Claims priority, application Canada, Nov. 23, 1990, 2030577

Int. Cl.[6] F28D *9/00*

U.S. Cl. 165—82 **10 Claims**



1. A heat exchanger apparatus of the cross flow type comprising a rigid, unitary, parallelpiped shaped core; an integral frame containing said core; and seal means between said core and said frame;

said core being formed by attached, spaced, parallel, plates providing therebetween a plurality of alternating cross flow paths for two different gases, the flow path of a first gas of one temperature being horizontally through said core between fore and aft ends of the core and the flow path of a second gas of a different temperature being through said core between a first pair of opposite sides of said core disposed at a right angle to said fore and aft ends,

said plurality of plates including a pair of outer plates and a plurality of innermost plates between the pair of outer plates,

said outer plates having outer side surfaces defining a second pair of opposite sides of said core disposed at right angles to said ends and to said first pair of sides of said core,

each inner plate being affixed to an adjacent plate on one side thereof at horizontal edges thereof by a first pair of elongated bars thereby defining with said adjacent plate on said one side a flow passage for said first gas between said fore and aft sides of said core,

each inner plate being further affixed to an adjacent plate on the other side thereof at edges by a second pair of elongated bars disposed at right angles to said first pair of bars thereby defining with said adjacent plate on the other side a flow passage for the second gas between said second pair of opposite sides of said core,

said core having four vertical corner edges, a pair of lower transverse corner edges and a pair of upper transverse corner edges;

said frame including a pair of panels joined by spaced elongated structural connectors,

said panels being disposed adjacent the pair of outer plates of said core and having inner surfaces adjacent said outer side surfaces of said outer plates,

said frame providing means supporting said core thereon and defining,

(i) lower surface areas outwardly of said lower pair of transverse corner edges of said core, in the fore and aft directions,

(ii) upper surfaces opposed to and spaced above the lower surface areas a distance greater than the height of said core to allow for expansion of said core in a vertical direction, and

(iii) opposed inner side surface areas adjacent to but spaced transversely outward from said four vertical corners of said core for permitting transverse thermal expansion of said core;

said seal means being attached between said core and said frame and including:

a first set of seals including elongated seal members positioned between each of the vertical corner edges of said core and said inner side surface areas defined by said frame,

a second set of seals including a pair of elongated seal members joining said upper transverse corner edges of said core and said upper surfaces of said frame,

said first and second sets of seals permitting thermal expansion and contraction of said core in the transverse, vertical and fore and aft directions relative to said frame, and

a third set of seals including a pair of elongated seals joining said lower transverse corner edges of said core to said lower surface area defined by said frame and permitting movement of said lower transverse corner edges in a fore and aft direction on said upper surface, and expansion and contraction of said lower transverse edges in a transverse direction relative to the lower surface areas of said frame,

wherein said upper surface areas of said frame are defined by a first spaced pair of said structural connectors, and

said lower surface areas of said frame are defined by a second spaced pair of said structural connectors, and wherein

said second set of seals are disposed between said upper transverse corner edges of said core and said first pair of structural connectors, and

said third set of seals are disposed between said lower transverse corner edges of said core and said second pair of structural connectors, and

wherein said core defines vertical faces immediately adjacent said transverse corner edges and extending the width of said core, and

said upper and lower surface areas of said structural connectors are disposed horizontally at right angles to said vertical faces of said core, wherein

said structural connectors have means defining vertical faces projecting at right angeles from the horizontal surfaces and being spaced from and opposing one each of the vertical faces of said core, and wherein

said elongated seal members of said second and third set of seals each extend transversely between the opposing vertical faces of said core and structural connectors of said frame, and

wherein said elongated seal members of said second and third set of seals are formed of sheet spring steel and are of U-shaped cross section defined by a pair of opposed leg portions and a curved central portion.

5,383,517

ADHESIVELY ASSEMBLED AND SEALED MODULAR HEAT EXCHANGER

Robert F. Dierbeck, 2707 Hall Rd., Hartford, Wis. 53027

Continuation-in-part of Ser. No. 72,497, Jun. 4, 1993, Pat. No. 5,303,770. This application Jan. 4, 1994, Ser. No. 177,178

The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.

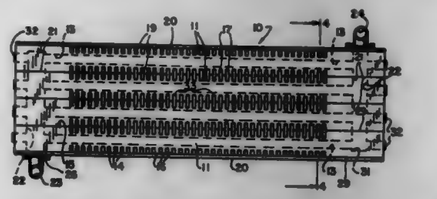
Int. Cl.[6] F28F *9/26;* **B21D** *53/02*

U.S. Cl. 165—144 **11 Claims**

1. A modular heat exchanger for a fluid flow comprising:

a plurality of modules formed from elongate extruded blocks of a heat transfer material, each block having a generally rectangular cross section and a longitudinally extending through bore between parallel opposite planar block faces;

each block face having formed therein a plurality of equally spaced parallel slots extending fully across the face in a lateral direction with respect to the axis of the through bore and defining therebetween a series of parallel fins bounded by face portions at the ends of each block face, the outer edge surfaces of the fins on each face lying



coplanar with the face in which the fins are formed, and the outer edges of the fins and the face portions on adjacent modules respectively abutting one another when the modules are placed together in face-to-face contact;

a cross bore perpendicular to and passing through abutting face portions and intersecting said through bores at each end; and,

a thin adhesive layer between said abutting face portions sealing the periphery of each cross bore passage therethrough and securing the modules together.

5,383,518

HEAT EXCHANGER

Simon A. Banks; Colin I. Adderley, both of Derby; John O. Fowler, Lancashire, and James E. Boardman, Barnoldswick, all of England, assignors to Rolls-Royce plc, London and Rolls-Royce and Associates Limited, Derby, both of England

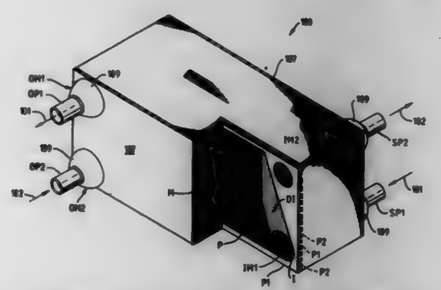
PCT No. PCT/GB92/00332, § 371 Date Aug. 4, 1993, § 102(e) Date Aug. 4, 1993, PCT Pub. No. WO92/15830, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 24, 1992, Ser. No. 98,408

Claims priority, application United Kingdom, Feb. 27, 1991, 9104155

Int. Cl.[6] F28F *3/08*

U.S. Cl. 165—166 **7 Claims**



1. A plate-fin type of heat exchanger for facilitating exchange of heat between at least two process streams, comprising;

a matrix of heat exchange elements arranged in side-by-side heat exchange relationship, the heat exchange elements comprising diffusion bonded sandwich constructions, each such sandwich construction having two outer sheets and a superplastically expanded core sheet structure between the two outer sheets, each core sheet structure providing flow passage means for at least one process stream, adjacent heat exchange elements being in intimate thermal contact with each other over at least most of the areas of their side faces through bonded joints between them, and

process stream inlet and outlet manifold means integral with the matrix for passing the process streams through the heat exchange elements, the manifold means penetrating the matrix from side-to-side through the thicknesses of the plate elements.

5,383,519

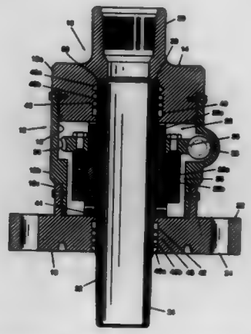
APPARATUS FOR ROTATING A TUBING STRING OF A PUMPING WELLHEAD

James A. Wright, Sherwood Park, and Curtis P. Ring, Edmonton, both of Canada, assignors to 569396 Alberta Ltd., Sherwood Park, Canada

Filed Aug. 4, 1993, Ser. No. 101,751

Int. Cl.[6] E21B *33/04*

U.S. Cl. 166—78 **9 Claims**



1. An apparatus for rotating a tubing string of a pumping wellhead, comprising:

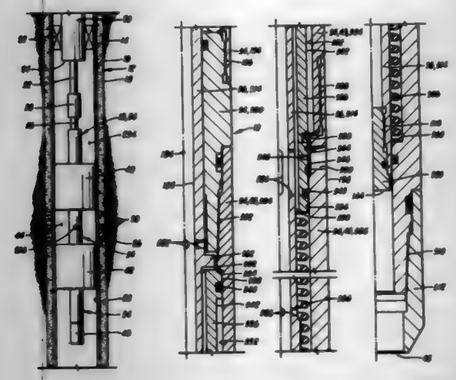
a. a housing having a first end, a second end, and an interior, the first end having a stationary external coupling communicating with the interior, the second end having means for attaching the housing to a wellhead;

b. a drive assembly disposed in the interior, the drive assembly including a rotatable tubular member having a first end and a second end, the first end of the tubular member being disposed within the interior of the housing in fluid communication with the stationary external coupling, the second end of the tubular member extending past the second end of the housing thereby providing a rotatable coupling engagable with a tubing string, the drive assembly including means for rotating the tubular member;

c. bearing means disposed between the tubular member and the interior of the housing thereby facilitating rotation of the tubular member, the bearing means including a first radial bearing disposed between the tubular member and the interior adjacent the first end of the housing and a second radial bearing disposed between the tubular member and the interior adjacent the second end of the housing; and

d. dynamic seals disposed between the tubular member and the interior of the housing to seal fluids within the housing.

5,383,520
COILED TUBING INFLATABLE PACKER WITH CIRCULATING PORT
James C. Tucker; Donald W. Winslow; Jeffrey S. Walter, and Steven L. Schwegman, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Sep. 22, 1992, Ser. No. 949,592
Int. Cl.[6] E21B *33/127, 34/10*
U.S. Cl. 166—142 25 Claims



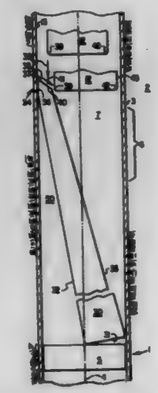
1. A packer apparatus for use on coiled tubing in a well bore, said apparatus comprising:
a housing having a central housing opening and defining a circulating passage therethrough;
a packer element mounted on said housing;
a valve sleeve slidably disposed in said housing, said valve sleeve defining a valve port therethrough in communication with said circulating passage when said valve sleeve is in an open position, thereby allowing circulation, and isolated from said circulating passage when in a closed position, thereby preventing circulation, said valve sleeve defining a differential area thereon such that a predetermined fluid flow through the apparatus results in sufficient pressure acting across said differential area to move said valve sleeve to said closed position without requiring rotation of the tubing, wherein said valve sleeve is adapted for allowing circulation of fluid after said packer element is engaged with said well bore; and
a mandrel disposed in said central opening and defining a circulating port therein, said circulating port and circulating passage being in communication when said mandrel is in a circulating position with respect to said housing.

5,383,521
FLY ASH CEMENTING COMPOSITIONS AND METHODS
David D. Onan, Lawton; Dralen T. Terry, and Bobby G. Brake, both of Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Apr. 1, 1993, Ser. No. 41,745
Int. Cl.[6] E21B *33/13*
U.S. Cl. 166—293 24 Claims

1. A cementing composition comprising:
a cement component consisting essentially of a fine particle size ASTM Class C fly ash or the equivalent fly ash wherein the particles are of a size no greater than about 36 microns and have a specific surface area no less than about 1.1 square meters per cubic centimeter; and
sufficient water to form a slurry.

19. A method of cementing in a subterranean zone penetrated by a well bore comprising the steps of:
pumping a cementing composition into said zone comprised of a fine particle size ASTM Class C fly ash or the equivalent fly ash wherein the particles are of a size no greater than about 36 microns and have a specific surface area no less than about 1.1 square meters per cubic centimeter, a dispersing agent comprised of the condensation polymer product of acetone, formaldehyde and sodium sulfite present in an amount in the range of from about 0.25% to about 1% by weight of said fly ash in said composition, a drilling fluid selected from the group consisting of a water base gel drilling fluid and a hydrocarbon base drilling fluid present in said composition in an amount in the range of from about 10% to about 50% by weight of said composition, and sufficient water to form a pumpable slurry; and
allowing said cementing composition to set into a hard substantially impermeable mass in said zone.

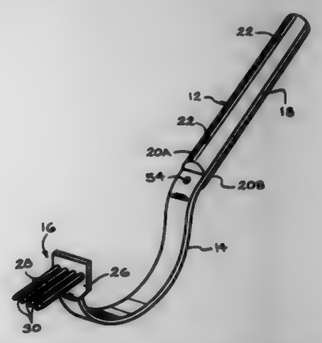
5,383,522
WHIPSTOCK AND METHOD
Charles D. Hailey, 1162 Burning Oak Rd., Oklahoma City, Okla. 73150, assignor to Atlantic Richfield Company, Los Angeles, Calif. and Charles D. Hailey, Oklahoma City, Okla., a part interest
Filed May 16, 1994, Ser. No. 242,764
Int. Cl.[6] E21B *7/08*
U.S. Cl. 166—382 19 Claims



1. In a whipstock for emplacement in a wellbore having a longitudinal axis, said whipstock having first and second opposing ends joined by opposing back and guide surfaces, said guide surface extending at a first acute angle (A) with respect to said back surface, the improvement comprising said second end being defined by at least first and second surfaces, said first surface having a length which approaches said guide surface, said first surface extending at a second angle (B) with respect to said back surface, said second surface having a length which approaches said back surface, said second surface extending at a third angle (C) with respect to said back surface, said second and third angels (B and C) being acute angles, said first and second surfaces intersect one another, said first surface intersects said guide surface, and said second surface intersects said back surface, whereby said first surface directs a well tool impinging thereon toward said guide surface and said second surface provides support for said whipstock when said whipstock is placed in said wellbore at an angle to said longitudinal axis of said wellbore.

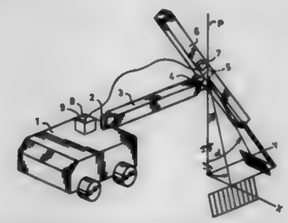
10. In a method for carrying out well operations involving setting a whipstock in an elongate wellbore having a longitudinal axis and an internal surface along said longitudinal axis, said wellbore having at least one internal restriction along said longitudinal axis whereby said whipstock in order to be operative after passing through and below said at least one internal restriction is set at an angle to said longitudinal axis so that a substantial length of said whipstock as set in said wellbore is unsupported by contact with said internal surface of said wellbore, the improvement comprising providing a whipstock with opposing upper and lower ends connected by opposing back and guide surfaces, said guide surface extending at a first angle (A) with respect to said back surface, said upper end being defined by at least first and second surfaces, said first surface approaching said guide surface and extending at a second angle (B) with respect to said back surface, said second surface approaching said back surface and extending at a third angle (C) with respect to said back surface, passing said whipstock through at least one internal restriction in said wellbore, setting said whipstock in place in said wellbore below said at least one internal restriction including tilting said whipstock relative to said longitudinal axis of said wellbore so that said second surface essentially rests against said internal surface of said wellbore.

5,383,523
WEEDING TOOL
Jerry R. Stamp, 3560 Springdale, Lambertville, Mich. 48144
Filed Jan. 6, 1993, Ser. No. 1,508
Int. Cl.[6] A01B *1/22;* B25G *3/04*
U.S. Cl. 172—378 19 Claims



19. A hand tool for removing weeds from soil comprising, in combination,
a substantially elliptically curved body portion having a handle end and a weeding end,
an elongate user engageable handle having an end joining said handle end of said body portion, said user engageable handle having a generally cylindrical grip including a centrally disposed flat extension of said curved body portion and an opposed pair of semi-circular handle portions secured to said flat extension, and
weeding means coupled to said weeding end of said body portion, said weeding means including at least three elongate, spaced-apart, parallel tines defining weed receiving spaces therebetween, said tines having tapering ends and disposed at an acute angle relative to said cylindrical grip, said weed receiving spaces having substantially uniform width along their length.

5,383,524
METHOD AND EQUIPMENT FOR ALIGNING THE FEEDING BEAM OF A ROCK DRILLING EQUIPMENT
Heikki Rinnemaa, Tampere, Finland, assignor to Tamrock Oy, Tampere, Finland
PCT No. PCT/FI91/00306, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO92/06279, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 7, 1991, Ser. No. 30,406
Claims priority, application Finland, Oct. 8, 1990, 904937
Int. Cl.[6] E21C *11/00*
U.S. Cl. 173—1 6 Claims

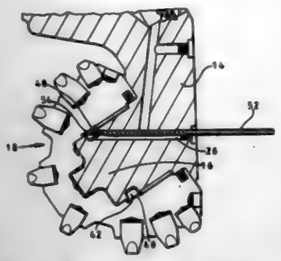


1. A method of aligning a feeding beam component of a rock drilling apparatus with a hole to be drilled wherein the inclination of the feeding beam is measured in two mutually perpendicular vertical measuring planes extending from a first common vertical axis by means of a pair of gravity operated sensors responsive to the position of the feeding beam, each sensor indicating the inclination of the feeding beam in the direction of one of the two mutually perpendicular planes, comprising the steps of:
a) measuring an angle of inclination of the feeding beam in the first vertical measuring plane by a first sensor responsive to movement of the feeding beam in said first vertical measuring plane;
b) measuring a second angle of inclination of the feeding beam in the second vertical measuring plane by a second sensor responsive to movement of the feeding beam in said second vertical measuring plane; wherein the presence of an angle of inclination in one of the first or second vertical measuring planes causes an error reading in the angle of inclination of the other of the first and second vertical measuring planes;
c) calculating actual first and second corrected angles of inclination for each of the first and second vertical measuring planes, taking into account said error reading; and
d) aligning the feeding beam in a predetermined direction as a function of said first and second actual corrected angles of inclination.

5,383,525
THREADED RING RETENTION MECHANISM
Jeffery E. Daly, Cypress, and Patsy N. Kepka, Pasadena, both of Tex., assignors to Camco International Inc., Houston, Tex.
Filed Aug. 24, 1993, Ser. No. 110,854
Claims priority, application United Kingdom, Aug. 26, 1992, 9218100
Int. Cl.[6] E21B *10/08*
U.S. Cl. 175—57 16 Claims

1. A method of manufacturing a rolling cutter drill bit of the kind comprising a bit body, at least one bearing spindle on the bit body, a rolling cutter rotatably mounted on the bearing spindle, and a retention assembly mounted between said cutter and spindle, the retention assembly comprising a threaded retention ring coaxial with the spindle and in screw-threaded engagement with one of said cutter and spindle, the method comprising the steps of providing in one of said retention ring and the component which it screw-threadedly engages an aperture which passes through a portion of one of the screw-threads to expose a portion of the other screw-thread, forming

the drill bit with a passage which extends from the exterior of the bit to said aperture in said one screw-thread so as to provide access to said exposed portion of the other screw-thread,



and physically altering said exposed portion of the other screw-thread in a manner to prevent subsequent relative rotation between the screw-threads, thereby locking the retention ring to the component which it screw-threadedly engages.

5,383,526

METHODS FOR ROCK MINING WITH NON-CORING ROTARY TOOLS

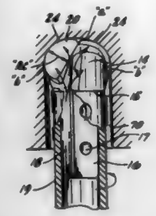
William J. Brady, 1767 Wishingwell Dr., Creve Coeur, Mo. 63141

Division of Ser. No. 4,682, Jan. 14, 1993, Pat. No. 5,303,787, which is a continuation-in-part of Ser. No. 704,885, May 23, 1991, Pat. No. 5,180,022. This application Sep. 7, 1993, Ser. No. 116,527

The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.

Int. Cl.[6] E21B *7/00*

U.S. Cl. 175—57 17 Claims



1. A method of drilling rock bores utilizing a non-coring rotary drill bit having a cutter head with a pair of cutter inserts formed with polycrystalline diamond (PCD) layers and having curved outer cutting edges and substantially planar wear surfaces, the cutter inserts being constructed and arranged on said drill bit head to face in the direction of rotation with the wear surfaces being at negative angles and the cutting edges extending along curving arcuate paths substantially continuously from the rotational axis of the drill bit to the outer gauge cutting margins thereof, and according to which method the drill bit is first collared into the rock surface at low thrust to establish the bore circumference; the method of drilling with such PCD insert drill bit that comprises, in combination, the steps of:

operating such PCD insert drill bit at moderate rotational speeds in the range of 300 to 750 rpm;

applying axial thrust to such PCD insert drill bit in the range of 2200 to 3200 pounds; and

delivering a flushing fluid to the cutting edges and wear surfaces of such PCD inserts at a relatively high dynamic pressure in the range of 150 to 400 psi.

5,383,527

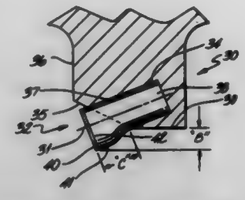
ASYMMETRICAL PDC CUTTER

Michael G. Azar, Houston, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed Sep. 15, 1993, Ser. No. 121,808

Int. Cl.[6] E21B *10/46*

U.S. Cl. 175—431 16 Claims



1. An asymmetric cutter insert comprising;

an insert body forming a first cylindrical base end and a second non-cylindrical cutter end, said non-cylindrical cutter end defining an ultra-hard cutting surface thereon a plane of which is about 90 degrees to an axis of said cylindrical base end, a portion of said non-cylindrical cutter end of said insert projects beyond the circumferential wall formed by the cylindrical base end of said insert toward a surface to be cut.

5,383,528

DRIVE SYSTEM HAVING A LINKAGE FOR CONTROLLING THE OPERATION OF GROUNDWHEELS IN A MOTOR VEHICLE

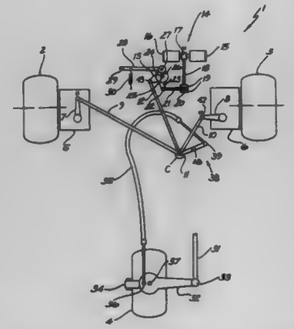
Alexander Nicol, 102-104 Dampier Street, Barellan Point, Queensland 4306, Australia

Filed Feb. 1, 1993, Ser. No. 12,155

Claims priority, application Australia, Jan. 30, 1992, PL0666

Int. Cl.[6] B62D *11/02*

U.S. Cl. 180—6.2 14 Claims



1. A drive system for a motor vehicle comprising:

drive means;

at least two ground engaging drive wheels each of which is capable of being independently driven by said drive means;

a steerable groundwheel capable of being turned to direct a path of travel of said vehicle;

and linkage means for linking said steerable groundwheel with said drive wheels, said linkage means including a linkage assembly having first and second arms, said first arm having a length which is half of a length of said second arm, said first arm having one end thereof connected to a center of said second arm and another end thereof connected to a fixed pivot, said first arm being pivotable about its connection with the center of the second arm and said second arm being pivotable about the fixed pivot in response to movement of a steering coupling connected to said steerable groundwheel, said linkage means being operable to

(i) functionally disengage the drive means with one of said drive wheels when the steerable groundwheel is positioned to turn said vehicle in a predetermined turning radius, said predetermined turning radius being greater than a minimum turning radius of said vehicle, and

(ii) to functionally engage the drive means with said drive wheels to drive said drive wheels in rotationally opposite directions when the steerable groundwheel is positioned to turn said vehicle in said minimum turning radius.

5,383,529

GEAR TRAIN ARRANGEMENT OF REAR WHEEL STEERING SYSTEM FOR MOTOR VEHICLE

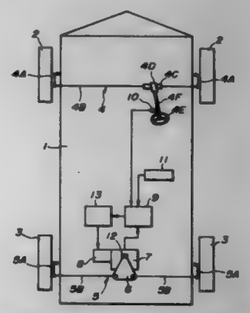
Shuichiro Shioyama, and Norihiro Saita, both of Atsugi, Japan, assignors to Atsugi Unisia Corporation, Atsugi, Japan

Filed Feb. 22, 1993, Ser. No. 20,702

Claims priority, application Japan, Feb. 21, 1992, 4-007667[U]

Int. Cl.[6] B62D *5/06*

U.S. Cl. 180—140 3 Claims



1. A rear wheel steering apparatus for an automotive vehicle, comprising:

a motor;

a gear train including input and output gears, said input gear being in drive connection with said motor and responsive to torque from said motor to rotate in a normal direction for transmitting the torque to said output gear; and

a steering member connected to said output gear for steering rear wheels of the vehicle; and

means responsive to a reverse torque acting on said input gear through said output gear for allowing said input gear to rotate in a reverse direction;

said gear train having a reverse rotation efficiency which is higher than zero.

5,383,530

MOTORCYCLE

Masakazu Shiohara, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

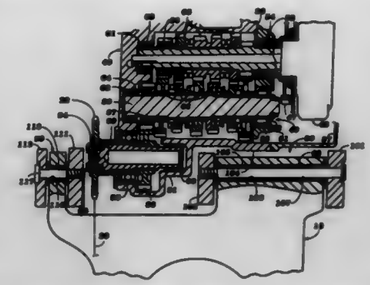
Filed Oct. 21, 1992, Ser. No. 964,445

Claims priority, application Japan, Oct. 21, 1991, 3-302382

Int. Cl.[6] B62K *25/30*

U.S. Cl. 180—227 15 Claims

1. A rear suspension and drive arrangement for a motorcycle type of vehicle comprising a frame assembly mounting a change speed transmission driven by an engine, said change speed transmission including an output shaft rotatable about a first axis and driving a rear wheel driving element fixed co-axially thereto, a trailing arm rotatably journaling a rear wheel thereon, means for pivotally mounting said trailing arm upon said frame assembly for suspension movement about a second axis parallel to said first axis and positioned longitudinally of said frame in a position forwardly of the rear peripheral edge of said rear wheel driving element and rearwardly of the forward peripheral edge of said rear wheel driving element so that a portion of said trailing arm overlies said rear wheel driving element, said overlying portion being spaced transversely from said rear wheel driving element sufficiently to permit removal of said rear wheel driving element from said output shaft when said trailing arm is in position mounted upon said frame assembly, and means for driving said rear wheel from said rear wheel driving element.



5,383,531

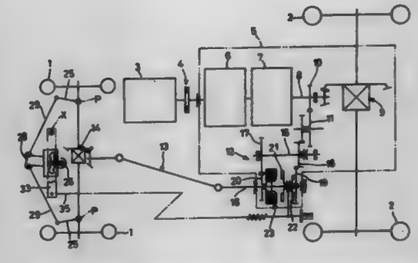
TURN CONTROL SYSTEM FOR A FOUR WHEEL DRIVE VEHICLE

Hidetaka Yoshioka, and Fumio Takada, both of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Continuation of Ser. No. 673,274, Mar. 21, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 76,264

Int. Cl.[6] B60K *17/34*

U.S. Cl. 180—233 3 Claims



1. A turn control system for a four wheel drive vehicle comprising:

an engine;

right and left non-steerable wheels for receiving a drive of said engine through a differential device;

right and left steerable wheels for receiving said drive of said engine through a second differential device;

steering means for controlling said steerable wheels;

change speed means connected to said steerable wheels, said change speed means including a standard transmission mode for driving said right and left steerable wheels at substantially the same average peripheral velocity as said right and left non-steerable wheels, an accelerating transmission mode for driving said right and left steerable wheels at a greater average peripheral velocity than said right and left non-steerable wheels, and switching means for selecting between said standard transmission mode and said accelerating transmission mode; and

interlocking means for interlocking said steering means and said switching means such that said change speed means is

operable in said accelerating transmission mode when said steerable wheels are steered in excess of a predetermined angle,

wherein an inner one of said steerable wheels with respect to a turning circle has a maximum steering angle $\beta 1$ set to form the following expression:

$$\text{secant } \beta 1 > K$$

where K is an accelerating ratio of said greater average peripheral velocity of said right and left steerable wheels in said accelerating transmission mode with respect to said average peripheral velocity of said right and left non-steerable wheels, wherein said accelerating ratio K is approximately 2 and wherein said maximum steering angle $\beta 1$ of said inner one of said steerable wheels is set within the range of 63 to 65 degrees;

wherein said maximum steering angle $\beta 1$ is set less than a theoretical maximum steering angle $\beta 01$ of said inner wheel for an ideal turn, wherein said theoretical maximum steering angle $\beta 01$ is derived from the following equation:

$$\beta 01 = \alpha + \gamma 1$$

where

$$\tan \gamma 1 = \frac{(W/2)\sin\alpha}{(L/\sin\alpha) - ((W/2)\cos\alpha)}$$

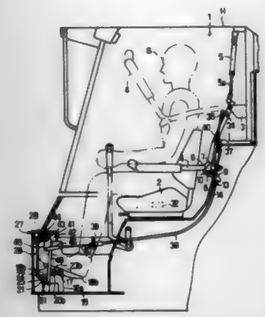
where W is the tread of the right and left steerable wheels, L, is a wheelbase of said vehicle, and α is an angle formed at the mid-point between said right and left steerable wheels formed between the moving direction of said vehicle and the center-line of said vehicle during said ideal turn.

5,383,532

FOOT PEDAL LOCKING DEVICE FOR CARGO-HANDLING VEHICLE

Masami Shonai; Yasuhiro Torii, and Kohji Iwamura, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 16, 1992, Ser. No. 851,653
Claims priority, application Japan, Mar. 18, 1991, 3-052836
Int. Cl.[6] B60R *21/00*
U.S. Cl. 180—269 **20 Claims**



1. A foot pedal locking device for a cargo-handling vehicle having a seat for an operator, comprising:

a restricting means for locking said foot pedal against rotation;

a detecting means for detecting utilization of said cargo-handling vehicle by an operator, said detecting means comprising electrical means;

electrically operated operating means for moving said restricting means on the basis of a detection signal from said electrical means of said detecting means to lock or unlock said foot pedal;

a restraining means switchably interposed between a restraining position where the operator occupying said seat is restrained and a waiting position where the operator is not disturbed from getting on and off the vehicle; and

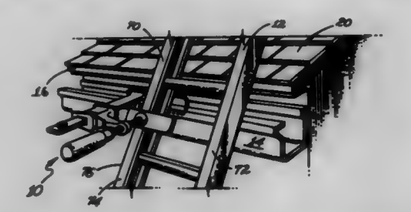
a mechanical lock control means for forcibly operating said restricting means independently of said electrically operated operating means responsive to the switching movement of said restraining means between the restraining position and the waiting position to alternately lock or unlock said foot pedal.

5,383,533

LADDER CLAMPING DEVICE

Dale Nikula, 35 Park St., Harwich, Mass. 02645, and Brian Shanahan, 32 Goff Ter., Centerville, Mass. 02632

Filed Feb. 16, 1994, Ser. No. 197,111
Int. Cl.[6] E06C *7/48*
U.S. Cl. 182—107 **6 Claims**



1. A ladder clamping safety device securing a ladder to a rain gutter of a house and for release therefrom comprising:

a) the rain gutter extends horizontally and includes an outer contoured wall having a contoured lip defining a vertical plane;

b) the ladder is positioned in angled relationship with said vertical plane and includes a pair of legs arranged in slanted relationship to said vertical plane and comprising a first and second leg each leg having a longitudinal top and a lateral edge;

c) a post having a first and second end;

d) a gutter plate means for simultaneous engaging an inner edge of the contoured lip and an inner surface of the said contoured wall of the said rain gutter comprising a recessed plate having a one and other end, the one end fixedly mounted on the second end of said post extending in perpendicular relationship thereto;

e) clamping bar means for engaging a selected leg of the ladder having a flat face plate positioned in coplanar relationship with the front surface of said leg and in angled relationship with the said gutter plate means, wherein said clamping bar means is connected by swivel means to a threaded shaft extending in coplanar relationship with the post having a first and second end, the first end being provided with a handle means and the second end supporting the swivel means; and

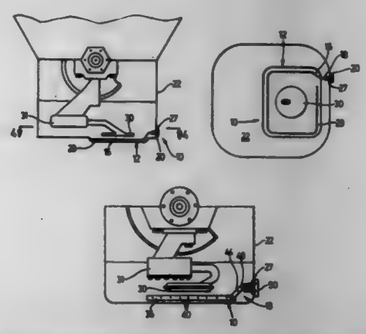
f) an arm member having a first and second end the first end provided with a threaded socket and the second end connected in sliding engagement to said post for reciprocal movement between a clamping position and a release position; wherein as the screw driver handle is manually turned, the shaft turns in the threaded socket for moving and holding said clamping bar means relative to the fixed gutter plate means and applies pressure on the objects being clamped including the leg of the ladder and the rain gutter.

5,383,534

MAGNETIC COLLECTOR FOR LUBRICATION SYSTEMS

James D. Pollier, 1977 Jefferson Blvd., Windsor, Ontario, Canada N8T 3W1

Filed Oct. 26, 1993, Ser. No. 141,008
Int. Cl.[6] F01M *1/10*; B01D *35/06*
U.S. Cl. 184—6.25 **16 Claims**



1. A magnetic collector for insertion into a liquid reservoir of a lubrication system, said magnetic collector comprising:

a flexible member having a magnetic surface that attracts metallic particles;

support means for removably supporting said flexible member in said liquid reservoir; and

a swivel for connecting one end of said flexible member to said support means, said swivel permitting free rotation of said support means relative to said flexible member.

15. A method of detecting misalignment of motor components, said method comprising the steps of:

inserting a magnetic collector into a lubricant reservoir associated with a motor, said magnetic collector including a magnetic member connected by a swivel to a threaded drain plug for sealing an opening to said reservoir;

positioning said magnetic member in said lubricant reservoir to at least partially surround a lubricant intake port associated with an oil pump;

threading said drain plug into said opening to seal said reservoir without rotationally disturbing the position of said magnetic member relative to said intake port;

allowing said motor to be in use and at rest for alternate periods of time;

removing said magnetic collector from said reservoir without disturbing any metallic debris collected upon said magnetic member;

inspecting said magnetic member for metallic debris; and

evaluating said motor for misalignment.

5,383,535

SIGNAL TRANSMITTING APPARATUS OF ELEVATOR

Hiroshi Ando, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 886,232, May 21, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 171,974
Claims priority, application Japan, May 22, 1991, 3-116418
Int. Cl.[6] B66B *1/00*
U.S. Cl. 187—247 **10 Claims**

1. An elevator signal transmitting apparatus comprising:

a parent station provided in a control panel so as to control signal transmission;

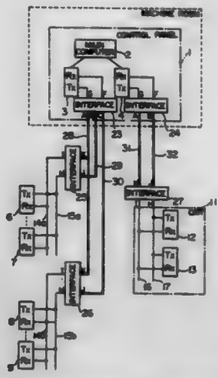
a plurality of child stations respectively provided in halls so as to control signal transmission;

third interface means connected to said parent station for converting unbalanced signals input from said parent station into balanced signals to output the balanced signals through a first port and for converting balanced signals input through a second port into unbalanced signals to output the unbalanced signals to said parent station;

first and second balanced transmission lines each having one ends connected to the first and second ports of said third interface means, respectively;

first and second unbalanced transmission lines each having one end connected to one of said plurality of child stations;

first interface means connected between the other ends of said first balanced transmission line and of said first unbalanced transmission line for converting balanced signals



input from said third interface means through said first balanced transmission line into unbalanced signals to output the unbalanced signals to the child station through said first unbalanced transmission line; and

second interface means connected between the other ends of said second balanced transmission line and of said second unbalanced transmission line for converting unbalanced signals input from the child station through said second unbalanced transmission line into balanced signals to output the balanced signals to said third interface means through said second balanced transmission line.

5,383,536

FOOT ACTUATED WHEEL BRAKE

Bryce G. Butter; James D. Houseman, and Stephen R. Kovac, all of St. Louis, Mo., assignors to Saf-T-Loc, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 783,817, Oct. 29, 1991, Pat. No. 5,328,000, and a continuation-in-part of Ser. No. 802,930, Oct. 29, 1991, Pat. No. Des. 342,888. This application Oct. 20, 1992, Ser. No. 963,698
The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.
Int. Cl.[6] B60B *33/00*; B62B *5/04*
U.S. Cl. 188—1.12 **6 Claims**

1. A wheel brake for at least one wheel in a wheeled cart where each such wheel is rotatably supported on a yoke at a lower end of a leg support in said wheeled cart, said wheel brake comprising:

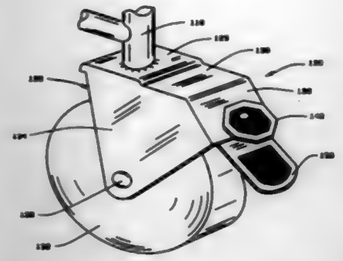
a first foot pedal movably mounted to said yoke between an upper non-engaged position and a lower engaged position and including a brake shoe for engaging said wheel at said lower engaged position;

a second foot pedal movably mounted relative to said first foot pedal between a lower non-engaged position and an upper engaged position where said second foot pedal operatively engages and holds said first foot pedal in its lower engaged position; and

cooperating engaging/disengaging means associated with said first and second foot pedals for moving said brake shoe into braking engagement with said wheel when said

first foot pedal is depressed and moved to its lower engaged position and for releasing said brake shoe from said wheel when said second foot pedal is engaged and moved from its upper engaged to its lower non-engaged position;

said first and second foot pedals being mounted below an upper substantially horizontal surface of said yoke;



said yoke also including an upper surface which is downwardly and outwardly inclined relative to said upper substantially horizontal surface of said yoke; and

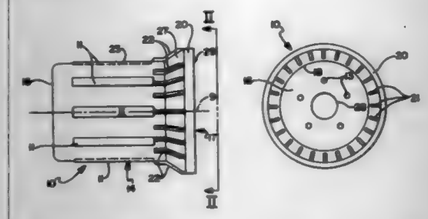
said first foot pedal extending above said downwardly and outwardly inclined surface while also being positioned below said upper substantially horizontal surface of said yoke.

5,383,537

BRAKE DRUM HAVING AN EXTENSION RING WITH CHILL FINS AND COOLING FINS FORMED THEREON

Jay D. White, Galesburg, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 16, 1993, Ser. No. 33,689
Int. Cl.[6] F16D *51/00, 65/78*
U.S. Cl. 188—78 **8 Claims**



1. A brake drum comprising:

a cylindrical braking drum having a flanged end opposite an open end and having a drum outer surface therebetween, said braking drum having an axis of rotation and an inner diameter;

an extension band formed on said drum outer surface of said braking drum in substantial close proximity to said open end, said extension band having an inboard side facing opposite said flanged end and an outboard side facing opposite said open end;

a multiplicity of generally axially extending chill fins formed on said drum outer surface and attached to said outboard side of said extension band, said chill fins being irregularly circumferentially spaced one from the other for creating chaotic airflow over said drum outer surface; and

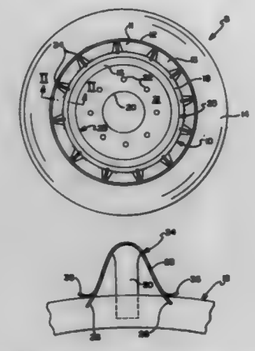
a multiplicity cooling fins formed on said inboard side of said extension band, said cooling fins extending axially inboard.

5,383,538

BRAKE SQUEAL SPRING CLIP DAMPENER

John J. Bair, Plainwell; Lee A. Freel, Clarkton; Gerald D. Damon, Farmington, and Jerry D. Woods, Milford, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 4, 1993, Ser. No. 131,163
Int. Cl.[6] F16D *65/10*; F16F *1/18*
U.S. Cl. 188—218 R **7 Claims**



2. A drum brake assembly with reduced brake squeal noise comprising:

an annular brake drum having an axis of rotation and having an outer surface and an annular squealer band mounted to said outer surface, said squealer band having an inner face and an outer face, said brake drum having a flange end and an open end opposite to said flange end where said squealer band is mounted substantially adjacent to said open end;

a wheel comprised of an annular wheel rim radially spaced from said brake drum forming a gap between said squealer band and said wheel rim and having a hub section mounted to said flange, said wheel rim attached to said hub section;

a spring clip dampener mounted between said rim and said squealer band within said gap comprised of a leaf spring section, said leaf spring section having a first end contacting said squealer band, a center section contacting said wheel rim, and a second end contacting said squealer band imparting a separation force between said squealer band and said wheel rim, a pair of inner tabs attached to a first edge of said leaf spring section, a first inner tab extending from said first end and a second inner tab extending from said second end toward said squealer band both overlapping said inner face of said squealer band, and an outer tab attached to a second edge of said leaf spring section extending from said center section radially inward toward said squealer band overlapping said outer face of said squealer band where said spring clip dampener creates a separation force between said squealer band and said wheel rim and increases the level of vibration dampening on said squealer band thereby lowering brake squeal noise level.

5,383,539

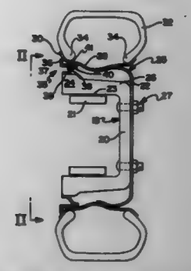
BRAKE SQUEAL DAMPENER RING

John J. Bair, Plainwell, and Steven W. Woodard, White Lake, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 4, 1993, Ser. No. 131,350
Int. Cl.[6] F16D *65/10*
U.S. Cl. 188—218 R **5 Claims**

4. A brake squeal assembly comprising:

a wheel assembly including an annular brake drum having an outer surface with an annular squealer band attached thereto and a friction inner surface for reacting with a brake shoe and a rim secured to said wheel in annular spaced relation about said drum and having an inner surface spaced radially outward from said drum outer surface;



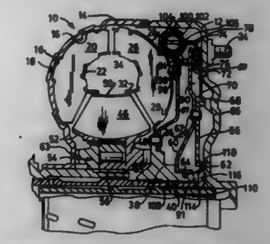
a squeal damper ring disposed between said rim and said brake drum said damper ring having a plurality of friction springs attached to an annular retention band contacting said inner surface of said wheel, said friction springs formed of thicker material than said retention band and extending to frictionally contact said squealer band to dampen vibration of said brake drum.

5,383,540

TORQUE CONVERTER BYPASS CLUTCH PISTON-PUMP DRIVE FOR AN AUTOMATIC TRANSMISSION

Fraser J. MacDonald, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1993, Ser. No. 131,399
Int. Cl.[6] F16D *3/14, 33/00, 33/00*
U.S. Cl. 192—3.29 **13 Claims**



1. In an torque converter that produces an hydrokinetic driving connection between a turbine and impeller disposed about an axis, an assembly comprising:

an impeller cover supported for rotation;

a pump shaft extending along said axis;

a plate fixed to the impeller cover, carrying a second friction surface adjacent and facing the first friction surface;

a piston supported for axial displacement on the turbine, sealed against passage of fluid therebetween, and having a first friction surface located at a radially outer portion of the piston;

first means for driveably connecting the plate and piston;

second means unconnected to the impeller cover for driveably connecting the piston and plate to the pump shaft;

a clutch for alternately driveably locking and releasing the impeller and turbine;

a first drive ring resiliently fixed to the turbine, having a friction disc located between the first friction surface and second friction surface; and

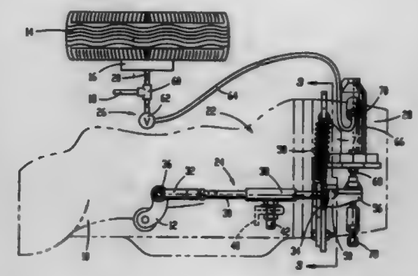
passage means for alternately pressurizing and venting a first space located between the impeller cover and piston and a second space located between the piston and the turbine.

5,383,541

AUTOMATIC GEAR SHIFT LOCK

James H. Kaplan, Mission Hills, Kans., assignor to Harlan Corporation, Kansas City, Kans.

Filed Jan. 11, 1993, Ser. No. 2,947
Int. Cl.[6] B60K *41/26*
U.S. Cl. 192—4 C **7 Claims**



1. An apparatus for use in locking the automatic transmission linkage of a vehicle against shifting between forward and reverse gears during movement of the vehicle, wherein the vehicle includes a hydraulic braking system, the apparatus comprising:

a locking means for locking the linkage against shifting movement between the forward and reverse gears;

a hydraulically-actuated shifting means for shifting the locking means between a locked position in which the linkage is locked against movement between the forward and reverse gears and an unlocked position in which the linkage is allowed to move between the forward and reverse gears; and

a pressure sensitive valve means connected between the braking system and the shifting means and being movable from a closed position in which hydraulic fluid is shut off from the shifting means and an open position in which fluid is delivered to the shifting means, the valve means moving from the closed to the open position when the pressure in the braking system reaches a preset level indicative of complete cessation of movement of the vehicle so that fluid is delivered to the shifting means to shift the locking means to the unlocked position,

said locking means includes an elongated rod adapted to be operably coupled with said linkage and movable therewith between positions corresponding to the forward or reverse gears; and

a plate member shiftable between the locking and unlocking positions and slidably receiving said rod, said plate member including movement-blocking structure for, when the plate member is in said locking position, preventing movement of said rod when said transmission linkage is in either a forward or reverse gear, said plate member permitting movement of said rod when the plate member is in said unlocking position.

5,383,542

OVERRUNNING CLUTCH

Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 172,990
Int. Cl.[6] F16D *41/07*
U.S. Cl. 192—45.1 **10 Claims**

1. An overrunning clutch comprising:

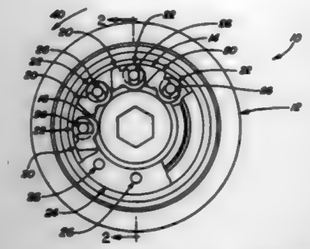
(a) a driving race with a substantially cylindrical surface with a substantially circular cross section, said race having

an axis of rotation normal to and through the center of the substantially circular cross section of said race;

(b) a driven race with a substantially cylindrical surface concentric with and facing said driving race, said driven race having a common axis of rotation with said driving race; and

(c) a plurality of cams distributed between said driving and said driven race, each cam comprising:

a locking portion comprising a first locking surface and a second locking surface, said locking portion having a profile such that there is an orientation in which said



locking portion is wedged between said driving race and said driven race, allowing torque transfer from said driving race to said driven race in a predetermined direction, but not allowing torque transmission from said driven race to said driving race in said same predetermined direction;

each said cam having a center of gravity such that centrifugal force applied at said center of gravity will move said locking portion of said cam into said wedged orientation;

wherein said cams are distributed such that regardless of rotational position of said clutch races, at least one said cam is also moved into said wedged orientation by gravitational force acting at said center of gravity.

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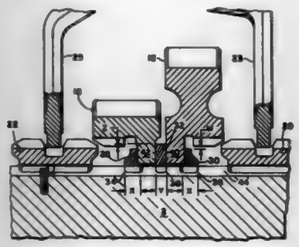
TRANSMISSION MAINSHAFT THRUST WASHER AND RETAINER RING COMBINATION

Robert B. Craft, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 29, 1993, Ser. No. 128,283

Int. Cl.[6] F16D *21/02*; F16H *3/08*

U.S. Cl. 192—48.8 **2 Claims**



1. A transmission mainshaft thrust washer and retainer ring combination of the type wherein radially inward extending flanges of a pair of adjacent mainshaft gears selectively clutchable with the mainshaft are prevented from moving axially away from each other by first and second retainer rings respectively disposed in annular grooves adjacent sides of the respective gear flanges which face away from each other and are prevented from moving axially towards each other by a thrust washer disposed in an annular groove in the mainshaft between sides of the respective gear flanges which face towards each other and operative to transmit axial thrust to the mainshaft during the process of clutching the respective gears thereto, wherein the improvement is characterized by;

the first and second retainer rings being interchangeable with each other but not with the thrust washer as a result of both retainer ring grooves having respective axial widths that are substantially the same with each other and wider than the axial width of the thrust washer groove axial width so as to accommodate an offset in the side of the respective rings facing towards the mainshaft gear flanges resulting in a portion of each retainer ring having an axial width within the retainer ring groove that is larger than both the axial widtli of the thrust washer groove and a remaining portion of the retainer ring.

5,383,544

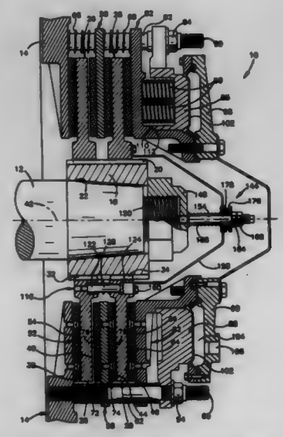
FORCE TRANSMITTING ASSEMBLY

Kirit R. Patel, North Royalton, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 12, 1993, Ser. No. 134,971

Int. Cl.[6] F16D *13/69*

U.S. Cl. 192—70.28 **5 Claims**



1. A force transmitting assembly operable between an engaged condition in which said force transmitting assembly is effective to transmit force and a disengaged condition in which said force transmitting assembly is ineffective to transmit force, said force transmitting assembly comprising a first member, a first force transmitting disc connected with and movable relative to said first member, a second force transmitting disc connected with and movable relative to said first member, a second member, a reaction disc connected with and movable relative to said second member and disposed between said first and second force transmitting discs, said first and second force transmitting discs having side surfaces which are disposed in engagement with opposite site surfaces of said reaction disc when said force transmitting assembly is in the engaged condition, said first force transmitting disc being in a first predetermined position relative to said first member when said force transmitting assembly is in the disengaged condition, said first force transmitting disc being offset from said first predetermined position when said force transmitting assembly is in the engaged condition, said second force transmitting disc being in a second predetermined position relative to said first member when said force transmitting assembly is in the disengaged condition, said second force transmitting disc being offset from said second predetermined position when said force transmitting assembly is in the engaged condition, first drive means for applying force to said second force transmitting disc to move said second force transmitting disc to the second predetermined position relative to said first member upon operation of said force transmitting assembly from the engaged condition to the disengaged condition, force transmitting means for transmitting force applied to said second force transmitting disc by said first drive means to move said first force transmitting disc to the first predetermined position relative to said second member under the influence of force applied to said second force transmitting disc by said first drive means and transmitted from said second force transmitting disc to said first force transmitting disc upon operation of said force transmitting assembly to the disengaged condition, and a shaft connected with said first member, said force transmitting assembly further including an internally threaded member disposed in engagement with an externally threaded end portion of said shaft, said first drive means being connected with said internally threaded member and said second force transmitting disc, said first drive means includes an elongated member extending axially outwardly from said internally threaded member, a force transmitting member movable along said elongated member and connected with said second force transmitting disc, and spring means disposed between said force transmitting member and said internally threaded member for urging said force transmitting member toward a third predetermined position relative to said elongated member, said force transmitting member being movable along said elongated member from the third predetermined position against the influence of said spring means and under the influence of force transmitted from said second force transmitting disc to said force transmitting member upon operation of said force transmitting assembly from the disengaged condition to the engaged condition, said spring means being operable to move said force transmitting member along said elongated member toward the third predetermined position upon operation of said force transmitting assembly from the engaged condition to the disengaged condition, said force transmitting member being operable to transmit force to move said second force transmitting disc toward the second predetermined position upon operation of said force transmitting assembly from the engaged condition to the disengaged condition.

5,383,545

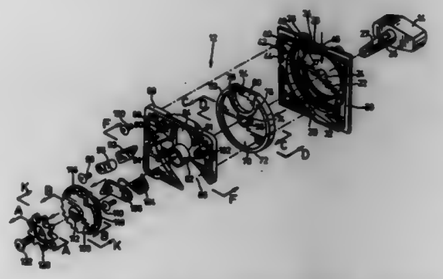
COIN MECHANISM

Josef W. Schwarzli, Stouffville, Canada, assignor to Machine-O-Matic Limited, Newmarket, Canada

Continuation-in-part of Ser. No. 836,212, Jan. 30, 1992, abandoned. This application Feb. 25, 1993, Ser. No. 22,102

Int. Cl.[6] G07F *5/06*

U.S. Cl. 194—202 **2 Claims**



1. A coin mechanism for a vending machine comprising a body portion having a slot for inserting a coin, a coin receiving disc which is rotatable in the body portion having a coin receiving recess aligned with the coin slot at a beginning of a path of travel of the coin in the coin receiving recess, the path of travel of the coin ending at an extraction ramp, a handle with a shaft extending into the body portion to rotate the disc, and a gear mechanism to actuate a dispensing wheel in the vending machine;

wherein the coin receiving disc rotates in a cylindrical recess formed in the body portion, a portion of a coin projecting over a raised edge of the body portion along the path of travel of the coin, a portion of said raised edge being ramped along a substantial portion of the path of travel of the coin to project progressively inwardly of the coin receiving disc and thereby to forcibly separate the coin axially from the coin receiving recess as the coin travels along the raised edge,

wherein the raised edge has an upper limit adjacent to the slot.

5,383,546

DEVICE FOR THE DETECTION OF A FOREIGN BODY IN A COIN CHANNEL

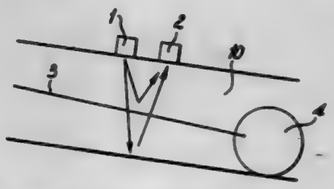
Arjen J. Mulder, Mainbach, Germany, assignor to NSM Aktiengesellschaft, Bingen, Germany

Filed Apr. 13, 1993, Ser. No. 46,669

Claims priority, application Germany, Apr. 14, 1992, 4212499; Sep. 21, 1992, 4231534

Int. Cl.[6] G07D *5/10*; G07F *3/02*

U.S. Cl. 194—203 **16 Claims**



1. Device for detecting a foreign body in a coin channel or recognizing edge outline of coins moving along the channel, comprising

a photoelectric detector comprising a source and receiver and arranged on top of the channel,

the photoelectric source comprising an LED and the photoelectric receiver comprising a phototransistor,

an amplifier through which the phototransistor is coupled with feedback to the LED,

means for measuring diode current at short intervals,

means for monitoring the sequential measurements and determining, by a plurality of the sequential measurements, a mean value of LED current, and

means for providing a failure signal in the case of a rapid charge in the LED current which exceeds limits due to temperature characteristics.

5,383,547

SCRAPER CONVEYOR

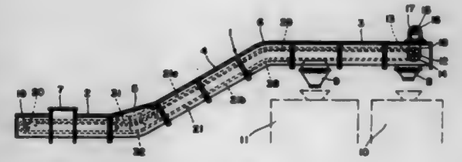
Seiichi Noda, He 54, Aza Kizu, Nanatsuka-machi, Kahoku-gun, Ishikawa-ken, Japan

Filed Sep. 7, 1993, Ser. No. 116,694

Claims priority, application Japan, Sep. 8, 1992, 4-265355

Int. Cl.[6] B65G *19/00*

U.S. Cl. 198—728 **3 Claims**

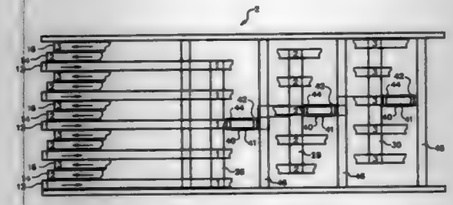


1. A scraper conveyor comprising:

a curved machine frame having 1) a machine frame having a horizontal supply case provided with a supply port, 2) a

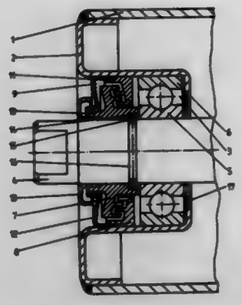
horizontal discharge case placed at a position higher than the supply case and provided with a discharge port, and 3) a slanted case placed between said horizontal supply case and horizontal discharge case;
a drive sprocket so placed at an end of the discharge case as to rotate by a motor;
a follower sprocket placed at an end of the supply case;
an endless chain extending around both the sprockets, said endless chain having a plurality of paired scrapers for conveying grain;
a guide rail formed along substantially an entire length of the curved machine frame and arranged in the machine frame in order to support upward an upper return chain portion of the endless chain;
a pair of chain sustain members arranged at a first corner portion between the supply case and the slanted case to prevent the upper return chain portion and a lower advancing chain portion of said endless chain from floating; and
a chain support member arranged at a second corner portion between the discharge case and the slanted case to support upward the lower advancing chain portion
wherein said chain support member has a pair of support rails to engage rollers on the lower advancing chain portion, the support rails having a gap between the rails, dimensioned to permit only grain to pass through.

5,383,548
RECIPROCATING FLOOR CONVEYOR
Manfred W. Quaeck, 1515-210th Ave. NE., Redmond, Wash. 98053
Continuation-in-part of Ser. No. 874,372, Apr. 27, 1992, abandoned. This application May 18, 1992, Ser. No. 885,231
Int. Cl.[6] B65G *25/04*
U.S. Cl. 198—750 **6 Claims**



1. A reciprocating conveyor comprising:
at least one group of at least three slat members, each of said slat members being individually reciprocatable; and
drive means engaging each slat member and operable to move more than half of said slat members simultaneously in a conveying direction and to move a remainder of said slat members in an opposite direction at least at about twice a rate of speed, said drive means comprising:
a fluid pressure source providing a plurality of fluid flows having substantially equal and constant flow rates;
an extensible fluid driven cylinder for reciprocation of each slat member of a group connected to one of said plurality of fluid flows having substantially equal and constant flow rate from said fluid pressure source, each of said fluid driven cylinders being divided into a piston side and a rod side and having a piston side to rod side displacement of at least about 2 to 1, such that said retraction of said fluid driven cylinder occurs at least at approximately twice the rate as expansion of said fluid driven cylinder, said piston side of said fluid driven cylinders not being directly interconnected;
a direction valve means for each fluid driven cylinder, each of said direction valve means having a first position in which said piston side of said fluid driven cylinder is connected to one of said plurality of fluid flows having substantially equal and constant flow rates from said fluid pressure source such that said fluid driven cylinder and said engaged slat member extend, and a second position in which said rod side of said fluid driven cylinder is connected to one of said plurality of fluid flows having substantially equal and constant flow rates from said fluid pressure source such that said fluid driven cylinder and said engaged slat member retract; and
means for controlling said direction valve means such that said direction valve means is moved from its first position to its second position when one of said slat members has fully extended, and said direction valve means is moved from its second position to its first position when said one of said slat members has fully retracted.

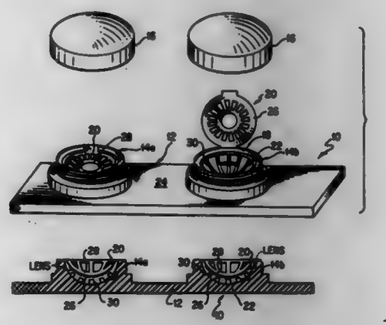
5,383,549
CONVEYOR-BELT CYLINDER
Manfred Mayer, Friedrichsthal, Germany, assignor to Precimeca Gesellschaft für Fördertechnik mbH, Sulzbach/Saar, Germany
Filed Jun. 3, 1994, Ser. No. 253,968
Claims priority, application Germany, Aug. 20, 1993, 4327988
Int. Cl.[6] B65G *39/10*
U.S. Cl. 198—842 **2 Claims**



1. A conveyor-belt cylinder with two ends comprising: a shaft; a base mounted on said shaft at each said ends; a jacket secured to each said base; a roller bearing on said shaft at each end of said cylinder; an annular spring securing each said base and bearing; a labyrinth seal sealing each said base and bearing and comprising an inner seal ring and an outer seal ring; said spring being inserted in an annular groove in said shaft; a first outward-facing annular flange on said inner seal ring; a terminating cap engaging the outside of said first annular flange and of a second outward-facing annular flange on said outer seal ring; said inner seal ring and said outer seal ring comprising a prefabricated assembly in conjunction with said terminating cap; said inner seal ring having a side facing said bearing and having an annular recess accommodating said spring.

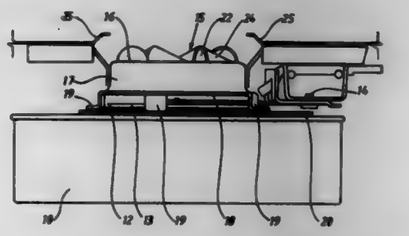
5,383,550
CONTACT LENS CASE
Fu-Pao Tsao, Lawrenceville, Ga., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 988,072, Dec. 9, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,727
Int. Cl.[6] A45C *11/04*
U.S. Cl. 206—5.1 **10 Claims**

1. A contact lens case which may be used for both carrying and disinfecting a contact lens, comprising:
a) a main body portion defining a reservoir capable of receiving a contact lens and an amount of a disinfecting solution sufficient to disinfect said lens, the reservoir having a floor portion which is concave to correspond to the convex surface of a contact lens;
b) a plurality of ribs extending upwardly from the reservoir floor for suspending the contact lens in position above the floor of the reservoir;
c) a basket having a convex bottom surface corresponding to the concave surface of a contact lens, the basket capable of being placed within the reservoir at a position above the ribs to form a space for holding the contact lens and porous to allow solution to circulate throughout the reservoir; and



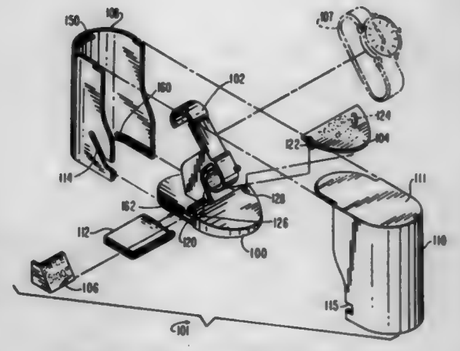
d) means for sealing the reservoir,
whereby a lens inserted into said reservoir is maintained with the concave side facing up while said is located in a resting position, thereby reducing trapped air bubbles and improving lens surface contact with solution contained in the reservoir.

5,383,551
DEVICE FOR A BURNER PREFERABLY FOR A SPIRIT STOVE
Thomas Arvidsson, Ljungby, Sweden, assignor to Aktiebolaget Electrolux, Sweden
Filed Dec. 27, 1993, Ser. No. 173,760
Claims priority, application Sweden, Dec. 29, 1992, 9203924
Int. Cl.[6] F24C *5/00*
U.S. Cl. 126—43 **9 Claims**



1. Device for a spirit stove burner which operates without pressure comprising, a fuel container (10) with a spirit-absorbing mass, the container having an opening (11) in which a portion of the absorbing mass is revealed in order to form an evaporation surface for the spirit, the stove having a flame spreader (15) which is placed above the opening and which comprises a generally horizontal plate (16) defining an upper side and a downwardly extending tube shaped part (17) below which air during burning flows to the evaporation surface, wherein the plate (16) has several flame openings (22) which are arranged and operable to create several minor flames which have a horizontal and a tangential direction component.

5,383,552
WATCH BOX
Jerome N. Dikowitz, Plainview, N.Y., assignor to E. Gluck Corporation, Long Island City, N.Y.
Filed Feb. 2, 1994, Ser. No. 190,424
Int. Cl.[6] B65D *85/40*
U.S. Cl. 206—6.1 **23 Claims**



1. A modular watch box comprising a base;
means for retaining a watch on said base;
a tab holder formed on said base; and
a cover selectively coupleable to said base and displaceable between a first position, wherein said cover envelopes at least said retaining means and said tab holder and a second position, wherein said cover does not envelope said retaining means and said tab holder;
said cover defining an opening substantially aligned with said tab holder to selectively allow insertion and removal of a first information tab from said tab holder when said cover is secured to said base.

22. A method of assembling a modular watch box including a base, a back panel and a front panel, wherein said base includes a top wall, a bottom wall and a side wall extending between a portion of the top wall and bottom wall thereby defining a space therebetween where said side wall does not extend between said top wall and said bottom wall, and said method comprising the steps of:
providing said back panel with at least one rib having a first end and a second end said rib extending in an axial direction, such that it is aligned with said space in said base;
displacing said back panel against said base such that one of said first end and said second end of said at least one rib bears against said side wall of said base; and
displacing said front panel into frictional engagement with at least one of said back panel and said base.

23. A method of replacing an information tab from within a watch box without opening the watch box, wherein the watch box includes a base including an information tab holder and a watch box cover including a slit, the method comprising the steps of:
providing the slit in the cover in alignment with the information tab holder of the base;
removing a first information tab from said information tab holder by sliding same through said slit; and
sliding a second information tab through said slit and into said information tab holder.

5,383,553

CASE FOR RECEIVING AT LEAST ONE DATA STORAGE DISK

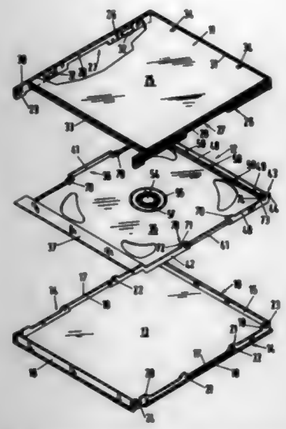
Henri Lammerant, and Philip Lammerant, both of Thulin, Belgium, assignors to Cartonneries de Thulin S.A., Thulin, Belgium

Filed Jun. 17, 1994, Ser. No. 261,830

Claims priority, application Germany, Jun. 18, 1993, 9309103[U]

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—309 **5 Claims**



1. A case for receiving at least one data storage disk, said case comprising:

a housing comprised of a lid and a base;

a support, for receiving at least one data storage disk, positioned in said housing;

said base having a substantially flat rectangular bottom plate with lateral edges and sidewalls connected to said lateral edges of said bottom plate;

said lid having a substantially flat rectangular top plate with lateral edges and sidewalls connected to said lateral edges of said top plate;

said housing further comprising a pivoting connection for pivoting said lid and said base relative to one another, said pivoting connection comprised of pivot pins connected to said sidewalls of one of said lid and said base and pivot holes, for receiving said pivot pins, positioned in said sidewalls of the other of said lid and said base;

wherein a length of said pivot pins is greater than a thickness of said sidewalls of the other of said lid and said base;

wherein said pivot pins have a radial enlargement, said radial enlargement having a diameter greater than a diameter of said pivot holes; and

wherein said sidewalls of said one of said lid and said base has an insertion slot, extending from an upper edge of said sidewalls of said one of said lid and said base to said pivot holes, for introducing said pivot pins into said pivot holes.

5,383,554

CONTAINER FOR STORING AND DISPLAYING AN ARTICLE

David M. Cowan, 167 N. 9 St., Brooklyn, N.Y. 11211

Continuation-in-part of Ser. No. 931,666, Aug. 19, 1992, which is a continuation of Ser. No. 713,731, Jun. 11, 1991, abandoned. This application Nov. 19, 1993, Ser. No. 155,473

Int. Cl.[6] B65B *85/57*

U.S. Cl. 206—310 **28 Claims**

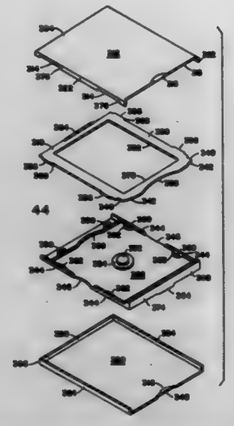
1. A container comprising:

(a) a housing;

(b) a drawer for carrying a first article, the drawer being slidably mounted in the housing so that it can be moved between a fully closed position in the housing and a fully open position in the housing; and

(c) a tray for carrying a second article, the tray being slidably mounted in the housing so it can be moved between a fully closed position in the housing and a partially extended position in the housing, the drawer in its fully open position extending from the housing beyond the tray when the tray is in its partially extended position;

the container having urging means for urging the tray towards its partially extended position as the drawer is moved towards its fully open position.



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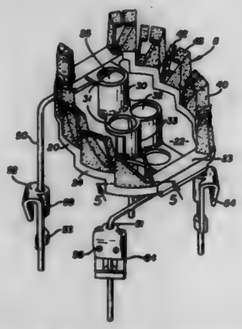
GOLF CLUB SECURER AND ORGANIZER

Robert J. Weinmeier, 4231 Dixie Canyon Ave., Apt. E., Sherman Oaks, Calif. 91423

Filed May 19, 1993, Ser. No. 64,769

Int. Cl.[6] 63B *55/00*

U.S. Cl. 206—315.6 **19 Claims**



1. A universal golf club securer and organizer, comprising:

a. a frame defining a central opening, said central opening for containing shafts of golf clubs each having a head with a golf ball engaging blade;

b. a plurality of securing means, each securing means having two members which engage the blade of the head of the club and at least one of said members being a prong which resiliently extends over the top of the blade of the head of a golf club, said plurality of securing means having different inner shapes to accommodate heads of golf clubs of different shapes, said plurality of securing means attached to said frame each for gripping and restraining outward movement of the head of a single golf club;

c. said two members of each securing means extending over a golf club head and having an opening between the members; and

d. adjustable attachment means for attaching the frame to a golf club bag.

5,383,556

PACKING FOR SMALL OBJECTS WITH SLIDER CLOSURE

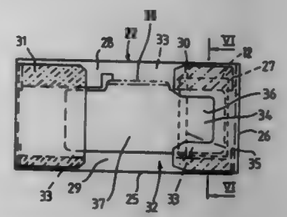
Brino A. Van Loo, Sassenheim, Netherlands, assignor to Studium Design B.V., Hillegom, Netherlands

Filed May 12, 1993, Ser. No. 59,254

Claims priority, application Netherlands, Jun. 17, 1992, 9201070

Int. Cl.[6] B65D *85/24, 43/20*

U.S. Cl. 206—338 **20 Claims**



1. Packing for small objects, comprising:

(A) a packing unit formed by a folded and joined plate of rigid material, the packing unit having at least one wall with an opening formed in one wall, to access an interior of the packing unit;

(B) at least two opposing slots formed on the one wall;

(C) a slider, formed from the plate of rigid material and slideably positioned within the opposing slots, such that the opening is releasably covered, wherein the slider is unitary with the packing unit; and

(D) a breakable weakening line connecting the slider to the packing unit.

10. Packing for small objects, comprising:

(A) a packing unit formed by a folded and joined sheet, the packing unit having at least one wall with an opening formed in one wall, to access an interior of the packing unit;

(B) at least two opposing slots formed on the one wall;

(C) a slider, formed of a plate of rigid material, slidably positioned within the opposing slots, such that the opening is releasably covered; and

(D) a cover foil applied across the opening, partly removably connected to the one wall and partly fixedly connected to the one wall, such that the opening is covered as long as the packing is not opened and is re-coverable by the cover foil after opening.

5,383,557

CASSETTE STORAGE CONTAINER WITH HUB ENGAGING FINGERS AND ADJACENT STOPS

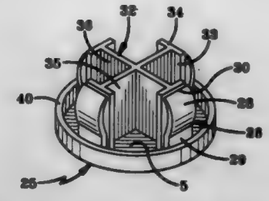
James T. Weisburn, Massillon; James K. Sankey, Hudson, Ohio, and Andrew W. Moock, Brecksville, all of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio

Filed Apr. 10, 1991, Ser. No. 682,967

Int. Cl.[6] B65D *85/672*

U.S. Cl. 206—387.13 **18 Claims**

1. A container for storing a tape cassette, said cassette being of the type having at least one tape reel hub comprising a cylindrical sidewall defining a recess in the hub, said hub recess being accessible through an opening formed in a bottom wall of the cassette, said storage container including enclosure means for receiving and enclosing a tape cassette in the storage container; and hub engaging means formed on the storage container and located for entering the hub recess through the access opening when a cassette is placed in said container for preventing rotation of the tape reel hub; said hub engaging means including at least a first pair of flexible fingers formed on the storage container and movable between a normal outwardly biased position and an inwardly flexed position for engaging the sidewall of the hub when in the outward biased position to prevent rotation of the hub when the cassette is inserted into the storage container; and rigid first stop means located inwardly of and closely adjacent to each of said fingers and in general radial alignment with said fingers to limit the inward movement of said fingers toward the flexed position by engaging said fingers upon the inward movement of the fingers.



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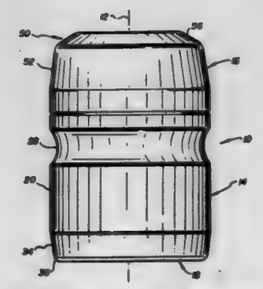
SEALED CONTAINER

Roger D. Wilkinson, New Fairfield, Conn., and Dean R. Lindsay, Winnetka, Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Sep. 11, 1992, Ser. No. 943,959

Int. Cl.[6] B65D *81/02*

U.S. Cl. 206—508 **15 Claims**



1. A sealed container which is easily opened comprising:

a base jar for containing a powdered mix, said jar including

a bottom wall,

a side enclosure extending upwardly from said bottom wall and including an upper portion disposed radially about a central axis with a screw thread about said upper portion,

a semi-spherical curved upper wall extending inwardly and upwardly from said upper portion of said side enclosure and radially about the central axis, said upper wall including a circular brim which defines a mouth opening for said jar, said circular brim having a diameter which is from 50 to 80% of a diameter of said upper portion of said side enclosure; and

a removable lid for said jar which seals said opening, said lid including

a top wall disposed about the central axis,

an encircling member extending downwardly from said top wall and radially about the central axis, said encircling member including a screw thread which matingly engages with said screw thread of said upper portion of said side enclosure,

a circular projection extending downwardly from said lid and radially about the central axis which engages and seals with said circular brim after said screw threads of said jar and lid engage, and

a circular flexible flange extending downwardly from said lid and radially about and beyond said circular projection and the central axis, said flexible flange having a tip which is radially flexed relative to a remainder of said flange upon engagement with said curved upper wall of said jar to seal therewith as said circular projection and circular brim matingly engage.

5,383,559

DISPENSING CONTAINER FOR TABLETS

Thomas Toren, Bondi, Australia, assignor to Toren Consulting Pty Limited, Bondi, Australia

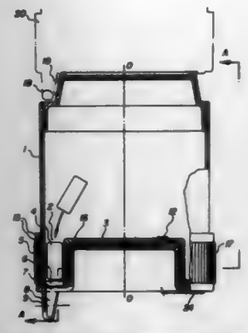
PCT No. PCT/AU91/00233, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO91/18808, PCT Pub. Date Dec. 12, 1991

Continuation of Ser. No. 938,176, Feb. 2, 1993, abandoned. This PCT application May 29, 1991, Ser. No. 242,065

Claims priority, application Australia, Jun. 4, 1990, PK0484

Int. Cl.[6] B65D *83/04*

U.S. Cl. 206—533 **9 Claims**



9. A dispensing container for containing a plurality of medical or food supplement tablets within the container in a random fashion, and dispensing the tablets one at a time comprising

a container having a hollow body and a first and second end, said container having no moving parts therein, said first end being closed and generally defining a first plane, said second end generally defining a second plane, an at least part circumferential channel which orients a plurality of said tablets in said hollow body in a preferred orientation, the oriented tablets being located in substantially the same plane which plane is substantially parallel to said first and second planes, said channel being disposed in said second end and defined between spaced peripheral circular sidewalls, said sidewalls having no relative movement therebetween, an aperture in said channel for permitting said tablets to leave said channel one at a time, a closure movable in relation to said hollow body to open and close said aperture, and a receptacle forming part of said closure disposed externally to said aperture for receiving a first tablet that has passed through said aperture, for holding said first tablet temporarily and for permitting manual removal of said first tablet, for causing said first tablet to block the way for another, second tablet from passing through said aperture until such time that said first tablet has been removed, and for receiving said second tablet, without movement of the said closure, after removal of said first tablet, said receptacle being disposed externally of said hollow body.

5,383,560

CASE, INTER ALIA FOR MAKE-UP PRODUCTS, COMPRISING A CLOSING DEVICE THAT CAN BE OPERATED FROM THE OUTSIDE WITH AID OF A PUSH BUTTON

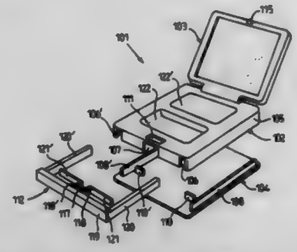
Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 845,814, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 620,006, Nov. 30, 1990, abandoned. This application Aug. 5, 1993, Ser. No. 102,497

Claims priority, application France, Dec. 1, 1989, 89 15867

Int. Cl.[6] B65D *69/00*

U.S. Cl. 206—581 **1 Claim**



1. A case for a make-up product comprising a base and a lid hingedly attached to said base and movable relative thereto between an open and closed position, said base having a space receiving a member including a push button and a ramp surface movable with said push button along an axis with said ramp surface sloping relative to said axis from one end of said ramp surface toward the opposite end thereof, said lid having a body connected to a portion thereof by connecting means so that said body will be engageable by a portion of said ramp surface when said lid is in said closed position and said push button is actuated, said member including a pair of flexible members disposed adjacent said ramp surface and which engage said body when said lid is in the closed position, the slope of said ramp surface being such that said body is ejected beyond said flexible members by said ramp surface when said push button is pushed by a user to move said push button from a deactuated to an actuated position, said base including elastic means for returning said push button to said deactuated position, said flexible members comprising a pair of flexible strip members each standing on one side of said ramp surface, each strip member having a portion for engaging said body between said strip members when said push button is in said deactuated position, said strip members extending generally parallel to said axis and said push button, said flexible members and said ramp surface being molded as a single component, said ramp surface extending over a selected length and said flexible strip members extending over said selected length; said flexible strip members each being made of plastic material and being spaced apart a distance so that said strip members exert pressure on said body at least during movement of said push button along said axis until said body is ejected from between said strip members by said ramp, said axis being a rectilinear axis, said push button including drawer means and said base including means for receiving said drawer means, said base including a button wall and side walls and a product carrying surface connected to said side walls with said side walls spacing said product carrying surface from said bottom wall with said drawer means having arms received in openings in one of said side walls and extending into the space between said product carrying surface and said bottom wall.

5,383,561

WEIGHT CHECKER-SORTER

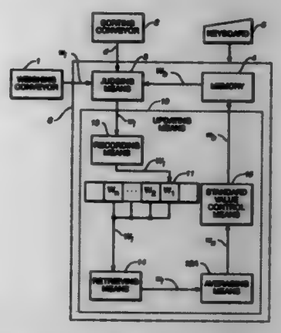
Harunori Tokutu, Shiga, Japan, assignor to Ishida Co., Ltd., Kyoto, Japan

Filed Nov. 19, 1993, Ser. No. 155,055

Claims priority, application Japan, Dec. 29, 1992, 4-359933

Int. Cl.[6] B07C *5/16*

U.S. Cl. 209—645 **20 Claims**



1. A weight checker-sorter comprising:

a weighing means for weighing a product expected to contain a specified plural number of articles;

judging means for determining whether or not said product, weighed by said weighing means, contains said specified plural number of said articles by comparing measured weight value obtained by said weighing means and a current standard value;

weight memory means for storing weight values of products which have been considered acceptable by said judging means;

updating means for calculating a new standard value from a plurality of weight values stored in said weight memory means; and

sorting means for sorting products weighed by said weighing means according to determinations by said judging means;

said updating means including averaging means for calculating an average once every n' times as new weight values are stored in said weight memory means, said average being of n weight values most recently stored in said weight memory means at the time, n and n' being integers, and n being greater than n', said averaging means including correcting means for correcting the value of said average to take into account of effects of sudden changes in said weight values.

5,383,562

OPEN FRAME RACK ASSEMBLY

Kenneth F. Gay, 241 Apache St., Westerville, Ohio 43081

Continuation-in-part of Ser. No. 994,524, Dec. 21, 1992, Pat. No. 5,299,698. This application Feb. 3, 1994, Ser. No. 191,040

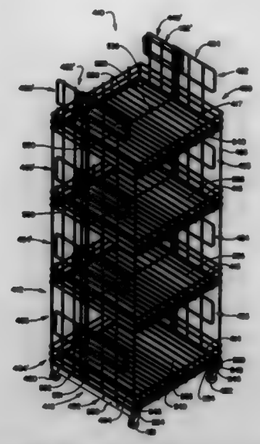
Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—181 **16 Claims**

1. An open frame module positionable upon a surface for connection with open frame components to form a vertically upstanding support for items, comprising:

a first open frame load receiving component having at least two parallel, spaced apart loading rods of first widthwise cross-sectional dimension, having a lower portion for transferring load to said surface and extending vertically upwardly a select height, having a plurality of receiving connector assemblies formed of horizontally disposed mutually parallel connector rods connected to an outwardly disposed said loading rod and extending outwardly therefrom a predetermined distance to define a receptor gap, said connector assemblies being positioned at spaced levels extending upwardly from the vicinity of said lower portion;

a second open frame load receiving component having two parallel, spaced apart loading rods of said first widthwise cross-sectional dimension, having a lower portion for transferring load to said surface and extending vertically upwardly a select height, having a plurality of link assemblies, each link assembly including at least one horizontal end link rod connected to and extending from one of said two loading rods and supporting at least one vertically disposed tab rod of second widthwise cross-sectional dimension less than said first widthwise cross-sectional dimension, said tab rod being slidably insertable within



oppositely disposed said receptor gaps of another said module to a position of substantial parallel adjacency with a said loading rod thereof;

a U-shaped horizontal cross member having a first side portion connected to said first load receiving component, having a second side portion connected to said second load receiving component, and an intermediate portion of predetermined length extending normally from each said first and second side portion and defining respective first and second corners therewith, said cross member positioning said first and second load receiving components in vertical, spaced apart relationship corresponding with said predetermined length.

5,383,563

OUTRIGGER AND GUARD ASSEMBLY

Viktor Richtsfeld, and Rudolf Weber, both of Mainburg, Germany, assignors to Caterpillar Inc., Peoria, Ill.

Filed Feb. 10, 1994, Ser. No. 194,775

Int. Cl.[6] B66C *23/78*

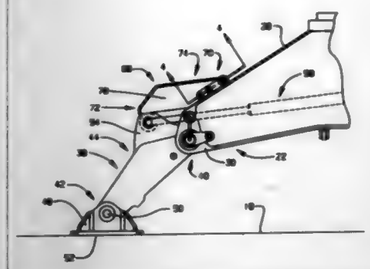
U.S. Cl. 212—189 **11 Claims**

1. An outrigger apparatus for stabilizing a work machine, comprising:

a support structure adapted to be attached to the work machine;

a leg member pivotally connected at a first end portion to the support structure and having a ground engaging means connected at a second end portion, the leg member being moveable between a lower ground engaging position and an upper travel position;

a guard member pivotally connected to the support structure; and



biasing means for rotating the guard toward the leg member in response to movement of the leg member.

5,383,564

ADULT FRIENDLY CHILD-RESISTANT ATTACHMENT FOR CONTAINERS USED TO STORE POTENTIALLY DANGEROUS MATERIALS

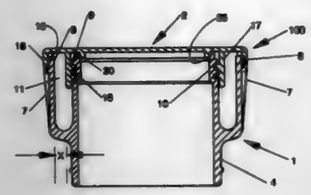
Peter W. Hamilton; Robert S. Dirksing, both of Cincinnati, Ohio, and Reuben F. Oder, Florence, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 826,747, Jan. 28, 1992, Pat. No. 5,230,433. This application Jan. 21, 1993, Ser. No. 6,866

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[6] B65D *55/02*

U.S. Cl. 215—221 **5 Claims**



1. A child resistant attachment for a container suitable for storing and dispensing a potentially dangerous material, said attachment being resistant to opening by children yet readily openable by adults, said child resistant attachment comprising:

(a) a finish portion having an upwardly extending thread ring, said thread ring having an innermost surface and an outermost surface, said thread ring including external threads on said outermost surface of said thread ring and including securement means on the outermost surface of said thread ring for attaching said finish portion to said container, and an annular collar having interior, exterior, uppermost and lowermost surfaces, said annular collar being generally concentric about said thread ring, interrupted by at least one pair of slots, thereby forming at least one resiliently deformable cantilevered pushtab having a lowermost end and an uppermost end, said push tab having an exposed surface contour which generally conforms to the contour of said exterior surface of the adjacent portions of said annular collar to minimize the chance of inadvertent depression thereof when said annular collar is grasped, said pushtab having a vertical extension projecting above said uppermost surface of said annular collar, said uppermost end of said pushtab being inwardly movable relative to the rest of said annular collar when a squeezing force is applied to said uppermost end of said pushtab; and

(b) a closure having a first skin having an innermost and an outermost surface said innermost surface of said first skirt including a means for rotatably and releasably securing said closure to said finish portion and a second skirt external to said first skirt, said second skirt having an innermost and an outermost surface said closure also having at least one interlocking pawl on said innermost surface of said second skirt, said interlocking pawl being so shaped and positioned that it will deflect said vertical extension on said resiliently deformable pushtab when said closure is rotatably secured onto said finish portion, but will prevent removing said closure from said finish portion by rotating said closure in a reverse direction unless said resiliently deformable cantilevered pushtab on said annular ring is first depressed to disengage said pushtab vertical extension from said interlocking pawl.

5,383,565

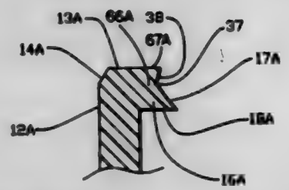
NECK FINISH FOR CONTAINERS OF RIGID MATERIAL

Daniel Luch, Los Gatos, Calif., assignor to Portola Packaging, Inc., San Jose, Calif.

Continuation of Ser. No. 818,800, Jan. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 564,630, Aug. 8, 1990, abandoned. This application Aug. 18, 1993, Ser. No. 108,842

Int. Cl.[6] B65D *1/40, 41/16, 41/18*

U.S. Cl. 215—317 **10 Claims**



1. A container neck formed of a rigid plastic material which is subject to distortion into an oval shape comprising a side wall having inner and outer wall surfaces, a lip at the top of said side wall, a rim around said outer wall surface having a rim top joined to said lip and terminating in an outer upper corner, the outside of said rim being substantially greater in size than said outer wall surface, said rim comprising a continuous peripheral locking bead, characterized in that said outer upper corner of said rim is formed with a cutout defined in part by a downward extending upper outer wall of said rim below said rim top being greater in size than said outer wall surface for a distance approximately half the height of said rim and below said upper outer wall said rim cutout slants downward-outward in a lower outer wall which intersects the bottom of said rim to form a contact point spaced downward from said rim top.

5,383,566

DUAL-CHAMBER COMPOSITE PRESSURE VESSEL AND METHOD OF FABRICATION THEREOF

Terence C. Johnson, Salt Lake City, Utah, assignor to Edo Corporation, Fiber Science Division, Salt Lake City, Utah

Filed Aug. 5, 1993, Ser. No. 102,578

Int. Cl.[6] B65D *25/04*

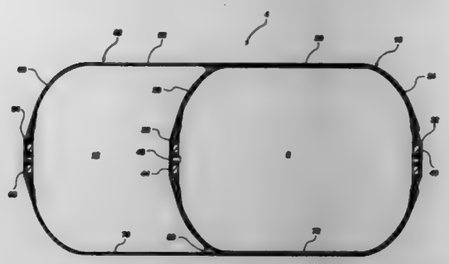
U.S. Cl. 220—562 **10 Claims**

1. A fiber-wound composite pressure vessel comprising

a first chamber-defining enclosure having a first oblate end section, a first cylindrical sidewall formed integrally at one end of the first sidewall with the end section, and a second oblate end section formed integrally with the sidewall at the other end of the first sidewall to enclose and define the first chamber, and

a second chamber-defining enclosure having a second cylindrical sidewall which is formed integrally with the first sidewall to extend forwardly of the second end section to a termination, and a third oblate end section formed integrally with the second sidewall over the termination thereof to enclose and define the second chamber, and

wherein the first enclosure, including first and second end section and first sidewall, is comprised of a first layer of



wound fiber, wherein the second end section is comprised of additional wound fibers, and wherein the first and second cylindrical sidewalls, and first and third end sections are comprised of a second layer of wound fiber.

5,383,567

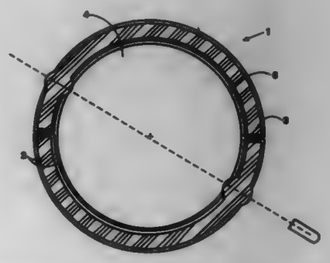
PROTECTIVE DEVICE FOR CONTAINER

Usman A. Sorathia, Arnold; Deborah A. Houghton, Annapolis; David P. Owen, Pasadena, all of Md.; Markus R. Pipyne, Burke, Va.; Wayne C. Jones, Catonsville, Md.; Vincent J. Castelli, Severna Park, Md.; Eugene C. Fischer, Stevensville, Md.; Ravanasamudram S. Venkatachalam, Arnold, Md.; Douglas Loup, Pasadena, Md., and Carlisle R. Stephenson, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 24, 1993, Ser. No. 125,713

Int. Cl.[6] B65D *90/02*

U.S. Cl. 220—4.13 **18 Claims**



1. A removable protective device for mounting on and surrounding a localized section of a container containing a solid mass heat source and an initiator for heating the heat source to a temperature above a melting point of the heat source whereby the heat source is brought to a molten state in the localized section of the container surrounded by said protective device, said protective device comprising:

a shell, said shell having inner and outer walls defining a space therebetween;

self-sealing means positioned in said space, said self-sealing means being pre-compressed between said inner and outer walls; and

mechanical mounting means for securably and releasably attaching said shell to the container, whereby upon said protective device being mounted to the container said self-sealing means act to seal a puncture in the container so as to prevent release of the molten heat source from the container.

5,383,568

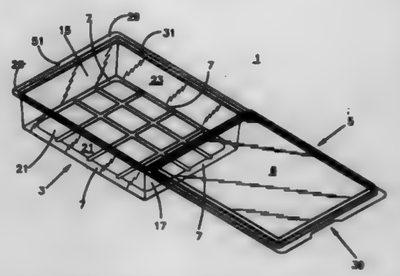
METHOD AND ARTICLE FOR PACKAGING PAPER AND THE LIKE

Judith H. Tuzick, Painesville, and Kent D. Johnson, Sandusky, both of Ohio, assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 459,941, Dec. 29, 1989, abandoned. This application Sep. 13, 1991, Ser. No. 759,833

Int. Cl.[6] B65D *7/42*

U.S. Cl. 220—606 **18 Claims**



1. A package including a container and a stack of psa sheet stock in the container, the sheets of the psa sheet stock having a rectangular shape formed by straight edges, said container being formed of molded sheet material, said container being generally rectangular and comprising a base with relatively long side walls, relatively short end walls, and a bottom wall, a cover hinged to the base, said bottom wall of said base comprising a bottom wall proper framed by border channels extending downwardly to an imaginary bottom plane, said bottom wall proper providing platform means surrounded by said border channels, said side walls and end walls being substantially upright and being planar throughout the majority of their height and said planarity extending downward below the level of said platform means, the outer sides of said border channels forming downward extensions of said side walls or end walls, the border channels being rounded in section with relatively large radii and being substantially exclusively below the platform means, the edges of the sheet stock overlying said channels whereby any tendency of the sheets to curl at their edges is reduced.

5,383,569

AUTOMATIC DELIVERY APPARATUS FOR PREPARED SLIDE GLASS SHEETS

Yunosuke Muto, Bunkyo, Japan, assignor to Muto Pure Chemicals Company Ltd., Tokyo, Japan

Filed May 11, 1993, Ser. No. 59,294

Claims priority, application Japan, May 15, 1992, 4-032180[U]

Int. Cl.[6] B65H *3/60*

U.S. Cl. 221—203 **7 Claims**

1. A glass sheet delivery apparatus comprising:

(a) a container for containing a plurality of glass sheets in a stacked manner;

(b) a polygonal roller having at least three flat sides attached to a bottom of said container for weakening an adsorptive force and a frictional force between adjacent ones of said plurality of glass sheets stacked within said container;

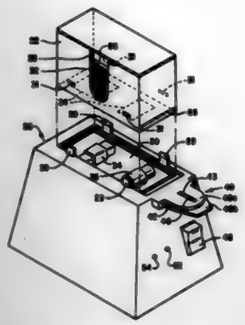
(c) transfer means for horizontally displacing an undermost one of said plurality of glass sheets stacked within said container;

(d) restriction means for restricting a horizontal displacement of the glass sheets other than said undermost one;

wherein

the rotation of said polygonal roller vertically displaces a part of the plurality of glass sheets to weaken the adsorptive force between the adjacent glass sheets and vibrates

the plurality of glass sheets to weaken the frictional force between the adjacent glass sheets so as to ensure a displacement of said undermost glass sheet in the horizontal direction.

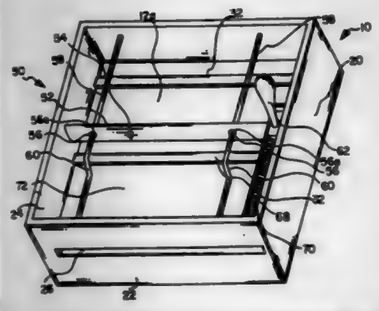


5,383,570

FLOOR MAT DISPENSING APPARATUS AND DISPOSABLE FLOOR MAT

Terry Gordon, 4716 N.W. 6th Court, Plantation, Fla. 33317

Filed Jul. 30, 1993, Ser. No. 100,484
Int. Cl.[6] A01C *9/00*
U.S. Cl. 221—213 **8 Claims**



1. An apparatus for dispensing mats one at a time from a stack of mats, comprising:

a mat retaining structure having a mat loading end and a mat dispensing end for retaining a stack of said mats, said mats being substantially mutually parallel, the mat within said structure nearest said dispensing end being designated the lead mat, said retaining structure comprising a mat dispensing slot disposed laterally of and adjacent to said lead mat near said mat dispensing end,

a stop member for preventing said lead mat from advancing beyond said dispensing slot,

a stack-biasing support member for biasing said stack of said mats such that said lead mat bears against said stop member,

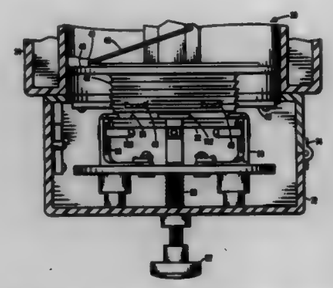
a lead mat sliding assembly comprising a mat gripping member laving a mat engaging surface and a guide member having a first end segment spaced apart from said mats, an intermediate segment oriented generally toward said mats, and a second end segment oriented substantially parallel to said mats and secured adjacent to said dispensing slot for providing a surface along which said gripping member can ride such that said first end segment guides said gripping member over and spaced apart from said lead mat, and then said intermediate segment guides said gripping member toward and against said lead mat, and then said second end segment guides said gripping member substantially parallel to said mats dragging said lead mat along and pushing a portion of said lead mat through said dispensing slot to become accessible to an apparatus user.

5,383,571

LID DISPENSER

Jeffrey E. Gunderson, Stoughton, Wis., assignor to Acry Fab Inc., San Prairie, Wis.

Filed Oct. 8, 1993, Ser. No. 134,554
Int. Cl.[6] B65H *3/28*
U.S. Cl. 221—223 **18 Claims**



1. An apparatus for dispensing container lids having peripheral flanges, the apparatus comprising:

a) a housing having portions defining a lid dispensing opening;

b) a lid support member which is fixed within the housing and which supports a stack of a plurality of lids thereon;

c) a plate positioned with respect to the support member to engage the lids supported thereon;

d) a spring which engages against the plate and biases the lids toward the dispensing opening;

e) a plurality of lid restraint members which extend from the housing frontwardly of the plate and engage with a frontmost lid of the stack;

f) a cover positioned frontwardly of the housing and having a lid removal opening which is frontward of the housing lid dispensing opening;

g) a rod which extends through the cover and which is graspable frontwardly of the cover by a user;

h) a claw support member which is fixed to the rod;

i) a spring which extends between the claw support member and the cover, wherein the spring biases the claw support member toward the housing lid dispensing opening; and

j) a plurality of claw members mounted to the claw support member radially outwardly from the rod, wherein each claw member is resiliently connected to the support member to permit movement in a radial direction, and wherein the claw members are engageable with a lid flange of a frontmost lid, and wherein the rod is retractable to disengage a frontmost lid from the stack and discharge said lid for removal through the cover lid removal opening.

5,383,572

CARD COUNTER AND DISPENSER

Ted Mrajca, 416 Elm Road, Toronto, Ontario, Canada M5M 3W5

Filed Oct. 1, 1993, Ser. No. 130,337
Int. Cl.[6] B65G *59/06*; B65H *3/06*
U.S. Cl. 221—259 **22 Claims**

1. Apparatus for counting and dispensing cards from a stack of cards comprising:

a chassis;

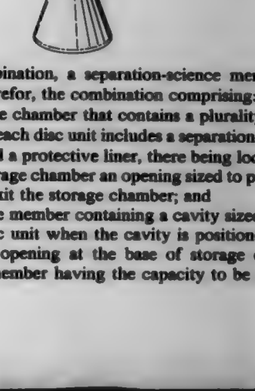
feed means comprising a feed roll having an axis of rotation mounted from said chassis in a fixed position and a peripheral surface, and a pair of nip rolls disposed forwardly of said feed roll for receiving cards from said feed roll;

drive means for driving said feed means;

a hopper for holding a stack of cards;

said hopper including a major wall surface serving to orient said cards with an edge parallel to said axis of rotation;

said major wall surface having a lower terminating edge;



a circular gate disposed forwardly of said major wall surface to project below said terminating edge;

said gate having a central axis disposed approximately at right angles to the axis of rotation of said feed roll;

said gate providing a progressively decreasing clearance from said peripheral surface in the forward direction; and

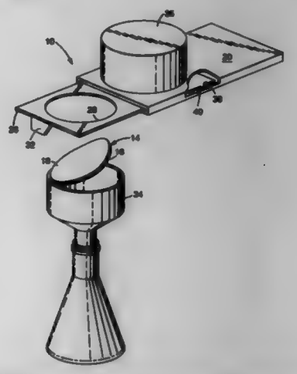
means for adjusting the clearance between said gate and said surface of said feed roll.

5,383,573

SEPARATION-SCIENCE MEMBRANE DISPENSER

William V. Balsimo, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 4, 1992, Ser. No. 971,357
Int. Cl.[6] B65G *59/06*; B65H *3/24*; B01D *39/18*
U.S. Cl. 221—264 **12 Claims**



1. In combination, a separation-science membrane and a dispenser therefor, the combination comprising:

(a) a storage chamber that contains a plurality of disc units wherein each disc unit includes a separation-science membrane and a protective liner, there being located at a base of the storage chamber an opening sized to permit the disc units to exit the storage chamber; and

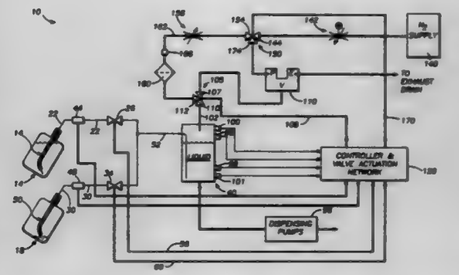
(b) a slidable member containing a cavity sized to receive a single disc unit when the cavity is positioned in register with the opening at the base of storage chamber, the slidable member having the capacity to be slid from the register position to a dispensing position to dispense a single disc unit upon each movement from the register position to the dispensing position.

5,383,574

SYSTEM AND METHOD FOR DISPENSING LIQUID FROM STORAGE CONTAINERS

Ian P. Raphael, Campbell, Calif., assignor to Microbar Sytems, Inc., Santa Clara, Calif.

Filed Jul. 19, 1993, Ser. No. 93,385
Int. Cl.[6] B67D *1/00*; G01F *11/00*
U.S. Cl. 222—1 **25 Claims**



15. A method of dispensing liquid media from first and second containers comprising the steps of:

selectively transferring said media from either said first container through a first media transfer line, or from said second container through a second media transfer line, to a liquid storage reservoir;

monitoring said transfer of media through said media transfer lines and switching liquid flow between said containers into said reservoir when media is not being transferred through one of said media transfer lines; and

selectively introducing gas into said liquid storage reservoir: and

selectively withdrawing gas from within said liquid storage reservoir in order to induce liquid to flow from said first and second media transfer lines into said reservoir.

5,383,575

Patent Not Issued For This Number

5,383,576

LIQUID CONTAINER SYSTEM

Simon J. Richter, Marietta, and Gary V. Paisley, Lilburn, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 4,736, Jan. 14, 1993, Pat. No. 5,242,086, which is a division of Ser. No. 803,241, Dec. 5, 1991, Pat. No. 5,242,085, which is a continuation-in-part of Ser. No. 628,819, Dec. 17, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 116,154
The portion of the term of this patent subsequent to Jan. 14, 2010, has been disclaimed.
Int. Cl.[6] B65D *35/28*
U.S. Cl. 222—105 **15 Claims**

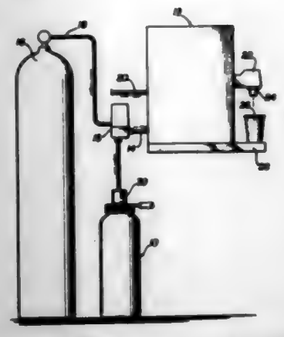
1. An apparatus comprising:

(a) a post-mix dispenser;

(b) a syrup container connected to said post-mix dispenser by a syrup line having a syrup pump therein and said line having a coupling on its distal end connected to said container; and

(c) said syrup container including a wall, a container opening for filling and evacuating said container surrounded by a container neck, and an air vent extending partway

through said wall; said wall including an outer PET layer and a delaminatable inner PET layer, such that said inner layer can separate from said outer layer when liquid is evacuated from said container and air flows in through said air vent; said air vent extending through said outer layer and terminating at said inner layer and said air vent being permanently open to atmosphere, such that air can flow through said air vent opening and in between said



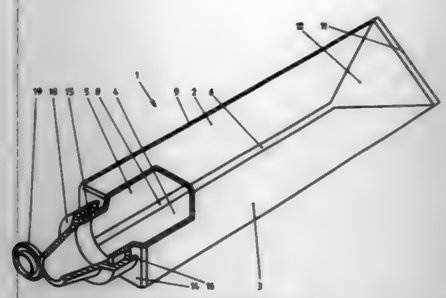
inner and outer PET layers as syrup is withdrawn from said container; said container including a closure connected to said container neck and sealing said container opening closed; means for non-removably connecting said closure to said container; and said closure including a liquid opening therethrough, and means for preventing said inner layer from sealing off said closure opening prior to complete liquid evacuation.

5,383,577

PLASTIC TUBE PRODUCED BY BLOW MOLDING

Harald Praha, Wentorf, Germany, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 819,428, Jan. 10, 1992, abandoned. This application Apr. 7, 1994, Ser. No. 224,406
Claims priority, application Germany, Jan. 12, 1991, 4100757
Int. Cl.[6] B65D *35/08*
U.S. Cl. 222—107 **10 Claims**



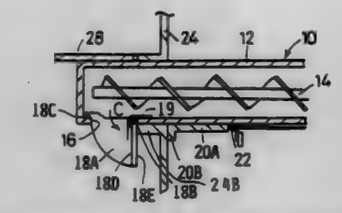
1. A plastic tube dispenser comprising:
a main body section comprising a dominant portion of the plastic tube dispenser, said main body section being formed from multiple pairs of diametrically opposed planar walls, said main body section having a substantially constant cross-section along the length of the main body section;
a front end located at one end of said main body section, said front end having a tubular opening section which is smaller in cross-sectional area than the cross sectional area of the main body section; and
a rear end located at an other end of said main body section, said rear end being formed from a pair of walls, said pair of rear end walls being formed from said main body section walls and converging to a substantially straight end edge, said end edge having a widthwise linear dimension no greater than the widest widthwise linear dimension of the cross-section of the main body section.

5,383,578

PARTICLE CARRYING DEVICE FOR CARRYING WASTE PARTICLES TO A WASTE PARTICLE RECEPTACLE

Soichiro Nishimura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 3, 1993, Ser. No. 25,772
Claims priority, application Japan, May 20, 1992, 4-127719
Int. Cl.[6] B67D *1/16*; G03g *21/00*
U.S. Cl. 222—108 **19 Claims**



1. A particle carrying device, detachably installable into a storing device for storing waste particles, for delivering the particles to the storing device, comprising:
a carrying portion having a particle delivery passage and detachably insertable into the storing device;
an opening formed in a head portion of the carrying portion and connecting the particle delivery passage with a surrounding environment;
a guide member pivotably attached to the head portion and reciprocatably movable between a closed position covering the opening and an open position uncovering the opening; and
a shielding member supported independently from said guide member on the head portion and movable between a first position for maintaining the guide member in the closed position and a second position for allowing the guide member to pivot between the open and closed positions.

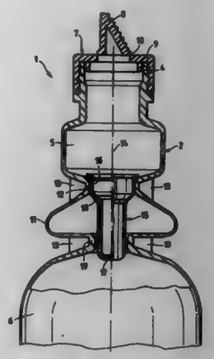
5,383,579

CONTAINER FOR CONTAINING TWO FLOWABLE MATERIALS IN SEPARATED COMPARTMENTS, BUT PERMITTING THE TWO MATERIALS TO BE MIXED FOR DISPENSING, BEFORE THE CONTAINER IS OPENED

Antonio Laufrancoui, and Giorgio Munari, both of Milan, Italy, assignors to Inge, S.p.A., Milan, Italy

Filed Oct. 7, 1992, Ser. No. 957,186
Claims priority, application Italy, Oct. 7, 1991, MI91A002656
Int. Cl.[6] B67B *5/56*
U.S. Cl. 222—129 **7 Claims**

1. A container for containing two flowable materials in separated compartments, but permitting the two materials to be mixed for dispensing, before the container is opened,
said container comprising:
peripheral sidewall means defining a first chamber for containing a first flowable material, said sidewall means having two axially opposite ends;
means defining an annular mouth at one said end of said peripheral sidewall means;
a deformable body defining a second chamber for containing a second flowable material, said deformable body being closed at one end and having means defining an annular restriction at an axially opposite end thereof;
said first and second chambers being arranged with one end of said peripheral sidewall means disposed adjacent but axially spaced from said opposite end of said body along a longitudinal axis of said container;
a tubular, annularly corrugated bellows axially joining said mouth with said annular restriction; said bellows being more easily deformable than are said peripheral sidewall means and said body adjacent said bellows;
an openable closure cap closing the opposite said end of said peripheral sidewall means;



a stopper seated in said mouth and thereby interruptably sealing said first chamber from said second chamber; said stopper including a structural feature which is engageable with said annular restriction upon flexing of said bellows, despite said closure cap remaining in closing relation to said opposite end of said peripheral sidewall means, for effectively disrupting said stopper and thereby effectively interconnecting said first chamber with said second chamber through said annular restriction, said bellows and said mouth, whereby flowable materials in said first and second chambers can be mixed by shaking said container after disrupting said stopper.

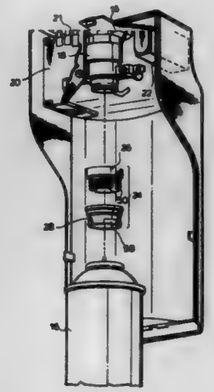
5,383,580

AEROSOL SPRAY CAN ADAPTOR

Gary C. Winder, 53 Anglesey Blvd., Etobicoke, Ontario, Canada M9A 3B8

Filed Apr. 5, 1993, Ser. No. 45,023
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—325 **14 Claims**

5. An adaptor device for connecting an aerosol spray can with a selectively-operable valve mechanism for dispersing the contents of an aerosol can, which comprises:
first and second elements,
said first element having means for mounting same to a cylindrical upstream portion of the valve mechanism and having right cylindrical portions comprising a continuous protrusion formed on an inner wall of said right-cylindrical portion thereof to be received in snap fit relationship with a complimentary continuous groove formed in the cylindrical portion of the valve mechanism,
said second element having means for mounting same to an undercut rim of the aerosol can and having a right-cylindrical portion comprising a groove formed on an outer wall of said right-cylindrical portion thereof to receive in snap-fitting relationship therewith a continuous bulbous head of the rim defining the undercut.
each said first and second elements being provided with screw threads which mate each other and which are formed on said right-cylindrical portions of said first and second elements, with the screw threads on said first element being in the form of a continuous bevelled thread formed on an exterior wall of said right-cylindrical portion of said first element and extending throughout the longitudinal dimension of said right cylindrical portion thereof and the screw threads on said second element being in the form of a continuous bevelled thread of complimentary shape to the bevelled screw thread formed on said first element formed on an interior wall of the right-cylindrical portion of said second element and extending throughout the longitudinal dimension of said right-cylindrical portion thereof,
said first element and said second element each having a radially-directed flange element extending outwardly from an upper extremity of said right-cylindrical portion of each of said first and second elements, whereby said



flange elements abut each other when said elements are fully screw-threadedly joined to each other,
said first element including a further cylindrical portion thereof extending from the outer radial extremity of the radially-directed flange thereof in an axial direction opposite to direction of axial extension of the first-mentioned right-cylindrical portion thereof to engage an outer cylindrical wall of said valve mechanism,
said further cylindrical portion having diametrically-opposite slots formed therein to receive therethrough radially-directed mounting elements of the valve mechanism, whereby said first element is locked against rotation relative to the valve mechanism by the extension of the radially-directed mounting elements through the diametrically-opposed slots.

5,383,581

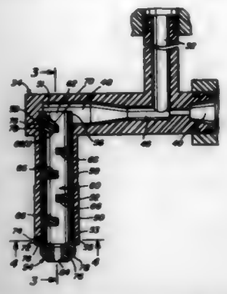
STATIC MIXING NOZZLE

Edward S. LeMarbe, St. Louis, Mo., and Sao V. Nguyen, Randolph, Mass., assignors to Jet Spray Corp., Norwood, Mass.

Filed Dec. 16, 1992, Ser. No. 991,440
Int. Cl.[6] B65D *83/00*
U.S. Cl. 222—459 **34 Claims**

1. A beverage dispenser system comprising:
a potable water source for supplying potable water;
a concentrate container for storing a liquid; and
a beverage discharge assembly including
a mixing block that receives the liquid from the concentrate container and potable water from the potable water source;
a first passage interconnected with the mixing block having a first end and a second end, the first end receiving the liquid and potable water from the mixing block;
a nozzle defining a second passage having a first end adjacent the second end of the first passage, and a second end at a liquid-dispensing location; and

an insert having an insert housing retained in the second passage, the insert housing defining an insert passage having a first inside diameter and a plurality of inwardly-directed baffles, the insert housing further defining a noz-



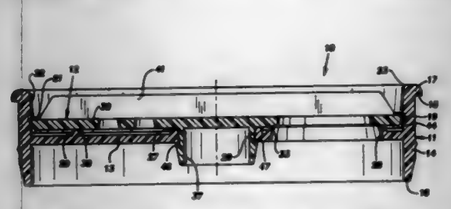
zle end located at the second end of the second passage, the nozzle end having a second inside diameter that is less than the first inside diameter for dispensing liquid therefrom.

5,383,582

SIFT-RESISTANT DISPENSING CLOSURE

David C. Baxter, Southington, and Michael J. Forsyth, Stow, both of Ohio, assignors to Weathercheм Corporation, Twinsberg, Ohio

Filed Mar. 18, 1994, Ser. No. 210,690
Int. Cl.[6] B65D *47/00*
U.S. Cl. 222—548 14 Claims



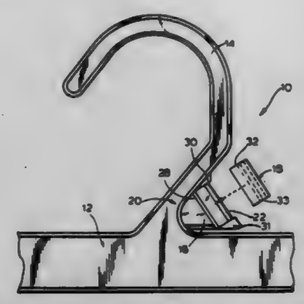
1. A sift resistant dispensing closure formed of injection molded thermoplastic material comprising a base and a rotor assembled on the base, the base including a peripheral rim for attachment adjacent an opening in the container and a central generally planar web radially inward of the rim for extending across the container opening, the rotor having a generally planar disc-like main body with a circular outer periphery and a central zone, a retaining area on the base surrounding and supporting the outer periphery of the rotor in an assembled position on the base in which the rotor main body overlies the base central web, the retaining area supporting the periphery of the rotor against axial movement away from the underlying base central web, a hub for retaining the central zone of the rotor in the assembled position on the base, the base retaining area and hub permitting rotation of the rotor on the base about its center, a dispensing opening in the base web disposed radially between the rim and the hub, a resilient lip seal surrounding the dispensing opening and engaging an underside surface of the rotor main body, the rotor main body having at least one dispensing opening selectively alignable with or displaceable from the base dispensing opening by manual rotation of the rotor on the body, the retaining area and the hub both restraining the rotor for rotation in the plane of the main body and in an accurately maintained axial location where its underside surface compresses the lip seal a predetermined distance to assure a sift resistant seal therewith at angular positions of the rotor on the base where the dispensing openings are out of alignment.

5,383,583

HANGER WITH IRREMOVABLE INFORMATION TAB

Andrew M. Zuckerman, Forest Hills, N.Y., assignor to Different Dimensions Inc., Rego Park, N.Y.

Division of Ser. No. 801,613, Nov. 22, 1991, Pat. No. 5,199,608, which is a continuation of Ser. No. 591,621, Oct. 2, 1990, abandoned. This application Apr. 5, 1993, Ser. No. 42,811
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[6] A47G *25/14*
U.S. Cl. 223—85 24 Claims



20. A garment hanger including a removal-resistant tab, comprising:

a hanger including a body and a hook member connected to said body;

a tab holder, formed integrally with said hanger, said tab holder having two opposite sides and a free edge, a first ridge disposed along said free edge and extending from said two opposing sides, an upper end member formed above said first ridge and a lower end member formed below said first ridge; and

a tab defining a face member and two opposing sides, each of said two opposing tab sides extending from said face member and terminating in a foremost edge opposite said face member, at least one of said opposing tab sides having a rib disposed on the inner surface thereof for engaging said first ridge to lock said tab to said tab holder, said face member and said two opposing tab sides forming an upper edge surface and a lower edge surface, said upper and lower end members of said tab holder being located relative to said respective upper and lower edge surfaces of said tab such that, when said tab is locked on to said tab holder, said upper and lower end members obstruct access to said respective upper and lower edge surfaces, said upper and lower end members of said tab holder extending substantially the full length of said upper and lower edge surfaces of said tab to preclude a finger purchase on said upper and lower edge surfaces;

thereby to render the hanger resistant to both accidental and intentional manual removal of said tab from said tab holder.

5,383,584

FOLDABLE HANGER

Michael E. Adams, 2009 Walters Ave., Northbrook, Ill. 60092

Filed Apr. 28, 1993, Ser. No. 54,965
Int. Cl.[6] A47G *25/40*
U.S. Cl. 223—94 13 Claims

1. A unitary foldable garment hanger comprising:

a) a pair of elongated arm means each having a shoulder, said shoulders being in adjacent relationship, each shoulder having a top portion and a bottom portion;

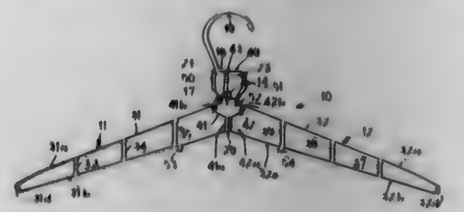
b) first hinge means interconnecting adjoining respective said bottom portions so that said arm means articulate in opposed relationship to each other between respective outwardly extended positions and lowered adjacent positions;

c) an upwardly arcuate elongated link means with opposite ends, each said opposite end being interconnected by a separate second hinge means directly to a different respective one of said top portions with said top portions being in spaced relationship to each other;

said link means being configured into a C-shape in side elevation when said arm means are in their extended positions;

said link means having a hook means which upstands therefrom when said link means is in said C-shape; and

said link means having latch means which reversibly locks said link means in said C-shape with said arm means so outwardly extended;



d) said latch means comprising

bar means that extends from said link means at a location generally adjacent to one of said second hinge means and that has a terminally defined notch, and

latch means that extends from said link means at a location generally adjacent to the other one of said second hinge means and that has a terminally defined catch and lever, whereby, when said arm means are so outwardly extended, said catch is engagable with said notch; and

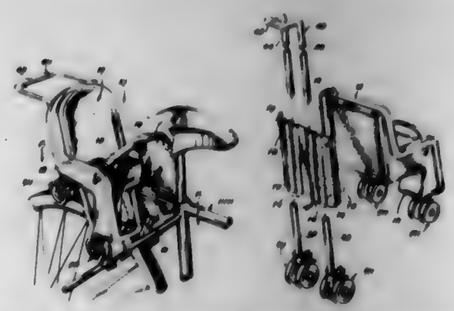
e) a pair of detent means associated with each said arm means, said detent means being reversibly engagable with each other when said arms means are in said lowered adjacent positions.

5,383,585

CHILD CARRIER AND STROLLER ATTACHABLE TO A BICYCLE

Edward J. Weiss, 10598 SW. 62nd Ave., Miami, Fla. 33156

Filed Sep. 17, 1993, Ser. No. 126,698
Int. Cl.[6] B62B *7/12*, B62J *1/16*
U.S. Cl. 224—31 9 Claims



1. A child carrier assembly adapted to be removably mounted to a frame of a bicycle and having a base defining a seat, a backrest portion and a footrest portion, said assembly comprising

a front wheel assembly structured for mounting to a bottom of the footrest portion so as to be disposed in supporting relation below the child carrier,

a rear wheel assembly structured for mounting to the back rest portion of the child carrier so as to be selectively movable and vertically adjustable between a plurality of locked positions including a raised, stowed position and a lowered, operable position,

said rear wheel assembly including locking means for locking said rear wheel assembly in one of said plurality of locked positions,

a handle assembly structured to be movably mounted to the backrest portion of the child carrier so as to be selectively vertically adjustable between a plurality of adjusted, locked positions including a raised, operable position and a lower, stowed position, and

mounting means for movably mounting said rear wheel assembly and said handle assembly to said backrest portion.

5,383,686

PULL OUT CUP AND CAN HOLDER

Wayne L. Leivan, 19911 Edgewood La., Huntington Beach, Calif. 92649

Filed Oct. 4, 1993, Ser. No. 131,284
Int. Cl.[6] B60R *7/00*, *7/10*
U.S. Cl. 224—42.44 8 Claims



1. In combination

a cup and can holder comprising a base plate having a first end and an opposite end, a first opening having a first size to receive a can and formed through the first end of said base plate, and a second opening having a different size to receive a cup and formed through said opposite end, and

frame means adapted to be mounted on a substantially horizontal support surface and slidably and removably receive the base plate of said can and cup holder below said frame means, said base plate being slidable partially out of said frame means to expose either the first end of said base plate and said first opening for receiving the can or the second end of said base plate and said second opening for receiving the cup depending upon whether the first or opposite end of said base plate slides out of said frame means, and said base plate being slidable completely out of and removed from said frame means so that said base plate can be returned to said frame means with the first and opposite ends of said base plate reversed with respect to said frame means.

5,383,587
DEVICE FOR CARRYING ELONGATED SKI EQUIPMENT

Gary L. Carpenter, 7160 Suntide Pl., Colorado Springs, Colo. 80919

Filed Jul. 12, 1993, Ser. No. 90,328
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—257 33 Claims



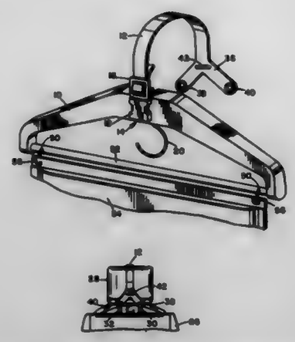
1. A device for carrying elongated ski equipment by suspending the equipment from a person's shoulder, comprising:
an elongated flexible strap having a first end, a second end and opposing side edges extending between the first and second ends;
said first end attached to said strap adjacent to said second end to form a closed loop having an interior surface, an exterior surface, a top end, a bottom end, a front side and a rear side;
a pocket secured to and extending between the opposing side edges on the exterior surface of the rear side of the closed loop, said pocket including a closed bottom and an open top having an orifice at least as large as a width dimension of one end of the elongated ski equipment, said pocket adapted for receiving and holding the one end of the elongated ski equipment adjacent the bottom end of the closed loop; and
an elongated tie strap fixed to the rear side of the closed loop and having a length sufficient to substantially surround the width dimension of the elongated ski equipment and secure the elongated ski equipment to the exterior surface of the rear side of the closed loop, said tie strap and said pocket being positioned to be on opposite sides of a center of gravity of the elongated ski equipment so that the center of gravity of the ski equipment is suspended at a point below the level of the person's shoulder when the interior surface of the front side of the closed loop is fitted about the person's shoulder.

5,383,588
GARMENT HANGER FOR VEHICLE SEAT

Michael D. Kazel, 27636 Avenue Scott, Unit D, Valencia, Calif. 91355

Continuation-in-part of Ser. No. 986,486, Dec. 7, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,867
Int. Cl.[6] B60R *7/10*
U.S. Cl. 224—275 15 Claims

1. A garment hanger apparatus for a vehicle seat having a headrest, said garment hanger apparatus comprising:
a strap assembly for extending over a vehicle headrest, said strap assembly having a first end portion for positioning behind a seat back and a second end portion having connector means for connection to a vehicle headrest;
a garment hanger having a central portion and a pair of oppositely directed side portions; and
a releasable connector having a first portion attached to said central portion of said garment hanger and a second portion having attachment means for attachment to said first end portion of said strap.



5,383,589
MODULAR CARRIER SYSTEM FOR ELONGATE ARTICLES

Keith P. Tracy, 10710 N. Magnolia Dr., Mequon, Wis. 53092, and William E. Chase, 1038 Ocontobanks, Colgate, Wis. 53017

Filed Mar. 1, 1993, Ser. No. 24,645
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—324 10 Claims

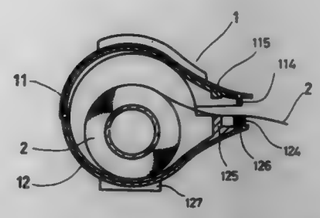


1. A carrier system mountable on a motor vehicle for carrying elongate members on the motor vehicle, said system comprising:
a pair of base members, each of said base members including three contact surfaces configured to engage the motor vehicle at three triangularly disposed points;
a flexible strap extending from each of said base members configured to engage opposite sides of the vehicle to provide lateral support to each of said base members when said base members are in place on the motor vehicle;
an article-engaging member carded on each of said base members for engaging the elongate members to be carded on the exterior of the motor vehicle; and
a tensioning system for tensioning said flexible strap, said tensioning system comprising:
an elongate tensioning member having a pair of laterally displaced substantially parallel cooperating cross members around and between which said flexible strap can be threaded and further including an extended portion by means of which the tensioning member can be rotated to a tensioned position to shorten the effective length of said strap and thereby increase the tension in said strap; and
a retainer detachably coupled to the tensioning member for securing the tensioning member in the tensioned position.

5,383,590
SAFETY FOOD WRAP FILM TEARING DEVICE

Hsiu-hui Ho, Hsi-chih, Taiwan, Prov. of China, assignor to Shih Chieh Hsu, Taiwan, Prov. of China

Filed Sep. 27, 1993, Ser. No. 126,639
Int. Cl.[6] B26F *3/02*
U.S. Cl. 225—43 1 Claim



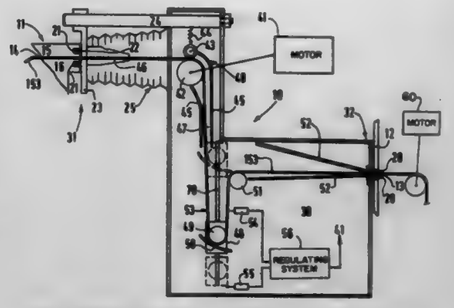
1. A safety food wrap film tearing device comprising an upper cover having a plurality of projections formed at a rear edge thereof and a lower cover having a plurality of receiving members corresponding to said projections of said upper cover such that said lower cover is pivotally connected to said upper cover by engaging said receiving members with said projections, said upper and said lower covers having lateral inner and outer side walls, respectively, to confine a roll of food wrap film within a space enclosed by said upper and said lower covers, said upper cover having an upper toothed tearing blade provided at a front bottom edge thereof and a press rib provided near an inner side of and parallel to said upper toothed tearing blade, and said lower cover having a lower toothed tearing blade provided at a front upper edge thereof to just abut against an outer surface of said upper toothed tearing blade when said upper and said lower covers are closed, a receiving rib provided near an inner side of and parallel to said lower toothed tearing blade to just contact said press rib of said upper cover, and a strip of pad abutting against an inner surface of said lower toothed tearing blade to just press against a bottom edge of said upper toothed tearing blade when said upper and said lower covers are closed.

5,383,591
INTERFACE DEVICE BETWEEN A FEEDING DEVICE AND A RECEIVING STATION FOR PHOTOGRAPHIC MATERIAL

Daniel G. Thibert, Chalon Sur Saone Cedex, France, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/FR91/00421, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO91/20016, PCT Pub. Date Dec. 26, 1991
PCT Filed May 29, 1991, Ser. No. 952,897
Claims priority, application France, Jun. 11, 1990, 90 07464
Int. Cl.[6] B65M *29/00*
U.S. Cl. 226—108 2 Claims

1. An interface device positioned between a receiving station and a feeding device, said feeding device capable of delivering photosensitive web through a discharge slot in said feeding device to said interface device with said web having a first tension, said receiving station being provided with a feed opening and a first driving device for withdrawing the web from the interface device and into the feed opening of the receiving station with said web having a second tension, said second tension being higher than said first tension, said interface device comprising:
a) a first means for connecting the receiving station in a light tight relation with the interface device;
b) a second means for connecting the feeding device in a light tight relation with the interface device, said second means comprising an element movable between a retracted position wherein the interface device does not cooperate with the feeding device and wherein introduction in said interfacing device of said web which exits from the feeding device is possible, and an extended position wherein said second means participates with the feeding device to provide, during operation, light tightness;
c) means: 1) during loading operations, to make the web delivered by the feeding device, move over a first feed trajectory between the first means and the second means,

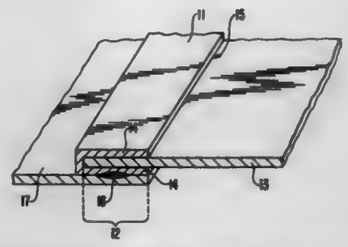


and 2) when in service, to define a second trajectory in which he web has one loop at least to limit the required tension forces to be applied onto the web so as to move it at a value lower than the first tension force;
d) a second driving device set upstream of the loop, exerting onto the web entering the second means, tension forces high enough to pull the web out of the feeding device said second diving means cooperating with a regulating system for controlling the length of the loop.

5,383,592
SHEET-STEEL COMPONENT AND LIGHT SHEET METAL COMPONENT WELDED JOINT

Wolfgang Fussnegger, Rohrau, and Harald Brinkschroeder, Nebringen, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 6, 1993, Ser. No. 162,399
Claims priority, application Germany, Dec. 4, 1992, 4240822
Int. Cl.[6] B23K *31/02*
U.S. Cl. 228—135 8 Claims



1. A welded joint between a sheet-steel component and a light sheet metal component, such as a sheet-aluminum component, comprising a lap or web weld and an additional part connected to the light sheet metal component at a rim of the light sheet metal component and welded to the sheet-steel component, wherein the additional part consists of an iron material and is lock-seamed to the rim of the light sheet metal component and the additional part is bonded to the light sheet metal component.

5,383,593

METHOD FOR WELD-ASSEMBLING A DISK FITTED WITH SMALL WINGS BY AN ENERGY BEAM

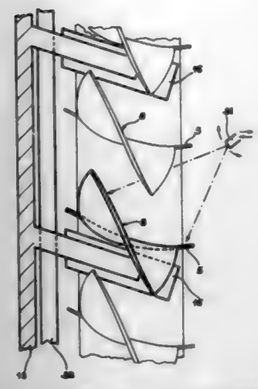
Pierre M. S. Lechervy, Ste. Genevieve Des Bois, and Bernard P. C. Sohier, Savigny Le Temple, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA" , Paris, France

Filed Nov. 3, 1993, Ser. No. 145,182

Claims priority, application France, Nov. 4, 1992, 92 13169

Int. Cl.[6] B23K *31/02, 9/02*

U.S. Cl. 228—182 **9 Claims**



1. Method for assembling by means of welding a disk provided with small wings composed of a foot integral with the disk and blades, wherein the method comprising the steps of installing the disk and blades on a rotating template fitted by means for fixing the disk and the blades, the blades touching the feet at joining surfaces, of rotating the template so as to place the wings successively in front of a beam of energy which traverses the joining surfaces and welding the blades to the feet, screens having been installed between the wings to be assembled and other wings so as to intercept the beam after the beam has traversed the joining surfaces.

5,383,594

RADIATION-SHIELDING TRANSPORT AND STORAGE CONTAINER

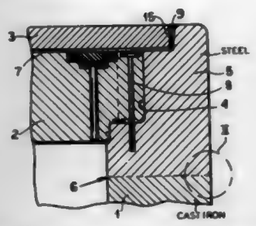
Rudolf Diersch, Essen; Klaus Janberg, Ratingen-Lintorf; Dieter Methling, Hattingen, and Karl Schröder, Siegen, all of Germany, assignors to GNS Gesellschaft fur Nuklear-Service mbh, Essen, Germany

Division of Ser. No. 948,719, Sep. 22, 1992, Pat. No. 5,346,096. This application Jan. 25, 1994, Ser. No. 187,190

Claims priority, application Germany, Oct. 24, 1991, 4135066

Int. Cl.[6] B23K *23/00*

U.S. Cl. 228—234.3 **3 Claims**



1. A method of making a radiation-shielding storage/transport container, the method comprising the steps of:

a) holding a cast-iron vessel having an open end defining an end face between an outer mold part and an inner mold part that leave the end face exposed;

b) covering the entire surface of the exposed end face with aluminothermic welding material;

c) positioning on the prepared and exposed end face a steel ring forming at least one annular seat; and

d) unitarily welding together the ring and the vessel over the entire surface of the end face by igniting the welding material.

5,383,595

BOXES

Derek Hallam, Bradford, England, assignor to Concept Packaging Limited, Bradford, United Kingdom

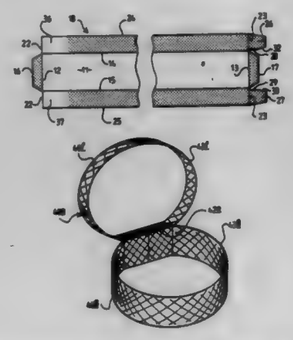
PCT No. PCT/GB92/00046, § 371 Date Jul. 8, 1993, § 102(e) Date Jul. 8, 1993, PCT Pub. No. WO92/12056, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 9, 1992, Ser. No. 87,818

Claims priority, application United Kingdom, Jan. 10, 1991, 9100501

Int. Cl.[6] B65D *3/14, 3/28*

U.S. Cl. 229—4.5 **15 Claims**



1. A box comprising a peripheral wall formed from a continuous strip of material having longitudinally opposite ends wherein:

lateral marginal portions of said material are folded over adjacent portions of the strip between said marginal portions and do not overlap one another, the lateral marginal portions being adhesively secured to said adjacent portions;

the folded marginal portions at one of said ends of the strip defining in combination with said intermediate portions a recess;

the other of said ends of the strip is formed with a tongue which is adapted to enter said recess, the ends of the strip being in abutting relation to form a joint with said tongue located in said recess; and

the tongue and the recess each comprise two parts associated with the respective longitudinal portions.

5,383,596

PLURAL TRAY COMPARTMENT CARTON PACKAGE

Richard F. Gulliver, and James R. Green, both of Tuscaloosa, Ala., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.

Continuation-in-part of Ser. No. 975,005, Nov. 12, 1992, Pat. No. 5,265,796, and a continuation-in-part of Ser. No. 964,870, Oct. 22, 1992, Pat. No. 5,267,686, which is a continuation-in-part of Ser. No. 796,599, Nov. 13, 1991, Pat. No. 5,183,201. This application Jul. 12, 1993, Ser. No. 90,506

Int. Cl.[6] B65D *5/48, 5/58*

U.S. Cl. 229—120.17 **34 Claims**

1. A carton package providing plural compartments suitably closed to contain consumable contents therein for shipping and handling so that the contents can be (1) heated in an oven while retained therein in a vented condition and (2) thereafter consumed while retained therein in an accessed condition,

said carton package comprising a plurality of blanks of carton material cut and scored so as to provide a plurality of tray compartments and a separate lid part for the plurality of tray compartments,

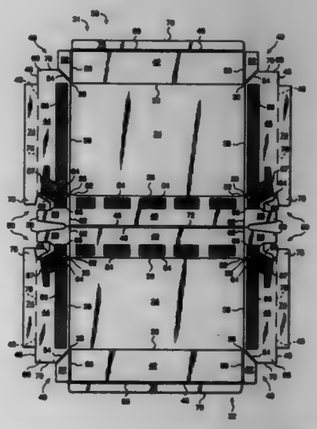
each of said tray compartments including,

a bottom wall panel having a periphery defined by interconnecting side fold lines interrelated so that each adjacent pair of side fold lines extends at an angle with respect to each other from a corner point defining a corner of said bottom wall panel,

side wall panels extending integrally from said side fold lines and interrelated so there are a plurality of pairs of adjacent side wall panels, said side wall panels being folded upwardly along said side fold lines and having outer edges defining an open top space for containing a consumable content, and

an integral corner connection between each pair of adjacent side wall panels, said integral corner connection being folded and sealed so as to form leak-tight sealed integral corners for said open top space,

said lid part including a planar rectangular lid panel defining the top of the package,



said lid panel having a pair of opposed end edges defined by a pair of opposed parallel free marginal edge portions extending along the top of a pair of opposed ends of the package and a pair of opposed side edges defined by a pair of opposed parallel lid flap panel fold lines,

said lid part also including a pair of lid flap panels integral with said pair of opposed side edges and folded downwardly along said lid flap panel fold lines in generally perpendicular relation to said planar lid panel so as to define substantially the entirety of a pair of opposed sides of the package,

said planar rectangular lid panel having an area greater than the combined area of the open top spaces of said tray compartments and extending thereover in generally closing relation thereto with said tray compartments disposed in generally side-by-side relation therebelow so as to present a side wall panel of each of two of said plurality of tray compartments disposed along said pair of opposed package ends constituting end defining side wall panels and a number of side wall panels equal to the number of tray compartments extending along each of said pair of opposed package sides constituting side defining side wall panels and a remainder of the side wall panels of said tray compartments disposed interiorly of said package and extending generally between said pair of opposed package sides and constituting interior side wall panels,

said end defining side wall panels extending along said pair of opposed package ends having integral flanges extending outwardly from the outer edges thereof sealingly adhered to the free marginal edge portions of said lid panel so as to define said pair of opposed package ends,

said side defining side wall panels extending along said pair of opposed package sides being adhered to said lid flap panels for rigidifying the connection of the tray compartments and providing a substantially smooth unitary exterior surface along the package sides for displaying indicia thereon in an uninterrupted fashion,

said lid part having cuts therein for facilitating the manual venting and accessing of each tray compartment space.

5,383,597

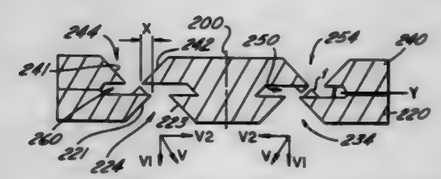
APPARATUS AND METHOD FOR CONTROLLING THE CONE ANGLE OF AN ATOMIZED SPRAY FROM A LOW PRESSURE FUEL INJECTOR

Kathirgamasundaram Sooriakumar, Colorado Springs, Colo.; Debojit Barua, Troy, and Marcus W. Fried, Belleville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1993, Ser. No. 102,920

Int. Cl.[6] F02M *61/16, 63/00*

U.S. Cl. 239—5 **19 Claims**



7. A method for controlling the cone angle of fuel exiting from an injector of the type used in an internal combustion engine, comprising the steps of:

(a) inducing a first turbulence in the fuel flowing past a first protrusion in at least one supply orifice which defines a flow axis therein,

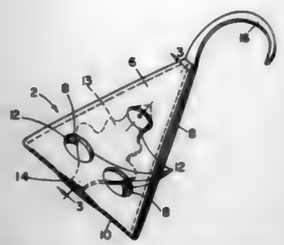
(b) guiding the fuel through a turbulence cavity and then out through a first metering orifice having another protrusion positioned downstream from the first protrusion by a distance y measured parallel to the flow axis and by a distance x measured perpendicular to the flow axis, thereby imparting to the fuel a lateral momentum component in the x direction, and

(c) controlling the droplet size of the atomized fuel exiting from the first metering orifice in a first flow by maintaining the x/y ratio greater than 0.1, and

(d) repeating steps a, b and c for inducing a source of second turbulence and lateral momentum in a second flow of fuel from a second metering orifice, and

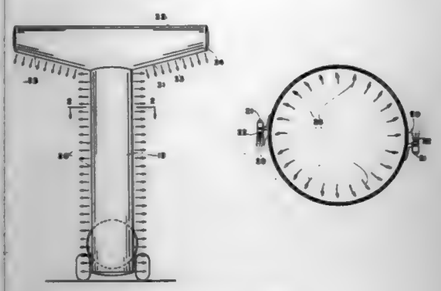
(e) directing the second flow for at least partially intersecting with the first flow such that the lateral momentum in the first and second flows cooperate for reducing the resulting lateral momentum of the first and second flows, thereby reducing the cone angle of the resulting atomized fuel flow exiting the injector.

5,383,598
AIR FRESHENER RETAINER
Robert L. Styles, 606 William Ave., Colorado Springs, Colo. 80906
Filed Jan. 27, 1994, Ser. No. 188,043
Int. Cl.[6] A61L *9/12*
U.S. Cl. 239—57 1 Claim



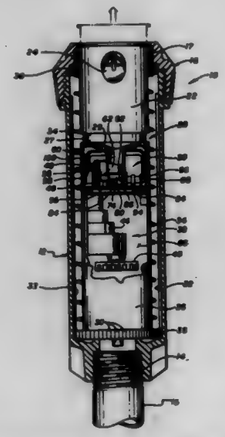
1. An isolation retainer for aromatically emissive substances, comprising;
a pair of opposing side members attached together along their respective perimeters to form a pocket therebetween for the retention of a chemically treated aromatically emissive substance where at least one of the side members contains at least one aperture for providing air flow through the said side member and into the interior of the pocket;
an elongated aperture disposed in the perimeter of the retainer for inserting the aromatically emissive substance into the said pocket; and
second aperture means for providing access through which a hanger which is attached to the emissive substance may be passed.

5,383,599
AGRICULTURAL AIR/LIQUID SPRAYER HAVING AN INFLATABLE SPRAYING SLEEVE
David Zur, 68 Hashomer Street, Zichron Yaakov, Israel
Filed Dec. 24, 1992, Ser. No. 996,726
Int. Cl.[6] B05B *7/24;* A01C *23/00*
U.S. Cl. 239—77 9 Claims



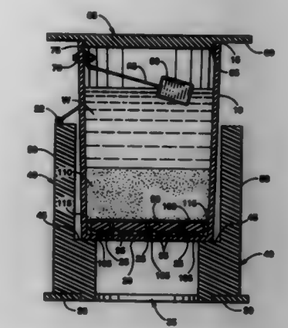
1. A spraying apparatus comprising:
a chassis;
an air blower mounted on the chassis;
a substantially vertical spraying sleeve attached to the air blower, the spraying sleeve having at least three apertures vertically spaced along a length of the sleeve and at least three spraying nozzles, one of said at least three spraying nozzles is paired with, and mounted adjacent to, a corresponding one of said at least three apertures;
a liquid container mounted on the chassis for providing a spraying liquid;
a plurality of conduits connected to the liquid container and the spraying nozzles; and
the air blower supplying air at a high pressure to the spraying sleeve for producing a high velocity air stream through each aperture and the liquid container supplying the spraying liquid to the spraying nozzles via the conduits at a low pressure, the spraying liquid exiting from the spraying nozzles in a spray stream transverse to the air stream.

5,383,600
VANDAL RESISTANT PART CIRCLE POP-UP GEAR DRIVEN ROTARY IRRIGATION SPRINKLER
Steven Verbera, Glendora, and Timothy C. Sexton, Walnut, both of Calif., assignors to Anthony Manufacturing Corp., Azusa, Calif.
Filed Oct. 25, 1993, Ser. No. 143,082
Int. Cl.[6] B05B *3/04*
U.S. Cl. 239—205 8 Claims



1. In a pop-up, part circle gear driven rotary irrigation sprinkler of the type including a sprinkler case within which is mounted a pop-up assembly adapted to move between a retracted, non-operating condition with the pop-up assembly disposed within the case and an extended operating condition with the pop-up assembly projecting above the case, the pop-up assembly including a nozzle housing rotatably coupled to an upper end of a generally hollow cylindrical stem keyed for sliding, non-rotating motion within the case, and a support housing disposed within the stem below the nozzle housing, the support housing including a base portion adapted to divide the stem into upper and lower chambers, a shiftable gear transmission drivingly coupled to the nozzle housing and mounted to the base within the upper chamber, and a water operated gear motor drivingly coupled to the shiftable gear transmission and secured to the base within the lower chamber, the improvement comprising:
slip clutch releasably restraining said support housing against rotation within said stem, said slip clutch permitting said support housing to rotate relative to said stem whenever an external torque above a predetermined level is applied to said nozzle housing whereby upon application of said external torque above said predetermined torque level, said nozzle housing will rotate said support housing relative to said stem.

5,383,601
DRIP WATERING APPARATUS
Joseph C. Astle, 18022 Dog Bar Rd., Grass Valley, Calif. 95949
Filed Apr. 5, 1994, Ser. No. 222,846
Int. Cl.[6] B05B *1/14*
U.S. Cl. 239—276 12 Claims



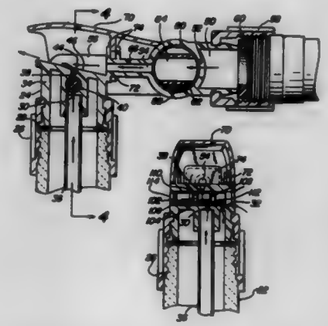
1. A drip irrigating apparatus for supplying a liquid to a plant, comprising:
a) a reservoir for containing the liquid having a side wall, an upper rim, and a bottom having a plurality of apertures;
b) a base for holding and supporting said reservoir;
c) a cover releasably fitted to said reservoir upper rim;
d) inlet control means for admitting and regulating an amount of incoming liquid into said reservoir; and
e) outlet control means for regulating an amount of outgoing liquid from said reservoir, wherein said outlet control means comprises:
a support member with upper and lower surfaces and a perimeter edge having a plurality of apertures extending between and through said upper and lower surfaces, wherein said support member fits within said reservoir proximate said reservoir bottom;
a liquid permeable filter sheet positioned immediately above said support member upper surface; and
a bed of particulate matter layered immediately above and on said filter sheet, wherein said particulate matter is too large in size to pass through said filter sheet.

5,383,602
WIPER AND WASHING SYSTEM, ESPECIALLY FOR WINDOW PANES OF MOTOR VEHICLES
Reinhard Edele, Sachsenheim; Reinhard Johannes, Eberstadt-Holzern; Oldrich Krizek, Bietigheim-Bissingen, and Eckhardt Schmid, Brackenheim, all of Germany, assignors to SWF Auto-Electric GmbH, Germany
PCT No. PCT/EP92/01116, § 371 Date Jan. 22, 1993, § 102(e) Date Jan. 22, 1993, PCT Pub. No. WO92/21535, PCT Pub. Date Dec. 10, 1992
PCT Filed May 20, 1992, Ser. No. 934,665
Claims priority, application Germany, May 25, 1991, 4117109
Int. Cl.[6] B60S *1/52, 1/46*
U.S. Cl. 239—284.1 10 Claims



3. A washing system comprising a connecting member, at least two washing nozzle members and an elongated tube member with two separate channels, each said channel of said tube member connected with and fluidly coupled to a respectively associated nozzle member, said tube member including coding means for interconnecting said washing nozzle members and said respectively associated channels of said tube member in a single predetermined orientation thereby preventing the interconnection of said washing nozzle members and said respectively associated tube channels in a way that deviates from said predetermined orientation;
wherein said tube member has an asymmetrical transverse cross-section;
wherein said coding means includes a longitudinally extending groove on said tube member, and a male member extending from
said connecting member and said nozzle members in each male member adapted to be received within said groove.

5,383,603
ASPIRATION-TYPE SPRAYER
Ronald F. Englhard, Mission Viejo, and Donald J. Shanklin, Fullerton, both of Calif., assignors to Hayes Products L.P., Santa Fe Springs, Calif.
Filed Jun. 22, 1993, Ser. No. 80,326
Int. Cl.[6] B05B *7/30*
U.S. Cl. 239—314 10 Claims



1. An aspiration-type chemical sprayer adapted to be connected to a source of carrier liquid under pressure comprising:
a container having an interior for storing a chemical to be sprayed;
a sprayer head having an aspiration orifice, a carrier fluid bore for directing the carrier liquid past the aspiration orifice, an aspiration passageway for directing chemicals from the container interior to the aspiration orifice, an atmospheric vent port for communication of atmospheric pressure with the container interior and a bore located between the aspiration orifice, the aspiration passageway, the atmospheric vent port and the container interior;
connection means for mounting the sprayer head to the container;
a chemical flow tube in fluid communication between the chemical stored in the container and the aspiration passageway;
a rod valve slideably positioned within the bore, the rod valve including a pair of spaced annular integral sealing ridges molded in one piece of a plastic material, the sealing ridges arranged to seal against the interior surface of the bore to simultaneously connect the aspiration passageway to the aspiration orifice and the vent port to the interior of the container in one, open, position of the rod valve and to simultaneously disconnect the aspiration passageway from the aspiration orifice and the vent port from the interior of the container in another, closed position of the rod valve; and
a carrier liquid control valve for selectively opening and

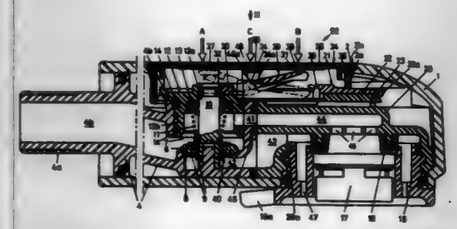
closing the carrier fluid bore to the source of pressurized carrier liquid.

5,383,604

WATER OUTLET HEAD FOR A SANITARY FITTING

Paul Boesch, Ebnat-Kappel, Switzerland, assignor to H. Weidmann AG, Rapperswil, Switzerland

Filed Feb. 2, 1994, Ser. No. 190,527
Claims priority, application Germany, Sep. 24, 1993, 9314443
Int. Cl.[6] E03C *1/04, 1/08*; B05B *1/18*; F16K *11/00*
U.S. Cl. 239—447 **15 Claims**



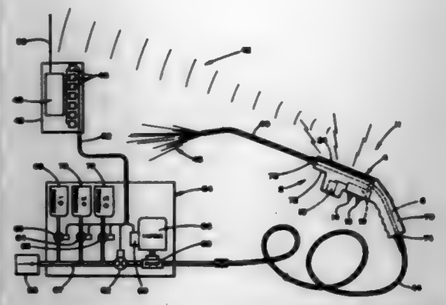
1. Water outlet for a sanitary fitting, said outlet comprising: at least one shower outlet (18) and one jet outlet (17), a diverter valve (40), and a manual operator (52) having an elastic cover cap (34) mounted in a housing (1), wherein a slider (21) is disposed below the cover cap, said slider being movable by pressing on the outside of the cap between a basic neutral position and a position in which the diverter valve is latched in a shower position, and wherein the manual operator comprises a rocker arm (29) connected at one end (30) to a piston (10) of the diverter valve and having another, opposite end (31) which interacts with the slider.

5,383,605

RADIO CONTROLLED SPRAYING DEVICE

Jim C. Teague, Grand Rapids, Mich., assignor to Hydro-Chem Systems, Inc., Grand Rapids, Mich.

Filed Dec. 10, 1992, Ser. No. 988,749
Int. Cl.[6] B05B *7/02, 9/01, 12/00*
U.S. Cl. 239—526 **13 Claims**



1. A radio operated control mechanism for operating a pressure sprayer, wherein the pressure sprayer comprises a motor driven pressure pump mechanism that receives liquid from a liquid source and receives selected additives from additive sources and pumps the liquid and selected additives under pressure through a hose to a hand held nozzle, the control mechanism including:

a nozzle housing for the nozzle formed in the shape of a pistol grip handle with a barrel portion and a hand grip portion angularly disposed with respect to the barrel portion;

a liquid conduit mounted in the nozzle housing and having an inlet and an outlet, the outlet facing outwardly from an outer end of the barrel portion;

a plurality of manually actuatable electronic switches mounted in the nozzle housing in position for manual actuation by a user while the user holds the nozzle housing by the hand grip, the switches including:

a deadman's switch that is actuated only when a user is holding the nozzle housing by the hand grip, the deadman's switch automatically becoming deactuated when the hand grip is released;

a liquid on/off switch; and

one or more additive switches for selecting chemical additives to the liquid;

a radio transmitter and power supply therefor mounted in the nozzle housing in electrical contact with the switches, the radio transmitter generating output signals comprising a carrier wave digitally encoded with control information representative of the state or change of state of each of the switches;

an antenna mounted to the nozzle housing and being connected with the transmitter to transmit the output signals from the antenna as airborne electromagnetic signals;

a radio receiver in electrical communication with the pressure pump mechanism, the radio receiver receiving the airborne electromagnetic signals transmitted from the antenna and converting the signals into electrical control signals that control the operation of the pump mechanism;

electrical controls connected to the pump mechanism in communication with the radio receiver, the electrical controls including:

an electrically operated main flow control valve that opens and closes a passageway from the liquid source to the pump mechanism, the passageway being closed and the liquid being shut off and not being delivered to the pump mechanism when the main flow control valve is deactuated;

a switch that controls the actuation of the pump motor; and

an additive flow control valve for each additive that controls the flow of each additive into the passageway along with the liquid passing from the source to the pump mechanism;

the electrical controls receiving the control signals from the receiver and operating the pump mechanism in response thereto, the control mechanism being such that it causes a control signal to be generated that deactuates the main flow control valve when the deadman's switch is deactuated, the control mechanism causing the main flow control valve to be actuated only when both the deadman's switch and the liquid on/off switch are actuated, and the control mechanism causing the additive flow control valve to open for each additive when the selection switch for that additive is actuated at the nozzle.

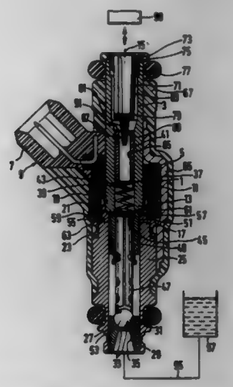
5,383,606

FUEL INJECTION VALVE AND METHOD FOR ADJUSTING A FUEL INJECTION VALVE

Alwin Stegmaier, North Charleston, S.C., and Kenneth J. Zwick, Philadelphia, Pa., assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 30, 1992, Ser. No. 906,908
Claims priority, application Germany, Jul. 18, 1991, 4123787
Int. Cl.[6] F02M *61/16, 55/00*
U.S. Cl. 239—575 **11 Claims**

3. A fuel injection valve having a valve closing element located in a flow conduit and cooperating with a valve seat, a throttle device disposed upstream of the valve seat and serving to meter the fuel flow, and a free cross section (89) of the throttle device (87) is continuously variable in an otherwise



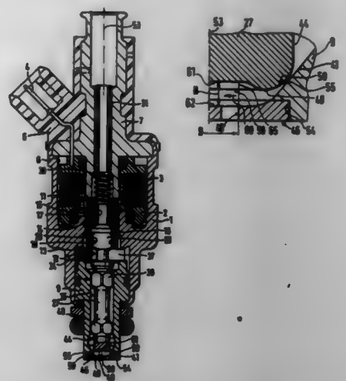
complete fuel injection valve whereby the flow of fuel is adjusted to a predetermined flow quantity.

5,383,607

ELECTROMAGNETICALLY ACTUATED INJECTION VALVE

Joerg Heyse, Gerlingen, and Volker Holzgrefe, Ditzingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 20, 1992, Ser. No. 979,680
Claims priority, application Germany, Dec. 19, 1991, 4141930
Int. Cl.[6] B05B *1/30*; F02M *51/00*
U.S. Cl. 239—585.4 **5 Claims**



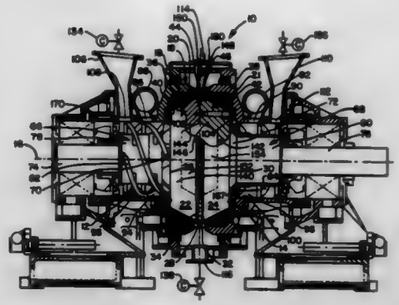
1. An electromagnetically actuatable injection valve for fuel injection systems, having a valve closing element that is actuatable by an armature in a direction of a longitudinal valve axis, said valve closing element includes a valve face (50) that cooperates with a valve seat face (41), to form a sealing seat (41, 50) and downstream of the sealing seat said valve closing element has a terminal face (48) that is oriented toward a perforated plate spaced from said terminal face and having at least one injection port, wherein beginning at the sealing seat between the terminal face and the perforated plate a flow cross section for the fuel flow is formed, the fuel flow between the terminal face (48) of the valve closing element (27 and the perforated plate (46) takes place as far as the at least one injection port (49) toward the longitudinal valve axis (53), and the terminal face (48) and the perforated plate (46) are configured such that beginning at the sealing seat (41, 50), an increase in an axial spacing (H) between the terminal face (48) and the perforated plate (46) results as a distance from the longitudinal valve axis (53) decreases, in such a manner that the flow cross section area for the fuel flow from the sealing seat (41, 50) to the at least one injection port (49) remains virtually constant and that said axial spacing (H) is constant in the radial direction from said at least one injection part (49) to said valve axis (53).

5,383,608

TWIN CONICAL REFINER WITH DUAL RIBBON FEEDERS

Karl Thore G. Dahlqvist, Norrkoping, Sweden; Franz Haider, Graz, Austria; Gregory R. Kohler, Williamsport, Pa.; Josef Krasser, Rein, Austria; William F. Lahmer, III, Lewisburg, Pa.; Alfred Lang, Graz-Stattegg, Austria; Wilhelm Mussner, Graz, Austria; Heinrich F. Munster, Vienna, Austria; Josef Muser, Neu-Setersberg, Austria; Ronald L. Musselman, Lewisburg, Pa., and Walter Writzl, Graz, Austria, assignors to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed Mar. 22, 1993, Ser. No. 34,154
Int. Cl.[6] B02C *7/06, 23/02*
U.S. Cl. 241—16 **42 Claims**



34. A rotor assembly for rotation about a rotation axis (16) in a high consistency mechanical pulp refiner (10), comprising:

two substantially identical frustroconical members (22,24), each having a base (140,142) closing one end (26,30) of the member, a side wall (144,146) defining a conical outer surface (36,38) of increasing diameter from the base to the other end (28,32) of the member, said other end including an annular face (148,150) surrounding a hollow region (152,154) formed by said side wall and said base;

means (156,158) for connecting the annular faces (148,150) of the frustroconical members together to form a rotor shell (20) that has an enclosed cavity, the shell and cavity being symmetric about said rotation (16) axis and about a vertical plane (160) that passes in parallel between the annular faces;

refiner plates (50) having bars (52) and grooves (54) carried by the conical outer surface (38) of the rotor shell (20); and

left and right shaft segments (66,68), each shaft segment having an inner end (70,72) connected to the rotor shell (20), and an outer end (74,76) adapted to be journalled for rotation in the refiner.

39. A method for the high consistency mechanical refining of cellulosic material in a refining zone (46) defined between a rotor surface (138) and a stator surface (162), comprising:

driving left and right shaft segments (66,68) within substantially tubular left and right shaft housings (12,14) disposed about a common longitudinal axis (16), so as to spin a rotor (20) connected between the shaft segments and situated within a rotor housing (18) connected between the left and right shaft housings, said rotor having a major diameter (34) which lies in a plane of symmetry (160) extending

perpendicularly to the axis midway between axially spaced apart left and right rotor ends (26,30),

conveying feed material axially inwardly in a first feed zone (94,96) along the inner wall (98,100) of each shaft housing to the rotor;

conveying the feed material through a second feed zone (102,104) at each end of the rotor, the second feed zone including, rotating feed plates (118) having bars (120) and grooves (122) carried at the ends (30) of the rotor, stationary feed plates (124) having bars (126) and grooves (128) carried by the rotor housing (18), the plates (118,124) being juxtaposed to define a feed gap (130) which narrows from the first feed zone (96) to the refining zone (46), whereby the second feed zones (104) receive feed material from the first feed zones (96), break down the size of the feed material in said feed gaps (130) without generation of steam, and advance the size-reduced feed material into the refining zones (46) under the influence of the centrifugal force of the spinning rotor;

conveying the material of reduced size into left (44) and right frustroconical refining zones (46) defined between the left end (26) and major diameter (34) of the rotor, and the right end (30) and major diameter of the rotor (34), respectively, each refining zone (46) including rotating refiner plates (50) having bars (52) and grooves (54) carried by the the rotor (20), stationary refining plates having bars (60) and grooves (62) carried by the rotor housing (18), the plates (50,58) being juxtaposed to define left and right frustroconical refining gaps (66) along which cellulosic material is defibrated with the release of steam, whereby the material in the left refining zone (44) and the material in the right refining zone (46) flow toward the major diameter (34) of the rotor (20);

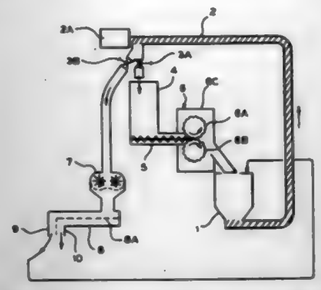
capturing the mixture of refined pulp and steam emerging from the refining zone (44,46) at the major diameter of the rotor in a casing (114) surrounding the rotor housing (18), and discharging (116) the mixture from the refiner.

5,383,609

METHOD FOR PULVERIZATION OF VEGETABLE FIBER MATERIALS AND ITS PRESSURE ROLLER SYSTEM

Robert W. Prater, Burr Ridge, Ill., and Jun Ohashi, Isehara, Japan, assignors to Prater Industries, Inc., Chicago, Ill.

Filed Mar. 30, 1993, Ser. No. 39,952
Claims priority, application Japan, Apr. 17, 1992, 4-097856
Int. Cl.[6] B02C *4/08, 4/28*
U.S. Cl. 241—29 **3 Claims**



1. In a method for pulverization of vegetable fiber materials, a milling procedure therefor comprising:

shaping said materials into compressed flakes by controlled force feeding said materials between a pair of adjacently disposed, synchronously and oppositely rotating, pressure rollers shaped at their respective circumferences to form said materials into said flakes, with the direction of rotation of such pressure rollers, respectively, being such that the adjacent portions of said adjacent portions of said circumferences of said pressure rollers move substantially in said direction, and,

after multiple repetitions of said shaping step,

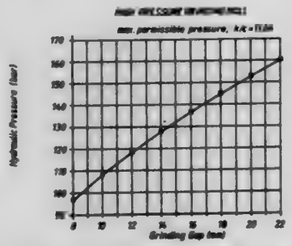
pulverizing the resulting flakes into powder form.

5,383,610

METHOD OF OPERATING A MATERIAL BED ROLL MILL

Don Longhurst, Marietta, Ga., assignor to Krupp Polysius AG, Beckum, Germany

Filed May 24, 1993, Ser. No. 66,496
Claims priority, application Germany, Jun. 17, 1992, 4219886
Int. Cl.[6] B02C *19/12*
U.S. Cl. 241—30 **8 Claims**



1. In a method of comminuting brittle material in a gap between confronting surfaces of a pair of contrarotating grinding rolls that are urged relatively toward one another under a predetermined optimum grinding force so as to crush and at least partially agglomerate a quantity of the brittle material passing through said gap, the improvement comprising:

constantly measuring surface pressure to which said rolls are subjected during comminution of the material;

comparing the measured surface pressure to a selected optimum surface pressure value;

at least temporarily reducing the grinding force applied to the rolls when the selected optimum surface pressure value is exceeded while continuing operation of the rolls until such time as the measured surface pressure no longer exceeds said selected optimum surface pressure value; and

thereafter restoring the optimum grinding force to the rolls.

5,383,611

DIRECT IN-LINE INJECTION OF PARTICULATE COMPOSITIONS IN SPRAYING SYSTEMS

Jeffery P. Falini, Bear, Del., and Lawrence D. Gaultney, Elkton, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 8, 1993, Ser. No. 134,238
Int. Cl.[6] B02C *19/22*
U.S. Cl. 241—30 **5 Claims**



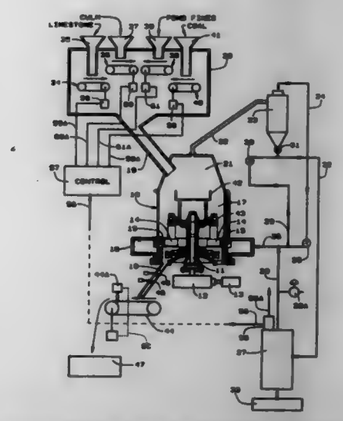
1. A method of directly injecting a solid particulate composition into a liquid spray system comprising feeding the composition into the inlet means of an apparatus for direct injection of a solid particulate composition into a liquid spray system, the apparatus comprising a longitudinal screw housing having a cylindrical cavity, a screw positioned within said cylindrical cavity, the screw having flights designed to transport and reduce the particle size of the solid particulate composition that enters the housing and is placed in contact with the screw, inlet means for introducing solid particulate composition into the housing and in contact with the screw at one end of the housing, and outlet means for the solid particulate composition to exit the housing and enter the liquid spray system at the other end of the housing, means for rotating the screw relative to the housing, with the design of the housing and the screw such that with the screw rotating relative to the housing the solid particulate composition introduced into the inlet means will be transported along the length of the screw from the inlet means to the outlet means while being metered and reduced in particle size, the improvement comprising that the depth of the screw flights are substantially constant depth along the entire area of the screw adjacent to the inlet means, rotating the screw such that the composition is transported along the length of the screw to the outlet means while being metered and reduced in particle size, and passing the composition through the outlet means and directly into the spray system.

5,383,612

APPARATUS FOR SEGREGATING LOW BTU MATERIAL FOR A MULTI-SOURCE OF FUEL MATERIALS

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Oct. 25, 1993, Ser. No. 140,568
Int. Cl.[6] B02C *23/30, 23/32, 25/00*
U.S. Cl. 241—34 **4 Claims**



1. Apparatus for processing low BTU fuel material to segregate the material rendered hard to grind and having minimum BTU content; said apparatus comprising:

a) a material grinding mill having a material inlet, a first material moving circuit containing a source of fuel material connected into said material inlet, a first discharge from said grinding mill for hard to grind material with low BTU content, and a second material discharge from said grinding mill; and

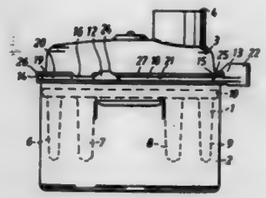
b) a second material moving circuit having a first connection with said second material grinding mill discharge and an air moving fan having a connection with said material grinding mill for supply of gaseous fluid, a source of material combustion means to supply drying heat connected into said second material moving circuit for supplying the drying heat to said grinding mill to effect material moisture drying conditions in said grinding mill.

5,383,613

SCRAPER ARRANGEMENT PERTAINING TO FOOD PROCESSORS

Jarl Sundquist, Sollentuna, Sweden, assignor to AB Hällde Maskiner, Kista, Sweden

Filed May 21, 1993, Ser. No. 65,392
Claims priority, application Sweden, May 22, 1992, 9201627-8
Int. Cl.[6] B02C *19/08*
U.S. Cl. 241—37.5 **9 Claims**



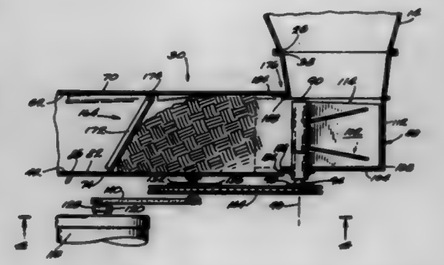
1. A scraper arrangement for use in combination with food processors of the kind in which the processor is a cutting appliance which cuts or chops the foodstuffs to be prepared, and which includes a container (2) having an upper peripheral edge and the container is fitted with a lid (3) which has a peripheral edge and an inlet opening (4) through which foodstuffs can be introduced into the container as the appliance operates, and wherein the container (2) is stationary while the applicance operates and in which rotating cutting means are located above the container bottom, said scraper arrangement (1) comprising: an annulus and at least two elongate scrapers (6–9) attached to and depending from said annulus (10) in annular spaced-apart arrangement, said annulus being adapted to be placed in the upper part of the container (2) with the elongate scrapers extending down from the annulus and adjacent the inner surface of the container; said annulus (10) including radially outwardly extending projections (11–13) adapted to be located between said lid (3) and the upper peripheral edge (14) of the container; and wherein the lid (3) includes downwardly directed shoulders (15–17) which when said lid is on the container, lie against the upper peripheral container edge (14); and wherein said shoulders (15–17) define therebetween and between the lid and said upper peripheral container edge, arcuate slots in which the radially directed projections (11–13) are disposed and will slide when the annulus (10) is rotated relative to the container (2).

5,383,614

AIR SEAL FOR THE PRODUCT DISCHARGE OF A CYCLONE SEPARATOR OR SIMILAR DEVICE

Martin H. Panning, P.O. Box 399, Thiensville, Wis. 53092

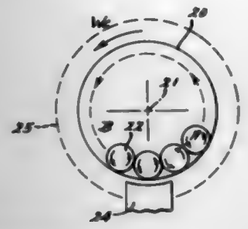
Filed Oct. 12, 1993, Ser. No. 135,263
Int. Cl.[6] B02C *23/08*
U.S. Cl. 241—79.1 **19 Claims**



1. An apparatus for providing an air seal for a device discharging a compressible product, said apparatus comprising:

a generally horizontal conduit having an upwardly opening inlet and an outlet spaced from said inlet;
a packer blade mounted in said conduit for pivotal movement about a generally vertical axis, said packer blade having a stroke path extending beneath said inlet;
a motor connected to said packer blade to cause reciprocating pivotal movement of said packer blade about said axis so that product entering said conduit via said inlet is swept by said packer blade toward said outlet; and
a discharge resistor which is located in said conduit between said packer blade and said outlet, which resists the flow of product through said conduit toward said outlet, and which permits compressed product to flow out of said conduit via said outlet;
such that said packer blade and said discharge resistor cause substantially uniform compression of the product between said packer blade and said discharge resistor so as to form a plug of product that substantially prevents air flow through said conduit in either direction.

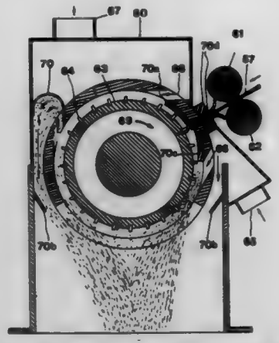
5,383,615
BALL MILLING APPARATUS
Andrzej Calka, Ainslie, and Barry W. Ninham, Cook, both of Australia, assignors to The Australian National University, Acton, Australia
PCT No. PCT/AU90/00471, § 371 Date Mar. 27, 1992, § 102(e) Date Mar. 27, 1992, PCT Pub. No. WO91/04810, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 3, 1989, Ser. No. 842,419
Int. Cl.[6] B02C *17/00, 17/04*
U.S. Cl. 241—172 **12 Claims**



1. A ball mill comprising:
(a) a substantially cylindrical chamber, the chamber being mounted with the axis of the cylinder substantially horizontal and for rotation about the axis of the cylinder; and
(b) a plurality of steel balls within the chamber; characterised in that
(c) the chamber is made of a paramagnetic material;
(d) the steel of which the balls are made is a ferromagnetic material; and
(e) at least one magnet is mounted outside the chamber, said at least one magnet (i) having lines of magnetic force which penetrate into the chamber, and (ii) being physically moveable relative to the chamber between a plurality of locations on a respective arc having its centre of curvature substantially at the axis of rotation of the chamber.

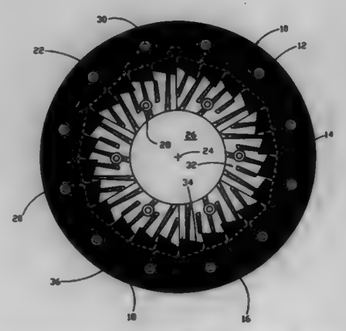
5,383,616
PULP MILL APPARATUS
Mike Svaighert, 3120 SW. 19th St., #144, Hallandale, Fla. 33009, assignor to Mike Svaighert and International Design & Mtg., Inc., both of Hallandale, Fla.
Division of Ser. No. 774,071, Oct. 9, 1991, Pat. No. 5,226,991. This application Jan. 22, 1993, Ser. No. 7,661
Int. Cl.[6] B02C *19/12*
U.S. Cl. 241—242 **4 Claims**

1. Pulp mill apparatus, comprising a support structure, a rotating cylindrical rotor having a peripheral surface and a longitudinal axis, a multiplicity of milling teeth having a given length disposed on said surface for cutting pulp, a shaft for rotatably supporting said rotor on said support structure, and means for driving said rotor, said milling teeth each having a forward and a rearward edge as seen in an axial direction and being mutually aligned around the circumference of said rotor,



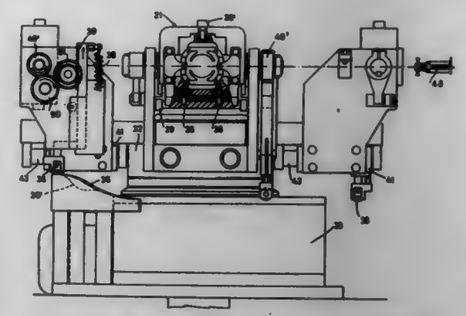
said forward and said rearward edges of said milling teeth being alternatingly aligned with one another in a circumferential direction, said teeth having leading edges as seen in a rotational direction of said rotor, and said leading edges being oriented obliquely to and defining a given angle with a parallel to said axial direction.

5,383,617
REFINER PLATES WITH ASYMMETRIC INLET PATTERN
Ian Deuchars, 4025 Briarwood St., NW., Salem, Oreg. 97304
Filed Oct. 21, 1993, Ser. No. 140,673
Int. Cl.[6] B02C *7/12*
U.S. Cl. 241—298 **6 Claims**



1. A plate attached to a substantially circular disc for installation in a rotating disc refiner, the disc having a center, a circumferential periphery, and a radius extending from said center to said periphery, and the plate being formed by a plurality of adjacent plate segments, each segment having a central axis extending radially and a pattern of raised bars and grooves defined between the bars, wherein said pattern comprises:
a first, radially inner zone having a first arrangement of laterally spaced bars and intervening grooves, each bar having a length defined by radially inner and outer ends and each groove having a width and a longitudinal centerline;
a second zone situated radially outward of said first zone and having a second arrangement of laterally spaced bars and intervening grooves, such that each bar has a length defined by radially inner and outer ends and each groove has a width and a longitudinal centerline, wherein the groove centerlines of the second zone are not collinear with the groove centerlines of the first zone; and
the outer ends of the bars in the first zone and the inner ends of the bars in the second zone are spaced from each other non-uniformly and thereby define a channel therebetween of periodically varying width.

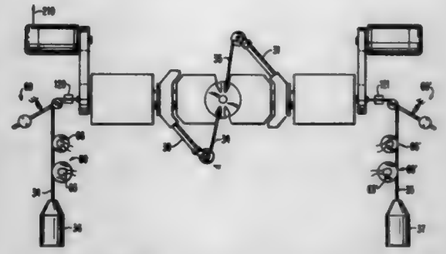
5,383,618
MACHINE AND METHOD FOR WINDING TWO-POLE STATORS
Luciano Santandrea, and Massimo Lombardi, both of Firenze, Italy, assignors to Axis S.p.A., Florence, Italy
Division of Ser. No. 911,126, Jul. 9, 1992, Pat. No. 5,316,228, which is a division of Ser. No. 579,606, Sep. 10, 1990, Pat. No. 5,149,000, which is a division of Ser. No. 306,618, Feb. 6, 1989, Pat. No. 4,969,606. This application Feb. 15, 1994, Ser. No. 196,713
Claims priority, application Italy, Mar. 10, 1988, 67196 A/88
Int. Cl.[6] H02K *15/02*
U.S. Cl. 242—1.10 R **6 Claims**



1. A machine for winding a stator having a longitudinal axis, said machine comprising:
a movable table for transferring the stator between a first station and a second station, wherein said first station is a stator winding station and said second station is a stator termination station;
a stator support mounted on said movable table for receiving and holding a stator so that said stator can be wound with its longitudinal axis substantially horizontal, wherein said stator support includes a pair of opposing clamping members for releasably clamping said stator thereto, said clamping members being removable from said stator support;
means for loading said stator between said opposing clamping members prior to winding said stator at said first station; and
means for unloading said stator from said opposing clamping members after termination of said starer at said second station.

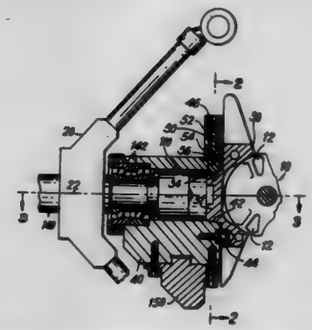
5,383,619
METHODS AND APPARATUS FOR WINDING ARMATURES WITH IMPROVED BALANCE
Giuseppe Cardini, Florence; Massimo Lombardi, Scandicci, and Mauro Tarchi, Florence, all of Italy, assignors to Axis USA, Inc., Marlborough, Mass.
Filed Apr. 2, 1993, Ser. No. 42,607
Int. Cl.[6] H02K *15/09*
U.S. Cl. 242—7.05 B **9 Claims**

1. Apparatus for simultaneously winding two coils of wire on a rotor for use in a dynamo-electric machine comprising:
first and second wire supplies for respectively supplying first and second wires;
first and second winders for respectively winding said first and second wires on said rotor;
first and second means for respectively guiding said first and second wires to said first and second winders, said first and second means for guiding respectively comprising first and second means for monitoring consumptions of the respective one of said first and second wires which is passing through the respective one of said first and second



means for guiding, and first and second means for applying tension to the respective one of said first and second wires which is passing through the respective one of said first and second means for guiding to the respective one of said first and second winders; and
means responsive to said first and second means for monitoring for adjusting the tension applied by at least one of said first and second means for applying tension in order to substantially equalize the consumptions of said first and second wires.

5,383,620
APPARATUS FOR FACILITATING THE CHANGING OF SHROUDS IN ARMATURE WINDING MACHINES
Massimo Lombardi, and Gianluigi Pisani, both of Florence, Italy, assignors to Axis USA, Inc., Marlborough, Mass.
Division of Ser. No. 610,928, Nov. 9, 1990, Pat. No. 5,257,745. This application Aug. 9, 1993, Ser. No. 104,360
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[6] H02K *15/09*
U.S. Cl. 242—7.05 B **5 Claims**



1. Apparatus for mounting an armature coil wire winding shroud on a support body so that the shroud is held firmly relative to said support body but is also readily removable from said support body comprising:
a first reference surface on said support body;
a second reference surface on said shroud; and

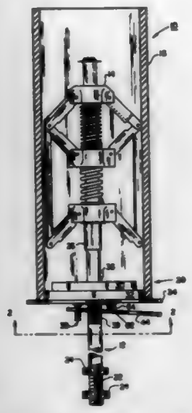
means for resiliently urging said first and second reference surfaces toward and into contact with one another.

5,383,621

PACKAGE ADAPTER HAVING AN ADJUSTABLE BASE

James L. Alexander, 1024 N. Tryon St., Charlotte, N.C. 28206

Filed Mar. 23, 1993, Ser. No. 35,729
Int. Cl.[6] B65H *49/06*
U.S. Cl. 242—130 22 Claims



1. A yarn package adapter for a creel for receiving and engaging a package of strand material wound about an elongate hollow core, said adapter comprising:

(a) a central shaft adapted to be mounted to said creel;

(b) means mounted on said central shaft for engaging the inside diameter of said package core;

(c) a base having an aperture for receiving said central shaft therealong and for forming a sliding abutment for engaging an end of said package core;

(d) a releasable locking mechanism attached to said base for engaging said central shaft and preventing movement of said base along said shaft; and

(e) means for restricting the movement of said base along said central shaft, thereby preventing said base from contacting said means mounted on said central shaft for engaging the inside diameter of said package core.

5,383,622

WEB TRANSFER MECHANISM AND METHOD FOR A CONTINUOUS WINDER

Herbert B. Kohler, Unionstown, Ohio, assignor to The Kohler Coating Machinery Corporation, Greentown, Ohio

Filed May 5, 1993, Ser. No. 57,740
Int. Cl.[6] B65H *19/20*
U.S. Cl. 242—527.2 22 Claims

1. A web transfer apparatus for a web winder, comprising:

a rotatable core for winding a web thereon;

means for positioning the web near the core;

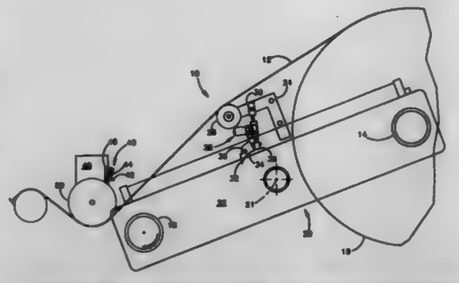
cutting means positionable near the web and near the core;

web deflector means positionable near the web on the opposite side from the cutting means for deflecting the web toward the core and into engagement with the cutting means thereby cutting the web;

a hood adjacent the cutting means and spaced from the core;

a channel defined by the core and the hood;

an air jet directed tangentially to the core and away from the channel to induce an air current in the channel to pull a



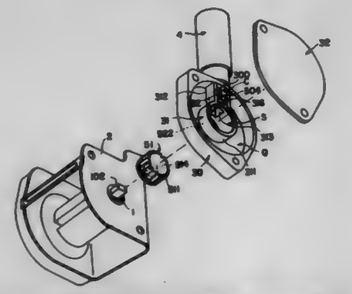
leading edge of the web through the channel and onto the core.

5,383,623

ROTARY ACTUATOR-OPERATED SEAT BELT PRETENSIONER

Mitsuhiko Hiruta; Ryoichi Yoshida; Muneo Nishizawa, and Koji Hiramatsu, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 908,189, Jul. 1, 1992, Pat. No. 5,248,110. This application Feb. 11, 1993, Ser. No. 16,763
Claims priority, application Japan, Feb. 13, 1992, 4-058840; Dec. 9, 1992, 4-351566; Dec. 9, 1992, 4-351567; Dec. 9, 1992, 4-351568
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[6] B60R *22/46*
U.S. Cl. 242—374 10 Claims



1. A rotary actuator-operated seat belt pretensioner comprising a frame, a belt take-up shaft rotatably mounted on the frame, a rotary actuator mounted on the frame and including an annular pressure chamber, a rotating member having a ring portion defining an inner wall of the pressure chamber and a space within the chamber and having an integral vane extending across the pressure chamber, the ring portion extending circumferentially continuously around the periphery of the space within it and the vane portion being unitary with the ring portion and in sliding and sealed engagement with the pressure chamber walls, a gas generator for supplying pressurized gas to the pressure chamber to impart rotation to the rotating member, and clutch means interposed between the rotating member and the take-up shaft and including a driving engagement member to which a driving force is imparted by the rotating member and a driven engagement member received in the space within the ring portion of the rotating member and connected to the take-up shaft for rotation therewith, the ring portion having a hole adjacent the vane portion having side edges spaced-apart from the edges of the ring portion, the

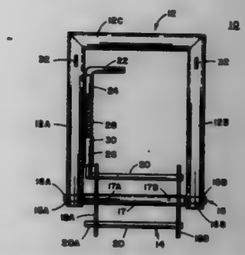
driving engagement member being received in the hole for movement into engagement with the driven engagement member, and the driving engagement member having a pressure-receiving surface facing the pressure chamber so as to be moved into engagement with the driven engagement member by a force acting on the pressure-receiving surface due to gas pressure supplied by the pressure generator to the pressure chamber.

5,383,624

PORTABLE HOSE REEL

Jerry M. Simon, 1415 S. Harbor Dr., Merritt Island, Fla. 32952

Filed Aug. 14, 1992, Ser. No. 930,314
Int. Cl.[6] B65H *75/40*
U.S. Cl. 242—396.1 5 Claims



1. A portable hose reel for carrying by a person and deploying a collapsible hose comprising:

reel means for receiving a plurality of convolutions of the collapsible hose arranged in generally spirally wound relation thereon, said reel means including an axle having a pair of opposite end portions, respectively, a pair of members extending generally radially about said axle and secured to said axle adjacent its opposite end portions, a plurality of means secured between said members in radially spaced relation with said axle for supporting engagement with an inner convolution of the collapsible hose in its spirally wound relation on said reel means, and at least one of said supporting engagement means respectively having a free end extending generally axially beyond one of said members;

frame means pivotally supporting said opposite end portions of said axle; and

resiliently urged means mounted to said frame means for manual movement between an at-rest position and a displaced position of said resiliently urged means, said resiliently urged means in its at-rest position being disposed in part in an interfacing position with said free end to engage therewith and to obviate de-reeling of the collapsible hose from said reel means and said resiliently urged means in its displaced position being displaced from said free end thereby to permit de-reeling of the collapsible hose from said reel means.

5,383,625

REEL HOLDER FOR USE IN TAPE WINDING APPARATUS

Seigo Uehara, Fujisawa, and Hideharu Tsukamoto, Hachioji, both of Japan, assignors to Sony Magnescale Inc., Tokyo, Japan

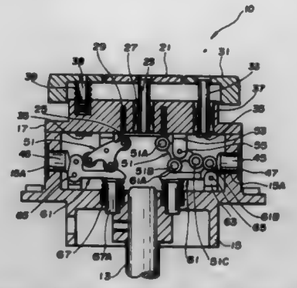
Filed Aug. 20, 1993, Ser. No. 109,536
Claims priority, application Japan, Aug. 31, 1992, 4-232344
Int. Cl.[6] B65H *75/24*
U.S. Cl. 242—572 18 Claims

1. A holder comprising:

a cylindrical base body;

a plurality of lock pins radially movably mounted in a peripheral portion of said cylindrical base body, each lock pin being axially movable between a projected position wherein an outer end thereof is projected outwardly from a cylindrical outer wall of said base body and a retracted position wherein said outer end thereof is retracted into said base body;

first and second buttons mounted on an axial end of said cylindrical base body, each button being movable in parallel with the axis of said cylindrical base body between raised and depressed positions with respect to said axial end; and



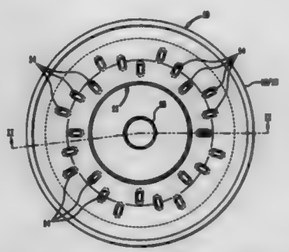
a transmission device installed in said cylindrical base body and operated in such a manner as to move said lock pins to the projected position when said first button is moved to the depressed position and return the lock pins to the retracted position when said second button is moved to the depressed position.

5,383,626

TAKE-UP REEL FOR ROLLABLE WINDING MATERIAL

Manfred Hiifner, Leopoldshöhe, Germany, assignor to Hiifner & Krullmann GmbH, Germany

Filed Nov. 9, 1992, Ser. No. 973,718
Claims priority, application Germany, Nov. 12, 1991, 9114007[U]
Int. Cl.[6] B65H *75/14*
U.S. Cl. 242—614.1 10 Claims



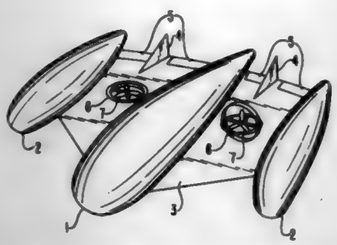
1. A take-up reel for rollable material, comprising a barrel defined by a diameter and having opposing end faces provided with an end flange forming a barrel-near inner surface and a barrel-distant outer surface, said barrel-distant outer surface being provided with knobs, each said knob being located on the flange at a diameter greater than the diameter of said barrel and each said knob having a center, wherein the center of successive knobs is arranged about different circles extending concentric to said barrel.

5,383,627

OMNIDIRECTIONAL PROPELLING TYPE AIRSHIP

Mutsuro Bando, 6-11, Funai-cho 1-chome, Oita, Japan

Filed Aug. 18, 1993, Ser. No. 108,505
Claims priority, application Japan, Aug. 20, 1992, 4-221446
Int. Cl.[6] B64B *1/34*
U.S. Cl. 244—26 3 Claims



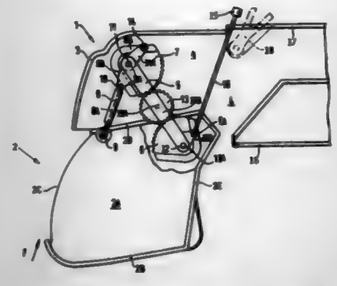
1. An omnidirectional airship comprising: a hull including a middle fuselage, outer fuselages disposed to respective sides of and spaced from said middle fuselage, and a cabin, said fuselages constituting an airtight gas chamber, said middle fuselage having a tear drop shape tapering in the aft direction of the airship, and each of said outer fuselages having a tear drop shape similar to and smaller than that of said middle fuselage; gas lighter than air occupying said gas chamber; an airfoil connected to said hull; propelling means for propelling the airship; gimbals supporting said propelling means; all of said propelling means being disposed proximately midway, in the forward to aft direction of the airship, between the center of gravity of said hull and the aerodynamic center of the airship; said airfoil comprising right and left horizontal airfoils connecting the middle fuselage to the outer fuselages; and vertically extending tails and elevators provided at rear portions of the horizontal airfoils.

5,383,628

OVERHEAD LUGGAGE COMPARTMENT, ESPECIALLY FOR PASSENGER AIRCRAFT

Michael Harriehausen, Hamburg; Dieter Knoch, Buxtehude, and Heinz Manthey, Hamburg, all of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Germany

Filed Oct. 28, 1993, Ser. No. 144,572
Claims priority, application Germany, Oct. 28, 1992, 9214592[U]
Int. Cl.[6] B64D *11/00*
U.S. Cl. 244—118.1 10 Claims



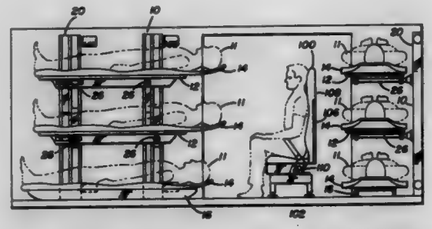
1. An overhead luggage compartment adapted for attachment to a fixed overhead structure, said luggage compartment comprising a fixed cover (3) secured to said overhead structure, a trough having a bottom for holding luggage and first and second trough side walls interconnected by said bottom, first and second trough guide suspension systems for raising and lowering said trough, said first suspension system being positioned between said first trough side wall and said fixed overhead structure, said second suspension system being positioned between said fixed overhead structure and said second side wall of said trough, each of said suspension systems comprising: first journal means (11) adapted for rigid connection to said overhead structure (4), said first journal means having a first rotational journal axis (11A), second journal means (12) rigidly connected to the respective trough side wall, said second journal means having a second rotational journal axis (12A), a guide lever (5) journalled with one end to said first journal axis of said first journal means and with its other end to said second journal axis of said second journal means, a gear wheel (13) journalled to said guide lever (5) intermediate its lever ends, said gear wheel (13) having a rotational axis (13A) positioned on said guide lever (5) on a line interconnecting said rotational axes of said first and second journal means (11, 12), a first gear sector (7) adapted for rigid connection to said overhead structure, said first gear sector (7) having a first gear center coinciding with said first journal axis (11A), a second gear sector (6) rigidly connected to said trough, said second gear sector (6) having a second gear center coinciding with said second journal axis (12A), said gear wheel (13) meshing with said first and second gear sectors (7, 6) so that said trough can be lowered by a force pulling downwardly and lifted by a force pushing upwardly.

5,383,629

EMERGENCY MEDICAL SYSTEM

Roy L. Morgan, Franktown, Colo., assignor to Air Methods Corporation International, Englewood, Colo.

Filed Oct. 7, 1992, Ser. No. 957,694
Int. Cl.[6] B64D *11/00*
U.S. Cl. 244—118.6 8 Claims



1. An emergency medical system for a vehicle interior space having a ceiling, a floor, and a pair of oppositely disposed walls, said system comprising,

a pair of substantially parallel horizontally spaced control masts mounted to each of the oppositely disposed walls, each of said control masts having a pair of substantially parallel tracks;

a pair of elongated litter support platforms arranged to extend along each of the oppositely disposed walls;

a pair of support assemblies positioned, respectively, toward opposite ends of each of said litter platforms, each of said support assemblies being slideably engaged with a respective one of said lift tracks to permit independent raising and lowering of each end of each of said litter support platforms;

vertical adjustment means for independently adjusting the vertical position of each of said support assemblies for controlling the vertical spacing between said litter support platforms,

each pair of said litter support platforms on the respective walls being positionable to provide space for litter supported patients on each of said platforms with room for a third litter supported patient on the floor beneath the lowermost litter support platform,

each of said litter support platforms on the respective walls being positionable adjacent each other proximate the ceiling to provide clearance for cargo stacked on the floor,

each of the lowermost one of said litter support platforms on the respective walls having reciprocable seat forming means thereon for configuring said litter support platform as a bench-like passenger seat; and

an attendant seat removably secured to the floor substantially midway between the opposite walls proximate one end of said litter support platforms, the lowermost of said litter platforms on opposite walls being spaced from each other and from said attendant seat so as to be positionable to locate patients within arm's reach of an attendant seated in said attendant seat.

5. An emergency medical system for a vehicle interior space having a ceiling, a floor, a rear wall, and a pair of oppositely disposed walls, said system comprising,

a pair of substantially parallel horizontally spaced control masts mounted to the rear wall and each of the oppositely disposed walls, each of said control masts having a pair of substantially parallel tracks;

a pair of elongated litter support platforms arranged to extend along the rear wall and each of the oppositely disposed walls;

a pair of support assemblies positioned, respectively, toward opposite ends of each of said litter platforms, each of said support assemblies being slideably engaged with a respective one of said lift tracks to permit independent raising and lowering of each end of each of said litter support platforms;

vertical adjustment means for independently adjusting the vertical position of each of said support assemblies for controlling the vertical spacing between said litter support platforms,

each pair of said litter support platforms on the respective walls being positionable to provide space for litter supported patients on each of said platforms with room for a third litter supported patient on the floor beneath the lowermost litter support platform,

each of said litter support platforms on the respective walls being positionable adjacent each other proximate the ceiling to provide clearance for cargo stacked on the floor,

each of the lowermost one of said litter support platforms on the respective walls having reciprocable seat forming means thereon for configuring said litter support platform as a bench-like passenger seat; and

an attendant seat removably secured to the floor proximate said litter platforms on the rear wall substantially midway between the opposite walls proximate one end of said litter support platforms on the opposite walls, the lowermost of said litter platforms on the rear and opposite walls being spaced from each other and from said attendant seat so as to be positionable to locate patients within arm's reach of an attendant seated in said attendant seat.

5,383,630

MAIN DECK QUICK CHANGE CARGO SYSTEM

Jeffrey J. Flatten, Reading, Pa., assignor to Teleflex Incorporated, Limerick, Pa.

Filed Mar. 17, 1994, Ser. No. 210,313
Int. Cl.[6] B64D *11/06*
U.S. Cl. 244—118.6 16 Claims

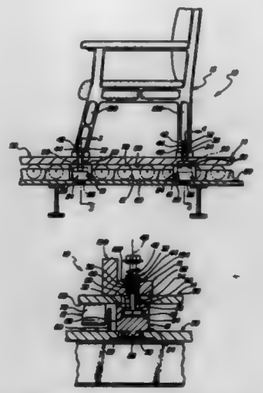
1. An assembly (10) for rapidly converting the payload-bearing main deck (20) of an aircraft (22) between cargo-carrying capability and crash-worthy passenger-carrying capability, said assembly (10) comprising:

cargo conveyor means (12) for transporting pallets (14) along the main deck (20);

a pallet (14) moveably disposed on said cargo conveyor means (12);

at least one passenger seat (16) disposed on said pallet (14); and

characterized by connector means (18) passing through said pallet (14) for directly connecting said passenger seat (16)



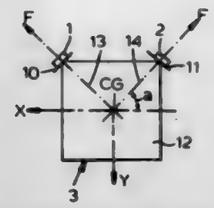
to the main deck (20) to transfer seat loads resulting from rapid aircraft decelerations directly into the main deck (20) thereby reducing said pallet's (14) structural load-carrying requirements so that said pallet (14) can be manufactured from lighter and less expensive materials.

5,383,631

TRIAXIALLY STABILIZED SATELLITE PROVIDED WITH ELECTRIC PROPULSORS FOR ORBITAL MANEUVERING AND ATTITUDE CONTROL

Leonardo Mazzini, Rome, Italy, assignor to Alenia Spazio S.p.A., L'Aquila, Italy

Filed Jan. 23, 1992, Ser. No. 824,860
Claims priority, application Italy, Jan. 23, 1991, RM91 A000051
Int. Cl.[6] B64G *1/26*
U.S. Cl. 244—169 1 Claim



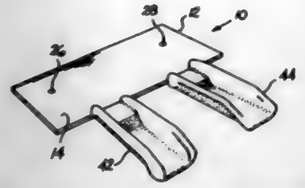
1. A triaxially stabilized satellite having a Cartesian axis system with mutually perpendicular X, Y and Z axes, two electric propulsors for orbital maneuvers and attitude control of said satellite and having respective versors including a right angle between them and lying in an X-Y plane, the versors being orientable in said plane about the Z axis to include a variable angle a with said X axis to impart two degrees of freedom of movement to said electric propulsors, said electric propulsors generating thrust vectors in line with said versors away from a center of gravity of the satellite at an intersection of said versors, said electric propulsors being firable independently and for respective angles of arc in their displacement with said degrees of freedom to maneuver said satellite orbitally, control attitude of said satellite and dissipate angular momentum of the satellite.

5,383,632

MOVEABLE FOREARM AND WRIST SUPPORT

Jack W. Shirlin, 31706 Sheridan, Garden City, Mich. 48135, and Robert T. Kaiser, 32916 Avondale, Westland, Mich. 48185

Filed Aug. 20, 1993, Ser. No. 109,838
Int. Cl.[6] B43L *15/00*
U.S. Cl. 248—118.5 9 Claims



1. A wrist and forearm support device, comprising:
a frame having a front edge supported in front of the user, a side edge, the frame having a generally upward-facing surface suited for supporting a hand-operated device such as a keyboard;
a first arm having a first end overlapping the front edge of the frame, and an opposite end overhanging the front edge of the frame in a first arm position;
first pivot means connecting the first end of the first arm to the frame such that the first arm is swingable about the first pivot means in a generally horizontal plane toward a second arm position in which said opposite end of the first arm overhangs said side edge;
a first elongated cushioned arm rest having a longitudinal axis and an upward-facing cushioned surface, and second pivot means on the overhanging end of the first arm and beneath the first cushioned arm rest for supporting the first cushioned arm rest for a pivotal motion in a generally horizontal position about an axis generally normal to said horizontal plane, the first cushioned arm rest having a length sufficient to cradle the user's wrist and a major portion of the forearm between the wrist and the elbow, wherein the user can rest her arm on the cushioned arm rest when it is disposed in a selected position with respect to the frame; and
the cushioned arm rest being swingable between a first position, generally normal to said front edge, when said opposite end of said first arm is disposed in said first arm position, and a second position in which the longitudinal axis of the arm rest is parallel to the side edge and spaced outwardly therefrom, and said opposite end of said first arm is disposed in said second arm position.

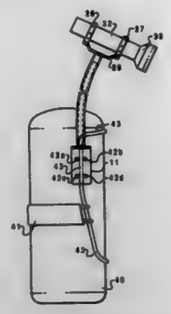
5,383,633

ILLUMINATING DEVICE FOR USE IN HAZARDOUS SITUATIONS

Michael J. Ellestad, 2430 Jefferson Point Dr., Apt. 935, Arlington, Tex. 76006

Continuation of Ser. No. 940,044, Sep. 3, 1992, abandoned. This application May 13, 1994, Ser. No. 242,701
Int. Cl.[6] F21V *33/00*
U.S. Cl. 248—160 20 Claims

1. A device for use in hazardous situations comprising:
(a) an elongated flex tube having a first end and an opposite end,
(b) an accessory mounting bracket attached to said first end,
(c) a support mounting bracket attached to said opposite end,
(d) insulating means interposed between said accessory mounting bracket and said elongated flex tube thereby to provide electrical insulation of said accessory mounting bracket from said elongated flex tube, a self-contained breathing apparatus connected to said support mounting



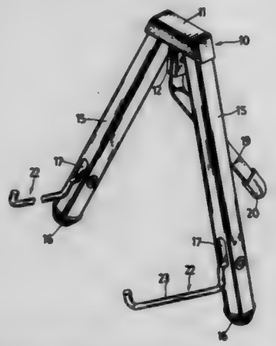
bracket, and an illuminating means connected to said accessory mounting bracket.

5,383,634

COLLAPSIBLE GUITAR STAND

Tsun-Chi Liao, Taichung, Taiwan, Prov. of China, assignor to Hwa Shin Musical Instrument Co., Ltd., Taichung, Taiwan, Prov. of China

Filed May 10, 1993, Ser. No. 58,251
Int. Cl.[6] G10D *3/00*
U.S. Cl. 248—166 1 Claim



1. A collapsible guitar stand comprising:
a) a crossbeam assembly including a horizontal top member having a hollow bottom portion, and a bottom frame, the bottom frame being connected to the vertical bottom portion of the top member to define a pair of bottom holes therein, the bottom frame having a groove extending along the length thereof;
b) a pair of front legs, each front leg including first and second ends, the first end of each front leg being pivotally secured within a bottom hole for permitting the front legs to be folded together, and each front leg further including a forwardly facing oblong opening formed adjacent the second end;
c) a back leg including a curved top end pivotally secured in the groove of the bottom frame for permitting the back leg to be folded forwardly and disposed between the front legs; and
d) a pair of supporting rods, each supporting rod including a first end pivotally secured to the front leg through the oblong opening thereof for permitting the rod to be folded

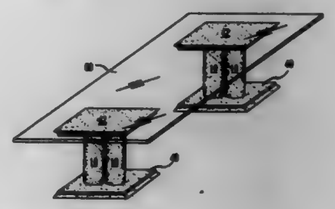
upwardly towards the front leg and be disposed substantially parallel and adjacent thereto.

5,383,635

NO-SEW FABRIC WRAP TABLES

Dana Barone, 1155 Walter Blvd., Manahawkin, N.J. 08050

Filed Sep. 7, 1993, Ser. No. 116,853
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[6] F16M *11/20*
U.S. Cl. 248—188.1 17 Claims



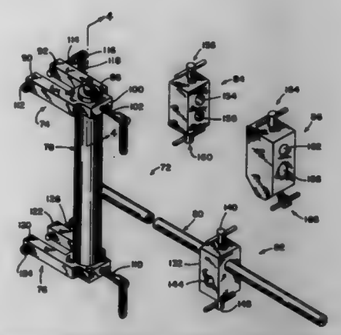
1. Apparatus comprising:
a first elongated semi-soft foam of predetermined shape and dimension;
a straight slit in an exterior surface of said first foam running along the length of said first foam;
a slot at least at one end of said first foam;
a fabric covering wrapped around said first foam, having opposing ends fitted into said slit and opposing sides tucked into said slot;
a second elongated semi-soft foam of predetermined shape and dimension;
a straight slit in an exterior surface of said second foam running along the length of said second foam;
a slot at least at one end of said second foam;
a fabric covering wrapped around said second foam, having opposing ends fitted into said slit and opposing sides tucked into said slot; and
means coupled between said slits of said first and second foams for joining said first and second foams together.

5,383,636

BRACKET SYSTEM FOR MOUNTING A CABLE SPLICING TOOL TO A PEDESTAL

Darwin M. Karl, 7887 Highland Dr., Minocqua, Wis. 54548

Filed Dec. 17, 1992, Ser. No. 992,151
Int. Cl.[6] F16M *13/02*
U.S. Cl. 248—278 11 Claims



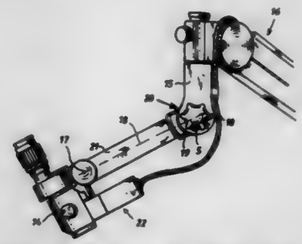
1. A mounting bracket for mounting a cable splicing head to a pedestal having one or more walls, comprising:
a body member defining first and second ends;
a clamp member pivotably mounted to the body member adjacent each end of the body member for mounting the body member to one of the pedestal walls, wherein the clamp members include mounting means for mounting the clamp members and the body member at any desired location along the pedestal wall;
a position fixing arrangement interposed between each clamp member and the respective end of the body member for selectively fixing a rotational position of the respective body member end relative to the clamp member;
an arm mounted to and extending outwardly from the body member; and
a mounting member releasably engaged with the arm and including a mounting arrangement for mounting the splicing head to the mounting member.

5,383,637

COUPLING FOR CONNECTING A SURGICAL MICROSCOPE TO A STAND

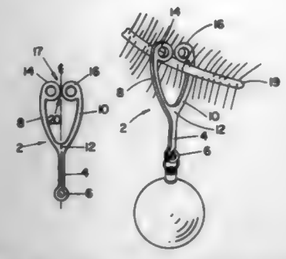
Klaus Biber, Aalen, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim

Filed Oct. 7, 1993, Ser. No. 132,904
Claims priority, application Germany, Oct. 8, 1992, 4233658
Int. Cl.[6] E04G *3/00*
U.S. Cl. 248—291 9 Claims



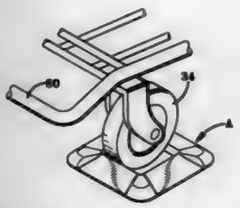
1. A coupling for connecting a surgical microscope to a stand so as to permit said microscope to be set in a plurality of base positions relative to said stand, the microscope having a carrier and being pivotable about a pivot axis in each of said base positions, the coupling comprising:
a supporting part for holding said carrier;
a connecting part for connecting said coupling to the stand;
said supporting part having a first bearing part and said connecting part having a second bearing part;
a holder for holding said bearing parts together to conjointly define a bearing and a bearing interface at which said parts rotate relative to each other;
said holder including: a first member connected to one of said bearing parts; a second member engaging said first member for holding said bearing parts together at said interface; and, a biasing device interposed between one of said bearing parts and one of said members to provide a friction force at said interface as said parts are rotated relative to each other;
said biasing device including resilient biasing means for generating a resilient biasing force between said one bearing part and said one member to generate said friction force; and, adjusting means for adjusting said friction force; and,
indexing means for indexing said microscope in any one of said base positions.

5,383,638
CHRISTMAS ORNAMENT HANGER
Dale E. Dieringer, 5195 W. 58th Ave., Ste. 300, Arvada, Colo. 80002, and Nikki Powell, 10040 Lewis St., Broomfield, Colo. 80021
Filed Feb. 25, 1994, Ser. No. 201,791
Int. Cl.[6] A47H *1/10*
U.S. Cl. 248—317 **3 Claims**



1. A hanger for a Christmas tree ornament, comprising,
a stem having first and second ends and an eyelet carried by the first end thereof,
a pair of divergent springable jaws having free ends symmetrically disposed about the extended centerline of the stem and being joined at a central hinge point which hinge point is integral with the second end of the stem, and
enlarged end portions carried by each of the free ends of the springable jaws.

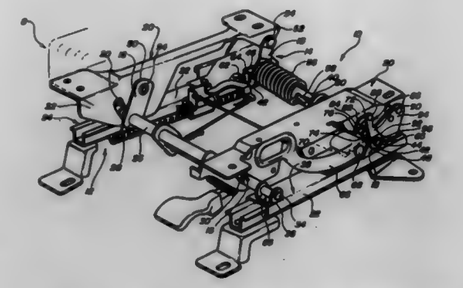
5,383,639
APPARATUS FOR SECURING A SHOPPING CART
Robert B. Byard, 1134 Brown St., Ste. 2F, Akron, Ohio 44301
Filed Jul. 10, 1992, Ser. No. 911,519
Int. Cl.[6] A47B *91/12*
U.S. Cl. 248—346.1 **4 Claims**



1. An apparatus for securing a wheeled cart to a specific location, said apparatus comprising:
a body member, said body member having a top surface and a bottom surface, said top surface having an outside edge, a top edge and an inclined surface, said inclined surface extending between said outside edge and said top edge of said top surface, said inclined surface and said top edge of said top surface defining a depression; and,
a corner shoulder, said corner shoulder having an outward-facing surface, said corner shoulder being located on said inclined surface and being elevated therefrom.

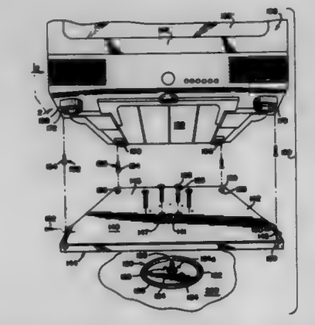
5,383,640
SEAT POSITION ADJUSTING APPARATUS
Richard F. Johnson, Bloomfield Hills, and Gregory S. Miller, Northville, both of Mich., assignors to Douglas & Lomason Company, Farmington Hills, Mich.
Filed Sep. 17, 1993, Ser. No. 123,332
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—372.1 **17 Claims**

1. A position adjusting apparatus for a vehicular seat, comprising:
a) a base;
b) a mounting bracket having a forward portion and a rearward portion for mounting a vehicular seat thereto;
c) a four bar mechanism extending from said base for supporting said vehicular seat, said four bar mechanism adapted for articulation with respect to said base such that said forward and rearward portions of said mounting bracket can be moved concurrently between elevated forward positions and lowered rearward positions;



d) means for storing a portion of the energy exerted as said vehicular seat is lowered from said elevated forward positions to said lowered rearward positions such that said stored energy can be utilized to assist elevating said seat from said lowered rearward position to said elevated forward position, said means for storing said energy being disposed between two members of said four bar mechanism; and
e) latch means selectively positionable for prohibiting articulation of said four bar mechanism and for permitting articulation of said four bar mechanism.

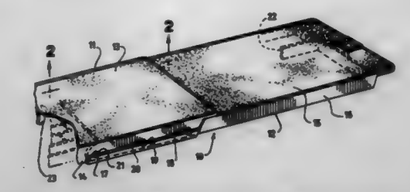
5,383,641
TELEVISION SUPPORT MEMBER SECURITY MOUNTING ASSEMBLY
Carl A. Bergetz, River Forest, Ill., assignor to Peerless Industries, Inc., Melrose Park, Ill.
Filed Oct. 27, 1992, Ser. No. 967,160
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[6] A47F *7/00*
U.S. Cl. 248—425 **17 Claims**



1. A mounting assembly for securely mounting an electrical appliance to a support surface, the mounting assembly comprising:
a lower section adapted to mate with the support surface, the lower section having at least one mounting aperture extending therethrough to permit the passage of a fastening means for fastening said lower section to said support surface;
an upper section rotatably joined to said lower section, the upper section including a tray dimensioned to receive the appliance thereon, the upper section further including a flange member extending along a portion of an edge of the tray, said tray and said flange member cooperating to define two distinct areas of engagement between said upper section and said appliance, said tray including at least one opening which permits access to the lower section fastening means, said upper section further including a plurality of first and second apertures, the upper section first apertures being disposed in said tray and the upper section second apertures being disposed in said flange member, said upper section second apertures being further angularly offset from said first apertures, said flange member being adapted to engage a portion of said appliance,
and said mounting assembly further including upper section first fastening means for providing a first point of engagement between said appliance and said mounting assembly, the first fastening means being adapted to pass generally vertical through said first apertures in said trak and engage said appliance in a manner whereby limited lateral and vertical movement of said appliance relative to said upper section is possible, and upper section second fastening means for providing a second point of engagement between said appliance and said mounting assembly, the second fastening means being adapted to pass generally horizontally through said second apertures of said upper section flange member and engage said appliance in a manner whereby movement of said appliance relative to said upper section is prevented and whereby, when said first and second fastening means engage said appliance through said respective first and second apertures, said second fastening means prevents lateral and vertical movement of said appliance upon said mounting assembly and said first fastening means prevents vertical movement of said appliance upon said mounting assembly.

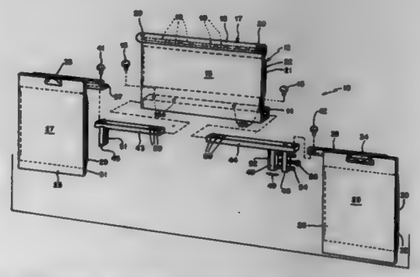
the information sheets are retained in close proximity to the display screen.

5,383,643
KEYBOARD COVER AND COPY HOLDER
Richard C. Koch, Trabuco Cyn, Calif., assignor to C-2, Inc., Chicago, Ill.
Filed Mar. 25, 1993, Ser. No. 36,925
Int. Cl.[6] A47B *97/04*
U.S. Cl. 248—447 **7 Claims**



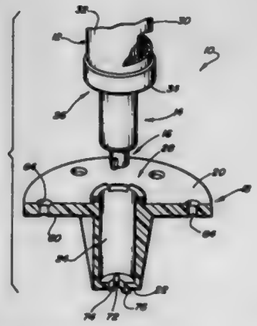
1. A keyboard covering and copy holding apparatus comprising: a first plate member; a second plate member pivotally connected to the first plate member; said second plate member being pivotable along a pivot axis between a first position for covering a keyboard in which the second plate member and the first plate member lie generally in end-to-end relation and define a flat configuration and a second position for holding a document in which the second plate member and the first plate member lie at an acute angle; each of said first and second plate members has a main plate segment and a flange segment which extends outwardly of the main plate segment in said first position; the plate segments of the first and second plate members defining an elongate, plate like assembly having an inner surface and an outer surface and the flange segments protruding downwardly from the inner surface the assembly to define a pocket for bounding the keys of a keyboard, the flange segments lying proximate the outer edges of the keys.

5,383,642
COMPUTER SCREEN ACCESSORY
Gerson Strassberg, 18 Engineers Rd., Roslyn Harbor, N.Y. 11576
Filed Aug. 20, 1993, Ser. No. 109,682
Int. Cl.[6] B41J *11/02*
U.S. Cl. 248—442.2 **11 Claims**



1. A device for retaining information sheets in close proximity to a display screen comprising:
a frame member;
a pair of adjusting members;
locking means for releasably locking one of said adjusting members in discrete predetermined positions with respect to said frame member;
retention means coupled to at least one of said adjusting members and said frame member for releasably retaining the information sheets; and
means for clamping the device to the display screen, so that

5,383,644
REMOVABLE PEDESTAL
O. C. Huse, Arlington, Tex., assignor to Moeller Marine Products, Goodlettsville, Tenn.
Filed Apr. 14, 1993, Ser. No. 48,404
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—523 **19 Claims**



1. A pedestal assembly comprising:
a pedestal base fixedly mounted to a surface, said pedestal base having a top surface and a bottom surface and a bore extending through said top and bottom surfaces, said top surface of said base having a first mounting means and said bottom surface of said base having a key slot therein;
a pedestal post for mounting to said pedestal base, said post

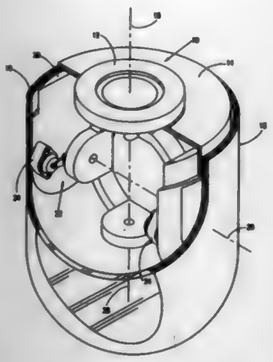
having opposed ends with one of said ends having a second mounting means for mating with said first mounting means and a key at a second of said ends adapted to be received within said key slot;

said pedestal post being insertable into said bore in a first position wherein said key and said key slot are circumferentially aligned and said mounting means are not mating, said pedestal being rotatable to a second position at which said mounting means being mated, and at which said key being non-aligned with said key slot and on an opposed side of said slot from said first mounting means and said post being secured to said base such that said post is rotatably locked into said base.

5,383,645
STABILIZED PAYLOAD

Hai Pedat, Haifa; Zvi Yavin, Misgav; Shlomo Djerassi, Nahariya, and Avihu Goral, Misgav, all of Israel, assignors to State of Israel-Ministry of Defence Armament Development Authority, Rafael, Haifa, Israel

Filed May 4, 1992, Ser. No. 878,729
Claims priority, application Israel, Jan. 12, 1992, 100634
Int. Cl.[6] F16M *1/00*
U.S. Cl. 248—637 **4 Claims**



1. A stabilized payload comprising:

a first gimbal arranged for rotation about a first axis and mounted onto a support;

a dual gimbal mounting assembly supported on said first gimbal for supporting a sensor; and

damper arranged intermediate said first gimbal and said dual gimbal mounting assembly.

5,383,646
DIAPHRAGM CONTROL VALVE

Zvi Weingarten, Kibbutz Evron, Israel, assignor to Bermad, Kibbutz Evron, Israel

Continuation of Ser. No. 564,358, Aug. 8, 1990. This application Jan. 21, 1994, Ser. No. 183,933
Claims priority, application Israel, Dec. 22, 1989, 92851
Int. Cl.[6] F16K *31/126*
U.S. Cl. 251—61.1 **14 Claims**

1. A diaphragm control valve, comprising:

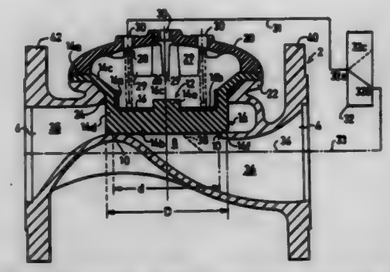
a housing having an inlet, an outlet, and a passageway circumscribed by a valve seat for the flow of fluid from the inlet to the outlet;

and a valve member including a diaphragm within said housing and displaceable towards or away from said valve seat to control the flow therethrough;

said diaphragm including an outer peripheral section secured over an opening in the housing in alignment with said valve seat, a valve-closer section displaceable with respect to the valve seat for controlling the flow therethrough, an intermediate flexible section permitting the displacement of said valve-closer section, and a cylindrical guiding section between the valve-closer section and the intermediate flexible section;

said housing including a wall defining a control chamber between it and the diaphragm, and means for pressurizing said control chamber to thereby displace said valve-closer section of the diaphragm towards said valve seat;

said housing further including a cylindrical guiding surface between said opening in the housing and said valve seat, and engageable with said cylindrical guiding section of



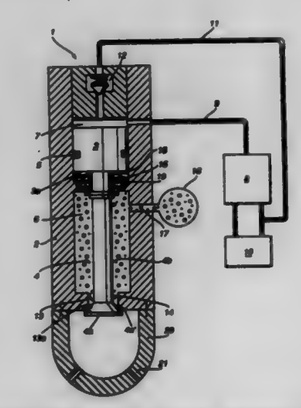
the diaphragm for guiding the movement of said valve-closer section of the diaphragm;

said cylindrical guiding section of the diaphragm being sufficiently resilient such that when the control chamber is pressurized to displace the valve-closure section towards the valve seat, the differential pressure between that in the control chamber and said valve outlet displaces said resilient guiding section outwardly to cause it to be firmly pressed against the cylindrical guiding section of the housing and thereby to restrain the valve-closure section from vibrating or from slamming to a closed position.

5,383,647
GAS-INJECTION VALVE FOR INTERNAL COMBUSTION ENGINE

Rainer Jorach, Ostfildern; Klaus Binder, Deizisau, both of Germany, and Shoichi Furuhama, Tokyo, Japan, assignors to Daimler-Benz AG, Stuttgart, Germany

Filed Mar. 17, 1994, Ser. No. 214,972
Int. Cl.[6] F16K *31/143*; F02B *43/00*
U.S. Cl. 251—63.6 **6 Claims**



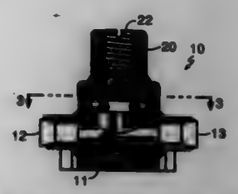
1. A gas-injection control valve for injecting gaseous fuel, particularly hydrogen, into a combustion chamber of an internal combustion engine, comprising: a valve housing with a

cylindrical cavity, a control piston movably disposed in said cylindrical cavity and defining an operating space at one side thereof and a gas space at the other side thereof, said housing having a gas injection port arranged at the end of said gas space opposite said control piston, a valve element disposed in said injection port for closing said injection port and forming a poppet valve adapted to open in the direction of gas flow from said gas space out through said injection port, said poppet valve having a valve stem extending through said gas space and operatively connected to said control piston, said control piston having a diameter larger than said poppet valve and said housing having a gas supply opening for supplying gas under pressure to said gas space whereby said gas under pressure holds said poppet valve in a closed position when the operating space at said one side of said control piston is not pressurized, and means for supplying a hydraulic control fluid under pressure to said operating space at said one side of said control piston for opening said poppet valve so as to permit the discharge of said gas from said gas space through said injection port.

5,383,648
VALVE FOR CONTROLLING FLOW

John Pipinias, Eliot, Me., assignor to Milton Roy Company, Arvada, Colo.

Filed Jan. 21, 1994, Ser. No. 184,263
Int. Cl.[6] F16K *1/52, 1/02*
U.S. Cl. 251—333 **2 Claims**



1. A valve for controlling flow of a fluid comprising

a first structural component having a pressure surface, said pressure surface forming a boundary of a plenum,

an elastomeric body made of elastomeric material, said elastomeric body being captured within said plenum so as to be in contact with said pressure surface,

a second structural component connected to said first structural component through a mechanism for moving said first and second structural components toward each other, so that said elastomeric body is squeezed against said pressure surface,

a first port and a first flow channel communicating between said first port and said plenum,

a second port and a second flow channel, said second flow channel communicating between said second port and an orifice at said pressure surface,

movement of said second structural component relative to said first structural component being through a range which squeezes said elastomeric body from a minimally deformed condition to a maximally deformed condition, the elastomeric body contacting said pressure surface over a first area when in its minimally deformed condition and contacting said pressure surface over a second area larger than said first area when in its maximally deformed condition,

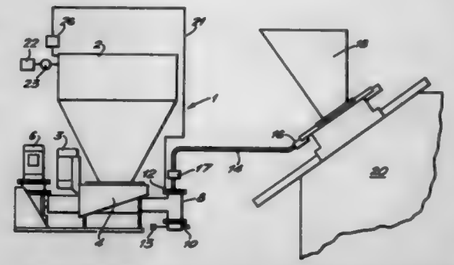
and wherein said orifice is positioned and sized to be wholly within said second area and extends outside of said first area, and

wherein said elastomeric body has the form of an o-ring.

5,383,649
DEVICE FOR INTRODUCING PARTICULATE MATERIAL

James Forrest, Swansea, United Kingdom, assignor to Osprey Metals Limited, United Kingdom

PCT No. PCT/GB91/01189, § 371 Date Jan. 12, 1993, § 102(e) Date Jan. 12, 1993, PCT Pub. No. WO92/01525, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 17, 1991, Ser. No. 956,900
Claims priority, application United Kingdom, Jul. 19, 1990, 9015832
Int. Cl.[6] B22D *23/00*
U.S. Cl. 266—44 **7 Claims**

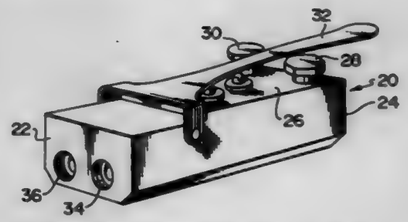


1. Gas atomization apparatus for atomizing a molten metal, molten alloy or molten ceramic stream comprising atomizing means for receiving the stream and atomizing the stream into a spray of droplets, and introducing means for introducing particulate material into the stream or spray, the introducing means including an introducing chamber having an opening through which a stream of molten metal, metal alloy or molten ceramic may be teemed, an inlet for particulate material to the introducing chamber and outlet means positioned about the opening for allowing particulate material to exit from the introducing chamber at a plurality of positions about the opening so that, in use, the particulate material is introduced substantially uniformly about the stream or spray.

5,383,650
GAS FLOW CONTROL ASSEMBLY FOR A GAS-SAVING OXY/FUEL CUTTING TORCH

Claude Bissonnette, 232 11th St. W., Cornwall, Ontario, Canada K6H 3B2

Filed Feb. 4, 1994, Ser. No. 191,668
Int. Cl.[6] B23K *7/00*
U.S. Cl. 266—48 **37 Claims**



1. A gas flow control assembly for a gas fuelled cutting torch, comprising:

a control body adapted to receive oxygen and fuel gas from separate sources and controllably meter the oxygen and fuel gas to a cutting torch head, the control body including flow control valves for respectively controlling a flow of fuel gas, preheat oxygen and cutting oxygen to the cutting torch head, each valve being biased to a normally closed position;

means for operating the flow control valves to open the valves in a specific sequence such that the valves for controlling the flow of fuel gas and preheat oxygen are opened substantially simultaneously, while the valve for controlling the flow of cutting oxygen is opened only after the fuel gas and the preheat oxygen valves are opened;

flow paths for bypassing the flow control valve for fuel gas and the flow control valve for preheat oxygen so that fuel gas and preheat oxygen are supplied to the cutting torch head when the valves are closed to sustain a pilot flame at a cutting nozzle mounted therein; and

shutoff valves for selectively inhibiting a flow of fuel gas and preheat oxygen to the cutting torch head and for regulating the flow of fuel gas and preheat oxygen to the cutting torch head when the flow control valves are open.

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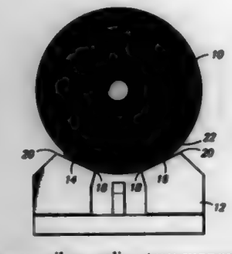
ALUMINUM COIL ANNEALING TRAY SUPPORT PAD

John E. Blazen, Trenton, Tenn., and Tony G. Carroll, Evansville, Ind., assignors to Pyrotek, Inc., Spokane, Wash.

Filed Feb. 7, 1994, Ser. No. 193,791

Int. Cl.[6] F26D *5/00*

U.S. Cl. 266—274 **81 Claims**



1. An aluminum coil annealing tray support pad for mounting on two facing and spaced support surfaces of an aluminum coil annealing tray to support an aluminum coil therebetween to minimize deformation of outer layers of the aluminum coil, comprising;

a first side section for mounting on one of the tray support surfaces to receive one portion of the coil;

a second side section for mounting on the other of the tray support surfaces to receive a second portion of the coil;

a central section extending between the first and second side sections;

wherein the first and second sections include;

a top layer formed of a wear resistant woven cloth that is composed of high tensile strength fibers that have melting temperatures above 400° F. for engaging the outer layer of the aluminum coil;

a bottom layer formed of a wear resistant woven cloth that is composed of high tensile strength fibers that have melting temperatures above 400° F. for engaging an inclined surface of the aluminum coil annealing tray;

a middle layer formed of a woven cloth that is composed of heat resistent fibers that have melting temperatures above 400° F.;

an upper thick high density, matted fiber insulative blanket interposed between the top and middle woven cloth layers;

a lower thick high density, matted fiber insulative blanket interposed between the middle and bottom woven cloth layers; and

wherein the upper and lower matted fiber insulative blankets are sufficiently crush resistent to enable the pad sections to deform to the contour of the periphery of the aluminum coil while providing substantially uniform coil support to minimize deformation of the outer layers of the coil.

5,383,652

ENGINE MOUNTING AND TRANSPORTATION APPARATUS

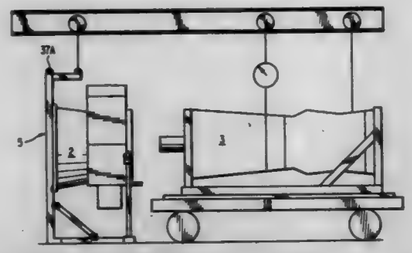
Henricus F. G. M. Van Den Berg, Auckland, New Zealand, assignor to Air New Zealand Limited, Auckland, New Zealand

Filed Jan. 27, 1993, Ser. No. 9,949

Claims priority, application New Zealand, Jan. 27, 1992, 241415

Int. Cl.[6] B66F *5/04*

U.S. Cl. 269—17 **6 Claims**



1. An engine mounting apparatus comprising:

first and second spaced apart framework members for receiving and supporting a respective front portion and one of a rear portion of an engine and part of the engine, said front portion and said one of the rear portion of said engine and the part of said engine being separable from one another,

said first framework member having first and second sections which define therebetween an angle of substantially 90 degrees, said first section having a first securing mechanism for securing said first section when in a substantially vertical portion with one of a front end of said front portion of said engine and said part of said engine, and

said second framework section having a supporting mechanism for supporting, when in a ground engaging substantially horizontal position, one of a rear end of said front portion of said engine and said part of said engine upon one of said rear portion of said engine and said part of said engine being moved away,

said first section having a hoist connection mechanism to enable said first framework member to be lifted with one of said front portion of said engine and said part of said engine secured thereto and for said first framework member to be turned substantially 90 degrees,

a front surface of said first section having a second securing mechanism to secure said first section when turned through substantially 90 degrees with a transporting mechanism for carrying said first framework member and said one said front portion of said engine and said part of said engine secured thereto in a lower cargo compartment of a passenger aircraft.

5,383,653

METHOD OF SERVICING A WATERCRAFT

Andrew G. Stuck, 2627 Birchwood Ave., Appleton, Wis. 54914

Division of Ser. No. 80,676, Jun. 21, 1993, Pat. No. 5,328,161, which is a continuation of Ser. No. 783,576, Oct. 28, 1991, abandoned. This application May 20, 1994, Ser. No. 246,736

Int. Cl.[6] B25B *1/00*

U.S. Cl. 269—17 **3 Claims**

1. A method of servicing a watercraft, comprising the steps of mounting a watercraft on a support in spaced relation above a foundation, forming a pair of rings each with a pair of diametrically opposed flat portions, inserting a first of said rings around an end portion of the watercraft to be serviced and positioning a first flat portion of said first ring in contact with the foundation, inserting a second of said rings around a second end portion of said watercraft and positioning a first flat portion of said second ring in contact with said foundation, connecting the rings together, clamping the watercraft to said rings, removing the support from beneath the watercraft, and



thereafter manually rotating said rings to position the second flat portions of said rings in contact with the foundation to thereby invert the watercraft and position the watercraft for service.

5,383,654

PAPER SHEET FEEDER

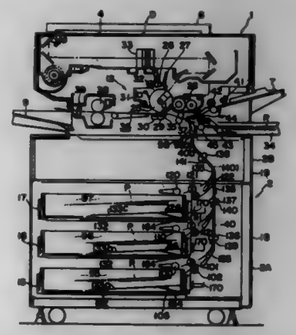
Ken Iseda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 734,027, Jul. 22, 1991, Pat. No. 5,199,694. This application Mar. 1, 1993, Ser. No. 24,638

Claims priority, application Japan, Jul. 23, 1990, 2-194203

Int. Cl.[6] B65H *3/44*

U.S. Cl. 271—9 **2 Claims**



1. A paper sheet feeder comprising:

first storing means for storing a first group of paper sheets;

second storing means for storing a second group of paper sheets;

selecting means for selecting one of said first and second group of paper sheets and generating a corresponding one of first and second energizing signals;

means for defining a transfer path in which the paper sheets are guided;

first taking-up means for taking up the first group of paper sheets one by one from said first storing means in accordance with the first energizing signal;

second taking-up means for taking up the second group of paper sheets one by one from said second storing means in accordance with the second energizing signal;

first registering means, located in the transfer path, for registering a first paper sheet supplied from said first taking-up means in a proper orientation and transferring the first paper sheet in the transfer path in accordance with the first energizing signal; and

second registering means, located downstream of said first registering means in the transfer path, for registering a second paper sheet supplied from said second taking-up means in a proper orientation and transferring the second paper sheet in the transfer path in accordance with the second energizing signal; and transferring the first paper sheets supplied from said first registering means in the transfer path in accordance with the first energizing signal.

5,383,655

SHEET FEEDING APPARATUS

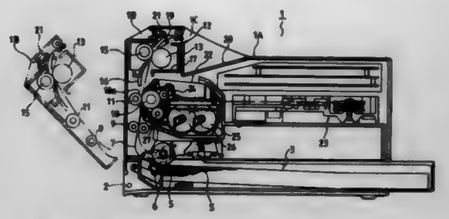
Yasuyoshi Hayakawa; Teruo Komatsu; Hironobu Isobe, all of Yokohama, and Atsushi Kubota, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 853,862, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 426,401, Oct. 25, 1989, abandoned. This application Oct. 22, 1993, Ser. No. 139,878

Claims priority, application Japan, Oct. 31, 1988, 63-275399; Nov. 22, 1988, 63-296737; Dec. 16, 1988, 63-317695; Dec. 16, 1988, 63-317696

Int. Cl.[6] B65H *5/00, 3/00*

U.S. Cl. 271—10 **18 Claims**



1. A sheet feeding apparatus comprising:

sheet accommodation means for accommodating sheets therein and drawable in a predetermined direction from said sheet feeding apparatus;

feeding means for feeding the sheets accommodated in said sheet accommodation means held at a sheet-feeding position;

friction means, disposed in front of the sheets accommodated in said sheet accommodating means at the sheet feeding position in the draw-out direction of said sheet accommodating means, for separating the sheets fed out from said feeding means one by one by friction; and

support means for supporting said feeding means and said friction means such that said feeding means and said friction means can be moved to a first position for separating a sheet and to a second position for permitting movement of said sheet accommodation means in said predetermined drawing direction.

5,383,656

SINGLE DRIVE NIP SHEET BUFFERING SYSTEM USING INDEPENDENTLY DRIVEN ROLLS WITH DIFFERENT FRICTIONAL PROPERTIES

Barry P. Mandel, Fairport; David R. Kamprath, Webster, both of N.Y.; Francesca A. Barrientos, Berkeley, Calif.; Richard A. Van Dongen, Newark, N.Y.; Anthony T. DeSanctis, Webster, N.Y., and Charles D. Rizzolo, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 3, 1993, Ser. No. 25,475

Int. Cl.[6] B65H *7/14*

U.S. Cl. 271—258 **48 Claims**

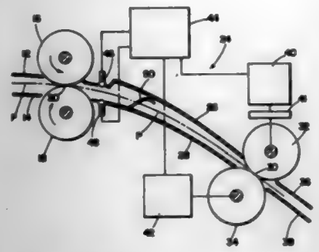
42. A method of sheet buffering comprising:

providing at least one pair of stationary spaced apart curvilinear guide members defining a sheet travel path therebetween;

providing a first paper feeding nip downstream of said at least one pair of spaced apart guide members in said sheet travel path;

feeding the leading edge of said first sheet into said first paper feeding nip;

moving the trailing edge of said first sheet laterally out of said sheet travel path; and,



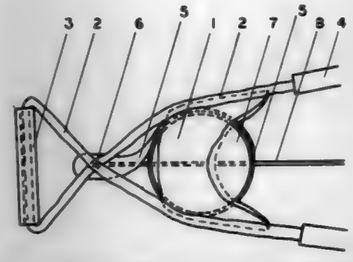
urging a leading edge of a second sheet into said pair of spaced apart guide members and along said sheet travel path lapping the trailing edge of said first sheet.

5,383,657

ELASTIC-POWERED CURVE-BALL HURLING DEVICE

Richard K. Rathmell, Rte. 4, Box 357B, Lexington, Va. 24450

Filed Dec. 23, 1993, Ser. No. 172,180
Int. Cl.[6] A63B *65/12, 69/40*; F41B *3/02*
U.S. Cl. 273—26 D **8 Claims**



1. A device to hurl a ball, said device having a pouch system which holds the ball as it accelerates, and subsequently releases the ball when the momentum of the ball carries it out of the decelerating pouch, said pouch system having an attached strap such that the loose end of the strap may be wrapped around the ball as it is nested into the pouch, said strap providing means to induce a spinning motion on the ball as it flies out of the pouch.

5,383,658

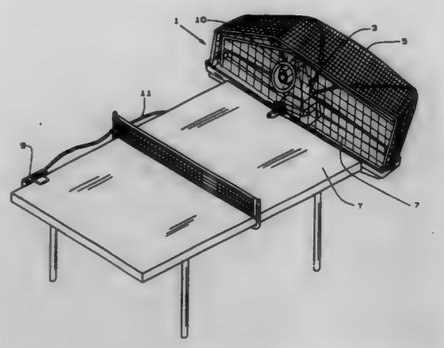
ROBOT TABLE TENNIS NET AND SERVER ASSEMBLY

Joseph E. Newgarden, Jr., 400 N. Belvedere, P.O. Box 939, Gallatin, Tenn. 37066

Filed Oct. 9, 1992, Ser. No. 959,266
Int. Cl.[6] A63B *39/00*
U.S. Cl. 273—30 **9 Claims**

1. In a ball serving assembly including a first net suspended above and along a first side of a trough for catching balls dropping from the first net and for feeding the balls to a robot server positioned in front of the first net and operatively associated with the trough, the improvement comprising:

a second net, said second net suspended in front of said first net above and along a second side of said trough with a lower edge of the second net spaced upwardly a short distance from said second side of said trough to allow table tennis balls with insufficient velocity hitting the second net to fall directly into the trough, said second net being constructed to allow table tennis ball having sufficient velocity to pass through said second net from the front but preventing table tennis balls from passing back



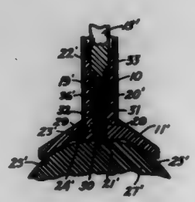
through the second net from the rear, thereby trapping said balls between said first and second nets and allowing said trapped balls to drop into said trough.

5,383,659

COMBINATION GOLF BALL PICK-UP AND TEEING DEVICE

Clarence R. Taylor, 28 Woodside Dr., Penfield, N.Y. 14526

Filed May 2, 1994, Ser. No. 235,973
Int. Cl.[6] A63B *57/00, 47/02*
U.S. Cl. 273—32 B **12 Claims**



1. A combination golf ball pick-up and teeing device comprising:

a shaft having a handle at one end and a hollow portion at the opposite end;

a rod slideably mounted within said hollow portion of said shaft for movement between a normal retracted position and an extended position;

an actuating member mounted on one end of said rod for moving said rod between said normal retracted and extended positions; and

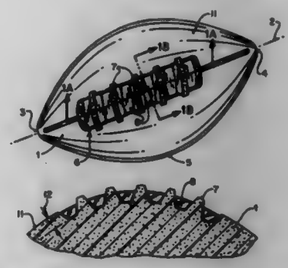
a needle mounted on the opposite end of said rod adapted to penetrate a golf ball for releasably holding the golf ball in a picked-up position when said opposite end of said hollow portion is placed into engagement with the golf ball and said rod is moved to its extended position, and said needle adapted to be retracted into said hollow portion for releasing the golf ball in a teed position when said rod is moved to its normal retracted position.

5,383,660

FOOTBALL WITH IMPROVED GRIP

Alan J. Adler, 752 La Para Ave., Palo Alto, Calif. 94306, and Peter S. MacDonald, Menlo Park, Calif., assignors to Alan J. Adler, Palo Alto, Calif.

Filed Jan. 19, 1993, Ser. No. 6,344
Int. Cl.[6] A63B *41/00*
U.S. Cl. 273—65 EG **19 Claims**



19. In a football having a body of generally prolate configuration having an outer surface, a longitudinal axis capped by two opposite ends, and a maximum diameter midway between said ends, the improvement wherein:

said outer surface of said body is formed with at least one indentation array, said indentation array having a long axis oriented generally parallel to the longitudinal axis of said body, said indentation array passing over said maximum diameter;

said indentation array includes a plurality of N indentations spaced along said long axis, including a pair of indentations at opposite ends of said indentation array and a plurality of intermediate indentations therebetween;

each of said indentations extends below said outer surface of said body by a respective depth;

each of said intermediate indentations is separated from two neighboring indentations by respective portions of said body, which portions together define a plurality of (N−1) bulkheads;

said bulkheads are parallel to each other and extend in a transverse direction relative to said long axis;

said intermediate indentations are generally parallelogram-shaped;

said indentations and said bulkheads have longitudinal dimensions along said long axis and transverse dimensions along a direction perpendicular to said long axis;

said transverse dimensions of said intermediate indentations are greater than said longitudinal dimensions of said indentations, but less than said maximum diameter;

said longitudinal dimensions of said bulkheads are smaller than said longitudinal dimensions of said intermediate indentations; and

said longitudinal and transverse dimensions of said indentations, said transverse dimensions of said bulkheads, and said depths of said indentations are such that said indentations provide finger pockets that facilitate a user gripping the football for throwing same.

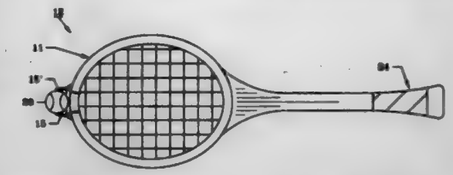
5,383,661

APPARATUS TO RETRIEVE TENNIS BALLS

Andrew L. Beck, Winston-Salem, N.C., assignor to Andiff Corporation, Winston-Salem, N.C.

Filed Jul. 26, 1993, Ser. No. 97,470
Int. Cl.[6] A63B *49/00*
U.S. Cl. 273—73 R **12 Claims**

1. An apparatus for placement on a game racket to retrieve balls used therewith comprising: a base, means to attach said base to the top of a game racket, said attaching means joined to said base, a pair of foldable arms, said arms pivotally joined to said base to fold substantially parallel thereto, said arms for



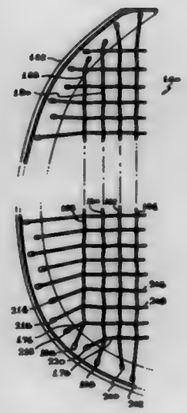
receiving a ball therebetween when unfolded substantially perpendicular from said folded position.

5,383,662

RACKET WITH IMPROVED STRINGS PATTERN

Pericles Gabrielidis, 14152 Foothill Blvd., #24, Sylmar, Calif. 91342

Continuation-in-part of Ser. No. 946,258, Sep. 16, 1992, abandoned, which is a continuation of Ser. No. 807,064, Dec. 10, 1991, abandoned. This application Aug. 3, 1993, Ser. No. 101,628
Int. Cl.[6] A63B *49/02*
U.S. Cl. 273—33 R **19 Claims**



1. A racket comprising:

a frame, handle means on said frame for manipulating said frame, said frame having a longitudinal direction extending from said handle means upward through said frame and having a transverse direction substantially at right angles to said longitudinal direction, said frame defining an opening therein, a string bed plane in said opening, said string bed plane having first and second sides, walls in said frame defining string holes for strings which are interwoven to form a string bed in said string bed plane, at least some of said holes extending to said frame opening on opposite sides of said string bed plane; and

strings through said holes, said strings being interwoven within said frame to define a string bed within the periphery of said interwoven strings, said string holes in said frame being positioned and said strings being interwoven in such a manner that, within said periphery, said string bed has a plurality of longitudinal strings lying substantially parallel to said longitudinal direction and has a plurality of transverse strings lying substantially parallel to said transverse direction, at least some of said longitudinal and said transverse strings being interwoven to form a string bed laterally defined by said interwoven strings, said strings being arranged so that some consecutive longi-

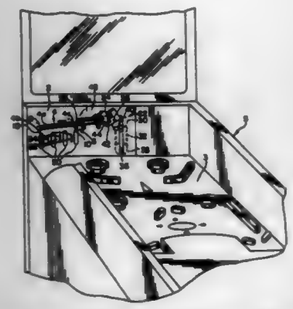
tudinal strings pass from said frame to said string bed plane on the same side of said string bed plane and some consecutive longitudinal strings pass from said frame to said string bed plane alternately from said first and second sides of said string bed plane and where some consecutive transverse strings pass from said frame to said string bed plane on the same side of said string bed plane and some consecutive transverse strings pass from said frame to said string bed plane alternately from said first and second sides of said string bed plane so that said string bed is supported all the way around and in the corners by strings which are divergent from said string bed plane only outside of the string bed to provide support for said string bed.

5,383,663

PLAYER CONTROLLED DUMP RAMP FOR A PINBALL GAME

Python V. Anghelo, Chicago, and Raymond J. Czajka, Hometown, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Filed Oct. 22, 1993, Ser. No. 141,256
Int. Cl.[6] A63E *7/02, 7/30*
U.S. Cl. 273—118 R **15 Claims**



1. A pinball game having a playfield on which a ball rolls, comprising:

a) first and second ball supporting surfaces disposed above the playfield adapted to support the ball therebetween as it rolls along said first and second surfaces, said first surface being a vertical wall extending upwardly from the playfield;

b) means for delivering a ball to said first and second surfaces;

c) a plurality of play objectives located below said first and second surfaces and spaced along the length thereof; and

d) player controlled means for moving one of said first and second surfaces relative to the other to allow the ball to drop between said surfaces toward the playfield to obtain and operate one of said play objectives.

5,383,664

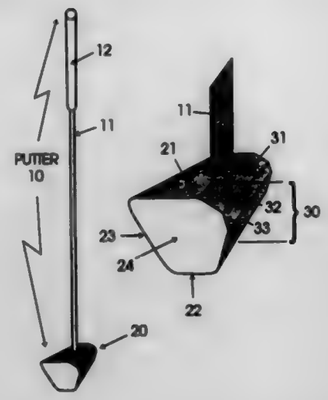
GOLF PUTTER AND PUTTER HEAD

Bert P. Epperson, Gadsden, Ala., assignor to Epperson-Thompson Golf, L.L.C., Birmingham, Ala.

Filed Jun. 30, 1993, Ser. No. 84,868
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—167 B **22 Claims**

1. A golf putter comprising:

a. a putter head having a planar striking surface with a generally horizontal bottom edge, said striking surface angled rearwardly from a vertical plane, wherein said bottom edge is forward of all other portions of said putter head and is positioned a vertical distance from the lowest point of said putter head in a range less than the radius of a target golf ball and more than half said radius; and



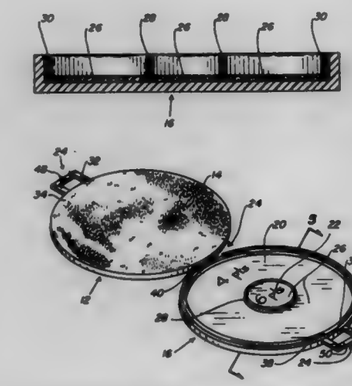
b. a shaft attached to said putter head rearward of said striking surface.

5,383,665

GOLF CHIPPING GAME APPARATUS

Joseph M. Schultz, and Teresa A. Schultz, both of 1802 S. 246th Pl., Des Moines, Wash. 98198

Filed Mar. 3, 1994, Ser. No. 205,168
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—176 A **6 Claims**



1. A new and improved golf chipping game apparatus, comprising:

a ball-hitting assembly which includes a horizontal ball-receiving surface,

a horizontal target assembly for receiving a golf ball hit from a ball-hitting assembly, said target assembly including a first target region having a first surface area and a second target region having a second surface area, wherein said second surface area is less than said first surface area,

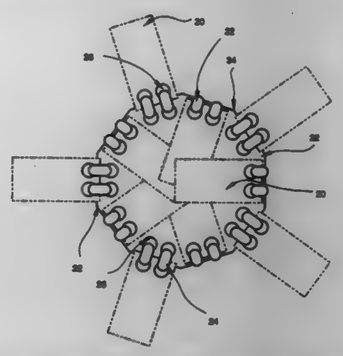
a connection assembly for connecting said ball-hitting assembly to said target assembly in a storage mode, said connection assembly including a hinge assembly including a hinge assembly connected between an edge portion of said ball-hitting assembly and an edge portion of said target assembly, said target assembly including a layer of cushion material which comprises said first target region and said second target region, a first ring of cushion material placed on said layer of cushion material, said first ring of cushion material defining an upstanding boundary between said first target region and said second target region, and a second ring of cushion material placed on said layer of cushion material, said second ring of cushion material defining an upstanding outer boundary of said first target region.

5,383,666

DECAGON SHAPED BRIDGE BIDDER

Murray M. Kaplan, 1146 S. Doheny Dr., Los Angeles, Calif. 90035

Filed Feb. 9, 1994, Ser. No. 195,344
Int. Cl.[6] A63F *1/06*
U.S. Cl. 273—148 R **1 Claim**



1. A decagon shaped bridge bidder comprising a single unit, table top bridge game device used in sequential, clockwise order by all four players during the competitive bidding phase of a bridge game;

said device is intended to enable players to;

(a) bid nonvocally by using custom designed bid cards instead of making verbal announcements;

(b) to be able to bid as fast as the speed of oral bidding;

(c) to be able to use only one said device as opposed to the present market system BIDDING BOXES TM with its compulsory set of 4 boxes per table; any of which box is substantially, by itself, larger and heavier than said decagon shaped bridge bidder;

nonvocal bidding is desired because it eliminates illegal communication between partners using hidden, coded messages by voice changes; it also eliminates the improper practice by contestents who eavesdrop on the oral bidding being made at adjacent tables; the contestents knowing full well that they will shortly be playing the very same hands they are listening in on;

said device comprises 3 elements; said elements are a base, a set of bid cards and binder combs;

said base is a flat decagon shape composed of vinyl, wood, plastic, metal or leather, vinyl is preferred; said base is approximately 9.5 cm (3.75″) wide and approximately 3 mm (⅛″) thick; said base has 10 equal straight perimeter outer edge sides which are each approximately 3.2 cm (1¼″) wide; each said 3.2 cm side has two spaced through holes 8 mm (5/16″) in diameter; said through holes' center points are approximately 8 mm (5/16″) below said perimeter's edge approximately 11 mm (7/16″) in from the left and from the right of of said 3.2 cm perimeter's side ends; said through holes conform to and align with through holes in said bid cards and the two teeth of said binder comb: each of said straight perimeter edges will accomodate one of ten different bid categories;

said binder comb is a plastic interlocking component; said binder comb is a one piece unit approximately 2.5 mm (1″) long and 13 mm (½″) in diameter so cut from commercially obtained 27 cm (10-½″) binder combs; said binder comb is made up of a spine and said two teeth; said teeth are approximately 6 mm (¼″) each in width; said teeth conform to and align with said through holes in said base and said bid cards; said binder comb while interlocking said base with said bid cards also functions as a hinge which enables and facilitates the turning back and forth of said bid cards between their ready to be bid outer position to their having been bid inner position at the center point of the base;

said set of bid cards comprises 66 cards; 7 no trump; 7 spades; 7 hearts; 7 diamonds; 7 clubs; 18 pass; 4 double; 3 redouble; 3 skip; 3 alert; said bid cards are approximately 2.5 cm (1″) wide and 5.5 cm (2-½″) long; each said bid card has 2 spaced through holes; said through holes are approximately 8 mm (5/16″) in diameter; said through holes are located near the top edge of said bid card when said bid card is in its said having been bid inner position, said through holes' center points are approximately 7 mm (9/32″) from said top of said bid card and approximately 7 mm (9/32″) in from both the left and from the right sides of same 2.5 cm bid card; said through holes conform to and align with said said through holes of said base and said teeth of said binder comb;

said bid cards are of the same thickness and laminated surface quality as a standard deck of playing cards; said bid cards each have the same imprint on each of its sides; said imprint identifies each category and in the case of no trumps; spades; hearts; diamonds; or clubs includes a numerical denomination designating an individual bid level of one to seven; said imprint identifications read vertically downward from said top of said bid cards towards said center point of said base;

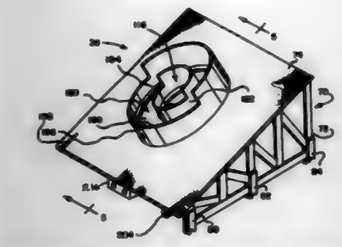
said no trump; spades; hearts; diamonds; and club categories when attached to said teeth of said binder comb must be affixed in such order that when said bid cards are lying in their said having been bid inner position in said center point of said base, card number 1 is on the bottom; covered sequentially by cards numbered 2, 3, 4, 5, 6, 7 on the top; conversely when said bid cards are in said ready to be bid outer position said bid card number 7 is now on the bottom covered sequentially by said bid cards numbered 6, 5, 4, 3, 2, with 1 on the top;

when affixing said 10 categories to said perimeter sides said categories are arranged in a specific clockwise order; said order is said no trump, diamonds, pass, hearts, alert, redouble, clubs, skip, spades, double; when affixing said bid cards said identification imprints must face and read vertically downwards towards said center of said base;

assembly of said device is done by hand; said binder comb is attached to said base by slightly raising said teeth of said binder comb away from said binder comb's exterior spine; said teeth are inserted into said through holes from said base's underbottom; said teeth are pushed up and out on to said top surface of said base; when emerging said teeth must be pointing and facing said perimeter outer edge of said base; said binder comb is now fitted over said perimeter edge of said base in the direction of protrusion of said teeth; said spine and said teeth are now fitted together; when said teeth and said spine are fully engaged said teeth will be overlapping said spine's exterior surface;

to affix said bid cards said teeth must once again be raised away from said spine's exterior surface creating enough open space to allow said bid cards to be hooked on to said teeth; said teeth are then fitted under said spine's exterior and into said binder comb's interior forming a secure interlock.

5,383,667
GOLF GAME
Thomas Sheely, 501 Airport Cir., Bentonville, Ark. 72712
Filed Nov. 13, 1992, Ser. No. 975,718
Int. Cl.[6] A63B *63/02*
U.S. Cl. 273—181 R 14 Claims



1. A target for a golf course of the type having a tee-off location spaced at least about 50 yards from said target comprising

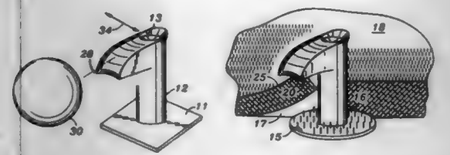
a surface,

means for tilting said surface generally toward said tee-off location so that said surface is visible from said tee-off location, and

a plurality of scoring regions on said surface, said regions being separated from each other by separators, said separators being supported by said surface and extending upwardly from it a distance sufficient to contain a ball that falls into a scoring region, said separators being transparent so that the view of the target is not obstructed when observed from said tee-off location, and

said regions are of different sizes so that said smaller regions correspond to a fewer number of strokes, and said larger regions correspond to a greater number of strokes.

5,383,668
GOLF TEE
Ronald V. Andrikian, 5113 Edsel Ave., Los Angeles, Calif. 90066
Filed Jul. 22, 1993, Ser. No. 95,730
Int. Cl.[6] A63B *57/00*
U.S. Cl. 273—201 31 Claims



1. A golf tee comprising:

(a) a base,

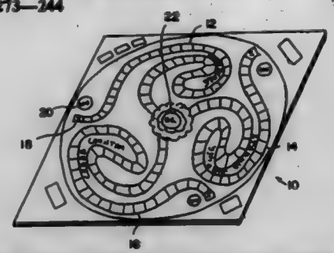
(b) a shaft having a bottom and a top, the shaft being rigidly anchored to the base,

(c) a cup on top of the shaft for receiving a golf ball, and

(d) an upwardly directed ramp for a golf ball, the ramp leading to the cup from a location adjacent to the shaft, the ramp having a free end, the free end being spaced above the base such that there is a space between the ramp and the base;

wherein the ramp includes a sloping surface extending between a free end of the ramp and a position of the ramp adjacent to and adjoined the cup, the sloping surface having a shape which is convex along at least part of the length between the free end and the end adjacent to the cup.

5,383,669
EQUESTRIAN BOARD GAME
Jack Vance, 4720 Buckeystown Pike, Frederick, Md. 21701
Filed Sep. 8, 1993, Ser. No. 117,811
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—244 7 Claims



1. The method of playing a board game having playing pieces, a plurality of landing positions defining at least one path for advancing the playing pieces, a plurality of game cards imprinted with instructions and questions, and means for generating random numbers for determining by chance the number of landing positions to advance the playing pieces, said method comprising the steps of:

(a) assigning to each player a playing piece to be moved from landing position to landing position around the board in response to the randomly generated numbers and the instructions imprinted on said cards associated with labels on specific landing positions;

(b) awarding game points to players corresponding to point values associated with labels on certain landing positions on which the players' playing pieces land;

(c) awarding game points to players who correctly answer questions associated with labels on certain landing positions on which the players' playing pieces land;

(d) awarding game points to players who correctly define terms associated with labels on certain landing positions on which the players' playing pieces land;

(e) using at least one additional playing piece to be moved in turn around the board;

(f) assigning control of said at least one additional playing piece to selected players in turn;

(g) awarding game points to said at least one additional playing piece in accordance with point values associated with said labels on certain positions on which said at least one additional playing piece lands; and

(h) awarding game points to said at least one additional playing piece for questions correctly answered and terms correctly defined by said selected player controlling said at least one additional playing piece.

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Patent Not Issued For This Number

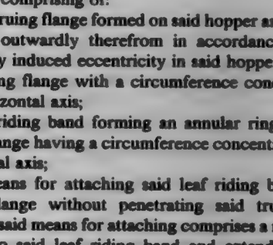
5,383,671
ANCHORING SYSTEM FOR A THREE DIMENSIONAL ANIMAL TARGET
David A. Teets, R.D. 1 Box 116 Rte. 68, Rochester, Pa. 15074, and Joseph D. Salvador, Jr., 119 Crescent Dr., New Galilee, Pa. 16141
Filed Jan. 14, 1994, Ser. No. 181,011
Int. Cl.[6] F41J *3/00*
U.S. Cl. 273—407 21 Claims

1. An anchoring system of a three dimensional animal target, comprising:

means for attaching the anchoring system to the three dimensional animal target;

a first member attached to the means for attaching in a manner so that pressure may be applied to the first member during anchoring of the three dimensional animal target;

a second member attached to the first member and positioned extending from the first member in a direction which is substantially opposite to a direction the means for attaching extends from the first member for insertion of the second member into a supporting surface; and



means for stabilizing the anchoring system attached to at least one of the first and second members and positioned extending from the first member for insertion into at least one of the supporting surface and the three dimensional animal target.

5,383,672
SEAL STRUCTURE FOR ROTARY KILN
Jack M. Cornelius, Leeds, Ala., assignor to PE Flo-Tech, Inc., Birmingham, Ala.
Filed Aug. 28, 1992, Ser. No. 936,306
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—152 6 Claims

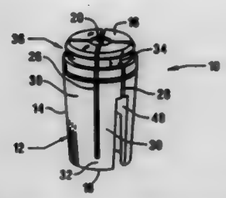
1. In a rotary kiln utilizing a rotary cylinder or hopper with thermally induced eccentricity which rotates about a horizontal axis and a plurality of flexible sealing leaves mounted about said hopper to define an annular seal about one end thereof, the inprovement comprising of:

(a) a solid truing flange formed on said hopper and extending radially outwardly therefrom in accordance with said thermally induced eccentricity in said hopper to provide said truing flange with a circumference concentric with said horizontal axis;

(b) a leaf riding band forming an annular ring about said truing flange having a circumference concentric with said horizontal axis;

(c) and means for attaching said leaf riding band to said truing flange without penetrating said truing flange, wherein said means for attaching comprises a radial flange affixed to said leaf riding band and extending radially inward therefrom parallel to said truing flange such that said radial and truing flanges abut axially relative to said hopper, with said radial flange having a plurality of apertures defined therein and clamping means for securing said truing flange and radial flange in axial abutment.

5,383,673
COLLET FOR A SQUARE-SHANK TAP
Victor D. Mogilnicki, Raleigh, N.C., assignor to Kennametal Inc., Latrobe, Pa.
Filed Aug. 3, 1993, Ser. No. 102,029
Int. Cl.[6] B23B *31/20*
U.S. Cl. 279—46.4 11 Claims



1. A collet for a tool having a cylindrical shank and a square drive comprising:

(a) a collet body having a forward end, a midsection, and a rearward end;

(b) an axial bore extending from the forward end of the collet body and terminating at the midsection for receiving the cylindrical shank of the tool;

(c) a plurality of axial slots formed in the collet body so as to define a plurality of radially compressible collet segments, said axial slots including a first axial slot open at the forward end of the collet body and a second axial slot open at the rearward end of the collet body;

(d) a gripping slot extending transversely through the midsection of the collet body and communicating with the axial bore so as to receive the square drive of the tool when the tool is inserted into the axial bore, wherein the width of the gripping slot is at least equal to the width of the square drive, and wherein the gripping slot is formed along a portion of said second axial slot extending from said rearward end of said collet to said midsection of said collet; and

(e) a pair of gripping surfaces formed in the midsection of the collet body on opposite sides of the gripping slot for gripping only two opposed surfaces of the square drive when the collet is radially collapsed to prevent radial movement of the tool.

5,383,674
ICE SKATE BLADE ASSEMBLY AND REMOVEABLE RUNNER FOR SAME
Brian G. Cann, 239 Holly Dr., Chalfont, Pa. 18914, and Richard C. Hampton, R.R. No. 1, King City, Ontario, Canada L0G 1K0
Division of Ser. No. 749,265, Aug. 23, 1991, Pat. No. 5,332,242.
This application Oct. 7, 1992, Ser. No. 957,698
Claims priority, application Canada, Feb. 24, 1989, 592006
Int. Cl.[6] A63C *1/30*
U.S. Cl. 280—11.18 13 Claims



1. An ice skate blade assembly having a holder,

said holder having a front end, a runner supporting portion and a rear end, said holder being configured to carry a replaceable runner formed as a flexible strip arranged to

be secured to the holder, said runner having a runner front end, an ice contacting portion and a runner rear end, said runner front end, said ice contacting portion and said runner rear end defining a runner length, and

a front attachment for releasably securing the runner front end to the front end of the holder, characterized in that said assembly comprises an eccentric lock for releasably securing the runner rear end to the rear end of the holder, said eccentric lock comprising

an urging assembly having a first pivot axis and a second pivot axis, said second pivot axis being disposed eccentrically of said first pivot axis, said urging assembly being connected to the holder such that the urging assembly is pivotable about said first pivot axis, and

a second hooking member for releasably engaging a first hooking member when said first hooking member is connected to an upwardly extending terminal end part of said runner rear end,

said eccentric lock having

a lock configuration

wherein said second hooking member is able to be releasably maintained in a locking over-center position relative to said first pivot axis such that said runner is longitudinally tensioned along said runner length

and an unlock configuration

wherein the first and second hooking members are disengageable,

said eccentric lock being displaceable between said lock and unlock configurations by displacing said urging assembly about said first pivot axis between a respective lock and unlock position, and

said second hooking member being connected to said urging assembly so as to be pivotable about said second pivot axis and so as to be urgeable to and from said locking over-center position when said urging assembly passes between said lock and unlock positions.

5,383,675

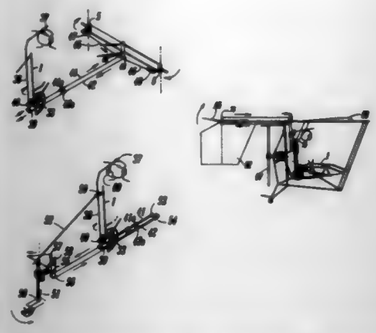
DRIVE AND CONTROL MECHANISMS FOR HUMAN POWERED VEHICLES

Richard T. Liebert, 12 Kristen Dr., Ballston Spa, N.Y. 12020

Continuation of Ser. No. 733,380, Jul. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 517,200, May 1, 1990, abandoned. This application Jul. 11, 1994, Ser. No. 273,267

Int. Cl.[6] B62K *21/00*; **B62M** *1/12, 3/00*; **B63H** *25/02*

U.S. Cl. 280—266 **7 Claims**



1. In a human powered vehicle including a steering system for regulating vehicle direction, a head actuated steering control apparatus comprising:

a steering linkage assembly for controlling said steering system; and

a head engaging member for enclosing an operator's head, said head engaging member including an actuating element for selectively linking said head engaging member and said steering linkage assembly in response to a tilting of said head engaging member, a linking of said head engaging member and said steering linkage assembly in response to the tilting of said head engaging member resulting in a change in said vehicle direction, said actuating element further preventing a linking of said head engaging member and said steering linkage assembly in response to a lateral, horizontal rotation of said head engaging member.

5,383,676

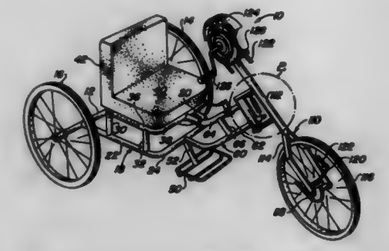
CENTERING APPARATUS FOR FRONT WHEEL OF THREE WHEELED VEHICLE

Thomas J. Valentino, 308 E. Pima, Phoenix, Ariz. 85004

Filed Sep. 2, 1993, Ser. No. 114,638

Int. Cl.[6] B62K *21/10*

U.S. Cl. 280—271 **12 Claims**



1. Apparatus for centering the front wheel of a vehicle comprising in combination:

vehicle frame means including

a shaft housing, and

a bore in the shaft housing;

front wheel assembly means connected to the vehicle frame means, including

a front wheel pivotable for steering the vehicle,

front wheel frame means to which the front wheel is secured and pivotally connected to the vehicle frame means, including bracket means securable to the shaft;

a shaft in the shaft housing;

means for securing the shaft to the bracket means to secure the front wheel assembly to the vehicle frame means; and

a spring secured to the shaft housing and to the bracket means for providing a bias to urge the front wheel assembly to a centered position relative to the vehicle frame means.

5,383,677

BICYCLE BODY SUPPORT APPARATUS

Timothy N. Thomas, 150 Garden Club Rd., Nordland, Wash. 98358, and Robert P. Schladetzky, 2982 Beaver Vy Rd., Port Ladlow, Wash. 98365

Filed Mar. 14, 1994, Ser. No. 209,272

Int. Cl.[6] B62K *19/40*

U.S. Cl. 280—288.4 **2 Claims**

1. A bicycle body support apparatus arranged for securement to a bicycle cross tube, the apparatus comprising:

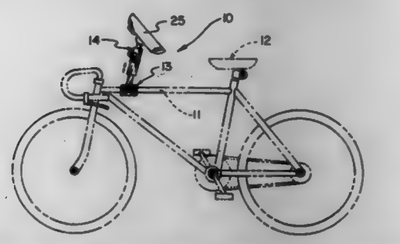
a cross tube mounting bracket having a lowermost plate arranged in facing adjacency to an uppermost plate; with the lowermost plate including a first semi-cylindrical recess to receive the cross tube therewithin, and the uppermost plate including a second semi-cylindrical recess to receive the cross tube therewithin, wherein the first semi-cylindrical recess and the second semi-cylindrical recess are symmetrically oriented about a predetermined axis;

a support shaft fixedly mounted to the uppermost plate and projecting therefrom canted relative to the predetermined axis at an acute angle, the support shaft having a mount portion at a free distal end of the support shaft;

a torso support assembly arranged for mounting to the mount portion, wherein the torso support assembly includes a seat mounting tube having a split cylindrical configuration with a gap extending longitudinally therethrough;

a first clamp flange and second clamp flange mounted on opposed sides of the gap;

a clamping member threadably engaged to said first flange and slidably positioned through said second flange; a seat shaft received within the seat mounting tube and secured



within the seat mounting tube by the clamping member, the seat mounting tube having a seat mounting tube lowermost portion coaxially aligned therewith;

a ferrous metallic abutment ring oriented between the seat mounting tube and the seat mounting tube lowermost portion, with the seat lowermost portion including a securement flange arranged for reception within the mount portion of the support shaft; and,

a shaft fastener securing the mount portion to the securement flange, with the securement flange, the shaft fastener, and the mount portion defining a pivot connection between the torso support assembly and the cross tube mounting bracket.

5,383,678

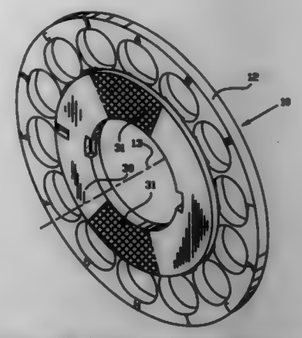
MULTI-ELEMENT WHEEL ALIGNMENT SHIM ASSEMBLY, AND METHOD OF USE

Gary L. Sokol, Longmont, Colo., assignor to Ingalls Engineering Company, Inc., Longmont, Colo.

Filed Aug. 20, 1993, Ser. No. 110,291

Int. Cl.[6] B62D *17/00*

U.S. Cl. 280—661 **22 Claims**



1. A shim assembly for correcting misalignment of toe and/or camber of a vehicle wheel spindle extending from a mounting plate attached to a vehicle the shim assembly comprising:

a first tapered shim element having opposed, nonparallel tapered surfaces;

a second tapered shim element having opposed, nonparallel tapered surfaces, at least a portion of one of the tapered surfaces of the first tapered shim element and at least a portion of one of the tapered surfaces of the second tapered shim element being adjacent to and in contact with each other; and

connecting means rotatably securing the first tapered shim element to the second tapered shim element for mutual rotation around a common axis,

whereby the composite taper of the shim assembly may be varied by orienting the taper of the first tapered shim element relative to the taper of second tapered shim element.

5,383,679

ARRANGEMENT OF SUSPENSION SYSTEM FOR AUTOMOTIVE VEHICLE

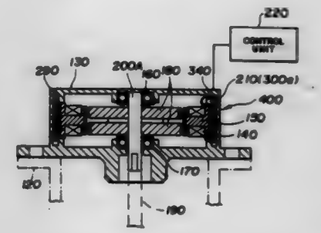
Michiya Nakamura, and Shinobu Kakizaki, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Mar. 4, 1993, Ser. No. 26,309

Claims priority, application Japan, Mar. 4, 1992, 4-010749[U]; Apr. 16, 1992, 4-024105[U]

Int. Cl.[6] B60G *17/015, 17/08*

U.S. Cl. 280—707 **5 Claims**



3. An arrangement of a suspension system for an automotive vehicle, comprising:

a) a plurality of shock absorbers, each having an actuator;

b) a control unit; and

c) a plurality, corresponding in number to said plurality of shock absorbers, of drive circuits, each being electrically connected with said control unit and arranged at a position adjacent to a corresponding one of said actuators such that transmission of signals from each drive circuit to the corresponding one of said plurality of actuators is unaffected by any electrical disturbance,

which further includes a plurality, corresponding in number to said plurality of shock absorbers, of determination circuits, each of said plurality of determination circuits being electrically connected to said control circuit and to one of said plurality of drive circuits, each of said plurality of determination circuits commanding a direction of a drive signal from a corresponding one of said plurality of drive circuits to the corresponding one of said plurality of actuators on the basis of an output signal of the control unit, and wherein each of said plurality of determination circuits is installed together with the corresponding one of said plurality of drive circuits at the position adjacent to the corresponding one of the actuators, both of said plurality of drive and determination circuits being physically separated from said control unit,

wherein each of said plurality of determination circuits is installed together with the corresponding one of said plurality of drive circuits at an upper position within a housing of the corresponding one of said actuators,

wherein each of said plurality of determination circuits is installed together with the corresponding one of said plurality of drive circuits at a position within said housing of the corresponding one of said actuators lower than the corresponding one of the actuators,

wherein a printed circuit board containing the correspond-

ing one of said plurality of drive circuits is installed within said housing of each of said plurality of actuators,

wherein each of said plurality of actuators includes an electromagnetic coil whose ends are connected to the corresponding one of said plurality of drive circuits via relatively short wires,

wherein each said printed circuit board is formed of a flexible, circular plate-like material and is mounted in a gap formed at an outer periphery side wall of said housing of the corresponding one of said actuators, and

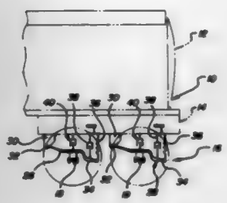
wherein each of said printed circuit boards contain the determination circuit associated with the corresponding one of said plurality of drive circuits and an abnormal state detection circuit for detecting an abnormal state of a drive pulse transmitted from the corresponding one of said plurality of drive circuits to the corresponding one of said actuators and a fail safe circuit which assures a safety operation of the corresponding one of said plurality of actuators on a basis of an output signal indicating the abnormal condition of the drive pulse of the corresponding one of said plurality of drive circuits derived from the corresponding one of said abnormal state detection circuits.

5,383,680

ANTI-ROLL SYSTEM FOR WHEELED VEHICLES

Peter D. Bock, Dearborn, and Glenn R. O'Rourke, Chesterfield, both of Mich., assignors to Cadillac Gage Textron Inc., Warren, Mich.

Filed Dec. 21, 1992, Ser. No. 993,427
Int. Cl.[6] B60G *11/26*
U.S. Cl. 280—714 **10 Claims**



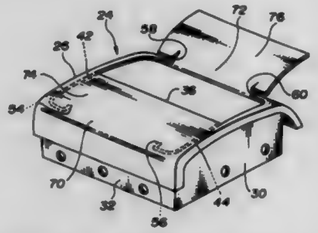
1. An anti-roll system for wheeled vehicles having a sprung mass including frame members, body structure and payload and an unsprung mass including axles and roadwheels; said sprung and unsprung masses being interconnected through control arms, springs and dampers characterized by: inboard and outboard selective, unidirectionally lockable devices; each of said selective, unidirectionally lockable devices further including relatively movable male and female members connected between the sprung mass and the unsprung mass and operative to allow normally free floating motion; and means for locking the male and female members with respect to contraction, remaining free in extension or to lock the male and female members with respect to extension, remaining free in contraction; sensor means for measuring and signalling vehicle operational parameters indicative of the existence of a lateral acceleration acting on the sprung mass, and control means for interpreting the sensed parameters and commanding said outboard selective, unidirectionally lockable device to lock with respect to contraction, remaining free in extension and said inboard selective, unidirectionally lockable device to lock with respect to extension, remaining free in contraction; whereby said anti-roll system will provide increased roll stiffness and corresponding increased roll-over threshold.

5,383,681

OCCUPANT RESTRAINT SYSTEM

Izumi Sato, Fuji, Japan, assignor to Nihon Plast Co., Ltd., Fuji, Japan

Filed Sep. 17, 1993, Ser. No. 122,651
Claims priority, application Japan, Sep. 29, 1992, 4-259656
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728 B **19 Claims**



1. An occupant restraint system comprising:

a container including a base wall, a first pair of spaced side walls joined to said base wall, and a second pair of spaced side walls joined to said base wall;

a folded inflatable occupant restraint cushion within said container, said cushion being folded to provide a cushion portion adjacent said base wall of said container;

a first tear line extending across said base wall and having opposite ends in said base wall;

second tear lines extending through said opposite ends of said first tear line and along a peripheral edge of said base wall, respectively, each of said second tear lines having two ends in said base wall; and

third tear lines extending at an angle from said two ends of each of said second tear lines toward said first tear line to define an integrally hinged pair of tongues forcibly separable from said container by said cushion portion of said inflatable cushion, said third tear lines terminate before said first tear line;

said first tear line and said second tear lines cooperating to define a pair of flaps integrally hinged to said pair of tongues and forcibly separable from said container and movable between a normally closed position and an open position by said cushion portion of said inflatable cushion.

5,383,682

STEERING WHEEL ASSEMBLY HAVING AN AIR BAG DEVICE

Atsushi Nagata; Toru Koyama, both of Inazawa, and Norinari Nagata, Nakashima, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 51,734, Apr. 23, 1993, abandoned. This application Mar. 7, 1994, Ser. No. 206,826
Claims priority, application Japan, Apr. 24, 1992, 4-027449; Jan. 27, 1993, 5-011950
Int. Cl.[6] B62D *1/04*; B60R *21/16*
U.S. Cl. 280—777 **7 Claims**

1. A steering wheel assembly comprising:

a ring portion;

a boss portion having a boss for connecting to a steering shaft of a vehicle and a boss plate laterally extending from said boss;

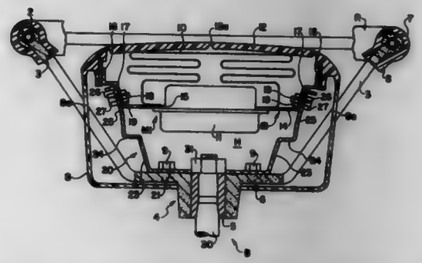
spoke means connecting said ring portion with said boss portion;

bracket means made of plastically deformable metal having supporting portions inclined at an angle in directions outwardly toward said ring portion and being attached to one of said boss portion and spoke means; and

an air bag device held at a predetermined distance from said boss plate by said bracket means,

said air bag device including a folded expandable air bag, an inflater for inflating said air bag, a pad covering said air bag and a bag holder holding said air bag, said inflater and said pad,

said bag holder having connecting portions inclined respectively at the same angle as said supporting portions of said bracket means,



said connecting portions being rotatably connected to said supporting portions for causing deformation of said supporting portions to absorb energy from an impact with the air bag.

5,383,683

MOTOR VEHICLE

Albert Hufgard, Antoinenstrasse 2-14, D-63 786 Hösbach, Germany

Filed Nov. 19, 1993, Ser. No. 155,955
Claims priority, application Germany, Nov. 19, 1992, 4238927
Int. Cl.[6] B62D *25/02, 25/16, 35/00*; B62K *11/00*
U.S. Cl. 280—781 **7 Claims**

1. A motor vehicle comprising a chassis having upper and bottom parts and having at least three wheels, with the bottom part of the chassis having side walls formed an hollow elements, with the upper part of the chassis formed as a hatch at least partly to be opened, with the hollow elements formed of two tubular supports having front and rear openings of identical cross-section at front and rear ends, with all cross-sections of the supports between the front and rear openings corresponding to the cross-section of the openings, and with the cumulative cross-sections of the two supports corresponding to at least half the total cross-section of the chassis bottom part.

5,383,684

BOOK

Jerome R. Smath, 29 Prospect Pl., Croton-on-Hudson, N.Y. 10520

Filed Mar. 28, 1994, Ser. No. 218,422
Int. Cl.[6] B42D *3/00*
U.S. Cl. 281—29 **12 Claims**

1. A novelty book for providing enhanced interest and excitement, said novelty book comprising

A. a first cover incorporating visually stimulating indicia appearing thereon;

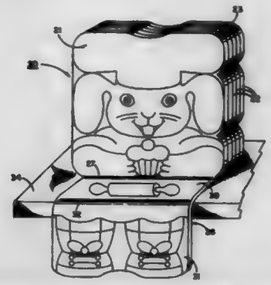
B. a plurality of pages attached to the cover along one edge thereof; and

C. a movable portion

a. pivotally mounted to the first cover along an integrally formed first fold line for pivotal movement relative thereto,

b. incorporating visually stimulating indicia appearing thereon directed to the same subject as the indicia appearing on the cover,

c. movable from a first stowed position to a second displayed position wherein said movable portion is directly associated with the cover to provide an enlarged visual display of a desired subject, and



d. comprising two sections integrally connected to each other and incorporating a second fold line formed between said two sections, with said second fold line being parallel to the first fold line;

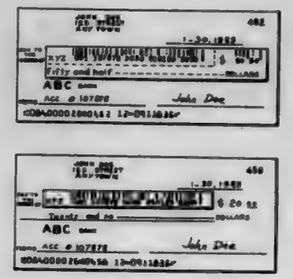
whereby a novelty book is attained which incorporates an enlarged, integrated display structure capable of being presented quickly and easily and maintained in a fully displayed configuration with ease for providing added interest and excitement to the book.

5,383,685

CHECKING ASSEMBLY WITH PERFORATED GUMMED LABEL HAVING PRE-PRINTED INDICIA THEREON

Ling H. Lee, 6496 Heather Dr., Memphis, Tenn. 38119

Filed May 11, 1993, Ser. No. 59,307
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—58 **1 Claim**



1. A checking assembly for improving efficiency of check preparation and check processing, said checking assembly comprising a gummed label, a bill and a standard check, said gummed label attached to said bill, said gummed label subsequently detached from said bill, and then to be posted onto a middle portion of said standard said gummed label comprising:

(a) a rectangular gummed label having a horizontal width slightly less than horizontal width of the standard check and having a vertical dimension sufficient to accommodate several printed lines;

(b) a horizontal perforated line provided across substantially middle of said gummed label extending from left of said gummed label to approximately one inch from right end of

said gummed label, thus dividing said gummed label into a upper segment and a lower segment; said upper segment being pre-printed thereon in letters identifying payee followed by readable and optically scannable indicia identifying payee, date of billing, previous balance, account number, current amount due, and other essential billing information; and

(c) a short vertical perforated line extending from top of said rectangular gummed label to right end of said horizontal perforated line; a right upper space of said lower segment being pre-printed thereon in Arabic readable numbers and in optically scannable indicia said current amount due, a remaining space of said lower segment being pre-printed thereon in letters identifying said current amount due;

whereby said payor transferring entire said gummed label onto his check for full payment without enclosing the customary payment stub; and thus, payor transferring only said upper segment onto his check for partial payment, then completing said check in usual manner, also without enclosing the customary payment stub; and

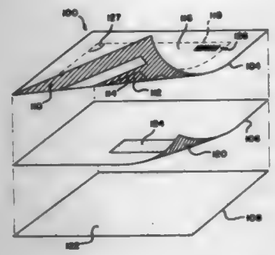
whereby said payee, according to scanned information on said gummed label, processing said check accurately and speedily.

5,383,686

LABEL FOR OPERATION CONTROL SYSTEM

David F. Laurash, Bellbrook, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Filed Oct. 15, 1992, Ser. No. 961,377
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—81 31 Claims



1. A label for use in an operation control system, said label comprising:

a top ply having its underside coated with an adhesive in a pattern defining a border around the outer periphery of said top ply which comprises a tab portion formed to be readily separable from said top ply, said adhesive being coated onto at least a substantial part of the underside of said tab portion which is adapted to include identification indicia thereon, said top ply further including a first portion having its underside free from said adhesive; and

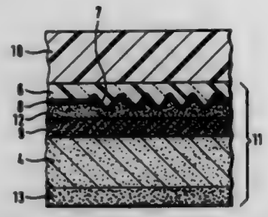
a bottom ply adhered directly to said top ply by said adhesive and having at least a tab release portion coated with a release material on its upper side corresponding to said tab portion of said top ply, whereby said tab portion can be separated from said top ply and said bottom ply, and secured elsewhere by means of said adhesive on the underside of said tab portion.

5,383,687

VALUE DOCUMENT AND EMBOSSING FOIL FOR THE PRODUCTION THEREOF

Joachim Sauss, Fuerth, and Hubert Suessner, Oberasbach, both of Germany, assignors to Leonhard Kurz GmbH & Co., Fuerth, Germany

Filed Feb. 12, 1993, Ser. No. 17,015
Claims priority, application Germany, Feb. 29, 1992, 4206441
Int. Cl.[6] B42D *15/10*; B32B *3/00*
U.S. Cl. 283—86 21 Claims



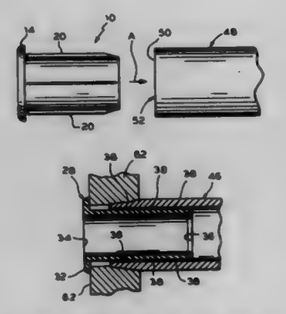
1. A value document comprising a surface carrying a security element including a magnetic layer comprising a dispersion of magnetizable particles in a binder and a security layer including an optical diffraction effect, said security layer overlying said magnetic layer in a region-wise manner with a surface of said security layer towards said magnetic layer having a spacial structure with an optical diffraction effect; a reflective non-magnetizable metal layer on said surface of said security layer; and a barrier layer between said metal layer and said magnetic layer, said barrier layer preventing said particles of said magnetic layer from reacting with said metal layer.

5,383,688

CONDUIT LINER

Richard C. Berry, Camillus, N.Y., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 795,707, Nov. 21, 1991, abandoned. This application May 28, 1993, Ser. No. 68,760
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—49 7 Claims



1. A one-piece plastic electrical conduit liner having a tubular body with two open opposite ends,

said tubular body having an outer diameter substantially equal to an inner diameter of a conduit it is to be inserted into,

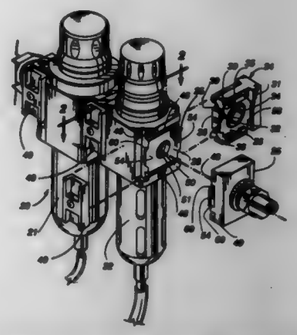
a plurality of flexible and collapsible fins extending from the outer surface of said body, said fins each having two opposite side walls wherein when said liner is inserted into said conduit, one fin side wall contacts the outer surface of the liner body and the other fin side wall contacts an inner surface of said conduit.

5,383,689

SEPARABLE CONNECTOR FOR PRESSURE FLUID COMPONENTS

John R. Wolfe, Sr., Englewood, Colo., assignor to Wilkerson Corporation, Englewood, Colo.

Filed Jul. 9, 1993, Ser. No. 89,749
Int. Cl.[6] F16L *39/02, 37/26*
U.S. Cl. 285—137.1 3 Claims



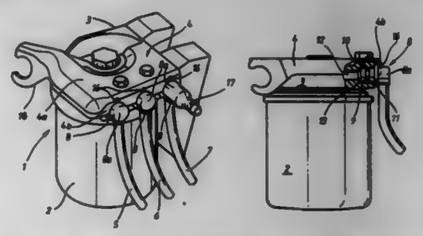
1. A connector for releasably securing together two pressure fluid conducting components in fluid tight sealed relationship, said connector comprising, in combination, a joining spacer defining a pair of opposed sealing surfaces and a pressure fluid port therein opening into each of said surfaces, a connector slide on each component defining a sealing surface and pressure fluid port opening into said surface, said connector slide and said joining spacer being adapted for sealing engagement with corresponding sealing surfaces in juxtaposed sealing relationship and said ports in communication, an O-ring seal positioned between said surfaces and surrounding said ports, a pair of parallel, spaced apart tracks and grooves on said joining spacer and connector slide surfaces, for joining said spacer and slide in sealing relation, and coacting wedge surfaces on said joining spacer and said connector slide for wedgingly clamping said spacer and slide together in sealed relation.

5,383,690

ARRANGEMENT FOR FASTENING A FLUID LINE TO A BODY PARTICULARLY A FUEL FILTER FOR AN INTERNAL COMBUSTION ENGINE

Gerd Niemeier, Stuttgart, and Frank Schneider, Filderstadt, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jul. 19, 1993, Ser. No. 94,519
Claims priority, application Germany, Aug. 25, 1992, 4228155
Int. Cl.[6] F16L *39/00*
U.S. Cl. 285—137.1 5 Claims



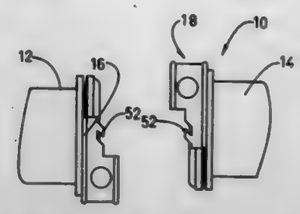
1. An arrangement for fastening at least one fluid line to a fuel filter for supplying fuel thereto, said fuel filter including a filter head and a filter box, said filter head having a receiving bore at one side thereof and said fluid line having a cylindrical connecting piece received and locked in said receiving bore, said cylindrical connecting piece being configured as a plug-in unit and provided with a stop collar which bears against said filter head when said connecting piece is fully inserted into said receiving bore and a mounting plate detachably connected to said filter head and having a portion bent at a right angle so as to form a plate portion which is screwed to said fuel filter head and a bent-over plate portion which extends along said one side of the filter head and over said connecting piece thereby overlaying said stop collar so as to safely lock said cylindrical connecting piece axially within said receiving bore.

5,383,691

UNIVERSAL LOCKING CONNECTOR FOR HUMAN BREATHING SYSTEMS

Geoffrey P. Anthony, 308 Dromore Avenue, Winnipeg, Manitoba, Canada R3M 0J5

Filed Oct. 12, 1993, Ser. No. 134,633
Claims priority, application Canada, Nov. 20, 1992, 2083451
Int. Cl.[6] H16L *19/03*
U.S. Cl. 285—325 18 Claims



1. A connector for connecting two annular objects arranged face-to-face, the connector comprising two components of the same configuration and having a coupled condition in which the two components are interlocked, each component comprising:

first and second part annular retaining members engageable with opposite facing sides of the two annular objects, and extending part way thereabout;

bridge means joining the two retaining members;

mounting means independent of the other component for mounting the component on a respective one of the annular objects;

interlocking means comprising undercut, axially facing teeth on the component engageable with teeth of the same configuration on the other component to fasten the components together around the two annular objects.

5,383,692

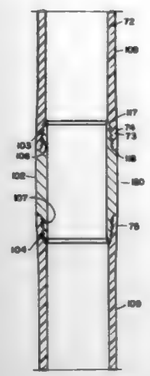
THREADED TUBULAR CONNECTION

John D. Watts, 5054 Stanhope, Houston, Tex. 77084-3033

Continuation-in-part of Ser. No. 315,271, Feb. 24, 1989, Pat. No. 5,018,771, which is a continuation-in-part of Ser. No. 897,069, Jul. 18, 1986, Pat. No. 4,813,717, which is a continuation of Ser. No. 260, Feb. 19, 1985, abandoned, which is a continuation of Ser. No. 1,936, Nov. 23, 1984, abandoned. This application Nov. 14, 1990, Ser. No. 612,496
Int. Cl.[6] F16L *33/24*
U.S. Cl. 285—239 10 Claims

3. A high strength connection for joints of pipe formed of reinforced thermosetting resin material for assembly into a pipe string of any desired length as may be hung in a deep well, sufficient to resist chemical attack by fluid in contact with the string, comprising: the joints being formed within both ends with tapered internal threads; a coupling having tapered external threads formed at both ends for sealing cooperation with said internal threads; the coupling being formed of a material

sufficient to resist chemical attack by the fluid; the coupling material having a more reliable compressive strength than the



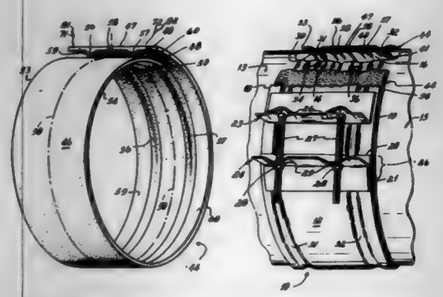
pipe material, sufficient to prevent cracking of the coupling wall by compressive makeup stresses.

5,383,693

GASKETS USED IN JOINING CORRUGATED PIPE

James W. Shade, Middletown, Ohio, assignor to Contech Construction Products, Inc., Middletown, Ohio

Filed Jun. 11, 1992, Ser. No. 897,365
Int. Cl.[6] F16L *17/02*
U.S. Cl. 285—373 **8 Claims**



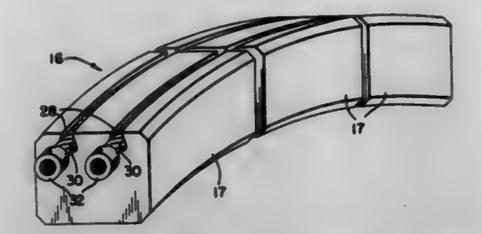
1. A pipe joint assembly comprising:
a circumferentially adjustable annular band for adjustment around two pipe ends to form a joint between said ends,
a first pipe and a second pipe, each of said pipes having an annularly grooved first end, each of said first ends adapted for partially telescoping into said annular band, and
a single sheet of elastomeric material having a bottom surface, with at least two integrally molded and laterally spaced ridges running lengthwise along said bottom surface,
said bottom surface adapted for forming a seal against an outside surface of the first end of each of said pipes by circumferentially extending said sheet completely around the annularly grooved end of each of said pipes and trapping said sheet between said pipes and said annular band, with one of said ridges adapted for disposition in an annular groove at the first end of said first pipe and another of said ridges adapted for disposition in an annular groove at the first end of said second pipe.

5,383,694

LOAD SEGMENT ASSEMBLY WITH WIRE ROPE

Ralph Taeuber, Jr., Houston; Sergio A. Castillo, Jr., Spring, and Robert H. Ash, Jr., Humble, all of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Jan. 29, 1993, Ser. No. 10,915
Int. Cl.[6] F16L *19/02, 27/00*
U.S. Cl. 285—374 **13 Claims**



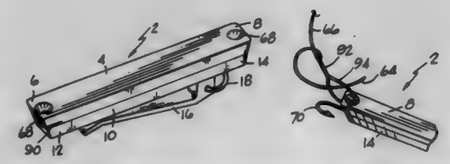
1. A load segment assembly for use as a bearing and locking member in a pipe swivel joint or connector comprising:
a plurality of arcuate load segments, each having opposed end faces, a concave face, and a convex face;
wherein said plurality of arcuate load segments are positioned end-to-end and joined by at least one flexible, elongate joining member such that said convex and concave faces of consecutive arcuate load segments align on the same sides respectively and are flexibly joined enabling relative displacement and rotation between said arcuate load segments; and
wherein said joining member is received on each arcuate segment in a groove on said convex face, each said groove having a dove-tail shaped profile; and
wherein each corresponding groove is sized relative to said joining member such that insertion of said joining member into each said groove requires said joining member to be threaded into each said groove at an end face of each load segment.

5,383,695

DEVICE FOR SECURING A HOOK TO A LINE

John R. Couper, 533 E. Fourth, #8, Loveland, Colo. 80537

Continuation-in-part of Ser. No. 10,427, Jul. 6, 1993. This application Feb. 16, 1994, Ser. No. 195,684
Int. Cl.[6] D03J *3/00*
U.S. Cl. 289—17 **20 Claims**



1. A device for use in securing a hook having an eyelet to a line comprising:
a first member having at least one end portion;
a second member having at least one end portion;
pivot means for connecting said first and second members for relative pivotal movement in spaced apart parallel planes between a first location at which said at least one end portions are in superposed relationship and a second location at which said at least one end portions are in an arcuately spaced apart relationship;
line receiving means in each of said at least one end portions so that said line receiving means are in alignment when said at least one end portions are at said first location;
line removal means in each of said at least one end portions so that the portion of the line in said line receiving means may be removed therefrom; and
holding means for holding an eyelet of a hook in alignment with said line receiving means when said at least one end portions are at said first location.

5,383,696

MULTI-PURPOSE SHOVEL LIKE TOOL

Guenter O. Speier, 22912 Cordoba Ct., Salinas, Calif. 93908

Filed Sep. 23, 1993, Ser. No. 126,173
Int. Cl.[6] A01B *1/04*
U.S. Cl. 294—49 **1 Claim**



1. A shovel comprising in combination:
a shovel handle;
a shovel yoke for connecting said handle to a surface of said shovel;
a shovel working surface formed of flattened expanded metal of the type that forms a grid of four sided diamond shaped openings;
said flattened expanded metal aligned with said working surface, each said diamond shaped opening parallel to the handle of the shovel and cut to a width and length sufficient to form said shovel working surface;
straight bars affixed to said flattened expanded metal at left and right edges relative to said handle to impart even and uninterrupted side edges;
said flattened expanded metal defining front edges cut to expose the diamond shaped openings of the flattened expanded metal in a serrated configuration whereby said shovel has a said serrated configuration at said front edges;
said diamond shaped openings of said expanded metal are elongate with one dimension of said opening being larger than an adjacent normal dimension at right angles to said one dimension; and,
said diamond shaped openings have said large dimension oriented parallel to said handle;
said flattened expanded metal at said cut front edges is hardened; and,
said shovel working surface has an arcuate contour with respect to said yoke and handle.

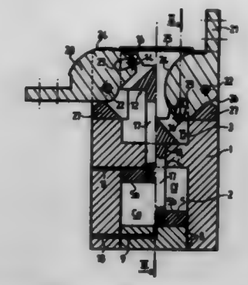
5,383,697

PNEUMATIC PINCERS

Philippe Roudaut, 142, rue du General Leclerc, 95120 Ermont, France

Filed Sep. 16, 1992, Ser. No. 945,956
Int. Cl.[6] B25J *15/08;* **B66C** *1/28*
U.S. Cl. 294—88 **13 Claims**

1. A pneumatic prehension device or pincers comprising a cylindrical head (13), a piston (5), a body (1) pierced with a cylinder-forming bore (2) in which said piston slides responsive to pressurized air within said cylinder (2) and acting upon said piston (5), two fingers (20, 21) movably mounted on said body (1) to assume any position between an extreme opening position and an extreme closing position, a shackle (12) provided with a control mechanism for governing the opening and the closing of said fingers (20, 21), said piston (5) being coupled to drive said shackle in response to said piston sliding in said bore (2), so as to control either a finger opening or a finger



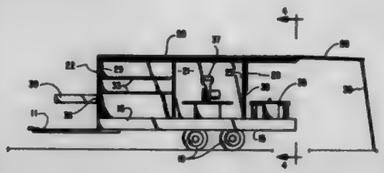
closing, said shackle (12) including said cylindrical head (13) supporting said control mechanism and mounted to slide and be guided inside a bore (3), so as to compensate for a resulting force of the radial forces exerted by said mechanism on said fingers, said forces being generated when said fingers squeeze a piece, and a coaxial rod (17) having an end linked to said cylindrical head (13) and another end for supporting said piston (5) with radial play between said coaxial rod (17) and said piston (5), said cylinder head having an axis which is the same as an axis of said bore (2) that receives piston (5).

5,383,698

TOOL TRAILER WITH OPEN END

William Buchholz, 96 Tinton Rd., Spearfish, S. Dak. 57783

Filed Aug. 17, 1993, Ser. No. 107,055
Int. Cl.[6] B60P *3/14*
U.S. Cl. 296—24.1 **2 Claims**



1. A mobile shop comprising a box having a floor, a front end, lateral sides and rear end, said box being mounted on a trailer chassis, a vertical front wall at said front end of said box, a vertical longitudinal wall dividing said box longitudinally, and a vertical lateral wall spaced at least one-fourth of the length of said box from said rear end, roof means extending over all of said box, said roof means being supported by said walls, said roof means over the rear of said box being a cantilevered surface whereby said lateral wall combines with said floor and said roof means to define a covered platform at the rear of said box, closure means for said shop comprising side covers hinged to said roof means along said lateral sides and a rear cover hinged to said roof means at the rear of said cantilevered surface to combine with said side covers and said front walls to completely enclose said shop for transportation; said front wall, said longitudinal wall and said lateral wall combining to define at least one side compartment, a radial arm saw disposed in said side compartment, said front wall and said lateral wall being formed with openings to allow pieces of

lumber of length longer than space between said walls to extend through said openings when in place on said radial arm saw.

5,383,699

FOLDING VEHICLE SEAT ASSEMBLY WITH SELF ADVANCING BACKREST

Wojciech Wozniekowski, Detroit, and Steven D. Gulda, White Lake Township, both of Mich., assignors to Lear Seating Corporation, Southfield, Mich.

Filed Nov. 12, 1993, Ser. No. 151,303
Int. Cl.[6] B60N *2/04*
U.S. Cl. 296—65.1 **14 Claims**



1. A vehicular seat assembly (14) movable from an upright seating position to a folded position for providing increased floor space within a vehicle (10), said vehicular seat assembly (14) comprising:

a seat portion (16) pivotally secured to the floor (20) of the vehicle (10) and movable between an upright seating position and folded position;

a latch assembly (40) movable between a locked position and an unlocked position for selectively locking said seat portion (16) in said upright seating position and unlocking said seat portion (16) from said occupant receiving position;

a backrest portion (18) including a post (62) extending therefrom, said backrest portion (18) pivotally connected to said seat portion (16) and movable between an upright seating position and folded position;

a backrest locking assembly (48) for locking said backrest portion (18) in said upright seating position;

a linkage assembly (46) interconnecting said latch assembly (40) with said backrest locking assembly (48) for simultaneously unlocking said backrest (18) from said upright seating position as said latch assembly (40) unlocks said seat portion (16) from said upright seating receiving position;

said vehicular seat assembly (14) characterized by folding means (84, 61, 98) for applying a force to said post (62) only when said seat portion (16) is unlocked to initiate movement of said backrest (18) from said upright seating position toward said folded position when said seat portion (16) is unlocked from said occupant receiving position thereby assisting in folding of said seat assembly (14).

5,383,700

POSITION DETENT FOR SUN VISOR FOR VEHICLES

Marc Agro, Saint Avold; Gerard Hilt, Henriville, both of France; Sabine Rust, Aidlingen, Germany; Christian Hornung, Maichingen, Germany; Henning Peters, Pfalzgrafenweiler, Germany, and Gerhard Zweigart, Aidlingen, Germany, assignors to Gebr. Happich GmbH, Wuppertal, Germany

Filed Apr. 15, 1994, Ser. No. 229,445
Claims priority, application Germany, Apr. 17, 1993, 4312435
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.9 **10 Claims**

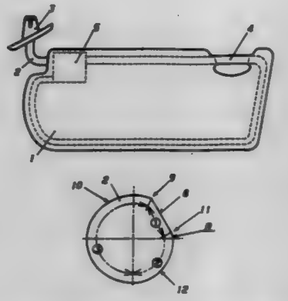
1. A sun-visor for a vehicle comprising:

a sun-visor body;

a sun-visor shaft projecting from and movable with the sun-visor body for being received in the body of a vehicle in which the sun-visor is supported; the sun-visor shaft having an end region in the sun-visor body; the end region having an axial detent region;

spring means supported in the sun-visor body and sized and positioned for applying pressure against the periphery of the shaft over the axial detent region for retaining the shaft in a selected rotated position from a position of non-use of the visor body stored below the roof of the vehicle to and into a position of use of the visor body in front of a vehicle window;

the sun-visor shaft axial detent region having respective circumferential regions around the sun-visor shaft including



a first region which is flat and is so placed around the shaft that when the spring means is pressed against the first region, the sun-visor body is in its position of non-use and the spring means acting on the first region holds the sun-visor body in its position of non-use, the first region having opposite first and second circumferential edges;

starting from the first circumferential edge of the first region, the sun-visor shaft having a second circumferential region developed as circular arc; and

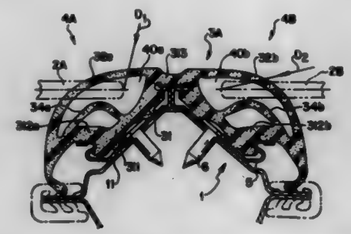
beyond the second region, the shaft having a third circumferential region which is developed generally as a spiral with a gradually decreasing diameter and extending toward the second circumferal edge of the first region.

5,383,701

WEATHERSTRIP FOR AUTOMOBILES

Masayasu Okada, Aich, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 1, 1993, Ser. No. 130,527
Claims priority, application Japan, Oct. 1, 1992, 4-286751
Int. Cl.[6] B60J *1/08*
U.S. Cl. 296—146.9 **6 Claims**



1. A weatherstrip for an automobile adapted to be mounted on a center pillar thereof, the weatherstrip comprising:

a mounting base;

first and second sealing walls coupled to said mounting base so as to define first and second hollow seal portions; and

a partition member disposed in each of said hollow seal portions, each said partition member having opposite ends thereof connected to said mounting base, said partition members having an inverted V-shaped section such that apexes thereof project toward said sealing walls,

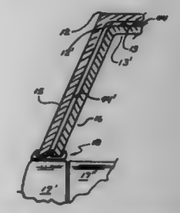
said apexes supporting the sealing walls when said partition members are depressed by a closing door glass of the automobile.

5,383,702

TRUCK'S ONE-MAN CONVERTIBLE CAMPER-TOP/SKIFF

Mark W. Matheson, 4584 Georgia St. #4, San Diego, Calif. 92116

Filed Oct. 18, 1993, Ser. No. 137,511
Int. Cl.[6] B60P *3/367*
U.S. Cl. 296—157 **6 Claims**



1. A pick-up truck type camper-top assembly, wherein is provided improved convenience of handling, facilitating improved single-person attachment/detachment ease relative to the truck's utility-bed, including dual-purpose capability thereby said camper-top assembly can also function as a skiff like water-vessel; the combination: apparatus comprising:

a shell like structure formed of two longitudinal oriented substantially vertical planar side-walls joined contiguously in support of a planar roof portion and a contiguous planar vertical transverse frontal-wall stationed immediately aftward of the pick-up truck's existing cab portion; including two special longitudinal slide-rail members, one of which is installed atop each of the truck's two existing utility-bed sidewalls, said slide-rails each including upwardly extending inboard and outboard flanges of about one-inch height, thereby serving to positively guide the manual fore/aft sliding of the camper-top's sidewalls therein; the forward-end of both said slide-rails including an automatic self-engaging anti-lift means, intermeshing as the camper-top is being manually slid into final forward-most installed position, so as to impinge with the lower portion of the transverse frontal-wall in such a manner preventing undesirable upward lifting and subsequent escapement of the camper-top therefrom, such as might otherwise be caused by a vandal or force of air-currents when the vehicle is moving forward at speed; and including anti-slide/anti-lift means situated at the aftward ends of both the slide-rails, engaged from within the camper-top confines so that upon closing of a planar transverse hatch-panel filling the aftward accessway, and conventional locking of same, the camper-top is ultimately rendered secure against unwarranted removal;

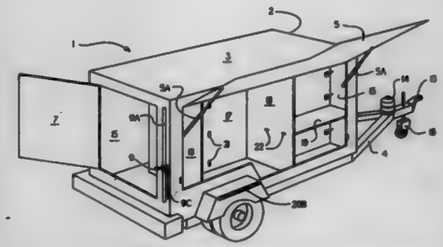
plus an additional modality of usage, whereby said camper-top once slidably removed form the slide-rails and inverted, so that the longitudinal side-walls and the transverse frontal-wall become the stern-section gunwales of the skiff embodiment; and whereby an essential second shell like component normally stowed nestedly out of sight within the confines of the camper-top while upon its sidewalls with its open-end facing aftward, is also slidable removed from the slide-rails and likewise inverted upon the shoreline to form an instant skiff bow-section, whereby both said sections are subsequently joined there so their open-end transverse-flanges matedly interface and become precisely positioned via laterally opposed integral alignment-luggings means included upon said transverse-flanges, whereupon a separate transverse vertically keywayed channel member interlocking means is lowered upon the mating transverse-flanges, thereby positively joining said mating transverse-flanges intimately into a rigidly united assembly capable of withstanding the rigors of hydrodynamic forces once launched into a waterway; subsequent converse disassembly as a skiff, and reinstallation upon the truck-bed slide-rails being likewise operable via a single person.

5,383,703

MODULAR TRAILER

S. J. Irvine, III, 181 Fairway La., Butler, Pa. 16001

Filed Jan. 28, 1993, Ser. No. 10,208
Int. Cl.[6] B60P *3/07*
U.S. Cl. 296—181 **31 Claims**



1. A modular trailer for both storage and transportation of a variety of variously sized and shaped items and for use as a recreational vehicle, the trailer comprising:

a) a trailer chassis;

b) a hollow body mounted thereon, said hollow body having a front, rear and two sides, forming an interior space;

c) a rear door mounted in the rear of said hollow body for ingress and egress from said interior space;

d) at least one side door mounted in at least one side of said hollow body, said side door allowing access to at least a portion of said interior space;

e) fixed rigid interior walls, mounted within said interior space at the periphery thereof and to said front, rear and side walls;

f) at least one modular rigid interior wall, adapted for selective placement within the interior space to at least partially divide said interior space into a plurality of smaller spaces; and

g) mounting means, affixed to one of said at least one modular interior wall and said fixed interior walls for selective interconnection therebetween.

5,383,704

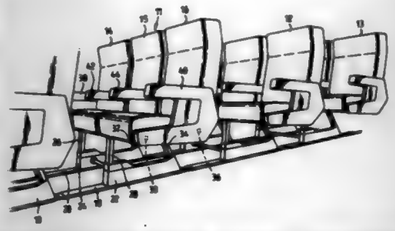
INTERMEDIATE ARMREST FOR A ROW OF SEATS

Reginald F. Granados, Reading, and Michael J. Robinson, Farnborough, both of England, assignors to L.A. Rumbold Limited, England

Filed Oct. 13, 1993, Ser. No. 135,677
Claims priority, application United Kingdom, Apr. 29, 1993, 9308896
Int. Cl.[6] A47C *17/04*
U.S. Cl. 297—115 **7 Claims**

1. An armrest assembly comprising a track of rectangular cross-section located between backrests of adjacent seats in a row of seats, a carriage slidably mounted on the track and having a first guide member arranged to engage with one edge of the track and a second guide member arranged to engage with an opposite edge of the track, and an armrest secured to the carriage, and releasable locking means for securing the

carriage in an upper position on the track, the carriage being movable on the track between said upper position in which the



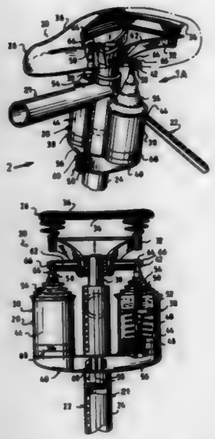
armrest is at a desired level for use and a lower position in which the armrest is level with seat cushions of the seats.

5,383,705

SHOCK ABSORBING SEAT

Bernard Voigt, 15 High St., Hicksville, N.Y. 11801

Filed Apr. 13, 1992, Ser. No. 867,382
Int. Cl.[6] B62J *1/02*
U.S. Cl. 297—211 **4 Claims**



1. An improved shock absorbing seat for a vehicle, with a frame having a seat tube which comprises:

a) a seat assembly;

b) absorbing means located between said seat assembly and the seat tube on the frame, for absorbing impulsive forces generated by the wheels making contact with an irregular road surface, so that the impulsive forces will be assimilated by said absorbing means before reaching said seat assembly to give a rider a softer and smoother ride;

said seat assembly including:

a seat post being slidably engaged with said seat tube;

a support structure connected to an upper end of said seat post;

a saddle that is carried on said support structure; and

a padded cover to fit over said saddle; and said absorbing means including:

a pair of external shock absorbers;

mounting means for mounting said external shock absorbers to said seat tube on said frame; and

coupling means for coupling said external shock absorbers to said seat assembly, so that said seat post can slide within said seat tube on said frame; and

each said external shock absorber including:

a cylindrical housing positioned vertically on said mounting means adjacent said seat tube;

a lower disc-shaped retainer carried in said housing;

a coil spring which sits upon said lower retainer;

a telescopic shaft extending upwardly from the center of said lower retainer through said coil spring and above said housing;

an upper disc-shaped retainer affixed to said telescopic shaft which fits over said coil spring; and

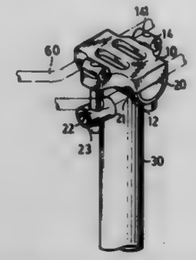
a cone-shaped bellows cover which is attached between a top of said housing and said telescopic shaft, to protect said telescopic shaft from weather elements, such as snow, ice, rain and debris.

5,383,706

ADJUSTING ASSEMBLY FOR BICYCLE SEAT

Chin-Pei Chen, Taichung Hsien, Taiwan, Prov. of China, assignor to Kalloy Industrial Co., Inc., Taiwan, Prov. of China

Filed Jun. 3, 1993, Ser. No. 72,476
Int. Cl.[6] B62J *1/00*
U.S. Cl. 297—215.15 **8 Claims**



1. A bicycle seat adjusting assembly comprising:

a seat tube (30) having a bore (32) extending transversely through an upper part (31) thereof, said upper part (31) having an arcuate surface (311) in an upper end thereof;

a balance tube (22) received in said transverse bore (32) with two ends thereof exposed outside said transverse bore (32), a vertical bore (221) being formed in each said exposed end of said balance tube (22);

a mounting means adapted to hold seat supporting rods (60), having an arcuate bottom surface pivotally received in said arcuate surface (311) and having two ears (11) each with a vertical hole (11) therein in alignment with one of said two vertical bores (221);

a positioning block (14) mounted on each said ear (11) and having a threaded hole (141) in alignment with one of said two vertical holes (111); and

a pair of adjusting bolts (23) each passing through one of said two vertical bores (221) and said aligned vertical hole (111) to engage with said aligned threaded hole (141).

5,383,707

INTERLOCK FOR FOLD DOWN SEAT BACK AND INTEGRAL CHILD SEAT

Joseph M. Osenkowski, Detroit; James L. Weber, W. Bloomfield; Wojciech Wdziekonski, Detroit, and Kurt A. Bart, E. Clinton Twp., Macomb County, all of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Dec. 28, 1993, Ser. No. 174,376
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—238 **16 Claims**

11. A seat back for a motor vehicle having a body with a stationary structure, said seat back comprising:

a back panel having a frame, said back panel being movable within said body between a generally upright use position and a stowed position;

latch means mounted to said frame and the vehicle stationary structure for attaching said back panel to the stationary structure to hold said back panel in said use position, when said back panel is in said use position said latch means normally being in a latched condition in which said back panel is attached to the stationary structure and said latch means having a latch member carried by said frame which is selectively movable between a latch position corresponding to the latched condition of said latch means and a release position corresponding to a release condition of said latch means in which said back panel is released from the stationary structure and is free to be moved from said use position;

a housing mounted to said frame;

a child seat cushion panel having a hinge member, said hinge member being mounted to said housing for rotation about a transverse axis between a stowed position within said back panel and a generally horizontal use position extending forward from said back panel in which said child seat cushion panel forms a surface upon which a child can be seated, said hinge member having an engagement portion radially extending from said axis which moves along a first path of travel as said child seat cushion panel is moved from said stowed position to said use position;

a pull cable having two ends, one of said ends being coupled to said movable latch member for pulling said cable in a first direction as said latch member is moved to said release position, the other end of said cable extending to said housing;

lock out means carried by said housing including a lock member movable along a second path of travel between a free position and a lock position, said lock member being coupled to the other end of said cable and moved to said lock position in response to pulling of said cable in said first direction upon release of said latch, said lock member having an engagement portion which is disposed within said first path of travel when said lock member is in said lock position whereby said lock member interferes with the rotation of hinge member preventing said child seat cushion panel from moving to said use position, and said engagement portion of said hinge member being disposed within said second path of travel when said child seat cushion panel is in said use position whereby said hinge member interferes with the movement of said lock member preventing said lock member from moving to said lock position which in turn prevents said latch member from moving to said release position to place said latch means in said release condition.

5,383,708

CHILD SEAT AND ANCHORING STRUCTURE FOR MOUNTING THE CHILD SEAT ONTO VEHICLE SEAT

Chikao Nagaoka, and Tokuhiro Amano, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Mar. 2, 1993, Ser. No. 25,231
Claims priority, application Japan, Mar. 13, 1992, 4-054735
Int. Cl.[6] B60N *2/26*
U.S. Cl. 297—250.1 **19 Claims**



1. A child seat which is mounted on and anchored to a vehicle seat having shoulder or lap belts, comprising:

a child seat main body;

engaging means attached to said child seat main body, said engaging means having a proximal end portion engageable with a fixed means attached to said vehicle seat and not to said shoulder or lap belts, and an intermediate portion of said engaging means being formed of an elongated flexible member; and

locking means which is provided at said child seat main body said locking means being provided such that a distal end portion of said engaging means is fixed to said locking means and such that said intermediate portion of said engaging means is able to be wound around said locking means and is able to be withdrawn from said locking means, said locking means locking said child seat on said vehicle seat by preventing the withdrawal of said engaging means from said locking means when said engaging means is engaged with said fixed means and said engaging means is in a state of being retracted in said child seat main body.

5,383,709

ORTHOPEDIC CHAIR WITH FORWARDLY AND REARWARDLY INCLINED POSITIONS

David B. Chaney, and Joseph A. Koncelik, both of Powell, Ohio, assignors to Zoetech, Inc., Westerville, Ohio

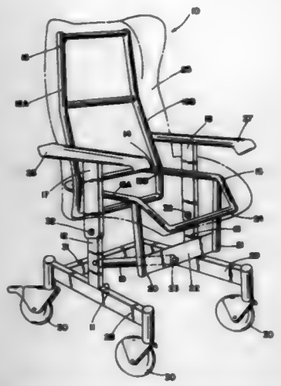
Filed Dec. 3, 1992, Ser. No. 984,956
Int. Cl.[6] A47C *3/00*
U.S. Cl. 297—302 **21 Claims**

4. A seating assembly comprising:

a) a ground-engaging chassis provided with a pair of laterally spaced apart, upwardly extending support members;

b) a user-receiving frame provided with a seat portion, a back portion and a pair of laterally spaced apart mounting members, said mounting members being pivotally connected to the support members to permit the frame to be placed in one of a plurality of stable positions from a forwardly inclined position through a level position to a rearwardly inclined position; and

c) a damper extending between the frame and the chassis for limiting acceleration of said frame as it moves between



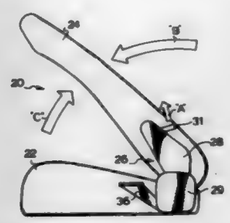
any one of said stable positions and any other of said stable positions.

5,383,710

MANUAL SEAT BACK LATCH FOR VEHICLES

Gulam Premji, Mississauga, Canada, assignor to Bertrand Faure Ltd., Mississauga, Canada

Filed Feb. 4, 1993, Ser. No. 13,364
Claims priority, application Canada, Oct. 16, 1992, 2080758
Int. Cl.[6] B60N *2/20*
U.S. Cl. 297—378.12 **9 Claims**



1. A selectively latchable vehicle seat hinge assembly comprising:

a first hinge arm and a first hinge plate each pivotally mounted about a common pivot axis for relative pivotal movement with respect to each other in first and second angular directions;

a stop means mounted on the first hinge plate in interfering relation with said first hinge arm so as to limit said relative pivotal movement of said first hinge arm and said first hinge plate in said first angular direction;

a latch plate mounted on the first hinge plate;

a latch pawl means pivotally mounted on said first hinge arm by means of an eccentrically operative, rotatably adjustable, backlash reduction means for pivotal movement about a separate pivot axis distinct from said common pivot axis and for selective latching contact with said latch plate so as to limit said relative pivotal movement of said first hinge arm and said first hinge plate in said second angular direction;

said backlash reduction means being mounted on said first hinge arm for rotation about a first pivot axis off-set and distinct from said common pivot axis to an optimized position, at which optimized position said backlash reduction means interacts with said latch pawl means to move said separate pivot axis and said latch pawl means generally toward said latch plate, thereby to cause controlled reduction in the amount of backlash between said latch pawl means and said latch plate; and,

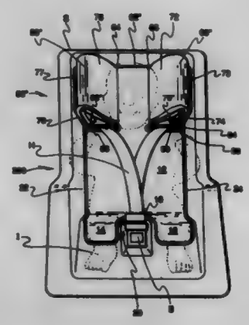
operating means interfacing with said latch pawl means so as to provide for said selective latching contact.

5,383,711

HEAD SUPPORT

Barbara S. Houghteling, 962 Xenon Ct., Golden, Colo. 80401

Filed Sep. 14, 1993, Ser. No. 121,170
Int. Cl.[6] A47C *7/38*
U.S. Cl. 297—397 **16 Claims**



1. A head support, comprising:

a flexible base member dimensioned to at least partially support the head of an individual;

a pair of elongated flexible resilient support members;

each of said head support members comprising a foam piece within a cover, said cover including elongated substantially rectangular overlying top and bottom fabric layers sewn together along two long edges and an outer short edge to form an envelope dimensioned for insertion said foam piece, an inner short edge of only said top sheet being sewn to said base member, leaving an inner short edge of said bottom sheet free, thus maintaining an opening for inserting and removal of said foam piece such that a relatively snug fit of said cover and attendant frictional forces maintain said foam piece against unintentional displacement;

fastening means connecting an inner short edge of each of said support members to said base member;

securing means disposed adjacent a free end portion of each of said support members for selectively adjustably securing said free end portion of each of said support members to said base member for adjusting an angle of inclination of said support member with respect to said base member for supporting the head of an individual therebetween such that each of said support members is disposed in an at least partially overfolded A-frame configuration forming inner and outer inclined surfaces connected by an apex portion; and

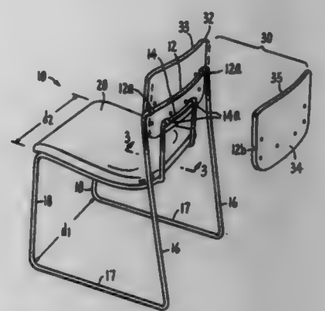
each of said inner inclined surfaces of said support members dimensioned and disposed for abutment with a side portion of the head of an individual.

5,383,712

FLEXIBLE CHAIR

Charles O. Perry, 20 Shorehaven Rd., East Norwalk, Conn. 06855

Continuation of Ser. No. 793,357, Jan. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 757,734, Sep. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 506,716, Apr. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 381,151, May 2, 1989, Pat. No. 5,009,466, which is a continuation-in-part of Ser. No. 185,707, Apr. 25, 1988, abandoned. This application May 6, 1994, Ser. No. 238,415
Int. Cl.[6] A47C *1/032*
U.S. Cl. 297—448 **32 Claims**



1. A flexible armchair, comprising:

a. a seat adapted to engage a user's seat;

b. a back generally perpendicular to said seat and adapted to engage a user's back and having a top and a bottom and upper and lower regions between the top and bottom; and

c. a flexible frame for holding and supporting said seat and back, characterized by said frame comprising:

i. a pair of support legs one at each side of the seat with each support leg having,

(1) a resilient back leg portion pivotally connected to the upper region of said back below the top,

(2) a bottom leg portion for extending along a floor surface, and

(3) a front leg portion extending upwardly to the front of said seat to support said seat, and

ii. pivotal connecting means connecting the rear of the seat to the lower region of said back at a location substantially above the seat, wherein the flexibility of the frame and the pivotal connecting means permit the back to tilt toward a reclining position while the back functions as a lever against the resiliency of the back leg portion forcing the bottom of the back forwardly for lumbar support, characterized in that:

d. said back leg portion extends forwardly from said upper region of said back above the seat and outside the bottom leg portion for a sufficient distance to form an arm rest and then downwardly and rearwardly to said bottom leg portion.

5,383,713

INFLATABLE SEAT BELT APPARATUS

Misao Kamiyama, and Kazuo Zeze, both of Hikone, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,334
Claims priority, application Japan, Oct. 21, 1991, 3-272599
Int. Cl.[6] B60R *22/28*
U.S. Cl. 297—471 **4 Claims**

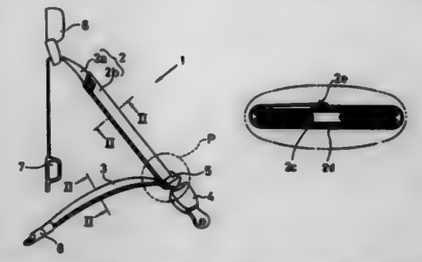
1. An inflatable seat belt apparatus, comprising:

a webbing, at least part of a portion of said webbing comes into contact with a passenger and is formed into a bag-shape, wherein the webbing is maintained in a belt-shape form during ordinary conditions and the bag-shape portion is inflatable by gas from a gas generating means at the time of an emergency;

a tongue provided on said webbing which is insertable into and lockable with a buckle to enable restraint of the passenger;

said tongue being provided with a through-hole through which said webbing is free to move;

a through-hole opening-area control member being movably provided on said tongue and being movable between an opening-area reducing position and an opening area enlarging position, said control member being capable of being held at said opening-area reducing position under



initial conditions and being capable of being moved to said opening-area enlarging position, so as to be in said opening-area enlarging position in the event of a necessity;

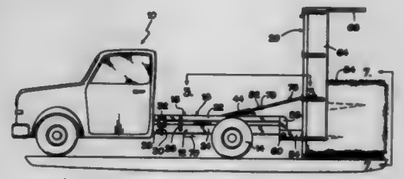
wherein when said control member is at said opening-area reducing position, an opening area of the through-hole is defined at least in part by said control member to be a first size which will allow movement of said webbing therethrough while said webbing is maintained in the belt-shape form, but which will impede turning over and twisting of said webbing, and when said control member is at said opening area enlarging position, said opening area of the through-hole is defined at least in part by said control member to be a second size which is larger than said first size.

5,383,714

VEHICLE HAVING DUMP BED

H. Victor Hunter, R.R. 4, Box 209, Butler, Mo. 64730

Filed Nov. 9, 1992, Ser. No. 973,426
Int. Cl.[6] B60P *1/16*
U.S. Cl. 298—17 R **16 Claims**



1. A vehicle having a dump bed assembly mounted on a frame of the vehicle, said dump bed assembly comprising:

a subframe mounted on the vehicle frame and having a pair of spaced apart arms extending downwardly at a rear portion of the subframe and a crossbeam extending transversely at an intermediate portion of the subframe between longitudinally extending side beams, said crossbeam having a portion that lies in a plane below that of the side beams;

means for coupling the subframe with the vehicle frame;

a bed overlying said subframe and movable between a horizontal position with the bed resting on said subframe side

beams and an elevated position with the bed pivoted off of the subframe side beams, said bed including a pair of downward extensions pivotally connected to said arms at a position spaced below a plane in which said bed lies; and an extensible cylinder connected at a forward end to said subframe crossbeam at said portion that lies in a plane below that of the side beams and at a rear end to said bed, extension of said cylinder causing the bed to pivot upwardly from the horizontal position to the elevated position, said bed being returned to the horizontal position with retraction of the cylinder, said cylinder extending at an acute angle to the horizontal when the bed is in the horizontal position.

5,383,715

WHEEL PROVIDED WITH SUB-WHEELS

Akira Homma; Susumu Homma; Hiroshi Sato, and Hisao Hirol, all of Tokamachi, Japan, assignors to Homma Science Corporation, Tokamachi, Japan

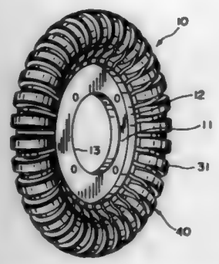
PCT No. PCT/JP92/00952, § 371 Date Feb. 9, 1993, § 102(e) Date Feb. 9, 1993, PCT Pub. No. WO93/02872, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 27, 1992, Ser. No. 969,225

Claims priority, application Japan, Aug. 8, 1991, 3-199636

Int. Cl.[6] B60B *19/00*

U.S. Cl. 301—5.23 **6 Claims**



1. A wheel provided with sub-wheels, which comprises:

wheel means for forming a wheel having a circular rim formed around the outer periphery thereof;

a plurality of sub-wheel supporting means mounted on and around said circular rim so as to be directed radially and outwardly; and

a plurality of sub-wheels each rotatably supported by a respective one of said sub-wheel supporting means for rotation about an axis extending tangentially to said circular rim, said plurality of sub-wheels being arranged on the outer periphery of said wheel for constituting a tire;

wherein each sub-wheel supporting means comprises two inclined surfaces each inclined by a specific angle towards each other, and a main shaft and a sub-shaft on said inclined surfaces so as to project therefrom, said main shaft having at the center portion thereof a hole in which one of said sub-wheels of the sub-wheel supporting means adjacent thereto is fitted and having on the outer periphery thereof another of said sub-wheels mounted rotatably;

wherein a joint protector is interposed between each adjacent pair of said sub-wheel supporting means, said joint protector having a wedge-shaped section and being provided with two short shafts fitted in the center holes of said sub-wheel supporting shafts; and

wherein an elastic interposition member is disposed around the circumference of the wheel and has radially outward projections interposed between each adjacent pair of said sub-wheels, said interposition member having an outermost diameter which is substantially the same as the outermost peripheral diameter of the tire constituted by the sub-wheels.

5,383,716

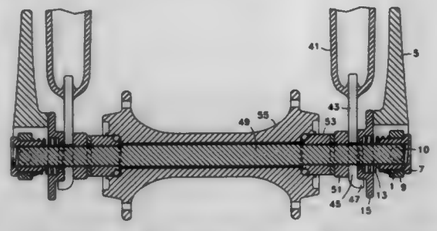
QUICK-RELEASE BICYCLE AXLE FASTENER

John V. Stewart, Orlando, Fla., and Cal M. Phillips, Platteville, Wis., assignors to S.A.F.E.-Q.R. Corporation, Platteville, Wis.

Filed Sep. 16, 1993, Ser. No. 122,724

Int. Cl.[6] B60B *27/00*

U.S. Cl. 301—124.2 **15 Claims**



1. A mechanism for attaching a wheel axle to a vehicle frame, the frame having a drop-out with an open-ended slot for receiving the axle, the drop-out having a coupling surface, the mechanism comprising:

a cam, mounted pivotally on an end of the axle, having a pivot axis substantially perpendicular to the wheel axle;

a lever attached to the cam;

a slide, mounted on the axle inboard of the cam, having a radial lip for axial movement of the slide by human fingers, and an inner surface of complementary shape to the coupling surface for mating therewith; and

a spring, mounted between the slide and the cam.

5,383,717

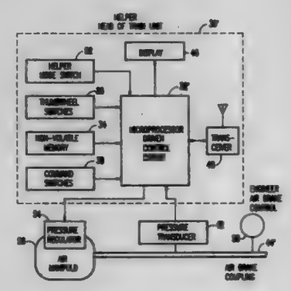
BRAKE CONTROL OF HELPER LOCOMOTIVE

Emilio A. Fernandez, Fairfax County, Va., and Angel P. Bezos, Montgomery County, Md., assignors to Pulse Electronics, Rockville, Md.

Filed Sep. 10, 1993, Ser. No. 119,975

Int. Cl.[6] B61L *23/00*

U.S. Cl. 303—3 **9 Claims**



1. A brake control system for railroad locomotives for controlling the brakes of a helper locomotive from a lead locomotive in a train wherein the helper locomotive is coupled to the train while a brake pipe of the train is not physically connected to a brake pipe of the helper locomotive, said brake control system comprising:

first pressure sensing means mounted on a car of the train and coupled to the brake pipe of the train for monitoring brake pipe pressure of the train and generating a first signal proportional to the monitored train brake pipe pressure;

telemetry means responsive to said first signal for transmitting a data signal representative of said first signal;

receiving means mounted in the helper locomotive tuned to receive the transmitted data signal;

second pressure sensing means connected to the brake pipe of said helper locomotive for monitoring brake pipe pressure of the helper locomotive and generating a second signal proportional to the monitored helper locomotive brake pipe pressure;

control means connected to said receiving means and responsive to said second signal for determining a difference between the monitored brake pipe pressures of the train and the helper locomotive and generating a control signal; and

pressure regulator means responsive to said control signal and connected to the brake pipe of said helper locomotive for maintaining the brake pipe pressure of the helper locomotive equal to the train brake pipe pressure.

5,383,718

BRAKE SYSTEM WITH A DEVICE FOR CONTROLLING BOTH BRAKE SLIP AND TRACTION SLIP

Jochen Burgdorf, Offenbach-Rumpenheim; Hans-Dieter Reisartz, Frankfurt am Main; Helmut Steffes, Hattersheim; Peter Volz, Darmstadt; Erhard Beck, Weilburg; Joachim Maas, Bad Vilbel; Peter Dinkel, Eppstein/Ts., and Stefan Risch, Wiesbaden, all of Germany, assignors to Alfred Teves GmbH, Germany

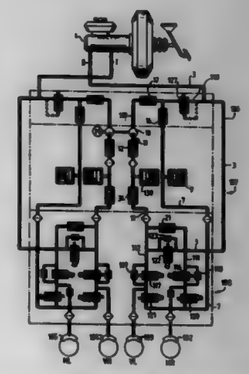
PCT No. PCT/EP91/01620, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO92/05990, PCT Pub. Date Apr. 16, 1992

PCT Filed Aug. 26, 1991, Ser. No. 853,771

Claims priority, application Germany, Oct. 5, 1990, 4031533; Mar. 18, 1991, 4108756

Int. Cl.[6] B60T *8/48, 8/42*

U.S. Cl. 303—113.2 **13 Claims**



1. A brake system for controlling fluid pressure in a wheel brake during normal braking, brake slip control and traction slip control, said brake system comprising:

a wheel brake;

a brake pedal;

a pressure fluid reservoir containing a pressure fluid;

a master brake cylinder in fluid communication with said pressure fluid reservoir and responsive to movement of said brake pedal for developing a pressure build up of pressure fluid in said master brake cylinder in response to actuation of said brake pedal;

an auxiliary source of pressure fluid containing pressure fluid having an initial pressure greater than atmospheric pressure;

a pump;

first control means extending between said master brake cylinder and said wheel brake:

(a) for controlling pressure fluid flow from and to said master brake cylinder,

(b) for permitting pressure fluid flow between said master brake cylinder and said wheel brake during normal braking as said brake pedal is actuated and without sensing a tendency of wheel lock,

(c) for regulating pressure fluid flow to said wheel brake during brake slip control as a tendency of wheel lock is sensed, and

(d) for preventing pressure fluid flow through said first control means to said master brake cylinder during traction slip control as wheel slippage is sensed;

second control means extending between said pump and said pressure fluid reservoir, and said pump and said auxiliary source of pressure fluid:

(a) for preventing pressure fluid flow between said pressure fluid reservoir and said pump during normal braking and brake slip control,

(b) for permitting pressure fluid flow between said pressure fluid reservoir and said pump during traction slip control,

(c) for causing a first valve, having a first valve opening pressure less than said initial pressure of said auxiliary source of pressure fluid and in excess of atmospheric pressure, to resist pressure fluid flow from said auxiliary source of pressure fluid to said pump:

(i) when pressure fluid flow between said master brake cylinder and said wheel brake is permitted during normal braking, and

(ii) when pressure fluid flow between said master brake cylinder and said wheel brake is regulated during brake slip control, and

(d) for causing a second valve, having a second valve opening pressure less than said first valve opening pressure, to resist pressure fluid flow from said pressure fluid reservoir to said pump in the absence of pressure fluid flow from said master brake cylinder to said first control means when said brake pedal is not actuated during traction slip control; and

third control means extending between said pump and said first control means for conducting pressure fluid flow from said pump to said first control means during brake slip control and traction slip control.

5,383,719

HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

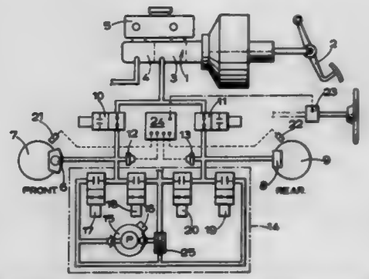
Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Public Limited Company, West Midlands, United Kingdom

Filed Apr. 9, 1993, Ser. No. 45,558

Claims priority, application United Kingdom, Apr. 14, 1992, 9208208

Int. Cl.[6] B60T *13/18, 13/68*

U.S. Cl. 303—113.2 **7 Claims**



1. An hydraulic braking system for a vehicle having brakes on wheels on front and rear axles, comprising a pedal-operated master cylinder for applying said brakes, an electrically driven

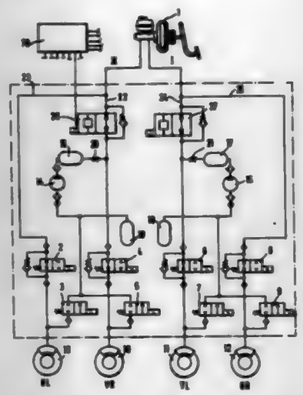
pump, speed sensors for sensing the behaviour of respective wheels, an electronic control module for emitting electric currents in response to signals from said speed sensors, and solenoid-controlled valve means for achieving brake application in a traction control mode and brake re-application in an anti-lock mode in response to energising currents from said electronic control module in turn responsive to signals from said speed sensors, wherein separate first solenoid-controlled valves are located in brake lines between said master cylinder and each of said brakes on said front and rear wheels of the vehicle, pressure sensing means are disposed in each respective said brake line and said solenoid-controlled valves are adapted to operate independently of each other to achieve independent pressure levels in the front and rear brakes by operation of said pump in response to signals supplied to said electronic control module from said pressure sensing means in each respective brake line.

5,383,720

BRAKING SYSTEM FOR MOTOR VEHICLES

Guenther Schmidt, Tamm-Hohenstange, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 24, 1993, Ser. No. 127,037
Claims priority, application Germany, Dec. 17, 1992, 4242732
Int. Cl.[6] B60T *8/28*
U.S. Cl. 303—113.5 **20 Claims**



1. A braking system for motor vehicles, having a main cylinder brake, wheel brake cylinders for at least one front wheel and at least one rear wheel, and having an anti-locking device, which has magnet valves associated with the wheel brake cylinders and a control device that monitors and controls the magnet valves, at least one pressure reducer (**26, 27**) that can be activated electromagnetically is inserted into at least one brake circuit (I, II); each pressure reducer (**26, 27**) has two active surfaces (d1, d2) of different sizes for the purpose of affecting wheel brake pressure dependent on the main cylinder brake pressure, in the sense of a reduction of pressure; that a pressure reduction of the brake cylinder pressure effected in this way occurs only at the at least one front wheel (**10, 11**); and that this pressure reduction can only be activated when the anti-locking device is able to function.

5,383,721

STAND FOR LARGE SCREEN TELEVISION SETS

Nathaniel Thomas, 10937 S. Emerald Ave., Chicago, Ill. 60628

Filed Nov. 24, 1992, Ser. No. 980,758
Int. Cl.[6] A47B *81/06*
U.S. Cl. 312—7.2 **2 Claims**

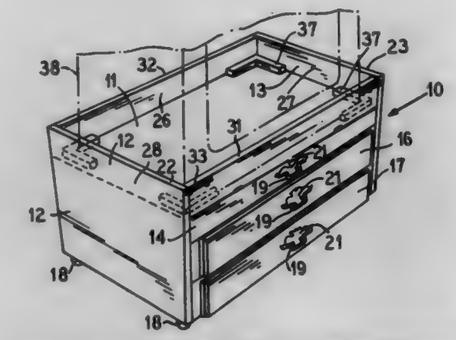
1. A stand for supporting a screen-equipped television receiver without interference of screen viewability comprising:

a) a rectangular, horizontal, generally unitary panel means having a top surface, opposed ends, opposed sides and four corners, and including panel support means mounted on caster means for supporting said panel means in spaced, translatable relationship to an underlying floor surface;

(b) a pair of upstanding opposed end walls, each one of said end walls extending adjacent to and in contacting relationship with a different respective one of said opposed ends and being fixedly associated therewith, and each one of said end walls having a pair of lateral opposite end portions;

(c) a pair of opposed side walls, each one of said side walls extending adjacent to a different respective one of said opposed sides, and each one of said side walls having a pair of lateral opposite end portions;

(d) the relationship between said pair of end wall lateral opposite end portions and said pair of side wall lateral opposite end portions being such that an individual one of said end wall lateral opposite end portions adjoins a respective different one of said side wall lateral opposite end portions over each one of said corners when each one of said side walls is in an upstanding position that is also in contacting relationship with said adjacent respective one of said opposed sides, thereby to define an adjoining pair of wall end portions at each said corner and also to define an enclosed area on said top surface;



(e) hinge means associating each one of said pair of side walls with said adjacent respective one of said opposed sides for side wall pivotable movements relative thereto so that each one of said pair of side walls is outwardly and downwardly pivotable by said hinge means between said upstanding position and a downturned position;

(f) latch means functionally associated with each one of said end portions for reversibly individually engaging together said adjoining pair of wall end portions at each said corner so that each one of said pair of side walls is retainable in its said upstanding position; and

(g) said panel means has a plurality of chock bracket means associated with said top surface with each one said plurality of chock bracket means being located adjacent to a different one of said corners for abuttingly engaging lower adjacent side portions of a screen equipped television receiver which rests upon said enclosed area, whereby said television receiver is stabilized and limited in horizontal sliding mobility; whereby

(i) when said side walls are in their downturned position said television receiver is liftable and depositable on said panel means within said enclosed area, and

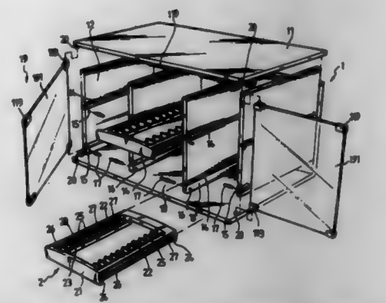
(ii) when said television receiver is deposited within said enclosed area and said opposed side walls are in said upstanding position and so engaged together with said end walls by said latch means, said television receiver is fully visible over the adjacent one of said side walls.

5,383,722

DRAWER TYPE CD-ROM STORAGE CABINET

Simon Chen, Taichung, , assignor to Shiang Fu Woodware Co., Ltd., Taichung,

Filed Dec. 29, 1993, Ser. No. 175,237
Int. Cl.[6] A47B *81/06*
U.S. Cl. 312—9.55 **4 Claims**



1. A CD-ROM storage cabinet comprising a cabinet body, which comprises a top panel, a bottom panel, two opposite side panels with plug holes on each of the two, a back panel, a double-swinging front door, at least and two vertical partition boards spaced between said side panels with through holes on each of the two, and a plurality of CD-ROM racks made to slide between said side panels and said vertical partition boards for keeping compact discs, wherein each side panel has a plurality of vertically spaced sliding grooves at an inner side for sling each CD-ROM rack and a plurality of plug pins respectively inserted in said plug holes thereof to limit the moving range of said CD-ROM racks in said cabinet body; each vertical partition board has a plurality of vertically spaced sliding grooves respectively disposed at equal elevations relative to the said sliding grooves on said side panels for sliding said CD-ROM racks, and a plurality of plug pins respectively inserted in said through holes thereof corresponding to the said plug holes on said side panels to limit the moving range of said CD-ROM racks in said cabinet body; said top and bottom panels of said cabinet body have respective bearing sockets disposed in the front to hold said double-swinging door; each CD-ROM rack comprises an open frame having two opposite side rails respectively inserted into either sliding groove on either side panel or vertical partition board of said cabinet body, parallel rods longitudinally spaced within said open frame, a plurality of equally spaced partition plates located between said side rails and said parallel rods and defining a plurality of compartments for keeping a respective CD-ROM, said compartment having a projecting strip transversely disposed between the said side rail and said parallel rod at the bottom for supporting a respective CD-ROM, each said partition plate having a top flange projecting outwardly on both sides for supporting a respective CD-ROM.

5,383,723

EARTHQUAKE RESISTANT ELECTRONIC EQUIPMENT FRAME

John A. Meyer, Fairport, N.Y., assignor to Northern Telecom Limited, Montreal, Canada

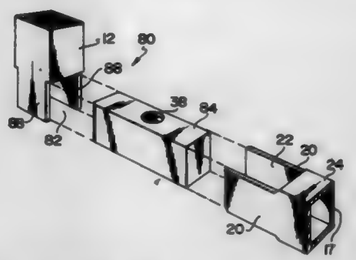
Filed Apr. 19, 1993, Ser. No. 48,672
Int. Cl.[6] A47B *47/00*; E02D *27/34*; E04H *9/02, 12/00*
U.S. Cl. 312—265.4 **6 Claims**

1. An earthquake resistant electronic equipment support frame comprising a plurality of upwardly extending frame members and frame base means extending between the upwardly extending frame members to hold the upwardly extending frame members in fixed relative positions, the frame base means having proximate regions extending directly from the upwardly extending frame members, said proximate regions being of more massive construction than parts of the frame base means which are remote from the upwardly extending frame members, the proximate regions being rigidly secured to the upwardly extending frame members and formed with apertures for receiving screw-threaded members to mount the frame upon a support;

wherein lower ends of the upwardly extending frame members are disposed at locations forming corners of a polygon and at least some of the proximate regions of the frame base means lie along sides of the polygon;

wherein the frame base means comprises a plurality of base frame members comprising elongate intermediate elements extending along sides of the polygon and having end regions, the proximate regions of the frame base means being provided at opposite end regions proximate of each of the intermediate elements, the proximate regions comprising end members of the base frame members, the end members being separated by the intermediate elements and extending along and rigidly secured to the end regions of the intermediate elements; and

wherein each intermediate element is of box cross-section and the end members are of solid block structure and are disposed within channels at the end regions of the intermediate elements.

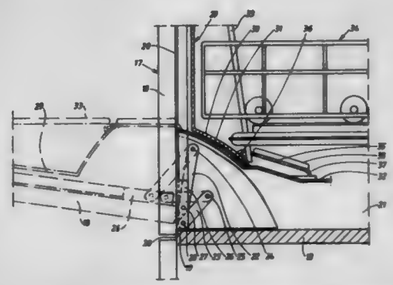


5,383,724

DEVICE FOR A DISHWASHER DOOR

Jan S. Wrangberth, Huskvarna, and Nils S. Nilsson, Ödeshög, both of Sweden, assignors to Aktiebolaget Electrolux, Sweden

Filed Jun. 4, 1993, Ser. No. 72,039
Claims priority, application Sweden, Jun. 17, 1992, 9201868
Int. Cl.[6] A47L *15/42*
U.S. Cl. 312—325 **4 Claims**



1. A device for a dishwasher, said dishwasher comprising a chassis (**21**) with a treatment chamber (**16**) for dishes, one side wall of the treatment chamber being provided with an access opening through which an interior of the treatment chamber is accessible to insert dishes therein and remove dishes therefrom, said opening normally being covered by a dishwasher door (**17**), said door being pivotally supported adjacent a lower horizontal edge such that the door can be moved between a

normally closed, generally vertical position and an open, mainly horizontal position, wherein the dishwasher is a built-in machine in which the dishwasher door (17) comprises an inner door (29) and an outer door (18, 39), said inner door having means (35) for covering a space between the inner door and a front part (31) of a bottom (32) of the treatment chamber when the dishwasher door is in the open position, said outer door having peripheral parts (19) which face the treatment chamber, said peripheral parts being adjacent a front edge (20) of a cabinet shell surrounding the chassis (21) when the dishwasher door is in the closed position, the lower edge of the outer door (18, 39) being pivotally supported at first pivot points (28, 47) whereby, when the dishwasher door is in the closed position, the first pivot points are inside the front edge (20) of the cabinet shell and, when the dishwasher door is in the open position, the first pivot points are displaced outwardly and upwardly relative to the front edge of the cabinet shell, said outer door also being supported by second pivot points (24, 41) which are spaced a distance from the first pivot points (28).

5,383,725

ASPHALT/DUST/RUBBER PROCESSING EQUIPMENT

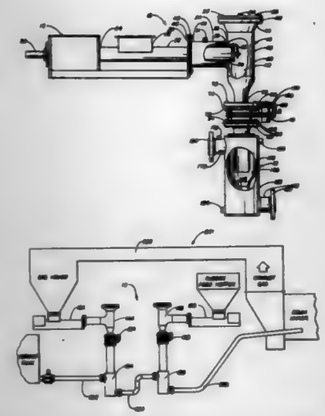
George W. Swisher, Jr., Oklahoma City, and Stuart W. Murray, Edmond, both of Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 416,374, Oct. 2, 1989, Pat. No. 5,209,563. This application Sep. 20, 1990, Ser. No. 585,834

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[6] B28C *5/46;* B01F *15/02*

U.S. Cl. 366—22 30 Claims



1. An apparatus for mixing a first and a second additive with a stream of liquid asphalt comprising:

a source of first additive;

a source of second additive;

means for mixing the first additive, the second additive and the stream of liquid asphalt;

means for dispensing the additives into the mixing means such that the additives are dispensed generally into the center of the stream of liquid asphalt; and

a pressurized environment formed by the mixing means and the dispensing means.

5,383,726

DEVICE FOR THE PREPARATION OF MIXTURES, FOR EXAMPLE THE PREPARATION OF DYE SOLUTIONS IN TEXTILE PLANTS

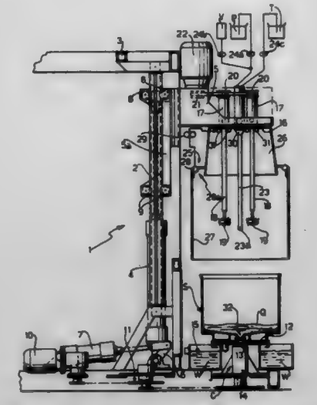
Walter Lanaro, Pouzone di Trivero, Italy, assignor to Lawer S.r.l., Lessona, Italy

Filed Nov. 17, 1993, Ser. No. 154,208

Claims priority, application Italy, Nov. 27, 1992, TO92A000960

Int. Cl.[6] B01F *5/04, 7/16*

U.S. Cl. 366—168 14 Claims



1. A device for preparing mixtures from a product disposed in a container and a quantity of solvent introduced into the container, wherein said device includes:

a movable structure capable of performing a generally lowering and rising movement with respect to said container between a raised position and a lowered position;

at least one duct carried by said movable structure for directing said quantity of solvent into said container;

agitator means carried by said movable structure whereby, when said movable structure is in a loweredj position said agitator means are immersed in said container, said agitator means being adapted to be driven so as to effect intimate mixing of said product and said solvent, said at least one duct carrying associated suction pumping means whereby, when said movable structure is in said lowered position, actuation of said suction pumping means effects evacuation of said product mixed with said solvent from said container by suction through said at least one duct, said container having a bottom wall convergent towards a sump and said at least one duct having a lower nozzle which, when said movable structure is in said lowered position, extends into said sump.

5,383,727

POUCH READILY ADAPTABLE FOR ATTACHMENT TO MOUNTING SURFACE

Guerin D. Rife, 1230 Via Salerno, Winter Park, Fla. 32789

Filed May 26, 1993, Ser. No. 67,027

Int. Cl.[6] B65D *33/14, 33/24*

U.S. Cl. 383—11 19 Claims

1. A pouch readily attachable to a mounting surface, for affording a user a readily accessible storage location for relatively small items, said pouch being comparatively flat and having front and back portions, with said front and back portions each having an upper edge, said pouch being elongate in a width sense and having a pair of side edges as well as a bottom edge, said side edges as well as said bottom edge of said pouch being closed, a top opening defined between said upper edge of said front portion and said upper edge of said back portion, an external portion of said back portion having attaching means thereon for enabling said pouch to be attached to a mounting surface, additional attaching means disposed adjacent both locations where a side edge intersects said back portions, to prevent undesired separation of said back portion



from the mounting surface, said front edge being made of elasticized material, whereby the user can readily move said front edge away from said back edge for the insertion of an item into the pouch, or to permit the retrieval of an item from the pouch.

5,383,728

SEALING SHIELD, PARTICULARLY FOR ROLLING BEARINGS

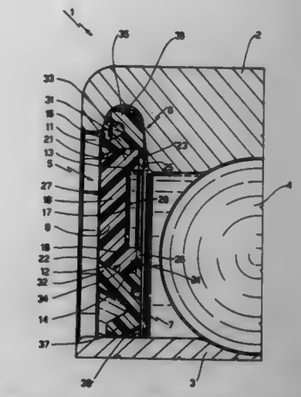
Mario Micca, Turin, and Vito C. Maselli, Modugno, both of Italy, assignors to SKF Industries S.p.A., Turin, Italy

Filed Nov. 5, 1992, Ser. No. 972,381

Claims priority, application Italy, Nov. 6, 1991, TO91U000274

Int. Cl.[6] F16C *33/76*

U.S. Cl. 384—482 9 Claims



1. A sealing shield for rolling bearings, the shield being comprised of relatively soft, elastic peripheral portions and a relatively rigid intermediate portion; and

(i) said intermediate portion comprising a single, rigid annular insert formed from a synthetic plastic polymer and delimited on the opposite sides, with respect to its own axis, by an inner edge and by an outer edge, respectively; and

(ii) said elastic peripheral portions being formed as separate parts, independent of each other, from a mixture of an elastomer and the same synthetic plastic polymer of said annular insert; a first of said peripheral portions being secured in one piece to said outer edge of the annular insert and a second of said peripheral portions being secured to said inner edge of the annular insert;

(iii) said annular insert presenting an elongated radial section with two projections at respective opposite ends of a longer side; said peripheral portions being secured to respective sides of the projections and said projections being covered by respective appendices of said peripheral portions; and

(iv) the annular insert being the sole connection between the two opposite peripheral portions.

5,383,729

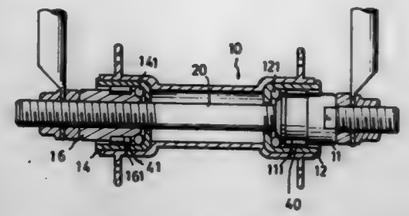
HUB ASSEMBLY FOR A BICYCLE

Kinka Hsieh, No. 125, Shih Chien St., Fengyuan City, Taiwan, Prov. of China

Filed Mar. 25, 1994, Ser. No. 217,627

Int. Cl.[6] F16C *19/49;* B60B *27/00*

U.S. Cl. 384—545 3 Claims



1. A hub assembly for a bicycle comprising:

an axle (20) having a first end and a second end, each of said first and second ends defining an outer thread formed on a peripheral portion thereof;

a hub member (10) rotatably mounted around said axle (20) and having a first end portion and a second end portion;

a first bowl member (12) and a second bowl member (14) respectively mounted in said first and second end portions of said hub member (10);

a first cone member (11) threadedly engaged on said first end of said axle (20) and having a first annular groove (111) defined on an outer peripheral surface thereof;

a first roller element (40) rotatably received in said first annular groove (111) and bearing against said first bowl member (12);

a first ball bearing (121) rotatably mounted between said first bowl member (12) and said first cone member (11);

a second cone member (16) threadedly engaged on said second end of said axle (20) and having a second annular groove (161) defined on an outer peripheral surface thereof;

a second roller element (41) rotatably received in said second annular groove (161) and bearing against said second bowl member (14); and

a second ball bearing (141) rotatably mounted between said second bowl member (14) and said second cone member (16).

5,383,730

DOCUMENT PROCESSING APPARATUS THAT MAGNIFIES ONLY BLACK PORTIONS OF CHARACTERS

Tsutomu Takahashi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 472,805, Jan. 31, 1990, abandoned. This application Sep. 17, 1992, Ser. No. 946,151

Claims priority, application Japan, Jan. 31, 1989, 1-21753

Int. Cl.[6] B41J *11/44*

U.S. Cl. 400—76 17 Claims

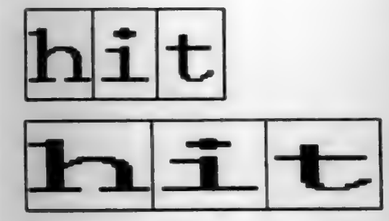
1. A document processing apparatus comprising:

storage means for storing dot patterns;

check means for checking whether a column of said dot patterns consists of all non-print dots;

magnification means for magnifying said dot patterns stored in said storage means in a lateral direction in response to a

result of checking provided by said check means, without magnifying a vertical dot string consisting entirely of blank dots in the lateral direction and with magnifying a vertical dot string including at least one black dot in the lateral direction; and



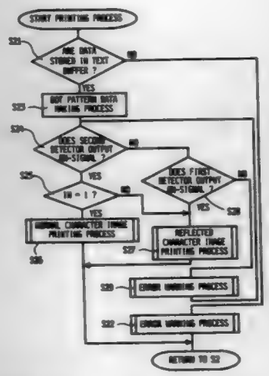
output means for outputting the dot patterns stored in said storage means or the dot patterns magnified by said magnification means.

5,383,731

PRINTING DEVICE HAVING A PRINT MEDIA DETECTOR

Shigenori Hattori, Ama; Kazuko Ishida, Konan, and Miyuki Narukawa, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 20, 1993, Ser. No. 64,716
Claims priority, application Japan, Jun. 5, 1992, 4-145725
Int. Cl.[6] B41J *7/96*
U.S. Cl. 400—76 **26 Claims**



1. A printing device for selectively printing a normal character image and a reflected character image on a tape, comprising:

a housing having a tape cassette holder for detachably holding interchangeable cassettes;

a first detector in said housing that detects assembly of a first cassette into said housing;

a second detector in said housing that detects assembly of a second cassette into said housing;

a printer in said housing printing one of a normal character print mode and a reflected character print mode;

a print mode setter coupled to said printer setting a print mode of said printer as one of a normal character print mode and a reflected character print mode; and

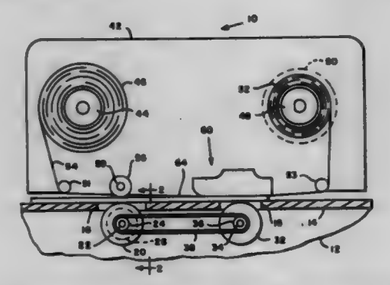
a controller coupled to said first detector, said second detector, said printer and said print mode setter, said controller including an automatic print mode determiner that sets an automatic print mode, wherein said controller controls said printer based on the print mode set by said print mode setter when a first interchangeable cassette is detected by said first detector, and overrides the print mode set by said print mode setter and controls said printer based on the automatic print mode set by said determiner when a second interchangeable cassette is detected by said second detector.

5,383,732

THERMAL PRINTING POSTAGE DISPENSING DEVICE HAVING SECURITY FEATURES AND METHOD OF USING

William Berson, Westport, and David W. Hubbard, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 20, 1993, Ser. No. 169,104
Int. Cl.[6] B41J *2/315*
U.S. Cl. 400—120.01 **12 Claims**



1. A postage dispensing device for printing postage on a flat comprising:

a supply of thermal ribbon having a first portion with preformed images and a second portion defining a longitudinal ink coating strip thereon,

a longitudinally extending deck,

a pair of first laterally extending, rotatable impression rollers in engagement with one another said impression rollers being a means to transfer said pre-formed image to a flat,

a motor connected with one of said pair of first laterally extending impression rollers for rotatably driving said one of said laterally extending rollers at a first speed,

a second laterally extending roller located on said deck longitudinally spaced from said one of said pair of first lateral extending impression rollers,

a thermal printer located adjacent said deck and spaced relative to said second roller said thermal printer being a means to transfer part of said ink coating to form indicia on a flat, and

means for conveying a thermal ribbon at a first speed between said pair of laterally extending impression rollers and between said printhead and said second laterally extending roller and means for conveying a flat between said thermal ribbon and of said rollers and between said thermal ribbon and said second roller speed at a second speed.

5,383,733

RIBBON CASSETTE FOR A PRINTER

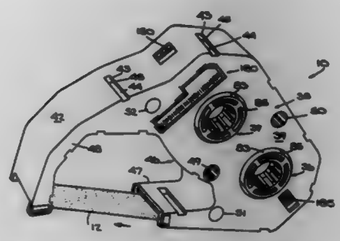
Charles D. Zinsmeyer; James A. Parnell; Dan R. Poole, all of Austin, Tex., and Carl D. Massey, Nashville, Tenn., assignors to Summagraphics Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 920,116, Jul. 24, 1992, Pat. No. 5,267,802. This application Mar. 19, 1993, Ser. No. 33,876
Int. Cl.[6] B41J *35/28*
U.S. Cl. 400—208 **26 Claims**

1. A ribbon cassette comprising:

a housing having opposed first and second major sides parallel to each other, a peripheral edge, and an outlet for a ribbon and an inlet for the ribbon;

there being first and second spaced holes in said first major side for receiving respective pins projecting from a mounting structure for mounting said cassette to the mounting structure with said first major side facing the



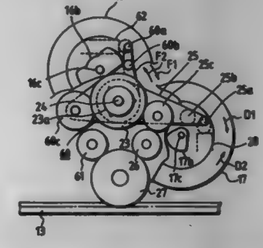
mounting structure, and third and fourth spaced holes in said second major side for receiving respective pins projecting from a mounting structure for mounting said cassette to that mounting structure with said second major side facing that mounting structure.

5,383,734

IMAGE RECORDING APPARATUS HAVING A RIBBON DRIVE SLIP CLUTCH

Yoshio Uchikata, and Toshiyuki Ohnishi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 104,593, Aug. 10, 1993, abandoned, which is a continuation of Ser. No. 13,546, Feb. 4, 1993, abandoned, which is a continuation of Ser. No. 507,111, Apr. 10, 1990, abandoned. This application Feb. 28, 1994, Ser. No. 203,614
Claims priority, application Japan, Apr. 10, 1989, 1-090076; Apr. 10, 1989, 1-090077; May 31, 1989, 1-136165
Int. Cl.[6] B41J *3/36*
U.S. Cl. 400—227.2 **11 Claims**



1. An image recording apparatus for recording an image on a recording medium by using ink contained in an ink member, said apparatus comprising:

a recording head acting on the ink member to record the image on the recording medium;

a drive source;

a mounting section for mounting a plurality of ink members;

discriminating means for discriminating whether ink of an ink member mounted on said mounting section is of mono color or plural colors;

first driving force transmitting means for transmitting a driving force from said drive source through a load absorbing mechanism to the mounted ink member to convey the mounted ink member;

second driving force transmitting means for transmitting the driving force from said drive source by bypassing the load absorbing mechanism to the mounted ink member to convey the mounted ink member;

shift means for shifting said recording head between a recording position where said recording head records and a retracted position retracted from the recording position; and

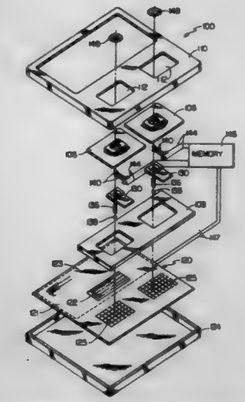
selection means for selecting said first driving force transmitting means to convey the mounted ink member when said recording head is at the recording position to record and selecting said second driving force transmitting means to convey the mounted ink member when said recording head is at the retracted position and said discriminating means discriminates that the ink of the mounted ink member is of plural colors and the color of ink with which recording is to be effected is to be changed.

5,383,735

MINIATURE KEYBOARD WITH SLIDING KEYS

Gregory W. Smiley, Etna, N.Y., assignor to Smith Corona Corporation, Cortland, N.Y.

Division of Ser. No. 95,470, Jul. 23, 1993. This application Jul. 21, 1994, Ser. No. 278,195
Int. Cl.[6] B41J *5/00, 5/06*
U.S. Cl. 400—479 **8 Claims**



1. An electronic device for storing characters in memory comprising a liquid crystal display touch panel having a plurality of contacts thereon being associated with characters to be displayed and stored, at least two keybutton each movable in at least a horizontal and vertical direction in relation to said contacts on said liquid crystal display touch panel and switch means operable to cause the character associated with the position of each of the keybuttons on the liquid crystal display touch panel to be stored in memory.

5,383,736

WRITING INSTRUMENT WITH PLURAL FEEDS

Pavel D. Okulov, 198 Profsoumnoya St. #118-1, Moscow, U.S.S.R.

Filed Sep. 10, 1992, Ser. No. 942,968
Claims priority, application U.S.S.R., Sep. 11, 1991, 5002934
Int. Cl.[6] B43K *7/00, 7/10, 27/12*
U.S. Cl. 401—45 **1 Claim**

1. A writing instrument comprising:

a body having a reception port in the form of a concave surface, an outlet port, and at least one connecting passageway extending therebetween along a central axis;

an application element in the form of a solid revolving ball captured within said outlet port;

a feeding element defining a convex surface received in contacting relation with the concave surface of said reception port, said body being movable both angularly with respect to said axis and rotationally in relation to said feeding element along an interface defined at the contact

between said concave and convex surfaces, said feeding element having a plurality of channels leading to said interface and adapted to be filled with distinct mixing components, said mixing components comprising inks of differing colors, wherein movement of said body in relation to said feeding element will result in alignment of at least one passageway with at least one of said channels,



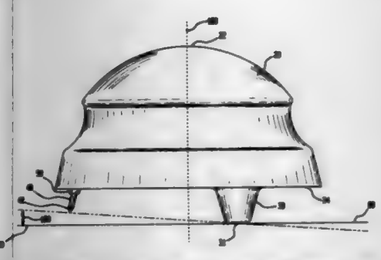
thereby allowing selected ratios of said mixing components to be admitted to said passageway for ultimate application by said application element, and

a displaceable gate disposed between said feeding element and said reception port and having at least one opening for varying amounts of said components from each channel being supplied to said at least one passageway.

5,383,737
HAND WRITING DEVICE

Kenard E. Urion, Woodbury, N.J., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Filed Apr. 16, 1993, Ser. No. 48,778
Int. Cl.[6] B43K *23/00, 29/00*
U.S. Cl. 401—48 5 Claims



1. A hand writing device for assisting the young, old, and disabled to impart indicia onto a medium, said device having a longitudinal axis and comprising:

an ergonomically designed and anthropomorphically shaped body having a top adapted to accommodate the palm of the hand, a planar bottom, and a reservoir containing a supply of writing fluid;

a stylus having a tip depositing said writing fluid on the medium;

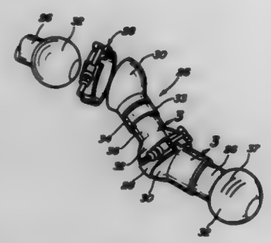
a glide system positioned on said bottom of said body and providing low-friction movement of said device over the medium, said glide system having a pair of legs spaced opposite each other adjacent the periphery of said body and equidistant from said longitudinal axis of said device, said legs and said stylus forming a planar, three-point contact with the medium and said legs being longer in length than said stylus to permit pivoting said device between a first position engaging said stylus with the medium and a second position disengaging said stylus from the medium; and

a head coextensively connected to and extending outwardly from one end of said body and holding said stylus; whereby writing motion is transferred between the hand and said stylus without reliance on finger control.

5,383,738
BALL JOINTED LINKS

Alfred F. Herbermann, Ann Arbor, Mich., assignor to Syron Engineering & Manufacturing Corp., Saline, Mich.

Continuation of Ser. No. 840,420, Feb. 24, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 177,091
Int. Cl.[6] F16C *11/06*
U.S. Cl. 403—56 20 Claims



1. A link element comprising:

a body extending along an axis between two ends, an aperture extending through said body between said ends, one of said ends being configured as a generally spherical male ball, said male ball having an irregular outer surface, the other of said ends being configured as a female socket, said female socket having an inner peripheral surface spaced approximately the same distance from said axis as an outer peripheral surface of said male ball;

said male ball being formed of a harder material than said female socket;

said male ball having a wall thickness between said outer peripheral surface and said aperture which is greater than the wall thickness of said female socket between said inner peripheral surface and an outer peripheral surface of said female socket; and

a central cylindrical extension connecting said male ball and said female socket, and a portion of said cylindrical extension adjacent said female socket having a smaller wall thickness than said male ball, said smaller wall thickness of said cylindrical extension extending from said female socket and towards said male ball, such that said male ball has a greater wall thickness than said cylindrical extension or said female socket.

5,383,739
VARIABLE ANGLE POST FOR COUPLING FENCE SEGMENTS

Vernon Haglund, 2029 N. Ocean Blvd., Fort Lauderdale, Fla. 33305

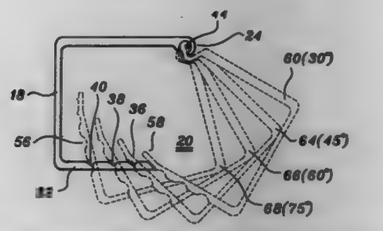
Filed Jun. 15, 1993, Ser. No. 76,872
Int. Cl.[6] E04H *17/00*
U.S. Cl. 403—107 1 Claim

1. A coupling system for joining articulated fence segments at a desired relative angle, the system comprising:

(a) a stationary part comprising, in transverse horizontal cross-section (i) a first planar surface having, at a first edge thereof, curved surface rotational engaging means, (ii) a second planar surface integrally depending from a second and opposite edge of said first surface and normal thereto, and (iii) a third planar surface integrally depending from an edge of said second surface not dependent from said first surface, said third surface normal to said second surface and parallel to said first surface, said third surface further having a free edge opposite to its edge of dependency with said second surface, in which the distance of said free edge relative to said second edge is defined by the

selected breakage of scoring notches, co-linear with said edges of said surfaces, within said third surface; and

(b) a rotating part comprising, in transverse horizontal cross-section (i) a first planar surface having, at a first edge thereof, a solid semi-circular solid surface complemental in geometry to said curved surface engaging means of said stationary part, (ii) a second planar surface integrally depending from a second and opposite edge of said first surface and normal thereto, and (iii) a third planar surface integrally depending from an edge of said second surface not depending from said first surface, said third surface normal to said second surface and parallel to said first



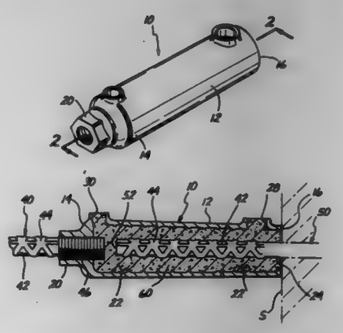
surface, said third surface further having a free edge portion thereof opposite to its edge of dependency with said second surface, having, on an exposed side thereof, a plurality of recesses each having a geometry complemental to said free edge of said third surface of said stationary part resulting from said selected breakage of said scoring notches of said third surface of said stationary part,

whereby coupling of a selected one of said recesses with said resulting free edge of said third surface of said stationary part will produce a fixed coupling between said parts at a desired angle between said first surfaces of both of said parts.

5,383,740
COMBINATION MECHANICAL/GROUT SLEEVE COUPLING FOR CONCRETE REINFORCEMENT BARS

Harry B. Lancelot, III, Hurst, Tex., assignor to Richmond Screw Anchor Company, Fort Worth, Tex.

Filed Aug. 2, 1993, Ser. No. 100,977
Int. Cl.[6] B25G *3/34;* F16B *11/00*
U.S. Cl. 403—267 9 Claims



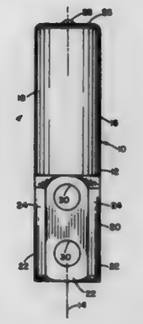
1. A coupler for reinforcement bars comprising:

a sleeve of tapering cross section between a wide end and an open narrow end, ridge means in said sleeve spaced between said ends, a threaded bore of constant diameter axially aligned in said wide end, a first grout port in said sleeve proximal to said threaded bore and a second grout port in said sleeve proximal to said narrow end.

5,383,741
END WELDED STUD AND SUPPORTS FOR WIREWAY HANGERS

Jack E. Vance, Suffolk, Va.; Gerald J. Luce, deceased, late of Glen Mills, Pa. by Cheryl L. Luce, Gerald J. Luce II, Deborah L. Bizaro, Cynthia A. Luce, executors; Robert L. Adair, Jr., Hagerstown, Md., and Clark B. Champney, Elyria, Ohio, assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va. and TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 363,673, Jun. 9, 1989, abandoned. This application Aug. 20, 1993, Ser. No. 109,634
Int. Cl.[6] F16L *3/00;* F16B *11/00*
U.S. Cl. 403—383 57 Claims



1. A stud for use in stud welding comprising:

an elongated bar, having a central axis and an outer surface,

said outer surface of said bar having a first portion being a substantially cylindrical surface and a second portion of said outer surface spaced from said first portion having at least one planar surface extending parallel to said central axis,

said stud having a base formed at the end of said cylindrical surface,

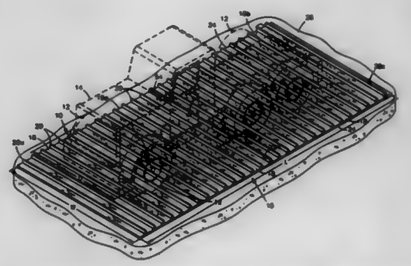
said base having a welding flux thereon, and

said planar surface having a plurality of bores perpendicular to said central axis.

5,383,742
DIRT AND ROCK REMOVAL APPARATUS FOR VEHICLE TIRES

Jimmie D. Grace, 2022 Calle De Los Alamos, San Clemente, Calif. 92672

Filed May 11, 1993, Ser. No. 59,360
Int. Cl.[6] E01C *5/16*
U.S. Cl. 404—15 2 Claims



2. An apparatus for removing dirt and rocks from the tires of trucks and other vehicles, said apparatus comprising:

a. a number of elongate, rigid metal ribs;

b. a rigid metal plate which comprises first and second longitudinal plate sections and including means for detachably

attaching the first and second sections of plates together; and

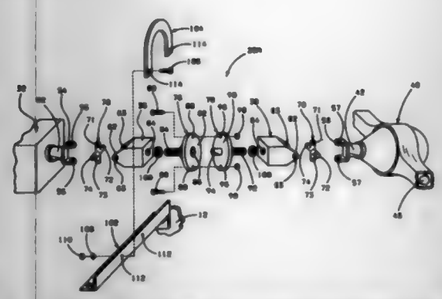
c. means for attaching said ribs to an upper surface of said plate in a mutually parallel orientation transversely across said plate and in a longitudinally spaced-apart manner, the longitudinal spacing between the ribs, taken in conjunction with the height of the ribs relative to said surface, preventing the peripheral surface of a tire rolling over the apparatus in a longitudinal direction from contacting said mounting surface, the ribs being mounted to the first and second plate sections so that two ribs are in abutment when the first and second plates are abutted to form a continuous plate, the means for detachably attaching the first and second plate sections together including a plurality of pins extending through said two abutting ribs.

5,383,743

VEHICLE HAVING A DRIVE TRAIN WITH TWO SHOCK-ABSORBING COUPLINGS

George W. Swisher, Jr., 1500 Dorchester Dr., Oklahoma City, Okla. 73120

Filed Sep. 7, 1993, Ser. No. 118,062
Int. Cl.[6] E01C *23/12*
U.S. Cl. 404—90 3 Claims



3. A vehicle for traveling over a surface and pulverizing an upper layer of the surface, the vehicle comprising:

a wheeled frame;

a cutter drum rotatably mounted to said frame;

drive means, mounted to said frame, for propelling the vehicle over the surface and for driving rotation of said cutter drum to pulverize an upper layer of the surface; and

a drive train operatively connecting said drive means with said cutter drum, said drive train including:

a pair of shock-absorbing couplings;

shearable means for producing a break in said drive train between said shock-absorbing couplings in response to a predetermined amount of shear force applied to said drive train; and

an elastomeric bushing positioned between said shearable means and one of said shock-absorbing couplings.

5,383,744

SUBIRRIGATION SYSTEM AND METHOD

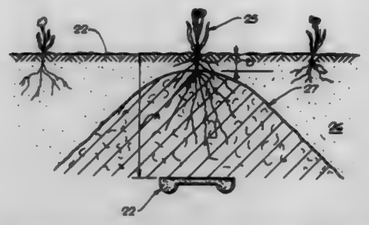
Robert V. Hendershot, 3450 Hidden Hills Dr., Santa Rosa, Calif. 95404

Filed Aug. 30, 1993, Ser. No. 113,990
Int. Cl.[6] E02B *13/00*
U.S. Cl. 405—36 6 Claims

1. A passive, underground irrigation system for supplying life sustaining moisture to acreage grown crops and plant life, particularly in semi-arid and marginally productive acreage generally requiring surface irrigation to sustain plant growth, comprising:

a plurality of unitary, annular, water retaining water reservoirs having non-degradable, water impervious, concave-convex walls definitive of annular concave water retention chambers fully open over one side thereof; said reservoirs being formed by dissecting discarded vehicle tire carcasses along planes normal to the central rotational axis of each thereof to produce two like reservoirs from each carcass having water retention chambers of maximum open side area and chamber capacity for a given tire size;

said reservoirs being buried underground in peripheral adjacency with said chambers thereof filled with soil and arranged in at least one generally horizontal layer spaced substantially below a planting surface and expected root zone of said plant life with the open sides of said chambers facing said root zone;



each soil filled chamber passively operating to capture and retain water that gravitates downwardly from said planting surface past said root zone and is thereby unavailable to sustain plant life;

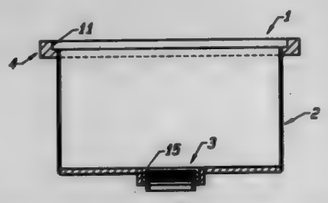
said reservoirs being buried at a depth such that water trapped therein forms a water table located at a distance below said root zone selected so that, once said root zone is substantially water depleted, moisture will migrate upwardly from said reservoirs to said root zone but not to said planting surface, thereby preventing surface evaporation loss of moisture.

5,383,745

HAZARDOUS MATERIALS CATCH BASIN

John A. Shannon, Fremont, Calif., assignor to John P. Deming, San Jose, Calif.

Filed Dec. 8, 1992, Ser. No. 986,804
Int. Cl.[6] E03F *1/00*
U.S. Cl. 405—52 8 Claims



1. A catch basin for insertion in a pre-existing storm drain for collecting hazardous materials in said storm drain, said storm drain having a shoulder for supporting a pre-existing storm drain cover member, comprising:

a rigid liquid impermeable container having a drain hole and an L-shaped annular flange which extends radially outwardly from the top of said container, said L-shaped annular flange having a vertically extending member, a lower horizontal surface which extends outwardly beneath said vertically extending member for mating with the shoulder of the pre-existing storm drain in place of the pre-existing storm drain cover member and an upper horizontal surface which extends inwardly from said vertically extending member for supporting a catch basin cover member;

said catch basin cover member having a lower surface and a diameter suitable for mating with said upper horizontal surface of said L-shaped annular flange and a thickness such that, when in place, said catch basin cover member is flush with the top of said L-shaped annular flange, said catch basin cover member having a plurality of through-holes; and

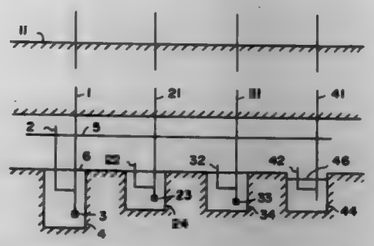
means for plugging the drain hole in the container.

5,383,746

PROCESS AND DEVICE PROVIDING TIGHTENED OPERATIONAL SAFETY FOR UNDERGROUND LIQUEFIED GAS STORAGE

Jean-Marie Dufourneaud, 31, rue du Cottage, 92410 Ville d'Avray, France

PCT No. PCT/FR91/00860, § 371 Date Jul. 15, 1992, § 102(e) Date Jul. 15, 1992, PCT Pub. No. WO92/08662, PCT Pub. Date May 29, 1992
PCT Filed Nov. 4, 1991, Ser. No. 910,119
Claims priority, application France, Nov. 15, 1990, 90 14208
Int. Cl.[6] B65G *5/00*
U.S. Cl. 405—53 17 Claims



1. A method of sealing an underground liquified gas storage area having at least one gallery with liquified and vaporized gas sections subject to a flowing in of ground seepage water towards the storage area caused by the interstitial pressure of the ground seepage water being higher than the stored liquified gas vapor pressure in the storage area comprising:

providing at least one water sump in the storage area, below the gallery;

providing a connection tube from the at least one water sump to the surface;

providing a vent tube from the vaporized gas section to the surface through the connection tube; and

providing means housed within the storage area for sealing the connection and vent tubes with water from the at least one water sump to prevent flow from the storage area to the surface.

7. An arrangement for safely extracting from and sealing an underground gas storage area having at least one gallery with liquified and vaporized gas sections subject to a flowing in of ground seepage water toward the storage area caused by the interstitial pressure of the ground seepage water being higher than the stored liquified gas vapor pressure in the storage area comprising:

at least one water sump provided in the storage area, below the gallery;

a connection tube extending from the at least one water sump to the surface;

a vent tube extending from the vaporized gas section, through the liquified gas section, and opening into said connection tube within the at least one water sump;

an extraction tube extending from the at least one water sump to the surface;

a lateral tube extending from the liquid gas section and opening into said extraction tube within the at least one water sump; and

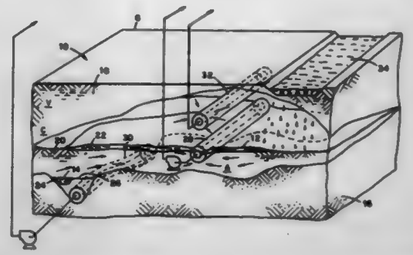
means for sealing said connection, vent, extraction and lateral tubes with water from the at least one water sump to prevent flow through said tubes to the surface, said sealing means including first and second valve means, associated with said connection and extraction tubes respectively, housed within the at least one water sump.

5,383,747

SYSTEM FOR TREATING A SUBTERRANEAN FORMATION HAVING AN AQUIFER CONTAMINATED WITH ORGANICS

Rudolph R. Millan, Berkeley, Calif., assignor to International Technology Corporation, Torrance, Calif.

Filed Aug. 23, 1993, Ser. No. 110,442
Int. Cl.[6] B09B *3/00*
U.S. Cl. 405—128 10 Claims



1. A method for treating a subterranean formation including an aquifer having a water table with an upper surface spaced below the ground surface and light non-aqueous phase liquid ("LNAPL") contaminants adjacent the upper surface of the water table, said method comprising the steps of:

providing a liquid removal well within the formation adjacent the upper surface of the water table;

removing at least a portion of the LNAPLs from the formation through the liquid removal well adjacent an extraction location within the formation which is adjacent the upper surface of the water table;

providing a vacuum well at a location within the formation which is above the upper surface of the water table and adjacent to but spaced apart and separate from the removal well; and

applying a vacuum to the formation through the vacuum well to cause a lift force to be exerted on the upper surface of the water table to maintain a desired level of the water table in relation to the extraction location for removal by the liquid removal well.

5,383,748

OFFSHORE STRUCTURE AND INSTALLATION METHOD

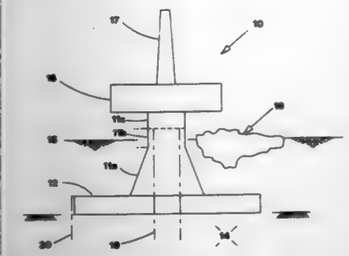
John W. Waddell, Orpington, England, assignor to Kvaerner Earl and Wright (a division of Kvaerner H&G Offshore Ltd.), United Kingdom

Continuation of Ser. No. 901,144, Jun. 19, 1992, abandoned.
This application Aug. 20, 1993, Ser. No. 109,464
Claims priority, application United Kingdom, Jun. 19, 1991, 9113194
Int. Cl.[6] E02B *17/02*
U.S. Cl. 405—217 4 Claims

1. A method for installing a structure that stands offshore, the structure including a shield portion comprising a flat base having a first plan area, and a hollow leg having a second plan area smaller than said first plan area upstanding from a center of the base, the leg having a lower frustro conical part tapering upwardly from the base to an upper cylindrical part, in which the base rests on a seabed and is designed to resist lateral environmental loads primarily by friction forces generated by the weight of the shield bearing directly on the seabed, and in which said friction forces are supplemented by peripheral members on the base of the shield portion which project downwardly into the seabed to provide additional resistance to

lateral environmental loads; and a separate support portion which comprises a group of free standing deck payload support piles to support vertical loads imposed by a deck payload, in which the group of piles is wholly surrounded by the shield portion, the method including the steps of:

moving the shield portion of the structure to its intended location;



setting the structure on the seabed;

driving the deck payload support piles individually and independently into the seabed;

driving the peripheral members downwardly into the seabed; and

installing a permanent deck on top of the group of piles.

5,383,749

METHODS OF REINFORCING UTILITY POLE STRUCTURES HAVING THEIR LOWER ENDS EMBEDDED IN THE GROUND, AND REINFORCEMENT CAGE STRUCTURE USEFUL FOR PRACTICING THE METHOD

Robert A. Reisdorff, 622 E. Hillcrest, and Douglas L. Kotil, 104 S. St., both of Seward, Nebr. 68434

Continuation-in-part of Ser. No. 3,622, Jan. 13, 1993, abandoned. This application Aug. 10, 1993, Ser. No. 104,676

Int. Cl.[6] E02D *37/00, 5/64*

U.S. Cl. 405—232 32 Claims



1. A method of reinforcing wooden utility and like poles, having lower ends embedded sufficiently deeply in the ground to normally support them in fixed position when first installed, with elongate reinforcement cages having portions with grippers at their lower ends which are swingably secured to the cage portions, for movement from a first position in which said grippers form rigid extensions of said cage portions and can be driven into the earth with said cage portions to a position alongside said pole in which said grippers are beneath weak portions of said pole adjacent groundline, to a second position in which said grippers are swung to substantially grip said pole between them, comprising:

(a) forcing said cage portions down along said pole with said grippers disposed in said first position; and

(b) lifting said cage portions and causing the pressure of the earth to swing said grippers to second position, and then securing said cage portions to said pole above ground to form a unitary cage structure embracing said pole.

5,383,750

EXCHANGEABLE MILLING CUTTING INSERTS

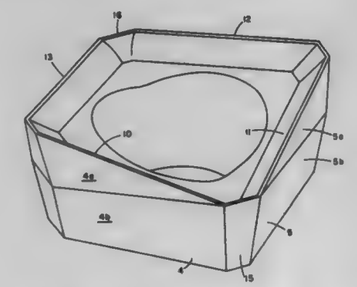
Amir Satran, Kfar Havradim, and Carol Smilovici, Acre, both of Israel, assignors to Iscar Ltd., Migdal Tefen, Israel

Filed May 21, 1993, Ser. No. 65,826

Claims priority, application Israel, May 25, 1992, 101985

Int. Cl.[6] B23L *5/20, 5/10*

U.S. Cl. 407—113 6 Claims



1. A milling cutter insert of substantially prismatic rhomboidal shape comprising upper, base and side surfaces with the intersection of each side surface and the upper surface constituting a cutting edge;

said upper surface being constituted by a central planar portion, parallel to said base surface, and rake surfaces respectively associated with said cutting edges, said rake surfaces sloping towards said central planar portion with which they merge;

a first pair of adjacent cutting edges meeting at a first common insert corner, a second pair of adjacent cutting edges meeting at a second common insert corner diagonally located with respect to said first insert corner, and the constituent cutting edges of each pair and their associated rake surfaces sloping towards the base surface and their common corner; and

said first pair of cutting edges and their associated side and rake surfaces constituting a mirror image of said second pair of cutting edges and their associated side and rake surfaces.

5,383,751

MANUALLY POSITIONED COMPUTER CONTROLLED DRILLING MACHINE

Michael J. Wheetley, Bedford, and James W. Shelby, Duncanville, both of Tex., assignors to Vought Aircraft Company, Dallas, Tex.

Filed Aug. 5, 1993, Ser. No. 102,283

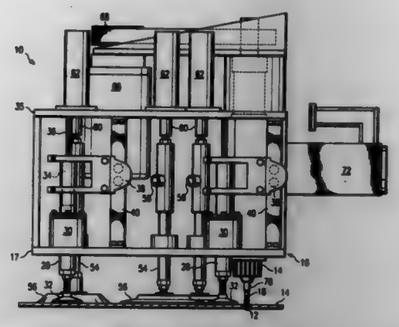
Int. Cl.[6] B23B *35/00, 45/14*

U.S. Cl. 408—1 R 12 Claims

10. A method of positioning a drilling platform on a workpiece to drill a hole with a drill bit, comprising the steps of:

positioning the drill bit at the point on the workpiece to be drilled and positioning the drill bit normal to the workpiece, the drill bit being mounted in a base having a plurality of extendable support legs biased to extend outwardly from the base and supporting the base on the workpiece, the biasing force being sufficiently low to permit the operator to counteract the biasing force to position the drill bit;

locking the extendable support legs in the position for drilling;



extending a selectively actuatable adhesion support into contact with the workpiece and actuating the adhesion support to adhere to the workpiece; and

pulling the adhesion support away from the workpiece to cause the base to press the locked support legs against the workpiece and provide a stable drilling platform for the drill bit.

5,383,752

APPARATUS FOR MAKING DENTAL REPLACEMENTS

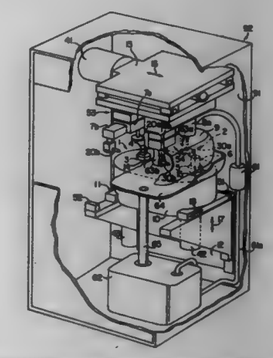
Volker M. Rheinberger, Vaduz, Switzerland; Gary Unterbrink, Feldkirch, Australia; Cosmas Malin, Mauren, and Harry L. Sawatzki, Schaan, both of Switzerland, assignors to Liconic AG, Mauren, Liechtenstein

Filed Nov. 16, 1992, Ser. No. 977,035

Claims priority, application Switzerland, Nov. 17, 1991, 3-357/91

Int. Cl.[6] B23C *3/00;* A61C *5/10*

U.S. Cl. 409—105 22 Claims



1. Apparatus for making dental replacements such as inlays, onlays and crowns and the like by scanning a template comprising:

a template holder rotatable about a first axis of rotation for rotating and holding a template resembling a dental replacement;

a movable blank holder rotatable about a second axis of rotation in spaced relationship from the first axis of rotation for rotating and holding a blank to be processed into a dental replacement;

a sensor mounted to detect the contours of a template on the template holder and producing an output signal in response to the contours;

a processing tool mounted a fixed distance from the sensor to make contact with and process a blank on the blank holder;

a synchronized rotary drive means for rotating the template holder and a template thereon relative to the sensor and simultaneously rotating the blank-holder and a blank thereon by the same amount relative to the processing tool, the synchronized rotary drive means having:

two upper and two lower sections of rotating shaft, each upper section of rotating shaft being rigidly connected to an upper disk, and each lower section of rotating shaft being likewise rigidly connected to a lower disk;

intermediate disks between the upper and lower disks;

the upper, lower, and intermediate disks being concentric relative to their respective sections of rotating shaft;

the upper disks being connected to the intermediate disks by first bolts and the intermediate disks being in turn attached by second bolts to the lower disks;

the first and second bolts being eccentric in relation to the sections of rotating shaft, and the center of each first bolt on an upper disk and the center of each second bolt on a lower disk being disposed 90° from one another about their respective sections of rotating shaft; and

two synchronizer rods the one synchronizer rod forming mobile joints with the first bolts by means of first bearing elements, and the other synchronizer rod likewise forming mobile joints with the second bolts by means of second bearing elements; and

a processing means connected with the sensor and the processing tool for moving the sensor and tool relative to the template and the blank respectively by controlled amounts in response to the output signal of the sensor.

5,383,753

RIVET FASTENER

Erich Palm, Heerbrugg, Switzerland, assignor to SFS Stadler Holding AG, Heerbrugg, Switzerland

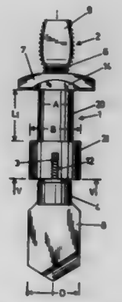
PCT No. PCT/EP92/01069, § 371 Date Mar. 8, 1993, § 102(e) Date Mar. 8, 1993, PCT Pub. No. WO92/22751, PCT Pub. Date Dec. 23, 1992

PCT Filed May 15, 1992, Ser. No. 971,975

Claims priority, application Germany, Jun. 17, 1991, 4119934

Int. Cl.[6] F16B *13/04, 13/06*

U.S. Cl. 411—29 12 Claims



1. Rivet fastener comprising a rivet housing and a rivet shaft including a bolt-shaped shank insertable into said housing and a head formed on said shank and being of a greater diameter than said shank, a drilling component arranged on said head, said housing including a stop flange, said rivet housing (1), as viewed in the direction of an axis thereof, being formed of two

sections (20, 21) of different outer dimensions, one section (21) with a greater outer dimension being provided on an end region situated opposite said stop flange (7) of said rivet housing (1) and said one section (21) with a greater outer dimension being correspondingly configured to form at least roughly a borehole diameter (D) of said drilling component (8) associated with said head (4) of the rivet shaft (2), wherein the two sections (20, 21) of the rivet housing (1) are configured as components prepared separately from each other.

5,383,754

IMAGE FORMING APPARATUS HAVING AN IMAGE ORIENTATION IDENTIFYING DEVICE AND A BINDING DEVICE

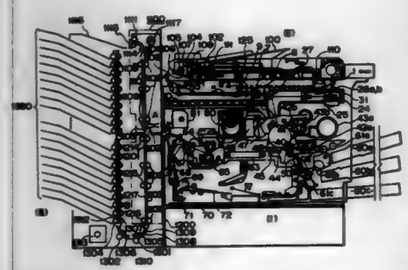
Hiroyasu Sumida, Ichikawa; Akihisa Itabashi, Tokyo; Hiroshi Fukano, Matsudo; Hiroyasu Shijo, Kawasaki; Hiroshi Takashima, Yono; Takeshi Ogiwara, Ohmiya, and Fumio Kishi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 22,332

Claims priority, application Japan, Feb. 27, 1992, 4-041611; Feb. 28, 1992, 4-043120; Feb. 28, 1992, 4-043160

Int. Cl.[6] B42C *13/00*

U.S. Cl. 412—11 **18 Claims**



1. A binding device identifying a binding position for binding sheets carrying images thereon, and performing a binding operation at the identified binding position, comprising:

detecting means for detecting the greatest blank portion of a page area of image data; and

binding position identifying means for identifying the binding position on the sheets in response to output data of said detecting means.

5,383,755

APPARATUS IN A BOOK BINDING MACHINE FOR PRODUCING NOITCHES IN THE BACK OF A BOOK BLOCK

Fredy Hüssig, Mürstetten, and Marcel Stolz, Felben, both of Switzerland, assignors to Grapha-Holding AG

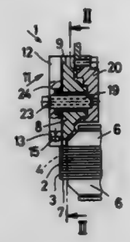
Filed Jun. 17, 1993, Ser. No. 78,410

Claims priority, application Switzerland, Jun. 19, 1992, 01954/92

Int. Cl.[6] B42C *5/04*

U.S. Cl. 412—16 **10 Claims**

1. An apparatus in a bookbinding machine for producing in a back of a book block notches which extend essentially transversely of the back of the book block, the apparatus comprising means for mounting the book block such that a portion of the book block projects from the means, a notch cutting tool mounted as to be moveable along a travel path for cutting notches in the projecting portion of the book block, a rotatably mounted abutment having a cylindrical support surface for laterally supporting the projecting portion against a cutting force exerted by the notch cutting tool, a guide means mounted rearwardly offset from the cylindrical support surface of the abutment, the guide means defining a groove surrounding the travel path of the notch cutting tool, wherein the cylindrical



support surface of the abutment is located opposite the groove of the guide means.

5,383,756

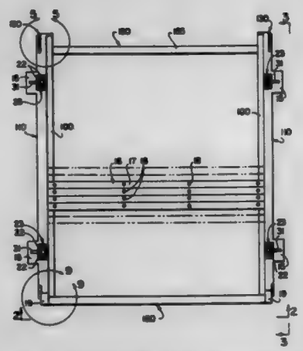
CASSETTE FOR BINDING STRIPS

John E. Coleman, Reno; Barney A. Tipps, Sparks, both of Nev., and Peter Hotowski, Deep River, Conn., assignors to Velo-Bind, Inc., Northbrook, Ill.

Continuation of Ser. No. 975,460, Nov. 12, 1992, abandoned. This application Feb. 15, 1994, Ser. No. 197,003

Int. Cl.[6] B42B *9/00*

U.S. Cl. 412—38 **6 Claims**



1. A cassette for bookbinding strips, said cassette comprising parallel first and second side rails each formed with an inward facing channel shaped to receive an end of each of a plurality of thin, narrow strips,

each said side rail having integral, longitudinally spaced apart first and second stacking struts, each said first and second stacking strut extending substantially vertically upward from its respective side rail, said first stacking strut having first stacking means on its distal end thereof, said second stacking strut having second stacking means on its distal end thereof, and

each said side rail having an integral third and fourth stacking strut, each said third and fourth stacking strut extending substantially vertically downward from said its respective rail and being vertically aligned with said first and second stacking struts, respectively, said third stacking strut having on its distal end thereof third stacking means complementary to said first stacking means, said fourth stacking strut having on its distal end thereof fourth stacking means complementary to said second stacking means, and

first and second spacer bars extending horizontally between said first and second side rails, detachably attached adjacent opposing ends of said first and second side rails approximately level with said first and second side rails,

whereby a plurality of bookbinding strips may be packaged side by side transverse to said side rails with opposed ends of said strips received in opposed channels, and

whereby one cassette may be stacked upon an identical, underlying cassette by placing said third and fourth stacking struts of said cassette with corresponding said third and fourth stacking means upon said first and second stacking struts of said underlying cassette having corresponding said first and second stacking means,

said first and second side rails, and said first and second spacer bars each is initially discrete, said cassette having a substantially open and unobstructed top and a substantially open and unobstructed bottom.

5,383,757

MULTI-DECK PARKING STRUCTURE

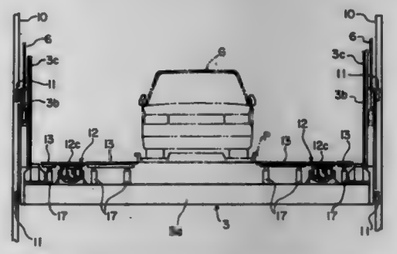
Shigekazu Takaoka, and Kazushi Tsujimoto, both of Komaki, Japan, assignors to Daifuku Co., Ltd., Osaka, Japan

Filed Sep. 23, 1993, Ser. No. 126,335

Claims priority, application Japan, Oct. 6, 1992, 4-266433; Dec. 3, 1992, 4-323524

Int. Cl.[6] E04H *6/18*

U.S. Cl. 414—240 **12 Claims**



1. A multi-deck parking structure comprising:

a plurality of decks for storing pallets constructed to carry vehicles, respectively;

an entrance section for receiving and delivering vehicles;

vehicle storing means including said plurality of decks arranged vertically above said entrance section;

vehicle transport means including a movable unit for moving upward and downward through a vertical shaft extending laterally of said vehicle storing means into said entrance section, to transport said pallets between said entrance section and said decks;

pallet support means formed on said movable unit for supporting said pallets, said pallet support means being extendible into and retractable from said vehicle storing means;

footpath floor means formed on said movable unit for allowing a person to walk on said movable unit in moving between said entrance section and said movable unit when said movable unit is in said entrance section, said footpath floor means being vertically movable relative to said pallet support means; and

adjusting means for keeping said footpath floor means substantially level with floor surfaces of said entrance section and supporting surfaces of said pallet support means when said movable unit is placed in said entrance section, and lowering said footpath floor means below said supporting surfaces of said pallet support means when said pallet support means is in a position to extend into or retract from said vehicle storing means.

5,383,758

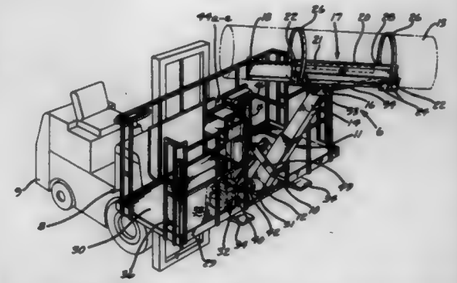
LOAD POSITIONING ARM

William E. Patrick, Wenatchee, Wash., assignor to Lift Mates, Inc., Wenatchee, Wash.

Filed Sep. 21, 1992, Ser. No. 949,039

Int. Cl.[6] B66C *1/00*

U.S. Cl. 414—680 **7 Claims**



1. Apparatus attachable to a lift truck for an operator to use to position materials, the apparatus comprising:

(a) a base having:

(i) at least one bracket arranged and configured for coupling to the lift truck; and

(ii) a platform on which the operator may be located to operate the apparatus;

(b) a lift arm having:

(i) a plurality of members slidably interconnected, said plurality of members having a proximal end and a distal end; the proximal end of said plurality of members being pivotally attached to said base for swinging movement in a fore and aft direction; and

(ii) a rotatable connector mounted for rotation in a plane transverse to the longitudinal axis of said plurality of members on the distal end of said plurality of members;

(c) a carriage having:

(i) a carrier pivotally attached to said rotatable connector for swinging movement about a second axis parallel to said plane; and

(ii) a track having attachment means for securing materials, said track being slidably connected to said carrier for movement in a direction transverse to said second axis, wherein said track includes a plurality of rollers disposed at both ends of said track that engage said carrier, said plurality of rollers being positioned to roll along said carrier when said track is translated relative to said carrier, said track being formed from a central rib and top and bottom flanges such that said track has an I-beam configuration, said carrier nesting at least partially within one side of said track between one side of the top and bottom flanges, the flanges on the other side of said track being arranged and configured to secure a pipe load for positioning, the top and bottom flanges extending parallel to the direction of the pipe load; and

(d) power means for positioning said lift arm and said carriage including:

(i) first means connected between said base and said lift arm for controlling pivotal movement of said lift arm relative to said base about the pivot connection between said base and said lift arm;

(ii) second means connected between each of said plurality of members and another of said plurality of members for controlling translational movement of said plurality of members relative to each other along the slidable interconnections;

(iii) third means connected between said plurality of members and said rotatable connector for controlling rota-

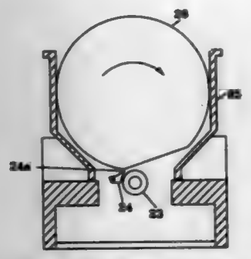
tional movement of said rotatable connector relative to said plurality of members;
(iv) fourth means connected between said carrier and said rotatable connector for controlling pivotal movement of said carriage relative to said rotatable connector;
(v) fifth means connected between said track and said carrier for controlling translational movement of said track relative to said carrier; so that the materials can be selectively pivoted, extended, rotated, tilted, and translated relative to said base by selective control of said power means; and
(vi) a power supply mechanism attached to said base for providing power to at least one of said first, second, third, fourth, and fifth means.

5,383,759

LOW PARTICLE WAFER AUTOMATIC FLAT ALIGNER

Gaille Lin, 1515 Flatwood Dr., Dallas, Tex. 75081

Filed Aug. 20, 1993, Ser. No. 109,514
Int. Cl.[6] B65G *47/24*
U.S. Cl. 414—257 **17 Claims**



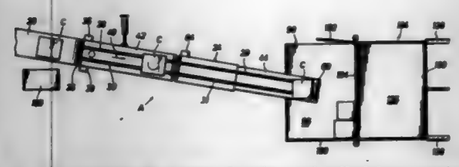
15. A method for aligning flat edges on semiconductor wafers in an apparatus having a roller and an alignment blade, including the steps of:
rotating said wafers with a roller in a first direction to ensure that all flat edges are clear of the alignment blade,
pivoting said alignment blade in an upward position;
rotating the wafers in a second direction until the rotation of each wafer is stopped by said alignment blade engaging an edge of the flat edge, and said flat edges are aligned;
rotating said alignment blade in a downward direction; and
rotating said wafers in a direction to position the aligned flat edges of the wafers at a desired position.

5,383,760

APPARATUS AND METHOD FOR CONTAINER PATTERN-FORMING AND PALLETIZING

Wesley D. Cawley, Port Neches, and Clifton M. Cawley, Nederland, both of Tex., assignors to Ohmstede-Cawley, Ltd., Beaumont, Tex.

Filed Nov. 1, 1993, Ser. No. 146,994
Int. Cl.[6] B65G *47/24, 57/14*
U.S. Cl. 414—791.6 **28 Claims**



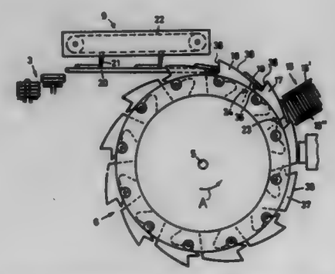
1. An apparatus for pattern-forming and palletizing containers on a pallet, the apparatus comprising:
an infeed conveyor adapted to receive and transport a container to a fixed location;
a generally horizontal orienting unit having a receiving end and a discharge end, said receiving end adapted to horizontally rotate about a vertical axis, said orienting unit comprising:
a pair of substantially parallel belt conveyors in side-by-side array,
means for driving each said belt conveyor independently of each other, and
means for adjusting the relative distance between said receiving and discharge ends of said orienting unit; and
means for rotating said orienting unit about said vertical axis, wherein said receiving end of said orienting unit is proximate to said fixed location of said infeed conveyor.

5,383,761

APPARATUS FOR SELECTIVELY SEPARATING ARTICLES FROM A STACK USING WHEEL MOUNTED PUSHERS

René Flack, Schleitheim, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Oct. 14, 1993, Ser. No. 136,003
Claims priority, application Switzerland, Oct. 14, 1992, 3211/92
Int. Cl.[6] B65G *59/06*
U.S. Cl. 414—798.9 **13 Claims**



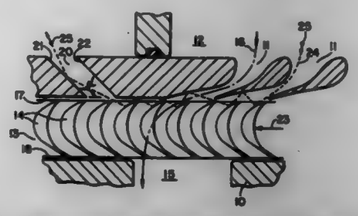
1. An apparatus for separating and sequentially conveying articles from an article stack, comprising
(a) an article accumulating means for forming the article stack therein;
(b) an article advancing wheel supported for rotation about a wheel axis in an article advancing direction;
(c) a plurality of spaced article pushers mounted on the wheel for circular travel therewith as a unit; a distance between said wheel and said article accumulating means being such that the article pushers sequentially pass by said article accumulating means upon rotation of said wheel; each said article pusher including an article pushing face for abutting an edge of an article in the article stack and pushing the article out of the article accumulating means and carrying the article from the article accumulating means as the wheel rotates;
(d) mounting means for securing each article pusher to said wheel to allow each said article pusher to move relative to said wheel into a first and a second position; in said first position said article pushing face is sufficiently close to said article accumulating means to abut and carry an article from the article accumulating means as the article pusher passes by the article accumulating means upon rotation of the wheel and in said second position said article pushing face is sufficiently remote from said article accumulating means to move past the article stack without abutting an article as the article pusher passes by the article accumulating means upon rotation of the wheel;
(e) control means for moving selected article pushers into said second position prior to reaching said article accumulating means as the wheel rotates;
(f) resetting means for moving the selected article pushers into said first position after having passed said article accumulating means; and
(g) article ejecting means for moving the articles away from said wheel after the article has been carried from the article accumulating means by the article pushers.

5,383,762

PNUEMATIC TURBINE

Rolf A. Jacobsson, Saltsjö-Boo, Sweden, assignor to Atlas Copco Tools AB, Nacka, Sweden

Continuation of Ser. No. 73,767, Jun. 8, 1993, abandoned. This application Mar. 2, 1994, Ser. No. 206,025
Claims priority, application Sweden, Jun. 16, 1992, 9201845-6
Int. Cl.[6] F04D *29/70*
U.S. Cl. 415—121.2 **4 Claims**



1. In a pneumatic turbine comprising a rotatable turbine wheel (13) having a peripheral row of blades (14); a stator housing (10) having a first wall (17) and a second wall (18) which are parallel to each other and which surround said turbine wheel (13); at least one nozzle (11) located in said first wall (17) for directing motive air onto said blades (14) to rotate said turbine wheel (13); and an air outlet (15) located in said second wall (18) substantially opposite to said at least one nozzle (11),
the improvement wherein:
said stator housing (10) comprises at least one particle escape passage (20) communicating with the atmosphere and located in said first wall (17);
said at least one particle escape passage (20) comprises a wall means (21) facing substantially in a direction different from a movement direction of said blades (14); and
said wall means (21) forms an angle (α) of at least 90° with the rotation plane of said turbine wheel (13).

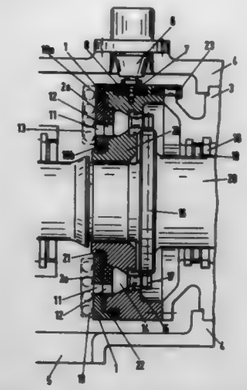
5,383,763

STEAM TURBINE WITH A ROTARY SLIDE FOR CONTROLLING STEAM THROUGHPUT

Dieter Henkelmann, Nürnberg, Germany, assignor to ABB Patent GmbH, Mannheim, Germany

Filed May 4, 1993, Ser. No. 59,438
Claims priority, application Germany, May 4, 1992, 4214773
Int. Cl.[6] F04D *5/48*; F01D *17/12*
U.S. Cl. 415—159 **18 Claims**

1. A steam turbine, comprising:
a rotary slide for controlling steam throughput, said rotary slide having control slits formed therein;
a stationary channel body having channel inlets formed therein;
said control slits and said channel inlets cooperating with each other for increasingly opening and closing said channel inlets depending on a direction of rotation of said rotary slide at the time;
said channel body having at least a basic part having steam channels formed therein required for conducting steam and an adapter part in which said channel inlets are formed disposed between said rotary slide and said basic part; and
said channel inlets connecting said control slits with said steam channels formed in said basic part and being defined



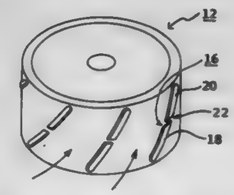
in accordance with an intended control characteristic of said rotary slide.

5,383,764

DIFFUSOR PUMP HAVING DIFFUSOR BLADES

Motoyasu Ogawa, and Yuzo Nakagawa, both of Tokyo, Japan, assignors to Nikkiso, Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,735
Claims priority, application Japan, Mar. 11, 1992, 4-052503
Int. Cl.[6] F04D *1/08, 29/44*
U.S. Cl. 415—199.3 **5 Claims**



1. In a diffusor pump for a liquid, the pump comprising a plurality of stages each of which includes an impeller and a cylindrical diffusor, each cylindrical diffusor having on a cylindrical surface thereof a plurality of spiral blades; the improvement in which said blades have at least one gap intermediate their length whereby each blade is divided into a plurality of portions including a first portion and a second portion, the liquid flowing from said first portion to said second portion, and said first portion having a solidity in the range of 0.75 to 1.25, thereby to broaden the range of velocity of the liquid flowing through said pump at which the pump will be free from revolution of the liquid and stalling.

5,383,765

AIR FRESHENER APPARATUS FOR CEILING FANS

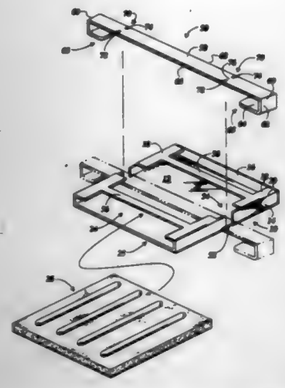
James T. Baxter, Hahira; Doug M. Vick, and George S. Gibbs, both of Thomasville, all of Ga., assignors to New Ideas International, Thomasville, Ga.

Filed Nov. 4, 1992, Ser. No. 971,344
Int. Cl.[6] F04D *29/00*
U.S. Cl. 416—62 **5 Claims**

1. An air freshener apparatus for a ceiling fan having fan blades that each taper in width from a narrow inner end to a wider outer end, comprising:
a tray with a pair of upstanding sidewalls and an end wall,

each sidewall having a flange extending laterally therefrom along an upper edge toward the opposite sidewall, thereby defining a recess on each side, each sidewall and flange further defining a notch;

a foam pad impregnated with a scent material, slidingly received in the tray with side edges of the foam pad within the recesses;



a cross arm received in the notches and having one of a pair of hooks at each distal end, the pair of hooks extending laterally from each respective lateral side of the tray for overlapping a lateral edge of the fan blade,

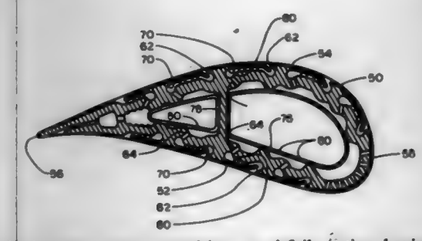
whereby the air freshener apparatus, being slidingly received on an outer portion of the tapered fan blade, deodorizes the air.

5,383,766

COOLED VANE

Hans R. Przirembel, Jupiter, and Robert C. Meyer, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 9, 1990, Ser. No. 550,003
Int. Cl.[6] F01D *5/18*
U.S. Cl. 416—97 A **7 Claims**



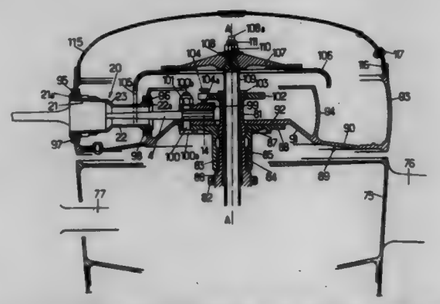
1. A stator vane comprising an airfoil section having a chordwise direction including a cast wall shell having a plurality of discrete pockets extending over the surface of the suction side and pressure side of said airfoil section, each of said pockets including a passageway extending parallel to the flow of the engine's gas path, an impingement hole at one end of said passageway extending through a portion of said cast wall shell and communicating with a central passage centrally disposed internal of said cast wall shell for flowing cooling air from said central passage through said impingement hole and through said passageway in a chordwise direction to discharge into said gas path through a slot formed on the end of said passageway to coalesce the cooling air for flowing a film of cooling air to flow along the outer surface of said cast wall shell in a direction of the gas path whereby said film of cooling air cools said stator vane, said flow of cooling air in said passageway being in indirect counterflow heat exchange relationship with said gas path.

5,383,767

BLADE-HUB LINKAGE DEVICE WITH A LAMINATE ATTACHMENT

Jacques A. Aubry, Cabries, France, assignor to Eurocopter France, France

Filed Dec. 14, 1993, Ser. No. 165,863
Claims priority, application France, Dec. 23, 1992, 92 15609
Int. Cl.[6] B64C *27/48*
U.S. Cl. 416—134 A **18 Claims**



1. A blade-hub linkage device for fastening at least one blade to a rotor hub of a multiblade rotor, said blade comprising:

a rigid shell with aerodynamic profile, having a tubular blade root on the side attached to the hub,

a strengthened framework, which is at least partially housed substantially longitudinally in the shell, and

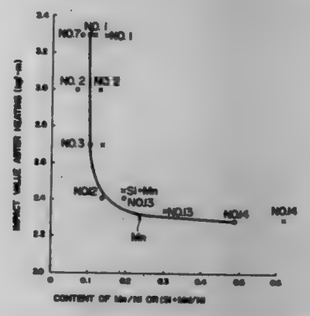
an blade rooting part, comprising at least one elongated torsion bar for attachment of the blade, said torsion bar being twistable about its longitudinal axis, made from composite material and comprised of substantially unidirectional fibers agglomerated by a rigidified synthetic resin, said torsion bar being linked to the said framework and extending at least partially outside the shell and passing through the blade root, said blade-hub linkage device comprising for at least said torsion bar, a laminate attachment including at least two laminate elements between which a bar end portion for linking said bar to the hub is sandwiched and fixed, said end portion being substantially flattened, each laminate element comprising a stack of at least two layers of fibers which are agglomerated by a rigidified synthetic resin, at least one of the resins of the torsion bar and of the laminate attachment solidly joining said laminate elements to said end portion, the solid combination of said laminate attachment and the end portion of said bar being in abutment against means for holding the laminate attachment and the blade to the hub.

5,383,768

STEAM TURBINE, ROTOR SHAFT THEREOF, AND HEAT RESISTING STEEL

Masao Sigs; Yutaka Fukui, both of Hitachi; Mitsuo Kuriyama, Ibaraki; Yoshimi Maeno, Hitachi; Masatoru Suwa, Ibaraki; Ryoichi Kaneko; Takeshi Onoda, both of Hitachi; Hidefumi Kajiwara; Yasuo Watanabe, both of Katsuta; Shintaro Takahashi, Hitachi, and Toshimi Tan, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 472,838, Jan. 31, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 893,079
Claims priority, application Japan, Feb. 3, 1989, 1-023890; May 22, 1989, 1-126622
Int. Cl.[6] C22C *38/44, 38/46*
U.S. Cl. 416—241 R **23 Claims**



1. A steam turbine having a rotor provided with a monoblock rotor shaft, multi-stage blades fixed on the mono-block rotor shaft from a high pressure side at which a steam inlet temperature of first stage blades is not less than 530° C. to a low pressure side of steam at final stage blades of which steam of not more than 100° C. is discharged, and a casing covering the rotor, said rotor shaft being fabricated from a Ni—Cr—Mo—V low alloy steel having a bainite structure and a ratio (Mn/Ni) not more than 0.12 or a ratio (Si+Mn)/Ni not more than 0.18 by weight, a 538° C., 100,000 hour creep rupture strength of said low alloy steel being not less than 11 Kgf/mm^2, a V-notch impact strength measured at room temperature after being heated at 500° C. for 1000 hours being not less than 3.0 $kgf\text{-}m/cm^2$, and the final stage blades at the low pressure side of steam having a length not less than 30 inches.

5,383,769

RETROFIT STRAINER ATTACHMENT FOR GASOLINE PUMPS

Jeffrey R. Williams, East Moline, Ill., assignor to The Marley Pump Company, Mission, Kans.

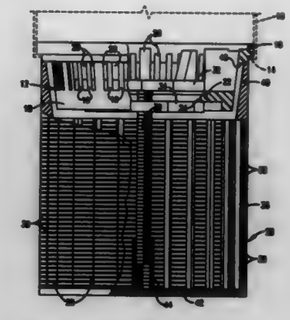
Filed Feb. 7, 1994, Ser. No. 192,368
Int. Cl.[6] F04B *19/00*; B01D *29/15*
U.S. Cl. 417—238 **8 Claims**

1. In combination with a submersible pump having an inlet fitting presenting a plate through which an inlet passage extends to admit liquid to the pump, the improvement comprising:

a threaded rod having one end carrying a first retainer element sized to be passed through said inlet passage in a skewed position of the rod, said first retainer element being rigidly connected with said rod and being engageable with an interior side of said plate when the rod is oriented in a non-skewed position generally aligned with the center of the inlet passage;

a second retainer element having a direct threaded connection with said rod to permit the second retainer element to be threaded against an exterior side of said plate in opposition to said first retainer element to secure the rod in the non-skewed position upon tightening of said second retainer element against the plate;

a strainer applicable to said inlet fitting and presenting mesh



openings allowing fluid flow therethrough but preventing particulate matter from reaching the inlet passage; and

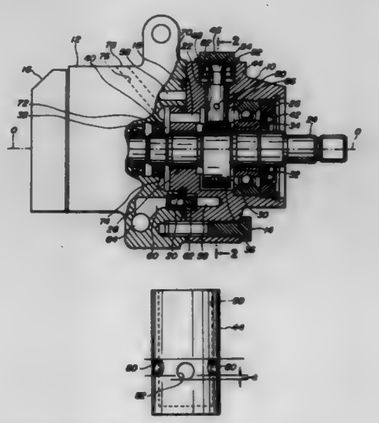
means for threading said strainer onto the rod to hold the strainer against said inlet fitting.

5,383,770

RADIAL PISTON PUMP WITH VENT IN HOLLOW PISTON

Keiji Hisahara, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Jun. 17, 1994, Ser. No. 259,975
Claims priority, application Japan, Jun. 29, 1993, 5-035210[U]
Int. Cl.[6] F04B *1/04*
U.S. Cl. 417—273 **7 Claims**



1. A pump comprising:

a pump body provided with a plurality of cylinders in radial arrangement about an axis;

a piston slidably supported in each of said cylinders;

a driving shaft adapted for rotation about said axis;

means for reciprocating each of said pistons upon rotation of said driving shaft to provide suction and compression strokes;

each of said pistons having a piston inner chamber and a set of inlet openings communicating with said piston inner chamber,

said pump body defining a well adapted for connection to a source of liquid, said set of inlet openings of each of said

pistons passing into said well with the piston in the suction stroke to admit fluid into the corresponding cylinder through said set of inlet openings and the piston inner chamber of the piston and passing out of said well with the piston in the subsequent compression stroke,

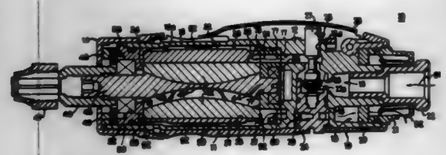
each of said pistons having a vent opening, said vent opening of each of said pistons passing out of said well later than said set of inlet openings pass out of said well with the piston in the subsequent compression stroke to admit escape of liquid out of said piston inner chamber into said well through said vent opening.

5,383,771

AIR MOTOR WITH OFFSET FRONT AND REAR EXHAUSTS

Anil P. Ghode, Mundelein, Ill.; Thomas J. Diedrich, Racine, and Raymond D. De Rome, Twin Lakes, both of Wis., assignors to Snap-on Incorporated, Kenosha, Wis.

Filed Dec. 20, 1993, Ser. No. 169,414
Int. Cl.[6] F04C *2/00*
U.S. Cl. 418—15 **16 Claims**



1. In a fluid operated rotary motor including a liner having a cylindrical bore therethrough, a rotor having radially slidable vanes and being eccentrically mounted in the cylindrical bore, first and second end plates respectively mounted at first and second ends of the liner and rotatably supporting the rotor, and a fluid inlet port communicating with the interior of the cylindrical bore adjacent to the first end of the liner, the improvement comprising: exhaust structure defining first and second exhaust passages communicating with the bore respectively adjacent to the first and second ends of the liner, said second end plate having an axially inner surface, said inner surface having a recess formed therein but not extending therethrough and defining a portion of said second exhaust passage such that said second exhaust passage does not extend through or forwardly of said second end plate, said exhaust structure including proportioning means for ensuring that substantial fluid is exhausted from the bore through each of said first and second exhaust passages.

5,383,772

SCROLL COMPRESSOR STABILIZER RING

Hubert Richardson, Jr., Brooklyn, and George W. Gatecliff, Saline, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 4, 1993, Ser. No. 147,687
Int. Cl.[6] F04C *18/04, 27/00, 29/02*
U.S. Cl. 418—55.4 **30 Claims**

1. A hermetic scroll compressor comprising:

a hermetically sealed housing including therein a discharge chamber at discharge pressure and a suction chamber at suction pressure;

a fixed scroll member in said housing including an involute fixed wrap element;

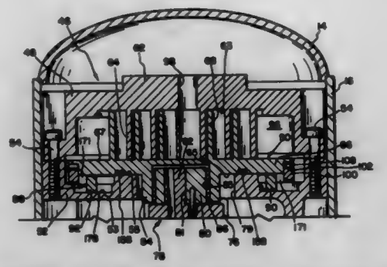
an orbiting scroll member in said housing including a plate portion having a face surface and a back surface, said face surface having an involute orbiting wrap element thereon intermeshed with said fixed wrap element;

a frame including a thrust surface adjacent said orbiting scroll member back surface;

a seal between said orbiting scroll member and said thrust surface sealingly separating between respective portions of said plate portion back surface exposed to discharge pressure and suction pressure;

drive means for causing said orbiting scroll member to orbit relative to said fixed scroll member; and

an annular stabilizer ring device nonsealingly disposed between said orbiting scroll member and said frame, said



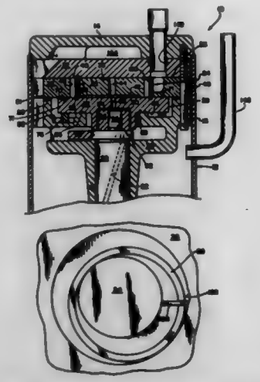
stabilizer ring device comprising a mechanical wave spring washer including a plurality of waves to contact said orbiting scroll member at a plurality of points to positively axially bias said orbiting scroll member toward said fixed scroll member, whereby wobbling of said orbiting scroll member is reduced.

5,383,773

ORBITING ROTARY COMPRESSOR HAVING AXIAL AND RADIAL COMPLIANCE

Hubert Richardson, Jr., Brooklyn, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 930,481, Aug. 14, 1992, Pat. No. 5,302,095, which is a continuation of Ser. No. 692,140, Apr. 26, 1991, abandoned. This application Jan. 12, 1994, Ser. No. 180,453
Int. Cl.[6] F04C *18/04, 18/32*
U.S. Cl. 418—57 **4 Claims**



1. An orbiting rotary-type compressor for compressing refrigerant fluid, comprising:

a hermetically sealed housing having disposed therein a discharge pressure chamber at discharge pressure and a suction pressure chamber at suction pressure;

a fixed cylinder block disposed in said housing, said cylinder block including a chamber having a side wall and an end wall;

a fixed center cylinder member within said chamber;

an orbiting annular cylindrical piston between said fixed cylinder block and said fixed center cylinder in said chamber, creating an inner pocket and an outer pocket, said inner pocket and said outer pocket in communication with said suction chamber and said discharge chamber;

a vane for sealing between suction pressure portions and discharge pressure portions of said inner pocket and said outer pocket, said vane slidable through said orbiting piston and sliding against both said fixed center cylinder member and said fixed cylinder block;

drive means including an oldham ring for orbiting said orbiting piston between said fixed cylinder housing and said fixed center cylinder in a manner such that said piston nonslidingly contacts said fixed cylinder block to expand and contract said inner and outer pockets;

axial compliance means for yieldably pressing said annular piston against said end wall to form a seal; and

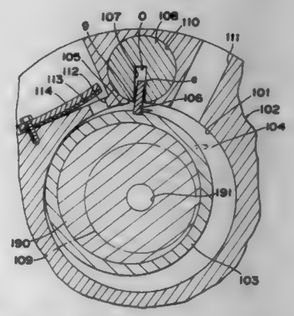
radial compliance means for yieldably pressing said annular piston against said side wall to form a seal.

5,383,774

ROTARY COMPRESSOR HAVING BLADE INTEGRATED IN ROLLER

Toshiyuki Toyama; Yasushi Yamamoto; Takahiro Uematsu, and Masanori Masuda, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP92/00122, § 371 Date Oct. 15, 1993, § 102(e) Date Oct. 15, 1993
PCT Filed Feb. 2, 1993, Ser. No. 30,067
Claims priority, application Japan, Apr. 28, 1992, 4-109939; Sep. 22, 1992, 4-252750
Int. Cl.[6] F04C *2/00*
U.S. Cl. 418—66 **23 Claims**



1. A rotary compressor comprising:

a cylinder having a cylinder chamber;

a rotatable roller positioned in the cylinder chamber, the roller being rotatable in the cylinder chamber;

a blade partitioning the cylinder chamber into a compression chamber and a suction chamber, the suction chamber having a suction port and the compression chamber having a discharge port, gas being sucked through the suction port, compressed and discharged through the discharge port when the roller is rotated, the blade being integrated with the roller so that the blade protrudes radially outwardly from the roller;

an eccentric shaft portion of a driving shaft, the roller being mounted on the shaft and being eccentrically rotated therewith; and

a support member being provided on the cylinder, the support member having a generally circular shape, the support member being rotatable and having a receiving portion for receiving a tip portion of the blade in such a manner that the tip portion of the blade is advanced and retreated from the support member;

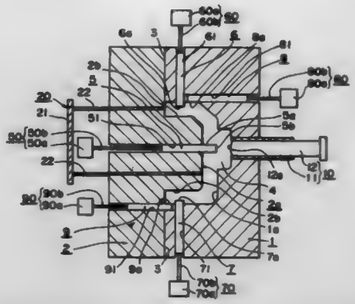
wherein a thickness of the roller being thin at a high-temperature side portion on the compression chamber side and being thick at a low-temperature side portion on the suction chamber side.

5,383,775

POWDERY MOLD RELEASE AGENT SPRAY DEVICE

Takashi Hanano, Kobe, Japan, assignor to Hanano Corporation, Kobe, Japan

Filed Feb. 3, 1994, Ser. No. 191,112
Claims priority, application Japan, Mar. 16, 1993, 5-055602
Int. Cl.[6] B29C *45/83*
U.S. Cl. 425—91 **2 Claims**



1. A spray device for spraying a powdery mold release agent onto molding surfaces of a mold cavity defined by metal molds when the molds are in a closed position wherein the spray device comprises:

(a) at least one first nozzle having spray ports on a tip end side surface and reciprocating within a first channel formed in the mold,

(b) means for reciprocating the first nozzle between a spraying position in which the tip end side surface of the first nozzle extends into the molding cavity and a retracted position in which a tip end surface of the first nozzle is flush with the molding surface,

(c) at least one second nozzle having spray ports on a tip end surface and reciprocating within a second channel formed in the mold,

(d) at least one shut pin reciprocating within a passage wherein the second channel intersects the passage, and

(e) means for reciprocating the second nozzle and the shut pin between a spraying position in which the tip end surface of the second nozzle extends into the mold cavity and a retracted position in which the shut pin extends into the second channel to isolate the tip end surface of the second nozzle from the mold cavity and an outer surface of the shut pin is flush with the molding surface.

5,383,776

APPARATUS FOR ANALYZING POLYMER DEFECTS

George C. Trail, and Jay P. Brush, both of Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 31, 1992, Ser. No. 999,633
Int. Cl.[6] G01N *21/89*
U.S. Cl. 425—135 **24 Claims**

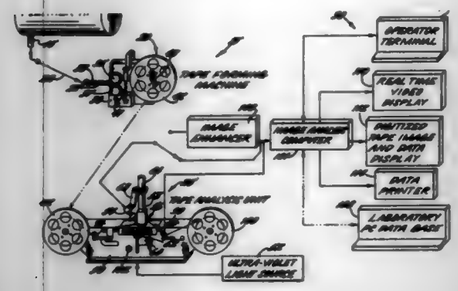
1. Apparatus for detecting defects that may be present in a polymer, said apparatus comprising:

(a) means for continually removing a sample of polymerization reactor output from a stream of molten polymer and converting said sample into a tape;

(b) a polymer inspection zone for inspecting a preselected area of the tape for the presence of defects;

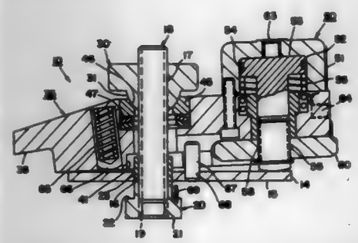
(c) guide assembly means at said inspection zone, said guide assembly means having first and second guide slots for receiving first and second edge portions of the tape, respectively, for providing constant positional alignment of the tape within said inspection zone, said first guide slot being stationary and said second guide slot being movable to accommodate variations in the width of the tape as the tape travels through said inspection zone;

(d) transport means for transporting the tape through said inspection zone;
(e) a source of electromagnetic radiation positioned adjacent said inspection zone for irradiating the tape on one side thereof;



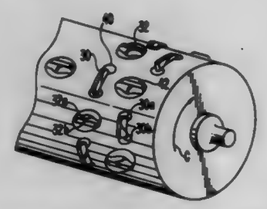
(f) detector means positioned adjacent said inspection zone for detecting electromagnetic radiation indicative of defects present in the polymer, and generating an output signal representative thereof; and
(g) analyzing means for receiving the output signal generated by said detector means and analyzing the signal to detect defects.

5,383,777
POWERED CLAMP FOR MOUNTING MOLD PARTS TO MOLDING MACHINE
Paul G. Pace, 19368 Crystal Ridge La., Northridge, Calif. 91326
Filed Mar. 9, 1993, Ser. No. 28,793
Int. Cl.[6] B29C *33/30*
U.S. Cl. 425—192 R **9 Claims**



1. A clamp for holding mold parts to a platen, said platen having a surface and a mounting slot in said surface, said clamp comprising:
a base plate having a surface for bearing against said platen surface, and an aperture through said base plate;
a pivot bolt having a T-head for fitting in said slot, and an external thread, said pivot bolt including a shank slidably fitted in the aperture in said base plate;
a pivot nut threadedly mounted to the thread on the pivot bolt, and a bearing face on said pivot nut;
a clamping bar having a passage therethrough, through which the pivot bolt extends, a countersink in said passage, a bearing washer having a bearing face complementary to the bearing face on the pivot nut, said bearing washer being axially shiftable in said countersink, bias spring means seated in said countersink biasing said bearing washer against the pivot nut, and a clamping flange on said clamping bar;
a hydraulic piston-cylinder assembly mounted to said clamping bar on the other side of said pivot bolt from said clamping flange, said assembly comprising a hydraulic cylinder mounted to said clamping bar, a piston in said cylinder, and a piston rod extending from said piston towards said base plate, and an external thread on said piston rod; and
a lock ring threaded to said piston rod adapted to bear against the clamping bar to lock the piston rod against retraction while in an extended position, thereby to hold the clamp against release after hydraulic pressure is relieved in said cylinder.

5,383,778
STRENGTH CONTROL EMBOSSING APPARATUS
Galyn A. Schulz, Appleton, Wis., assignor to James River Corporation of Virginia, Richmond, Va.
Filed Sep. 4, 1990, Ser. No. 577,119
Int. Cl.[6] B29C *59/02*
U.S. Cl. 425—363 **12 Claims**

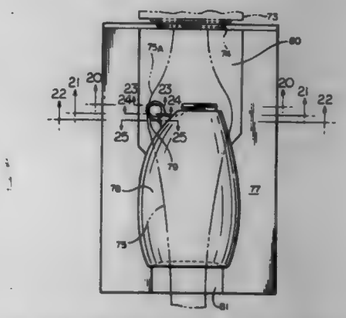


1. An apparatus for embossing a fibrous web and thereby modifying the strength characteristics of said web in a machine direction or a cross-machine direction thereof, comprising:
embossing means for forming an embossed pattern in a fibrous web, said embossing means including protruding means for protruding into said fibrous web to form the embossed pattern;
reaction means opposed to said embossing means, for urging said fibrous web against said embossing means, such that said protruding means protrude into said fibrous web;
said protruding means having non-uniform heights such that first portions of said protruding means protrude more deeply into said fibrous web than second portions of said protruding means, said embossing means including a surface wherein said first portions extend to a greater height from the surface thereof than said second portions, said first portions extending in one of the machine direction or the cross machine direction and said second portions extending in the other of the machine direction or the cross machine direction such that the tensile strength of said fibrous web is weakened to a greater extent in the direction in which said second portions extend.

5,383,779
APPARATUS FOR FORMING A LIGHTWEIGHT PLASTIC BOTTLE
Gerald R. Robinson, Perrysburg, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio
Division of Ser. No. 811,552, Dec. 20, 1991, Pat. No. 5,275,780, which is a division of Ser. No. 594,807, Oct. 9, 1990, Pat. No. 5,086,937. This application Nov. 22, 1993, Ser. No. 156,566
Int. Cl.[6] B29C *49/18*
U.S. Cl. 425—525 **5 Claims**

1. Apparatus for blow molding a plastic bottle having a base including a bottom intended to rest upon a supporting surface, an integral body portion extending upwardly from said base and including a central area, a shoulder portion above said central area and a neck extending upwardly from said shoulder portion, said shoulder portion having an integral handle extending therefrom, said apparatus comprising:
(a) an extrusion die for forming a tubular parison in heated moldable condition;
(b) means for positioning said parison between partible blow mold sections, said sections, when closed having a cavity

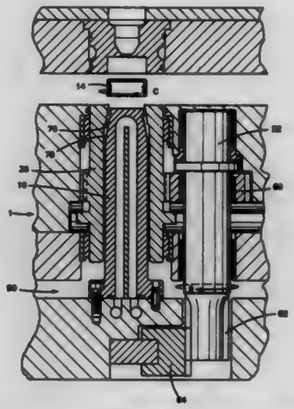
with (i) a first portion defining a bottom forming surface, a body forming surface and a neck forming surface lying on an axis and (ii) a second portion defining the shape of said handle, said second portion being offset with respect to said axis and said neck forming surface and communicating with said first portion throughout a line of juncture of reduced size defined by a third portion;
(c) an air supply for introducing low pressure gas into said parison to pre-blow (i) that portion of said parison intended to form said integral handle to a radial extent to be captured within said cavity second portion upon closing of said mold sections and that, upon expanding in said cavity first portion, said shoulder portion will have a target minimum thickness of 0.015 inch and a target average thickness between 0.020 inch and 0.030 inch and (ii) that portion of said parison intended to form said central area to cause such parison portion to thin to an extent such



that, upon expanding in said cavity first portion, said central area will have a target maximum thickness of 0.012 inch;
(d) means for closing said partible blow mold sections around said pre-blown parison to enclose a major portion thereof in said cavity first portion while compression molding a minor portion in said cavity second portion to form a solid handle;
(e) means for introducing high pressure gas into that portion of the mold enclosed parison lying within said cavity first portion; and
(f) a restrictor for preventing high pressure gas from entering that portion of said parison enclosed within said cavity second portion, said restrictor forming a single line of juncture between the handle and the shoulder which is thinner throughout its entire length than the portion of the handle adjacent thereto.

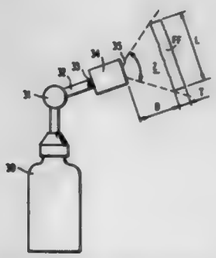
5,383,780
APPARATUS FOR FORMING THREADED MOLDED ARTICLE
Derek McCready, and Jacek Kalemba, both of Mississauga, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada
Filed Sep. 27, 1993, Ser. No. 126,879
Int. Cl.[6] B29C *45/44*; B29D *1/00*
U.S. Cl. 425—552 **13 Claims**

1. Apparatus for forming a threaded, molded plastic article with an outer surface thereof which comprises:
a female mold having a mold surface for the formation of the outer surface of said molded plastic article;
a mold core having an external core surface cooperating with said female mold to form a mold therebetween, said mold having a mold closed position and a mold open position, said mold core and female mold forming a mold cavity in the mold closed position, said mold core being so constructed to form a threaded inner surface of said molded article in the mold closed position;
means for injecting plastic material into said mold cavity through the female mold;
means for relatively moving said female mold to a position spaced from the mold core to space the female mold from the molded article and form said mold open position;
a movable, rotatable stripper ring fitted over a portion of the external core surface having a rearward position in the



mold closed position and a forward position in the mold open position, said stripper ring being in contacting relationship with said threaded article in the mold open position; and
means to rotate the stripper ring from the rearward to the forward position thereof and thereby remove the threaded article from the mold core by rotating the stripper ring.

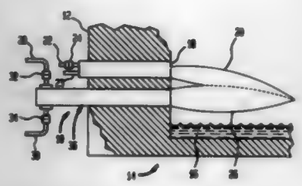
5,383,781
BURNER METHOD AND APPARATUS
Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Columbia, Md.
PCT No. PCT/US92/04446, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993, PCT Pub. No. WO92/22735, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 4, 1992, Ser. No. 50,385
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[6] F23D *11/00*
U.S. Cl. 431—2 **17 Claims**



1. In a system for heating objects having a supply of fluid fuel under pressure which is to be stoichiometrically mixed to achieve a combustible mixture, fluid fuel flow line connected to said fluid fuel under pressure, a manual control valve in said fluid fuel flow line, a burner means for mixing air with said fluid fuel to achieve said combustible mixture, characterized by said burner means includes a fluidic oscillator for forming a

jet of said fluid fuel and oscillating said jet of fluid fuel in ambient air downstream of said fluidic oscillator to mix air with said fuel and achieve said combustible mixture a distance spaced from any physical structure of said torch whereby a flame front of burning combustible mixture has a broad shape and is spaced a distance from said fluidic oscillator which is determined by the sweep angle, wave pattern and frequency of said fluidic oscillator.

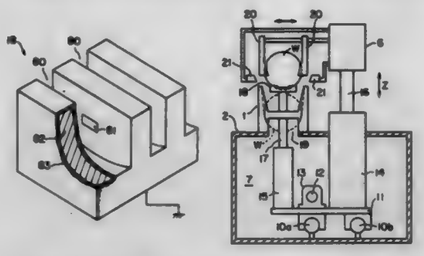
5,383,782
GAS-LANCE APPARATUS AND METHOD
Leo T. Yap, Princeton, N.J., assignor to The BOC Group, Inc., New Providence, N.J.
Filed Apr. 21, 1993, Ser. No. 50,938
Int. Cl.[6] F27B *3/22*
U.S. Cl. 432—22 **5 Claims**



1. A lance for injecting a rate-enhancing gas between a flame and a thermal load to augment combustion of fuel undergoing combustion in the flame, said lance comprising:
means for introducing a fan-shaped main jet between the flame and the thermal load, the main jet producing a low pressure field of the rate-enhancing gas between the flame and the thermal load to deform the flame into the shape of the main jet and to draw the flame toward the thermal load, the main jet decaying along its length due to entrainment of combustion-environment gas in the main jet; and
booster jet means for introducing a fan-shaped booster jet of the rate-enhancing gas between the main jet and the thermal load, the booster jet having a higher velocity than the main jet;
the main jet means having a greater cross-sectional area than said booster jet means; and
the main and booster jet means positioned so that said main and booster jets are oriented parallel to each other and in one direction, spaced apart to cause interaction between said main booster jets, outside of core regions thereof, and said booster jet is located sufficiently adjacent to said main jet to delay the decay of said main jet.

5,383,783
SUBSTRATE HANDLING APPARATUS
Takashi Ishimori, Mizusawa, Japan, assignor to Tokyo Electron Kabushiki Kaisha and Tokyo Electron Tohoku Kabushiki Kaisha, both of Tokyo, Japan
Filed Oct. 1, 1993, Ser. No. 130,441
Claims priority, application Japan, Oct. 6, 1992, 4-267171
Int. Cl.[6] F27D *5/00*
U.S. Cl. 432—253 **10 Claims**

1. A substrate handling apparatus, comprising:
a substrate supporting portion for fixing and supporting substrates,
wherein said substrate supporting portion is composed of a grounded electroconductive base material and a resin coat formed on a portion of the surface of said base material which is adapted to be in contact with said substrates, said substrate supporting portion being adapted to discharge a

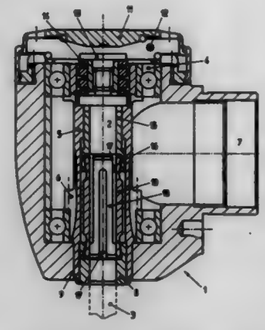


static electricity in said substrates through said coat to said base material.

5,383,784
AUZILIARY ORTHODONTIC APPLIANCE
Friedrich Sernetz, Pforzheim, Germany, assignor to Dentaurum J. P. Winkelstroeter KG, Ispringen, Germany
Filed Sep. 1, 1993, Ser. No. 108,732
Claims priority, application Germany, Mar. 16, 1991, 91104117
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—7 **10 Claims**

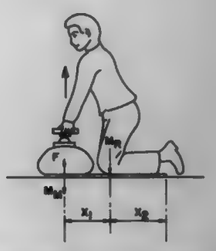
1. Auxiliary orthodontic appliance, characterized in that said auxiliary appliance comprises at least one of titanium and an alloy on the basis of titanium and its surfaces are formed by a titanium oxide skin whose electrical breakdown potential in synthetic saliva with a pH value of 2.3 at 37° C. is greater than 2000 mV.

5,383,785
PUSH-BUTTON OPERATED CHUCKING DEVICE FOR A DENTAL ANGLE PIECE
Wilhelm Brugger, Anthering, Austria, assignor to Dentalwerk Burmoos Gesellschaft m.b.H., Burmoos, Austria
Filed Aug. 11, 1993, Ser. No. 104,800
Claims priority, application Austria, Aug. 12, 1992, 1626/92
Int. Cl.[6] A61C *1/14*
U.S. Cl. 433—129 **5 Claims**



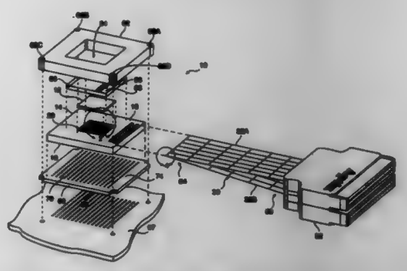
1. A chucking device comprising a collet chuck for holding a dental tool, the collet chuck comprising a collet chuck sleeve, the collet chuck sleeve having two ends, the collet chuck sleeve having axial slots at both ends thereof, the chucking device further comprising a push button for releasing the collet chuck against the force of a clamping spring, the collet chuck sleeve having at both ends in the areas of the axial slots conical undercuts, wherein one of the undercuts is mounted in a conical seat which is mounted so as to be axially fixed and rotating together with the dental tool, an actuating member biased by the clamping spring, another of the conical undercuts being mounted in a conical seat of the actuating member, the actuating member being axially displaceable by means of the push button against the axially fixed seat.

5,383,786
TRAINING MANIKIN FOR PRACTICING EXTERNAL CARDIAC MASSAGE
Ole B. Køhnke, Lyngby, Denmark, assignor to Ambu International A/S, Glostrup, Denmark
Filed Mar. 9, 1993, Ser. No. 28,125
Claims priority, application Denmark, Mar. 12, 1992, 0329/92
Int. Cl.[6] G09B *23/28*
U.S. Cl. 434—265 **6 Claims**



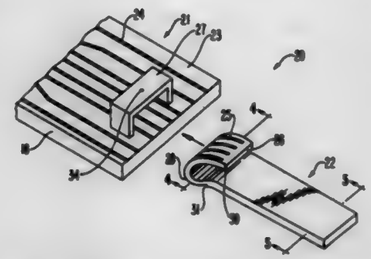
1. A training manikin for a person practising external cardiac massage, including chest expansion, comprising chest means defining opposite sides, a support member for the practising person, said support member being such that it can be placed in a position beneath said chest means, said support member operatively connected to said chest means and extending outwardly beyond one of said opposite sides of the chest means, and means for transferring a pull exerted on the chest means to the support member.

5,383,787
INTEGRATED CIRCUIT PACKAGE WITH DIRECT ACCESS TO INTERNAL SIGNALS
Andrew Switky, Palo Alto, and Robert Osana, Jr., San Jose, both of Calif., assignors to Aptix Corporation, San Jose, Calif.
Continuation-in-part of Ser. No. 53,610, Apr. 27, 1993. This application Apr. 27, 1993, Ser. No. 53,505
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—67 **14 Claims**



1. A reusable, self-contained integrated circuit die package for demountable attachment to a circuit board comprising:
at least one integrated circuit die including a plurality of interface pins;
a spreader having a first surface, a second surface, a first set of spreader electrical contacts disposed on said first surface and adapted to be electrically connected to said plurality of interface pins of said at least one integrated circuit die, a second set of spreader electrical contacts disposed on said second surface at least some of the members of which are electrically connected to at least some members of said first set of spreader electrical contacts and adapted for electrical connection to a circuit board, and a third set of spreader electrical contacts at least some of the members of which are electrically connected to at least some members of said first set of spreader electrical contacts, wherein said second set of spreader electrical contacts are disposed on a different surface of said spreader than are said third set of spreader electrical contacts;
a socket base having a first surface and a second surface and a first array of conformal electrical contacts extending through and beyond said first surface of said socket base and adapted to make electrical contact with the contacts of said second set of spreader electrical contacts, said first array of conformal electrical contacts in electrical contact with a second array of non-deformable conformal electrically conductive plungers extending through and beyond said second surface of said socket base and adapted to electrically contact electrically conductive pads on the circuit board;
a socket cover attached to said socket base by compressive attachment means for applying a compressive force urging said spreader against said first conformal contacts;
means located only at a periphery of the package for removably attaching the package to a circuit board by applying a compressive force urging all portions of the package toward said circuit board; and
a flexible electrical cable having a first end, a second end, and a plurality of electrical conductors, wherein at least some members of said plurality of electrical conductors at said first end are electrically connected to at least some members of said third set of spreader electrical contacts.

5,383,788
ELECTRICAL INTERCONNECT ASSEMBLY
Mark Spencer, Phoenix, Ariz., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed May 20, 1993, Ser. No. 65,344
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—67 **11 Claims**



1. A connector assembly for connecting flexible circuitry to a planar substrate that has conductive traces on at least one surface thereof, the assembly comprising:
flexible circuitry comprising a flat flexible strip of circuitry having a top face and a bottom face between which lie a plurality of parallel longitudinally extending electrically insulated conductors, and having at least one end thereof bent back in said longitudinal direction to form a resilient spring such that the top face of the bent back portion is adjacent the top face of the unbent portion of the strip, said conductors being uninsulated at the bottom face opposite the bent back top face, and adapted to resiliently press its conductors against conductive traces of the planar substrate,
an elongated housing located on said planar substrate, and positioned over at least one conductive trace of the planar substrate, said housing adapted to receive said bent back

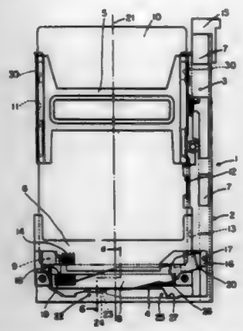
end of the flat flexible strip and having means to hold said strip firmly in said housing in a manner which presses the conductors against the conductive traces of the planar substrate.

5,383,789

MULTI-FULCRUM CARD EJECTING MECHANISM

Yoshinori Watanabe, Yamato, Japan, assignor to Molex Incorporated, Ill.

Filed Dec. 14, 1993, Ser. No. 166,765
Claims priority, application Japan, Jan. 21, 1993, 5-026289
Int. Cl.[6] H01R *13/629*
U.S. Cl. 439—159 **25 Claims**



1. A connector apparatus for providing an interconnection between an IC card and a printed circuit board, said connector apparatus including:

a connector body defining an IC card passage with an IC card-receiving opening at one end thereof, wherein said IC card is inwardly and outwardly movable within the IC card passage between an inserted position whereat it electrically and mechanically engages the connector apparatus, and an initial ejected position whereat said IC card is at least partially disengaged from the connector apparatus;

an elongated actuator reciprocally mounted laterally of the IC card passage; and

an ejector arm rotatable about a first point on the connector body, said ejector arm having a first end pivotally associated with the actuator and a second end which cooperates with the IC card when said card is in the inserted position, whereby when said IC card is in the inserted position and the actuator is moved in the direction of insertion of the IC card, the ejector arm pivots about the first point and the second end of the ejector arm moves the IC card to the initial ejected position;

the improvement in the connector apparatus comprising:

the ejector arm is rotatable about a second point on the connector body, wherein the ejector arm pivots about the second point after pivoting about the first point, thereby moving the IC card from the initial ejected position to a final ejected position wherein a portion of the IC card extends outside the IC card-receiving opening.

5,383,790

CONNECTOR WITH FLOATING SELF-ALIGNMENT AND ZERO IMPULSE SEPARATION MECHANISMS

Leslie Kerek, Los Angeles, and Edward Radoy, Woodland Hills, both of Calif., assignors to G & H Technology, Inc., Camarillo, Calif.

Filed Nov. 19, 1993, Ser. No. 154,514
Int. Cl.[6] H01R *13/029, 13/635*
U.S. Cl. 439—248 **20 Claims**

1. A connector assembly mounted between a first panel and a second panel, where the first and second panels are movable relative to each other and each has a connector opening, the connector assembly comprising:

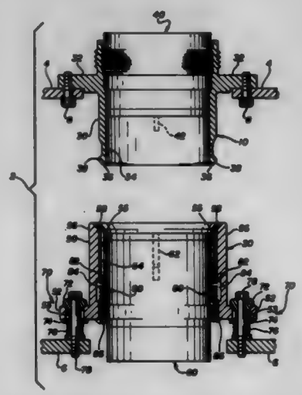
a. a connector plug having a cylindrical plug shell, the plug shell having an exterior plug flange for mounting the plug shell to said first panel, an interior chamber for housing a male connector with at least one pin contact, and a proximal end with a rounded circular lip;

b. means for mounting said plug flange to said first panel such that said connector plug extends through said connector opening of said first panel;

c. a connector receptacle having a cylindrical receptacle shell, the receptacle shell having an exterior receptacle flange, an interior chamber for housing a female connector and forming a tubular cavity between the receptacle shell and the female connector for receiving said proximal end of said plug shell, and a proximal end with a circular ramp surface, the female connector having at least one socket contact engageable with said at least one pin contact of said male connector;

d. said receptacle flange having a multiplicity of openings symmetrically positioned around said receptacle shell, each opening having an interior conical surface and an interior cylindrical surface;

e. a multiplicity of self-alignment mounting assemblies symmetrically positioned around said receptacle shell for mounting said receptacle flange to said second panel;



f. each said self-alignment mounting assembly including an eyelet placed through each said flange opening, the eyelet having an exterior conical surface engageable with said interior conical surface of each said flange opening, and an exterior cylindrical surface with a reduced dimension for maintaining a tubular clearance between the exterior cylindrical surface of the eyelet and said interior cylindrical surface of said flange opening;

g. each said self-alignment mounting assembly further including an alignment spring for providing cushioning between said receptacle flange and said eyelet;

h. means for mounting said eyelet of each said self-alignment mounting assembly to said second panel such that said connector receptacle extends through said connector opening of said second panel; and

i. an adjustable ejection assembly disposed within said tubular cavity of said receptacle shell and including a circular snap ring engageable with said proximal end of said plug shell, a multiplicity of ejection springs symmetrically positioned for biasing said snap ring, and means for individually adjusting a pre-load of each ejection spring to apply a balanced ejection force on said plug shell;

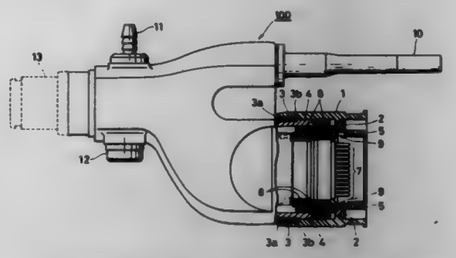
j. whereby said multiplicity of self-alignment mounting assemblies provide proper connection between said connector plug and said connector receptacle during misaligned engagement or separation where said plug shell and said receptacle shell are linearly or angularly shifted relative to each other, and said adjustable ejection assembly provides proper ejection force between said plug shell and said receptacle shell for minimum impulse separation.

5,383,791

CONNECTOR FOR USE IN AN ELECTRIC ENDOSCOPE

Katsuya Hirakui, and Masayuki Oyatsu, both of Tochigiken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 6, 1993, Ser. No. 43,784
Claims priority, application Japan, Apr. 14, 1992, 4-094409
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—312 **11 Claims**



1. A connector for use in an electric endoscope having a main body and a scope portion, said connector for connecting the main body with the scope portion, said connector comprising:

a housing;

a plurality of terminals held in said housing;

a first bearing portion made of a rigid material and disposed on said housing;

a second bearing portion made of an elastic material and disposed on said housing apart from said first bearing portion; and

an operating handle with a cylindrical configuration rotatably supported by said first and second bearing portions, said operating handle having a cam mechanism which is operated with the rotation of said operating handle;

wherein said second bearing portion is pressed and modified between said operating handle and said housing to produce a restitutive force so as to produce a predetermined friction torque surface friction when rotating said operating handle.

5,383,792

INSERTABLE LATCH MEANS FOR USE IN AN ELECTRICAL CONNECTOR

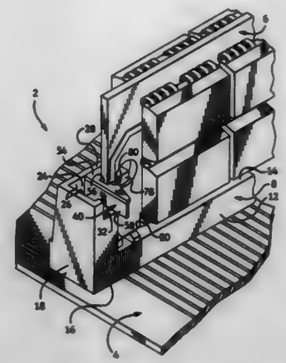
Iouif Korsunsky, Harrisburg; Richard C. Schroepfer, Thompsontown, and Monte L. Kopp, Tower City, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 645,151, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 313,261, Feb. 21, 1989, Pat. No. 4,986,765. This application Mar. 4, 1993, Ser. No. 26,280
The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—326 **55 Claims**

1. An electrical connector for connecting a daughter card and a mother board, the daughter card being rotatable relative to the mother board between a first and a second position, the electrical connector having a housing with a card receiving slot dimensioned to receive the daughter card therein, and the connector having contact terminals positioned adjacent to the card receiving slot and configured to make an electrical connection with the daughter card when the daughter card is in the second position in the card receiving slot, the electrical connector comprising:

a latch receiving recess provided at an end of the housing near the card receiving slot of the housing;

a separate resilient latch having a base portion which is positioned in the latch receiving recess, and a latching portion which extends from the latch receiving recess toward the card receiving slot;



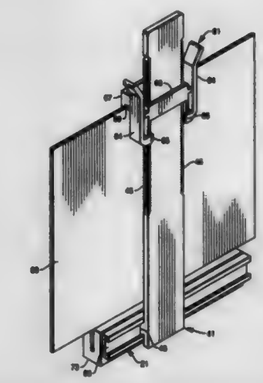
whereby after the daughter card is rotated from the first position to the second position, the latch cooperates with the daughter card to maintain
the daughter card in the second position.

5,383,793

ADUSTABLE HEIGHT AND POSITION PRINTED CIRCUIT BOARD RETAINER

Sawyer C. Hsu; Bao Q. Tran, both of San Diego, and Robert T. Wang, Escondido, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 17, 1993, Ser. No. 168,293
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—327 **8 Claims**



1. An adjustable retainer for releasable retaining a printed circuit card in a circuit card edge connector, said printed circuit card including a bottom edge for connection with said circuit card edge connector and a top edge opposite said bottom edge, said retainer comprising:

a base member for attachment to said circuit card edge connector;

an elongated retaining post having a length greater than the distance from said bottom edge to said top edge of said printed circuit board;

means for attaching said retaining post to said base member such that said retaining post is secured in an orthogonal relationship with said circuit card edge connector and parallel with said circuit card installed into said circuit card edge connector, said attachment means permitting attachment of said retaining post to said base member at various positions along a side of said circuit card edge connector;

a clamp assembly slideably attached to said retaining post and positionable at various positions along the length of said retaining post, said clamp assembly including a body and means for engaging the tog edge of said circuit card; and

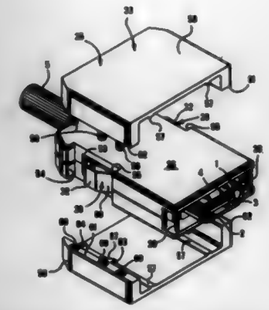
means for securing said clamp assembly into a selected position along said retainer post.

5,383,794

LATCH ACTUATOR FOR A CONNECTOR

Wayne S. Davis, Harrisburg; Michael E. Shirk, Grantville, and Earl C. Myers, Jr., Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 16, 1993, Ser. No. 93,543
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—352 **14 Claims**



1. A kit of parts for an actuator mechanism comprising: a latch arm holder with an interior adapted to encircle an electrical connector; latch arms adapted for pivotal movement in the holder; engaging ends of the latch arms adapted to engage with, and to pivot and disengage from, another mating electrical connector; an actuator having identical actuator sections; actuating ends of the latch arms adapted to face toward the actuator; the actuator being adapted to slide along the holder and against the actuating ends to pivot the latch arms and the engaging ends; interlocking posts and sockets on the actuator sections; fillets in the sockets recessed from entrance ends of the sockets; and the posts being adapted to be inserted in entrance ends of the sockets, and thereafter alongside the fillets in the sockets and in interference fit with the fillets in the sockets.

5,383,795

UNISEX CONNECTOR/MODULAR ADAPTER SYSTEMS

Aldo Falossi, 22496 Caminito Grande, Laguna Hills, Calif. 92653, and Paul Thomas, 1257 W. O'Farrell St., San Pedro, Calif. 90731

Division of Ser. No. 55,980, May 3, 1993, Pat. No. 5,348,494. This application May 12, 1994, Ser. No. 241,799
Int. Cl.[6] H01R *13/677*
U.S. Cl. 439—362 **30 Claims**

1. A connector shell assembly for a 9-pin connector and a radio jack having a multiplicity of wires, the multiplicity of wires connected to the 9-pin connector, the connector shell assembly comprising:

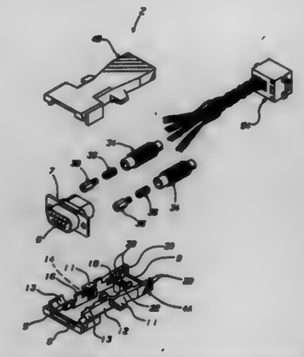
a. an elongated rigid connector shell having a first half and an identical second half, each half having a longitudinal slot with a front portion for housing said 9-pin connector, and a rear portion for housing said radio jack, a transverse slot on a front end for receiving a transverse plate of said 9-pin connector, a first and a second transverse slots on an extended rear end for receiving a first and a second transverse notches of said radio jack, a first lateral side and a second lateral side;

b. means for interlocking said first and second halves of said connector shell together for receiving and partially enclosing said 9-pin connector and said radio jack;

c. a first and a second unisex spring-loaded turn wheel mechanisms each having a spring, a reversible member and a base;

d. said reversible member having a first end and a second end, the first end has a male screw post and the second end has a female screw nut;

e. said base of said first and second unisex spring-loaded turn wheel mechanisms having a first end and a second end, the first end has an opening for accommodating said spring and said reversible member respectively, and the second



end has a cross shaped slot for accommodating a driving tool; and

f. means for retaining said first and second unisex spring-loaded turn wheel mechanisms to said first and second lateral sides of said connector shell respectively;

g. whereby prior to snapping together said two halves of said connector shell, said 9-pin connector is placed in said longitudinal slot at said front portion of said first half of said connector shell and said transverse plate of said 9-pin connector is retained in said transverse slot of said front end of said first half of said connector shell, and said radio jack is placed in said longitudinal slot at said rear portion of said first half of said connector shell and said two transverse notches of said radio jack is retained in said two transverse slots of said extended rear end of said first half of said connector shell, said springs and said reversible members are placed in said bases respectively of said unisex spring-loaded turn wheel mechanisms which show said male screw posts for adapting an opposite said female screw nuts, said connector shell is snapped together to retain said 9-pin connector and said radio jack.

5,383,796

ELECTRICAL CONNECTOR WITH IMPROVED STRAIN RELIEF MEANS

David C. Bowen, Downers Grove, and Jerry A. Long, Elgin, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

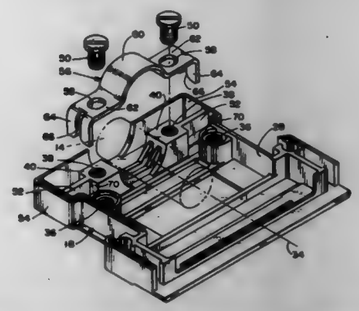
Filed Nov. 24, 1993, Ser. No. 158,136
Int. Cl.[6] H01R *13/595*
U.S. Cl. 439—469 **6 Claims**

1. In an electrical connector which includes

a shell means having a cavity and a cable-receiving opening adapted to receive an electrical cable, the cable-receiving opening defining an axis, and a pair of screw posts in the cavity spaced on opposite sides of the axis such that the cable can be positioned therebetween, and

a cable clamp member having a center section adapted to embrace one side of the cable, and a pair of wing sections extending from the center section and having screw-receiving holes alignable with said screw posts,

wherein the improvement comprises:



complementary interengaging positioning means between the shell means and the cable clamp member for prepositioning the cable clamp member over the cable with the screw-receiving holes aligned with the screw posts, wherein said complementary interengaging positioning means include flanges projecting from the wing sections, and

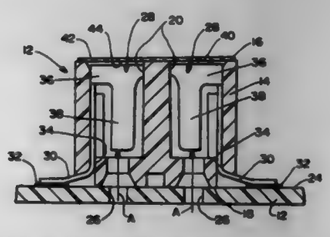
said flanges include slots for embracing ribs on the shell means.

5,383,797

SYSTEM FOR HANDLING ELECTRICAL CONNECTORS BY A VACUUM-SUCTION NOZZLE

AuYong C. Seong; Yuen P. Woon, and Lai M. Sang, all of Singapore, Singapore, assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 8, 1993, Ser. No. 89,946
Int. Cl.[6] H01R *13/00*
U.S. Cl. 439—476 **7 Claims**



1. A system for mounting a connector assembly to a mounting surface of an electrical apparatus through the use of a vacuum-suction nozzle, comprising:

a connector assembly including a dielectric housing adapted to be positioned adjacent said mounting surface, the housing having a top surface and a bottom surface with a plurality of terminal-receiving through passages extending therebetween, the bottom surface being adapted to be mounted adjacent to the mounting surface of the electrical apparatus, and a plurality of sidewalls extending between said top surface and said bottom surface and defining an outer periphery of said top surface,

a plurality of electrical terminals mounted in the passages and including solder tail portions projecting from first open ends of the through passages for solder interconnection to circuitry of the electrical apparatus, and

a generally planar film secured directly to the top surface of the housing and covering second open ends of at least some of the through passages to provide a smooth surface area for engagement by the vacuum-suction nozzle for manipulating and positioning the connector assembly, said film being secured only within the outer periphery of said top surface.

5,383,798

VCR TERMINAL CONNECTOR

Lark Lin, No. 43-3, Pei-Tao Li, Tan-Shui Town, Taipei Hsien, Taiwan, Prov. of China

Filed Aug. 16, 1993, Ser. No. 106,577
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—578 **1 Claim**



1. A VCR terminal connector comprising a metal contact casing connected to an outside conductor of a coaxial cable, a shell covered around said metal contact casing, a coil spring retained to said shell around the coaxial cable, a metal contact center rod retained inside said metal contact casing by insulator bushings and connected to the central conductor of the coaxial cable, wherein said metal contact center rod has a hole on a rear end thereof into which the central conductor of the coaxial cable is inserted and then retained thereto by deforming the rear end of said metal contact center rod through a punching process; said metal contact casing comprises an axial through hole, which receives said metal contact center rod and said coaxial cable, and a side through hole, through which a liquid insulating compound is filled into the axial through hole of said metal contact casing and hardened to form a layer of insulating shield covered over said metal contact center rod and the central conductor of the coaxial cable; said metal contact casing is deformed by punching, after the insertion of the coaxial cable and said metal contact center rod into the axial through hole of said metal contact casing, to let the coaxial cable be firmly retained thereto; insulator bushings are fastened inside the axial through hole of said metal contact casing around said metal contact center hole and the coaxial cable to firmly retain the outside conductor of the coaxial cable to said metal contact casing on an interior thereof; an insulating layer of shield is formed through an injection molding process and covered over said metal contact casing and the central conductor and outside conductor of the coaxial cable and filled up the gaps between said metal contact center rod and said metal contact casing.

5,383,799

MULTI-PURPOSE PLUG-IN ELECTRICAL OUTLET ADAPTOR

Philip E. Fladung, 1028 Fairview La., Carmel, Ind. 46032

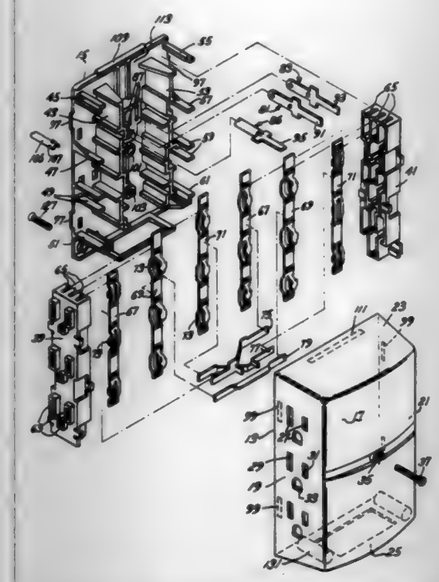
Filed Mar. 26, 1993, Ser. No. 37,931
Int. Cl.[6] H01R *25/00*
U.S. Cl. 439—652 **27 Claims**

1. An outlet adaptor for plug insertion into a conventional wall mounted outlet receptacle, said adaptor comprising:

a main housing defining an interior space

first and second connector blades securely mounted to said main housing, each of said blades having an exterior end extending outwardly from the backside of said main housing and an interior end disposed within said interior space, said exterior ends of said connector blades being spaced apart and arranged in a parallel relationship to define a plug capable of insertion into a wall mounted outlet receptacle;

a first bus carrier associated with said main housing having a first set of plug receiving apertures and constructed to accept the connector blades of a conventional plug passing through first and second apertures of said first set of apertures, said first bus carrier including a first bus strip positioned for making electrical contact with a connector blade inserted into said first aperture of said first set of apertures, and a second bus strip positioned for making electrical contact with a connector blade inserted into said second aperture of said first set of apertures;



a second bus carrier associated with said main housing having a second set of plug receiving apertures and constructed to accept the connector blades of a conventional plug passing through first and second apertures of said second set of apertures, said second bus carrier including a third bus strip positioned for making electrical contact with a connector blade inserted into said first aperture of said second set of apertures and a fourth bus strip positioned for making electrical contact with a connector blade inserted into said second aperture of said second set of apertures;

a printed circuit board disposed within said interior space, said printed circuit board carrying a plurality of printed electrical conductors; and

each of said first, second, third and fourth bus strips being electrically connected to one of said printed electrical conductors of said printed circuit board and the interior end of each of said first and second connector blades being electrically connected to one of said printed electrical conductor of said printed circuit board.

5,383,800

RELAY TERMINAL FOR USE IN BRANCH CONNECTING BOX

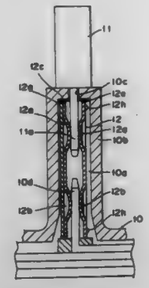
Yuuji Saka, and Takahiro Onizuka, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Continuation of Ser. No. 21,572, Feb. 24, 1993, abandoned. This application May 27, 1994, Ser. No. 250,654

Claims priority, application Japan, Mar. 30, 1992, 4-017674[U]

Int. Cl.[6] H01R *11/09*

U.S. Cl. 439—787 **4 Claims**



1. A relay terminal for use in a branch connecting box into which the relay terminal is inserted to connect a first end of the relay terminal with a tab of a bus bar and a second end of the relay terminal with a tab of a functional component, said relay terminal comprising a first pair of connecting springs on surfaces of the relay terminal in the vicinity of the first end of the relay terminal, and a second pair of connecting springs on surfaces of the second end of the relay terminal, the connecting springs of each pair being opposed to each other in such a manner that the connecting springs project inward in the configuration of a circular arc with a gap provided between each pair of the connecting springs, through which each tab is inserted between said pair of the connecting springs, opposed ends of each of said connecting springs being connected to surfaces of the relay terminal, whereby a contact load is equally applied to each connecting spring when the respective tabs are inserted into the relay terminal, and wherein the relay terminal is a bent plate-shaped material of a hollow cylindrical configuration, end edges of said plate-shaped material overlapping at a first surface portion, a second surface portion being opposed to said first surface portion, projections being located on said second surface portion, said projections having a height substantially equal to the thickness of said plate-shaped material, whereby said relay terminal can be inserted in the center of said connecting box.

5,383,801

HOLLOW JET THRUSTER DEVICE

Jean-Bernard Chas, Villa des Haules, 76790 Etretat, France

PCT No. PCT/FR92/00001, § 371 Date Jan. 18, 1993, § 102(e) Date Jan. 18, 1993, PCT Pub. No. WO92/12048, PCT Pub. Date Jul. 23, 1992

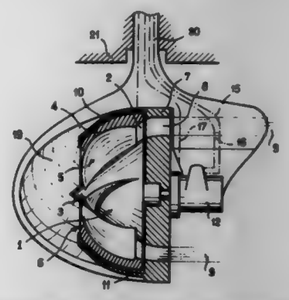
PCT Filed Jan. 2, 1992, Ser. No. 78,305

Claims priority, application France, Jan. 2, 1991, 91 00022

Int. Cl.[6] B63H *21/12*

U.S. Cl. 440—5 **7 Claims**

1. In a device for producing thrust from a flow of accelerated fluid comprising a stator (10), a fluid acceleration means (1) having drive vanes (5) and being rotatable inside the stator (10) about an axis of revolution by drive members, a circularly symmetrical stationary web portion (7) centered on said axis and having a plurality of fins (8) configured to rectify a trajectory of the fluid passing from the accelerator means (1) so as to form a hollow jet (9) having a volume of space inside the hollow jet, and means for supplying pressure to said volume of space,



the improvement wherein the drive members (12) for the acceleration means (1) are disposed within the volume of space inside the hollow jet.

5,383,802

PROPULSION SYSTEM

Hugh B. Nicholson, Tallahassee, Fla., assignor to Maelstrom, Inc., Tallahassee, Fla.

Filed Nov. 17, 1993, Ser. No. 153,085

Int. Cl.[6] B63H *11/00*

U.S. Cl. 440—38 **15 Claims**

1. A propulsion system comprising:

a cylindrical support member and a tubular rotatable member rotatably mounted within said support member and being adapted to permit a fluid flow therethrough, said tubular member defining first, second and third sections extending along a longitudinal direction of said tubular member, said first section of said tubular member slightly tapering inwardly in a direction toward a rotational axis of said tubular member for restricting said fluid flow therethrough, said second section extending radially outwardly in a direction away from said rotational axis, and said third section extending in a direction which is substantially parallel to the rotational axis; and

vane means attached on an interior surface of said tubular member and comprising blades which extend in a direction toward said rotational axis such that rotation of said tubular member and the vane means attached thereon draws air/gas and fluid into the tubular member to accelerate the fluid flow through the tubular member;

wherein:

said blades of said vane means define first, second and third blade sections which extend along the longitudinal direction of said tubular member;

said first blade section is located at said first section of said tubular member and extends from an entrance of said tubular member to the second section of the tubular member for driving air/gas and fluid to said second blade section, said second blade section overlaps the first and third blade sections, and said second blade section extends from said first section to said third section of said tubular member, said third blade section extends from said second section to said third section of said tubular member and extends substantially to an exit of said tubular member; and

said second and third blade sections guide the fluid received rom the first blade section through the tubular member, apply a centrifugal force to the fluid and draw in additional air/gas to the fluid.

5,383,803

OUTBOARD MOTOR COOLING SYSTEM

David R. Pilgrim, P.O. Box 1927, Rockport, Tex. 78382

Continuation of Ser. No. 15,141, Feb. 9, 1993, abandoned, which is a continuation of Ser. No. 625,003, Dec. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 481,249, Feb. 20, 1990, abandoned. This application Sep. 17, 1993, Ser. No. 126,694

Int. Cl.[6] B63H *21/10*

U.S. Cl. 440—88 **17 Claims**

1. An outboard motor of the type comprising

an internal combustion engine including

a block providing a coolant passage therein, and

a shaft output; and

a lower unit, in driven relation with the output, having a drive unit, and means for lubricating the drive unit; means providing an exhaust gas passage from the engine through the lower unit; and a first one-time-through cooling system delivering ambient water through the engine and through the exhaust passage and including a coolant pump, the improvement comprising

means converting the first one-time-through cooling system into a closed circuit cooling system and a second one-time-through cooling system, the closed circuit cooling system being independent of the lubricating means and including, in circuit, the coolant pump, a heat exchanger and the block coolant passage for conducting coolant between the coolant pump, heat exchanger and coolant passage for cooling the engine;

the second one-time-through cooling system being indepen-

dent of the closed circuit cooling system and comprising an inlet, a discharge outlet in communication with the exhaust gas passage and means for conducting water from the inlet to the outlet.

5,383,804
SKI TUBE

Joseph E. Mitch, and Klara D. Mitch, both of 655 Carlson Ct., Rohnert Park, Calif. 94928

Continuation-in-part of Ser. No. 783,090, Oct. 18, 1991, Pat. No. Des. 340,495. This application Oct. 19, 1993, Ser. No. 138,911
Int. Cl.[6] B63B *7/08*
U.S. Cl. 441—66 3 Claims

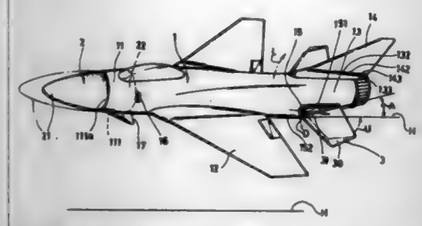


1. A ski tube comprising:
a torus-shaped inflatable innertube; and
a torus-shaped cover member including a continuous fastener, said cover member adapted for removable covering of said innertube, said cover member having a base portion; and
a towing flap portion connected to said cover member base portion and adapted for releasable capture of a tow rope handle, said towing flap portion including at least one strap element for capture of said tow rope handle.

5,383,805
TOY GLIDER WITH ADJUSTABLE FLYING PATH

Tzu-Jan J. Tsai, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan, Prov. of China

Filed May 20, 1994, Ser. No. 246,495
Int. Cl.[6] A63H *27/00*
U.S. Cl. 446—66 8 Claims

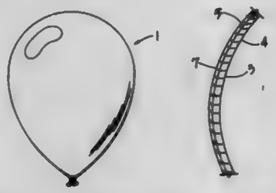


1. A toy glider comprising:
a fuselage (1) including a pair of wings (12) secured to a middle portion of the fuselage (1), a vertical stabilizer (14) mounted on a tail portion of the fuselage (1), and a front socket recessed in a front portion of the fuselage (1);
a telescopic nose member (12) telescopically secured in said front socket of said fuselage (1) for adjusting a center of gravity of said fuselage (1) for varying a flying path of the toy glider; and
a self-biasing elevator (3) including a tailplane (30) resiliently secured to a rear bottom portion (152) of said fuselage (1) by a restoring member (31), whereby upon a depression of the tailplane (30) and said restoring member (31) to horizontally position the tailplane (30), a horizontal flying of the toy glider can be catapulted, and upon releasing of the depression on the restoring member (31) after catapulting the glider, the restoring member (31) will automatically restore to bias the tailplane (30) for an elevating angle of the elevator (3) for upwardly pitching the glider for an upwardly climbing of the glider after a horizontal flying.

5,383,806
INFLATABLE BALLOONS WITH ANTI-BLOOMING AND ANTI-FOGGING COATINGS

Andy C. Prater, Willard, Ohio, assignor to Continental American Corporation, Wichita, Kans.

Filed Mar. 30, 1993, Ser. No. 40,107
Int. Cl.[6] A63H *3/06, 37/00*
U.S. Cl. 446—220 7 Claims



1. A method of preserving a smooth, glossy finish of an inflatable, transparent, toy balloon originally having such finish, the balloon comprising a latex material having inside and outside surfaces, said method comprising the steps of:
a) holding the balloon upon a form;
b) applying to the balloon a solution comprising an aqueous anionic aliphatic dispersion of polyester urethane having a sufficient solids content to coat said balloon and create an outer layer; and
c) drying said outer layer to provide a smooth, glossy finish without reduction in the transparency of said balloon.

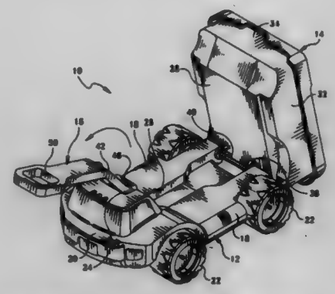
5,383,807

Patent Not Issued For This Number

5,383,808
CONVERTIBLE TOY TRUCK/WAGON

David M. DuBois, Providence, R.I., assignor to Playskool, Inc., Pawtucket, R.I.

Filed Feb. 9, 1994, Ser. No. 195,911
Int. Cl.[6] A63H *17/06, 33/02, 17/00*
U.S. Cl. 446—428 13 Claims

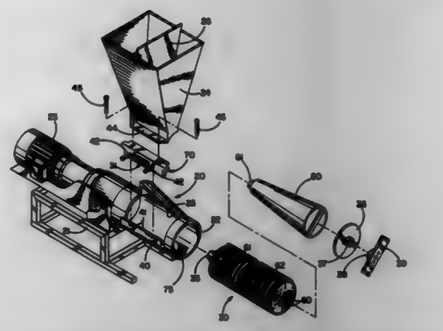


1. A convertible toy truck/wagon comprising:
a) a truck chassis and wheel assembly having front and rear ends and including a chassis member, a cab on said chassis member and a plurality of wheels on said chassis member for movably supporting said chassis and wheel assembly on a supporting surface;
b) a truck bed having front and rear ends;
c) means pivotally mounting said truck bed on said chassis member behind said cab such that said truck bed is pivotable between a first position wherein said truck bed is received in a substantially horizontal disposition on said chassis member and a second position wherein said truck bed is pivoted upwardly and rearwardly relative to said chassis member;
d) handle means including a handle member having first and second ends, said handle member being pivotally attached to said chassis and wheel assembly such that when said truck bed is in the second position thereof, said handle member is pivotable between a first position wherein said handle member extends rearwardly from the first end thereof along said chassis member behind said cab and a second position wherein said handle member extends forwardly from the first end thereof and the second end thereof is disposed forward of said cab; and
e) said handle member being disposed beneath said truck bed when said handle member and said truck bed are in the respective first positions thereof.

5,383,809
DESINEWING MACHINE FOR PRODUCING COARSE-TEXTURED MEAT

Stephen A. Paoli, c/o Stephen Paoli International Corporation, 2531 11th St., Rockford, Ill. 61104

Filed Aug. 12, 1993, Ser. No. 106,345
Int. Cl.[6] A22C *17/04*; B02C *23/16*
U.S. Cl. 452—138 18 Claims

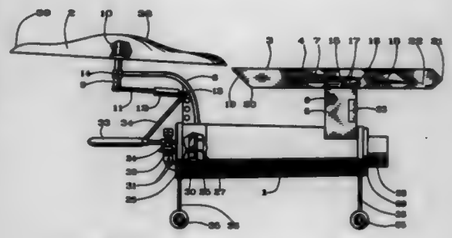


1. A machine for stripping sinew from relatively large meat hunks and for producing substantially smaller pieces of coarsely ground meat, said machine comprising an elongated outer housing of circular cross-section, a hollow rotor of circular cross-section rotatably supported within and spaced radially inwardly from said housing, means for rotating said rotor about a predetermined axis, means for introducing meat hunks into the space between said housing and said rotor, a series of cutting and conveying elements extending helically around and along said rotor, a pressure bar coacting with said cutting and conveying elements to strip sinew from the hunks introduced into said space, said cutting and conveying elements advancing the stripped sinew along the exterior of said rotor to a first discharge station, a series of discrete holes formed through said rotor adjacent said cutting and conveying elements, said holes being generally circular and being closely spaced from one another along a helix extending around and along said rotor and between said cutting and conveying elements, small pieces of meat being formed and being forced through said holes and into the interior of said rotor as the sinew is stripped from said hunks, and means located within said rotor for causing said small pieces of meat to advance to a second discharge station remote from said first station.

5,383,810
REMOTE CONTROL FLYING MODEL SPACESHIP

Dana R. Loving, 4018 SW. 20th St., Gainesville, Fla. 32608

Filed Mar. 18, 1993, Ser. No. 33,363
Int. Cl.[6] A63H *27/00, 30/04*; B64C *15/00*
U.S. Cl. 446—57 28 Claims



1. A spaceship comprising:
a propulsion duct having a tubular form with an inside periphery, an outside periphery, an intake end and a discharge end;
a ducted fan having a fan shaft concentric to a linear axis of the propulsion duct and positioned inside of the intake end of the propulsion duct;
a rotational prime mover attached to the propulsion duct and having rotational-drive relationship to the fan shaft;
a circular wing attached to a forward strut extended upward vertically and forwardly from a front portion of the outside periphery of the propulsion duct;
a first pod wing attached to a first side strut extended sidewards and upwards at a select angle from a first side of an intermediate portion of the outside periphery of the propulsion duct;
a second pod wing attached to a second side strut extended sidewards and upwards at a select angle from a second side of an intermediate portion of the outside periphery of the propulsion duct;
a stabilizer wing extended horizontally between the first pod wing and the second pod wing;
an aileron attached pivotally to each pod wing;
an elevator attached pivotally to a rear edge of the stabilizer wing; and
a rudder means on an aft portion of the propulsion duct.

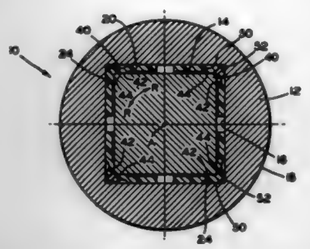
5,383,811
FLEXIBLE NON-METALLIC BEARING LINER FOR TELESCOPIC STEERING COLUMN

Edward N. Campbell, Oklahoma City, Okla., and Thomas J. Keller, Cridersville, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed May 31, 1991, Ser. No. 708,549
The portion of the term of this patent subsequent to Feb. 24, 2010, has been disclaimed.
Int. Cl.[6] F16D *3/06, 3/76, 33/20*; B62D *1/18*
U.S. Cl. 464—89 4 Claims

1. In an elongated non-metallic bearing liner adapted for placement between a telescoping steering sleeve and shaft, said liner defining a longitudinal axis and having at least four generally axially extending parallel planar sides, each side defining a pair of edges extending along said axis, wherein adjacent edges of two adjacent sides are integrally joined together by a web having a cross-section substantially thinner than the average cross-sections of said sides, said liner further defining a radial dimension extending perpendicularly to said axis, said web being outwardly bowed radially of said axis of said liner, wherein each of said adjacent edges comprises an arcuate, axially extending, integral spring means, whereby torsional lost motion between said steering shaft and steering sleeve may be resiliently absorbed, wherein each of said spring means com-

prises a U-shaped resilient spring channel, each side containing two spring channels, wherein, with respect to said axis, each U-shaped spring channel defines a radially inwardly bowed



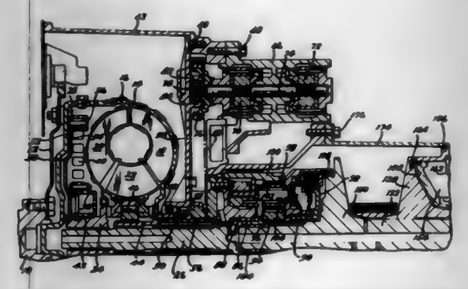
portion, and wherein said bearing liner further defines integral locator flanges positioned at each longitudinal end, each flange extending radially outwardly of said axis.

5,383,812

RADIO CONTROL VALVE FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Thomas T. Tibbles, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 8, 1993, Ser. No. 27,998
Int. Cl.[6] F16H *59/00*
U.S. Cl. 474—28 **7 Claims**



1. A control system for a continuously variable transmission having a primary friction sheave assembly and a secondary friction sheave assembly, a drive belt drivably connecting said sheave assemblies, primary servo means for adjusting the pitch radius of said primary sheave assembly, secondary servo means for adjusting the pitch radius of said secondary sheave assembly;

said control system comprising a pump, a control valve circuit connecting each servo means with said pump;

each sheave assembly including a pressure chamber of expansible volume, an increase in the pitch radius of one sheave assembly being accompanied by a decrease in the pitch radius of the other sheave assembly;

said primary servo means comprising an upshift pressure chamber and a downshift pressure chamber; and

a ratio control valve means in said valve circuit for controlling distribution of pressure to said upshift and downshift pressure chambers from said pump;

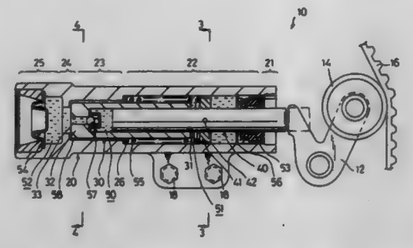
said ratio control valve means comprising a valve chamber, a movable valve spool in said valve chamber, a pair of valve lands with flow metering edges on said spool, flow exit ports in said valve chamber adapted to register with said flow metering edges, and flow inlet ports in said valve chamber at locations adjacent said lands whereby inlet flow to said valve chamber is unrestricted by said lands.

5,383,813

OIL-OPERATED TENSIONER FOR TOOTHED BELT

Nobuhiro Odai, Sakado, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan

Filed Jun. 10, 1994, Ser. No. 258,099
Claims priority, application Japan, Jun. 29, 1993, 5-040305[U]
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—110 **3 Claims**



1. An oil-operated tensioner for a toothed belt comprising:

a hollow housing having a wall and a housing opening;

a hollow cylinder disposed within the housing, the cylinder having first and second ends, a cylindrical interior side wall, a cylinder opening at said first end, and an end wall at said second end, the end wall having means providing a first oil path for the flow of oil through the end wall into the cylinder;

a rod extending from the exterior of the housing into the cylinder through the housing opening and the cylinder opening, the rod being slidable in the cylinder and fitting the cylindrical interior side wall with a small clearance whereby the cylinder and the rod form a high pressure oil chamber defined by the end wall of the cylinder, the rod, and a portion of the interior side wall of the cylinder;

spring means for urging said rod in a direction to protrude from the housing through the housing opening;

volume change absorbing means located adjacent to said second end of the cylinder;

an oil reservoir within the housing adjacent to the end wall of the cylinder, the oil reservoir being defined by a portion of the wall of the housing, a portion of the cylinder, and said volume change absorbing means, the oil reservoir being in communication with said first oil path;

means, comprising a check valve in said first oil path, for allowing oil to flow from the reservoir into the high pressure oil chamber, but preventing flow of oil through said first oil path from the high pressure oil chamber to the reservoir;

sealing means located adjacent to the housing opening, the sealing means surrounding the rod and extending from the rod to the wall of the housing;

a low pressure chamber located adjacent to the cylinder opening and being defined by a portion of the wall of the housing, a portion of the rod, a portion of the cylinder, and the sealing means; and

means providing a second oil path between the housing and the cylinder, for providing communication between said low pressure chamber and said oil reservoir.

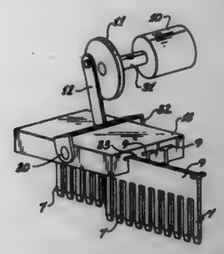
5,383,814

HAND TENDERIZER

Andre R. Jaccard, 3421 N. Benzing Rd., Orchard Park, N.Y. 14127

Filed Sep. 2, 1993, Ser. No. 116,116
Int. Cl.[6] A22C *9/00*
U.S. Cl. 452—141 **8 Claims**

1. A blade segment for use in a handheld meat tenderizer comprising an integral unit having a substantially rectangular configuration when viewed from a front perspective and having a substantially T-shaped configuration when viewed from a side perspective, said blade segment having an upper substantially solid section having a plurality of elongated sharpened



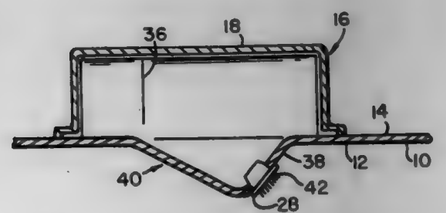
blades suspended therefrom, each of said sharpened blades terminating in a beveled, pointed and sharpened manner for easier entrance in a meat portion to be tenderized.

5,383,815

AIR CONDUIT ARRANGEMENT FOR THE VENTILATION OR AIR CONDITIONING OF THE INTERIOR OF A VEHICLE AND METHOD FOR PRODUCING AN AIR CONDUIT ARRANGEMENT

Gerd H. Kiesel, Neiber; Wilfried Blume, Hanover, and Dieter Meyer, Wedemark, all of Germany, assignors to Beneform GmbH, Germany

Filed Jan. 28, 1993, Ser. No. 12,162
Claims priority, application Germany, Jan. 28, 1992, 4202256
Int. Cl.[6] B60H *1/26*; B61D *27/00*
U.S. Cl. 454—137 **22 Claims**



1. An air conduit system for ventilating or air conditioning a vehicle interior, said interior being partly defined by roof and side body walls, at least of one said roof and side body wall having multilayered, preformed panel elements adjacent thereto, said panel elements having a decorated side facing the vehicle interior and a back with fastening elements facing the roof and side body walls, said system comprising air conduits formed by first and second wall sections, resiliently and permanently glued together at the back of said panel elements wherein the first of said conduit wall sections is formed by the panel elements and the second wall section is formed by a thermoplastic preformed part disposed on the back of said panel elements and said panel elements are fastened by means of the preformed part to at least one of said roof and side body walls.

5,383,816

EXHAUST BOX

Dominic Marcello, Mississauga, and Michael DiMauro, Concord, both of Canada, assignors to Webb Industries, Concord, Canada

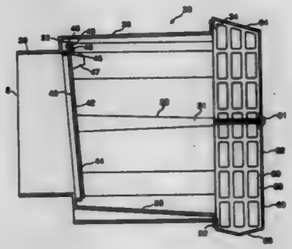
Filed May 4, 1993, Ser. No. 56,748
Int. Cl.[6] F24F *13/10*
U.S. Cl. 454—359 **10 Claims**

1. A gravity operated exhaust box for use in a wall structure, said exhaust box comprising:

a generally rectangular main body portion having an interior end and an exterior end, and adapted to fit into a wall structure such that said interior end is disposed toward the interior of the building defined by said wall structure and said exterior end is disposed toward the exterior of the building defined by said wall structure;

an inlet portion extending outwardly from said interior end of said main body portion and adapted to receive an exhaust duct in generally sealed relation thereto, said inlet portion having a first end terminating exteriorly to said main body portion and a second end terminating interiorly to said main body portion in a damper member receiving surface;

a flange portion extending radially outwardly from said exterior end of said main body portion, said flange portion being adapted to interface with said wall structure so as to help retain said exhaust box in place within said wall structure;



said main body portion having a sloped bottom portion that is sloped downwardly from said interior end to said exterior end and is thereby adapted to cause water thereon to flow toward said exterior end of said main body portion;

a damper member pivotally attached to said exhaust box such that said damper member is gravity biased into contact with said receiving surface, wherein said receiving surface is adapted to receive said damper member thereagainst so as to substantially preclude said inlet portion from being in fluid communication with said main body portion of said exhaust box; and

a rain screen grill extending outwardly from said exterior end of said main body portion, wherein said rain screen grill has a generally solid front plate, a generally solid top plate, a bottom plate, and a pair of perforated side plates with said plates generally enclosing said exterior end of said main body portion such that there are substantially no gaps between said plates and said main body portion.

5,383,817

MULTIPLE PLY PAPER ROLL

Joseph A. McCormick, Manhattan, Ill., assignor to General Credit Forms, Incorporated, Earth City, Mo.

Continuation of Ser. No. 873,451, Apr. 24, 1992, abandoned.
This application Mar. 14, 1994, Ser. No. 214,008
Int. Cl.[6] B41L *1/20*
U.S. Cl. 462—25 **8 Claims**

1. A roll comprising at least one imprintable form, each said form comprising:

(a) a top ply and a bottom ply, each of said top and bottom plies defining at least one longitudinal edge in register with a corresponding longitudinal edge of the other top or bottom ply, said top ply being disposed over said bottom ply, and each of said top and bottom plies defining respective upper and lower surfaces;

(b) said top ply lower surface and said bottom ply upper surface being coated with a carbonless image producing agent;

(c) said top ply upper surface and said bottom ply lower surface being free of carbonless image producing agent; and,

(d) means for releasably adhering said lower coated surface of said top ply to an adjacent upper coated surface of said bottom ply along at least said longitudinal edge of said top and bottom plies without adhering a coated ply surface to



an adjacent ply surface which is free of carbonless image producing agent;

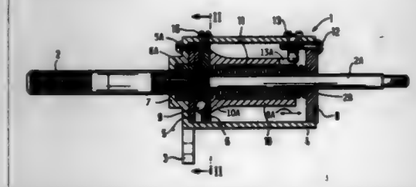
whereby said form having said releasably joined top and bottom plies can be unwound from said roll without the form adhering to said remaining portion of said roll.

5,383,818

OVERLOAD CLUTCH FOR LIMITING A TORQUE MOMENT

Wolfgang Lessat-Kaupat, and Guenther Kallies, both of Hamburg, Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Germany

Filed Jun. 26, 1992, Ser. No. 905,248
Claims priority, application Germany, Jul. 2, 1991, 4121892
Int. Cl.[6] F16D *7/08, 3/10*
U.S. Cl. 464—36 **5 Claims**



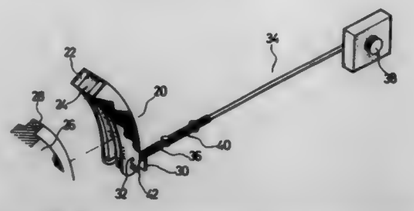
1. An overload clutch for limiting a torque moment, comprising a housing (4) with a central longitudinal axis, a drive shaft (2) rotatably mounted in said housing, power take-off means (3) rigidly connected to said housing, an entraining cam disk (5) including several depressions (18) in said entraining cam disk (5), and a cage element (6) facing said depressions, said cage element comprising a plurality of axial bores (14), a ball (9) in each of said bores, and a stack of annular friction springs positioned for applying a compression force to said balls, means (12, 13) for adjusting said compression force, and wherein said cage element is a disk (6) with holes (14) forming said axial bores, said disk (6) having an axial thickness smaller than the diameter of said balls, a pressure application element between said balls and said stack of annular friction springs so that said compression force is centrally effective through said pressure application element on said balls, said clutch further comprising limit elements (15, 16) between said housing (4) and said disk (6) for limiting rotation of said disk (6) relative to said housing (4).

5,383,819

DAMPING DEVICE FOR GYMNASTIC APPARATUS

Leao Wang, and Peter Wu, both of Taichung Hsien, Taiwan, Prov. of China, assignors to Greenmaster Industrial Corp., Taiping Hsiang, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 96,998, Jul. 26, 1993, Pat. No. 5,322,481. This application Mar. 3, 1994, Ser. No. 205,156
Int. Cl.[6] F16H *7/00*
U.S. Cl. 474—144 **1 Claim**



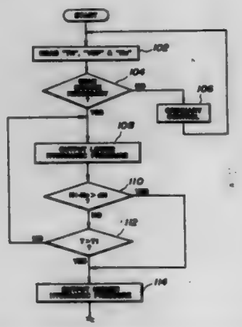
1. A damping device controlled by a rotary knob through a traction device to give a damping force to a gymnastic apparatus of the type comprising a free wheel and a flywheel driven by said free wheel through a belt transmission mechanism, the damping device comprising a curved channel plate having a bottom end pivotally connected between two wheel guards being disposed at two opposite sides by a peripheral flange around the periphery of said flywheel, two friction pads bilaterally fastened to said curved channel plate on the inside, a longitudinal opening defined between said friction pads, which receives said peripheral flange of said flywheel, a lug affixed to said curved channel plate on the outside near the bottom end and driven by said traction device through a spring-supported hook to adjust the angular position of said curved channel plate in changing the contact area between said peripheral flange of said flywheel and said friction pads.

5,383,820

CONTROL SYSTEM FOR AUTOMOTIVE AUTOMATIC TRANSMISSION

Akimasa Mori, Fuji, Japan, assignor to Jatco Corporation, Fujii, Japan

Filed Apr. 27, 1993, Ser. No. 52,738
Claims priority, application Japan, Apr. 28, 1992, 4-136296
Int. Cl.[6] F16H *61/08*
U.S. Cl. 475—123 **5 Claims**



1. In an automotive automatic transmission including a friction element operated by a hydraulic pressure,

a control system comprising:

first means for judging whether a gear change of the transmission is necessary or not in accordance with the running condition of the vehicle;

second means for lowering said hydraulic pressure when said first means judges a necessity of the gear change;

third means for increasing said hydraulic pressure when a difference between the maximum engine speed appearing after starting of gear change operation and a current engine speed is greater than a predetermined degree; and

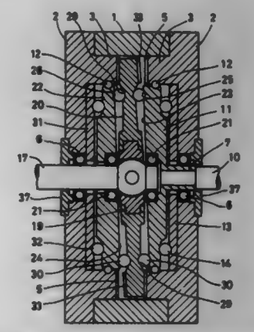
fourth means for increasing said hydraulic pressure when a predetermined time passes from the time when said first means has judged the necessity of said gear change irrespective of operation of said third means.

5,383,821

5SPEED REDUCER

Hiroshi Murakami, 7-7-303, Hiranohigashi 4-chome, Hirano-ku, Osaka, and Tetsu Sakaida, No. 1306, Asahi Plaza, 65-68, Numa 1-chome, Yao-shi, Osaka, both of Japan

Filed Oct. 5, 1993, Ser. No. 131,381
Claims priority, application Japan, Feb. 9, 1993, 5-021144
Int. Cl.[6] F16H *1/28*
U.S. Cl. 475—164 **1 Claim**



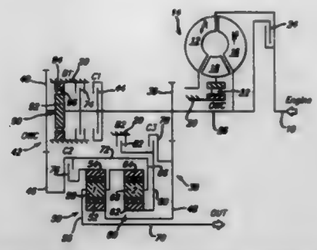
1. A speed reducer comprising: a pair of side plates arranged opposite to each other and formed on their surfaces opposite to each other with ring-shaped protrusions concentric to and spaced apart from each other, said protrusions having fixed gears at surfaces thereof opposing each other; an input shaft extending through the center of one of said side plates and supported so as to be rotatable; a circular input plate fixed to an inner end of said input shaft, one of the surfaces of said input plate facing the other of said side plates and being inclined with respect to the center of rotation of said input plate; an output shaft extending through the center of the other of said side plates and supported so as to be rotatable; a universal joint provided on an inner end of said output shaft; an output plate mounted on the inner end of said output shaft through said universal joint so as to be rotatable with and inclinable relative to said output shaft, said output plate being provided on both sides thereof near its outer circumference with movable gears each having teeth whose number is different from the number of teeth of each said fixed gear and adapted to be brought into meshing engagement with said fixed gears, and said output plate being supported so as to be kept substantially parallel to said inclined surface of said input plate while it sways as said input plate rotates, whereby the teeth of said movable gears are brought into meshing engagement with said fixed gears on said protrusions one after another at diametrically opposite positions from each other.

5,383,822

MULTIPLE SPEED AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLES

Stanley L. Pierce, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 9, 1993, Ser. No. 103,373
Int. Cl.[6] F16H *3/56, 57/10*
U.S. Cl. 475—281 **13 Claims**



1. A multiple speed ratio automatic transmission housed in a casing, comprising:

an input shaft (26);

an output shaft (70);

a first gearset (38) driveably connected to the input shaft;

a second gearset (42);

first (50) and second (60) gear units, each gear unit having a sun gear, ring gear, planet pinions meshing with the sun gear and ring gear, and carrier rotatably supporting the planet pinions, the carrier (56) of the first gear unit, ring gear (64) of the second gear unit, and output shaft mutually driveably connected, the carrier (66) of the second gear unit driveably connected to the second gearset, the sun gear (52) of the first gear unit driveably connected to the first gearset;

first brake means for releasably holding the second gearset and carrier of the second gear unit against rotation;

first clutch means (44) for releasably connecting the input shaft and second gearset;

second clutch means (76) for releasably connecting the second gearset and ring gear of the first gear unit;

third clutch means (78) for releasably connecting the sun gear of the second gear unit and first gearset; and

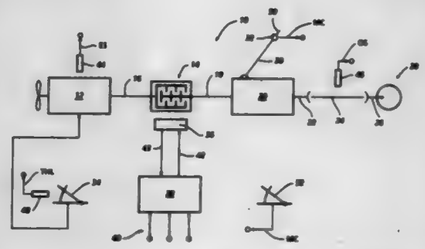
second brake means (82) for releasably holding the sun gear of the second gear unit against rotation.

5,383,823

CLUTCH CONTROL

Harold R. Ward, Farmington Hills; Jerry D. Woods, Milford, and Roger A. Williams, Redford, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 10, 1993, Ser. No. 74,627
Int. Cl.[6] B60K *41/28*
U.S. Cl. 477—86 **34 Claims**



1. A method for controlling engagement and disengagement

of a vehicular master clutch (14) drivingly interposed between an engine (12) controlled by a manual throttle (34) and a manually shifted multiple speed mechanical transmission (20), said throttle having a nondisplaced position wherein a minimum amount of fuel is supplied to the engine and being substantially continuously displaceable to a one hundred percent (100%) displaced position wherein maximum fueling of the engine is requested, said method comprising:

providing a clutch actuator (36) responsive to signals from a controller (38) to engage and disengage the master clutch;

providing a manually operated selection device (50/52) allowing manual selection of engagement and disengagement of said master clutch, said device biased to a position of selection of engagement of said master clutch and displaceable to a position of selection of disengagement of said master clutch;

sensing a value (OS) indicative of vehicle speed;

sensing a value (THL) indicative of throttle displacement;

comparing the value indicative of vehicle speed to a first reference value (REF_{OS}); and

if the value indicative of vehicle speed is less than said first reference value ($OS<REF_{OS}$), then, if said manually operated selection device is in the disengagement selection position, causing said actuator to disengage said master clutch and, if the manually operated section device is in the position of selection of engagement, causing said master clutch to automatically engage in a modulated manner as a function of the value of the signal indicative of throttle displacement, the greater the throttle displacement, the greater the engagement of the master clutch, and,

if said signal indicative of vehicle speed exceeds said first reference value ($OS>REF_{OS}$), then causing said master clutch to engage and disengage as selected by said selection device regardless of the value of the signal indicative of throttle displacement.

18. A control system for controlling engagement and disengagement of a vehicular master clutch (14) drivingly interposed between an engine (12) controlled by a manual throttle (34) and a manually shifted multiple speed mechanical transmission (20), said throttle having a nondisplaced position wherein a minimum amount of fuel is supplied to the engine and being substantially continuously displaceable to a one hundred percent (100%) displaced position wherein maximum fueling of the engine is requested, said control system comprising:

a clutch actuator (36) responsive to signals from a controller (38) to engage and disengage the master clutch;

a manually operated selection device (50/52) allowing manual selection of engagement and disengagement of said master clutch, said device biased to a position of selection of engagement of said master clutch and displaceable to a position of selection of disengagement of said master clutch;

a first sensor (46) for sensing a value (OS) indicative of vehicle speed;

a second sensor (48) for sensing a value (THL) indicative of throttle displacement;

said controller (38) effective to compare the value indicative of vehicle speed to a first reference value (REF_{OS}); and

if the value indicative of vehicle speed is less than said first reference value ($OS<REF_{OS}$), then, if said manually operated selection device is in the disengagement selection position, causing said actuator to disengage said master clutch and, if the manually operated section device is in the position of selection of engagement, causing said master clutch to automatically engage in a modulated manner as a function of the value of the signal indicative of throttle displacement, the greater the throttle displacement, the greater the engagement of the master clutch, and,

if said signal indicative of vehicle speed exceeds said first reference value ($OS>REF_{OS}$), then causing said master clutch to engage and disengage as selected by said selection device regardless of the value of the signal indicative of throttle displacement.

5,383,824

PROCESS FOR CONTROLLING THE TORQUE OF AN INTERNAL COMBUSTION ENGINE

Wolfgang Runge, and Hans-Dieter Hengstler, both of Ravensburg, Germany, assignors to Zahnradfabrik Friedrichshafen AG, Germany

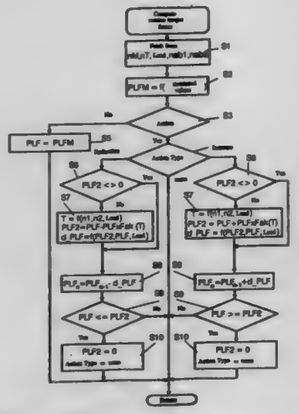
PCT No. PCT/EP91/02167, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/09449, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 18, 1991, Ser. No. 64,036

Claims priority, application Germany, Nov. 22, 1990, 4037092

Int. Cl.[6] B60K *41/04*

U.S. Cl. 477—110 **8 Claims**



1. A method for controlling torque of an internal combustion engine arranged to provide driving power to a motor vehicle via an automatic gear system, said internal combustion engine including an engine control device (2) which, based upon at least speed and load signals received from said internal combustion engine, controlling at least one of an ignition angle of an ignition system and an injection pulse width of a fuel injection system, the automatic gear system having a gear system control device (1) which, based on received speed and load requirement signals, controlling gear changes of the automatic gear system, and a computer system of said gear system control device (1) and a computer system of said engine control device (2) constantly communicating with one another via interfaces (3), wherein said engine control device (2) periodically receives from said gear system control device (1), a percentage torque requirement (PLF) based on which said engine control device (2) automatically influences the torque of the internal combustion engine; said method comprising the steps of:

detecting with said gear system control device (1) when a change of torque occurs;

varying the percentage torque requirement (PLF) sent via said interface (3) in accordance with a gradient (d_{PLF}); and

determining said gradient (d_{PLF}), as a function of a set end value of a torque requirement (PLF2), a variable factor of the torque requirement (PLF) and a load signal, as follows: $d_{PLF}=f$ (PLF2, PLF, load).

5,383,825

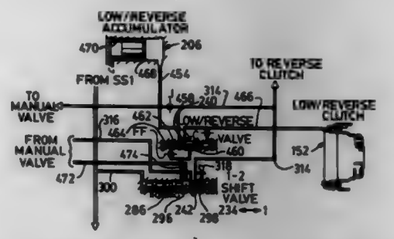
ELECTRONIC SHIFT CONTROLLER FOR A MULTIPLE RATIO AUTOMOTIVE TRANSMISSION

Joseph E. El-Khoury, Novi; Frank W. Timte, Canton, both of Mich.; Gerard P. Kuchta, Ingrave, England, and Edmond R. League, Moselstr, Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed May 25, 1993, Ser. No. 66,847

Int. Cl.[6] F16H *61/08*

U.S. Cl. 477—149 **12 Claims**



1. An electronic control system for a multiple ratio automatic transmission for use in an automotive vehicle driveline having a throttle controlled internal combustion engine, said transmission having gearing elements defining a first speed ratio and a second speed ratio;

fluid pressure actuated clutch and brake means for controlling the relative speeds of said gearing elements to effect speed ratio changes between said first and second speed ratios;

said clutch and brake means including a friction brake adapted to anchor a reaction element of said gearing that is common to both of said speed ratios and a friction clutch adapted to connect two of said gearing elements together to effect said second speed ratio, said friction clutch being released and said friction brake being applied to effect a speed ratio downshift;

a fluid pressure operated brake servo means for applying and releasing said brake and a fluid pressure operated actuator for applying and releasing said clutch, said brake servo having a pressure actuated piston defining in part a brake apply pressure chamber and a brake release pressure chamber; and

means for regulating the rate of exhaust of pressure from said clutch actuator and from said brake release pressure chamber in response to changes in vehicle driveline operating variables thereby achieving smooth speed ratio changes.

5,383,826

USER INTERFACE CONSOLE FOR EXERCISE EQUIPMENT

Farnet Michael, Auburn, Ala., assignor to Diversified Products Corporation, Opelika, Ala.

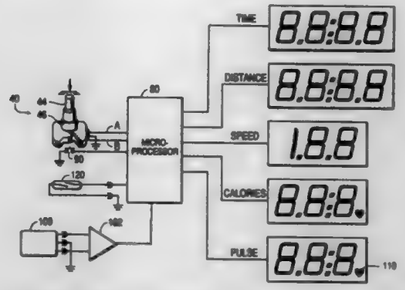
Filed Oct. 13, 1992, Ser. No. 959,437

Int. Cl.[6] A63B *21/005*

U.S. Cl. 482—3 **22 Claims**

1. A user interface console for controlling the operating conditions of an exercise device, said user interface having a program mode for programming exercise parameters, said user interface console comprising:

interfacing means for programming said exercise parameters, said interfacing means includes an encoder unit, having a rotatable shaft, for generating digital signals in response to rotation of the shaft, and wherein at least one



of said exercise parameters are programmed by rotating said rotatable shaft.

5,383,827

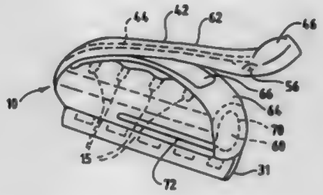
INFLATABLE HAND ORTHOSIS

Elliot L. Stern, Auburn, Ala., assignor to Orthotic Rehabilitation Products, Inc., Tampa, Fla.

Filed Mar. 15, 1993, Ser. No. 31,676

Int. Cl.[6] A63B *23/16*; A61F *5/00*

U.S. Cl. 482—47 **7 Claims**



1. An inflatable hand device for assisting the therapeutic exercise of the fingers and thumb of a patient's hand, said device comprising:

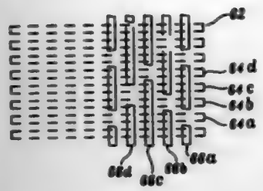
an inflatable bladder for positioning between the palm and fingers of a patient's hand with one side of said bladder fitting against the palm and another side substantially opposite said palm side, with an outer seam extending around a perimeter of said bladder to form an interior chamber for receiving and holding an inflating fluid,

a plurality of inner seams on the side of said bladder substantially opposite the palm side for forming interconnected fluid passageways within said interior chamber, said inner seams and said interconnected passageways adapted for simultaneously aligning and extending the fingers and abducting the thumb of the patient's hand while said interconnected passageways are inflated;

means for inflating and deflating said interconnected passageways of said inflatable bladder; and

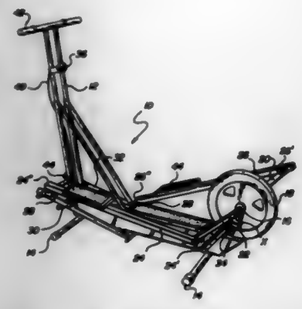
means for securing said inflatable bladder to the patient's hand whereby an uninflated bladder may be placed under said fingers and then pumped up to force said fingers to extend and said thumb to abduct.

5,383,828
BELT AND DECK ASSEMBLY FOR AN EXERCISE TREADMILL
Mark D. Sands, Centralia; Daniel A. Schwandt, Bothell; Soddy Tsang, Seattle, and Wes A. Williams, Arlington, all of Wash., assignors to Precor Incorporated, Bothell, Wash.
Division of Ser. No. 919,134, Jul. 23, 1992. This application Mar. 16, 1994, Ser. No. 213,989
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 10 Claims



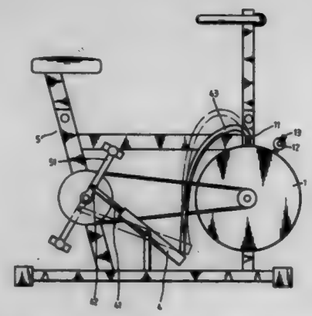
1. A treadmill assembly comprising:
an elongated frame having a pair of opposed ends;
a roller rotatably mounted to each of the opposed ends of said frame to extend laterally across said frame;
an endless belt extending over said rollers to form upper and lower spaced apart runs; and
a deck secured to said frame between said rollers and between the runs of said belt wherein said deck is formed with a wax-embedded hardborad adjacent said belt wherein said wax-embedded hardborad is made of wood and forms an outer surface of said deck that said belt contacts, and said wax-embedded hardboard includes a wax that is distributed throughout the body of said hardboard.

5,383,829
STATIONARY EXERCISE DEVICE
Larry Miller, 1628 Treeside Dr., Rochester, Mich. 48307
Continuation of Ser. No. 953,897, Sep. 30, 1992, Pat. No. 5,242,343. This application Aug. 13, 1993, Ser. No. 106,378
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[6] A63B *69/16, 22/04*
U.S. Cl. 482—57 7 Claims



1. An exercise device comprising:
a frame having a fixed pivot axis defined thereon, said frame configured to be supported on a floor;
a first and a second foot link, each having a foot engaging portion;
a first and a second coupling member, each associated with a respective one of said foot links for pivotally coupling said foot link to said pivot axis at a predetermined distance therefrom so that a first end of said foot link travels in an arcuate path about said axis;
a first and a second guide member, each guide member being supported by said frame and operative to engage a respective one of said foot links and to direct a second end of said foot link along a preselected, reciprocating path of travel, which is generally inclined with respect to said floor, as the first end of said foot link travels along said arcuate path; so that when said exercise device is in use, and when the second end of one of said foot links travels from a point at a lower end of said inclined path, upward along said inclined path, the heel portion of a user's foot associated therewith initially rises at a faster rate than the toe portion, and when the second end of said foot link travels downward, along said inclined, reciprocating path of travel, the heel portion of the user's foot initially lowers at a faster rate than the toe portion.

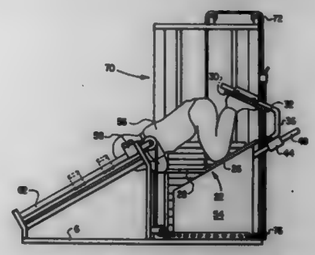
5,383,830
ADJUSTABLE AIR PRESSURE FORCE RESISTANCE EXERCISER SYSTEM
Long-Chuan Shu, Tainan Hsien, Taiwan, Prov. of China, assignor to Shuang Rong Shing Traffic Material Factory Co., Ltd., Tainan Hsien, Taiwan, Prov. of China
Filed Feb. 23, 1994, Ser. No. 200,448
Int. Cl.[6] A63B *69/16*
U.S. Cl. 482—63 1 Claim



1. An adjustable air pressure force resistance exercise system for a pedal actuated exerciser, comprising:
(a) an enclosed wheel box defining an interior chamber and having a bladed wheel member rotatively mounted therein;
(b) a first check valve mounted to a wall of said wheel box for insert of air into said interior chamber;
(c) a pump mounted to said exerciser having an input end coupled to a pedal of said exerciser, and an output end in fluid communication with said first check valve;
(d) a second check valve mounted to said wall of said wheel box for providing discharge from said interior chamber; and,
(e) a pressure gauge connected to said second check valve for opening said second check valve when air pressure within said wheel box reaches a predetermined setting of said pressure gauge.

5,383,831
GLUTEAL MUSCLE EXERCISE APPARATUS
Thomas W. Drath, 410 Grace, Richardson, Tex. 75081
Filed May 29, 1992, Ser. No. 891,290
Int. Cl.[6] A63B *21/062*
U.S. Cl. 482—101 18 Claims

1. An exercise apparatus for strengthening and toning the gluteal muscles of an exerciser, said exercise apparatus comprising:
means for supporting the exerciser with his feet fixedly positioned over his head, including a knee support platform;
linearly moveable means for directing movement of the upper portion of the exerciser's body as he pushes that



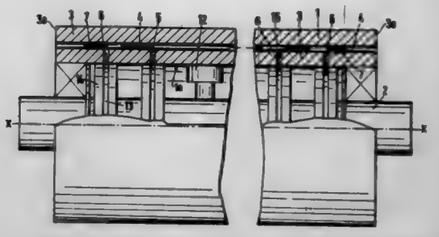
portion of his body out-and-away from his fixedly positioned feet to an extended position; and
means for varying the resistance presented by said linearly moveable means to the out-and-away movement made by the exerciser.

5,383,832
METHOD AND MACHINE FOR PERFORMING A TOOL CHANGE
Pavel Blazek, Schlierbach, and Gerhard Stark, Notzingen, both of Germany, assignors to STAMA Maschinenfabrik, GmbH, Schlierbach, Germany
Filed Mar. 21, 1994, Ser. No. 215,026
Claims priority, application Germany, Apr. 7, 1993, 4311469
Int. Cl.[6] B23Q *3/157*
U.S. Cl. 483—1 9 Claims



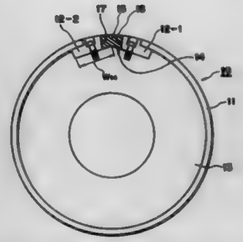
1. A method for performing a tool change in a machine tool for machining workpieces, said machine tool having a main spindle and a tool magazine containing a plurality of tools which are moved relative to the main spindle, the method comprising the steps of:
imparting a peripheral motion to the tool magazine, said peripheral motion defining first and second peripheral locations of the tool magazine, said first peripheral location facing the main spindle;
removing a tool from the tool magazine at the second peripheral location, thereby defining a first empty position in the tool magazine, and temporarily storing the removed tool;
depositing the tool already used in said first empty space with the aid of said main spindle at the first peripheral location;
taking the tool to be used, adjacent to the tool deposited in said first empty position, from the tool magazine, thereby defining a second empty position; and
subsequently, depositing the temporarily stored tool in the second empty position.

5,383,833
ROLL FOR HEATING OR COOLING RUNNING WEBS
Hubert Brugger, Baindt; Karl-Heinz Euderle, Weingarten; Harald Hess, Grünkraut; Frank Isele, Horgenzell; Horst Sesser, Bergatreute, and Rolf Wenske, Ravensburg-Torkenweiler, all of Germany, assignors to Sulzer-Escher Wyss GmbH, Ravensburg, Germany
Filed Jul. 14, 1993, Ser. No. 91,325
Claims priority, application Germany, Jul. 16, 1992, 4223359
Int. Cl.[6] B21B *13/02*
U.S. Cl. 492—16 14 Claims



1. A roll comprising a shell rotatable about a predetermined axis and having first and second end portions; and means for varying the temperature of at least one of said end portions, said means for varying the temperature comprising at least one first channel provided in said shell and extending in substantial parallelism with said axis, at least one second channel provided in said shell to admit a conditioning fluid into said at least one first channel, at least one third channel provided in said shell to receive conditioning fluid from said at least one first channel, and at least one adjustable throttle in at least one of said channels.

5,383,834
ROLL STAMPER FOR FORMING A BASE FOR INFORMATION RECORDING MEDIUM
Osamu Kaneone; Hirofumi Kamitakahara, both of Yokohama; Hitoshi Yoshino, Kawasaki; Tetsuya Sato, Kawasaki, and Hisanori Hayashi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 12, 1992, Ser. No. 897,747
Claims priority, application Japan, Jun. 14, 1991, 3-169028
Int. Cl.[6] B21B *31/08, 27/05*
U.S. Cl. 492—25 32 Claims



1. A roll stamper for forming an information recording medium base sheet, comprising;
a stamper member having a pattern corresponding to a pre-format pattern of an information recording medium in a surface of said stamper member;
fixing members fixed on opposite end portions of a reverse surface of said stamper member so as to be integral with said stamper member;
a specular roll base having a plurality of engagement grooves formed in a circumferential surface parallel to its

axis in which grooves said fixing member can be respectively fitted; and

said stamper member being fixed on said specular roll base by respectively fitting said fixing members in said engagement grooves, said stamper member being placed along the circumferential surface of said specular roll base;

wherein a recess in a circumferential surface of the roll stamper including a gap between said fixing members and said engagement grooves is filled with a filler so that the roll stamper circumferential surface is substantially smooth, and said filler is formed of a material having a thermal expansion coefficient larger than the thermal expansion coefficient of the material of said roll base.

5,383,835

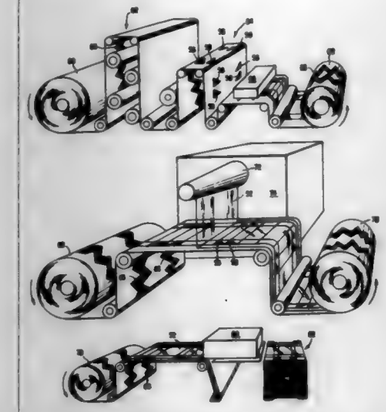
GAS BARRIER FOLDING CARTON CONSTRUCTION

Robert L. Gordon, 45 Maple La., Monroe, N.Y. 10950, and David E. Stier, 17 Randall Ter., Middletown, N.Y. 10940

Division of Ser. No. 970,551, Nov. 2, 1992, Pat. No. 5,289,939. This application Oct. 26, 1993, Ser. No. 141,006

Int. Cl.[6] B65H *37/00*

U.S. Cl. 493—330 **8 Claims**



1. A method of making blanks for forming gas impermeable folding cartons, the method including the steps of (1) continuously applying spaced apart coatings of abhesive along one surface adjacent one edge of a running web of indefinite length, (2) continuously die cutting spaced apart gaps along said one web edge, said one web edge between said gaps forming end closure panels for a carton, (3) continuously laminating or extruding a gas impermeable barrier film on said one surface of said web so that said barrier film covers said one surface and spans said gaps, (4) continuously die cutting carton blanks from said web and said extruded or laminated barrier film thereon, said barrier film spanning said gaps of said die cut blanks.

5,383,836

LETTER SHEET FORMING APPARATUS

John A. Long, 41 Lamont Avenue, Scarborough, Ontario, Canada M1S 1A8

Continuation-in-part of Ser. No. 859,879, Mar. 30, 1992, Pat. No. 5,298,009, which is a continuation-in-part of Ser. No. 816,712, Jan. 3, 1992, Pat. No. 5,275,857, which is a continuation-in-part of Ser. No. 800,285, Nov. 29, 1991, Pat. No. 5,219,631. This application Mar. 23, 1993, Ser. No. 35,707

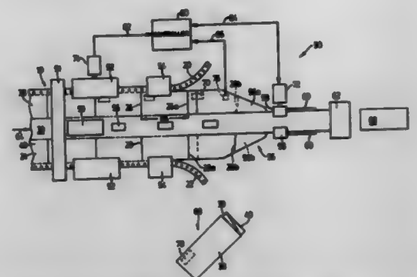
Int. Cl.[6] B65H *35/10, 45/22, 45/28*

U.S. Cl. 493—342 **3 Claims**

1. Apparatus for forming folded letter sheets from a paper web:

a first paper web feeder for feeding a paper web in a downstream direction;

a paper web folder downstream of said first paper web feeder for folding marginal portions of said web about a middle portion of said web, said paper web folder comprising a medial stationary plate portion for supporting said middle portion of said web and two stationary ploughs, each having upstream ends extending generally outwardly from said medial stationary plate portion, one of said ploughs progressively folding to overlie said medial stationary plate portion, and therefore said middle portion of said web, in said downstream direction such that the downstream end of said one plough is substantially parallel to said medial stationary plate portion and the other of said two ploughs progressively folding to underlie said medial stationary plate portion, and therefore said middle portion of said web, in said downstream direction such that the downstream end of said other plough is substantially parallel to said medial stationary plate portion whereby said paper web folder folds said web in a Z-fold;



a transverse cut former between said first paper web feeder and said paper web folder for separating all but a middle portion of said web along transverse cut lines at regularly spaced intervals representative of the width of a desired letter sheet such that those cut lines extending from a given side of said web are of a uniform length, said transverse cut former forming transverse cuts in said web such that each transverse cut has a length at least about as great as the width of said middle portion of said web represented by the distance between the inner ends of opposed transverse cuts;

said ploughs of said paper web folder having a length which is one and a half to two times the interval between the transverse cut lines formed by said transverse cut former in a paper web whereby the marginal portions of the web are folded over the middle portion of the web over a short distance

a second paper web feeder for feeding the folded web;

synchronising means to synchronise said second paper web feeder with said first paper web feeder;

a web separator for separating said folded web to form folded letter sheets.

5,383,837

METHOD AND APPARATUS FOR MAKING IMPROVED DUNNAGE

Ridley Watts, Gates Mills, Ohio, assignor to Patriot Packaging Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 861,247, Mar. 31, 1992, Pat. No. 5,257,492, which is a continuation-in-part of Ser. No. 681,087, Apr. 5, 1991, Pat. No. 5,181,614. This application Apr. 30, 1993, Ser. No. 55,861

Int. Cl.[6] B31F *1/00, 1/14*; B65B *23/00*

U.S. Cl. 493—352 **17 Claims**

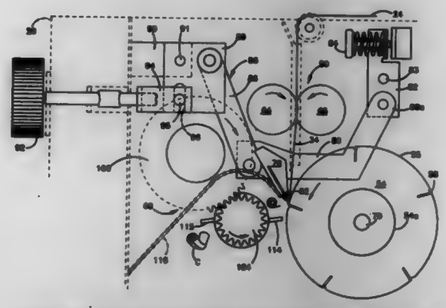
1. Apparatus for concurrently forming a plurality of coils of thin, flexible, resilient strips of material. comprising:

means defining a path along which a length of thin, flexible resilient material wider than individual coils to be formed is moved,

cutters in said path for separating the length into strips that form separate coils,

a cylindrical roller rotatably supported across said path and having a resilient peripheral surface over which said material is moved,

a stationary, rigid, member having a convex and narrow edge supported across said path, located to act against said



material and said roller with force sufficient to indent the roller surface, for bending and tensioning said material across said edge, said edge having a lower coefficient of friction than said surface,

a cutting element partially recessed in and extending along the width of the roller and across said path, and partially exposed at the peripheral surface of the roller, constructed and arranged to coact with said member to sever said material in a direction transverse to said path, and

a drive for rotating said roller about a central axis relative to said member to feed said material past said edge.

5,383,838

TACHOMETER AND ROTOR IDENTIFICATION SYSTEM FOR CENTRIFUGES

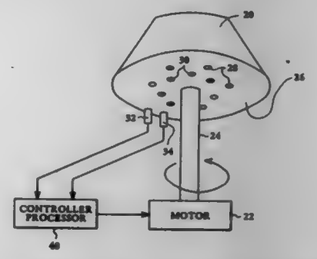
David W. Cheng, Union City, and David Q. Dong, San Jose, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 638,269, Jan. 7, 1991, Pat. No. 5,221,250. This application Dec. 7, 1992, Ser. No. 987,512

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[6] B04B *9/10*

U.S. Cl. 494—10 **13 Claims**



1. A centrifuge system which is operable with different centrifuge rotors, each rotor having one or more sets of detectable coding elements, each set of which defines a code corresponding to a maximum operating speed of the rotor for operation in one of different centrifuges, the centrifuge system comprising:

drive means for rotating a rotor about an axis;

first detection means including a first sensor positioned at a first radial distance from the axis for detecting the presence or absence of a first set of coding elements on a revolving rotor, wherein said first set of coding elements define a first code corresponding to a first maximum operating speed for operation in a different centrifuge;

second detection means including a second sensor positioned at a second radial distance from the axis for detecting the presence or absense of a second set of coding elements present on a revolving rotor, wherein said second set of coding elements define a second code corresponding to a second maximum operating speed higher than said first maximum operating speed for operation in the present centrifuge system;

means, connected to both the first and second detection means, for distinguishing between a rotor having both the first and the second sets of coding elements from a rotor having only the first set of coding elements, said distinguishing means including a means for determining the second code of a revolving centrifuge rotor having the second set of coding elements and a means for determining the first code of a revolving centrifuge rotor having only the first set of coding elements.

5,383,839

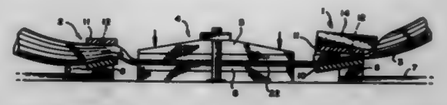
EXTERNAL PLATE VALVES FOR CONTROLLING BLOOD FLOW THROUGH A SHUNT OF A CARDIOPULMONARY BYPASS PUMP

Fred O. Bobis, Austin, Tex., assignor to Thomas M. Runge, Austin, Tex.

Filed Aug. 10, 1993, Ser. No. 103,810

Int. Cl.[6] A61M *1/10*

U.S. Cl. 600—16 **7 Claims**



4. A cardiopulmonary bypass pump comprising, a movable compression plate and a fixed plate, an inlet pinch valve mounted on a first base plate positioned externally of the bypass pump, an outlet pinch valve mounted on a second base plate positioned externally of said bypass pump, a compressible shunt for conveying blood through a patient extending through said pinch valves and positioned between the movable compression plate and the fixed plate, the portion of the shunt extending between the inlet and outlet valves providing a sack, each of the base plates and associated inlet and outlet valves being positionable at a predetermined distance from the bypass pump to vary the volume dimension of the sack, to thereby allow for adjustment of stroke volume required for the particular patient.

5,383,840

BIOCOMPATIBLE VENTRICULAR ASSIST AND ARRHYTHMIA CONTROL DEVICE INCLUDING CARDIAC COMPRESSION BAND-STAY-PAD ASSEMBLY

Marlin S. Heilman, Sarver; Steve A. Kolenik, Leechburg; Christopher D. Capone, Pittsburgh; Carl M. Parisi, Kittanning; Edward K. Press, Allison Park, and Vernon L. Speicher, Leechburg, all of Pa., assignors to Vascor, Inc., Pittsburgh, Pa.

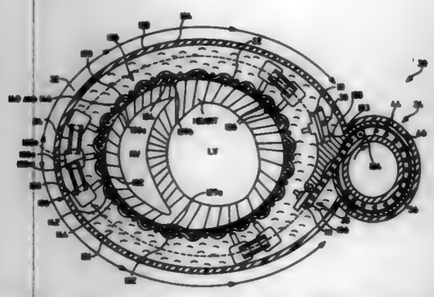
Filed Jul. 28, 1992, Ser. No. 920,732

Int. Cl.[6] A61H *31/00*

U.S. Cl. 600—17 **46 Claims**

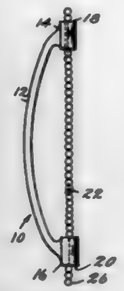
17. A ventricular assist device which can be implanted in a patient user exterior to the heart, comprising:

elongated band means positionable around the entire perimeter of the heart;
rotatable support means for winding at least a portion of the band means thereon and unwinding the portion of the band means therefrom, the band means being connected to the rotatable support means;
resilient pad means for engaging the heart and applying pressure thereto in response to movement of said band means;



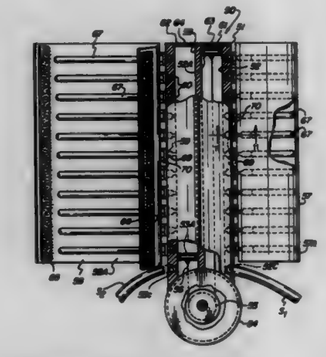
means for sensing the systolic and diastolic phases of the heart; and
reversible drive means for rotating the rotatable support means in one direction to wind the portion of the band means thereon and thereby compressing the heart ventricle during a systolic phase thereof, and for rotating the rotatable support means in a reverse direction to unwind the portion of the band means from the rotatable support means, to release the heart during a diastolic phase thereof.

5,383,841
MASSAGING DEVICE
Frank M. Lilley, Swanton, Md., assignor to Pamela Star Lilley, Swanton, Md.
Filed Dec. 18, 1992, Ser. No. 995,753
Int. Cl.[6] A61H *15/00, 7/00*
U.S. Cl. 601—128 **3 Claims**



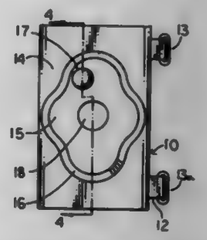
1. A massaging device comprising:
a flexible, bow-shaped element defining first and second opposed distal ends;
a first retaining element attached to said bow-shaped element at said first end;
a second retaining element attached to said bow-shaped element at said second end;
a first string of beads removably attached to and extending between said first retaining element and said second retaining element;
a second string of beads positioned adjacent to said first string of beads, said second string of beads removably attached to and extending between said first retaining element and said second retaining element; and
each of said first and second retaining elements defining a plurality of substantially hemispherical cavities therein, each of said cavities sized for receiving a portion of a single one of said beads in nesting relationship within said cavity.

5,383,842
APPARATUS FOR ENHANCING VENOUS CIRCULATION AND MASSAGE
Milio Bertini, 679 Garden St., Trumbull, Conn. 06611
Continuation-in-part of Ser. No. 835,403, Feb. 14, 1992, Pat. No. 5,245,990. This application Sep. 25, 1992, Ser. No. 951,108
Int. Cl.[6] A61H *7/00*
U.S. Cl. 601—151 **7 Claims**



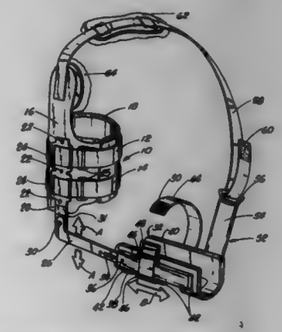
6. A massaging appliance comprising
a supply manifold including a pair of juxtapositioned cylinders,
a housing connected to one end of said pair of cylinders,
an end wall closing the other end of each of said pair of cylinders,
a vent opening disposed in each of said end walls,
inlet means connected to each of said pair of cylinders for introducing thereinto an actuating fluid pressure,
a piston reciprocally mounted in each of said cylinders,
a pulley mounted on said housing,
a flexible connector threaded about said pulley, said flexible connector having its opposed ends connected to each of said pistons whereby one of said pistons follows the other of said pistons,
a mounting bar connected to each of said cylinders and extending longitudinally thereof,
a plurality of spaced apart holes formed in each of said mounting bars disposed in communication with its corresponding cylinder,
a wrap connected to each of said mounting bars,
each of said wraps including a sheet of flexible material adapted to be wrapped about a body part to be treated,
means for securing each of said wraps in its operative position about a corresponding body part,
a plurality of inflatable tubes connected to each of said wraps,
means for connecting each of said inflatable tubes in communication with a corresponding hole of said mounting bar to dispose said inflatable tubes in communication with its corresponding cylinder,
means connected to each of said inlet means for alternately introducing and exhausting fluid pressure into and out of said cylinders for progressively imparting a massaging force on one of said wraps, as the other is being simultaneously relieved of the massaging force.

5,383,843
AIR PRESSURE KNEE BRACE APPARATUS
Randy C. Watson, 599 Lake Tahoe Blvd., Aspen Bldg. Suite B-1, South Lake Tahoe, Calif. 96150, and Richard L. Baiocchi, 630 Alma Way, Zephyr Cove, Nev. 89448
Filed Mar. 7, 1994, Ser. No. 206,619
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—13 **6 Claims**



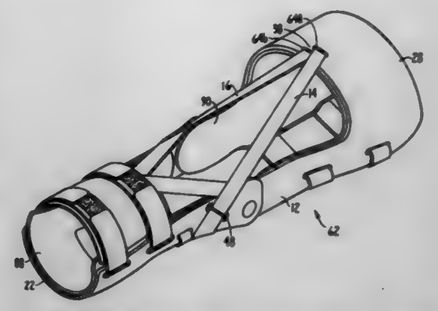
1. An air pressure knee brace apparatus, for use in providing a lightweight protection and support unit for individuals desiring this protection and support, comprising:
flexible means;
said flexible means comprising a stretchable wrapping portion to be positioned around the back of the knee area of an individual;
said flexible means having at least one sizing means for tightening or loosening said flexible means as desired by the individual using the apparatus;
a pneumatic chamber attached to said flexible means to be positioned over the kneecap area forming an encircling means around the knee area;
said pneumatic chamber having a mesh means for attaching and positioning said pneumatic chamber to said apparatus;
said pneumatic chamber having an aperture located at the center of said pneumatic chamber to be positioned directly over the kneecap to allow freedom of movement of the kneecap; and
said pneumatic chamber further having valving means for permitting the inflation and deflation of said pneumatic chamber as desired by the individual using said apparatus.

5,383,844
HUMERAL FRACTURE BRACE
Eugene J. Munoz, Redding; Miguel Estupinan, Oceanside, and Charles A. Bastyr, San Diego, all of Calif., assignors to Smith & Nephew Donjoy, Inc., Carlsbad, Calif.
Filed Sep. 21, 1992, Ser. No. 948,123
Int. Cl.[6] A61F *5/04, 5/10*
U.S. Cl. 602—20 **7 Claims**



1. Humeral fracture brace, comprising:
a) a humeral cuff for providing rigid lateral support to the humerus;
b) a humeral brace bar extending from the humeral cuff along a line that tracks the patient's humerus, the bar having a proximal end portion that joins to the cuff and a distal end portion;
c) a forearm support that includes a forearm cuff and a forearm brace bar extending from the forearm cuff along a line that tracks the patient's forearm, the forearm brace bar having a proximal end portion that is joined to the distal end portion of the humeral brace bar and a distal end portion that joins to the forearm cuff;
d) sliding hinge means for joining the distal end of the humeral brace bar and the proximal end of the forearm brace bar, said hinge means including a longitudinal slot in the distal end portion of the humeral support bar and a pivot pin in the proximal end of the forearm brace bar, said sliding hinge means allowing the proximal end portion of the forearm brace bar to slide relative to the axis of the humeral brace bar;
e) a sliding connection that connects the forearm cuff to the forearm support bar;
f) spring means for urging the proximal end of the forearm support bar toward the humeral cuff, said spring means connected at a first end to said humeral brace bar distal end portion and connected at a second end to said pivot pin; and
g) weight means adapted to encircle the patient's forearm for translating the pivot pin in the slot to offset the spring means, allowing traction/distraction of the fracture.

5,383,845
HINGED ORTHOPEDIC BRACE HAVING COMPLIANT SUPPORT COMPONENTS
Joseph F. Nebolon, Del Mar, Calif., assignor to Smith & Nephew Donjoy Inc., Carlsbad, Calif.
Filed Feb. 12, 1993, Ser. No. 17,032
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—26 **24 Claims**



1. An orthopedic brace having an anterior side, a posterior side, a medial side and a lateral side, wherein said brace is substantially free of any rigid support components and is mountable on a leg for supporting a knee joint between the upper and lower leg, said brace comprising:
a) a compliant shell comprising,
1) an upper leg cuff adapted to be conformingly positioned on the upper leg, and
2) a lower leg cuff adapted to be conformingly positioned on the lower leg;
b) means pivotally engaging said shell for rotating said upper leg cuff relative to said lower leg cuff about the knee joint; and
c) a support strap engaging a first engagement point substantially on the anterior side of said brace that is adapted to be positioned substantially adjacent to the anterior side of the

upper leg, and engaging a second engagement point substantially on the posterior side of said brace that is adapted to be positioned substantially adjacent to the posterior side of the lower leg, such that said support strap is adapted to extend from said first engagement point substantially laterally or medially across the knee joint to said second engagement point.

5,383,846

FINGER MOUNTED MOISTURE ABSORBING DEVICE

Thomas C. Short, 7440 La Vista Dr. - Apt. 253, Dallas, Tex. 75214-4283

Filed Feb. 24, 1992, Ser. No. 840,011
Int. Cl.[6] A61F *13/00*
U.S. Cl. 602—59 7 Claims



1. A finger-mounted moisture-absorbing device to enable an athlete to remove moisture from small areas such as the eyes, the device comprising:

a generally rectangular sheet of moisture-absorbing material rolled to form substantially a tube with opposed outer ends of the rectangle in adjacent relationship; and

attachment means holding the opposed outer ends to form a tubular member for mounting on a finger such that the device can be used as a moisture-removing device through moisture absorption by the material and the moisture squeezed from the material without removal from the finger.

5,383,847

NON-SPECIFIC IMMUNE SYSTEM ENHANCEMENT

Richard L. Edelson, Westport, Conn., assignor to Therakos, Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 502,083, Mar. 29, 1990, Pat. No. 5,147,289. This application Jul. 29, 1992, Ser. No. 921,865
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—6 4 Claims

1. A method for non-specifically enhancing the immune system response of an immunodeficient mammal to an antigen, the method comprising the steps of:

a) determining if the mammal's helper/inducer T cell count is at least 150 per cubic milliliter of blood and, if so, conducting the following steps (b)–(d);

b) withdrawing leukocyte containing material from the mammal;

c) treating the withdrawn leukocytes in a manner to alter the cells; and

d) returning the treated leukocytes to the mammal.

5,383,848

IONTOPHORETIC ADMINISTRATION OF DRUGS

Robert S. Hillman, and John M. Pawelchak, both of San Diego, Calif., assignors to Genzia, Inc., San Diego, Calif.

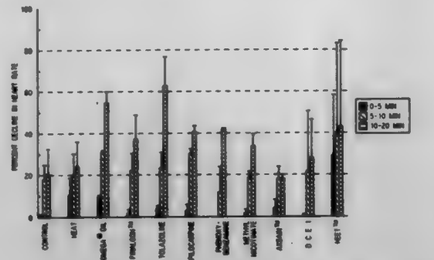
Continuation-in-part of Ser. No. 509,332, Apr. 12, 1990, abandoned. This application Apr. 4, 1991, Ser. No. 680,577
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 8 Claims

1. An improved method of iontophoretic administration of a drug to a subject comprising the steps of:

selecting a site on the subject's skin for iontophoretic administration of the drug;

administering a formulation capable of increasing blood flow to the subject's skin near the site and prior to iontophoretic administration of the drug;

allowing sufficient time to pass for the formulation to effect increased flow of blood in the skin near the site on the subject's skin; and



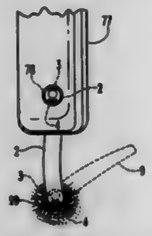
iontophoretically administering the drug to the subject at the site; wherein said formulation includes from about 0.1 to about 5% methyl nicotinate and from about 0.02% to about 0.3% capsaicin in a vehicle of which comprises a short chain aliphatic alcohol, light mineral oil or propylene glycol and methyl salicylate, in a ratio which comprises about 2 to about 6 parts alcohol and about 1 to about 4 parts mineral oil or propylene glycol per part methyl salicylate.

5,383,849

METHOD FOR SELECTIVE ENDOSCOPIC CANNULATION OF DUCTAL STRUCTURES

Frederick C. Joblin, Jr., Iowa City, Iowa, assignor to Wilson-Cook Medical, Inc., Winston-Salem, N.C.

Filed May 11, 1992, Ser. No. 881,215
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—53 8 Claims



1. A method for selective endoscopic cannulation of a desired ductal structure within a ductal system of a patient, said method comprising the steps of:

introducing an endoscope into the patient, said endoscope defining an operation channel providing remote operative access into the body of the patient, and positioning the operating end of the endoscope in proximity with an entrance into the ductal system;

advancing a selective endoscopic cannulator through the operating channel of the endoscope and through the entrance into the ductal system, the cannulator including an elongated intermediate portion which is normally straight and flexible and which defines a longitudinal axis, and a normally curved distal tip portion which extends distally from said intermediate portion and normally flexibly deviates in a specific direction away from the longitudinal axis defined by said intermediate portion and generally toward the desired ductal structure when endoscopically positioned within the ductal system, the cannulator further including referential coupling means, maintained in fixed relation within the cannulator, for allowing bending of the cannulator along a portion of the length of the cannulator in a first plane which is transverse to the longitudinal axis of said referential coupling means while resisting bending in other transverse planes relative thereto;

positioning the cannulator such that the referential coupling means is positioned at the entrance to the ductal system, wherein the referential coupling means, by allowing bending in a specific transverse plane relative thereto at the ductal entrance while resisting bending in other transverse planes, maintains a predictable orientation between the cannulator and the ductal entrance in dependence upon the position of the operating end of the endoscope relative to the ductal entrance; and

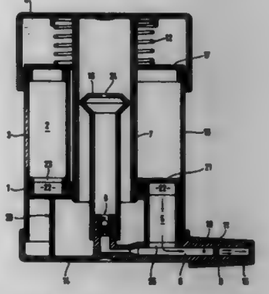
manipulating the cannulator within the ductal system to locate and cannulate the desired ductal structure, wherein said manipulating step includes the step of rotating the operating end of the endoscope about the ductal entrance with the referential coupling means positioned thereat, by which the referential coupling means causes the tip of the cannulator to correspondingly rotate within the ductal system to thereby locate the desired ductal structure for cannulation.

5,383,850

INHALER

Egon Schwab, Hochheim am Main; Hans-Joachim Loos, Ginsheim-Gustavsburg, and Günter Ziegert, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 3, 1993, Ser. No. 72,326
Claims priority, application Germany, Jun. 5, 1992, 4218517
Int. Cl.[6] A61M *13/00, 15/00, 16/00;* B05D *7/14*
U.S. Cl. 604—58 9 Claims



1. An inhaler for the repeated inhalation of a pulverulent pharmaceutical, comprising

a) a housing having a first end and a second end, and a means defining a hollow cylinder axially disposed within the housing, said hollow cylinder having a first end and a second end;

b) an lid detachably attached to the first end of the housing;

c) an intermediate floor disposed between the first and second end of the housing;

d) means defining a housing chamber defined by the hollow cylinder, the housing, the lid and the intermediate floor for containing the pulverulent pharmaceutical;

e) the hollow cylinder first end being attached to a rotatable cap which operationally engages the first end of the housing;

f) a biasing means disposed between the lid and the rotatable cap;

g) a baseplate, attached to the second end of the housing, having means defining a hollow mouthpiece which has a first end and a second end and means defining a blow-out channel defined by an interior surface of the hollow mouthpiece, the hollow mouthpiece first end, and the hollow mouthpiece second end;

h) means defining a mouthpiece opening between the first and second mouthpiece end;

i) the first mouthpiece end having a valving means;

j) a piston means, attached to the first mouthpiece end, operationally and axially disposed within the hollow cylinder;

k) a frame, attached to the baseplate, disposed within the housing;

l) an dosing wheel, having means defining at least one dosing chamber extending through the dosing wheel, disposed between the intermediate floor and the frame;

m) the hollow cylinder, projecting from the rotatable cap through the lid, the intermediate floor, and the frame, operationally engaging the dosing wheel for rotating the dosing wheel between a loading and an unloading position,

n) the intermediate floor having means defining a loading hole for transferring the pulverulent pharmaceutical from the housing chamber to the dosing chamber while the dosing wheel is in the loading position; and

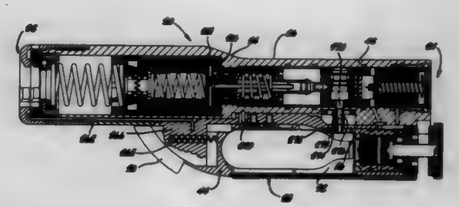
o) the frame having a discharge shaft operationally engaging the mouthpiece at the mouthpiece opening thereby connecting the dosing chamber, while in an unloading position, to the blow-out channel.

5,383,851

NEEDLELESS HYPODERMIC INJECTION DEVICE

Charles N. McKinnon, Jr., Laguna Niguel, Calif.; Steven F. Peterson, West Linn, Oreg.; Paul E. Smith, Tualatin; Takaaki Nakagawa, and Victor L. Bartholomew, both of Tigard, Oreg., assignors to Bioject Inc., Portland, Oreg.

Filed Jul. 24, 1992, Ser. No. 920,106
Int. Cl.[6] A61M *5/30*
U.S. Cl. 604—68 23 Claims



1. A needleless injection device comprising:

a housing;

a driver piston slidably contained within the housing;

an ampule releasably attached to the housing;

a plunger slidably extending from the ampule at least partially into the housing: and

a clamp piston slidably positioned within the driver piston for engaging the driver piston to the plunger regardless of plunger location.

5,383,852

CATHETER WITH INDEPENDENT PROXIMAL AND DISTAL CONTROL

Debbie Stevens-Wright, Fitchburg, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Dec. 4, 1992, Ser. No. 987,750
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—95 20 Claims

1. A steerable catheter, comprising:

an elongated flexible shaft having a distal end and a central lumen running the length of the shaft;

a continuously flexible tip assembly connected to the distal end of said shaft, said tip assembly comprising a proximal section and a distal section, each of said proximal and distal sections having a periphery and a distal end, at least said proximal section including a central lumen, each of said shaft and said proximal and distal sections having a stiffness which is selected to permit said sections to bend substantially independently of each other;

at least one proximal pull cable and one distal pull cable passing through said central lumen of said shaft to said tip assembly, said proximal pull cable being directed radially



from the center lumen of the shaft to the periphery of the proximal section, said distal pull cable passing through the central lumen of said proximal section and being directed radially to the periphery of the distal section;

means for anchoring said proximal pull cable near the distal end of said proximal section so that tension applied to said proximal pull cable will cause said proximal section of said flexible tip assembly to bend within a first plane; and

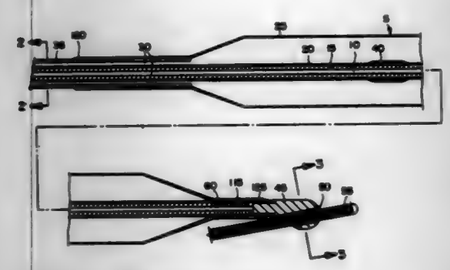
means for anchoring said distal pull cable near the distal end of said distal section so that tension applied to said distal pull cable will cause said distal section of said tip assembly to bend within a second plane.

5,383,853

RAPID EXCHANGE CATHETER

Eugene J. Jung; Kenneth Keown, both of San Diego, and Peter I. C. Turk, San Juan Capistrano, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 12, 1992, Ser. No. 975,456
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—96 3 Claims



1. A catheter comprising:

an elongated shaft having a proximal end and a distal end;

a therapy means for providing medical treatment comprising an expandable balloon having a distal end and a proximal end, the distal end of the shaft ending generally proximal to the balloon with the proximal end of the balloon affixed to the shaft distal end;

a spring coil covered by a jacket having a distal end and a proximal end, the spring coil and jacket extending longitudinally within the shaft, the shaft surrounding the jacket with sufficient clearance to define an inflation lumen, and within the balloon to the distal end of the balloon, and further defining an inner lumen, the distal end of the balloon being affixed to the distal end of the jacket and the jacket and balloon each having at least one exit port at their distal ends so that liquids can be transmitted from the inner lumen to the exterior of the catheter, the exit ports of the inner lumen, the jacket and the balloon arranged relative to each other such that fluid can flow outward;

a core wire within the spring coil, the core wire extending longitudinally the length of the catheter; and

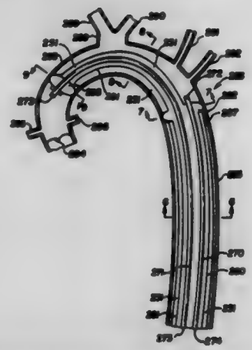
a wire guiding means for slidably mounting over a guidewire, the wire guiding means being a tubular member having a proximal end and a distal end and extending proximally at an angle greater than 0 degrees from the distal end of the spring coil and terminating before the distal end of the balloon.

5,383,854

PORTABLE AND MODULAR CARDIOPULMONARY BYPASS APPARATUS AND ASSOCIATED AORTIC BALLOON CATHETER AND ASSOCIATED METHOD

Peter Safar; S. William Stezoski, and Miroslav Klein, all of Pittsburgh, Pa., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.

Division of Ser. No. 637,565, Dec. 28, 1990, Pat. No. 5,308,320.
This application Aug. 19, 1992, Ser. No. 932,212
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—98 11 Claims



1. An aortic balloon catheter for selectively perfusing regions of a patient's body, said catheter comprising:

an elongated first lumen for delivering fluid to said patient's body, said elongated first lumen having an open internal end for placement in said patient's aorta, said open internal end being open to said aorta and an external end for placement outside of said patient's aorta such that said fluid flows into said external end and out of said open internal end and into said patient's blood stream;

an elongated second lumen for delivering fluid to said patient's body, said elongated second lumen having an open internal end for placement in said patient's aorta, said open internal end being open to said aorta and an external end for placement outside of said patient's aorta such that said fluid flows into said external end and out of said open internal end and into said patient's blood stream;

a first balloon positioned between said first lumen open internal end and said first lumen external end;

said first balloon being of such size that when inflated it will sealingly engage the interior wall of the patient's aorta;

a second balloon positioned between said first lumen open internal end and said second lumen open internal end;

said second balloon being of such size that when inflated it will sealingly engage the interior wall of said patient's aorta;

elongated first pilot tubing means in communication with the interior of said first balloon to deliver fluid to said first balloon;

elongated second pilot tubing means in communication with the interior of said second balloon to deliver fluid to said second balloon; and

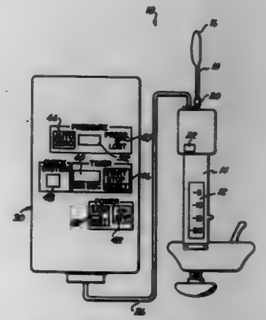
pump means in communication with said first and second pilot tubing means for providing fluid to and withdrawing fluid from said first and second balloons.

5,383,855

ELECTRONICALLY MONITORED ANGIOPLASTY SYSTEM

Warren B. Nicholson, Dublin; Mark D. Pfouts, Powell, and Russell I. Delong, Columbus, all of Ohio, assignors to Medex, Inc., Hilliard, Ohio

Filed Aug. 20, 1992, Ser. No. 932,645
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—100 17 Claims



1. An angioplasty system comprising:

an angioplasty syringe with an outlet connectable to a balloon catheter having a balloon to be inflated and deflated;

pressure transducer means mounted in fluid communication with the syringe outlet for generating an electrical pressure signal corresponding to the pressure in the balloon;

conversion circuit means coupled to said pressure transducer means for converting said electrical pressure signal to a numerical pressure value, said conversion circuit means including a read-out for displaying the numerical pressure value; and

verifier circuit means coupled to the conversion circuit means for selectively causing said conversion circuit means to offset the numerical pressure value by a predetermined amount whereby observing a change in the displayed numerical value on said read-out corresponding to said predetermined amount verifies operation of said conversion circuit means.

5,383,856

HELICAL SPIRAL BALLOON CATHETER

Robert M. Bersin, 2005 Cortelyou Rd., Charlotte, N.C. 28203

Filed Mar. 19, 1993, Ser. No. 37,566
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—101 6 Claims

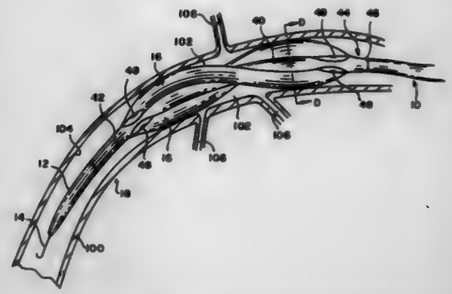
3. A dissection repair balloon catheter comprising:

a central support tube;

a plurality of balloon elements disposed at a distal end of said central support tube;

each of said plurality of balloon elements having a longitudinal extent, each of said plurality of balloon elements winding around said central support tube in a helical pattern, wherein said plurality of balloon elements are spaced equidistantly around a circumference of said central support tube; and

means fluidly coupled to said balloon elements for expanding said balloon elements into contact with an inner wall of a blood vessel of a patient when said catheter and said balloon elements are in a desired position within said blood vessel; and



means for returning said balloons to an unexpanded condition.

5,383,857

SAFETY SYRINGE

Alexander B. Levitov, Maplewood, Minn., assignor to Abbis Corporation, St. Paul, Minn.

Filed Apr. 5, 1994, Ser. No. 223,159
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 4 Claims



1. A safety syringe comprising:

a syringe barrel **14** having a central bore and a nose **42**, said nose **42** adapted to receive a needle **20**, said syringe barrel having a latch flange **30**;

a guard sheath **16** located for reciprocating motion along said syringe barrel **14** from a first retracted position to a second extended position, said guard sheath **16** having at least one latch arm **26** to couple said guard sheath **16** to said syringe barrel **14** and to retain said guard sheath **16** in said retracted position;

a syringe plunger **12** having a proximal and distal end, a plunger gasket **24** located on said distal end, and having a thumb rest **26** on said proximal end, said syringe plunger having a latch release surface located proximate said thumb rest **26** for releasing guard sheath **16** as said syringe plunger **12** approaches said latch flange **30**;

an elastomeric spring **18** connected to both said guard sheath **16** and to said syringe barrel **14**, and having a relaxed state

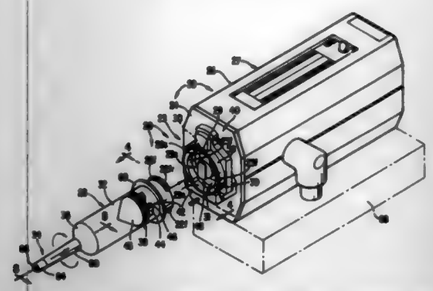
corresponding to said extended state and having a deflected position corresponding to said retracted position.

5,383,858

FRONT-LOADING MEDICAL INJECTOR AND SYRINGE FOR USE THEREWITH

David M. Reilly, Glenshaw; Joseph B. Havrilla; Eugene A. Gelbium, both of Pittsburgh, and Daniel Kazousky, Trafford, all of Pa., assignors to Medrad, Inc., Pittsburgh, Pa.

Filed Aug. 17, 1992, Ser. No. 929,926
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—152 20 Claims



1. An injector for injecting a liquid from a syringe, said syringe having a plunger, said injector comprising:

a housing having a front wall;

readily releasable mounting means on said housing front wall for supporting the syringe for an injection operation, said readily releasable mounting means including retaining means for releasably engaging a retaining portion on the syringe, slot means of said readily releasable mounting means for receiving therethrough the retaining portion on the syringe, inner surface means of said readily releasable mounting means for engaging the retaining portion on the syringe when the syringe is inserted into and rotated in said readily releasable mounting means;

drive means in said housing movable through said housing front wall for controlling the movement of the plunger in the syringe; and

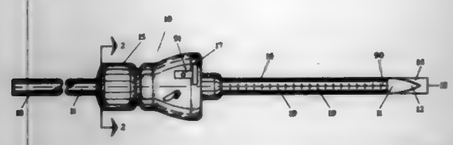
annular sealing means on the front wall of said housing for engaging annular sealing means on the syringe, for perpendicularly aligning the plunger and the drive means and for minimizing slack between the syringe and the slot means.

5,383,859

ROTATABLE LAPAROSCOPIC PUNCTURING INSTRUMENT

Frank Sewell, Jr., 1413 N. Elm, Henderson, Ky. 42420

Division of Ser. No. 832,058, Feb. 6, 1992. This application Oct. 4, 1993, Ser. No. 131,300
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—164 6 Claims



1. A laparoscopic surgical instrument having a longitudinal axis, a distal end and an operative end, comprising:

a handle;

a rotatable body tissue puncturing means rotatably connected to the handle,

the puncturing means having a distal end, an operative end and a longitudinal axis,

such that the handle is disposed between the operative and distal ends of the puncturing means, and

such that the puncturing means rotates about its longitudinal axis with respect to the handle, and

the puncturing means being adapted to be rotated by a motor; and

a safety shield operatively connected to the handle and movable between an extended position in which the shield prevents the puncturing means from puncturing body tissue and a retracted position in which the shield allows the puncturing means to puncture body tissue,

the safety shield being biased toward its extended position,

the safety shield substantially encasing the distal end of the puncturing means when the shield is in its extended position, and

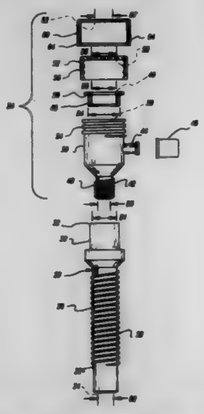
the shield sized to enter a hole in body tissue created by the distal end of the puncturing means when the safety shield was in its retracted position.

5,383,860

TWO-PART CONDUCTIVE CANNULA WITH ADAPTIVE DISPOSABLE NON-INVASIVE ELEMENT

Michael Lau, Edmonds, Wash., assignor to M.I.S. Technology International, Inc., Singapore

Filed Mar. 2, 1993, Ser. No. 25,024
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—167 7 Claims



6. A cannula system including a disposable non-invasive portion for use with surgical instruments with external diameters ranging from a first diameter to a second diameter, the non-invasive portion comprising:

a top cap having a first internal diameter;

a substantially cylindrical narrow section axially alignable with the top cap and having a second internal diameter the narrow section being adapted for rigid coupling to an invasive portion;

a main section having a third internal diameter the main section being positioned intermediate the top cap and the narrow section and being axially aligned therewith to provide a passageway through the non-invasive portion, the narrow section and the main section being a unitary piece;

a trocar valve within the passageway operatively sized to accommodate each of said surgical instruments of differing diameters the trocar valve inhibiting the escape of fluids through the passageway;

a top cap cover mateable to the top cap and having a top cap aperture therethrough, the top cap aperture being axially aligned with the passageway when the top cap cover is mated to the top cap, the top cap cover further being operatively sized and of sufficient flexibility to permit passage of each such surgical instrument while radially engaging each such surgical instrument, the first internal diameter, the second internal diameter and the third internal diameter each being larger than either of the first diameter and the second diameter of said surgical instruments;

the top cap, the main section, and the narrow section being formed of molded plastic; and

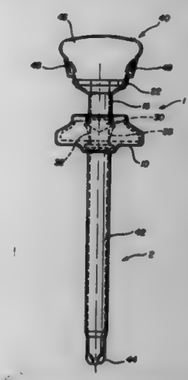
a plurality of conductive invasive portions each comprising an internal passageway with an internal passageway diameter closely conforming to a surgical instrument of a respective predetermined diameter and a coupler adapted for rigid coupling to the narrow section wherein the an internal passageway diameter of a first one of the invasive portions is greater than an internal passageway diameter of a second one of the invasive portions.

5,383,861

FLEXIBLE CANNULA

Sven Hempel, Kaltenkirchen, and Thomas Wulf, Hamburg, both of Germany, assignors to Ethicon Endo-Surgery, Cincinnati, Ohio

Filed Oct. 12, 1993, Ser. No. 135,216
Claims priority, application Germany, Oct. 16, 1992, 4234990
Int. Cl.[6] A61M *39/00, 39/04*
U.S. Cl. 604—167 8 Claims



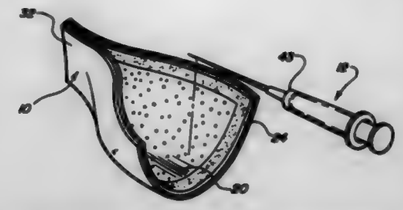
1. Flexible cannula with a tube whose distal zone is introducible into the inside of the body through a trocar puncture point, and with a top piece attached to its proximal end, the top piece having a proximal end face with an opening and a seal capable of engaging surgical instruments, and which is separately closeable by a closure device arranged in the inside of the top piece, said cannula characterized in that the tube is made from a flexible material and that the top piece is divided into a housing which has a flat proximal end and contains the closure device; and a flexible intermediate tube which, starting from the proximal end of the housing, extends along the longitudinal axis of the cannula.

5,383,862

METHOD AND DEVICE FOR ENVELOPING AND DISINFECTING OF SHARP INSTRUMENTS

Dieter R. Berndt, 3407 Sandpiper Way, Allenwood, N.J. 08720, and Brian P. Smith, 409 St. Clair Ave., Spring Lake, N.J. 07762

Continuation-in-part of Ser. No. 4,181, Jan. 13, 1993, abandoned, which is a continuation of Ser. No. 829,894, Feb. 3, 1990, abandoned. This application Dec. 14, 1993, Ser. No. 167,538
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—187 19 Claims



1. An apparatus for enveloping and decontaminating a sharp instrument prior to disposal, the sharp instrument of the type used in contact with potentially infected bodily fluids, the apparatus consisting of:

a substantially planar main body member having first and second sides, said first side including a first portion and a second portion, said main body member being sufficiently flexible to permit said first portion of main body member to be folded over on said second portion of said main body member;

a flexible sheet material permanently attached to said second side, said flexible sheet material being resistant to penetration by said sharp instrument;

means for substantially permanently affixing said first portion of said main body member to said second portion of said main body member; and

means for decontaminating the sharp instrument;

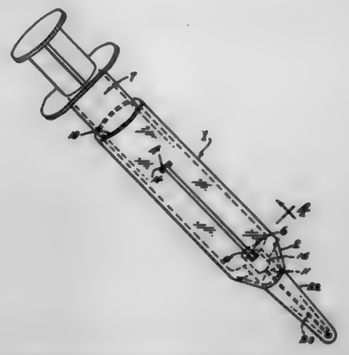
whereby said apparatus securely retains the sharp instrument for disposal.

5,383,863

ATTACHMENT FOR MAXIMUM SAFETY OF HYPODERMIC SYRINGES

Nestor E. Mardones, Pueyrredon 193 - Lomas de Zamora -C.P. (1832) Pcia. de Buenos Aires, Argentina

Filed Nov. 15, 1993, Ser. No. 152,297
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—198 8 Claims



1. An attachment for a hypodermic syringe comprised of a

hollow cylinder fitted with a plunger and having a sharpened tubular needle for injection or withdrawal of fluids, the attachment exposing the needle when the syringe is used and alternately to permanently cover the needle after the syringe is used, and including:

a transparent protector tube of cylinder form with an open inner end slidably telescoped over the syringe cylinder and with an open outer end having a retracted position exposing the needle and having an extended position forward of and to cover the needle,

and catch means in the form of a resilient spring cooperating with a longitudinal slot in the protector tube, the spring being comprised of a split-ring body with a pair of divergent legs brought together by engagement in the longitudinal slot with the split-ring body constricted thereby onto a hub that carries the needle of the syringe, said slot having a means engaged by said catch means for retracted positioning of the protector tube, and having a lock means alternately engaged by said catch means for permanent extended positioning of the protector tube.

5,383,864

PRE-FILLED INJECTION DEVICE COMPRISING A BARREL WHEREIN A LIQUID DIAZEPAM FORMULATION IS ACCOMMODATED

Johan G. van den Heuvel, Amsterdam, Netherlands, assignor to Duphar International Research B.V.

Continuation of Ser. No. 497,669, Mar. 23, 1990, abandoned. This application Dec. 14, 1992, Ser. No. 990,929

Claims priority, application Netherlands, Mar. 28, 1989, 8900747

Int. Cl.[6] A61M *5/315*

U.S. Cl. 604—218 **5 Claims**



1. A pre-filled injection device, comprising (i) a barrel which is open at each end in which, before using the device, a liquid diazepam formulation is sealingly accommodated and which comprises at least one rubber sealing member to seal said formulation, and (ii) a needle connection means for connecting an injection needle at the front end of the barrel, wherein said sealing member is manufactured from bromobutyl rubber.

5,383,865

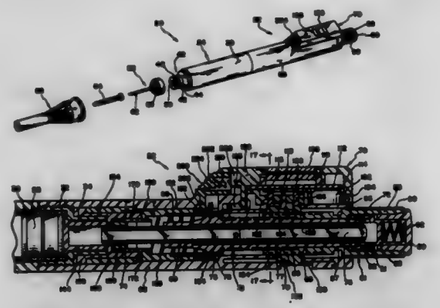
MEDICATION DISPENSING DEVICE

Peter Michel, Burgdorf, Switzerland, assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 15, 1993, Ser. No. 31,595

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—232 **16 Claims**



1. A medication dispensing device, comprising:

a cartridge for containing and sealing an injectable product therein, said cartridge including a plunger therein; and

an injector attached to said cartridge and comprising a housing, a drive mechanism disposed in said housing and including a dosage sleeve having a knob at a proximal end of said dosage sleeve and a rod coupled to said sleeve such that upon rotation of said knob, said rod is axially advanceable a first distance to establish a set dosage of injectable product to be delivered without effecting delivery of the injectable product, a clutch mechanism disposed in said housing and comprising a rotatable piece that is secured to said dosage sleeve for rotation therewith and a locking seat in engagement with said rotatable piece and being configured to restrict rotation of said rotatable piece, and hence said dosage knob, to a first direction only, a disengaging mechanism for selectively disengaging said locking seat from said rotatable piece thereby permitting rotation of said dosage sleeve in a second and opposite direction while said cartridge is attached to said injector to reduce the first distance of axial advancement of said rod thereby reducing the set dosage of injectable product to be delivered, wherein said rod is axially advanceable a second distance upon axial force being applied to said knob to engage and axially advance said plunger to effect delivery of the set dosage of injectable product.

5,383,866

OCCLUSION URETERAL CATHETER FOR RETROGRADE PYELOGRAPHY

Hau H. Chang, 7704 Calle Espada, Bakersfield, Calif. 93309

Filed Sep. 15, 1993, Ser. No. 120,796

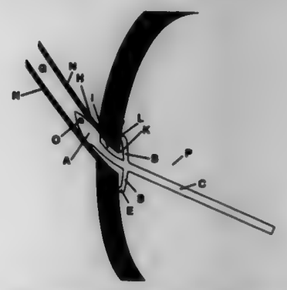
Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—280 **8 Claims**

1. The occlusion ureteral catheter suitable for fitting the ureteral orifice through the urinary bladder at the uretero vesical junction through a cystoscope for retrograde pyelography, said catheter comprising:

(a) a long, flexible slender radio-opaque catheter, said catheter comprising a head portion at its distal end and an elongate stem portion extending from the proximal end of said head portion, said catheter measuring less than 4 mm at its outer diameter, said catheter further comprising a smooth lumen extending therethrough from the distal tip of said head portion to the proximal end of said stem portion

(b) a generally curved compression element comprising either a conical or plate shape, said compression element extending circumferentially around said catheter at a distance no greater than 2 cm from the tip of said head portion, the maximum diameter of said compression element larger than the maximum diameter of said head



portion but less than 1 cm, said compression element further comprising an outer ridge portion at its outer circumference and a base portion, said ridge and base portions projecting toward the head portion of said catheter.

5,383,867

UNIVERSAL INCONTINENCE DEVICE

Joan Klinger, Box 36, Mount Lemmon, Ariz. 85619

Filed May 25, 1993, Ser. No. 65,892

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **20 Claims**



1. An incontinence device comprising:

(a) a front section having a liquid absorbent layer and a liquid resistant exterior surface;

(b) a center section having an absorbent material for collecting body fluids, said center section communicating with said front section;

(c) a rear section communicating with said center section;

(d) a waist band for connecting said rear section to said front section;

(e) a medial semi perforated opening extending through said liquid absorbent layer and said liquid resistant exterior surface of said front section, said medial semi perforated opening extending upwardly toward said waist band said medial semi perforated opening terminating below said waist band to provide an optional access from said exterior surface to the interior surface of said front section;

(f) a liquid resistant flap cover for covering said medial semi perforated opening; and

(g) a seal for sealing the entire perimeter of said liquid resistant flap cover to said liquid resistant exterior surface of said front section.

5,383,868

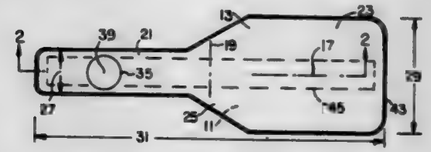
WOMAN'S SANITARY NAPKIN

Kwang H. Hyun, 13701 E. Bannon Dr., Cerritos, Calif. 90701

Filed Jun. 17, 1993, Ser. No. 79,088

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **1 Claim**



1. A sanitary napkin comprising:

a liquid-absorbent pad having a longitudinal axis and a transverse axis; said pad having a narrow rectangular section adapted for placement between a woman's thighs without folding, a wide section adapted for placement against the woman's abdomen, and a flared connector section interconnecting said narrow and wide sections;

a liquid-absorbent plug projecting from the narrow section of the pad for insertion into a woman's vagina; said plug comprising a plug body formed of cotton batting, and a porous sheath overlying said plug body, said sheath having a flange fitting against the liquid-absorbent pad;

said plug being contiguous with said pad whereby menstrual fluids can flow through the plug into the pad;

a porous cloth sheet (57) surrounding said liquid-absorbent pad for channeling menstrual fluids along and into the pad; said cloth sheet fitting around said plug to overly the plug flange;

and a liquid impermeable covering extending entirely around said pad and porous cloth sheet, but not around said plug; said liquid impermeable covering having an opening that fits around the plug so that the covering fully encapsulates the absorbent pad and cloth sheet.

5,383,869

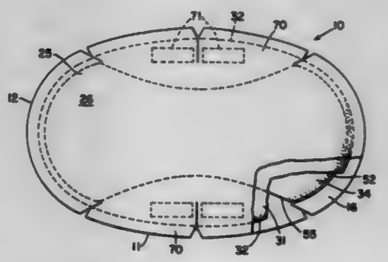
THIN, FLEXIBLE SANITARY NAPKIN

Thomas W. Osborn, III, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 688,755, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 570,231, Aug. 20, 1990, Pat. No. 5,009,653, which is a continuation of Ser. No. 293,606, Jan. 4, 1989, Pat. No. 4,950,264, which is a continuation-in-part of Ser. No. 175,559, Mar. 31, 1988, abandoned. This application Oct. 8, 1992, Ser. No. 960,176

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **7 Claims**

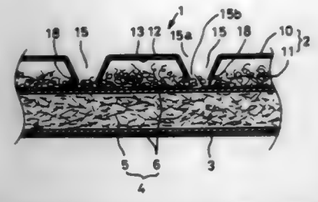


1. A sanitary napkin comprising:

a liquid permeable topsheet;

a liquid impermeable barrier sheet;
an absorbent core intermediate said topsheet and said barrier sheet;
said sanitary napkin having a test capacity of at least 8.0 grams, a total capacity of at least about 20.0 grams, an absorbent portion with a flexure resistance less than 250.0 grams, and a caliper less than 2.6 millimeters.

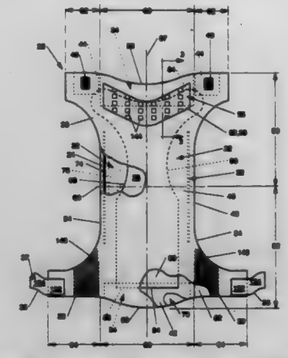
5,383,870
LIQUID-PERMEABLE TOPSHEET FOR BODY FLUID ABSORPTIVE GOODS
Hisashi Takai, and Tsutomu Kido, both of Kawanoe, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo and Uni-Charm Corporation, Ehime, both of Japan
Filed Sep. 2, 1993, Ser. No. 114,839
Claims priority, application Japan, Sep. 7, 1992, 4-238417
Int. Cl.[6] A61F *13/15, 13/20*
U.S. Cl. 604—378 **6 Claims**



1. A topsheet (2) for body fluid absorptive articles comprising
(a) an upper sheet layer (10) of melt blown nonwoven fabric having a weight per unit area of 10 to 100 g/m^2 and provided with a plurality of downwardly extending liquid passageways (15) having upper ends (15*a*) and lower ends with lower openings (15*b*), and
(b) a lower fibrous layer (11) underlying said upper sheet layer (10) having a fineness of 1 to 10 deniers, a weight per unit area of 10 to 40 g/m^2 and a density of 0.01 to 0.1 g/cm^3 the ends with lower openings (15*b*) of said downwardly extending passageways (15) being bonded to said lower layer (11) so as to protect said downwardly extending liquid passageways (15) against collapse and protect said lower openings (15*b*) from being distorted.

5,383,871
ABSORBENT ARTICLES HAVING A CLOSURE SYSTEM PROVIDING SUSTAINED DYNAMIC FIT
Edward P. Carlin, Maineville; Kenneth B. Buell, Cincinnati; Gary D. Lavon, Harrison, and Dean J. Daniels, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 3, 1993, Ser. No. 72,274
Int. Cl.[6] A61F *13/15, 13/20*
U.S. Cl. 604—385.2 **16 Claims**

1. An absorbent article comprising:
a containment assembly having a front waist region, a back waist region opposed to said front waist region, a front end edge, a back end edge, longitudinal edges, a longitudinal centerline, a longitudinal direction defined as the direction parallel to said longitudinal centerline, a lateral centerline, a lateral direction defined as the direction parallel to said lateral centerline, said containment assembly comprising:
an outer covering layer;
an absorbent core joined with said outer covering layer; and
closure means for anchoring the absorbent article about the wearer by forming a primary zone of tension disposed at an angle of between about 5° and about 30° from the lateral direction to sustain fit of the absorbent article throughout wearing, said closure means comprising
(a) a securement member joined to said containment assembly adjacent each said longitudinal edge in said back waist region, each said securement member comprising a tape tab and a first fastening component, each said tape tab comprising a fixed portion joined to said containment assembly and a tab portion contiguous with said fixed portion and disposed such that said tab portion can extend beyond said longitudinal edge of said containment assembly, said first fastening component being joined to said tab portion, said tab portion having a proximal edge disposed nearest the longitudinal edge having a top point and a bottom point, a distal edge disposed laterally outward from said longitudinal edge having an upper point and a lower point, and sidelong edges, said upper point of said distal edge being disposed at an angle to the lateral direction from said top

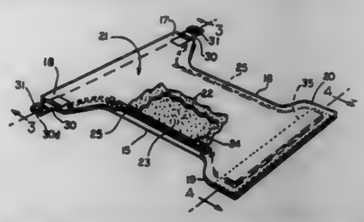


point of said proximal edge, and said bottom point of said distal edge being disposed at an angle to the lateral direction from said bottom point of said proximal edge, such that said tab portion is oriented at an angle to the lateral direction, said sidelong edges of each said tab portion each having a curvilinear shape, and
(b) a landing member joined to said containment assembly in said front waist region, said landing member comprising a second fastening component engageable with said first fastening component so as to provide a variable positioning refastenable side closure, said landing member being shaped and oriented so that the said first fastening component and said second fastening component engage each other in a manner so as to impart a primary line of tension at an angle to the lateral direction.

5,383,872
DISPOSABLE DIAPER WITH IMPROVED MECHANICAL FASTENING SYSTEM
Thomas H. Roessler, Menasha, and Bruce M. Siebers, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 954,832, Sep. 29, 1992, abandoned, which is a division of Ser. No. 653,850, Feb. 11, 1991, Pat. No. 5,176,670, which is a division of Ser. No. 287,416, Dec. 20, 1988, Pat. No. 5,019,073. This application Aug. 6, 1993, Ser. No. 103,721
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—391 **20 Claims**

1. An absorbent article, comprising:
superposed backsheet, absorbent body and topsheet elements fastened together to form a composite having a selected shape which defines a first waistband portion, a second waistband portion and an intermediate portion, said intermediate portion having lateral side margins and interconnecting said first and second waistband portions;

a pair of separate, opposite side panels which are attached at laterally opposed sides of said composite at said first waistband portion thereof to provide a pair of ear portions; and
means for fastening said ear portions to said second waistband portion to secure said article on a wearer, said fastening means including,
a hook and loop fastener comprising two interlocking materials, one of which is a hook material and the other of which is a loop material,
said hook material attached to each of said ear portions, and said loop material attached to said second waistband portion of said composite,



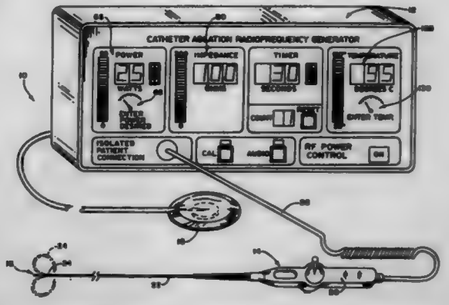
said hook and loop materials being engageable to releasably attach said ear portions to said second waistband portion to thereby encircle the abdomen of said wearer,
said hook material having hooks which are tapered base to tip with the tips of the hooks rounded with a radius, a total caliper in the range of about 0.04 to 0.05 inches, a hook density within a range of about 440 to 1040 hooks per square inch, a row density within a range of about 20–60 rows per inch, and a base film with a thickness within a range of about 0.008–0.010 inch.

5,383,873
SMOOTH MUSCLE CHEMICAL PACEMAKER
Michael Hoey, Shoreview, and Peter Gehlbach, Minneapolis, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.
Filed Dec. 9, 1992, Ser. No. 987,748
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—891.1 **17 Claims**



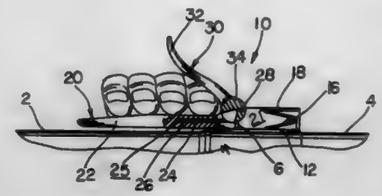
1. A method for treating a disorder associated with smooth muscle function in an organ peripheral to the central nervous system, comprising:
(a) selecting at least one neuroactive substance having a therapeutic effect on said disorder;
(b) selecting means for controlled, localized delivery of said substance to said organ;
(c) combining said at least one neuoractive substance with said means for controlled, localized delivery to form a treatment element; and
(d) attaching said treatment element to a selected portion of the serosa of said organ in a manner to accomplish said therapeutic effect.

5,383,874
SYSTEMS FOR IDENTIFYING CATHETERS AND MONITORING THEIR USE
Jerome Jackson, Sunnyvale, and Roger A. Stern, Cupertino, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.
Continuation-in-part of Ser. No. 790,578, Nov. 8, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,691
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—1 **21 Claims**



11. A catheter including a body carrying an electrode having predetermined operating characteristic, the body also carrying electronic means for retaining a code that represents the number of times that the electrode has been used, the electronic retaining means including output means for generating said number in response to a predetermined prompt and input means for updating said number in response to each use of the electrode.

5,383,875
SAFETY DEVICE FOR A POWERED SURGICAL INSTRUMENT
Rodney Bays, Pierceton, Ind.; Michael L. Boulton, Ouji; John H. Pascaloff, Goleta, both of Calif.; Gregory C. Stalcup, Columbia City, Ind., and Dai N. Vu, Ventura, Calif., assignors to Zimmer, Inc.
Filed May 31, 1994, Ser. No. 251,449
Int. Cl.[6] H01H *3/20*
U.S. Cl. 606—1 **14 Claims**



1. In combination, a powered surgical instrument including a body and a depressible pin extending from said body which activates said instrument when depressed and an apparatus for depressively engaging said pin, said apparatus comprising:
a first lever connected to said body for pivotal movement between a released position wherein said first lever is spaced from said body and a depressed position wherein said first lever is adjacent said body, and
a second lever shiftably carried by said first lever for pivotal movement relative to said first lever between a first position and second position,
said second lever includes a contact part adapted for forcefully engaging said pin to activate said instrument when

said second lever is in its second position and said first lever is in its depressed position.

5,383,876

FLUID COOLED ELECTROSURGICAL PROBE FOR CUTTING AND CAUTERIZING TISSUE

Paul C. Nardella, North Easton, Mass., assignor to American Cardiac Ablation Co., Inc., Taunton, Mass.

Continuation of Ser. No. 975,866, Nov. 13, 1992. This application Mar. 22, 1994, Ser. No. 216,069
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—49 **21 Claims**



13. An electrosurgical cutting and coagulation system comprising

an elongate surgical probe member having disposed about a distal portion of the outer surface thereof at least one cauterization electrode;

a longitudinal, centrally disposed lumen extending through the member, the lumen adapted to convey a fluid through the member to be discharged through an outlet port disposed in a distal portion of the member;

a selectively deployable cutting electrode positioned within the lumen, the cutting electrode being able to operably extend from the lumen upon deployment, the electrode being of such diameter that it does not fully occlude the lumen;

a means for delivering electrosurgical energy through the device to the cauterization electrode;

a fluid supply reservoir in fluid communication with the lumen;

a means for delivering fluid from the reservoir to the lumen; and

means for controlling the delivery of electrosurgical energy to the cauterization electrode to cauterize tissue.

5,383,877

INSTRUMENTS AND METHOD FOR SUTURING AND LIGATION

Henry C. Clarke, 1558 Victoria Avenue, Windsor, Ontario, Canada N8Y 1P5

Continuation of Ser. No. 694,114, May 1, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,548
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 **17 Claims**



11. A laparoscopic forceps for extending through a trocar in the body of a patient and positioning and tensioning a loose tie in a suture thread within the body of a patient and having both runs of the thread passing through the trocar to the exterior thereof for manual engagement by a user of the forceps, the laparoscopic forceps comprising:

a pair of elongated slender links which lie in side by side relationship and are constructed and arranged to be received in the trocar tube,

a pair of jaws adjacent one end of said elongated links and carried by at least one of said links,

at least one of said jaws being pivotally movable to open and closed positions relative to the other jaw about an axis extending transversely to the longitude of the forceps, said jaws being constructed and arranged so that in the closed position they can pass through the trocar tube and into the body of the patient,

means for manually moving said jaws to a closed position and to an open position, and

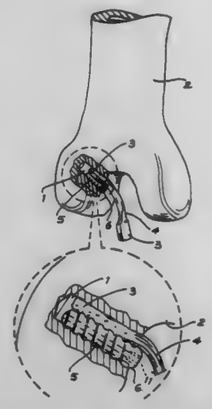
a groove through the free ends of both jaws and extending at generally a right angle to both the longitude of the forceps and the axis of pivotal movement of said jaws and opening outwardly of the jaws, said groove being constructed and arranged for slidably receiving the runs of the suture thread with a loose tie therein adjacent the free ends of the jaws and with the runs of the thread extending from both ends of such groove generally longitudinally along the elongated links of the forceps and through the trocar tube to the exterior thereof to facilitate tensioning of the tie by opening the jaws while in the body with the thread slidably received in the groove through both of said jaws.

5,383,878

SURGICAL SCREW

Gregory J. Roger, and Leo A. Pinczewski, both of Crows Nest, Australia, assignors to Hip Developments Pty Ltd., Crows Nest, Australia

PCT No. PCT/AU91/00405, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/03980, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 30, 1991, Ser. No. 39,056
Claims priority, application Australia, Sep. 4, 1990, PK2119
Int. Cl.[6] A61B *17/58*; F16B *35/06*
U.S. Cl. 606—73 **6 Claims**



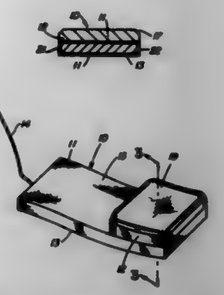
1. A surgical screw having a shank with a longitudinal axis, a thread extending along a length of the shank from one end of the shank, the thread being devoid of an outer cutting line throughout said length, a head at tan opposite end of the shank, said head having an outer surface extending smoothly and continuously from an adjacent part of the shank, said outer surface including a hemispherical end portion having a diameter at least equal to a maximum diameter of said part of the shank, and a recess in the head for an insertion tool.

5,383,879

BONE WAX APPLICATOR AND METHOD FOR DRESSING BONE TISSUE

Arnold G. Phillips, 1420 Madison Dr., Buffalo Grove, Ill. 60089

PCT No. PCT/US90/00479, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993
PCT Filed Jan. 22, 1990, Ser. No. 915,806
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—86 **8 Claims**



1. An applicator for applying bone wax to bleeding bone tissue exposed by an incision closeable with a suture, said applicator comprising:

a reinforcement layer of pliable, surgical fiber;

a layer of bone wax that covers one end of a major surface of the reinforcement layer, such that said bone wax can be applied to the bone tissue by scraping the bone wax layer against the tissue; and

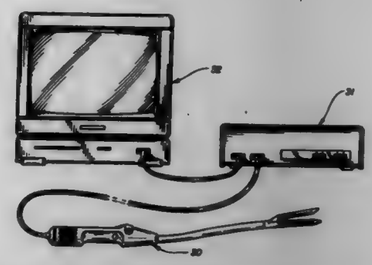
an identification string attached to said reinforcement layer for aiding in physically locating the applicator for removal before closure with the suture.

5,383,880

ENDOSCOPIC SURGICAL SYSTEM WITH SENSING MEANS

Michael D. Hooven, Cincinnati, Ohio, assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 822,478, Jan. 17, 1992, abandoned. This application Dec. 16, 1992, Ser. No. 991,619
Int. Cl.[6] A61B *17/12*
U.S. Cl. 606—142 **6 Claims**



1. An endoscopic instrument comprising:

an endoscopic distal head portion for carrying out a step in an endoscopic surgical procedure, said step in an endoscopic procedure including tissue manipulation, stapling, ligation, cutting or the combination of such steps;

a shaft connected to and extending proximally from said head portion,

means for applying a motion to said shaft,

means disposed in said head portion for translating the motion applied to the shaft into a force and/or motion of the head portion to carry out the step in the procedure,

sensing means for measuring motion of a predetermined part of said head portion, said sensing means disposed in said head portion; and

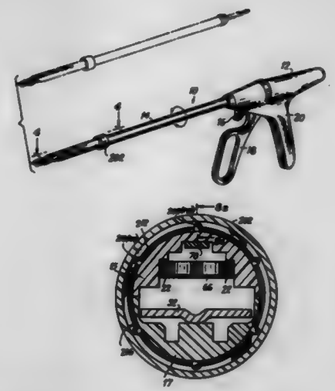
control means for controlling of the force and/or motion of the head portion said control means interconnected with said sensing means.

5,383,881

SAFETY DEVICE FOR USE WITH ENDOSCOPIC INSTRUMENTATION

David T. Green, Westport; Henry Bolanos, East Norwalk, both of Conn.; Wayne P. Young, Brewster, N.Y.; Richard A. McGarry; Lisa W. Heaton, both of Norwalk, Conn., and Keith Ratcliff, Sandy Hook, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 939,029, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 794,492, Nov. 19, 1991, abandoned, which is a division of Ser. No. 530,652, May 30, 1990, Pat. No. 5,084,057, which is a continuation-in-part of Ser. No. 381,265, Jul. 18, 1989, Pat. No. 5,100,420, which is a continuation-in-part of Ser. No. 479,375, Feb. 13, 1990, Pat. No. 5,129,885. This application Sep. 22, 1993, Ser. No. 125,519
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—143 **1 Claim**



1. In combination:

(a) an endoscopic clip applier having an elongated shaft portion which is adapted to be inserted into a trocar guide tube, said elongated shaft portion including:

(i) a clip track for storing a plurality of surgical clips;

(ii) a clip pusher adjacent to and movable with respect to said clip track for individually advancing said surgical clips to clip closing jaws positioned at the distal end of said elongated shaft portion;

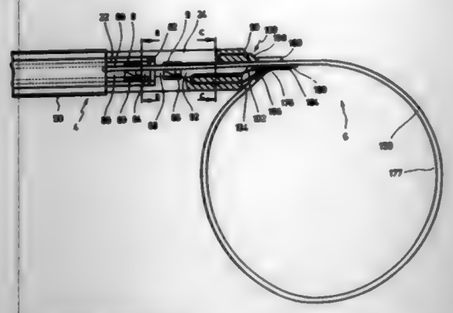
(iii) a channel having a distal portion which at least partially surrounds said clip closing jaws for camming said clip closing jaws to form a clip positioned therewithin;

(iv) a gaseous seal means surrounding at least a portion of said clip pusher and said channel for inhibiting the flow of gases through said elongated shaft portion;

(b) a safety device comprising a collar configured and dimensioned to be disposed on the elongated shaft portion and locking means disposed on said collar for releasably engaging said elongated shaft portion; and

(c) a trocar guide tube including release means releasing said locking means from engagement with said elongated shaft portion by camming said locking means away from said elongated shaft portion.

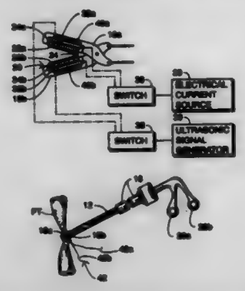
5,383,882
LIGATURE AND LIGATURE APPLYING ENDOSCOPIC INSTRUMENT
Gerhard Buess, Bebenhausen; Kirsten Huss, Ahrensburg; Sven Hoepel, Kaltenkirchen, and Thomas Schuldt, Hamburg, all of Germany, assignors to Ethicon, Inc., Somerville, N.J.
Filed Jul. 26, 1993, Ser. No. 97,357
Claims priority, application Germany, Aug. 28, 1992, 4228909
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—157 9 Claims



1. Ligature comprising:
an elongated, flexible binding part which is provided with a toothing on one side at least in the area of a free end thereof;
a headpiece having an aperture with a base zone which connects with the other end of the binding part, with two side zones extending from the base zone, with a counter-support connected to said side zones and lying opposite the base zone and said counter-support having a stop element, the stop element engaging at the toothing when the binding part is curved to produce a closed shape and is guided through the said aperture; said side zones and counter-support of such aperture permitting only a movement of the toothing in the direction of an ever narrower closed shape;
in that the binding part has a constricted zone; and
in that counter-support is provided with a longitudinal slot through which the constricted zone of the binding part is introducible into the headpiece; and
said ligature pretensioned by preliminary treatment in such a way that it automatically rolls up into a curved shape and said headpiece comes to rest in the vicinity of the constricted zone of the binding part.

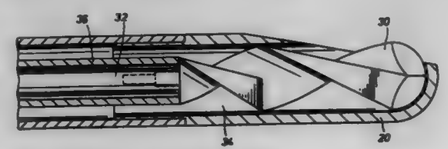
5,383,883
METHOD FOR ULTRASONICALLY APPLYING A SURGICAL DEVICE
Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023, and Mitchell N. Essig, 227 High Brook Ct., Pelham, N.Y. 10803
Filed Jun. 7, 1992, Ser. No. 72,762
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—169 7 Claims

1. A method for use in operating on a patient, comprising the steps of:
Providing a surgical device with two portions made of a polymeric material;
applying said surgical device to a structure in a patient; and
upon application of said surgical device to the structure, bonding said two portions to one another to form a continuous weld between said two portions, said step of bonding including the steps of generating an ultrasonic signal and transmitting said signal into said two portions upon application of said surgical device to the structure;



wherein said steps of applying and bonding are performed by inserting a laparoscopic instrument into a patient through a laparoscopic trocar sleeve.

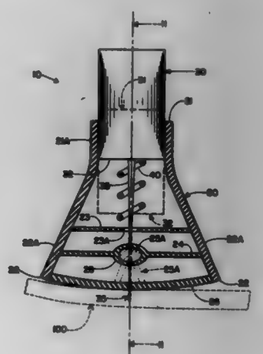
5,383,894
SPINAL DISC SURGICAL INSTRUMENT
David P. Summers, Montgomery, Tex., assignor to American BioMed, Inc., The Woodlands, Tex.
Filed Dec. 4, 1992, Ser. No. 985,329
Int. Cl.[6] A61B *17/22*
U.S. Cl. 606—170 7 Claims



1. A surgical instrument comprising:
(a) a substantially rigid cannula shaft, said cannula shaft including a lateral cutting port formed on the distal end thereof;
(b) handle means supporting said cannula shaft at one end thereof, said handle means including an axial bore extending therethrough;
(c) a drive shaft extending through said handle means and said cannula shaft, said drive shaft including cutter means mounted on the distal end thereof, said cutter means cooperating with said cutting port for severing body tissue;
(d) an idler shaft journaled about said drive shaft and enclosing said drive shaft within said cannula shaft, said idler shaft providing a non-rotating surface for evacuation of severed tissue from the surgical site;
(e) means connected to said drive shaft for rotating said cutter means; and
(f) wherein said cannula shaft and said idler shaft define an annular evacuation passage therebetween for evacuation of severed tissue from the surgical site.

5,383,885
BLOOD COLLECTION AND TESTING DEVICE
Todd A. Bland, 4301 Abbott Rd., Lincoln, Nebr. 68516
Filed Jun. 29, 1993, Ser. No. 82,950
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—182 2 Claims

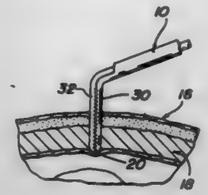
1. A blood collection and testing device comprising:
a hollow housing symmetrically disposed about a vertical axis, said housing having an upper annular end and a lower annular end wherein both ends lie in planes perpendicular to said vertical axis, said housing having an upper tubular portion extending from said upper end to a first intermediate location in-between said upper and lower ends and a lower conical portion extending from said first intermediate location to said lower end and wherein said lower annular end has a larger diameter than said upper annular end;
a circular fluid-pervious gauze attached peripherally to said housing lower annular end and extending across said lower end, said gauze being adapted to receive a sample of blood;
a circular membrane attached peripherally to said hollow housing at a second intermediate location in-between said first intermediate location and said lower end, said membrane including a centrally located and puncturably rupturable bubble portion containing a fluid reagent of a type that reacts with human blood;
a pushbutton slidable within said hollow housing and translatable along said vertical axis between an extended position and a retracted position, said pushbutton being dimensioned and configured to slidably engage the substantial entirety of the inner surface of the said hollow housing



upper portion, said pushbutton including a top end located above the hollow housing upper end and a bottom end located at said first intermediate location when said pushbutton is in said retracted position and located between said first and second intermediate locations when said pushbutton is in said extended position;
a needle extending downwardly from the bottom end of said pushbutton and generally lying along said vertical axis, said needle being of a length such that it lies between said first and second intermediate locations in said pushbutton retracted position and such that it extends below said hollow housing lower end in said pushbutton extended position, whereby said puncturably rupturable bubble is puncturably rupturable by said needle as said pushbutton is moved from said retracted position to said extended position and whereby also said fluid reagent flows toward the gauze and chemically interacts with human blood at said gauze; and
means for biasing said pushbutton toward said retracted position.

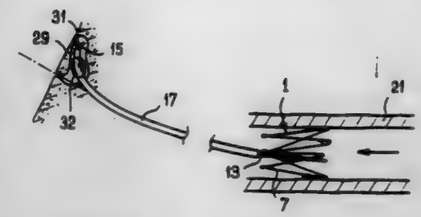
5,383,886
METHODS AND INSTRUMENTS FOR PERFORMING MEDICAL PROCEDURES PERCUTANEOUSLY WITHOUT A TROCAR
Kenneth Keusey, Chester Springs, and Harold Clupper, West Chester, both of Pa., assignors to Keusey Nash Corporation, Exton, Pa.
Filed Oct. 13, 1992, Ser. No. 959,857
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—185 6 Claims

1. A method for performing a medical procedure in an interior portion of the body of a living being from outside the body of said being via a small percutaneous incision or puncture by the use of an instrument, said instrument having a proximal portion, an intermediate portion, and a distal portion, said distal portion comprising working means and a tip, said tip having a tissue engagement surface which is sufficiently blunt so as not to present a hazard to tissue or organs located within the interior portion of the being, said method comprising the steps ensuring that the skin and tissue over the interior portion is supported, bringing said tissue engagement surface into engagement with the skin over the interior portion and applying pressure thereto to pase through the skin and underlying tissue to form the percutaneous incision or puncture, moving



said working means of said instrument directly through the percutaneous incision or puncture so that said working means is at a desired position within said interior portion of said being and with the tissue contiguous with the incision or puncture engaging portions of the instrument extending through the incision or puncture, operating said working means from outside the body of said being so that said working means performs said procedure, and then withdrawing said instrument out of said percutaneous incision or puncture, the incision or puncture being sufficiently small that it is quickly self-sealing after said distal portion of said instrument has been removed therefrom.

5,383,887
DEVICE FOR SELECTIVELY FORMING A TEMPORARY BLOOD FILTER
Guy Nadal, Poitiers, France, assignor to Celsa LG, Chasseneuil, France
Filed Dec. 28, 1993, Ser. No. 174,358
Claims priority, application France, Dec. 28, 1992, 92 15774
Int. Cl.[6] A61F *2/02*; A61B *17/00*
U.S. Cl. 606—200 10 Claims



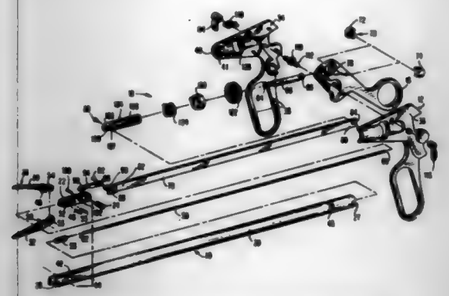
1. A blood filter device adapted to be implanted inside a blood vessel, comprising:
a strand formed in a zigzag configuration including an endless series of elongated sections being joined by bends at opposite ends of said filter device to form, upon uniform full expansion, an essentially cylindrical open wall;
tie means linked to fewer than all said bends, at one of the opposite ends of said filter device, for variably constricting those strand sections to which the tie means are linked, thus forming an essentially frusto-conical/conical open wall for engaging said blood vessel, the constricted strand sections axially converging for controllably filtering encountered blood clots flowing through the filter device.

5,383,888

ARTICULATING ENDOSCOPIC SURGICAL APPARATUS

Boris Zvenyatsky, Bronx, N.Y.; Ernest Aranyi, Easton, and H. Jonathan Tovey, Milford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 12, 1992, Ser. No. 834,687
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—206 **47 Claims**



1. An endoscopic surgical apparatus comprising:

a handle portion;

an endoscopic portion including an elongated tubular section defining a longitudinal axis and having opposed proximal and distal ends, the proximal end of said tubular section extending from said handle portion, and an articulating section pivotally connected to said tubular section adjacent the distal end thereof;

tool means depending from said articulating section of said endoscopic portion for performing a surgical task;

a linkage mechanism including at least one reciprocating member associated with said handle portion and said endoscopic portion for pivoting said articulating section to an articulated position at an angle to the longitudinal axis of said tubular section; and

means for actuating said tool means at least when said articulating section is disposed at an angle to said longitudinal axis of said tubular section.

5,383,889

TETHERED EVERTING BALLOON RETRACTOR FOR HOLLOW BODIES AND METHOD OF USING

Robert D. Warner, Cupertino; Albert K. Chin, and Gail Stevens, both of Palo Alto, all of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 890,941, May 29, 1992, which is a continuation-in-part of Ser. No. 762,318, Sep. 19, 1991, which is a continuation-in-part of Ser. No. 706,781, May 29, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 959,259
Int. Cl.[6] A61M *29/02*
U.S. Cl. 606—192 **25 Claims**

1. An apparatus for applying a manipulating force to manipulate a hollow body, the apparatus comprising:

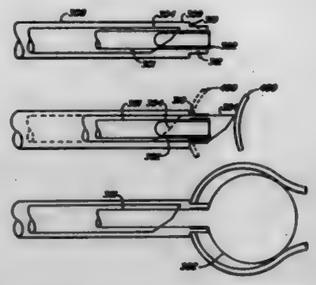
a hollow shaft having a distal end;

a first hollow tube having a distal end, being coaxially mounted outside the hollow shaft, and being axially fixed relative to the hollow shaft;

a second hollow tube having a distal end providing a cutting edge, the second hollow tube being coaxially mounted between the hollow shaft and the first hollow tube, and being axially slidable relative to the hollow shaft and the first hollow tube;

an elastomeric balloon attached to the distal end of the hollow shaft, the elastomeric balloon having a distal tip, and being inflatable from a collapsed state to an expanded state to engage the hollow body; and

a tethering means, attached to the distal tip of the elastomeric balloon, for limiting distal excursion and freely permitting proximal excursion of the distal tip of the elastomeric balloon in the expanded state in response to the manipulating force.

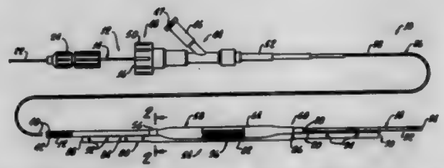


5,383,890

LOW-PROFILE SINGLE-LUMEN PERFUSION BALLOON CATHETER

Manouchehr Miraki, Aliso Viejo; Blair Walker, Long Beach, and Sheryl W. Higgins, Silverado, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Oct. 27, 1993, Ser. No. 143,946
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—194 **28 Claims**



1. A perfusion balloon catheter comprising a catheter shaft which at a distal end portion thereof carries an expansible balloon section, a perfusion conduit exterior to the balloon section and defining proximal and distal perfusion openings respectively disposed relative to said balloon section and communicating with one another via a passage of said perfusion conduit, and a support member for supporting said perfusion conduit in opposition to inflation pressure from said balloon section and maintaining said perfusion conduit passage open to permit perfusion blood flow past said balloon while the latter is forcefully inflated with pressurized fluid.

5,383,891

NOSE BLEED KID

Marshall D. Walker, 10238 Alamo Ct., Wichita, Kans. 67212

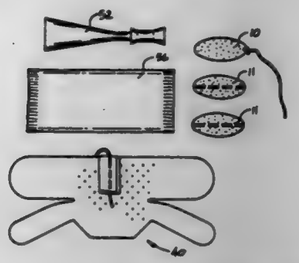
Continuation-in-part of Ser. No. 681,350, Apr. 8, 1991, abandoned. This application Aug. 31, 1993, Ser. No. 114,451
Int. Cl.[6] A61M *29/00, 31/00*; B65D *69/00*; A61F *13/15*
U.S. Cl. 606—196 **5 Claims**

1. A nose bleed kit comprising:

at least a first hemostatic tampon constructed of a compressed synthetic sponge having rounded ends and a length approximately twice its width wherein said length is between 3 and 5 cm, sized for hand insertion without instruments within a nasal cavity and including a string attached thereto;

a sealable container of liquid vasoconstrictive agent for wetting and expanding the sponge;

a sealable container of anti-bacterial ointment for lubricating the sponge during insertion: and



a bandage means having adhesive covered surfaces for attaching the string to a face of a user.

5,383,892

STENT FOR TRANSLUMINAL IMPLANTATION

Alain Cardon, Rennes; Yvon Kerdiles, Saint Gregoire; Michel Boliveau, Cesson Senigne; Denis Ansel, Thorigne-Fouillard, and Jean Debuigne, Chantepie, all of France, assignors to Meadox France, Bievres, France

Filed Nov. 6, 1992, Ser. No. 972,977
Claims priority, application France, Nov. 8, 1991, 91 13820
Int. Cl.[6] A61F *2/04*
U.S. Cl. 606—198 **7 Claims**



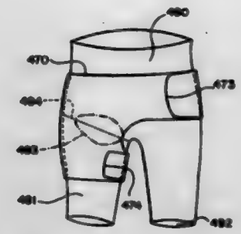
1. A stent for transluminal implantation having two axes and consisting of an alternate juxtaposition of at least two axially rigid cylindrical parts and at least one axially flexible cylindrical part; said stent having said at least two axially rigid cylindrical parts at said two ends; said at least two axially rigid cylindrical parts being made of a first material having a first structure and being capable of radial expansion in a plastic manner and said at least one axially flexible cylindrical part being made of a second material having a second structure and being capable of radial expansion in an elastic manner, said first and second material being the same material, said first and second structures being different, said first structure of said at least two axially rigid cylindrical parts consisting of tubular members, said tubular members having a longitudinal axis, two ends and a surface, slots and half-slots being cut regularly along said surface and being aligned with said longitudinal axis of said tubular members, said half-slot being split and issuing into said ends of said tubular members whereby flanges are formed, said second structure of said at least one axially flexible cylindrical part consisting of a mesh of wires, said wires being criss-crossed to form knots whereby pairs of wires issue from each knot, said flanges having ends; each wire of each pair being welded to each end of said flanges, whereby a right-hand helical thread line and a left-hand helical thread line are formed.

5,383,893

DEVICE FOR PREVENTING POST-CATHERIZATION WOUND BLEEDING

Yousef Dawashvar, 21459 Woodfarm, Northville, Mich. 48167

Continuation-in-part of Ser. No. 989,825, Dec. 14, 1992, which is a continuation-in-part of Ser. No. 800,085, Nov. 29, 1991, Pat. No. 5,263,966. This application Apr. 5, 1993, Ser. No. 42,560
Int. Cl.[6] A61B *17/12*
U.S. Cl. 606—201 **2 Claims**



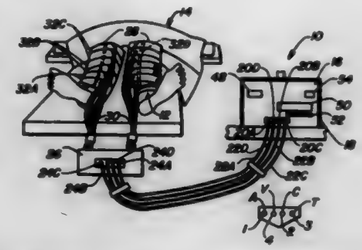
1. A wrap for holding a pressure-applying means against a person's groin so that pressure can be exerted by such pressure-applying means against the groin, yet allowing a person to both sit up and lie down while pressure of such pressure-applying means continues to be exerted on the groin, said wrap comprising an abdomen-wrap portion for encircling the abdomen proximate the groin and a thigh-wrap portion for encircling the thigh proximate the groin, wherein said wrap is constructed and arranged to define a line of folding proximate to and generally parallel with the groin line and to be free of constraint between portions of said abdomen- and thigh-wrap portions that pass posteriorly of the person that would otherwise prevent the person from bending between sitting and supine positions, and further including such a pressure-applying means wherein said pressure-applying means comprises first inflatable balloon means for disposition exclusively to the abdomen-side of the groin line beneath said abdomen-wrap portion and second inflatable balloon means for disposition exclusively to the thigh-side of the groin line beneath said thigh-wrap portion.

5,383,894

COMPRESSION DEVICE HAVING STEPPER MOTOR CONTROLLED VALVES

John D. Dye, Bridgewater, Mass., assignor to The Kendall Co., Mansfield, Mass.

Continuation-in-part of Ser. No. 790,809, Nov. 12, 1993, abandoned. This application Jul. 30, 1993, Ser. No. 99,506
Int. Cl.[6] A61B *17/12*
U.S. Cl. 606—201 **5 Claims**



1. A compression device for applying compressive pressure against a patient's limb comprising:

a source of pressurized fluid, a flexible sleeve enclosing the limb with at least one pressure chamber connected to the source, at least one solenoid valve connected to the source

and connectable with the pressure chamber, a pressure transducer connectable to the solenoid valve for transforming pressure it senses from the source to an analog signal, a signal converter for converting the analog signal to a digital signal, and a pressure control apparatus for receiving the digital signal;

a microprocessor programmed to monitor and adjust pressure to a sleeve pressure chamber, the microprocessor being programmed to have a preselected pressure value, to receive the digital signal from the signal converter, to compare the digital signal to the preselected pressure value, and after the comparison to send an electrical signal, if needed, for controlling pressure to the sleeve;

a driver circuit for receiving the electrical signal from the microprocessor, the driver circuit then emitting electrical pulses to further control pressure to the sleeve; and

a flow control valve having a stepper motor attached thereto connectable between the source of pressurized fluid and said at least one solenoid valve, the stepper motor being responsive to the electrical pulses emitted by the driver circuit for controlling the flow control valve so as to adjust the pressure being delivered to the pressure chamber by precisely regulating the fluid flow through the flow control valve to said at least one solenoid valve permitting the flow of fluid to the sleeve pressure chamber.

5,383,895

ENDOSCOPIC SURGICAL GRASPER AND METHOD

Jeffrey E. Holmes, and Jeffrey J. Christian, both of San Jose, Calif., assignors to Unisurge, Inc., Cupertino, Calif.

Filed Feb. 10, 1993, Ser. No. 16,044
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—206 **6 Claims**



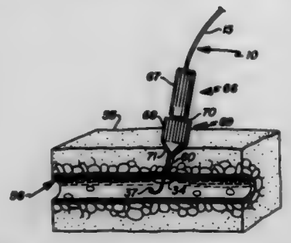
1. An endoscopic surgical grasper for use by the human hand comprising a handle adapted to fit into the human hand, a rigid tubular member having proximal and distal extremities and having the proximal extremity secured to the handle in a predetermined position longitudinal of the handle, a push rod having proximal and distal extremities slidably mounted in the tubular member, stop means carried by the handle, a knob assembly slidably mounted on said tubular member and being movable from a first position in engagement with the stop means and a second position away from the stop means, said knob assembly including a plunger slidably mounted on said tubular member, pin and slot means coupling said plunger to the proximal extremity of the push rod and permitting limited movement of said push rod longitudinally of the tubular member while preventing rotational movement of the plunger relative to the tubular member, said knob assembly also including a knob rotatably mounted on said handle threadedly engaging said plunger and having a portion adapted to engage said stop means in said handle, spring means disposed within said tubular member and yieldably urging said plunger and the push rod in a distal direction towards said second position of said knob assembly, jaw-like grasping means having first and second members movable between open and closed positions carried by the distal extremity of the tubular member and a linkage mechanism connecting said first and second grasping members to said push rod.

5,383,896

VASCULAR SEALING DEVICE

Gary Gershony, 1599 Swan Dr., Tulsa, Okla. 74120, and Karol W. Nowakowski, 5476 Landmark Clr., Moundview, Minn. 55112

Filed May 25, 1993, Ser. No. 67,213
Int. Cl.[6] A61B *17/12*
U.S. Cl. 606—213 **16 Claims**



1. A medical sealing apparatus for closing of an aperture in a patient body, comprising:

a. a thin, elongated conduit having a central lumen, said conduit having proximal and distal ends, said conduit distal end being insertable into the patient body aperture and having an inflation segment including an external orifice which is communicatively connected to said lumen, said conduit proximal end having a cylindrical configuration of a uniform outside diameter;

b. an expandable member sealingly disposed at said conduit distal end inflation segment, said expandable member being inflatable to a predetermined diameter;

c. a seal consisting of an elastomeric material continuously and adhereingly disposed in said conduit central lumen along a predetermined segment at said proximal end thereof, said seal permitting ingress and egress of fluid to and from said conduit lumen via a syringe; and

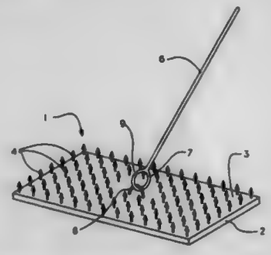
d. a fixation member having a base portion for contact with the patient body and means to engage said conduit until the patient body aperture is closed.

5,383,897

METHOD AND APPARATUS FOR CLOSING BLOOD VESSEL PUNCTURES

Mark H. Wholey, Oakmont, Pa., assignor to Shadyside Hospital, Pittsburgh, Pa.

Continuation of Ser. No. 962,816, Oct. 19, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 165,061
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—213 **13 Claims**



1. A closure for sealing a puncture in a blood vessel comprising:

a) a sheet adapted to conform to a blood vessel wall, the sheet having a top surface and a bottom surface, one of the top surface and the bottom surface having

a plurality of barbs covering, distributed and interspersed throughout, the barbs being sufficient in number, and being positioned and configured so that a multiplicity of barbs will pierce and anchor in the blood vessel wall; and

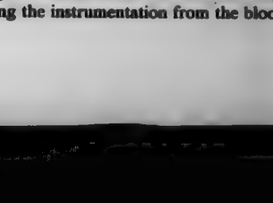
b) a pusher rod having means for releasable attachment to the sheet and being releasably attached to the sheet, the pusher rod for pushing the sheet through the puncture, anchoring the sheet to cover and seal the puncture and seat the barbs into the blood vessel wall and thereafter releasing from the sheet.

5,383,898

SARFARAZI CORNEAL INCISION CLOSURE

Faezeh M. Sarfarazi, 25 Wimall Rd., Newton Center, Mass. 02159

Continuation-in-part of Ser. No. 807,437, Dec. 13, 1991, Pat. No. 5,190,057. This application Feb. 10, 1992, Ser. No. 906,436
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—214 **1 Claim**



1. A fastener for an opening in tissue having at least two edges comprising:

first engaging means for engaging the first tissue edge;

second engaging means for engaging the second tissue edge;

bridging means connecting said first and second engaging means such that the first and second edges are held in contact with each other; and

a portion of surgical glue being located on said bridging means, wherein said fastener is a tape wherein said tape has a longitudinal indentation.

5,383,899

METHOD OF USING A SURFACE OPENING ADHESIVE SEALER

Julius G. Hammerslag, 27011 Calle Esperanza, San Juan Capistrano, Calif. 92675

Division of Ser. No. 127,769, Sep. 28, 1993, abandoned. This application Feb. 23, 1994, Ser. No. 200,416
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—214 **8 Claims**



1. A method of performing an intravascular procedure in a human through a vascular perforation and inhibiting bleeding from the perforation following the procedure, comprising the steps of:

perforating a blood vessel in the human to provide access to the vascular system;

introducing instrumentation into the blood vessel through the perforation;

performing treatment with the instrumentation;

withdrawing the instrumentation from the blood vessel;

inhibiting blood flow through the blood vessel having the perforation;

exposing the blood vessel at the perforation;

applying at adhesive to the exterior of the blood vessel wall in the vicinity of the perforation, thereby sealing the perforation; and

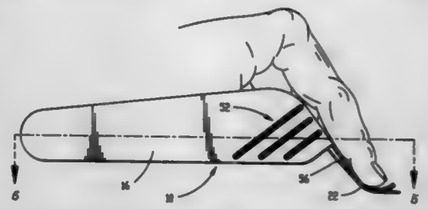
permitting resumption of blood flow in the blood vessel.

5,383,900

TAPE APPLICATOR

Kermit E. Krantz, Mission Hills, Kans., assignor to Medi-Flex Hospital Products, Overland Park, Kans.

Filed Jun. 1, 1994, Ser. No. 252,423
Int. Cl.[6] A63B *17/00*
U.S. Cl. 606—215 **10 Claims**



1. A tape applicator comprising:

a pair of sidewalls spaced laterally from one another to define a tape storage enclosure;

a pair of posts extending between the sidewalls and being spaced from one another to define a generally oval-shaped run extending between and around the posts;

a closed loop of backing material supported by the posts and being movable relative to the posts along the run, the length of the loop being substantially equal to the length of the run; and

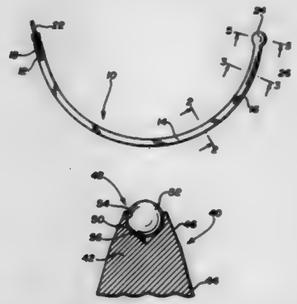
a piece of tape coated on one side with an adhesive material, the tape being of a length less than about the length of the loop of backing material and being supported and carried on the backing material by the adhesive, the enclosure defining an opening through which the tape may be pulled from the backing material and dispensed.

5,383,901

BLUNT POINT NEEDLES

Walter McGregor, Flemington, and Semyon Shchervinsky, Whitehouse Station, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Oct. 18, 1993, Ser. No. 138,680
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—223 **14 Claims**



1. A surgical needle comprising:

a tip portion having a proximal end and a distal end, said

distal end having a cross-sectional perimeter wherein said tip portion has a cross-sectional area which decreases progressively toward said distal end;

a blunt tip contiguous with said distal end of said tip portion, said blunt tip having a cross-sectional perimeter which is greater than said cross-sectional perimeter of said distal end of said tip portion;

a suture mounting portion having a hole to which a suture is to be attached, said suture mounting portion extending from the proximal end of the needle; and

a body portion which is disposed between and contiguous with said suture mounting portion and said tip portion, wherein said body portion has a generally uniform cross-sectional area throughout an entire length thereof,

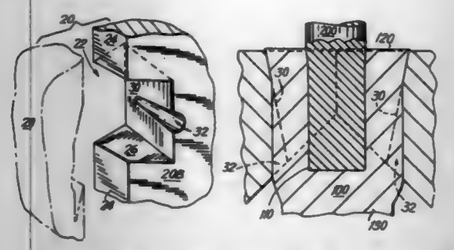
wherein said cross-section of said tip portion is circular and said blunt tip has a substantially spherical shape.

5,383,902

SURGICAL NEEDLE-SUTURE ATTACHMENT FOR CONTROLLED SUTURE RELEASE

Richard P. Carpentiere, Plantsville; Francis D. Colligan, Waterbury; Ronald H. Belcourt, Jr., Meriden, and Giuseppe Giordano, Ansonia, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jun. 2, 1993, Ser. No. 71,653
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—224 **32 Claims**



1. A method for attaching a surgical needle to a suture, the needle having a generally cylindrical outer portion and a blunt end with a substantially circular elongated aperture formed therein, the suture having an end portion suitably configured for insertion into the aperture, comprising:

providing a pair of dies, each die including a die face having an inner die surface portion for at least partial reception of the cylindrical outer portion of the needle, each die surface portion including at least one generally planar crimping surface having a generally arcuate-shaped concavity extending along a portion of said crimping surface;

positioning said pair of dies adjacent the corresponding cylindrical portion of the needle with said inner die surface portions of said dies facing the generally cylindrical outer surface of the needle, said generally planar surfaces of said dies angularly offset relative to the longitudinal axis of the elongated aperture of the needle and said generally planar surfaces of said dies and said arcuate-shaped concavity extending along the direction of the needle portion which defines the elongated aperture; and

applying inward impact force to said dies to displace said dies toward each other causing said generally planar crimping surfaces of each die to engage the surface of the needle to thereby cause crimping of said needle at an angle offset relative to the longitudinal axis of the elongated aperture of the needle and reduction of an average dimension of the aperture defined therein, whereby said arcuate-shaped concavity of each said die is configured and dimensioned to permit deformed material of the needle to be received and collected therewithin so as to facilitate attachment of the needle and the suture.

5,383,903

DIMETHYLSILOXANE-ALKYLENE OXIDE COPOLYMER COATINGS FOR FILAMENTS

Nagabhushanam Totakura, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Aug. 20, 1992, Ser. No. 932,961
Int. Cl.[6] A61L *17/00*; A61B *17/04*
U.S. Cl. 606—228 **11 Claims**

1. A surgical suture comprising:

a filament of a synthetic material;

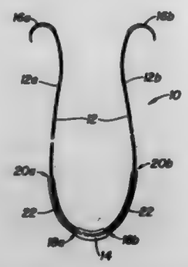
a coating on said filament, said coating comprising a dimethylsiloxane-alkylene oxide copolymer.

5,383,904

STIFFENED SURGICAL DEVICE

Nagabhushanam Totakura, Norwalk, and Ross Muth, Brookfield,, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 13, 1992, Ser. No. 959,012
Int. Cl.[6] A61L *17/00*
U.S. Cl. 606—228 **11 Claims**



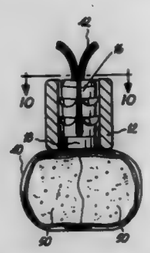
1. A method of treating a suture-pledget device with a pledget disposed on a central region of the suture comprising applying a stiffening agent to at least a portion of the suture adjacent to the pledget wherein the stiffening agent is applied to the suture and the pledget is substantially unstiffened.

5,383,905

SUTURE LOOP LOCKING DEVICE

Ellen M. Golds, Hastings-On-Hudson, N.Y., and Steven Howansky, Wilton, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,202
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—232 **19 Claims**



1. A device for securing a suture loop about bodily tissue, which comprises:

a bead member having a longitudinal bore extending therethrough, said longitudinal bore defining a cross sectional dimension which is substantially constant throughout the length of said longitudinal bore; and

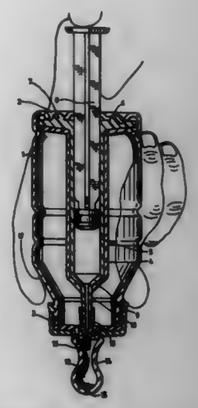
an anchor member slidably insertable within said bore of said bead member and defining a longitudinal passageway therethrough for reception of two end portions of a suture looped about tissue, said anchor member comprising a base portion and at least two axial compressible sections integrally connected at respective first end portions thereof to said base portion, each said at least two axial sections tapering generally outwardly towards a second end portion thereof relative to a longitudinal axis defined by said anchor member, said at least two axial sections adapted to collapse radially inwardly towards said longitudinal axis defined by said anchor member upon at least partial insertion of said anchor member within said bore of said bead member to securely wedge the suture end portions received within said passageway of said anchor member to secure the suture looped about tissue.

5,383,906

NURSING BOTTLE WITH MEDICATION DISPENSER

Mark T. Burchett, and Lori W. Burchett, both of 10505 Golf Rd., Orland Park, Ill. 60462

Filed May 12, 1993, Ser. No. 61,698
Int. Cl.[6] A61J *17/00*
U.S. Cl. 606—236 **35 Claims**



1. A liquid medication dispenser suitable for delivering a controllable mixture of a palatable beverage into which a liquid medication has been diluted, comprising:

a. a bottle having a top opening and a bottom end;

b. a nipple attached to said top opening and having one or more perforations therein to allow liquid to pass through;

c. a fixed cylindrical internal sleeve extending longitudinally from said bottom end of said bottle axially in the direction of said top opening, and having an open proximal end situated at said bottom end of said bottle and a distal end facing said top opening, said distal end of said sleeve being longitudinally separated from said nipple;

d. a removable syringe operatively attached into said internal sleeve, said syringe consisting of a barrel having a distal end and a proximal end, said proximal end being provided with a plunger, said distal end of said syringe being longitudinally separated from said nipple;

e. a first elongated hollow tip formed on said distal end of said sleeve;

f. and a second elongated hollow tip located on said distal end of said internal sleeve and sized to tightly surround said first elongated hollow tip and to provide a fluid-tight seal thereto,

whereby medicine is mixed with palatable beverage near said perforations within said nipple prior to exiting said perforations.

5,383,907

SYSTEM AND METHOD FOR DELIVERING MULTIPLE CLOSELY SPACED DEFIBRILLATION PULSES

Mark W. Kroll, Minnetonka, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Filed Dec. 18, 1992, Ser. No. 993,292
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—5 **27 Claims**



1. A main energy delivery electrical circuit for use in an implantable cardioverter defibrillator device, comprising:

a) a low power output primary defibrillator battery;

b) a high power output intermediate power intensifying battery;

c) switch means, electrically connected to the intermediate power intensifying battery and the low power output primary defibrillator battery, for selectively switching between the primary defibrillator battery and the intensifying battery; and

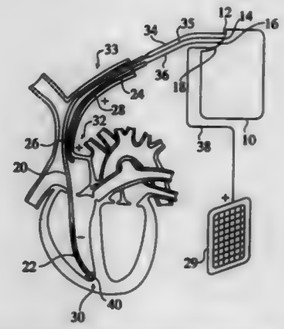
d) a main energy delivery capacitor connected to the switch means for discharging, in a first pulse, an electrical charge from the primary battery and for discharging one or more subsequent pulses of electrical charge derived from the intermediate power intensifying battery so that the electrical circuit permits the implantable cardioverter defibrillator device to deliver multiple closely spaced defibrillation pulses to a heart.

5,383,908

DEFIBRILLATION SYSTEM HAVING INNOMINATE VEIN ELECTRODE AND METHOD FOR ITS USE

Michael B. Sweeney, Menlo Park, Calif., and Debra S. Echt, Nashville, Tenn., assignors to Ventritex, Inc., Sunnyvale, Calif.

Filed Jun. 16, 1993, Ser. No. 79,069
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **21 Claims**

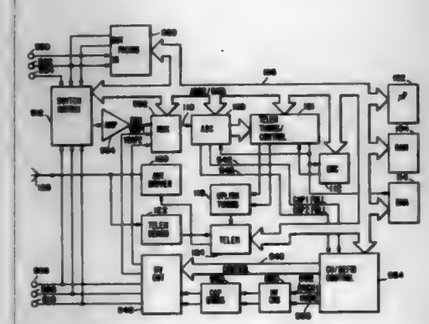


1. An implantable cardioverter/defibrillator system for delivering electrical discharges to the heart of a patient to restore normal cardiac rhythm comprising:

a pulse generator including sensing means, high energy shock generation means, pacing means and terminals of

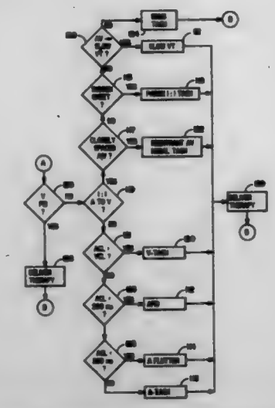
opposite polarity coupled to said high energy shock generation means;
a first intravascular catheter insertable within the heart of a patient having a distal first electrode on said first catheter for positioning in the right ventricle, said distal first electrode being connected to a terminal of said pulse generator of one polarity;
a second intravascular catheter insertable within the superior vena cava the patient having a distal second electrode on said second catheter for positioning in the superior vena cava region and a proximal third electrode on said second catheter spaced from said second electrode for positioning in the left innominate vein;
electrical conduction means for electrically connecting said second electrode and said third electrode together and to a terminal of said pulse generator of an opposite polarity; and
discharge means in said pulse generator for supplying electrical energy between said terminals of opposite polarity.

5,383,909
DIAGNOSTIC TELEMETRY SYSTEM FOR AN APPARATUS FOR DETECTION AND TREATMENT OF TACHYCARDIA AND FIBRILLATION
John G. Keimel, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Jan. 29, 1993, Ser. No. 10,970
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—7 **12 Claims**



1. An implantable device, comprising: means for detecting heart depolarizations;
means for measuring a parameter associated with said detected depolarizations;
means for detecting at least first and second arrhythmias, said detecting means comprising means for defining criteria for detection of said first and second arrhythmias as a function of said measured parameter, over a series of said detected depolarizations, including means for storing an indication of the relative progress toward meeting said criteria and for updating said stored information following each detected depolarization; and
means for telemetering information following individual ones of said detected depolarizations to an external receiver, said information comprising said updated stored information as to the relative progress toward meeting said criteria.

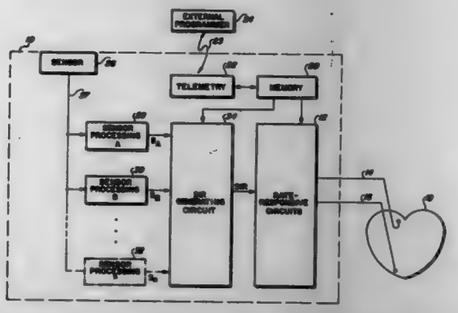
5,383,910
METHOD AND APPARATUS FOR TACHYARRHYTHMIA DETECTION AND TREATMENT
Karel den Dulk, Maastricht, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Feb. 19, 1993, Ser. No. 19,511
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—14 **8 Claims**



5. Apparatus for detecting re-entrant A-V nodal tachycardia in a patient's heart, comprising:
means for sensing the atrium and ventricle of the patient's heart to detect atrial and ventricular depolarization signals;
first measuring means for measuring the intervals between successive depolarization signals in a chamber of said patient's heart;
second measuring means for measuring the time intervals between successive atrial and ventricular depolarization signals; and
detecting means, responsive to said first and second measuring means, for detecting the presence of re-entrant A-V nodal tachycardia in response to the detection of a series of depolarization signals in said chamber of said patient's heart manifesting a rate in excess of a tachycardia rate criterion, in which successive ventricular depolarization signals are followed by atrial depolarization signals separated from said ventricular depolarization signals by intervals of time which fall within a first predetermined range of intervals substantially less than the expected duration of A-V intervals which would occur in a sinus or other tachycardia at a rate in excess of said tachycardia rate criterion.
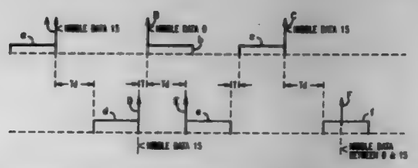
5,383,911
RATE-RESPONSIVE PACEMAKER HAVING SELECTABLE RESPONSE TO ARM MOVEMENT AND PEDAL IMPACTS
Brian M. Mann, Beverly Hills, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.
Filed Jan. 29, 1993, Ser. No. 10,916
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—19 **21 Claims**

1. An implantable rate-responsive pacemaker comprising:
pulse generator means for generating stimulation pulses on demand at a rate determined by a sensor indicated rate (SIR) signal;
an activity sensor that generates a raw sensor signal as a function of patient activity;
first sensor processing means for processing said raw sensor signal and converting said raw sensor signal to a first processed sensor signal, said first processed sensor signal being relatively sensitive to arm motion of the patient;
second sensor processing means for processing said raw sensor signal and converting said raw sensor signal to a second processed sensor signal, said second processed sensor signal being relatively sensitive to pedal impacts of the patient; and



SIR signal generating means for generating said SIR signal by combining said first and second processed sensor signals in accordance with a prescribed combination function;
whereby said pulse generating means generates said stimulation pulses on demand at a rate determined by the raw sensor signal and the prescribed combination function.

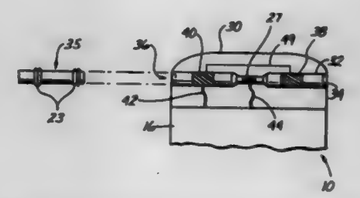
5,383,912
APPARATUS FOR HIGH SPEED DATA COMMUNICATION BETWEEN AN EXTERNAL MEDICAL DEVICE AND AN IMPLANTABLE MEDICAL DEVICE
Timothy J. Cox, Lake Jackson, and Randolph K. Armstrong, Missouri City, both of Tex., assignors to Intermedics, Inc., Angleton, Tex.
Filed May 5, 1993, Ser. No. 58,752
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—32 **2 Claims**



1. A method of bi-directionally and simultaneously communicating data between an external device and an implantable medical device, comprising the steps of:
generating a first plurality of time delay intervals each having a length representative of a corresponding data value to be communicated from the external device to the implantable medical device;
generating a second plurality of time delay intervals each having a length representative of a corresponding data value to be communicated from the implantable medical device to the external device;
transmitting a first train of pulses of electromagnetic energy from the external device to the implantable medical device by transmitting each, except the first, pulse of said first train of pulses after a respective time delay interval following transmission of an immediately preceding pulse of said first train of pulses, the respective time delay interval being a respective one of said first plurality of time delay intervals;

receiving in the implantable medical device the first train of pulses of electromagnetic energy;
transmitting a second train of pulses of electromagnetic energy from the implantable medical device to the external device by transmitting each pulse of said second train of pulses after a respective time delay interval following receipt of an immediately preceding pulse of said first train of pulses, the respective time delay interval being a respective one of said second plurality of time delay intervals; and
receiving in the external device the second train of pulses of electromagnetic energy.

5,383,913
BIDIRECTIONAL LEAD CONNECTOR FOR LEFT OR RIGHT SIDED IMPLANTATION OF PACEMAKERS AND/OR OTHER IMPLANTABLE ELECTROPHYSIOLOGIC DEVICES AND A METHOD FOR USING THE SAME
Steven M. Schiff, 279 St. Joseph Ave., Long Beach, Calif. 90803
Filed Apr. 21, 1993, Ser. No. 50,859
Int. Cl.[6] A61N *1/375*
U.S. Cl. 607—38 **19 Claims**

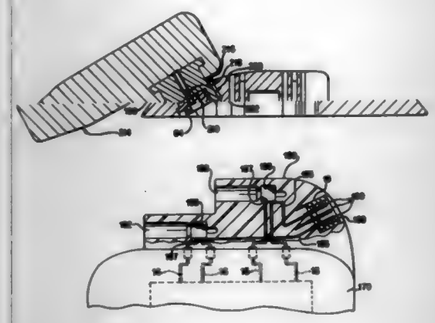


1. An improvement in an electrophysiologic device comprising:
a connector head for use in combination with at least one plug-in type lead having;
a casing coupled to said connector head; and
an electrically integral bidirectional electrical connector means disposed within said connector head for reattachably inserting only one said plug-in type lead according to user selection from either one of at least two directions and to make electrical contact with said lead when inserted within said connector in either of said two directions,
whereby said device may be implanted within a patient on either the left or right side of said patient with equal ease.

5,383,914
DIAGNOSTIC CONNECTOR PORT FOR A PULSE GENERATOR
Michael O'Phelan, Roseville, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.
Continuation of Ser. No. 882,524, May 13, 1992, abandoned.
This application Jan. 5, 1994, Ser. No. 177,659
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—36 **22 Claims**

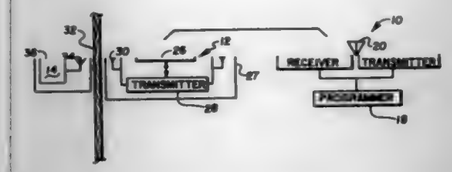
1. A pulse generator device comprising:
a body including pulse means for generating charges transferred to a heart of a patient;
a header on said body;
a plurality of lead ports formed in said header for connection with leads extending to the heart to transfer charges to the heart from said body; and
a diagnostic connector port formed in said header and being electrically connected to said lead ports;
said diagnostic connector port including electrical contact means for electrically connecting said diagnostic connec-

tor port with connector plug means for transfer of information from said body directly to external diagnostic



equipment during interengagement of said electrical contact means and said connector plug means.

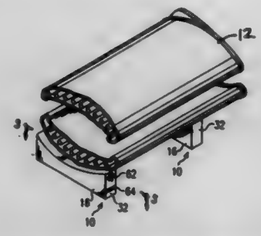
5,383,915
WIRELESS PROGRAMMER/REPEATER SYSTEM FOR AN IMPLANTED MEDICAL DEVICE
Theodore P. Adams, Edina, Minn., assignor to Angeion Corporation, Plymouth, Minn.
Continuation of Ser. No. 682,966, Apr. 10, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 13,028
Int. Cl.[6] H04B 7/00
U.S. Cl. 607—60 **16 Claims**



1. A wireless programmer/repeater system for communicating with an implanted medical device in a patient comprising:
programmer means positioned remote from the patient for providing programming data to be communicated to the medical device; and
repeater means physically separate from and not connected to the programmer means and positioned proximite to the patient for relaying the programming data from the programmer means to the medical device.

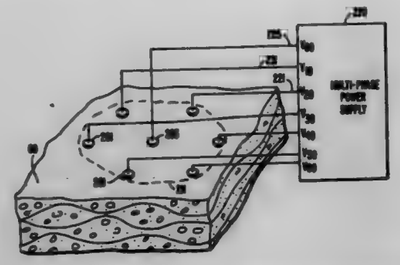
5,383,916
SUPPORT MEMBER FOR A TANNING BED OR COMPARABLE DEVICE
Roger A. Brown, Dallas, Tex., assignor to Puretan International, Inc., Dallas, Tex.
Continuation of Ser. No. 789,868, Nov. 12, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 982,014
Int. Cl.[6] A61N 5/06
U.S. Cl. 607—91 **25 Claims**

1. A tanning bed assembly for placement on a surface comprising:
a) a tanning bed;
b) at least two support legs for supporting the tanning bed above the surface, each support leg having a top end for engagement with the underside of said bed at points spaced one from the other, and a second end for engagement with the surface, one of said support legs having a compartment therein; and
c) a cassette adapted for holding electrical components used in conjunction with the tanning bed, said cassette being receivable in said compartment and removable from said



compartment without affecting the support strength of the support leg for supporting the bed said compartment having at least one outlet vent adapted to facilitate dissipation of heat from the electrical components, out of said compartment and away from the tanning bed.

5,383,917
DEVICE AND METHOD FOR MULTI-PHASE RADIO-FREQUENCY ABLATION
Jawahar M. Desai, 4141 Cowell Blvd. No. 38, Davis, Calif. 95616, and Htay L. Nyo, San Jose, Calif., assignors to Jawahar M. Desai, Roseville, Calif.
Filed Jul. 5, 1991, Ser. No. 726,035
Int. Cl.[6] A61N 5/00
U.S. Cl. 607—702 **22 Claims**

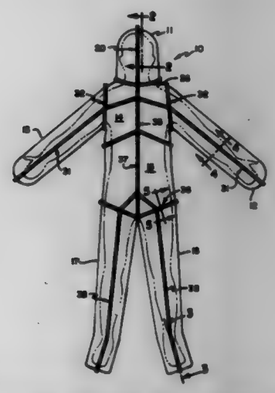


1. A radio-frequency ablation apparatus for biological tissues, comprising:
an electrode catheter having an array of electrodes; and
means for supplying individual phased RF voltages to each of said plurality of electrodes, such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.

5,383,918
HYPOTHERMIA REDUCING BODY EXCLOSURE
Thomas F. Panetta, 4 Apple Tree La., Great Neck, N.Y. 11024
Filed Aug. 31, 1992, Ser. No. 938,828
Int. Cl.[6] A61F 7/00
U.S. Cl. 607—104 **11 Claims**

1. A body enclosure having head, torso, arm and leg portions comprising:
(a) a first sheet having a first end and a second end, said first sheet being made of a substantially gas impermeable flexible material;

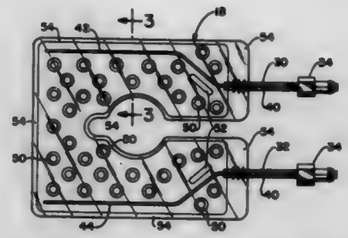
(b) means for releasably connecting said first end to said second end to form said enclosure fully about a body, said connecting means including a fastener and forming a longitudinally oriented seam with respect to said body;
(c) a plurality of inlet port means for admitting fluid into said enclosure, said fluid being controlled to be within a predetermined temperature range, at least one of said inlet port means being disposed adjacent to the torso and at least another one of said inlet port means being disposed adjacent to one of said head, arm or leg portion;
(d) a plurality of exhaust port means for discharging fluid from within said enclosure, at least one of said exhaust port means being disposed adjacent to said torso portion and at least another one of said exhaust port means being



disposed through a passage located between the first end and the second end, said plurality of inlet port means and said exhaust port means cooperating with one another such that the flow of fluid within the enclosure permits a substantially even distribution of temperature controlled fluid therethrough to control the temperature of the body; and
(e) said body enclosure comprising a plurality of removable sections to permit access to selected areas of the body during an operation, the remainder of the body enclosure, when a section is removed, being capable of being sealed to the body, so as to prevent the substantial leakage of the temperature controlled fluid and the disturbance of the even distribution of temperature controlled fluid within the enclosure.

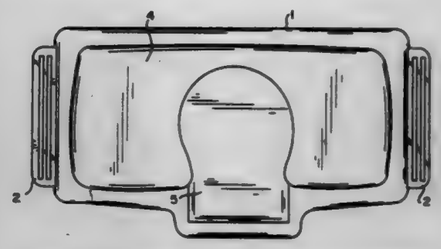
5,383,919
THERMAL THERAPY PAD
Kevin A. Kelly, Galloway, and Roman Szpur, Kettering, both of Ohio, assignors to Danninger Medical Technology, Inc., Columbus, Ohio
Filed May 18, 1993, Ser. No. 63,240
Int. Cl.[6] A61F 7/00
U.S. Cl. 607—104 **3 Claims**

3. A fluid transfer pad comprising:
a first membrane having a first periphery and a second membrane having a second periphery, said first and second periphery being sealed to form a fluid receiving cavity, said first membrane and said second membrane each being made from a material which is sterilizable by gamma radiation and having a Shore A hardness of from about 70 to about 90 and having a thickness of from about 0.3 to about 0.020 mils;
a fluid conduit means comprising an inlet conduit and an outlet conduit made from a material having a Shore A hardness of from about 70 to about 90 having an internal diameter of from about 0.15 to about 0.5 inches, and having a wall thickness of from about 0.15 to about 0.2 inches, said inlet including a first end terminating in said fluid receiving cavity; and said conduit means further comprising at least one flexible internal conduit extending from within said fluid conduit means into said fluid receiving cavity, said flexible internal conduit being a tube having



an outer diameter of about 0.075 to about 0.45 inches, a Shore A hardness of from about 70 to about 90, and including a longitudinal axis, said tube having tube walls with a thickness of from about 0.15 to about 0.2 inches, and including a slit through said tube walls spiraling at a pitch of from about ¼ to about 40 revolutions per inch.

5,383,920
DEVICE AND METHOD FOR HIP PROTECTION AND STABILIZATION
W. David Sikes, Gainesville, Fla., assignor to Homeostatics Design Group, Inc., Starke, Fla.
Filed Sep. 14, 1993, Ser. No. 122,076
Int. Cl.[6] A61F 5/00
U.S. Cl. 607—112 **19 Claims**



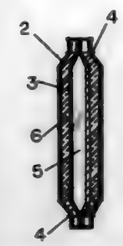
1. A device for the protection of a joint and surrounding area against an injury due to contact with a hard surface, wherein said device comprises an outer rigid shield having an outer and inner face, a cushion comprising a first and second pad component affixed to the inner face of said shield, wherein said first pad component is centrally disposed on the inner face of said shield and said second pad component is disposed around the periphery of said first pad component, said second pad component having a thickness greater than said first pad component whereby said second pad component directly contacts a wearer of said device, holding said centrally disposed first pad component away from the wearer.

5,383,921
THERAPEUTIC MUFF
Shirley K. Barry, 4972 Mt. Casas Dr., San Diego, Calif. 92117
Filed Aug. 1, 1994, Ser. No. 283,545
Int. Cl.[6] A61F 7/00
U.S. Cl. 607—114 **1 Claim**

1. A therapeutic muff made from two longitudinal tubular segments of flexible material comprising:
(a) a first tubular segment made of a flexible fleece material having first and second ends;

(b) said first segment having an inside diameter of approximately six inches and a length of approximately twelve inches;

(c) a second tubular segment of denim material having first and second ends and an outside diameter of approximately eight inches and a length of approximately twelve inches;



(d) wherein the first segment is located within the second segment with the respective first and second ends of the first and second tubular segments fastened together to define a circumferential space therebetween;

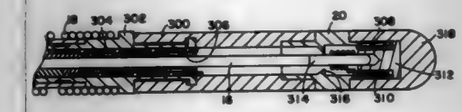
(e) said circumferential space being filled with a temperature retaining material comprising a mixture of two pounds of dry wheat, one stick of cinnamon, and twelve cloves.

5,383,922

RF LEAD FIXATION AND IMPLANTABLE LEAD

Douglas P. Zipes, Carmel, Ind.; Clare P. Ulrich; Paul D. Blankenau, both of Minneapolis, Minn., and William M. Terrell, Coon Rapids, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 15, 1993, Ser. No. 31,767
Int. Cl.[6] A61N *1/04*
U.S. Cl. 607—122 **20 Claims**



1. A method of affixing a medical lead having an electrode at a desired location within a patient's body, comprising:

positioning said electrode adjacent body tissue at said desired location and coupling said electrode to a source of RF electrical energy;

applying RF electrical energy to said electrode to affix said electrode to said tissue; and

disconnecting said source of RF energy from said electrode and allowing said lead to remain affixed to said tissue.

5,383,923

STEERABLE CATHETER HAVING PULLER WIRE WITH SHAPE MEMORY

Wilton W. Webster, Jr., Altadena, Calif., assignor to Webster Laboratories, Inc., Baldwin Park, Calif.

Continuation of Ser. No. 595,035, Oct. 20, 1990, abandoned. This application May 11, 1993, Ser. No. 60,450
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—125 **5 Claims**

1. A steerable catheter comprising:

a flexible, elongated catheter body having proximal and distal ends, said distal end of the catheter forming a catheter tip;

an elongated puller wire having a proximal end and a distal end extending through the catheter body to the catheter tip where the distal end of the puller wire is fixedly attached to the distal end of the catheter body, said puller wire comprising a superelastic nickel-titanium alloy whereby the puller wire, if bent under a stress, will spring back to its original shape when the stress is removed without permanent deformation of the puller wire; and



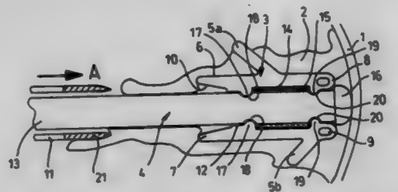
means connected to the proximal end of the catheter body and the puller wire for controlling the puller wire to bend the catheter tip.

5,383,924

EXTRACTABLE CARDIAC PROBE AND ITS APPLICATION PROCEDURE

Jacques Brehier, Le Mans, France, assignor to Ela Medical, Montrouge Cedex, France

Filed Jun. 3, 1993, Ser. No. 71,675
Claims priority, application France, Jun. 3, 1992, 92 06704
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—126 **42 Claims**



1. An extractable cardiac probe for cardiac stimulation, comprising:

a catheter having a proximal tip, a distal tip, and having a flexible outer sheath, and an electrode at the distal tip adapted to be placed against an inner surface of a heart; and

a sleeve surrounding said catheter having a proximal tip, a distal tip, and means for attachment of the probe to a cardiac surface,

said catheter being separable from said sleeve to permit the withdrawal of the catheter and the retention in position of the sleeve on the cardiac surface, wherein said sleeve has an inside diameter that securely engages the catheter, the sleeve being at least partially deformable through enlargement of the inside diameter to permit separation of the catheter and the sleeve and extraction of the catheter from the sleeve by sliding movement.

5,383,925

THREE-DIMENSIONAL BRAIDED SOFT TISSUE PROSTHESIS

Peter J. Schmitt, Garnerville, N.Y., assignor to Meadox Medicals, Inc., Oakland, N.J.

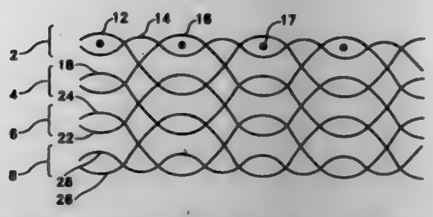
Filed Sep. 14, 1992, Ser. No. 945,226
Int. Cl.[6] A61F *2/06, 2/04*
U.S. Cl. 623—1 **26 Claims**

1. A prosthetic device, comprising:

an implantable tubular three-dimensional braided structure wherein said braided structure includes a plurality of interconnected layers, and

wherein said structure has an inner fluid contacting surface and an outer tissue contacting surface, and

wherein said inner surface has a porosity sufficient to discourage leakage of fluid therethrough and said outer



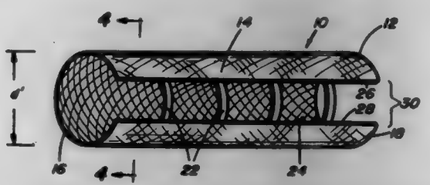
surface has a porosity sufficient to allow growth of tissue therein.

5,383,926

RE-EXPANDABLE ENDOPROSTHESIS

James E. Lock, Newton; Valerie Mandell, Brookline, and Stanton Perry, Swampscott, all of Mass., assignors to Children's Medical Center Corporation, Boston, Mass.

Filed Nov. 23, 1992, Ser. No. 980,300
Int. Cl.[6] A61F *2/04*
U.S. Cl. 623—1 **14 Claims**



1. A method for fabricating a radially expandable endoprosthesis device comprising the steps of

forming an elongated radially outwardly expandable sleeve member (12) including a wall (14) and a longitudinal axis (20) extending through the length thereof,

forming at least one lateral slot (24) parallel to said longitudinal axis (20) disposed in said wall (14) including a pair of opposing edges (26,28) extending parallel of said longitudinal axis (20) and defining an open region (30) between the opposing edges (26,28),

forming expansion limiting means including at least one connecting strip (22),

disposing the expansion limiting means on the sleeve member (12) across the lateral slot (24) for initially limiting to a first circumference the radially outward expansion of the sleeve member (12).

5,383,927

NON-THROMOGENIC VASCULAR PROSTHESIS

George L. De Goicoechea, Cassis, France, and John O. Hudson, Clearwater, Fla., assignors to Intervascular Inc., Clearwater, Fla.

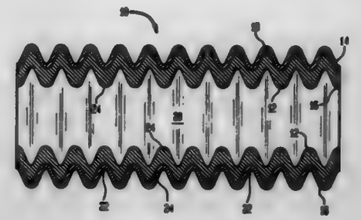
Continuation of Ser. No. 879,345, May 7, 1992, abandoned. This application Apr. 15, 1993, Ser. No. 47,799
Int. Cl.[6] A61F *2/06, 2/04*
U.S. Cl. 623—1 **20 Claims**

1. A vascular prosthesis, comprising

a base material having inner and outer surfaces and a degree of porosity,

an outer coating of compounded heparin bound to said outer surface of said base material and an inner coating of compounded heparin bound to said inner surface of said base material, said compounded heparin including heparin and a cationic surfactant, and

a layer of a material capable of reducing said degree of porosity of said base material formed on said outer coating



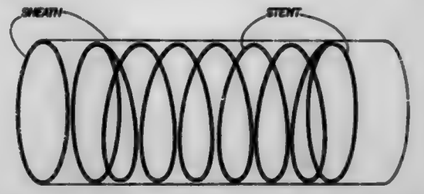
of compounded heparin, said layer of material being free of any substance that counteracts an anti-coagulant.

5,383,928

STENT SHEATH FOR LOCAL DRUG DELIVERY

Neal A. Scott, Atlanta; Stephen R. Hanson, Stone Mountain; Spencer B. King, III, and Laurence A. Harker, both of Atlanta, all of Ga., assignors to Emory University, Atlanta, Ga.

Continuation of Ser. No. 896,240, Jun. 10, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 109,149
Int. Cl.[6] A61F *2/06, 2/04*
U.S. Cl. 623—1 **25 Claims**



1. In combination, a hollow tubular stent having a predetermined length and a separate sheath removably encompassing at least a portion of said hollow tubular stent to locally deliver at least one drug to an area selected from the group consisting of an arterial wall and an arterial lumen into which the stent has been inserted, comprising at least one polymer and at least one drug incorporated within the polymer, the sheath removably encompassing at least a portion of the stent and having a thickness to allow controlled release of the drug.

5,383,929

IMPLANTABLE PROSTHETIC DEVICE

Walter J. Ledergerber, 29502 Anza Maria, Laguna Niguel, Calif. 92677

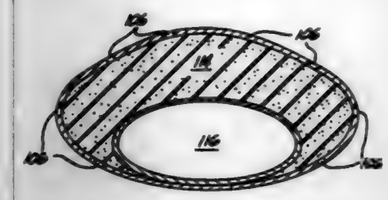
Continuation of Ser. No. 325,444, Mar. 20, 1989, abandoned, which is a division of Ser. No. 137,871, Dec. 22, 1987, Pat. No. 5,282,856. This application Nov. 27, 1991, Ser. No. 799,773
Int. Cl.[6] A61F *2/12, 2/02*
U.S. Cl. 623—8 **14 Claims**

1. In an implantable prosthetic device for use in the human body, the implantable prosthetic device including a fluid filled region, the improvement comprising:

a pressure adaptive element disposed within the prosthetic device adjacent said fluid filled region which is capable of automatically changing volume under pressure after implanting in the body, and

means for communicating body fluids to and from the pressure adaptive element, to external to the implantable prosthetic device, in response to the pressure adaptive ele-

ment's changing volume, which implant includes at least one permanent perforation to permit communication of



body fluid between the prosthetic device and the human body.

5,383,930

METHOD FOR TREATING FINE SUPERFICIAL FACIAL LINES

Ann Brennan, San Francisco; Roseann Burhenne, Los Altos Hills; Frank A. Delustro, Belmont; Thomas L. Smestad, Palo Alto; Louis Fries, Los Altos, and Rees M. Orland, Los Altos Hills, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Division of Ser. No. 677,403, Mar. 29, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 927,146
Int. Cl.[6] A61F 2/02
U.S. Cl. 623—11 5 Claims

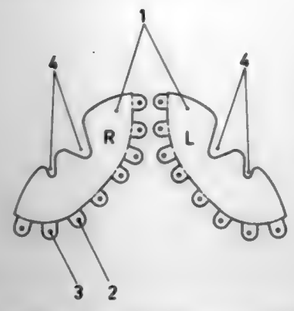
1. In a method for correcting fine superficial facial lines comprising injecting an aqueous suspension of a particulate biomaterial at a concentration of 10 to 50 mg/ml intradermally at the site of the lines from a syringe barrel fitted with a fine gauge needle, the improvement wherein the biomaterial is a fibrillar noncrosslinked atelopeptide collagen which exhibits an extrusion plot in which there is a smooth substantially linear increase in force up to a substantially constant force in the range of 10 to 30 newtons with an average of about 25 newtons and the needle gauge is 31 to 33 inclusive.

5,383,931

RESORBABLE IMPLANTABLE DEVICE FOR THE RECONSTRUCTION OF THE ORBIT OF THE HUMAN SKULL

Markus Hebli, Davos-Frauenkirch; Sylwester Gogolewski, Alvaneu-Dorf, and Stephan M. Perren, Davos-Dorf, all of Switzerland, assignors to Synthes (U.S.A.), Paoli, Pa.

Filed Jan. 3, 1992, Ser. No. 817,472
Int. Cl.[6] A61F 2/28, 2/30
U.S. Cl. 623—16 18 Claims



1. An implantable device for reconstructing an orbit of a human skull comprising:

a. a flat flexible element having a shape which is approximately the shape of a developed curved surface of a frustum of a cone, said surface having a circularly curved bottom rim and a smaller circularly curved top rim;

b. said element having an indentation in the top rim adapted to receive eye vessels and muscles;

c. said element being made of a material selected from the group consisting of a biocompatible polymeric material and a biocompatible polymeric-ceramic material; and

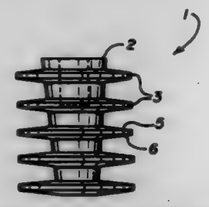
d. said element being three dimensionally shapable and trimmable to form a longitudinally slit curved surface for implantation and adaptation into the skull orbit to be reconstructed.

5,383,932

ABSORBABLE MEDULLARY PLUG

Stephen Wilson, Raynham; Laurel Rogers, North Attleboro, both of Mass., and Allan Ritchie, Lymington, England, assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Apr. 27, 1993, Ser. No. 53,833
Int. Cl.[6] A61F 2/28
U.S. Cl. 623—16 20 Claims



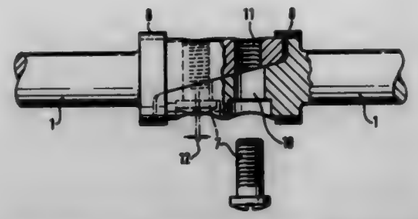
1. An absorbable intramedullary bone plug for restricting cement flow in prosthesis implant surgery comprising a tapered longitudinal body having extending from the tapered longitudinal body a plurality of longitudinally spaced fins, each fin providing a continuous outer edge, said fins extending to approximately equal final diameters.

5,383,933

ENDOPROSTHESIS

Arnold Keller, Kayhude, Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Germany

PCT No. PCT/EP92/02730, § 371 Date Jul. 27, 1993, § 102(e) Date Jul. 27, 1993, PCT Pub. No. WO93/10724, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 26, 1992, Ser. No. 94,082
Claims priority, application Germany, Dec. 2, 1991, 9114970
Int. Cl.[6] A61F 2/38
U.S. Cl. 623—16 8 Claims



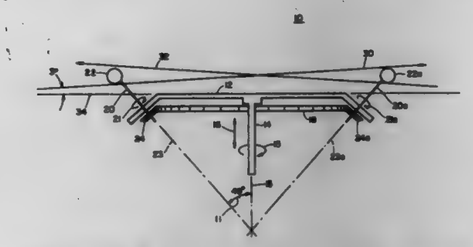
1. An implantable biocompatible endoprosthesis sized and shaped for attachment to bones in a human body comprising two prosthesis parts, said parts including mutually overlapping elongated connecting lugs of predetermined length, characterised in that each of the lugs (3) includes a free end portion (5) and a peripherally lipped pocket (9) whereby upon overlapping assembly said lugs the free end portion of each lug is received in a positive-locking manner by the lipped pocket on the respective other prosthesis.

5,383,934

METHOD FOR ION BEAM TREATING ORTHOPAEDIC IMPLANT COMPONENTS

Anthony J. Armini, Manchester, and Stephen N. Bunker, Wakefield, both of Mass., assignors to Implant Sciences, Corporation, Wakefield, Mass.

Continuation-in-part of Ser. No. 847,159, Mar. 4, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 121,232
Int. Cl.[6] A61F 2/30; B05D 3/06; C23C 14/48
U.S. Cl. 623—16 14 Claims



1. A process for ion beam treating a metallic orthopaedic implant component to form a zirconium oxide graded interface layer between the metallic component and a subsequently applied zirconium oxide coating, comprising:

immersing the implant component in an oxygen containing gas at a pressure between 5×10^{-6} and 1×10^{-3} Torr;

providing an ion beam of zirconium to the immersed component; and

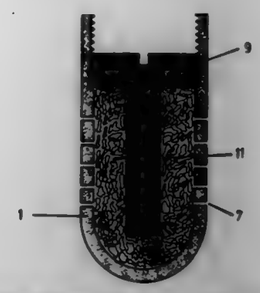
providing a source of zirconium vapor to the immersed component to form the interface layer of ion implanted zirconium oxide varying between the composition of pure metallic component material from beneath the surface of said metallic component to pure zirconium oxide on the surface of said metallic component.

5,383,935

PROSTHETIC IMPLANT WITH SELF-GENERATED CURRENT FOR EARLY FIXATION IN SKELETAL BONE

Morteza Shirkhanzadeh, 64 Ontario Street, Apt. 410, Kingston, Ontario, Canada K7L 5J4

Filed Sep. 28, 1993, Ser. No. 127,491
Int. Cl.[6] A61F 2/28, 2/02, 2/30, 2/54
U.S. Cl. 623—16 16 Claims



1. A prosthetic implant for use as a body implant and for stimulating bone formation in close proximity of said implant comprising:

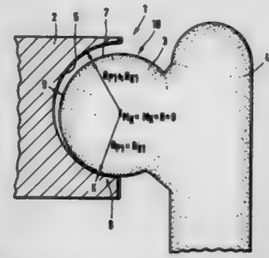
An implantable base member consisting of an internal housing and a conductive porous wall, said porous wall surrounding said internal housing at least partially, said porous wall having an outer surface on which bone attachment is desired, an inner surface and a plurality of apertures extending from said inner surface through said wall to said outer surface, and adapted for tissue ingrowth when said prosthetic implant is implanted in the body; a porous means located in said internal housing retaining a biocompatible electrolyte, said electrolyte being in contact with said inner surface of said porous wall; an anode also secured within said internal housing, said anode being in contact with said electrolyte and means for electrically connecting said anode to said porous wall so as to form a galvanic couple and to generate sufficient current flow to induce precipitation of calcium phosphate minerals on said outer surface of said porous wall and to stimulate bone growth into said porous wall.

5,383,936

ARTIFICIAL JOINT AS AN ENDOPROSTHESIS FOR THE HUMAN SHOULDER JOINT

Dietmar Kubein-Meesenburg, Kreiensen, and Hans Nägerl, Gleichen/OT, both of Germany, assignors to Joachim Theusner, Munich, Germany

Filed Sep. 24, 1993, Ser. No. 126,912
Claims priority, application Germany, Sep. 26, 1992, 4232313
Int. Cl.[6] A61F 2/40
U.S. Cl. 623—19 13 Claims



1. An artificial joint for the human shoulder joint and including two joint parts, a joint head and a joint pan, moving relative to one another with spherical functional joint surfaces (6, 11) associated with the joint parts, whereby the curvatures of the functional surfaces are convex-concave in a plane frontal to the functional surfaces as well as in a plane perpendicular to the frontal plane, and the geometry of the joint planes with respect to each other is determined in both planes by a dimeric joint chain that runs through the rotational centers of the functional surfaces of each intersection contour, characterized in that

the joint head (3) and the joint pan (2) are formed in relation to their functional surfaces in such a way that in their position corresponding to the rest position of the human joint in a dangling state, the mutual frictional surfaces (5, 7) have the same radius of curvature in the frontal plane within a contact area (8) and produce a linear contact of the functional surfaces (5, 7);

a roll-off area (9) adjoins said surface areas in which the radii R_{P1}, R_{K1} of the two functional surfaces (5, 7) are operative to produce a circumferentially widening gap section occupying the area between the joint parts (2, 3); and

in the transverse plane running radially through each contact point K of the functional surfaces (6, 11) of the joint parts (2, 3), the radii (R_{P2}, R_{K2}) of the functional surfaces (6, 11) are dimensioned to produce a circumferentially widening gap on each side of the contact point K.

5,383,937

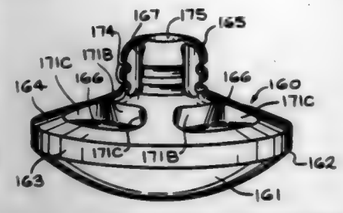
RECESSED PATELLAR PROSTHESIS

W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623

Continuation-in-part of Ser. No. 599,432, Oct. 18, 1990, Pat. No. 5,197,986, which is a continuation-in-part of Ser. No. 508,088, Apr. 11, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 22,997

Int. Cl.[6] A61F 2/38

U.S. Cl. 623—20 20 Claims



1. A one-piece patellar prosthesis adapted to be implanted in a prepared patella with bone cement comprising:

(a) a dome having an outwardly facing surface, convexly curved throughout, positioned for sliding engagement with a femoral prosthesis, said dome terminating at its radial outer extent in a circular edge defining a plane, said dome having a central axis perpendicular to said plane;

(b) a body having a surface facing away from said outwardly facing surface, said body extending to said circular edge and said body surface having (i) a first central area in proximity to said central axis spaced from said plane by a predetermined amount, (ii) other areas extending radially outwardly from said central axis tapering without interruption toward said plane and (iii) at least one concavity positioned between said other areas, said concavity having reverse taper surfaces for engagement with said bone cement; and

(c) post means extending from said body surface along said central axis.

5,383,938

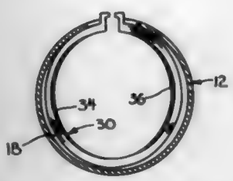
LOCKING RING FOR AN ACETABULAR CUP

William Rohr, Warsaw; Melissa Broderick, North Webster, and Tony Gonzalez, Winona Lake, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Continuation of Ser. No. 17,112, Feb. 12, 1993, abandoned. This application Nov. 29, 1993, Ser. No. 158,471

Int. Cl.[6] A61F 2/34

U.S. Cl. 623—22 3 Claims



1. In combination, a prosthetic acetabular cup and a locking ring for removably retaining an acetabular liner within the cup, the acetabular cup defining an opening for accommodating the liner, an annular groove being formed in said cup adjacent the opening, the locking ring being partially supported within the annular groove, the locking ring having an interior periphery and an exterior periphery cooperating to define a means for preventing the ring from disengaging with the cup prior to insertion of the liner, wherein said locking ring is oblong such that at least two opposed points of the locking ring remain supported by the cup when the locking ring is shifted relative to the cup.

5,383,939

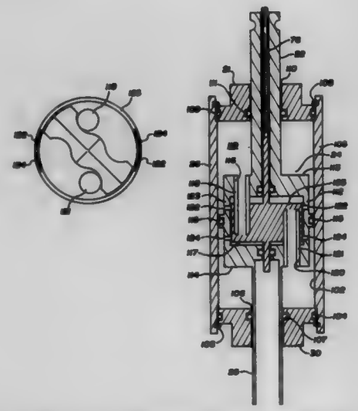
SYSTEM FOR CONTROLLING ARTIFICIAL KNEE JOINT ACTION IN AN ABOVE KNEE PROSTHESIS

Kelvin B. James, 7935 98th Avenue, Edmonton, Alberta, Canada T6A0B5

Filed Dec. 5, 1991, Ser. No. 804,264

Int. Cl.[6] A61F 2/64, 2/70

U.S. Cl. 623—24 6 Claims



1. In an above knee prosthesis (AKP) for use by a human user, said AKP having upper and lower leg segments, a knee joint connecting the segments and a foot attached to the lower segment, the improvement comprising:

a hydraulic damper means, pivotally connected with the leg segments for separately and variably damping each of flexion and extension rotational movements of the knee joint throughout the stance and swing phases of gait utilizing restriction of hydraulic fluid flow;

said damper means comprising a cylinder, forming an internal chamber, and a piston adapted to slide therein, said piston engaging the cylinder in sealed relationship and dividing the chamber into first and second end chambers filled with hydraulic fluid when in use, said piston being operative to reciprocate within the cylinder chamber as the leg segments move together in flexion or separate in extension,

said damper means having first and second passageways, each connecting the end chambers,

said damper means having first variable valve means associated with the first passageway for regulating fluid flow therethrough and second variable valve means associated with the second passageway for regulating fluid flow therethrough,

said damper means having first one way check valve means for enabling fluid to flow between end chambers through the first passageway when the leg segments endeavor to separate in extension and second one way check valve means for enabling fluid to flow between end chambers through the second passageway when the leg segments endeavor to move together in flexion;

actuating means for adjusting each of the first and second variable valve means so the flow capacity of each of the first and second passageways may be separately varied;

electronic sensing means for continuously monitoring AKP knee angle and emitting signals representative thereof,

electronic sensing means for continuously monitoring position of the center of gravity of the user's body relative to the AKP foot and emitting signals representative thereof; and

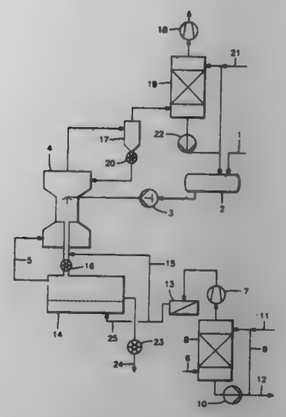
programmed computer means for receiving the emitted signals, continuously establishing from said signals the state of the AKP throughout the course of gait and activating the actuating means to separately vary the flow capacity of one or both passageways at appropriate transition points between AKP states throughout the stance and swing phases of gait.

5,383,940

PROCESS OF PRODUCING SOLID SODIUM CYANIDE

Reinhard Böber, Weimar, and Walter Spielmann, Schwedt, both of Germany, assignors to Glatt Ingenieurtechnik GmbH, Weimer, Germany

Filed Nov. 23, 1993, Ser. No. 155,781
Claims priority, application Germany, Dec. 1, 1992, 4240318
Int. Cl.[6] C22B *1/14*
U.S. Cl. 23—313 FB **5 Claims**



1. A process of producing solid sodium cyanide, comprising granulating an aqueous sodium cyanide solution containing 30 to 45% by weight sodium cyanide and containing up to 5% by weight solids in a two-step process in countercurrent flow with heated air wherein in the first process step the aqueous sodium cyanide solution is passed through a fluidized bed in a fluidized bed granulator produced by passing heated air from the second process step through the fluidized bed granulator, the heated air being cooled down to a temperature of 60° to 90° C. in the first process stem and then passed through a cyclone to remove entrained sodium cyanide dust, the removed sodium cyanide dust being recycled to the fluidized bed, the fluidized bed producing a sodium cyanide granulate of 2 to 6 mm in size which is discharged from the fluidized bed granulator through a classifying discharge duct, said sodium cyanide granulate being dried to a residual moisture of 1.5 to 4% by weight, and wherein in the second process step the granulate produced in the first process step is dried in a further fluidized bed by an air stream with an initial temperature of 150° to 230° C. to a residual moisture content less than 1.5% by weight and is removed from the further fluidized bed through a cellular wheel.

5,383,941

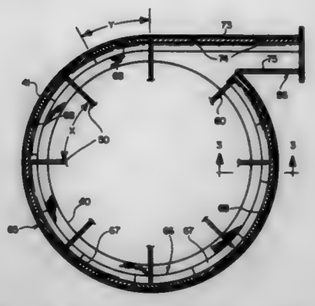
SEGMENTED CENTRIFUGAL SEPARATOR SCROLL HOUSING

William D. Nemedi, Vicksburg, Mich., assignor to Inter-Source Recovery Systems, Inc., Kalamazoo, Mich.

Division of Ser. No. 831,176, Feb. 5, 1992, Pat. No. 5,264,124.
This application Aug. 26, 1993, Ser. No. 112,597
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—402.08 **7 Claims**

1. The method of replacing a liner located in a discharge housing positioned above a separator bowl in a centrifugal separator device in which the bowl has a plurality of rotatable spaced blades therein with a portion of said blades being located in said discharge housing and wherein said liner is stationary and comprises a plurality of releasable segments; said method comprising the steps of:

a) orienting a pair of said spaced adjacent blades relative to a liner segment to be removed whereby the arcuate length between said pair of adjacent blades is greater than the arcuate length of said liner segment; and,



b) removing said liner segment from said centrifugal separator device by passing said liner segment through the space formed between said pair of spaced adjacent blades.

5,383,942

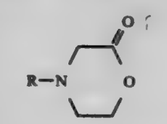
FUEL COMPOSITION

Wei-Yang Su, Austin, Tex.; Sheldon Herbstman, New City; Joseph M. Russo, Poughkeepsie, both of N.Y.; Robert L. Zimmerman, and Michael Cuscurida, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 22, 1993, Ser. No. 79,571
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[6] C10L *1/10*
U.S. Cl. 44—334 **12 Claims**

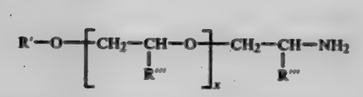
1. An amido alkanolamine composition obtained by reacting, at a temperature of 10° C.–200° C.:

(a) a 4-alkyl-2-morpholinone represented by the formula:

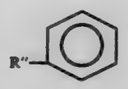


in which R represents a monovalent aliphatic radical having from 1 to 10 carbon atoms; and

(b) a hydrocarbyl oxypolyoxyalkylene amine represented by the formula



in which R′ represents an alkyl, an alicyclic or an alkyl-alicyclic radical having from 12 to 30 carbon atoms or



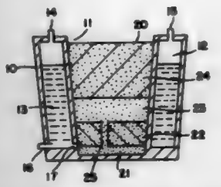
wherein R″ represents a hydrocarbyl radical having from 4 to 30 carbon atoms, x has a value of from about 5 to 50, and R‴ is an ethyl radical or a mixture of methyl and ethyl radicals.

5,383,943

SOIL BLOCK FOR POT PLANT CULTIVATION AND A METHOD OF CULTIVATING POT PLANTS USING THE SAME

Kinya Ogawa, Kawasaki, and Yoichi Hirasawa, Higashikurume, both of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Aug. 3, 1993, Ser. No. 101,313
Claims priority, application Japan, Aug. 8, 1992, 4-232891; Dec. 4, 1992, 4-350579
Int. Cl.[6] A01B *79/00*
U.S. Cl. 47—58 7 Claims



1. A method of cultivating pot plants, comprising the steps of:

providing block for pot plant cultivation including a water-retentive layer, consisting essentially of sand and water, a second layer which consists essentially of sand and/or soil treated with a silicon or fluoro-type water-repellant agent, said second layer being above and in contact with said water-retentive layer, and a soil layer above said second layer;

planting a pot plant in said soil layer; and

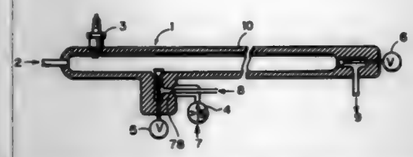
supplying water to said water-retentive layer.

5,383,944

METHOD FOR GASIFYING COMBUSTIBLE LIQUID AND POWDER BY USING GAS DETONATION WAVE

Hidenori Matsui, 2-9-57, Aobe-cho, Higashimurayama-shi, Japan, assignor to Kostsu Gas Koygo Co., Ltd., Osaka and Hidenori Matsui, Higashimurayama, both of Japan

Continuation of Ser. No. 816,742, Jan. 2, 1992, abandoned. This application Aug. 4, 1993, Ser. No. 102,107
Int. Cl.[6] F23B *7/00*; C10J *3/46*
U.S. Cl. 48—197 R 4 Claims



1. A method for gasifying combustible liquid or powder using a gas detonation wave comprising:

a step of introducing a detonable mixed gas comprising a uniform mixture of a combustible gas and an oxidizing gas into a detonation tube at a pressure equal to or greater than atmospheric pressure, said combustible gas and oxidizing gas being provided in amounts within a detonable range;

a step of spraying, coating or laying the combustible liquid or powder in the detonation tube; and

a step of only detonating said mixed gas by ignition to produce a supersonic detonation wave which propagates through the detonation tube to thermally decompose the combustible liquid or powder by high-temperature of at least 2000° C. and high-pressure of at least 20 times atmospheric pressure behind the detonation wave.

5,383,945

ABRASIVE MATERIAL AND METHOD

Thomas E. Cottringer; Ronald H. van de Merwe; Ralph Bauer, all of Niagara Falls, Canada, and Walter A. Yarbrough, State College, Pa., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 23,346, Mar. 9, 1987, abandoned, and Ser. No. 323,268, Mar. 15, 1989, abandoned, which is a continuation of Ser. No. 732,973, May 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 620,654, Jun. 14, 1984, abandoned, said Ser. No. 23,346, is a continuation-in-part of Ser. No. 872,349, Jun. 9, 1986, abandoned, which is a division of Ser. No. 662,869, Oct. 19, 1984, Pat. No. 4,623,364, which is a continuation-in-part of Ser. No. 592,689, Mar. 23, 1984, abandoned, which is a continuation-in-part of Ser. No. 572,106, Jan. 19, 1984, abandoned. This application Nov. 29, 1989, Ser. No. 443,552
Int. Cl.[6] C09C *1/68*
U.S. Cl. 51—309 41 Claims

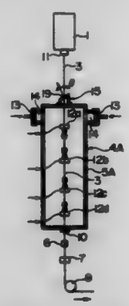
1. An alumina gel containing dispersed alpha alumina seed particles in an amount and size such that drying said gel and firing it at a selected temperature between 1200° and 1500° and for a selected time of 15 minutes or less which are sufficient to convert the alumina of the gel to alpha alumina having a hardness of at least 16 GPa, will transform said alumina to alpha alumina having a crystal size less than about 1 micron.

5,383,946

OPTICAL FIBER PRODUCTION METHOD AND PRODUCTION APPARATUS THEREOF

Yasuhiro Naka, Ichihara, and Yukio Komura, Chiba, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 76,963
Claims priority, application Japan, Jun. 24, 1992, 4-165921; Jul. 7, 1992, 4-179705
Int. Cl.[6] C03B *37/023*
U.S. Cl. 65—443 26 Claims



1. An optical fiber production apparatus comprising:

a heating furnace which heats an optical fiber preform and draws an optical fiber, through an exit in said furnace, comprising a core and a cladding;

a cooling apparatus having a first optical fiber penetration portion arranged below said heating furnace and receiving the optical fiber pulled out from said heating furnace, cooling means for force-cooling said received optical fiber by using a cooling gas, and a second optical fiber penetration portion from which the cooled optical fiber is pulled out; and

resin coating means, which is arranged downstream of said cooling apparatus, for coating a protective resin on said optical fiber cooled and pulled out from said second optical fiber penetration portion,

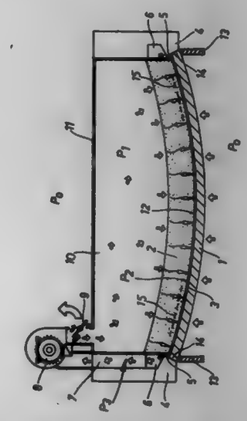
wherein said first optical fiber penetration portion is provided with cooling gas louver means for directing said cooling gas blown out from said first optical fiber penetration portion at an angle from the running axis of the optical fiber, said angle being sufficient to direct the cooling gas away from the exit of said heating furnace to substantially prevent gas from entering the heating furnace.

5,383,947

PRESS-BENDING METHOD AND APPARATUS FOR BENDING GLASS SHEETS

Jori Montonen, Tampere, Finland, assignor to Tamglass Engineering Oy, Tampere, Finland

Filed May 12, 1993, Ser. No. 59,602
Claims priority, application Finland, May 27, 1992, 922447
Int. Cl.[6] C03B *23/035*
U.S. Cl. 65—25.4 20 Claims



10. A press-bending apparatus for bending glass sheets, the apparatus comprising:

an upper, curved mould surface including a plurality of pores;

a lower support element for bearing a glass sheet relative to the mould surface to define a space between the glass sheet and the mould surface;

a suction channel at least partially surrounding the mould surface;

means for blowing air through the pores into the space and for removing air from the space through the suction channel; and

means for adjusting a relationship between an amount of air removed from the space and an amount of air blown into the space by the means for blowing and removing air such that pressure in the space is lower than ambient pressure.

5,383,948

METHOD AND APPARATUS FOR CRACKOFF AND NECK SEALING OF CATHODE RAY TUBE FUNNELS

Lance P. Muir, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Jul. 6, 1993, Ser. No. 85,739
Int. Cl.[6] C03B *29/02*
U.S. Cl. 65—28 20 Claims

1. An apparatus for attaching a glass neck to a glass funnel of a cathode ray tube, comprising:

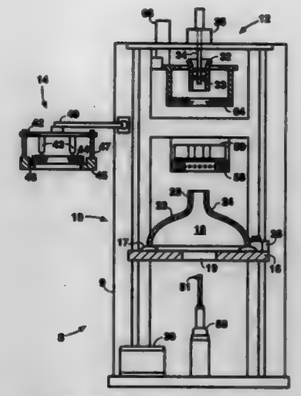
a frame;

a support platform attached to said frame for supporting a glass funnel component;

a gauge attached to said frame for determining a reference location on said funnel component, at least one of said gauge or said support platform being movable toward the other;

a chuck attached to said frame for supporting a glass neck component,

a sensor for providing a signal when a funnel is appropriately positioned in said gauge; and



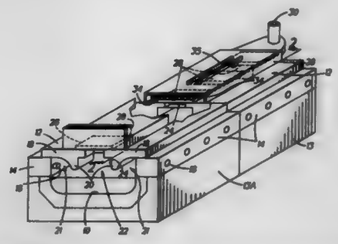
a system controller for receiving said signal and using said signal to control movement of said apparatus to effectively attach sale glass neck component to said glass funnel.

5,383,949

GLASS FOREHEARTH

Frank J. Bubon, Windsor; Kenneth J. Paul, Tolland, and Steven J. Pinkerton, Avon, all of Conn., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Jun. 6, 1994, Ser. No. 254,182
Int. Cl.[6] C03B *5/23*
U.S. Cl. 65—346 8 Claims



1. A glass forehearth comprising upstream and downstream zones each including

a lower portion including a channel for conveying molten glass,

a roof member for closing said channel and including a pair of downwardly extending elongated projections which effectively divide the space between said roof and the molten glass conveyed by said channel into a pair of side flow channels and a central flow channel,

means for introducing heat into said side channels,

a tunnel on top of said roof member overlying said central channel, said tunnel having an inlet at the upstream end and an outlet at the downstream end

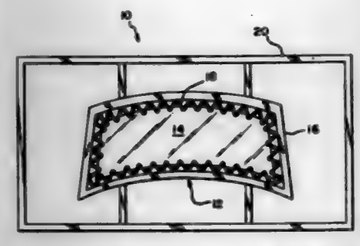
a plurality of openings in said roof connecting said central channel and said tunnel,

a corresponding plurality of thermal plates for closing said openings so that heat will be transferred between said tunnel and said central channel, and

means for supplying cooling air to the inlet of said tunnel, and

said upstream zone further comprising means for raising the temperature of at least one of said thermal plates so that heat will be transferred into said central flow channel.

5,383,950
APPARATUS FOR SUPPORTING A GLASS SHEET DURING A TEMPERING PROCESS
Amin H. Hashemi, Farmington Hills, and Robert A. Hill, Melvindale, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 4, 1993, Ser. No. 130,928
Int. Cl.[6] C03B 27/044
U.S. Cl. 65—348 21 Claims



1. An apparatus for supporting a hot glass sheet during transport from a furnace into an air quench area during a tempering process comprising:
a truss ring structure adapted to engage a glass sheet, said truss ring structure having a ring and a plurality of shaped fingers having converging diagonal sides connected to and extending radially inward from said ring for supporting the glass sheet;
a shuttle frame for transporting said truss ring structure; and,
means for cushioning the glass sheet on said ring, said means comprising a fiberglass tube positioned on said fingers.

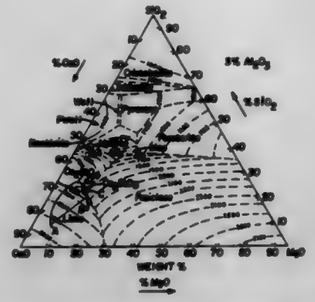
5,383,951
PRODUCTION OF GRANULAR AMMONIUM SULPHATE USING STRIPPED ZINC ELECTROLYTE AS A GRANULATING AID
James B. Cross, Trail; Kenneth L. Beynon, Castlegar, and Cushman R. S. M. Hampton, Rossland, all of Canada, assignors to Cominco Ltd., Vancouver, Canada
Filed Aug. 27, 1993, Ser. No. 112,277
Int. Cl.[6] C05C 3/00
U.S. Cl. 71—61 8 Claims

1. A process for the production of free-flowing, non-caking, stable granular ammonium sulphate containing micronutrients comprising granulating ammonium sulphate in the presence of a granulating aid which is stripped zinc electrolyte containing zinc, magnesium and manganese derived from an electrolytic zinc operation, in an amount effective to produce a final ammonium sulphate product containing about 0.4% to about 1.3% by weight zinc, about 0.01% to about 0.16% by weight magnesium and about 0.01% to about 0.09% by weight manganese.

5,383,952
PROCESS FOR BINDING DUST IN FERTILIZER GRANULES
Arno Siegwald, Kassel-Wilhelmshohe; Otto Wendt, Wathlingen; Gunter Nürnberger, Isernhagen; Dieter Paetz, Lehrte-Ahlten; Wolfgang Walczyk, Hohenroda, and Klaus-Dieter Müller, Lohfelden, all of Germany, assignors to Kali und Salz Aktiengesellschaft, Kassel, Germany
Continuation of Ser. No. 656,049, Feb. 14, 1991, abandoned. This application Mar. 16, 1994, Ser. No. 210,086
Claims priority, application Germany, Jun. 7, 1989, 3918523
Int. Cl.[6] C05G 3/10; C05D 1/00
U.S. Cl. 71—63 3 Claims

1. Process for preventing dusting during the loading or transporting of granulates, comprising:
adding to said granulates a dust-binding, liquid mixture consisting of molasses and another liquid selected from the group consisting of glycerin, polyethylene glycol, triethanolamine and the mixtures thereof;
wherein the dust-binding mixture is used in an amount of 0.6% to 1.2% by weight, based on the weight of the granulates to be treated;
wherein the weight ratio between the molasses and the another liquid is 1:0.3 to 1:2; and
adding said dust-binding liquid mixture in extremely finely divided form.

5,383,953
METHOD OF PRODUCING MAGNESIUM VAPOR AT ATMOSPHERIC PRESSURE
Roy A. Christini, Washington Township, Washington County, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Feb. 3, 1994, Ser. No. 190,988
Int. Cl.[6] C22B 26/22
U.S. Cl. 75—10.19 19 Claims

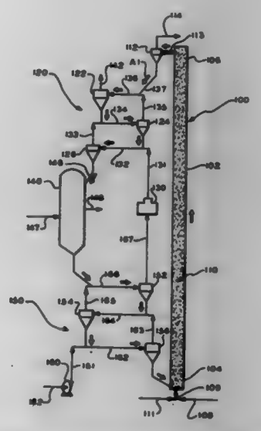


1. A method of producing magnesium vapor at substantially atmospheric pressure in a reaction zone of a reduction furnace, said method comprising:
feeding into said reduction furnace magnesium-oxide containing materials and metal reductants;
heating said magnesium-oxide containing materials and said metal reductants in said reaction zone to an operating temperature to create a slag composition having a phase diagram including a two-phase liquid and solid region; and
controlling said feeding of said magnesium-oxide containing materials and said metal reductants into said reduction furnace such that said slag composition is within said two-phase liquid and solid region at said operating temperature, whereby magnesium vapor at substantially atmospheric pressure is produced in said reaction zone.

5,383,954
SOLID MARKING COMPOSITION CONTAINING GLITTER
Michael S. Craig, Easton, Pa., assignor to Binney & Smith, Inc., Easton, Pa.
Continuation of Ser. No. 968,843, Oct. 30, 1992, Pat. No. 5,261,952, which is a continuation-in-part of Ser. No. 860,973, Mar. 31, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,458
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[6] C09D 13/00
U.S. Cl. 106—19 B 23 Claims

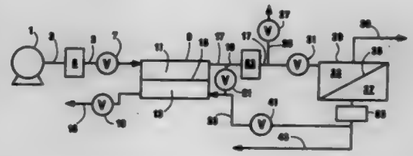
1. A glitter crayon composition comprising a plasticizer selected from the group consisting of paraffin waxes, microcrystalline waxes, synthetic waxes, natural waxes, vegetable fats and hydrogenated and sulfonated derivatives thereof, animal fats and hydrogenated derivatives thereof, fatty esters of glycols, fatty acid salts of alkali and alkaline earth metals and aluminum, and mixtures thereof, a fatty acid, an emollient selected from the group consisting of lanolin oil and its derivatives, mineral oil, fatty esters, fatty acid esters, fatty alcohols, mono- and di-esters of propylene glycols, glyceral di-esters, mono- and di-esters of polyethylene glycols, petrolatum, vegetable shortening, dimers and trimers of fatty acids, plant oils, silicones, and mixtures thereof, a pigment, and glitter, such that said glitter is capable of being retained on a substrate when said composition is deposited on said substrate.

5,383,955
NITROGEN OXIDES AND SULFUR OXIDES REMOVAL UTILIZING TRANSPORT LINE ADSORBER
Lewis G. Neal, Bethel Park; Warren Ma, Pittsburgh; Min-Yan Chang; Qian Zhou, both of Bethel Park, all of Pa.; Carmo J. Pereira, Silver Spring, Md.; Karl W. Plumlee, Ellicott City, Md., and Jean W. Beeckman, Columbia, Md., assignors to Noxso Corporation, Bethel Park, Pa.
Continuation-in-part of Ser. No. 17,864, Feb. 16, 1993, Pat. No. 5,302,188, which is a continuation of Ser. No. 801,697, Dec. 2, 1991, abandoned. This application Dec. 13, 1993, Ser. No. 166,203
Int. Cl.[6] B01D 53/12
U.S. Cl. 95—34 22 Claims



1. Process for utilizing cooled regenerated sorbent particles to substantially remove nitrogen oxides and sulfur oxides from pressurized flue gas, comprising the steps of:
providing sorbent particles suitable for adsorbing nitrogen oxides and sulfur oxides from said flue gas and providing said sorbent particles of an average size in the range of about 30 to about 500 microns;
transporting said sorbent particles through entrained flow adsorber means utilizing said pressurized flue gas to cause said sorbent particles to substantially adsorb said nitrogen oxides and said sulfur oxides from said flue gas while said sorbent particles are being transported through said entrained flow adsorber means by said pressurized flue gas;
separating said sorbent particles having said oxides adsorbed thereto from said flue gas to provide a stream of substantially nitrogen oxide and sulfur oxide free flue gas and to provide sorbent particles having said oxides adsorbed thereto;
providing a source of heated gas;
passing at least some said sorbent particles having said oxides adsorbed thereto through a plurality of interconnected cyclones utilizing said heated gas and gravity to heat said sorbent particles to remove said nitrogen oxides therefrom and to separate said sorbent particles and remove nitrogen oxides and to produce an off gas stream of heated gas carrying away said nitrogen oxides and to provide heated sorbent particles having said sulfur oxides adsorbed thereto;
contacting said heated sorbent particles having said sulfur oxides adsorbed thereto with a regenerant gas to substantially remove said sulfur oxides therefrom and to produce heated regenerated sorbent particles and an off gas stream of regenerant gas carrying away said sulfur oxides removed from said heated regenerated sorbent particles;
providing a cooling gas;
passing said heated regenerated sorbent particles through a second plurality of interconnected cyclones utilizing said cooling gas and gravity to cool said sorbent particles and to separate said sorbent particles from said cooling gas to produce cooled regenerated sorbent particles; and
returning said cooled regenerated sorbent particles to said entrained flow adsorber means and repeating said steps for removing said nitrogen oxides and said sulfur oxides from said pressurized flue gas.

5,383,956
START-UP AND SHUT DOWN PROCESSES FOR MEMBRANE SYSTEMS AND MEMBRANE SYSTEMS USEFUL FOR THE SAME
Ravi Prasad, East Amherst, and Pauline J. Cook, Kenmore, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.
Filed Oct. 12, 1993, Ser. No. 134,023
Int. Cl.[6] B01D 53/22
U.S. Cl. 95—45 20 Claims



1. A start-up process for a membrane gas separation system comprising at least one gas separation membrane module having permeate and nonpermeate sides and at least one membrane dryer module having permeate and nonpermeate sides, with said at least one gas separation membrane module being capable of separating at least one gas component from a gas mixture and said at least one membrane dryer module being capable of separating wet components from said gas mixture, said start-up process comprising the step of:
(a) pressurizing said at least one membrane dryer module and said at least one gas separation membrane module at the same time at a rate of less than 10 psi per second through passing a pressurized gas mixture into said non-

permeate sides of said at least one gas separation membrane module and said at least one membrane dryer module;

(b) permeating at least one gas component of said gas mixture from the nonpermeate side of said gas separation membrane module to the permeate side of said gas separation membrane module; and

(c) passing at least a portion of the permeated gas component from step (b) to the permeate side of said membrane dryer module.

5,383,957

MULTISTAGE CASCADE SWEEP-PROCESS FOR MEMBRANE GAS SEPARATION

Christian Barbe, and Dominique Masurel, both of Paris Cedex, France, assignors to L'Air Liquide, Paris Cedex, France

Continuation of Ser. No. 964,259, Oct. 21, 1992, abandoned, which is a division of Ser. No. 725,773, Jul. 2, 1991, Pat. No. 5,240,471. This application Jun. 1, 1993, Ser. No. 70,041

Int. Cl.[6] B01D *53/22, 63/08*

U.S. Cl. 96—8 **10 Claims**



1. A nitrogen generator for producing nitrogen gas from a feed stream of atmospheric air or a mixture of nitrogen and oxygen, said generator having at least first and second stages of membrane units each containing a plurality of hollow fiber membranes and having feed input means, at least one of the membrane units comprising a sweep input to inject a sweep gas longitudinally on the external surface of the hollow fiber membranes, the generator further comprising:

a) means for feeding said feed stream to a first membrane stage;

b) means for collecting a non-permeate stream of said first membrane stage and using the same as a feed stream for a second membrane stage;

c) means for collecting only a permeate stream from at least said second membrane stage, and feeding all of the permeate stream from said second membrane stage to a sweep input of at least said first membrane stage, such that the sweep gas is injected longitudinally and countercurrent to the non-permeate gas on the external surface of the hollow fiber membranes, and that the sweep gas is mixed with gas permeating through the hollow fiber membranes to make the permeate stream; and

d) means for collecting a permeate of said first membrane stage and a non-permeate of said second membrane stage or for collecting a permeate of said first membrane stage and a non-permeate of a last membrane stage, when more than said first and second membrane stages are used.

5,383,958

DEAERATION SYSTEM

Joseph A. Battaglia, Forest Hills, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1994, Ser. No. 194,196

Int. Cl.[6] B01D *19/00*

U.S. Cl. 96—188 **4 Claims**

1. A water deaeration system, comprising:

a deaeration vessel for deaerating air dissolved in water;

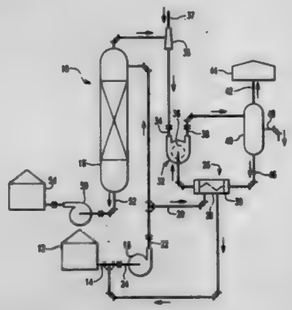
supply piping connected with the deaeration vessel for supplying water thereto;

a supply pump in the supply piping for pumping the water to the vessel, the pump having a suction side and a discharge side;

recirculation piping connected between the pump discharge side and the pump suction side for recirculating a portion of the water from the discharge side to the suction side;

a heat exchanger for utilizing the water as a cooling source, the heat exchanger having a cold side and a hot side, the cold side connected with the recirculation piping;

a vacuum pump having a water seal for creating a vacuum, the vacuum pump having a suction side connected with the deaeration vessel for evacuating the air and water entrained therein from the deaeration vessel and having a discharge side;



an air-water separator connected with the discharge side of the vacuum pump for separating the entrained water and seal water from the evacuated air; and

seal water piping connected between the separator and the water seal of the vacuum pump and with the hot side of the recirculation heat exchanger connected therein;

whereby cooled separated water is returned to the vacuum pump seal and heated water is supplied to the deaeration vessel.

5,383,959

REVERSIBLE INKS

Sunil J. Sirdesai, San Diego, and Gerald Odstrchel, San Juan Capistrano, both of Calif., assignors to Xytronyx, Inc., San Diego, Calif.

Filed Feb. 22, 1993, Ser. No. 23,784

Int. Cl.[6] C09D *11/00*

U.S. Cl. 106—21 A **32 Claims**

1. Photochromic ink consisting essentially of polyvinyl chloride, a plasticizer, a dispersant, and a spiroheterocyle dye.

5,383,960

INK JET PRINTING INKS

Peter Gregory, Bolton; Ronald W. Kenyon, Failsworth; Prahalad M. Mistry, Lancashire, and John A. Taylor, Manchester, all of England, assignors to Zeneca Limited, London, England

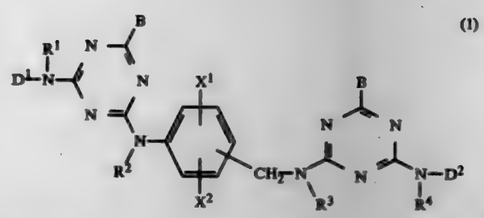
Filed Jan. 26, 1993, Ser. No. 9,038

Claims priority, application United Kingdom, Mar. 6, 1992, 9204898; May 26, 1992, 9211109

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 K **12 Claims**

1. An ink containing less than 5% inorganic compounds which comprise a liquid medium and a dye of the Formula (1):



(1)

wherein:

D^1 and D^2 are each independently a chromophore of the azo series;

R^1, R^2, R^3 and R^4 are each independently H or optionally substituted alkyl;

B is a labile atom or group, hydroxy, amino or an ether, thioether or amine group; and

X^1 and X^2 are each independently H, halo, alkyl, alkoxy, acylamino, ureido, nitro, carboxy or sulpho; and wherein the liquid medium comprises water and a water-soluble organic solvent in a weight ratio of 95:1 to 50:50.

5,383,961

WATER-SOLUBLE SULPHUR DYES, THEIR PREPARATION AND USE

Wolfgang Baser, Maintal; Gert Nagl, Niederdorfelden; Willi Steckelberg, Hofheim/Ts; Josef Ritter, Bad Soden, and Wilhelm Manelshagen, Bad Camberg, all of Germany, assignors to Cassella AG, Frankfurt, Germany

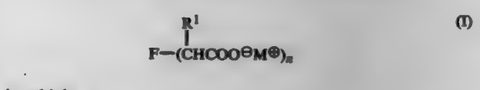
Filed Sep. 30, 1993, Ser. No. 128,641

Claims priority, application Germany, Oct. 10, 1992, 4234222

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 R **20 Claims**

1. Water-soluble black sulphur dyes of the formula I



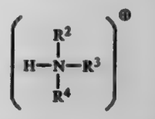
(I)

in which

F is the dye chromophore of C.I. Sulphur or Leuco Sulphur Black 1, C.I. No. 53185; C.I. Sulphur or Leuco Sulphur Black 2, C.I. No. 53195; C.I. Sulphur or Leuco Sulphur Black 5, C.I. No. 53205; C.I. Sulphur Black 6, C.I. No. 53295; C.I. Sulphur Black 7, C.I. No. 53300; C.I. Sulphur or Leuco Sulphur Black 10, C.I. No. 53190; C.I. Sulphur Black 11, C.I. No. 53290, or C.I. Sulphur or Leuco Sulphur Black 12, C.I. 53200,

R^1 is hydrogen or (C_1-C_4—) alkyl,

$M^{\oplus}$ is an alkali metal cation, an ammonium cation of the formula II or mixtures thereof,



(II)

R^2, R^3, R^4 are hydrogen, (C_1-C_4) alkyl, (C_2-C_4) alkenyl, 2-hydroxypropyl, 3-hydroxypropyl, 2,3-dihydroxypropyl, —$(CH_2CH_2N—H)_p$—$CH_2CH_2NH_2$, —$(CH_2CH_2O)_m$—R^5,2-aminoethyl,2-aminopropyl,3-aminopropyl, or

2 or 3 of the radicals R^2, R^3, R^4 together with the nitrogen atom to which they are attached form a heterocyclic ring which optionally contain further heteroatoms or heteroatom groupings,

R^5 is hydrogen or (C_1-C_4) alkyl,

p is a number from 1 to 10,

m is a number from 1 to 10 and

n is such a large number that dye I contains 5 to 20% by weight of $COO^{\ominus}$ groups.

5,383,962

CORROSION INHIBITOR

Charles N. Hansen, 1448 S. 1700 East, Salt Lake City, Utah 84108-2602

Filed Oct. 19, 1993, Ser. No. 137,931

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[6] C09K *3/18*

U.S. Cl. 106—14.21 **9 Claims**

1. A method of inhibiting the corrosion of a metal by a corrosive agent, comprising applying to the metal a composition comprising an effective amount of an active component selected from the group consisting of ammonium carbonate and ammonium bicarbonate to inhibit corrosion of the metal by the corrosive agent.

5,383,963

COMPOSITE FIBERS OF POTASSIUM HEXATITANATE AND TITANIUM DIOXIDE

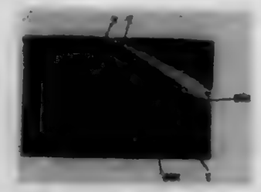
Izumu Kobayashi, Nara, and Yuji Aramaki, Ikoma, both of Japan, assignors to Kubota Corporation, Osaka, Japan

Filed May 23, 1994, Ser. No. 247,634

Claims priority, application Japan, Feb. 22, 1993, 5-57876; Feb. 22, 1993, 5-57877

Int. Cl.[6] C09K *3/14*

U.S. Cl. 106—36 **6 Claims**



1. A composite fiber prepared by a melting process, the fiber being a polycrystalline fiber consisting of potassium hexatitanate crystals and titanium dioxide crystals mixed therewith.

5,383,964

PROCESS FOR THE OXIDATION OF CATIONIC STARCHES AND AMPHOTERIC STARCHES, CONTAINING CARBOXYL AND CATIONIC GROUPS, THUS OBTAINED

Sophie Suc, Oullins; Jacques Defaye, Saint Ismier; Andrée Gadelle, Saint Martin, and Jacques Kervennal, Lyon, all of France, assignors to Elf Atochem S.A., France

Filed Mar. 22, 1993, Ser. No. 35,362

Claims priority, application France, Mar. 23, 1992, 92 03463

Int. Cl.[6] C08B *31/18*

U.S. Cl. 106—210 **19 Claims**

1. A process for the oxidation of a cationic starch starting material containing terminal reducing groups by reacting the cationic starch in an aqueous reaction mixture containing a mixture of said cationic starch with hydrogen peroxide and a bromine-containing compound capable of yielding bromine in the presence of hydrogen peroxide under conditions sufficient to selectively oxidize terminal reducing groups present in the aqueous reaction mixture to produce a starch product containing carboxyl and cationic groups.

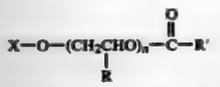
5,383,965

NAPHTHENIC ACID ESTERS AS DISPERSING AGENTS FOR PIGMENT ADDITIVES AND PRODUCTS INCORPORATING SAME

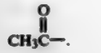
James L. Carmine, Laguna Niguel, Calif., and Rose A. Ryntz, Clinton Township, Macomb County, Mich., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Filed Feb. 5, 1993, Ser. No. 14,213
Int. Cl.[6] C09C *1/44*
U.S. Cl. 106—284.24 29 Claims

1. A pigment dispersion comprising a normally solid pigment component and an ester of naphthenic acid, having the general formula:



where R'=a naphthene group containing one or more alkylated cyclopentane and/or cyclohexane ring(s), and
where R=H or CH_3,
where n=1–6, and



X=H or.

5,383,966

PROCESS FOR THE PREPARATION OF DISPERSIBLE QUINACRIDONES

Daphne R. Johnson, Charleston, S.C., assignor to Miles Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 996,245, Dec. 23, 1992, abandoned. This application Sep. 15, 1993, Ser. No. 121,816
Int. Cl.[6] C09B *48/00*
U.S. Cl. 106—495 22 Claims

1. A process for conditioning a quinacridone pigment comprising
(a) preparing an aqueous slurry of a crude quinacridone;
(b) thoroughly mixing the aqueous slurry with 0.3 to 2.9 parts by weight, relative to the quinacridone pigment, of at least one C_1–C_{12} alkyl ester of a C_{7-C12} aromatic carboxylic acid at a temperature of between 70° C. and 200° C.;
(c) hydrolyzing the alkyl ester used in step (b)in alkaline media; and
(d) collecting the quinacridone pigment.

5,383,967

NATURAL SILICA-CONTAINING CEMENT AND CONCRETE COMPOSITION

Raymond S. Chase, 2855 Devonshire Rd., Ann Arbor, Mich. 48104

Continuation of Ser. No. 914,006, Jul. 14, 1992, abandoned, which is a continuation of Ser. No. 677,481, Mar. 29, 1991, abandoned. This application Feb. 17, 1994, Ser. No. 197,620
Int. Cl.[6] C04B *7/02, 11/30*
U.S. Cl. 106—737 13 Claims

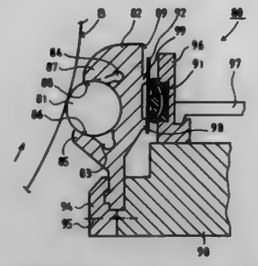
5. A blended cement, comprising:
gypsum;
portland cement clinker; and
a comminuted mineralogic silica source material which reacts with lime released from the gypsum and portland cement clinker upon hydration to form calcium silicate hydrate, which binds as a strengthener, so as to consume the lime released from the gypsum and portland cement clinker,
wherein the silica source material, consists of feldspathic quartzite which is at least 50 % by weight silica, has a maximum particle size of about microns, an average particle size of about 1 to 10 microns, and a specific surface area of from 4680 to 10,000 square centimeters/gram.

5,383,968

METHOD AND DEVICE FOR KEEPING A COATING ROD AND A ROD CRADLE IN A BAR COATER CLEAN AND FOR PREVENTING LEAKAGE OF LUBRICATION AND/OR COOLING WATER

Rauno Rantanen, Muurame; Markku Lummila; Hannu Korhonen, both of Jyväskylä ; Petri Palovilta, Vantaa, and Jukka Koskinen, Helsinki, all of Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Nov. 4, 1992, Ser. No. 971,321
Claims priority, application Finland, Nov. 6, 1991, 915239
Int. Cl.[6] D21H *25/12*
U.S. Cl. 118—119 15 Claims



1. A device for keeping a cradle of a coating rod in a bar coater clean and for preventing leakage of lubrication and/or cooling water in the bar coater, comprising:
a rod cradle,
a coating rod revolvingly supported substantially over its entire length in said rod cradle,
a frame construction for a bar coater, said rod cradle being attached to said frame construction,
at least one water groove arranged in said rod cradle substantially parallel to and open towards said coating rod, said groove being structured and arranged to circulate water which lubricates, cleanses and/or cools said coating rod,
loading means for loading said coating rod and said rod cradle towards a base to be coated, said loading means comprise a loading member that extends substantially over the entire length of said rod cradle, said loading member being arranged to seal glide faces arranged between said coating rod and said rod cradle and prevent leakage of water from said groove, said loading member acting against a rear face of said rod cradle, and
a second groove formed in said rear face of said rod cradle, said second groove being parallel to a longitudinal direction of said rod cradle, said loading member being structured and arranged to provide a substantially linear load a distance from said second groove to thereby load said rear face of said rod cradle.

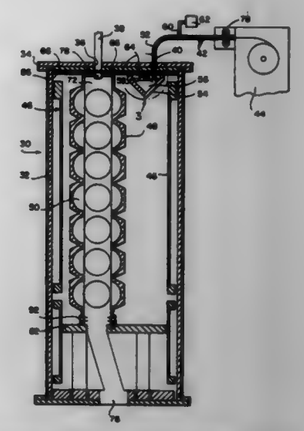
5,383,969

PROCESS AND APPARATUS FOR SUPPLYING ZINC VAPOR CONTINUOUSLY TO A CHEMICAL VAPOR DEPOSITION PROCESS FROM A CONTINUOUS SUPPLY OF SOLID ZINC

Alexander Teverovsky, Concord; James C. MacDonald, Stoneham; Michael A. Pickering, and Jeffery L. Kirsch, both of Dracut, all of Mass., assignors to CVD, Inc., Woburn, Mass.

Filed Apr. 5, 1993, Ser. No. 42,933
Int. Cl.[6] C23C *16/00, 14/00*
U.S. Cl. 118—719 21 Claims

1. A process for the manufacture of chemically deposited structures by chemical vapor deposition comprising, in combination:
supplying solid metal substantially continuously to a retort at a controlled rate, said retort consisting of a body of refractory material having a top and a bottom and a transverse cross section wherein the cross-section continually decreases from the top of the retort to the bottom of the retort;
heating said retort to melt said metal to form molten metal having a surface layer;
vaporizing said metal;



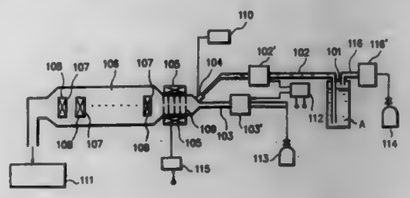
conducting said metal vapor to a chemical vapor deposition zone by conveying said metal vapor through a conduit, and diffusing said metal vapor across the cross section of said deposition zone defined by a plurality of heated removable mandrel plates;
providing a reaction gas and conducting said reaction gas to said chemical vapor deposition zone; and
reacting said metal vapor and said reaction gas to form a reaction product and depositing the product onto said heated removable mandrel plates to form a chemical vapor deposited structure.

5,383,970

CHEMICAL VAPOR DEPOSITION METHOD FOR FORMING A DEPOSITED FILM WITH THE USE OF A LIQUID RAW MATERIAL AND APPARATUS SUITABLE FOR PRACTICING SAID METHOD

Tetsuo Asaba, Odawara, and Kenji Makino, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,543
Claims priority, application Japan, Dec. 26, 1991, 3-345056
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—726 2 Claims



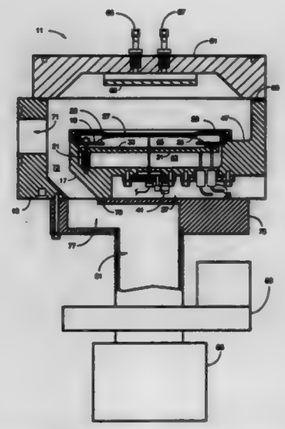
1. A chemical vapor deposition apparatus for forming a deposited film on a substrate using a liquid raw material, said apparatus comprising a substantially enclosed reaction chamber provided with means for holding said substrate in the inside of said reaction chamber, an exhaust means with a vacuum pump for evacuating the inside of said reaction chamber, and gas feed means for introducing a film-forming raw material gas produced from said liquid raw material into said reaction chamber, said gas feed means being provided with means for gasifying said liquid raw material to produce said film-forming raw material gas and means for introducing said film-forming raw material gas into said reaction chamber, characterized in that said gas feed means comprises a gasification vessel disposed in the vicinity of said reaction chamber, a liquid transportation conduit extending from a container for a liquid raw material for film formation, a gas transportation conduit extending from a gas reservoir for a reaction gas, said liquid transportation conduit being provided with a liquid flow controlling means for controlling the flow rate of the liquid raw material and connected to said gasification vessel through a liquid supply head for jetting the liquid raw material into said gasification vessel while pulverizing the liquid raw material into liquid fine particles, said gas transportation conduit being provided with a gas flow controlling means for controlling the flow rate of the reaction gas and connected to said gasification vessel, said gasification vessel containing in the inside a plate means providing a desired gas pressure difference between the upstream side and the downstream side of said plate means, said plate means being integrally provided with a plurality of perforations for producing a gaseous mixture comprising said liquid fine particles of the liquid raw material and the reaction gas, a plurality of heat generators, and a plurality of thermo detectors, wherein said gaseous mixture comprising said liquid fine particles of the liquid raw material and the reaction gas is gasified to produce a film-forming raw material gas in said gasification vessel and means for introducing said film-forming gas material into said reaction chamber to cause the formation of a deposited film on said substrate positioned in said reaction chamber.

5,383,971

DIFFERENTIAL PRESSURE CVD CHUCK

Steven C. Selbrede, San Jose, Calif., assignor to Genus, Inc., Mountain View, Calif.

Continuation of Ser. No. 596,512, Oct. 12, 1990, Pat. No. 5,094,885. This application Mar. 11, 1992, Ser. No. 849,488
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[6] C23C *16/00, 16/46*
U.S. Cl. 118—728 12 Claims



1. An apparatus for preventing coating on the edge and

backside of a substrate during processing in a processing volume comprising:

support means for supporting the substrate during processing;

purge cavity means for forming a slot with the front surface of the substrate around the periphery thereof, forming a purge cavity isolated from said processing volume except for said slot; and

purge gas means for supplying purge gas to said purge cavity to flow through said slot opposing diffusion of processing gas from said processing volume to the edge and backside of said substrate.

5,383,972

METHOD OF CARPET CLEANING AND MAINTENANCE

Dale A. Waltz, Concord, N.H., assignor to Interface Service Management, Inc., Braintree, Mass.

Filed Jan. 12, 1993, Ser. No. 3,522
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—26 **25 Claims**

1. A method of cleaning and maintaining a carpet comprising the steps of:

a. determining the number of walkons per day of the carpet;

b. after a period of time dependent on the number of walkons per day of the carpet, spraying the carpet with a solvent effective in emulsifying oils and grease in the carpet and extracting the solvent from the pre-sprayed carpet;

c. waiting a period of time dependent on the number of walkons per day of the carpet;

d. applying and extracting a low sudsing anionic or cationic detergent solution from the carpet; and

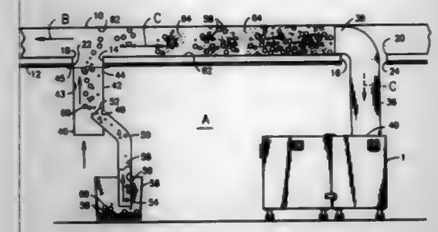
e. repeating step (b).

5,383,973

METHOD FOR CLEANING HEATING, VENTILATING AND AIR CONDITIONING DUCTS

Ward E. Carry, Jr., Venice, Fla., assignor to ADCS/Air Duct Cleaning Systems, Inc., Venice, Fla.

Filed Oct. 21, 1993, Ser. No. 139,986
Int. Cl.[6] B08B *7/00, 5/00, 6/00, 9/00*
U.S. Cl. 134—8 **8 Claims**



1. A method for removal of foreign matter from the interior of ducts adapted for movement of an operating fluid therethrough in one direction, said method comprising the steps of:

a. selecting at least a portion of a duct having an interior with foreign matter therein and said duct having an interior surface;

b. providing a stream of air within said portion of said duct;

c. providing a plurality of members having an exterior surface for receiving and holding a static electrical charge thereon;

d. placing said members into said stream of air for agitation by said stream of air and agitation against said interior surface of said duct thereby creating a static electric charge on said exterior surface of said members;

e. moving said stream of air and said members carried therein through at least said portion of said duct such that a portion of said foreign matter therein is attracted to and carried by said members and a portion is carried by said stream of air; and

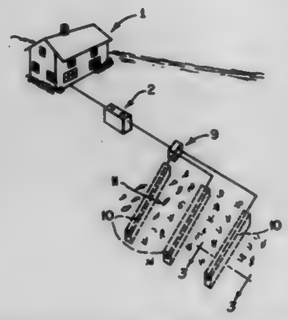
f. removing said members and said stream of air from said duct, whereby a portion of said foreign matter is removed from said duct.

5,383,974

METHOD FOR REJUVENATING A DRAINFIELD OR DRY WELL

Edward P. Johnson, 28082 Oaklands Cir., Easton, Md. 21601

Filed Jun. 1, 1993, Ser. No. 69,585
Int. Cl.[6] B08B *5/04*
U.S. Cl. 134—21 **37 Claims**



1. A method of cleaning a septic tank drainfield including at least one underground drainfield lateral having perforations therein, comprising the steps of:

gaining access to one end of said drainfield lateral;

applying suction at said one end of said drainfield lateral to clear said drainfield lateral of accumulated waste; and

penetrating the ground and applying underground agitation with an underground agitation means at a location near said drainfield lateral whereby additional accumulated waste is loosened and cleared by said suction.

5,383,975

ARRANGEMENT FOR CLEANING OF PIPELINES

Johan Faxen, Box 3109, S-903 03 Umeå, Sweden

PCT No. PCT/SE91/00655, § 371 Date Mar. 25, 1993, § 102(e) Date Mar. 25, 1993, PCT Pub. No. WO92/05888, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 30, 1991, Ser. No. 30,339
Claims priority, application Sweden, Oct. 4, 1990, 9003183
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[6] B08B *9/00, 9/02, 9/04, 5/02*
U.S. Cl. 134—22.11 **7 Claims**



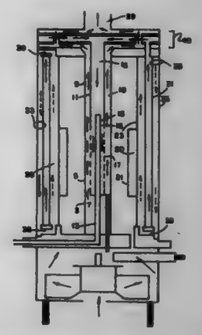
1. A process for cleaning pipe lines with a cleaning means having a longitudinal axis and which is connected via a supply conduit to a source of pressure medium, and wherein the cleaning means has at least one nozzle opening which is directed backwards towards the supply conduit at an acute angle relative to a center line which extends through a fastening of the supply conduit to the cleaning means, and wherein the nozzle opening is in the form of a substantially continuous annular gap which extends along the periphery of the cleaning means and which is connected to the supply conduit and the source of pressure medium, the medium being made to discharge through the annular gap and partly clean inner walls of a pipe line and force the cleaning means to move into the pipe line by the force resulting from the discharge of the pressure medium from the annular gap, said process including the steps of bringing the cleaning means into contact with an inner wall of a pipe line, and causing one part of the cleaning means to rotate around the longitudinal axis of the cleaning means so that as said one part of the cleaning means rotates in contact with the inner wall of a pipe line, the cleaning means is caused to move sideways relative to its longitudinal axis and follow a helical movement within the pipe line.

5,383,976

COMPACT DC/AC ELECTRIC POWER GENERATOR USING CONVECTIVE LIQUID COOLED LOW BANDGAP THERMOPHOTOVOLTAIC CELL STRINGS AND REGENERATIVE HYDROCARBON BURNER

Robert M. Fraas, Palm Desert, Calif.; Lewis M. Fraas, and Jany X. Fraas, both of Issaquah, Wash., assignors to JX Crystals, Inc., Issaquah, Wash.

Continuation-in-part of Ser. No. 906,452, Jun. 30, 1992, Pat. No. 5,312,521. This application Apr. 19, 1993, Ser. No. 47,477
Int. Cl.[6] H01L *31/058*
U.S. Cl. 136—253 **9 Claims**



1. A thermophotovoltaic generator comprising: a central coaxial burner/emitter/regenerator at least partially surrounded by linear parallel thermophotovoltaic cell strings facing the burner/emitter for converting infrared energy received from the burner/emitter to DC or AC electric power wherein:

a) energy for the burner/emitter/regenerator comes from combustion of a hydrocarbon fuel and air mixture,

b) the regenerator preheats incoming combustion air with outgoing exhaust gases thereby increasing efficiency in utilization of energy from the fuel and providing for a greatly increased flame temperature and burner/emitter temperature thereby increasing infrared flux to the thermophotovoltaic cell strings, increasing electrical power output of a given size cell string and reducing cost per watt of cell string electrical output relative to a thermophotovoltaic generator without said regenerator,

c) the cell strings are responsive to infrared radiation with wavelengths at least as long as 1.7 microns, and

d) optical elements are provided totally surrounding the emitter/burner except for spaces occupied by the thermophotovoltaic cell strings, for directing the infrared radiation emanating radially from the burner/emitter and for concentrating most of the infrared radiation on the cell strings,

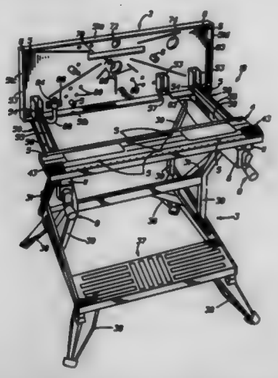
e) the burner/emitter/regenerator and the optical elements combining for providing uniform infrared energy input along a length of each photovoltaic cell string.

5,383,977

WORKBENCH AND WORKTABLE

Phillip W. Pearce, Washington, England, assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 130,328, Oct. 1, 1993, which is a continuation of Ser. No. 20,182, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 939,860, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 809,813, Dec. 18, 1991, abandoned. This application Apr. 8, 1994, Ser. No. 236,231
Claims priority, application United Kingdom, Mar. 11, 1990, 9105059; Dec. 21, 1990, 9027775
Int. Cl.[6] B25H *1/00*
U.S. Cl. 144—286 A **25 Claims**



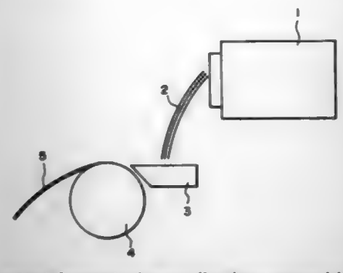
1. A workbench comprising a work surface disposed on a supporting structure, the work surface comprising a vice jaw member carrying a first vice jaw and a worktable having a second complimentary vice jaw, the worktable in a working position thereof lying substantially in the same plane as the jaw member, the said jaws facing one another and being adapted to be moved towards and away from one another in said plane by vice operating means, and the worktable being pivotally mounted with respect to said supporting structure so as to enable said worktable to be pivoted away from the supporting structure to give access to the underside of the worktable which is provided with means for mounting at least one power tool thereon, the worktable having a tool aperture through which a working part of said at least one power tool is adapted to project to the upper side of the worktable for working on a workpiece presented to it when the worktable is returned to said working position.

5,383,978

ALLOY INGOT FOR PERMANENT MAGNET, ANISOTROPIC POWDERS FOR PERMANENT MAGNET, METHOD FOR PRODUCING SAME AND PERMANENT MAGNET

Kazuhiko Yamamoto, Kobe; Yuichi Miyake, Kami, and Chiharu Okada, Kobe, all of Japan, assignors to Santoku Metal Industry Co., Ltd., Hyogo, Japan

Filed Feb. 12, 1993, Ser. No. 17,043
Claims priority, application Japan, Feb. 15, 1992, 4-028656; May 21, 1992, 4-128936; Sep. 7, 1992, 4-238299
Int. Cl.[6] H01F *1/02*
U.S. Cl. 148—101 7 Claims



1. A method for producing an alloy ingot comprising melting a rare earth metal-iron alloy to obtain a molten alloy and solidifying the molten alloy uniformly at a cooling rate of 10° to 1000° C./sec. and at a sub-cooling degree of 10° to 500° C.

5,383,979

PROCESS FOR PRODUCING A SURFACE-HARDENED WORKPIECE FROM SINTERED IRON

Rudolf Schneider, Froendenberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 2, 1993, Ser. No. 94,187
Claims priority, application Germany, Dec. 5, 1991, 4140148; Feb. 7, 1992, 4103692
Int. Cl.[6] C23C *8/18*
U.S. Cl. 148—217 11 Claims

1. A process for producing a workpiece from sintered iron, the pores on the surface of the workpiece first being largely closed after sintering by means of a treatment with superheated steam and the workpiece then being subjected to surface-hardening, said process comprising the step of carrying out the steam treatment at a temperature below 430° and 500° C., at a steam partial pressure of from 20 to 80 mbar, and for at most 2 hours, thereby to form an oxide layer having a maximum thickness of 5 μm.

5,383,980

PROCESS FOR HARDENING WORKPIECES IN A PULSED PLASMA DISCHARGE

Albrecht Melber, Darmstadt; Kyong-Tschong Rie, and Frank Schaatbaum, both of Braunschweig, all of Germany, assignors to Leybold Durferrit GmbH, Cologne, Germany

Continuation-in-part of Ser. No. 918,668, Jul. 22, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 54,847
Claims priority, application Germany, Jan. 20, 1992, 4201325; Nov. 19, 1992, 4238993
Int. Cl.[6] C23C *8/22*
U.S. Cl. 148—222 12 Claims

1. Process for hardening a workpiece of steel having an austenite region with a carbon saturation limit beyond which carbides are formed, said workpiece having a surface, said process comprising the following steps:

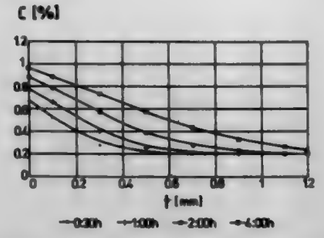
providing a cathode and an anode in a vacuum chamber,

placing said workpiece on said cathode, said cathode serving as a workpiece holder,

evacuating said chamber,

introducing a process gas into said chamber so that a total pressure of 14 to 30 mbar is present in the chamber, said process gas consisting of 2 to 50% by volume argon, 3 to 50% by volume gaseous hydrocarbons, and hydrogen,

generating a plasma discharge in said chamber by providing a pulsed voltage having pulses of between 200 and 2000 volts between said cathode and said anode, said pulses



being separated by pauses, said voltage having an initial pulse time between 110 and 10,000 μs and an initial pause time between 30 and 10,000 μs, and

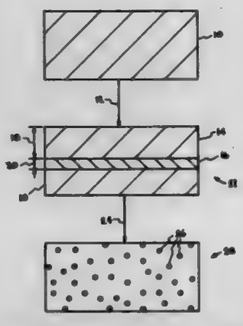
decreasing average power fed to said plasma discharge during said pulsed voltage by at least one of reducing said pulse time and lengthening said pause time wherein the carbon saturation limit of the steel in the austenite region is at no time exceeded on the surface of the workpiece.

5,383,981

REUSABLE CRUCIBLE FOR CONTAINING CORROSIVE LIQUIDS

Jean A. H. de Pruneda, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 14, 1993, Ser. No. 76,061
Int. Cl.[6] C22C *27/00*
U.S. Cl. 148—237 4 Claims



1. A composition of matter for containing corrosive liquid materials, comprising a substrate of tantalum or tantalum alloy supersaturated with carbon atoms, wherein the carbon atoms are interspersed with the tantalum atoms throughout the substrate.

5,383,982

PROCESS OF PRODUCING PHOSPHATE COATINGS

Dieter Hauffe, Frankfurt am Main, and Fleischhacker-Jeworrek, Margit, Usingen, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 13, 1993, Ser. No. 166,254
Claims priority, application Germany, Dec. 19, 1992, 4243214
Int. Cl.[6] C23C *22/10, 22/22, 2/16*
U.S. Cl. 148—262 6 Claims

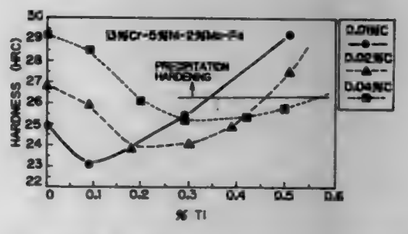
1. A process of producing a phosphate coating on a metal surface of iron or steel by a non-layer forming phosphating process comprising: contacting the surface with an aqueous phosphating solution on the basis of magnesium phosphate which contains an accelerator wherein the phosphating solution contains 0.2 to 4 g/l magnesium, 1 to 20 g/l phosphate (calculated as P_2O_5) and, as accelerator, at least one compound selected from the group consisting of hydrogen peroxide, perphosphate and percarbonate, said solution being free of inorganic substances which are not precipitable with calcium hydroxide in a neutral or alkaline medium.

5,383,983

MARTENSITIC STAINLESS STEEL SUITABLE FOR USE IN OIL WELLS

Kunio Kondo, Kobe; Takahiro Kushida, Amagasaki, and Masakatsu Ueda, Nara, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1993, Ser. No. 45,596
Claims priority, application Japan, Apr. 9, 1992, 4-88506
Int. Cl.[6] C22C *38/44*
U.S. Cl. 148—325 20 Claims



1. A martensitic stainless steel for use in oil wells having improved stability in strength and good resistance to sulfide stress corrosion cracking, which has a chemical composition consisting essentially, on a weight basis, of:

Si: not greater than 1.0%, Mn: not greater than 1.0%,

Cr: 10.0–14.0%, Mo: 0.5–7.0%,

Ni: 4.0–8.0%, Al: 0.001–0.1%,

either Ti in an amount satisfying the following inequality (1) or Zr in an amount satisfying the following inequality (2),

one or both of Mg: 0–0.05% and Ce: 0–0.05%, and

a balance of Fe and incidental impurities in which the contents of C, P, S, N, and V as impurities are limited to 0.05% or less, 0.04% or less, 0.005% or less, 0.05% or less, and 0.2% or less, respectively,

said composition further satisfying the following inequalities (3) and (4):

$$4(\%C) \leq \%Ti \leq \{-0.01/(\%C+0.015)\}+0.75 \quad (1)$$

$$10(\%C) \leq \%Zr \leq 2.0\% \quad (2)$$

$$30(\%Cr)+36(\%Mo)+14(\%Si)-28(\%Ni) \leq 455 \quad (3)$$

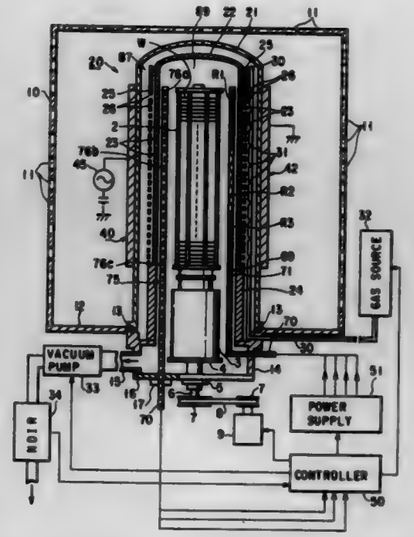
$$21(\%Cr)+25(\%Mo)+17(\%Si)+35(\%Ni) \leq 731 \quad (4).$$

5,383,984

PLASMA PROCESSING APPARATUS ETCHING TUNNEL-TYPE

Yutaka Shimada, Sagamihara; Hitoshi Kato, Kofu; Junichi Kakizaki, Fujisawa; Kazutugu Aoki, Shiroyama; Haruki Mori, Yokosuka, and Tatsuo Shiotsuki, Oita, all of Japan, assignors to Tokyo Electron Limited, Tokyo; Tokyo Electron Tohoku Limited, Esashi and Kabushiki Kaisha Toshiba, Kawasaki, all of Japan

Filed Jun. 17, 1993, Ser. No. 77,602
Claims priority, application Japan, Jun. 17, 1992, 4-183216; Jun. 17, 1992, 4-183217; Jun. 17, 1992, 4-183218
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—345 12 Claims



1. An apparatus for processing substrates with plasma generated by exciting gas comprising:

a processing tube for housing a plurality of substrates;

means for introducing a processing gas into the processing tube;

electrode means arranged along the outer circumference of said processing tube for generating a high frequency electric field, when power is supplied, in a processing gas introducing region to convert said processing gas into plasma;

heater means arranged immediately adjacent to said plurality of substrates within said processing tube to directly heat said plurality of substrates;

etching tunnel means arranged between the heater means and the processing gas introducing region and having a plurality of holes through which only radicals in plasma generated in said processing gas introducing region are allowed to pass toward said substrates;

means for exhausting said processing gas from said processing tube;

first power supply means for supplying power to said electrode means;

second power supply means for supplying power to said heater means; and

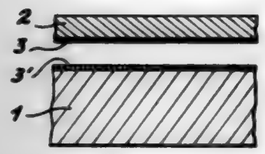
control means for controlling the amount of power supplied from said second power supply means to said heater means.

5,383,985

METHOD OF INSTALLING AN INSERT SERVING AS A PROTECTIVE CLADDING ON A PART MADE OF MARTENSITIC STEEL OR OF TITANIUM-BASED ALLOY

André Coulon, Bessancourt, France, assignor to GEC Alsthom Electromecanique SA, Paris, France

Filed Jun. 4, 1993, Ser. No. 70,925
Claims priority, application France, Jun. 5, 1992, 92 06860
Int. Cl.[6] B32B *31/12*
U.S. Cl. 148—527 12 Claims



1. A method of installing a coating serving as protective cladding, on a part made of a material selected from a group consisting of martensitic steel and titanium-based alloy, the method comprising the steps of:

interposing a metal layer between the, coating and the part, which layer is constituted by elements that transform into intermetallic phase components during heat treatment, the melting temperature of said layer being 20° C. to 50° C. greater than the temperature θ used for said heat treatment;

heating an assembly comprising the part and the coating to a forging temperature that is at least 20° C. less than θ, inserting the part-coating assembly in a heated calibration matrix, calibrating the part-coating assembly removing the part-coating assembly from the matrix, and cooling the assembly; and

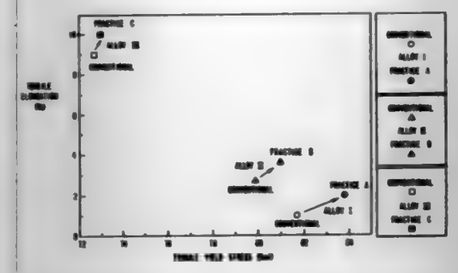
inserting the part-coating assembly in an isostatic pressure oven, compacting the assembly to a pressure greater than 1,000 bars at the temperature θ, and then cooling the assembly to ambient temperature.

5,383,986

METHOD OF IMPROVING TRANSVERSE DIRECTION MECHANICAL PROPERTIES OF ALUMINUM-LITHIUM ALLOY WROUGHT PRODUCT USING MULTIPLE STRETCHING STEPS

Alex Cho, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Mar. 12, 1993, Ser. No. 30,925
Int. Cl.[6] C22F *1/04*
U.S. Cl. 148—697 19 Claims



1. A method of improving transverse direction strength and ductility in a solution heat treated and quenched aluminum-lithium alloy wrought product comprising the steps of:

a) stretching said solution heat treated and quenched aluminum-lithium alloy wrought product an amount between 1 and 20 percent reduction in a plurality of stretching steps, and

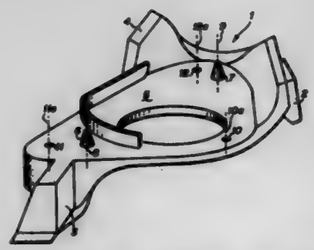
b) aging said stretched wrought product to increase its strength whereby said plurality of stretching steps increase strength and ductility in said wrought product in said transverse direction, said stretching occurring prior to any aging of the product.

5,383,987

CAST AND ASSEMBLY METHOD FOR MOTOR VEHICLE BODYWORK

Gundolf Kreis, Oberstimm; Helmrich Timm, Ingolstadt; Norbert Ensing, Denkendorf, and Robert Spies, Ingolstadt, all of Germany, assignors to Audi A.G., Ingolstadt, Germany

PCT No. PCT/EP91/02117, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO92/11170, PCT Pub. Date Jul. 9, 1992
PCT Filed Nov. 8, 1991, Ser. No. 75,600
Claims priority, application Germany, Dec. 20, 1990, 4041022
Int. Cl.[6] B32B *31/04*
U.S. Cl. 156—60 18 Claims



1. A method of assembly of a vehicle bodywork having a space frame bearing structure of the type in which cast light metal junction elements are used to join a plurality of extruded light metal hollow section frame members, said assembly method comprising the steps of:

a) providing a cast light metal junction element having a plurality of connector portions for joining a plurality of converging extruded light metal hollow section frame members and including at least one wall surface having a plurality of spaced apart datum points thereon;

b) clamping said cast light metal junction element to a fixture at said datum points so that said cast light metal junction element is held at a desired spatial orientation;

c) securing each of said plurality of said extruded light metal hollow section frame members to their corresponding connector portions of said cast light metal junction element; and

d) unclamping said cast light metal junction element from said fixture.

5,383,988

MODULAR APPARATUS FOR FABRICATING AN ABSORBENT ARTICLE

Thomas R. Herrmann, Redding, Calif., and Donald J. Teodoro, Kent, Wash., assignors to Paragon Trade Brands, Inc., Federal Way, Wash.

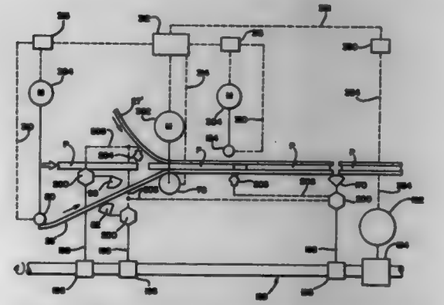
Filed Sep. 10, 1992, Ser. No. 942,926
Int. Cl.[6] B32B *31/00, 35/00*
U.S. Cl. 156—64 19 Claims

1. A method for operating a machine in which disposable absorbent articles are fabricated along at least one processing path from components which include webs of material assembled by (1) a plurality of first, continuous operating means for each continuously operating on at least one moving web and (2) a plurality of second operating means for each effecting a unity operation intermittently relative to at least one associated moving web once per each absorbent article, said method comprising the steps of:

(A) continuously operating a plurality of individual drive means each comprising adjustable speed electric motor means for each respectively driving one of said continuous operating means wherein at least one of said continuous operating means comprises means for drawing at least one of said webs through said machine;

(B) adjusting said adjustable speed motor means of a selected one of said drive means to establish a preselected speed of a selected one of said continuous operating means;

(C) controlling the remaining adjustable speed electric motor means of said remaining drive means to adjust the



speeds of the remaining continuous operating means to equal the preselected speed of said selected continuous operating means; and

(D) rotating a main drive shaft with a further adjustable speed electric motor means at a speed proportional to the preselected speed of said selected one continuous operating means for mechanically transferring power from said shaft to said plurality of second operating means through a plurality of direction phasing mechanical power transfer devices each associated with at least one of said second operating means whereby each of said direction phasing mechanical power transfer devices can be adjusted to temporarily change the speed of the associated second operating means relative to the speed of said drive shaft to effect registration of the operations of said second operating means in a preselected relationship with said associated web portion.

5,383,989

METHOD AND APPARATUS FOR MANUFACTURING RECLOSABLE PLASTIC BAGS UTILIZING PRE-HEATED ZIPPER

Michael J. McMahon, Palatine, Ill., assignor to Illinois Tool Works, Inc., Glenview, Ill.

Filed May 21, 1993, Ser. No. 65,668
Int. Cl.[6] B31B *1/90*; B32B *31/02, 31/12, 31/26*
U.S. Cl. 156—66 5 Claims

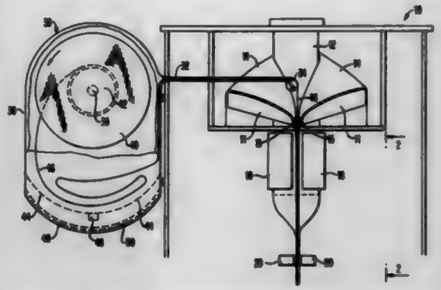
1. A method for manufacturing plastic bags or packages wherein a longitudinally extending continuous plastic zipper having male and female profiles on interior surfaces of the plastic bag or package provides a resealable closure between two plies of plastic sheet material, said plastic sheet plies being welded together with a transverse seal at preselected intervals separated by a distance corresponding to the width of the bags or packages being produced to thereby provide side seals separating said bags or packages, said method comprising the steps of:

providing a substantially tension-free length of continuous plastic zipper having male and female profile sections;

heating said length of plastic zipper to effect a presoftening thereof;

inserting said length of plastic zipper while in a heated state between said two plies of plastic sheet material;

fusing said male profile section of said length of plastic zipper to one of said two plies of plastic sheet material;



fusing said female profile section of said length of plastic zipper to the other of said two plies of plastic sheet material; and

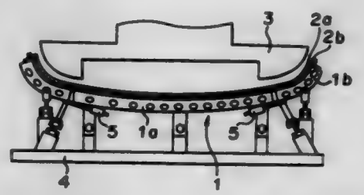
making a transverse seal across said two plies of plastic sheet material and through said presoftened length of plastic zipper.

5,383,990

METHOD FOR BENDING AND LAMINATING A PAIR OF GLASS PLATES

Hiroshi Tsuji, Yokohama, Japan, assignor to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 856,888, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 567,733, Aug. 15, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,058
Claims priority, application Japan, Aug. 24, 1989, 1-216053
Int. Cl.[6] C03B *23/023*; C03C *27/10*
U.S. Cl. 156—102 7 Claims



1. A method of bending glass plates for a laminated glass wherein two glass plates for a laminated glass are simultaneously bent, the method comprising:

providing first and second glass plates which are components of the laminated glass in an overlapping state on a bending mold, said bending mold having a shaping surface of a substantially concave form, wherein the second glass plate is disposed below said first glass plate and said second glass plate has at least one of: (a) a heat absorptivity which is greater than a heat absorptivity of said first glass plate; and (b) a softening point which is lower than a softening point of said first glass plate; such that said second glass plate is softened faster than said first glass plate when said first and second glass plates are heated;

heating said first and second glass plates in a heating furnace such that said first and second glass plates are bent into a shape substantially corresponding to the shaping surface

of the bending mold utilizing the deadweight of the first and second glass plates; and

combining said first and second plates to form a laminated glass.

5,383,991

PROCESS FOR THE MANUFACTURE OF A RIGID COVER FOR A VEHICLE ROOF AND COVER MANUFACTURED ACCORDING TO THE PROCESS

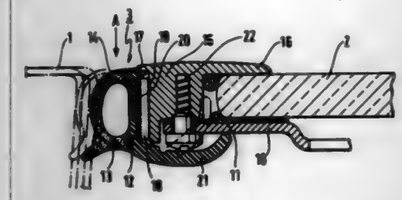
Rolf Brocke, Wangen, and Klaus Glagow, Wasserburg, both of Germany, assignors to Metzeler Automotive Profiles GmbH, Lindau/Bodensee, Germany

Filed Mar. 14, 1994, Ser. No. 213,117

Claims priority, application Germany, Mar. 15, 1993, 4308221

Int. Cl.[6] B65C *3/26*

U.S. Cl. 156—108 **11 Claims**



1. Process for the manufacture of a rigid cover for a vehicle roof, with a peripheral seal opposite the roof opening and a glass panel, which is glued to an underlain base frame, protruding out the side, in the rim area and on whose protruding edge is secured a peripheral, approximately T-shaped aluminum frame, which covers the edge of the glass panel with one free leg, and the gap seal to the roof opening with the other free leg, characterized in that the gap seal (3) is manufactured in the shape of a coextruded profile with an interior, vertically extending profile area (12; 32; 46) of an elastomer, and an exterior hollow chamber profile (13), made of sponge rubber and in the shape of a peripheral piece, which is connected to the exterior side of the vertical leg of the T-shaped aluminum frame (15; 30; 40), after which this finished module is set on the protruding edge area of the other module, comprising glass panel (1) and base frame (10), and both modules are screwed together.

3. Cover manufactured according to the process in claim 1, characterized in that the gap seal (3), connected to the T-shaped aluminum frame (15; 30; 40), which in turn is screwed onto the base frame (10), consists of two profile sections (A, B), where section A, with a tongue (21; 37) extruded onto the lower edge of the elastomer area (12; 32; 46) and covering the rim of the base frame (10) in the area of the securing screws (22), extends over the front edge of the cover (1), and where section B, with a tongue (23) projecting downward from the elastomer area (12; 32; 46), extends over the remaining area of the T-shaped aluminum frame (15; 30; 40).

5,383,992

METHOD AND DEVICE FOR PRODUCING A TOROIDAL ROAD VEHICLE TIRE CARCASS

Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

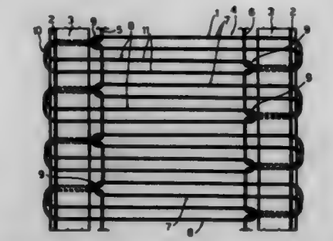
Filed Dec. 16, 1992, Ser. No. 991,844

Claims priority, application Italy, Dec. 30, 1991, T091A001049

Int. Cl.[6] B29D *30/00*

U.S. Cl. 156—117 **12 Claims**

1. A method of producing a toroidal road vehicle tire carcass comprising two coaxial annular beads, and a plurality of elongated reinforcing elements having a first portion, and an intermediate portion between and extending substantially radially in relation to the two beads; said method comprising the steps of providing a knotting device; and a support frame forming a toroidal frame supporting said carcass and said beads; winding successive parallel intermediate portions of a cord substantially in a U to form a portion of said elongated reinforcing elements; engaging said intermediate portions by means of a knotting device outside said supporting frame, so as to form, on said frame, two series of said elongated reinforcing elements extending completely outside of the support frame, each element



being defined by a loop; rotating the knotting device and the supporting frame in relation to each other about an axis parallel to the bead axis; engaging each loop in each of said series by said knotting device, and winding each of said loops completely about a respective bead, and drawing each of said loops towards the other bead, and connecting each loop to a respective loop in the other series via a interconnecting link to form a toroidal reticulated looped structure enclosing the two beads.

5,383,993

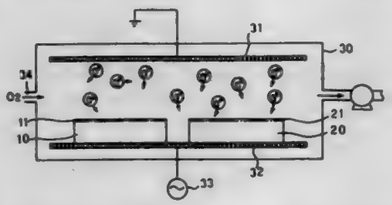
METHOD OF BONDING SEMICONDUCTOR SUBSTRATES

Mitsutaka Katada, Kariya; Kazuhiro Tsuruta, Oobu; Seiji Fujino, Toyota, and Michitoshi Onoda, Toyohashi, all of Japan, assignors to Nippon Soken Inc., Nishio, Japan

Continuation of Ser. No. 675,613, Mar. 27, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 118,784

Int. Cl.[6] H01L *21/20, 21/02*

U.S. Cl. 156—153 **21 Claims**



1. A method of bonding semiconductor substrates, which comprises the steps of:

(a) preparing a plurality of silicon substrates which have surfaces that are mirror-polished;

(b) providing said mirror-polished surface of at least one of said silicon substrates with a hydrophilic property and with an oxygen concentration which is in a range of 64–73% and said oxygen concentration which gradually becomes lower toward inside said silicon substrate with said hydrophilic property by coupling said at least one of said silicon substrates to a cathode of an electrically biased system and forming an oxide layer on said mirror-polished surface by exposing said mirror-polished surface to an atmosphere including positive oxygen ions;

(c) adhering water molecules to said mirror-polished surface;

(d) contacting said silicon substrates with each other through said mirror-polished surface; and

(e) heating said contacted silicon substrates at a temperature

of less than 600° C. to bond strongly said contacted silicon substrates.

5,383,994

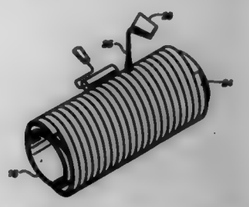
METHOD FOR MAKING A DOUBLE WALL FIRE PROOF DUCT

Lawrence E. Shea, 165 Lake Dr., San Bruno, Calif. 94066

Division of Ser. No. 528,803, May 24, 1990, Pat. No. 5,298,299. This application Feb. 8, 1993, Ser. No. 15,254

Int. Cl.[6] B65H *81/00*

U.S. Cl. 156—175 **22 Claims**



1. A method for making a composite duct structure for carrying air and gases having an inner liner of chemically resistant material and an outer layer of fire-retardant material, said method comprising the steps of:

providing an elongated cylindrical mandrel;

coating said mandrel with a layer of chemically resistant resin;

wrapping said mandrel with successive inner layers of fabric material and saturating said inner layers with additional chemically resistant resin;

rolling said inner layers to form an inner liner of substantially uniform thickness free of air bubbles;

applying additional outer layers of fabric material directly over said first layers and saturating said second layers with a fire resistant resorcinolaldehyde or phenol-resorcinol aldehyde resin material to form an outer casing around said inner liner material;

compressing said outer layers to remove any air bubbles; and

curing said outer layers so that they become integral with said inner liner.

5,383,995

METHOD OF MAKING OPTICAL THIN FLAKES AND INKS INCORPORATING THE SAME

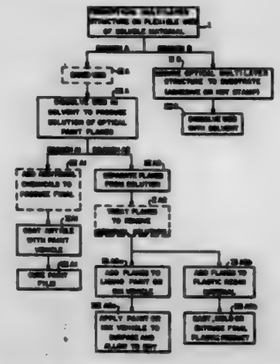
Roger W. Phillips, Santa Rosa, Calif.; Thomas Mayer, Boulder, Colo., and Gary S. Ash, Boston, Mass., assignors to Flex Products, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 962,610, Oct. 16, 1992, which is a continuation of Ser. No. 675,317, Mar. 26, 1991, which is a division of Ser. No. 329,941, Mar. 29, 1989, Pat. No. 5,084,351, which is a division of Ser. No. 251,034, Sep. 26, 1988, Pat. No. 5,059,245, which is a continuation of Ser. No. 812,814, Dec. 23, 1985, which is a continuation-in-part of Ser. No. 567,638, Jan. 19, 1984, abandoned, which is a continuation of Ser. No. 314,695, Oct. 26, 1981, Pat. No. 4,434,010, which is a division of Ser. No. 108,004, Dec. 28, 1979, abandoned. This application Oct. 29, 1993, Ser. No. 146,834

Int. Cl.[6] B44C *1/165*

U.S. Cl. 156—230 **2 Claims**

1. In a method for producing an optically variable ink, providing a flexible web, depositing an organic release coat upon the flexible web at atmospheric pressure, depositing in a vacuum a multilayer metal dielectric optically variable thin film coating formed solely of inorganic materials onto the release coat, passing the web containing the release coat thereon into a solvent to dissolve the release coat, removing the optically variable multilayer thin film coating from the web so that the coating is free of the organic release coat and causing the same to break into oversize flakes formed solely of inorganic materials, drying the oversize flakes, reducing the flakes in size by air pulverization so that they have a size distribution ranging from



2 to 20 microns and introducing the flakes into a liquid vehicle so that they are dispersed therein.

5,383,996

METHOD AND WEB FOR APPLYING GRAPHICS TO FRAMING SUBSTRATE

Donald R. Dressler, 320 Cavan La., Glastonbury, Conn. 06033

Filed Sep. 15, 1993, Ser. No. 122,195

Int. Cl.[6] B32B *31/00, 3/00*; B44C *1/00*

U.S. Cl. 156—234 **17 Claims**



1. A method for applying a graphic to a display substrate comprising:

selecting an adhesive sheet having a carrier backing and an adhesive layer;

cutting a pattern through the adhesive layer but not the backing of the adhesive sheet;

peeling some of the cut adhesive layer from the carrier backing while leaving the remainder on the carrier backing as an adhesive pattern that is a reverse image of the desired graphic;

placing the adhesive sheet so that the reverse image adhesive pattern contacts the display substrate;

applying heat and pressure to the carrier backing for a first period of time, thereby bonding the reverse image adhesive pattern to the display substrate;

after said first period of time, peeling the carrier backing away from the adhesive pattern, which remains bonded to the display substrate such that the adhesive pattern appears right-reading with respect to the desired graphic;

selecting a graphics sheet having a lower side and an upper, decorative side;

placing the graphics sheet on the display substrate, with said lower side in contact with said right-reading adhesive pattern;

applying heat and pressure to the graphics sheet for a second

period of time, thereby bonding the graphics sheet only to the right-reading adhesive pattern;

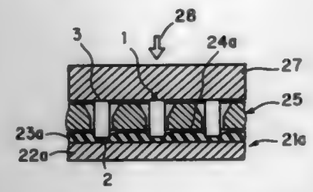
after said second period of time, pulling the graphics sheet from the display substrate, thereby leaving a portion of the graphics sheet bonded to the right-reading adhesive pattern and constituting the desired graphic on said display substrate.

5,383,997

METHOD OF HANDLING ELECTRONIC COMPONENT CHIPS

Kenji Minowa; Norio Sakai; Tetsuro Saito, and Toshimi Yoshizawa, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 855,202, Mar. 20, 1992, abandoned. This application May 9, 1994, Ser. No. 240,087
Claims priority, application Japan, Mar. 20, 1991, 3-055256
Int. Cl.[6] B05C *3/00, 13/00*
U.S. Cl. 156—235 **8 Claims**



1. A method of handling and forming substantially rectangular-parallelepiped-shaped electronic component chips having first and second opposed end surfaces, said method comprising the steps of:

preparing a first electronic component chip holder comprising a first elastic body having a first adhesive surface;

preparing a second electronic component chip holder comprising a second elastic body having a second adhesive surface, the adhesion of said second adhesive surface being stronger than the adhesion of said first adhesive surface;

adhering said first adhesive surface of said first electronic component chip holder to said first end surfaces of said substantially rectangular-parallelepiped-shaped electronic component chips for holding said electronic component chips by said first electronic component chip holder;

processing said second end surfaces of said electronic component chips;

moving said first electronic component chip holder holding said electronic component chips towards said second electronic component chip holder;

adhering said second adhesive surface to said processed second end surfaces of said electronic component chips;

separating said first and second electronic component chip holders from each other, said second end surfaces of said electronic component chips being held by said second electronic component chip holder; and

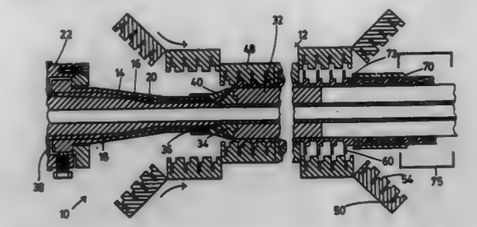
processing said first end surfaces of said electronic component chips being held by said second electronic component chip holder.

5,383,998

APPARATUS FOR MODIFYING CORRUGATED OR RIBBED PIPE TO HAVE A SMOOTH OUTER WALL

Manfred A. A. Lupke, Thornhill, Canada, assignor to Corma Inc., Ontario, Canada

Division of Ser. No. 977,762, Nov. 17, 1992, Pat. No. 5,330,600. This application May 13, 1994, Ser. No. 242,241
Claims priority, application Canada, Nov. 22, 1991, 2056060
Int. Cl.[6] B32B *31/20*
U.S. Cl. 156—242 **15 Claims**



1. Apparatus for forming double-walled ribbed pipe having a smooth inner wall and an outer wall with ribs extending therebetween comprising:

an extrusion die having an elongate extrusion nozzle coaxial about an elongate mandrel;

a travelling mold tunnel having a mold face aligned with the extrusion nozzle and arranged to receive a parison of thermoplastic material from the nozzle on the mold face to mold an outer face of an intermediate formed pipe;

a forming plug within the mold tunnel to mold said intermediate pipe between the plug and the mold face;

outer pipe wall smoothing means downstream of the travelling mold tunnel to mold an outer wall of said intermediate pipe to form a double-walled pipe, the outer pipe wall smoothing means having an internal diameter generally corresponding to the desired outer diameter of the resulting double-walled pipe, the outer pipe wall smoothing means being located coaxial with the mold tunnel to receive the intermediate pipe therefrom and to form a smooth outer wall thereon.

5,383,999

METHOD FOR MANUFACTURING HIGH HARDNESS KRAFT PAPER-MADE BOARD BLOCK

Shin C. Kuo, Changhua City, Taiwan, Prov. of China, assignor to Ta Yen Paper Box Container Co., Ltd., Changhua City, Taiwan, Prov. of China

Filed Dec. 15, 1993, Ser. No. 166,867
Int. Cl.[6] B32B *31/00, 29/00*
U.S. Cl. 156—267 **2 Claims**

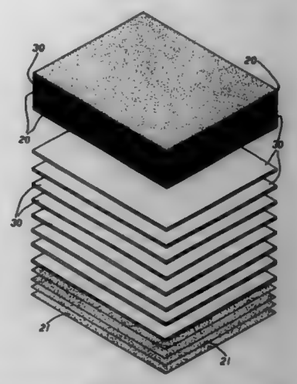
1. A method for manufacturing high hardness kraft paper-made board block, comprising the following steps:

board-laminating step, wherein multiple layers of carton boards with high thickness and a basic weight of 700 g/m^2 are closely attached to one another by white glue or amyloid glue to form a thick board, and then multiple layers of three-layer corrugated boards which have high strength and are made of A-class flock paper and kraft paper with high basic weight are attached in sequence on said thick board by white glue or amyloid glue, wherein said multiple layers of three-layer corrugated boards form an intermediate board, and then another thick board and another intermediate board are twice further attached on the first intermediate board, and finally an upmost layer of thick board is attached on the last intermediate board;

high frequency drying and patterning step, wherein the laminated board block is heated by high frequency and compressed and quickly dried and patterned to form a solid assembled board block structure:

cutting step, wherein a piece of scaffold board with a predetermined width is cut away from said board block according to requirements of use;

thermo-melting glue-reinforcing step, wherein a layer of solvent-free thermo-melting glue is painted on external surface of the cut scaffold board to quickly harden; and



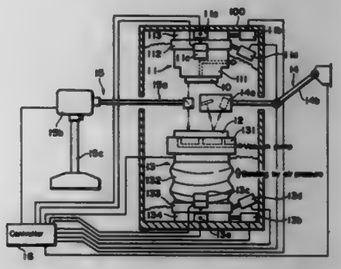
edge-planning step, wherein irregular edges of said layer of thermo-melting glue painted On the surface of said scaffold board are planed by an electro-thermally planing device.

5,384,000

SEMICONDUCTOR CHIP MOUNTING METHOD AND APPARATUS

Masanori Nishiguchi, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 56,777, May 4, 1993, Pat. No. 5,324,381. This application Mar. 3, 1994, Ser. No. 205,416
Claims priority, application Japan, May 6, 1992, 4-113569; May 15, 1992, 4-123758; May 15, 1992, 4-123761
The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.
Int. Cl.[6] H01L *21/60*
U.S. Cl. 156—297 **28 Claims**



1. A method of mounting a semiconductor chip comprising the steps of:

(a) measuring a three-dimensional shape of a surface of a board on which the chip is to be attached;

(b) adjusting, based upon the measurement made in step (a), a relative orientation of the board and the chip so that the board and the chip are substantially parallel; and

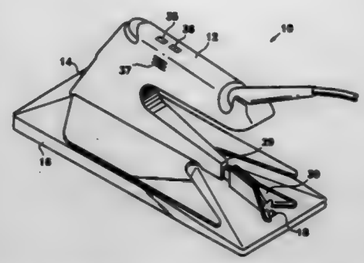
(c) attaching the semiconductor chip to the board.

5,384,001

CARPET SEAMING APPARATUS AND METHOD

Merle R. Hoopengardner, Lafayette, Calif., assignor to Step Lee Corporation, Lafayette, Calif.

Continuation-in-part of Ser. No. 4,907, Jan. 14, 1993. This application Jan. 14, 1994, Ser. No. 184,432
Int. Cl.[6] B29C *65/00*
U.S. Cl. 156—391 **15 Claims**



1. A carpet seaming tape iron, for use in installing and adhering a hot melt carpet seaming tape to the backings of a pair of adjacent pieces of carpet which are to be seamed and joined, by moving the iron over the hot melt adhesive on the seaming tape from above while working between the two pieces of carpet, comprising,

a base plate on the iron, and

liquid channel means in the base plate of the iron and extending up through the base plate for feeding melted liquid hot melt adhesive from the base plate of the iron up to an elevated location near a rear end of the iron, in a position to be applied to opposed edges of carpet backings of the two pieces of carpet as the iron is moved along on the carpet seaming tape, between the two carpet edges,

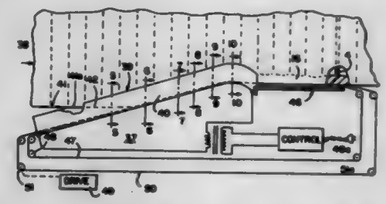
whereby, as the two carpet edges come together at the back of the advancing iron, they are seam welded in a butt joint by the hot melt adhesive, adding strength to the seam in the carpet and supplementing the strength afforded by adhesion of the seaming tape to the carpet backings.

5,384,002

FLUTED PLASTICBOARD SEALING APPARATUS

Alfred F. Leatherman, and Clyde P. Repik, both of Columbus, Ohio, assignors to William C. Heller, Jr., Milwaukee, Wis.

Continuation of Ser. No. 776,558, Oct. 15, 1991, abandoned. This application May 18, 1993, Ser. No. 63,457
Int. Cl.[6] B32B *31/20, 31/26*
U.S. Cl. 156—500 **15 Claims**



1. An apparatus for sealing the open edge wall of a fluted plasticboard having substantially rigid outer face boards connected by spaced connector walls, said face boards having aligned outer free edges, comprising a heated form unit having inclined sidewalls having sealing portions adapted to engage said free edges of the edge wall and an end wall spaced outwardly from said sealing portions to form a substantial confining chamber extending outwardly of said edge wall forming an essentially continuous smooth inner cavity surface between

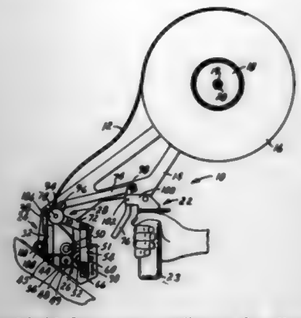
said sealing portions and said end wall, means to heat said form unit to a temperature to convert said plastic face boards and connector walls to a molten and flowing state, transport means for relatively moving said plasticboard through said form unit and establishing lateral pressure engagement between said sidewalls of said heated form unit and said outer free edges of said face boards and to form a substantial confining sealed chamber whereby the edges become plastic molten with relative movement of the melted face boards inwardly into said confining sealed chamber and with the molten plastic confined within the form unit as said plasticboard moves through said form unit and forming a substantial molten edge wall between said face boards having a continuous smooth outer surface extending outwardly from said outer free edges, and a cooling unit coupled to said form unit and cooling said molten edge wall within said form unit to a self sustaining state and thereby create a complete end closure wall between said face boards.

5,384,003

DISPENSER POR TAPES AND SIMILAR WEB MATERIALS INCORPORATING A CUTTING AND DELAYED FEED MECHANISM

James G. Mitchell, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 24, 1992, Ser. No. 934,556
Int. Cl.[6] B65H *35/07*
U.S. Cl. 156—510 20 Claims



1. A hand-held foam tape applicator for dispensing and applying lengths of foam tape comprising:
a support frame;
a tape source support means provided on said support frame for rotatably supporting a source of foam tape thereon;
a handle connected with said support frame including a gripping portion for holding and manipulating said hand-held foam tape applicator;
a cutting element movably disposed on said support frame and movable along a path between a first position and a second position;
guide means for guiding the foam tape along said dispensing apparatus to an application element operatively connected to said support frame, and for guiding the foam tape to pass through said path between said first and second positions of said cutting element so that when said cutting element is moved from said first position to said second position, said cutting element cuts the foam tape;
advancing means for advancing the foam tape along said guide means toward said application element; and
an actuating means comprising a link operatively connected to said cutting element and said advancing means so that movement of said link from a first position to a second position is transferred to said cutting element to move said cutting element from its first position to its second position, and movement of said link from said second position toward its first position is transferred to said cutting element to move said cutting element back to its first position, and after a time delay that is sufficient to allow said cutting element to fully retract from the foam tape, it is transferred to said advancing means to advance the foam tape towards said application element.

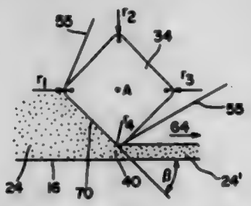
19. An apparatus for dispensing lengths of web material comprising:
a support frame;
a cutting element movably disposed on said support frame and movable along a path between a first position and a second position;
guide means for guiding the web material along said dispensing apparatus to an application point thereof, and for guiding the web material to pass through said path between said first and second positions of said cutting element so that when said cutting element is moved from said first position to said second position, said cutting element cuts the web material;
advancing means for advancing the web material along said guide means toward said application point; and
an actuation element supported on said support frame to move between first and second positions and operatively connected with said cutting element and said advancing means so that movement of said actuation element from its first position to its second position is transferred to said cutting element to move said cutting element from its first position to its second position, and movement of said actuation element from its second position back to its first position is transferred to said cutting element to move said cutting element from its second position back to its first position, and after a time delay, it is transferred to said advancing means to advance the web material toward said application point;
wherein said advancing means includes a feed roller rotatably supported on said support frame, a transfer link connected to said actuation element, and a conversion means between said transfer link and said feed roller for converting movement of said transfer link to rotary motion of said feed roller during movement of said actuation element from its second position to its first position after said time delay, said time delay provided by a longitudinal slot through said transfer link which is connected to said conversion means.

5,384,004

APPARATUS FOR THE PRODUCTION OF A FLAME RESISTANT TO NONFLAMMABLE COMPOSITE PANEL

Reinhard Schlatter, Schaffhausen; Urs Gabl, Wilrenlos, and Rainer Ehrat, Schaffhausen, all of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Continuation of Ser. No. 84,626, Jun. 30, 1993, abandoned, which is a division of Ser. No. 854,351, Mar. 19, 1992, Pat. No. 5,264,057. This application May 10, 1994, Ser. No. 240,311
Claims priority, application Switzerland, Apr. 10, 1991, 1060/91
Int. Cl.[6] B32B *31/20*
U.S. Cl. 156—543 13 Claims



1. Apparatus for producing a flame resistant to nonflammable composite panel having a core comprising a nonextrudable core mixture of a pourable nonflammable filling material and a binder, and on both sides cover strips flexibly bonded to the core, which comprises:

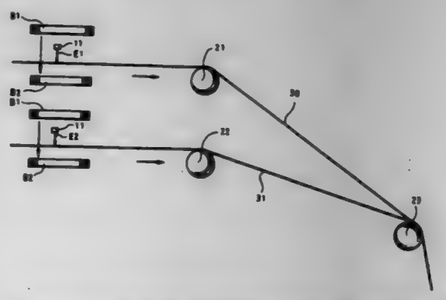
means for supplying a metal lower cover strip and a lower adhesive film thereon;
roller means for the lower cover strip and lower adhesive film thereon;
means for applying a non-extrudable core mixture of a pourable nonflammable filling material and a binder to the lower adhesive film on the lower cover strip;
first means for forming a settable running-in angle (β) and an adjustable V gap downstream of the means for applying a core mixture, said first means defining a calibrated feed for the core mixture while precompacting the core mixture and obtaining the desired thickness thereof;
means for drawing the core mixture on the lower adhesive film through the V gap to form a laminate of a drawn core mixture-lower adhesive film-lower cover strip;
second means for supporting the lower cover strip in contact with the lower adhesive film at least in the region of the first means;
means for supplying a metal upper cover strip and an upper adhesive film to the laminate to form a composite panel of an upper cover strip—upper adhesive film—drawn core mixture—lower adhesive film—lower cover strip;
roller means for the upper cover strip and upper adhesive film downstream of the means for supplying an upper cover strip and upper adhesive film; and
third means for pressing the composite panel.

5,384,005

PROCESS FOR PRODUCING LAMINATED CAPACITORS AND CAPACITOR MADE FROM SUCH A PROCESS

Nicolas Chapas, Navenne; Philippe Myszon, Fontaine Francaise, and Ronan Stephan, Dijon, all of France, assignors to Compagnie Europeenne de Composants Electroniques LCC, Courbevoie, France

Continuation of Ser. No. 22,313, Feb. 19, 1993, abandoned. This application Jan. 19, 1994, Ser. No. 183,236
Claims priority, application France, Feb. 25, 1992, 92 02150
Int. Cl.[6] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—629 8 Claims



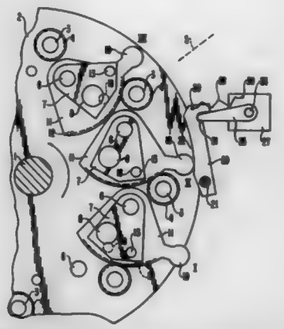
1. Process for producing laminated capacitors by winding at least one pair of metallized plastic films, said winding comprising:
a first step of winding finishing turns while demetallizing portions of the films so that the superposed films do not produce any capacitance in the final component;
a second step of winding which superposes the films so that the superposed films contribute to the capacitance of the final component while demetallizing the films at lateral portions thereof; and
a third step of winding finishing turns under the same conditions as during the first step,
wherein the demetallization steps are performed by etching.

5,384,006

LABELING APPARATUS WITH CLUTCHES TO BLOCK LABEL REMOVAL

Harry Meyer, Pinneberg, Germany, assignor to Anker-Maschinenbau GmbH, Hamburg, Germany

Filed Dec. 10, 1993, Ser. No. 165,087
Claims priority, application Germany, Dec. 16, 1992, 4242489
Int. Cl.[6] B65C *9/00*
U.S. Cl. 156—566 9 Claims



1. In a labeling apparatus having a rotatably driven support (2) rotating about a longitudinal axis of a central shaft mounted on a stationary bench, a plurality of label shafts having axes parallel with said central shaft rotatably carried by said support, curved label plates fixed to said label shafts and positioned for glue coating during rotation of said support, for removing labels from a label supply box and for transferring said labels to a label transfer device, a substantially continuous cam on said bench and means for pivoting said label shafts relative to said support as said support rotates, the improvement wherein each said means for pivoting a label shaft includes
a pinion (4) on said label shaft;
cam follower means (8) for engaging and following said cam;
a gear assembly shaft carried by said support (2), said gear assembly shaft having a longitudinal axis;
a pivotable arm (7) attached to said cam follower means and pivotable about said longitudinal axis of said gear assembly shaft (6);
a drive gear segment (11) meshing with said pinion and pivotable about said axis of said gear assembly shaft (6);
clutch means (13, 15, 16, 23) for selectively coupling said drive gear segment to said pivotable arm to cause said drive gear segment to pivot with said arm, said pinion and label shaft being driven thereby.

5,384,007

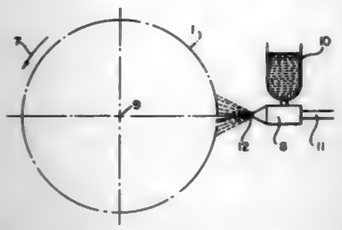
PROCESS FOR MANUFACTURING A SCREEN PRINTING STENCIL

Haas Fischer, Wergl, Austria, assignor to Schablonentechnik Kuestein Ges. m.b.H., Kufstein, Austria

Filed Oct. 13, 1993, Ser. No. 135,528
Claims priority, application European Pat. Off., Oct. 21, 1992, 92118032
Int. Cl.[6] B44C *1/22*; B29C *37/00*
U.S. Cl. 156—640 18 Claims

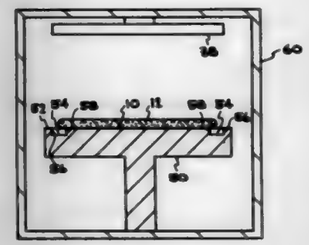
1. A process for manufacturing a screen printing stencil comprising the following steps:
a) forming a hollow-cylindrical round screen (1),
b) applying a photosensitive coating layer (L) to the outer surface of the round screen (1) by applying a monomer containing a photoinitiator,

c) location-selective exposure of the coating layer (L) by means of a laser device (27) for the purpose of cross-link-



ing or curing the exposed positions of the coating layer (L) while rotating the round screen (1), and
d) developing the coating layer (L) thus exposed.

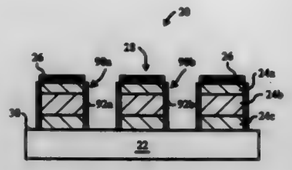
5,384,008
PROCESS AND APPARATUS FOR FULL WAFER DEPOSITION
Ashok Sinha, Palo Alto, and Sasson Somekh, Los Altos Hills, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Jun. 18, 1993, Ser. No. 79,481
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—643 **26 Claims**



1. A process for depositing a layer of material over the entire frontside surface of a semiconductor wafer without leaving residues on the backside of said wafer which comprises:
a) depositing a layer of material on said entire frontside surface of said wafer;
b) placing said wafer generally coaxially against a surface of a generally circular wafer support having means thereon for permitting access to at least the outermost portion of the backside of said wafer; and
c) etching said wafer to remove from said backside of said wafer, said materials deposited thereon during said deposition step, by permitting etchant materials to contact said backside deposits through said access means on said wafer support.

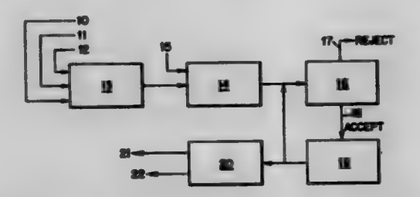
5,384,009
PLASMA ETCHING USING XENON
Steven Mak, Pleasanton; Brian Shieh, Fremont, and Charles S. Rhoades, Los Gatos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Jun. 16, 1993, Ser. No. 78,131
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—662 **26 Claims**

1. A method for selectively etching a substrate having grain boundaries and a resist material thereon, comprising the steps of:
(a) placing a substrate into an etch zone;
(b) introducing a process gas absent oxygen into the etch zone, the process gas comprising (i) a primary etchant selected from the group consisting of chlorine, fluorine and bromine, (ii) a secondary etchant suitable for etching grain boundaries in the substrate, and (iii) xenon; and

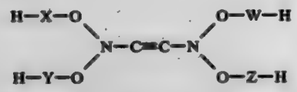


(c) generating a substantially oxygen-free plasma in the etch zone to form an etch gas from the process gas, wherein the etch gas selectively etches the substrate.

5,384,010
DEINKING WASTEPAPER PRINTED WITH WATER-BASED INK
Mean-Jeng Hou, Tega Cay, S.C., and Narayanasamy Seenivasan, Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Filed Aug. 27, 1993, Ser. No. 113,152
Int. Cl.[6] D21C *5/02*
U.S. Cl. 162—5 **9 Claims**



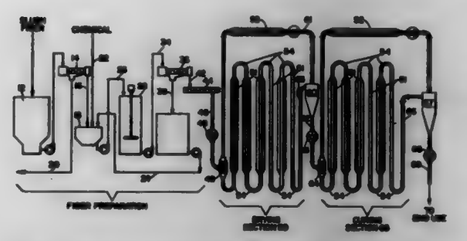
1. A method for deinking pulp which has been made from paper printed with water-based ink wherein said method comprises:
a) pulping the paper with water at a temperature of 25–85 degrees C. in neutral to mildly alkaline conditions;
b) diluting the pulp to a consistency of 0.8–3.0%;
c) mixing the pulp with 0.5–3.0% by weight (based on the oven-dried weight of the pulp) of a surfactant component made by combining 5–95% of a fatty acid or fatty acid blend selected from the group consisting of C_{12}-C_{22} fatty acid and 95–5% of at least one alkoxylated diamine of Formula I:



Formula I

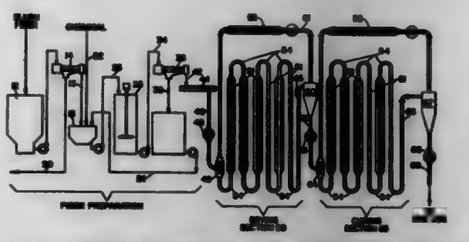
where X,Y,W and Z may be alike or different and are each independently selected from the group
(i) $-(CH_2-CH(CH_3)-O)_a(CH_2-CH_2-O)_b-$;
(ii) $-(CH_2-CH_2)-O)_c(CH_2-CH(CH_3)-O)_d-$; and
(iii) random copolymers of ethylene oxide and propylene oxide,
wherein a,b,c and d are each selected independently to be a number between 1–30 so as to give an HLB value between 5–15; and
d) treating said pulp in a flotation cell wherein inks are removed from the pulp.

5,384,011
PROCESS FOR CROSSLINKING OF CELLULOSIC FIBERS
Sherrill J. Hazard, Jr., Appleton, Wis., assignor to James River Corporation of Virginia, Richmond, Va.
Filed Feb. 12, 1993, Ser. No. 17,037
Int. Cl.[6] D21H *11/20*
U.S. Cl. 162—9 **16 Claims**



1. In a method for preparing crosslinked cellulosic fibers wherein said fibers are treated with a chemical crosslinking agent, individualized, dried and cured, the improvement which comprises carrying out the drying and the curing in two separate stages, wherein
a) the drying is carried out in a pressurized vessel providing turbulent flow so as to entrain said treated fibers in superheated steam, said drying being carried out with pressurized steam at an initial temperature ranging from about 140° to about 350° C. and a pressure of 10–105 psia;
b) separating said steam from said fibers; and
c) curing said treated fibers in a pressurized vessel providing turbulent flow so as to entrain said treated fibers in superheated steam and render them anfractuous, said curing being carried out with pressurized steam at an initial temperature ranging from about 140°–350° C. at a pressure of 10 to 105 psia.

5,384,012
PROCESS FOR CROSSLINKING OF CELLULOSIC FIBERS
Sherrill J. Hazard, Jr., Appleton, Wis., assignor to James River Corporation of Virginia, Richmond, Va.
Continuation-in-part of Ser. No. 17,037, Feb. 12, 1993. This application Mar. 26, 1993, Ser. No. 38,725
Int. Cl.[6] D21C *9/00*; D21H *15/04*
U.S. Cl. 162—9 **16 Claims**

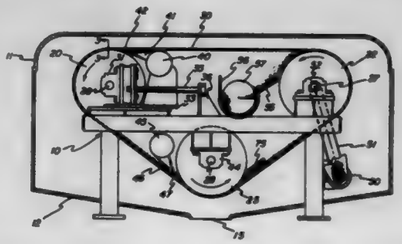


1. In a method for preparing crosslinked cellulosic fibers wherein said fibers are treated with a chemical crosslinking agent, individualized, dried and cured, the improvement which comprises carrying out the drying and the curing in a pressurized vessel providing turbulent flow so as to entrain said treated fibers in superheated steam, said drying being carried out with pressurized steam at an initial temperature ranging from about 140° to about 350° C. and a pressure of 10–105 psia; and curing of said dried and treated fibers being carried out in a pressurized vessel providing turbulent flow so as to entrain said treated fibers in superheated steam and render them anfractuous, said curing being carried out with pressurized steam at an initial temperature ranging from about 140°–350° C. at a pressure of 10 to 105 psia.

5,384,013
CATIONIC PIGMENT-CONTAINING PAPER COATING COMPOSITION
John C. Husband; Richard Bown, both of St. Austell, and Pamela G. Drage, Par, all of Great Britain, assignors to ECC International Limited, United Kingdom
Continuation-in-part of Ser. No. 613,447, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 398,289, Aug. 22, 1989, abandoned, which is a continuation of Ser. No. 146,961, Jan. 22, 1988, abandoned. This application Jun. 4, 1992, Ser. No. 853,757
Claims priority, application United Kingdom, Dec. 6, 1989, 8927536
Int. Cl.[6] D21H *17/69*
U.S. Cl. 162—168.1 **19 Claims**

1. An aqueous paper coating composition which comprises (i) at least 45% by weight of a particulate inorganic pigment and (ii) an adhesive; wherein the said pigment is cationically dispersed with a dispersing agent comprising an anionic polyelectrolyte and a cationic polyelectrolyte, the cationic polyelectrolyte being present in an amount sufficient to render the pigment particles cationic; wherein the adhesive is a cationic or non-ionic adhesive; and wherein the particulate pigment is one which is not capable of being dispersed in water at high solids, and following vigorous mixing, in the sole presence of said cationic polyelectrolyte.

5,384,014
APPARATUS AND METHOD FOR THICKENING PULP AND PAPER STOCK
Terry L. Bliss, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio
Continuation of Ser. No. 278,105, Nov. 30, 1988, abandoned. This application Jan. 29, 1991, Ser. No. 649,231
Int. Cl.[6] B01D *33/04*
U.S. Cl. 162—317 **3 Claims**



1. Apparatus for thickening a suspension of solid particles in liquid, comprising:
(a) means defining a frame,
(b) first, second and third rolls rotatably mounted in spaced relation in said frame on substantially parallel horizontal axes which define a triangle,
(c) an endless wire belt trained around said rolls for travel from said first roll to said second and third rolls in wrapping relation with a limited angular portion of the surface of each thereof and thereby defining a space bounded by said belt wherein all of said rolls are enclosed by said belt and the remaining portion of each said roll not wrapped by said belt is bare and defines a wedge zone with the portion of said belt approaching said roll,
(d) each of said first and second rolls having a discontinuous surface providing spaces enclosed by the portions of said

belt wrapping said rolls, said discontinuous surface comprising multiple circumferential grooves separated by circumferential land portions to provide space in said grooves for receiving said suspension while said grooves are enclosed by said land portions and by said wire, wherein the surface of said first roll comprises helical grooves which spiral in opposite directions from the center of said roll,

(e) headbox means positioned to direct a flow of said suspension into said wedge zone at a first of said rolls whereby said suspension is initially confined in said grooves in said first roll surface by the portion of said belt wrapping said first roll,

(f) means for driving at all of said rolls and said wire at a speed sufficiently high to effect the development of centrifugal force causing liquid in said confined suspension to be expressed outwardly through said belt and thereby causing said particles in said confined suspension to be retained and to form a discontinuous layer of pulp alternating with open areas on the inner surface of said belt as said belt separates from said first roll for travel to said second roll,

(g) additional headbox means positioned to direct an additional flow of said suspension into said wedge zone at said second roll whereby additional solid particles form pulp deposits in said open areas on the inner surface of said belt in consolidated relation with said discontinuous pulp layer thereon as said belt separates form said second roll for travel to said third roll,

(h) means associated with said third roll for causing said consolidated pulp to transfer from said belt to said bare portion of the surface of said third roll, and

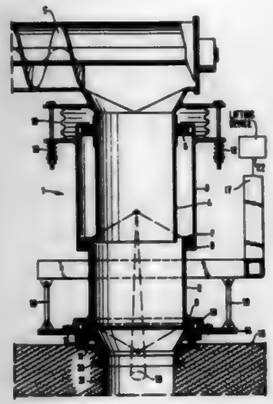
(i) means mounted in said space for collecting said transferred pulp from said third roll and removing said collected pulp from said space.

5,384,015

ARRANGEMENT FOR FILLING COAL IN OVEN CHAMBERS OF A COKE OVEN BATTERY

Horst Schröter, Viersen, and Horst Andreas, Düsseldorf, both of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Essen, Germany

Filed Aug. 12, 1993, Ser. No. 105,713
Claims priority, application Germany, Aug. 25, 1992, 4228191
Int. Cl.[6] C10B *31/04, 31/02*
U.S. Cl. 202—251 **8 Claims**



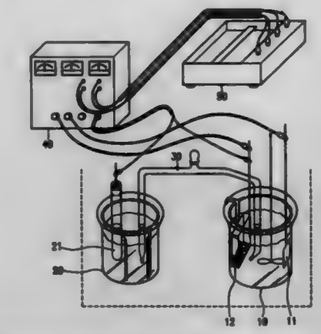
1. An arrangement for filling coal in oven chambers of a coke oven battery comprising a telescopable filling tube mountable on a filling car and having a lower end which is lowerable to a filling hole frame of a filling hole of a coke oven battery, said filling tube including a lower tubular piece and an upper tubular piece each having an upper end and a lower end; an upper sealing ring arranged on an outer side of said upper end of said lower tubular piece and a lower sealing ring arranged on an outer side of said lower end of said lower tubular piece, each of said sealing rings having the shape of a portion of a sphere and being provided with a circular segment-shaped outer surface arranged so that said circular segment-shaped outer surface of said lower sealing ring is directed upwardly and said circular segment-shaped outer surface of said upper sealing ring is directed downwardly; an additional sealing ring arranged on an inner side of said lower end of said upper tubular piece and having an outer surface which is inclined upwardly; a contact ring loosely located on said lower sealing ring and having an inner diameter and a shape corresponding to an outer diameter and a shape of said lower sealing ring; a filling hole frame sealing ring having an inner diameter corresponding to an inner diameter of said lower tubular piece and a shape formed so that it extends in a funnel-shaped manner into the filling hole opening and has a sealing surface with a spherical cross-section, said filling hole frame-sealing ring being fixedly connected with said contact ring; elastic sealing rings arranged between said filling hole frame-sealing ring and the filling hole frame; and a lifting device actuating said filling hole frame-sealing ring so as to vertically lift and lower the latter.

5,384,016

PROCESS FOR RECOVERING TUNGSTEN CARBIDE FROM CEMENTED TUNGSTEN CARBIDE SCRAPS BY SELECTIVE ELECTROLYSIS

Jing-Chie Lin; Jaian-Yuan Lin, and Sheng-Long Lee, all of Chung-Li, Taiwan, Prov. of China, assignors to National Science Council, Taipei, Taiwan, Prov. of China

Filed Nov. 10, 1993, Ser. No. 150,376
Int. Cl.[6] C25F *1/00*
U.S. Cl. 204—64 R **9 Claims**



1. A process for recovering tungsten carbide from cemented tungsten carbide scrap having a cementing agent, comprising the steps of:

(a) immersing the cemented tungsten carbide scrap in an electrolyte having an anode and a cathode therein, the electrolyte being an acidic solution and including a chelating agent, and the cemented tungsten carbide scrap being connected to the anode;

(b) applying a constant potential between the anode and the cathode to electrochemically and selectively dissolve at least a portion of the cementing agent without significant dissolution of the tungsten carbide and;

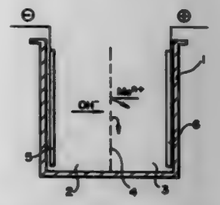
(c) recovering the tungsten carbide from the electrolyte.

5,384,017

METHOD OF PRODUCING METAL HYDROXIDES

Roger Lambrozo, Paris, France, assignor to Serapec S.A., Fontenay-Sous-Bois, France

Filed Mar. 5, 1993, Ser. No. 26,745
Claims priority, application France, Mar. 5, 1992, 92 02873
Int. Cl.[6] C25B *1/00*
U.S. Cl. 204—56 **14 Claims**



1. A method for producing metal hydroxides, in an easy-to-separate powder form, from the metal in solution, comprising:

adding an acidic metal solution to a container, the container including an anode compartment, a cathode compartment, and a solid anionic membrane separating the anode compartment and the cathode compartment; and

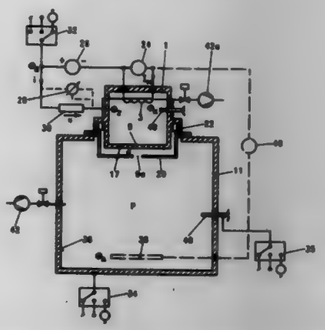
passing an electric current through the metal solution to precipitate a hydroxide in a powder form against the solid ion-exchange membrane, the metal hydroxide produced comprising double hydroxides of nickel and cadmium or triple hydroxides of nickel, cadmium and cobalt.

5,384,018

PROCESS AND APPARATUS FOR GENERATING AND IGNITING A LOW-VOLTAGE

Jürgen Ramm, Flüsch, Switzerland; Eugen Beck, Fürstentum, Liechtenstein; Hugo Frei, Werdenberg, Switzerland; Albert Zaeger, Fürstentum, Liechtenstein, and Günter Peter, Ploes, Switzerland, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed May 11, 1993, Ser. No. 60,365
Claims priority, application Switzerland, May 26, 1992, 1696/92
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.38 **38 Claims**



19. A process for igniting and operating a low-voltage discharge in a cathode chamber (1) wherein at least one thermionic cathode (3) is provided in the cathode chamber, the process comprising:

connecting at least parts of an inner wall of the cathode chamber to a fixed potential (ϕ_B) via a current limitation element (30), between which and a potential (ϕ_K) connected to the cathode (3), is obtained the ignition voltage.

5,384,019

MEMBRANE REINFORCED WITH MODIFIED LENO WEAVE FABRIC

James T. Keating, Wilmington, Del.; Everett I. Beacom, Fayetteville, N.C., and James M. Batman, Andrews, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1993, Ser. No. 144,861
Int. Cl.[6] C25B *13/08, 13/02*
U.S. Cl. 204—252 **14 Claims**



1. A membrane comprising at least one highly fluorinated ion exchange resin reinforced with a leno weave yarn system comprising (a) in the warp (i) resistant yarns made from at least one polymer resistant at temperatures of intended use to chemicals to which the membrane is to be exposed during said use, and (ii) sacrificial yarns; and (b) in the weft, resistant yarns made from at least one polymer resistant at temperatures of intended use to chemicals to which the membrane is to be exposed during said use and no sacrificial yarns.

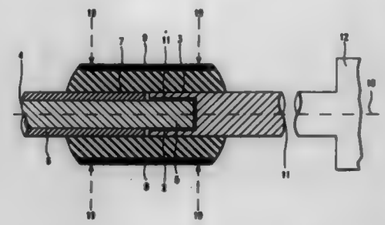
14. An improved electrolytic cell which comprises an anode, an anode compartment, a cathode, a cathode compartment and an ion exchange membrane which separates said compartments, the improvement comprising use of the membrane of claim 1.

5,384,020

ANODE STRUCTURE FOR CATHODIC PROTECTION AGAINST CORROSION, AND METHOD FOR MAKING THE ANODE STRUCTURE

Günter Oppermann, Eriesee; Rüdiger Weinhardt, Rodenbach, and Stefan Kotowski, Seligenstadt, all of Germany, assignors to Heraeus Elektrochemie GmbH, Hanau, Germany

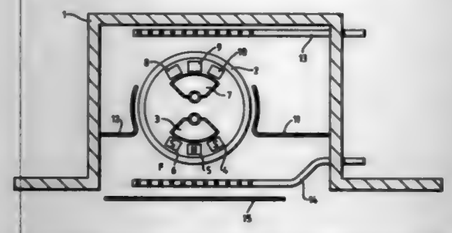
Filed Jun. 2, 1993, Ser. No. 71,300
Claims priority, application Germany, Jul. 27, 1992, 4224539
Int. Cl.[6] C23F *13/10*
U.S. Cl. 204—280 **6 Claims**



1. Anode structure for cathodic protection against corrosion, comprising: an anode, a connecting cable attached thereto having an insulation-stripped end and electrically insulating jacket, a terminal body means comprising at least one plastically deformable compression collar for causing a pressure in a radial direction needed for sealing, and a single electrically insulating seal the anode including an anode element in the form of an anode connection having a socket into which the insulation-stripped end of the connecting cable fits forming an electrical contact, said seal sealing an area of connection between the connecting cable and the anode element, said seal being in contact with the jacket of the connecting cable, said

seal being surrounded at least partially by the terminal body, the anode including said anode element comprising a valve-metal current feed pin having an end with said socket formed therein, and the insulation-stripped end of the connecting cable reaching into said socket, said seal comprising an annular body of an elastic, electrically insulating material for jacketing sleeve-like an end of said jacket and said end of the current feed pin.

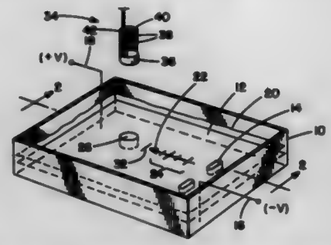
5,384,021
SPUTTERING APPARATUS
Michael J. Thwaites, Basingstoke, England, assignor to The BOC Group plc, Windlesham, England
Continuation of Ser. No. 955,597, Oct. 2, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 104,277
Claims priority, application United Kingdom, Oct. 11, 1991, 9121665
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.21 **10 Claims**



1. Apparatus for sputtering coatings of material onto a substrate from a chamber subject to evacuation during use, which comprises:
a substantially cylindrical target tube having on a surface thereof the material to be sputtered;
means for rotating the target tube about its longitudinal axis;
primary magnetic means for assisting the sputtering process by the provision of a magnetic field in a sputtering zone associated with the target tube;
means for moving the substrate through the chamber and into the sputtering zone;
means for introducing an ionisable gas and a reactive gas into the chamber in the vicinity of the sputtering zone;
wherein supplementary magnetic means are provided to form a supplementary magnetic field remote from the sputtering zone and means are provided to introduce ionisable gas in the vicinity of the supplementary magnetic field.

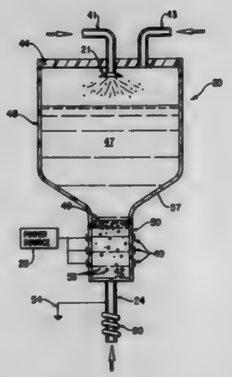
5,384,022
METHOD AND APPARATUS FOR ELECTROPHORETIC DNA BAND ISOLATION
Ayyappan K. Rajasekaran, New York, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Sep. 8, 1993, Ser. No. 118,045
Int. Cl.[6] C25B *9/00*
U.S. Cl. 204—299 R **12 Claims**

1. Electrophoretic apparatus for segregating a molecular species, said apparatus comprising:
a container;
a gel layer and buffer solution resident in said container, said gel layer having a first well for receiving said molecular species;
electrical means for applying a potential to said gel layer to cause migration of said molecular species from said first well and along a migration path in said gel layer;
a second well in said gel layer, said second well positioned in said migration path;
cup means for insertion in said second well, said cup means having a rim which, when said cup means is resident in said second well, is positioned below said migration path of said molecular species in said gel layer; and
membrane means placeable in said second well to prevent migration of said molecular species past said cup means



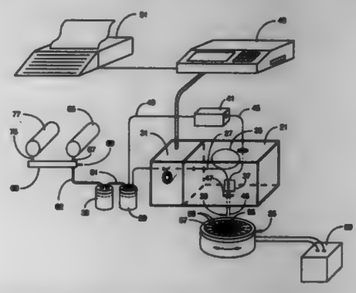
along said migration path, whereby electrophoretic migration causes said molecular species to enter said second well and to be collected within said cup means for later recovery.

5,384,023
SOLVENT EXTRACTION METHOD AND APPARATUS FOR RECOVERING ANALYTES
David L. Stalling; Thomas S. Wood; Kevin P. Kelly, all of Columbia; Leemer G. Cernohlavek, Fulton; Philip D. Lochhaas, Columbia; Loren C. Schrier, Hallsville, and David M. Strumpf, Columbia, all of Mo., assignors to Analytical Bio-Chemistry Laboratories, Inc., Columbia, Mo.
Filed Jun. 7, 1993, Ser. No. 72,021
Int. Cl.[6] B01D *17/06*; B03C *5/00*
U.S. Cl. 204—186 **20 Claims**



1. A method of solvent extraction conducted in an extraction cell, said method comprising the steps of:
(a) introducing droplets of a dispersed phase into a continuous phase disposed in said extraction cell, said droplets having a first surface area, said droplets being caused to flow through said continuous phase;
(b) applying to said introduced droplets within said continuous phase a constant pulsed electric field of sufficiently high intensity to shatter said droplets into many smaller droplets to form an emulsion of said smaller droplets in said continuous phase, said smaller droplets having a combined total surface area greater than the total surface area of said introduced droplets;
(c) coalescing a plurality of said smaller droplets to reform larger droplets; and
(d) separating said reformed droplets from said emulsion to form a separate phase of the dispersed materials;
wherein step (b) includes creating said electric field from outside said extraction cell with a voltage electrode disposed outside said extraction cell so as to be separated from said continuous phase and preclude any direct contact between said electrode and said continuous phase.

5,384,024
CAPILLARY ELECTROPHORESIS
Stephen E. Moring, San Mateo; Michael S. Albin, Mountain View; Reid B. Kowallis, San Carlos; Thomas E. Lee, Sunnyvale; Dennis E. Mead, Campbell; John H. Nickel, San Jose; Mark F. Oldham, Los Gatos; Richard T. Reel, Hayward, all of Calif.; Timothy S. Orpin, Montrose, and Janice C. Woods, Emerald, both of Australia, assignors to Applied Biosystems, Inc, Foster City, Calif.
Filed Mar. 13, 1992, Ser. No. 850,764
Int. Cl.[6] B01D *61/46, 57/02*; G01N *27/26*
U.S. Cl. 204—299 R **26 Claims**



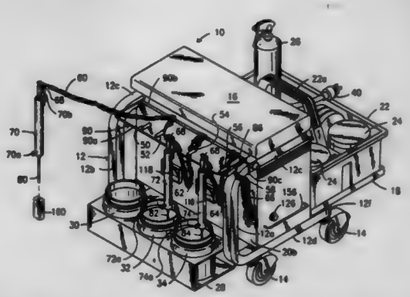
1. A capillary electrophoresis instruments having an external enclosure, comprising:
a carrier within the enclosure configured for carrying a first end of an electrophoresis capillary and a first electrode positioned side-by-side relative to one another;
a carrier drive configured for translating the carrier vertically at a load position for inserting the first end of the capillary and the first electrode into a container for liquid, and for withdrawing therefrom;
an outlet station within the enclosure configured for holding a buffer reservoir and for positioning a second end of the capillary and a second electrode in the second buffer reservoir;
a rotary carousel having a circular array of support positions for liquid containers; and
a delivery apparatus configured for supporting and moving the rotary carousel from without the enclosure to within the enclosure and from within the enclosure to without the enclosure, and for rotating the carousel within the enclosure, presenting the support positions for liquid containers individually at the load position.

5,384,025
NOTCHED SPACER FOR SLAB-GEL ELECTROPHORESIS
Andrew J. Blauband, Redwood City, Calif., assignor to Applied Biosystems, Inc., Foster City, Calif.
Filed Mar. 7, 1994, Ser. No. 206,995
Int. Cl.[6] C25B *9/00*
U.S. Cl. 204—299 R **12 Claims**



1. A side spacer for an electrophoresis apparatus comprising: an inside edge which contacts a gel layer, the inside edge having at least one notch which inscribes a hold area anchoring the side spacers into the gel layer.

5,384,026
METHOD FOR GOLD PLATING A METALLIC SURFACE
Daniel A. McLaughlin, Madeira Beach, Fla., assignor to Gold Effects, Inc., Largo, Fla.
Division of Ser. No. 126,375, Sep. 24, 1993, Pat. No. 5,346,602. This application May 10, 1994, Ser. No. 241,171
Int. Cl.[6] C25D *5/06, 5/02, 5/34*
U.S. Cl. 205—117 **2 Claims**



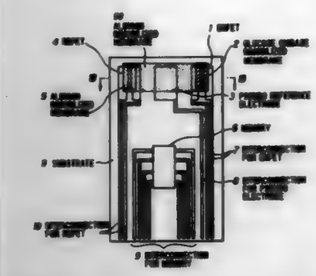
1. A method for gold plating a metallic surface, the steps comprising:
providing a mobile electroplating apparatus having wheels to enable the apparatus to be easily moved by a user to any desired position in relation to a metallic surface to be gold plated, a seat to accommodate a user while electroplating the metallic surface, a DC power source having a plurality of voltage output receptacles, a plurality of chemical solution containers, a workpiece contact member for completing an electric circuit between the metallic surface and the DC power source, and means for sequentially applying chemical solutions in said containers on the metallic surface to be gold plated, said means including a plurality of hand manipulated applicators, each of the applicators connectable by a wire lead to the DC power source through the voltage output receptacles;
securing an electrically conductive member on each of the applicators;
encasing each of the electrically conductive members in a chemical solution absorbent sleeve;

successively and selectively immersing the absorbent sleeves on said electrically conductive members in the chemical solutions;
providing power to the DC power source;
applying the workpiece contact member to the metallic surface to be gold plated; and
applying the chemical solution absorbed on each of the absorbent sleeves on the metallic surface to be gold plated in succession to provide a gold film on said metallic surface.

5,384,027
REFORMING HYDROCARBONS USING TRANSITION METAL CARBIDE CATALYST AND GASEOUS OXYGEN
Fawaz G. Sherif, Stony Point, N.Y., assignor to Akzo Nobel N.V., Arnhem, Netherlands
Filed Nov. 9, 1993, Ser. No. 149,426
Int. Cl.[6] C10G 35/06
U.S. Cl. 208—134 12 Claims

1. A process for reforming a hydrocarbon which comprises treating the hydrocarbon, while at elevated temperature, with hydrogen while in the presence of a transition metal carbide catalyst and an effective amount of gaseous oxygen to improve the selectivity of the catalyst to aromatic formation and reduce the hydrogenolysis activity of the catalyst.

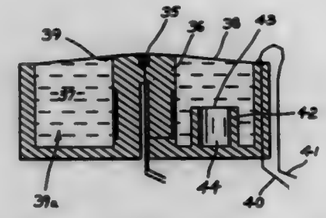
5,384,028
BIOSENSOR WITH A DATA MEMORY
Naruaki Ito, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Aug. 27, 1993, Ser. No. 113,597
Claims priority, application Japan, Aug. 28, 1992, 4-229028
Int. Cl.[6] G01N 27/26
U.S. Cl. 204—403 5 Claims



1. A biosensor with a data memory, comprising:
an enzyme sensor for generating an output dependent on a concentration of an organic substance in a solution, said enzyme sensor being provided on a sensor substrate with an enzyme membrane; and
a memory for storing data and calibrating said enzyme sensor wherein the data stored is a fabrication date, and a sensor effective period and wherein said memory is provided on said sensor substrate.

5,384,029
ELECTROCHEMICAL MEMBRANE SENSOR
Lawrence A. Campbell, 12 Gladstone Av, Hunters Hill, New South Wales 2110, Australia
Filed Oct. 15, 1993, Ser. No. 138,403
Int. Cl.[6] G01N 27/404
U.S. Cl. 204—415 8 Claims

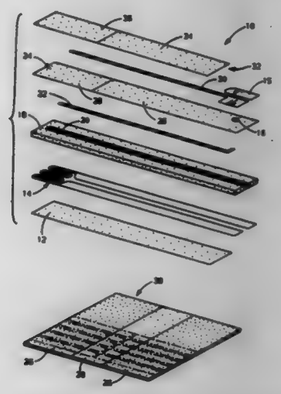
1. An electrochemical membrane sensor adapted to be immersed in a test fluid so as to sense desired chemical species within the test fluid, said sensor comprising:
an open housing that defines a chamber,
a membrane sealing the chamber from said test fluid, said chamber adapted to be filled with an electrolytic medium, said membrane being selectively permeable so as to allow said desired chemical species from the test fluid to permeate into the electrolytic medium,
an anode and a cathode spaced apart within the chamber and each adapted to be electrically connected to a measurement transducer that responds to current between the anode and cathode, said current being proportional to the concentration of said desired chemical species within the test fluid, and
an acoustic transduction element which is adapted to stir the test fluid adjacent the membrane so that the concentration of said desired chemical species permeating into the electrolytic medium is representative of the concentration of the desired chemical species in the test fluid as a whole,



and which is also adapted to clean contaminants from the outer surface of the membrane exposed to the test fluid, said acoustic transduction element including said membrane as a mechanical component thereof, wherein said membrane is a piezoelectric film transducer so that sonic and ultrasonic energy transmitted by the piezoelectric action of said membrane will cause the membrane to be excited to separately produce low frequency vibration modes and high frequency ultrasonic modes according to the energy transmitted and to stir the test fluid adjacent the membrane and clean any contaminants from the outer surface of the membrane and to cause circulation of electrolytic medium within the chamber.

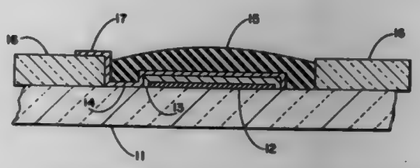
5,384,030
EXHAUST SENSOR INCLUDING A COMPOSITE TILE SENSING ELEMENT AND METHODS OF MAKING THE SAME
Richard W. Duce, Flushing, and David B. Quinn, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 15, 1994, Ser. No. 196,863
Int. Cl.[6] G01N 27/26; B05D 5/12, 3/12
U.S. Cl. 204—426 8 Claims

1. A method of making an exhaust sensor substrate comprising co-depositing first and second compatible compositions, said first composition comprising a dielectric material and said second composition comprising an electrolyte material; co-firing said compositions to form a substrate comprising an electrolyte portion, a dielectric portion and a transition portion



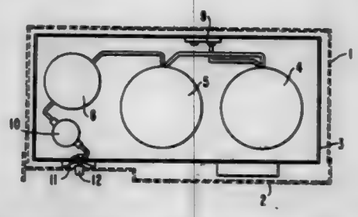
comprising a variant gradient of dielectric and electrolyte material.

5,384,031
REFERENCE ELECTRODE
Carter Anderson, Eagan, and Kee V. Sin, Lino Lakes, both of Minn., assignors to Diametrics Medical, Inc., Roseville, Minn.
Continuation-in-part of Ser. No. 875,308, Apr. 29, 1992, abandoned. This application Nov. 24, 1992, Ser. No. 980,086
Int. Cl.[6] G01N 27/333, 27/401
U.S. Cl. 204—435 22 Claims



1. A reference electrode system which provides both a reference half cell electrical potential and a free diffusion liquid junction between a reference half cell and an analytical half cell comprising:
(a) a dielectric substrate;
(b) a reference half cell layer on said substrate;
(c) an at least partially water soluble hydrophilic wicking material contacting and connecting the reference half cell and the analytical half cell and defining a passage therebetween;
(d) a dielectric, liquid impermeable barrier layer between the hydrophilic wicking material and the analytical half cell thereby essentially isolating the reference half cell except for a minor portion of the wicking material;
(e) an aqueous solution contacting and at least in part dissolving the hydrophilic wicking material creating thereby a substantially hollow, free diffusion channel in said passage by replacing dissolved hydrophilic wicking material with a solution containing dissolved wicking material; and
(f) electrical connection means for connecting the reference half cell to external circuit means.

5,384,032
WATER PURIFYING AND STERILIZING APPARATUS
Dacio M. de Souza, Sao Paulo, Brazil, assignor to Brasfilter Industria E Comercio Ltda., Sao Paulo, Brazil
Filed May 26, 1993, Ser. No. 67,351
Claims priority, application Brazil, May 29, 1992, MU-7200909
Int. Cl.[6] B01D 17/12, 35/06
U.S. Cl. 210—104 12 Claims



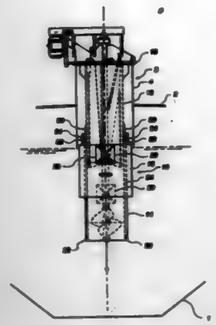
1. A water purifying and sterilizing apparatus, comprising
a block-shaped box having an interior in which water is purified and sterilized,
a cover for closing said box at a front thereof,
a rear water inlet through which water is passed into said box,
a tray mounted in said box,
three cylindrical filtering chambers retaining in said tray, a first and second one of said chambers each comprising a filtering element in an interior thereof for filtering water passing through said first and second chambers, respectively,
an ultraviolet lamp arranged in an interior of a third one of said chambers for sterilizing water passing through said third chamber, said third chamber being sealed by upper and lower covers,
a monitor lamp for indicating operation of said ultraviolet lamp,
a solenoid valve for releasing purified water,
a microswitch for actuating said solenoid valve to release water,
an on/off switch to actuate said apparatus,
a water outlet spout coupled to said solenoid valve for passing water therethrough, and
a flow baffle arranged in a lower portion of said third chamber, said flow baffle comprising a circular part having a substantially low height, said circular part having a diameter substantially equal to the diameter of the interior of said third chamber, said flow baffle having a central, circular orifice having a diameter substantially equal to the diameter of said ultraviolet lamp such that said flow baffle surrounds said ultraviolet lamp, said circular part comprising a plurality of U-shaped sections interconnected by ramps that extend from an upper face of each of said U-shaped sections to a median height of an adjacent one of said U-shaped sections, such that rectangular openings are defined in said flow baffle through which water flows.

5,384,033
FLOATING INLET TUBE
Josef D. Matasovic, Salt Lake City, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.
Filed Mar. 8, 1994, Ser. No. 207,753
Int. Cl.[6] C02F 3/28
U.S. Cl. 210—121 22 Claims

1. A float tube assembly in combinstion with a mixing apparatus in a digester having liquids therein during waste disposal processes, said float tube assembly comprising:
an annular fixed housing having a portion thereof communicating with a portion of said mixing apparatus to allow

said liquids in said digester to flow to said mixing apparatus;

an annular floating housing having a portion thereof installed around the annular fixed housing, the annular floating housing in communication with said liquids in said digester; and



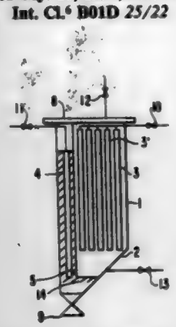
float means connected to the annular floating housing providing buoyant force to allow the annular floating housing to float in said liquids in said digester while allowing said liquids to flow through the annular floating housing into the annular fixed housing to said mixing apparatus.

5,384,034

CANDLE PRECOATED FILTER FOR RESIDUAL VOLUME FILTRATION

Hartmut Hetzel, Cologne, Germany, assignor to DrM, Dr. Muller AG, Mannedorf, Switzerland

PCT No. PCT/CH91/00196, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO93/04762, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 10, 1991, Ser. No. 64,168
Int. Cl.[6] B01D *25/22*
U.S. Cl. 210—137 4 Claims



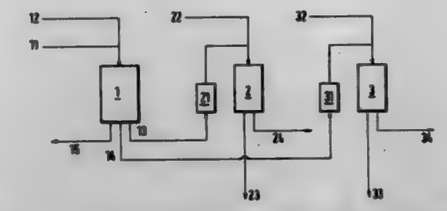
1. A filter for residual volume filtration, comprising a pressure vessel having a cylindrical upper part and a conical base; a plurality of filter elements arranged substantially vertically and including at least one residual filter element and other filter elements formed so that said at least one residual filter element is lengthened toward said base and is longer than said other filter elements; and a separating wall which separates said at least one residual filter element in an upper portion of said pressure vessel from said other filter elements so as to be tight against media and to project out in a lower portion of said pressure vessel beyond a length of said other filter element, said at least one residual filter element having a lower portion projecting downwardly below said other filter elements, said separating wall being provided with at least one opening in the region of said lower portion of said at least one residual filter element and being closeable from an outside.

5,384,035

METHOD FOR PROCESSING INDUSTRIAL DISCHARGES

Heinz-Dieter Smolnik, Brunswick, and Jürgen Thommel, Wolfenbüttel, both of Germany, assignors to Amino GmbH, Frellstedt, Germany

Filed Sep. 17, 1993, Ser. No. 123,295
Claims priority, application Germany, Sep. 17, 1992, 4231149
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 13 Claims



1. A method for the further processing of industrial residue discharges from molasses processing, with a starting material of vinasse or residual molasses, by means of ion-exclusion chromotography comprising at least a first separation pass through a separating column, wherein during said pass, elution of the substances to be separated takes place with dilute or diluted solution of said starting material.

5,384,036

EFFLUENT TREATMENT

John R. Fyson, London, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/01681, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO92/04282, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 5, 1991, Ser. No. 984,417
Claims priority, application United Kingdom, Sep. 7, 1990, 9019606
Int. Cl.[6] C02F *1/62*
U.S. Cl. 210—724 5 Claims

1. A method of treating chemical liquid effluent to render it more environmentally acceptable, wherein said chemical liquid effluent comprises overflow from one or more photographic processors and includes sequestering agents and heavy metal ions, comprising

adding an alkali to said chemical liquid effluent in an amount effective to remove said heavy metal ions;

adding a salt of aluminum to said chemical liquid effluent in an amount of from 10 to 200 g/liter effluent, wherein said salt of aluminum complexes with and precipitates out said sequestering agents.

5,384,037

INTEGRATED PROCESS FOR THE PRODUCTION OF DISTILLATE HYDROCARBON

Tom N. Kalnes, La Grange, Ill., assignor to UOP, Des Plaines, Ill.

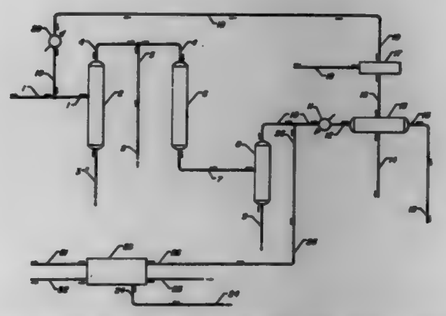
Continuation-in-part of Ser. No. 752,805, Aug. 30, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 83,227
Int. Cl.[6] C10G *49/00, 69/14*
U.S. Cl. 208—85 13 Claims

1. An integrated process for the production of a distillable hydrocarbon stream from a first distillate hydrocarbon stream, a second distillate hydrocarbon stream and a waste lubricant stream which process comprises:

(a) contacting said waste lubricant stream with a first hydrogen-rich gaseous stream in a flash zone at flash conditions thereby increasing the temperature of said waste lubricant stream to produce a hydrocarbonaceous vapor stream comprising hydrogen and a non-distillable component;

(b) admixing said hydrocarbonaceous vapor stream comprising hydrogen and said first distillate hydrocarbon feed stream and contacting the resulting admixture with a hydrogenation catalyst in a hydrogenation reaction zone at hydrogenation conditions;

(c) condensing at least a portion of the resulting effluent from said hydrogenation reaction zone to produce a second hydrogen-rich gaseous stream comprising at least one acid gas and a first distillable hydrocarbon product stream;



(d) contacting said second distillate hydrocarbon stream with a hydrocracking catalyst in a hydrocracking zone at hydrocracking conditions;

(e) recovering a second distillable hydrocarbon product stream and an aqueous ammonia solution from said hydrocracking zone;

(f) admixing said aqueous ammonia solution recovered in step (e) with said second hydrogen-rich gaseous stream comprising at least one acid gas recovered from step (c);

(g) condensing at least a portion of the admixture produced in step (f) to produce a third hydrogen-rich gaseous stream and a third distillable hydrocarbon product stream; and

(h) recycling at least a portion of said third hydrogen-rich gaseous stream from step (g) to step (a).

5,384,038

STABLE, HIGH-YIELD REFORMING CATALYST

Leonid B. Galperin, Chicago, Ill., assignor to UOP, Des Plaines, Ill.

Division of Ser. No. 974,544, Nov. 12, 1992, Pat. No. 5,314,854. This application Feb. 14, 1994, Ser. No. 194,973
Int. Cl.[6] C10G *35/095;* C07C *5/00*
U.S. Cl. 208—138 7 Claims

1. A process for the reforming of a hydrocarbon feedstock comprising contacting a hydrocarbon feedstock at reforming conditions with a bed of catalyst particles to obtain an aromatics-rich effluent stream comprising:

(a) a multigradient noble-metal component consisting essentially of uniformly dispersed platinum and surface-layer palladium;

(b) a nonacidic large-pore molecular sieve; and,

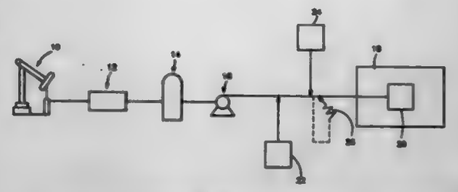
(c) an inorganic-oxide binder.

5,384,039

CRUDE OIL DEHYDRATION AND DESALTING SYSTEM WITH A HIGHER GRAVITY THAN 10 DEGREES API IN MIXING PIPELINES

Aaron Padron, Caracas; Ender Anez, and Raul Possamai, both of Ciudad Ojeda, all of Venezuela, assignors to Maraven, S.A., Caracas, Venezuela

Filed Jul. 31, 1992, Ser. No. 922,727
Int. Cl.[6] C10G *33/04*
U.S. Cl. 208—187 11 Claims



1. A system for dehydrating and desalting a crude-oil-in-water emulsion, comprising:

a flowline carrying the emulsion providing an oil-water emulsion wherein the water content is about less than or equal to 30% by volume;

means for adding demulsifier to the emulsion;

means for adding washing water to the emulsion, whereby a mixture of emulsion, demulsifier and washing water is formed; and

a mixing pipeline means for imparting mixing energy to the mixture, the mixing pipeline having a length (L) and diameter (D) selected, based on fluid characteristics of the emulsion, wherein said length (L) and said diameter (D) of said pipeline are determined according to the following equations:

$$D^7 = \frac{6.3 \times 10^{-4} f \cdot \rho_e \cdot Q_e}{\mu_e \cdot K \cdot F_2}$$

$$L = \frac{t \cdot Q_e}{76.45 \cdot D^2}$$

wherein:

f—is a Fanning Friction factor;

ρ_e—is a density of the emulsion (gm/cc);

Q_e—is a flow rate of the emulsion (bbl/day);

μ_e—is a viscosity of the emulsion (poise);

K—is an instrument constant of a dynamic coalescer;

F—is a rotational speed of the dynamic coalescer (rpm);

t—is a mixing time (hr);

D—is the inside diameter of the mixing pipeline (inches); and

L—is the length of the mixing pipeline (km), so as to coalesce water droplets of the emulsion thereby desalting and substantially breaking the emulsion as the emulsion passes through said mixing pipeline, so as to obtain a water content about less than or equal to 5% by volume.

5,384,040

PROCESS FOR THE ELIMINATION OF MERCURY AND POSSIBLY ARSENIC FROM HYDROCARBONS

Larry Mank, Orgeval; Yves Barthel; Charles Cameron, both of Paris, and Patrick Serrazin, Rueil Malmaison, all of France, assignors to Institute Francais Du Petrole, Rueil-Malmaison, France

Filed Jan. 22, 1993, Ser. No. 7,682
Claims priority, application France, Nov. 24, 1992, 92 14224
Int. Cl.[6] C10G *67/06, 25/00*
U.S. Cl. 208—251 R 14 Claims

1. A process for the elimination of mercury from a liquid hydrocarbon charge, comprising transforming the mercury

contained in the compounds of the charge into elemental mercury, fractionating the effluent resulting from said transformation into at least two separate cuts with different mercury contents, at least one cut having an initial boiling point below 180° C. and having a mercury content above a maximum permissible content, and at least one cut having a boiling point above 180° C. and having a reduced mercury content, and contacting said at least one cut boiling below 180° C. with at least one mercury collecting mass.

5,384,041

COMPOSITION FOR PASSIVATING VANADIUM IN CATALYTIC CRACKING AND PREPARATION THEREOF

Michel Deebe, North Brunswick; John M. Macaoay, Lindes, both of N.J.; Paul R. Suitch, Milledgeville, Ga., and Roland von Ballmoos, Belle Mead, N.J., assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 987,519, Dec. 8, 1992, Pat. No. 5,300,469. This application Mar. 4, 1994, Ser. No. 179,843

Int. Cl.[6] C10G *11/05*

U.S. Cl. 208—253 **2 Claims**

1. A process for catalytically cracking a hydrocarbon feedstock contaminated with vanadium which comprises contacting said feedstock under catalytic cracking conditions with a physical mixture of fluidizable microspheres of zeolitic cracking catalyst and attrition-resistant microspheres comprising particles of free MgO in amount of at least 2% by weight, determined by x-ray, in admixture with particles of fine particle size anhydrous, x-ray amorphous kaolin clay, and a small amount of a magnesium silicate cement, the anhydrous kaolin being the predominating component of said microspheres, said microspheres having a BET surface area below 15 m^2/g, being free from substantial amounts of crystalline magnesium silicate and crystalline magnesium aluminate phases, and having an EAI below 2% by weight before and after steaming at 1480° F. for 4 hours with 100% steam, and a total pore volume in the range of 0.1 to 0.4 cc/g.

5,384,042

PERFUSIVE CHROMATOGRAPHY

Nouhar B. Afeyan, Brookline, Mass.; Fred E. Regnier, West Lafayette, Ind., and Robert C. Dean, Jr., Norwich, Vt., assignors to PerSeptive Biosystems, Inc., Cambridge, Mass.

Division of Ser. No. 988,028, Dec. 9, 1992, Pat. No. 5,228,989, which is a continuation of Ser. No. 669,047, Mar. 14, 1991, abandoned, which is a division of Ser. No. 595,661, Oct. 9, 1990, Pat. No. 5,019,270, which is a continuation of Ser. No. 376,885, Jul. 6, 1989, abandoned. This application May 10, 1993, Ser. No. 14,473

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **22 Claims**



1. A chromatography matrix comprising a plurality of packed particles, the particles defining a pore structure at least bimodal in its distribution that produces a matrix suitable for perfusion chromatography, the particles comprising a rigid solid, having a mean diameter greater than 20 μm, and defining a plurality of throughpores for convective mass transport and a plurality of smaller pores having diameters within the range of 300 Å–700 Å for diffusive mass transport, and comprising solute interactive regions in fluid communication with the throughpores, the ratio of the mean diameter of the particle to the mean diameter of the throughpores being less than 70.

5,384,043

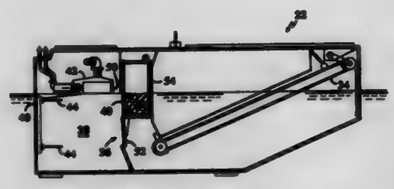
SKIMMER HAVING A RETRACTABLE DYNAMIC INCLINED PLANE

Ralph A. Bianchi, Stoneham, Mass.; Walter P. Sarnacki, Searsport, and Robert L. Watkins, Blue Hill, both of Me., assignors to JBF Scientific Company, Inc., Winchester, Mass.

Filed May 27, 1993, Ser. No. 68,631

Int. Cl.[6] E02B *15/04*

U.S. Cl. 210—242.3 **2 Claims**



1. A skimming vessel for operation in water comprising:

A) a vessel main body for floating upon the water and providing support for all other components of the skimming vessel, said body having forward and aft ends whereby said body is more efficiently propelled in the forward direction than in the rearward direction;

B) a retractable oil-collection module retractably mounted in the main body for raising and lowering between retracted and immersed positions with respect to the surface of the body of water on which the main body floats, the module comprising:

i) collection-well walls forming a collection well having a collection-well entrance that is submerged when the module is in its immersed position, the walls so extending above the water surface when the module is in its immersed position as to prevent floatage from floating out of the well on the water's surface; and

ii) a submersion conveyer, including an endless submersion belt, for driving the submersion belt in an endless path that has an inclined path portion that, when the module is in its immersed position, leads rearward from a relatively forward position above the water surface to a relatively rearward position below the water surface and adjacent the collection-well entrance,

whereby the submersion conveyer draws to the collection-well entrance floatage impelled against it by the vessel's forward motion, and the floatage thus submerged enters the collection well and is retained therein when the vessel moves forward; and

C) a module retractor, mounted on the main body, for raising and lowering the oil-collection module between its immersed position and its retracted position, in which the module is suspended above the surface of the water surface.

5,384,044

FLUID SEPARATION DEVICES AND METHODS OF MAKING SAME

Keith E. Burgess, Kennebunk, Me., assignor to Techniweave, Inc., Rochester, N.H.

Filed Sep. 7, 1993, Ser. No. 116,856

Int. Cl.[6] B01D *27/06*

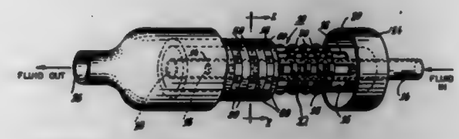
U.S. Cl. 210—346 **66 Claims**

1. For use in apparatus for separating selected substances from a stream of fluid moving relative thereto by which said substances are being borne, a pressure differential barrier member comprising

an array of bridges in which the bridges constituting each adjacent pair of bridges are spaced apart from each other and are joined by an interconnection means, and wherein, with respect to said array,

the orientation of said bridges is along a common axis line, each of which bridges has side edges, each of which side edges occupies a plane that is substantially parallel to said axis line, and each of said bridges spans a bridged space that is open to the flow of fluid therethrough,

each of said interconnection means is continuous with the adjacent pair of bridges between which it is located, and, together with the side edges of those bridges between which it is located, bounds a space that is open to the flow of fluid therethrough,



the bridges and the interconnecting means therebetween are made from material whose physical characteristics include incompressibility sufficient to maintain spaced apart from each other to a predetermined extent bodies of separation material that are positioned on both sides of each of said bridges abutting substantially entirely the side edges said bridges,

and separation material retentively positioned on both sides of each of said bridges abutting the side edges of said bridges and covering substantially entirely the access thereto under the side edges of the spanning portion of said bridge, whereby substantially entirely all fluid which passes through said bridged spaces flows through said separation material.

5,384,045

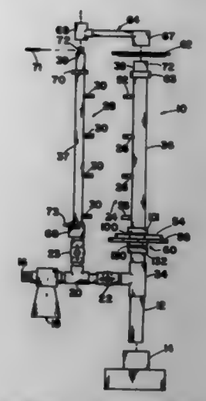
FILTER CLEANER

Jerry Chmielewski, and Doreen M. Chmielewski, both of 7224 N. Hale, Tampa, Fla. 33614

Filed May 16, 1994, Ser. No. 242,952

Int. Cl.[6] B08B *3/02, 9/00*; B01D *29/68, 29/74*

U.S. Cl. 210—354 **12 Claims**



1. Apparatus for washing a cylindrical filter with preasurized water, said filter having an open top end, an open bottom end, an inner surface, and an outer surface, said apparatus comprising,

an inlet connection attached to a supply of said pressurized water,

a horizontal pipe extending between and connected to said inlet connection and to a vertical pipe comprising an inner, water-carrying, tubular member and a coaxial outer, filter-supporting, tubular member,

said vertical pipe having an upper end and a lower end, said inner tubular member capped adjacent said upper end of said vertical pipe, said inner tubular attached adjacent said lower end of said vertical pipe to said horizontal pipe, said vertical pipe attached adjacent said lower end thereof to a single support rod supporting said apparatus,

a platform supporting said bottom end of said filter, said platform rotatably mounted to said outer tubular member of said vertical pipe adjacent said lower end thereof,

a retainer fitting said top end of said filter, said retainer fitting over said upper end of said vertical pipe, and freely rotating thereabout, and

a plurality of nozzles extending outward of said inner and said outer tubular members of said vertical pipe, each said nozzles spraying said water onto said inner surface of said filter, a first and a second spray respectively from a first and a second of said plurality of nozzles rotating said filter in a first rotational direction about said vertical pipe, a third spray from a third nozzle of said plurality of nozzles opposing said rotation.

5,384,046

SCREEN ELEMENT

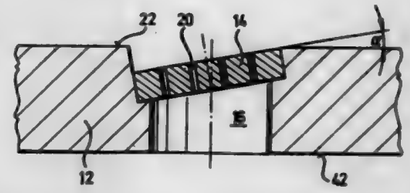
Frank Lotter, and Waldemar R. Knodel, both of Penzing, Germany, assignors to Heinrich Fiedler GmbH & Co KG, Germany

Continuation of Ser. No. 817,062, Jan. 6, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 186,059

Claims priority, application Germany, Jul. 2, 1991, 4121896

Int. Cl.[6] B01D *29/05, 35/28*; B07B *1/46*

U.S. Cl. 210—484 **5 Claims**

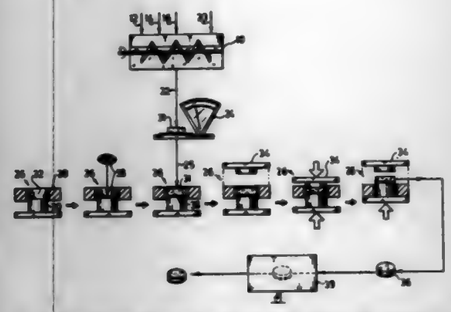


1. A screen element for sorting and classifying a fiber suspension, comprising:

a support screen having an upstream side facing the incoming fiber suspension and a downstream side, said support screen including a plurality of recesses at the upstream side, each recess defining a central axis and being extended downstream by a bore at formation of a shoulder, with said bore defining a central axis; and

a separate screen insert detachably received in each said recess of said support screen and supported by said shoulder, said screen insert including a selective arrangement of classifying openings to suit the screen element in regard to a sorting and classifying of the fiber suspension and to allow replacement of a single screen insert, said screen insert being slanted at an angle relative to said upstream side of said support screen, with said central axis of said recess extending at an angle relative to said central axis of said bore.

5,384,047
FILTER DRYER BODY
Chad A. Schechter, Phelps; Jeffrey J. Yost, and Jon D. Gould, both of Lyons, all of N.Y., assignors to Refractron Technologies Corporation, Newark, N.Y.
Filed Jan. 22, 1993, Ser. No. 7,673
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[6] B01D *69/00*
U.S. Cl. 210—490 18 Claims



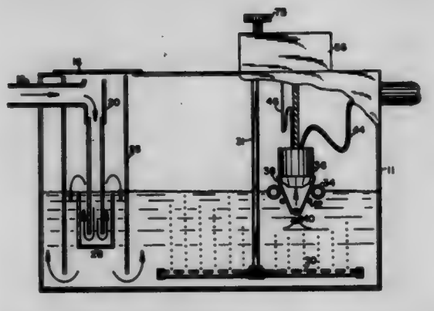
1. A filter body comprised of at least about 75 weight percent of molecular sieve material and from about 9 to about 20 weight percent of polyphenylene sulfide, wherein said filter body has a compressive strength of at least about 500 pounds per square inch, a pressure drop of from about 5 to about 20 inches (water column), a water pickup of at least about 11 weight percent, and an initial 24-hour water pickup of at least about 6 weight percent, and wherein:
(a) said molecular sieve has the formula $M_{2/n}O:Al_2O_3:SiO_2$, wherein:
1. M is a metal ion selected from the group consisting of sodium, potassium, calcium, strontium, barium, cesium, magnesium, and mixtures thereof, and
2. n is the valence of the metal ion and is selected from the group consisting of 1 and 2;
(b) substantially all of the pores of said molecular sieve material are smaller than about 4 angstroms; and
(c) substantially all of the particles of said molecular sieve are larger than 100 microns and smaller than 2,000 microns.

5,384,048
BIOREMEDIATION OF CONTAMINATED GROUNDWATER
Terry C. Hazen, and Carl B. Fliermans, both of Augusta, Ga., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation-in-part of Ser. No. 935,950, Aug. 27, 1992. This application Mar. 8, 1994, Ser. No. 207,506
Int. Cl.[6] C02F *3/30*
U.S. Cl. 210—605 19 Claims



1. A method for enhancing the degradation of contaminants in soil, said contaminants present at a contaminant concentration, said soil containing microbes capable of degrading said contaminants aerobically, said microbes present at a first concentration, said method comprising the steps of:
continuously injecting an oxygenated fluid into said soil to establish a generally aerobic environment in said soil, leaving pockets of anaerobic environments in said soil;
injecting for a first interval of time a nutrient fluid into said soil to feed said microbes and increase said first concentration to a second concentration higher than said first concentration; then
withholding said nutrient fluid so that said microbes are forced to degrade said contaminants; then, when said second concentration has decreased to a third concentration,
resuming injection of said nutrient fluid to increase said third concentration; and
continuing to inject and then withhold said nutrient until said contaminant concentration is below a preselected level.

5,384,049
WASTEWATER TREATMENT PROCESS
D. Thomas Murphy, 584 Mililani Dr., Kihei, Hi. 96753
Division of Ser. No. 753,860, Sep. 3, 1991, Pat. No. 5,186,821, and Ser. No. 850,113, Feb. 19, 1992, Pat. No. 5,234,580. This application Jan. 21, 1993, Ser. No. 6,976
Int. Cl.[6] C02F *3/02, 3/12*
U.S. Cl. 210—629 2 Claims



1. A single basin .cyclic wastewater treatment process comprising the facets of;
a. passing influent into a single basin through at least one inlet;
b. allowing said influent to continuously, be received from said at least one inlet into a manifold adapted for substantially mitigating splash energy created when said influent comes in contact with a common water level inside said manifold by containing said influent inside of said manifold and isolating said influent from the area within a first enclosure;
c. allowing said influent to continuously be received through said manifold such that, said influent will exit below said common water level but above a settled sludge blanket zone;
d. allowing said influent to continuously be received through said manifold such that, influent will exit said manifold below said common water level at a substantially reduced velocity than with which said influent entered said manifold;
e. allowing said influent to continuously be hydraulically displaced from said manifold in a lateral hydraulic flow direction as opposed to a downward or upward hydraulic flow direction-into a first enclosure having walls, an open top, and an open bottom with an edge, said edge forming a skirt, said skirt being suspended above a bottom of a second enclosure to create an open area, and said second enclosure having walls;

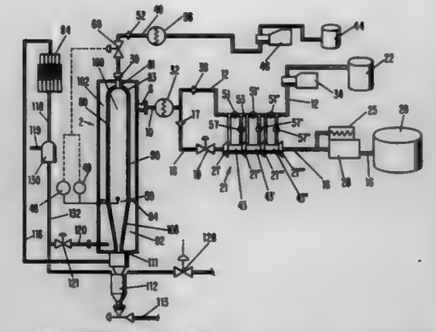
f. allowing said common water level of said manifold and the water level of said first enclosure to communicate and hydraulically equalize within said single basin and flow from said first enclosure underneath said skirt in a lateral hydraulic flow direction into said second enclosure of said single basin, as opposed to a downward or upward hydraulic flow direction;
g. the receiving of said influent being continued during a phase of aerating and mixing said influent;
h. the receiving of said influent being continued while ceasing said aeration and said mixing and initiating
i. a setting phase in which activated sludge in said influent settles said first enclosure and said second enclosure after said aeration, creating an activated sludge blanket in lower zones of said first enclosure and said second enclosure such that, the interface of said settled activated sludge blanket of said first enclosure and said second enclosure is substantially above said open area created between said skirt edge of said first enclosure and said bottom of said second enclosure
j. the receiving of said influent being continued during a decanting phase in which said settled activated sludge blanket serves as a biological contactor to absorb and filter said influent during hydraulic-flow equalization as said influent passes from inside said first enclosure down through said settled activated sludge blanket within said first enclosure laterally through said activated sludge in said open area and into said settled activated sludge blanket within said second enclosure and displacing treated effluent or supernatant from said settled activated sludge blanket into an upper clarified supernatant zone that exists above said settled activated sludge blanket within said second enclosure without causing upset of said settled sludge;
k. repeating said aerating, settling and decanting phases while preventing influent in said first enclosure from being mixed with treated effluent within said second enclosure during said settling and decanting phases.

5,384,050
HYDRAZONES AS OXYGEN SCAVENGERS IN BOILER WATER SYSTEMS
Douglas G. Kelley, and Deborah M. Rogers, both of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.
Filed Nov. 4, 1993, Ser. No. 145,554
Int. Cl.[6] C02F *1/20*
U.S. Cl. 210—750 9 Claims

1. A method for removing dissolved oxygen from boiler water having an alkaline pH which comprises adding to the boiler water an oxygen scavenging amount of at least one dihydrazone compound selected from the group consisting of glyoxaldihydrazone ($H_2N—N=CH—HC=N—NH_2$), pyruvaldehyde dihydrazone ($H_2N—N=CCH_3—CH_3C=N—NH_2$) and biacetyl dihydrazone ($H_2N—N=CCH_3—CH_3C=N—NH_2$).

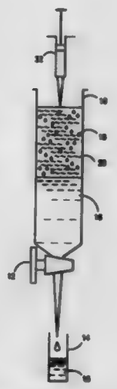
5,384,051
SUPERCRITICAL OXIDATION REACTOR
Thomas G. McGinness, 500 N. Guadalupe St., #G-5, Sante Fe, N. Mex. 87501
Filed Feb. 5, 1993, Ser. No. 14,345
Int. Cl.[6] C02F *1/72*
U.S. Cl. 210—761 42 Claims

1. A supercritical reactor apparatus comprising:
a pressure vessel capable of operating at a temperature and pressure in excess of the supercritical temperature and pressure of water;
a reaction zone enclosed within said pressure vessel;
a source of at least one fuel;
means for introducing said fuel into said reaction zone;
a supply of at least one reactant;
means for compressing said reactant to said supercritical pressure;
means for heating said reactant to about said supercritical temperature;
means for injecting the heated and compressed reactant into said pressure vessel;
a permeable liner comprising material capable of being permeable to said reactant at a temperature and pressure in



excess of the supercritical temperature and pressure of water, said liner disposed between said means for injecting and said reaction zone, and through which said liner said heated reactant is dispersed into said reaction zone thereby inducing a reaction it said supercritical temperature and pressure in said reaction zone with said fuel; and
an exhaust, through which by-products of the reaction exit from said reaction zone.

5,384,052
PREPARATIVE TECHNIQUE TO CONCENTRATE OR ISOLATE SURFACTANT FROM OIL/WATER EMULSIONS
H. M. Princen, Flemington, and Peter O. Staffeld, Mount Laurel, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Mar. 24, 1993, Ser. No. 36,296
Int. Cl.[6] B01D *21/26*
U.S. Cl. 210—787 7 Claims



1. A preparative method to concentrate or isolate at least one surfactant from an oil/water emulsion or a sludge comprising:
a) centrifuging a sludge or emulsion sample so as to obtain separate oil, water, and solids phases;

b) separating the solids and water phases from the oil phase which oil phase contains a surfactant or surfactants;
c) directing water droplets into the oil phase which droplets fall through the oil phase causing said surfactant to adhere to the droplets thereby forming a surfactant-poor oil phase and the droplets to form a high-internal-phase-ratio (HIPR) water-in-oil emulsion at the bottom which emulsion is enriched in surfactants;
d) separating the HIPR emulsion of step c) from the surfactant-poor oil phase;
e) centrifuging the HIPR emulsion from step d) into a water phase and a surfactant-rich oil phase; and
f) separating the surfactant-rich oil phase from the water phase in step e).

5,384,053

PRODUCTION OF A LUBRICATING OIL ADDITIVE CONCENTRATE

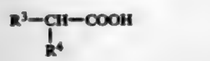
Charles Cane, Hull; John Crawford, Surrey, and Sean P. O'Connor, Hull, all of England, assignors to BP Chemicals (Additives) Limited, London, England

Continuation of Ser. No. 8,392, Jan. 25, 1993, abandoned, which is a continuation of Ser. No. 879,541, May 4, 1992, abandoned, which is a continuation of Ser. No. 363,546, Jun. 8, 1989, abandoned. This application Feb. 25, 1994, Ser. No. 202,665
Claims priority, application United Kingdom, Jun. 4, 1988, 88/14012
Int. Cl.[6] C10M *159/24*
U.S. Cl. 252—18 **6 Claims**

1. A process for the production of a lubricating oil additive concentrate which process comprises reacting at elevated temperature
component (A) a calcium hydrocarbyl-substituted sulphonate,
component (B) a calcium base added either in a single addition or in a plurality of additions during the reaction,
component (C) at least one compound which is (i) a polyhydric alcohol having 2 to 4 carbon atoms, (ii) a di-(C_3 or C_4) glycol, (iii) a tri-(C_2–C_4) glycol, (iv) a mono-or polyalkylene glycol alkyl ether of the formula (I)

$$R(OR^1)_xOR^2 \quad (I)$$

wherein R is a C_1 to C_6 alkyl group, R^1 is an alkylene group, R^2 is hydrogen or a C_1 to C_6 alkyl group and x is an integer from 1 to 6, (v) a C_1 to C_{20} monohydric alcohol, (vi) a ketone having up to 20 carbon atoms, (vii) a carboxylic acid ester having up to 10 carbon atoms, or (viii) an ether having up to 20 carbon atoms,
component (D) a lubricating oil,
component (E) carbon dioxide added subsequent to the, or each, addition of component (B),
component (F) sufficient to provide from 10 to 35% by weight, based on the weight of the concentrate, of a carboxylic acid or an acid anhydride or ester thereof, said acid having the formula (II) and having a molecular weight of less than 500



(II)

wherein R^3 is a C_{10} to C_{24} alkyl or alkenyl group and R^4 is hydrogen or a C_1 to C_4 alkyl group, and
component (G) at least one compound which is an ammonium alkanoate or a mono-, di-, tri- or tetra-alkyl ammonium formate or alkanoate, so as to obtain a concentrate having a TBN greater than 300 and a viscosity at 100° C. of less than 750 cSt.

5,384,054

PROCESS FOR METAL SALTS OF HYDROCARBYL DITHIOPHOSPHORIC ACID

Abbas Kadkhodayan, Collinsville, Ill., assignor to Ethyl Petroleum Additives, Inc., Richmond, Va.

Filed Jan. 18, 1994, Ser. No. 181,828
Int. Cl.[6] C10M *1/48*
U.S. Cl. 252—32.7 E **9 Claims**

1. A process for preparing an overbased metal salt of hydrocarbyl dithiophosphoric acid comprising:
a) reacting phosphorus sulfide and an alcohol in a first reaction mass in the presence of a catalytic amount of nitrogen containing catalyst thereby forming a hydrocarbyl dithiophosphoric acid;
b) separating the hydrocarbyl dithiophosphoric acid and first reaction mass, one from the other;
c) treating the hydrocarbyl dithiophosphoric acid with an effective amount of phosphorus sulfide at a temperature within the range of from about 5020 to about 200° C.; and
d) neutralizing the treated hydrocarbyl dithiophosphoric acid with an amount of metal oxide; whereby the effective amount of phosphorus sulfide is sufficient to form a basic metal salt of the dithiophosphoric acid having a base metal to phosphorus ratio within the range of from about 1.15:1 to about 1.3:1.

5,384,055

LUBRICANT ADDITIVES

Henry Ashjian, E. Brunswick, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 866,945, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 342,179, Apr. 25, 1989, abandoned. This application Nov. 16, 1992, Ser. No. 977,726
Int. Cl.[6] C10M *133/16, 133/56*
U.S. Cl. 252—51.5 A **11 Claims**

1. A lubricant additive composition comprising the reaction product of an amine with an adduct of an olefinic oligomer and maleic anhydride, the olefinic oligomer having a branch ratio of less than 0.19, a weight average molecular weight of 300 to 45,000, a number average molecular weight of 300 to 18,000 and a molecular weight distribution from 1 to 5 and a pour point below −15° C., which is the product of the oligomerization of a C_6 to C_{20} alpha-olefin feedstock, or mixtures thereof, under oligomerization conditions in contact with a catalyst comprising chromium oxide reduced with carbon monoxide on a porous support.

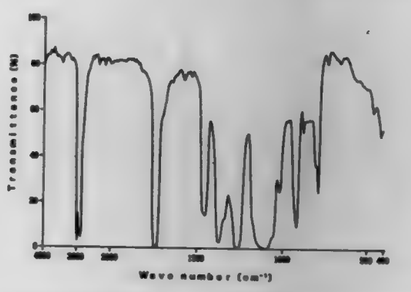
7. In a process for the production of an alkenylsuccinimide derivative of an adduct of maleic anhydride and an olefin oligomer comprising the oligomerization product of a C_6 to C_{20} alpha-olefin feed, by reacting the adduct with an amine, the improvement comprising, the use of an olefinic oligomer produced under oligomerization conditions in contact with a catalyst comprising a reduced valence state chromium oxide catalyst on a porous support produced by the carbon monoxide reduction of chromium oxide on a porous support at a temperature of from 250° to 450° C., the olefinic oligomer having a branch ratio of less than 0.19, a weight average molecular weight of 300 to 45,000, a number average molecular weight of 300 to 18,000 and a molecular weight distribution from 1 to 5 and a pour point below −15° C.

5,384,056

POLYCARBONATE AND USE THEREOF

Masahide Tanaka; Tadaaki Fujimoto, and Kazunori Takahata, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 3,426
Claims priority, application Japan, Jan. 13, 1992, 4-003960
The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.
Int. Cl.[6] C10M *129/02;* C09K *5/00*
U.S. Cl. 252—56 R **4 Claims**



1. A polycarbonate represented by the following general formula [I]:

$$R_1O\text{—}[CH_2CH(OR_1)CH_2O]_x\text{—}R_1 \quad I$$

wherein R_1 is a group represented by the following formula (A) , and x is an integer of 2 to 30;

$$-(ZO)_mCOOR_2 \quad (A)$$

wherein R_2 is each independently a hydrocarbon group having not more than 30 carbon atoms or a hydrocarbon group containing an ether linkage and having 2 to 30 carbon atoms, Z is an alkylene group selected from an ethylene group and a propylene group, and m is an integer of 1 to 24.

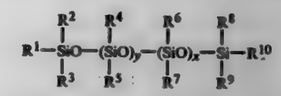
5,384,057

COMPOSITIONS AND PROCESS OF USING IN REFRIGERATION

Lech Wilczek, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1990, Ser. No. 521,300
Int. Cl.[6] C09K *5/04;* C10M *105/76, 105/50*
U.S. Cl. 252—68 **4 Claims**

1. A composition for use in compression refrigeration comprising:
(a) at least one compound selected from the group consisting of 1,1,2,2-tetrafluoroethane, 1,1,1,2-tetrafluoroethane and pentafluoroethane; and
(b) a sufficient amount to provide lubrication of at least one fluorine-containing compound having the formula:



in which R^1 and R^{10} are each selected from a first group consisting of alkyl groups containing 1–20 carbon atoms, aryl groups containing 6–30 carbon atoms, and cycloalkyl groups containing 6–30 carbon atoms, R^5 is a fluorine-substituted alkyl group having the formula

$$-(CH_2)_m\text{—}(CF_2)_n\text{—}F$$

wherein m is an integer from 2 to 6 and n is an integer from 4 to 8; and R^2,R^3,R^4, R^6,R^7,R^8 and R^9 are selected from the group consisting of aikyl groups containing 1–20 carbon atoms, aryl groups containing 6–30 carbon atoms and cycloalkyl groups containing 6–30 carbon atoms; wherein y is a number from 2–14 and x is equal to zero, said lubricant having an SUS viscosity at 100° F. of at least 50 and a pour point of less than about −10° C.

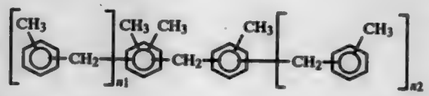
5,384,058

HEAT TRANSFER FLUIDS COMPRISING MONO- AND BIS(METHYLBENZYL)XYLENE

Raymond Commandeur, Vizille, and Jean-Pierre Sarrou, Chatou, both of France, assignors to Elf Atochem S.A., Puteaux, France

Continuation of Ser. No. 840,199, Feb. 24, 1992, abandoned. This application Apr. 20, 1993, Ser. No. 90,441
Claims priority, application France, Feb. 22, 1991, 91 02172
Int. Cl.[6] C09K *5/00*
U.S. Cl. 252—73 **5 Claims**

1. In a heat transfer process employing a heat transfer fluid medium, the improvement which comprises, using as the heat transfer fluid therefor, a composition comprising an admixture of the following compounds (A):



(A)

in which $n_1+n_2=0$ or 1, wherein a fraction of said compounds (A) $n_1+n_2=0$ and further wherein another fraction of said compounds (A) $n_1+n_2=1$.

5,384,059

HEAT TRANSFER FLUID AND PROCESS FOR ITS PREPARATION

Alfons Klein, Duesseldorf; Rudolf Kron, Bornheim; Helmut Fiege, Leverkusen, and Klaus-Christian Paetz, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 984,788, Dec. 3, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 110,343
Claims priority, application Germany, Dec. 13, 1991, 4141191
Int. Cl.[6] C07C *2/66, 13/18*
U.S. Cl. 252—73 **10 Claims**

1. A heat transfer fluid comprising
A. 4 to 30% by weight of 2-cyclohexylbiphenyl,
B. 1 to 15% by weight of 3-cyclohexylbiphenyl,
C. 4 to 30% by weight of 4-cyclohexylbiphenyl and
D. 45 to 65% by weight of dicyclohexylbenzenes, phenylbicyclohexyls and/or tercyclohexyls and optionally higher polycyclic hydrocarbons,
the percentage data in each case relating to the sum of the components A to D.

5,384,060

SOLID LAUNDRY PRE-SPOTTER COMPOSITION CONTAINING ENCAPSULATED SODIUM BICARBONATE AND METHOD OF USE

John C. Mandy, Woodbridge, and Michael D. Fatignato, Dayton, both of N.J., assignors to Fluid Packaging Company Inc., Lakewood, N.J.

Continuation-in-part of Ser. No. 912,191, Jul. 13, 1992, Pat. No. 5,288,421. This application Feb. 18, 1994, Ser. No. 198,806
Int. Cl.[6] C11D *3/10, 17/00, 17/08;* D06L *1/16*
U.S. Cl. 252—92 **27 Claims**

1. A soil and stain remover composition in applicator stick form for application to fabric as an aid in cleaning, said composition comprising:
a. from about 10 to about 15% by weight of sodium stearate;

b. from about 8 to about 11% by weight of propylene glycol;
c. from about 3 to about 6% by weight of a polyethylene glycol;
d. from about 10 to about 20% by weight of an alkyl aromatic sulfonic acid surfactant, an alkyl aromatic sulfonate surfactant that has been formed in situ by the reaction of said alkyl aromatic sulfonic with a strong base, or a mixture thereof;
e. from about 2 to about 6% by weight of a strong base capable of reacting in situ with said alkyl aromatic sulfonic acid surfactant to form a semi-solid sulfonate product;
f. from about 20 to about 35% by weight of at least one nonionic surfactant, wherein said nonionic surfactant is different from said alkyl aromatic sulfonic acid surfactant or said alkyl aromatic sulfonate surfactant above;
g. from about 2 to about 10% by weight of an enzyme;
h. from about 20 to about 30% by weight water;
i. an amount of sodium bicarbonate sufficient to reduce the pH of said composition to a range of about 8.2 to about 9.0; and
j. an additional amount of sodium bicarbonate sufficient to enhance the soil and stain removing capabilities of said composition, wherein said sodium bicarbonate is in an encapsulated form, such that said sodium bicarbonate is released under the pressure of application to soiled or stained fabric,

wherein the composition exhibits a drop point greater than about 115° F. and a penetrometer reading of at least about 55 units (5.5 mm), and

wherein the encapsulated sodium bicarbonate directs the soil and stain removing capabilities of the composition to the point of application on the fabric.

5,384,061

STABLE THICKENED AQUEOUS CLEANING COMPOSITION CONTAINING A CHLORINE BLEACH AND PHYTIC ACID

Rodney M. Wise, Cincinnati, Ohio, assignor to The Procter & Gamble Co., Cincinnati, Ohio

Filed Dec. 23, 1993, Ser. No. 172,401
Int. Cl.[6] C09K *15/32*; C11D *7/26, 7/36, 7/54*
U.S. Cl. 252—95 32 Claims

1. An aqueous, thickened liquid or gel cleaning composition having improved physical and chemical stability, said composition comprising, by weight:
(a) a chlorine bleach ingredient providing from about 0.2 to 2.5% available chlorine;
(b) from about 0.1 to 10% of a cross-linked polycarboxylate polymer thickening agent having a molecular weight of from about 500,000 to 5,000,000;
(c) from about 0.05 to 5% of phytic acid; which is substantially free of hypochlorite-reactive species;
(d) from about 0.05 to 5% of a free radical scavenging rheology stabilizing agent;
(e) sufficient alkalinity buffering agent to provide said composition with a pH greater than about 10; and
(f) at least about 15% water.

32. An aqueous, shear-thinning thickened liquid or gel automatic dishwashing detergent composition having improved physical and chemical stability, said composition comprising, by weight:
(a) a chlorine bleach ingredient providing from about 0.5 to 1.5% available chlorine;
(b) from about 0.5% to 2% of a cross-linked polycarboxylate polymer thickening agent having a molecular weight of from about 750,000 to 400,000;
(c) from about 0.2 to 1% of phytic acid that is substantially free of hypochlorite-reactive species;
(d) from about 0.2 to 1% of a free radical scavenging rheology stabilizing agent;
(e) from about 0.1 to 2.5% of detergent surfactant;
(f) from about 15 to 40% of a detergency builder material;
(g) sufficient alkalinity buffering agent to provide said composition with a pH greater than about 11.5; and
(h) at least about 15% water.

5,384,062

PERBORATE PERSULFATE: PROTEASE DENTURE CLEANSER TABLET COMPOSITION

Anthony B. Ecga, Boonton, and Richard G. Moran, Lake Hopatcong, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 1, 1993, Ser. No. 160,378
Int. Cl.[6] A61K *7/30*; C11D *3/39, 3/48, 17/00*
U.S. Cl. 252—99 29 Claims

1. A denture cleansing composition in tablet form derived from a mixture comprising:
(a) a pregranulated compressed mixture of an anhydrous perborate in an amount of from about 5% to about 25% by weight of said composition, a perborate monohydrate, and a lubricant and compression aid, wherein the weight ratio of anhydrous perborate to said perborate monohydrate in said pregranulated mixture is from about 1.3 to about 1:1, the amount of perborate monohydrate in the premixture being reflected by the ratio; and
(b) a monopersulfate compound in an amount of from about 15% to about 27% by weight of said composition; and
(c) non-granulated perborate monohydrate wherein the total amount of granulated and non-granulated perborate monohydrate is in an amount of from about 30% to about 45% by weight of said denture cleansing composition; and
(d) an effective amount of one or more proteolytic enzyme(s) to disrupt the proteinaceous material in plaque; and
(e) an effective amount of a sequestering agent to remove calcium deposits and calculus deposits.

5,384,063

ACIDIC LIQUID DETERGENT COMPOSITIONS FOR BATHROOMS

Ricky Ah-Man Woo, Hamilton, Ohio; Michel J. Carrie, Strombeek-Bever, Belgium; William A. Cilley, Cincinnati, Ohio; Ronald A. Masters, Loveland, Ohio; Daniel W. Michael, Cincinnati, Ohio, and Eddy Vos, Linden, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 19, 1993, Ser. No. 35,122
Int. Cl.[6] C11D *1/88, 1/94, 1/68, 3/33*
U.S. Cl. 252—142 9 Claims

1. An acidic aqueous hard surface detergent composition comprising: (a) a detergent surfactant system which comprises a mixture of amphoteric-non-zwitterionic and nonionic detergent surfactants, wherein said amphoteric-non-zwitterionic detergent surfactant is selected from the group consisting of: (1) glycinate detergent surfactant having the generic formula, as an acid, of:

$$RC(O)—N(R^1)—(CH_2)_n—N(R^1)—CH_2—C(O)—OH$$

wherein RC(O)— is a C_{8-14} hydrophobic fatty acyl moiety which, in combination with the nitrogen atom, forms an amido group, each n is from 1 to 3, and each R^1 is hydrogen or a C_{1-2} alkyl or hydroxy alkyl group: (2) propionates having the formula:

$$C_7C(O)NH(CH_2)_2N(CH_2CH_2OH)CH_2CH_2C(O)O^{(-)}Na^{(+)}$$

(3) cocoyl amido ethyleneamine-N-(hydroxyethyl)-2-hydroxypropyl-1-sulfonate or C_{8-10} fatty acyl amidoethyleneamine-N-(methyl)ethyl sulfonate, or analogs or homologs thereof, as their water-soluble salts, or acids; (4) cocoylamido ethyleneamine-N-(methyl)-acetates or cocoylamido ethyleneamine-N-(hydroxyethyl)-acetates or cocoylamido propyl amine-N-(hydroxyethyl)-acetates, or analogs or homologs thereof, as their water-soluble salts or acids; and (5) mixtures thereof, and wherein said nonionic detergent surfactant contains a C_{7-22} alkyl group and from about 2.5 to about 12 ethylene oxide groups and has an HLB of from about 6 to about 18, the nonionic detergent surfactant being present at a level of from about 0.5% to about 6% and the ratio of nonionic surfactant to amphoteric, non-zwitterionic surfactant being from about 1:4 to about 3:1; (b) optional hydrophobic solvent that provides a primary cleaning function selected from the group consisting of: glycol ethers having the formula $R^1O—(R^2O—)_mH$ wherein each R^1 is an alkyl group which contains from about 4 to about 8 carbon atoms, each R^2 is either ethylene or propylene, and m is a number from 1 to about 3, and the compound has a solubility in water of less than about 20%; diols having from about 6 to about 16 carbon atoms in their molecular structure; benzyl alcohol; n-hexanol; phthalic acid esters of C_{1-4} alcohols; and mixtures thereof, the solvent, when present, being at a level of from about 1% to about 15%; and (c) polycarboxylate detergent builder selected from the group consisting of: dicarboxylic acids having from about 2 to about 14 carbon atoms between the carboxyl groups; citric acid; builders having the generic formula:

$$R^5—[O—CH(COOH)CH(COOH)]_nR^5$$

wherein each R^5 is selected from the group consisting of H and OH and n is a number from about 2 to about 3 on the average; chelating agents having the formula:

$$R—N(CH_2COOM)_2$$

wherein R is selected from the group consisting of: $—CH_2CH_2CH_2OH$; $—CH_2CH(OH)CH_3$; $—CH_2CH(OH)CH_2OH$; $—CH(CH_2OH)_2$; $—CH_3$; $—CH_2CH_2OCH_3$; $—C(O)—CH_3$; $—CH_2—C(O)—NH_2$; $—CH_2CH_2CH_2OCH_3$; $—C(CH_2OH)_3$; and mixtures thereof;

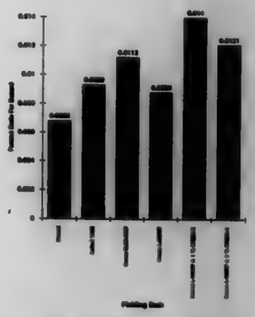
and each M is hydrogen; and mixtures thereof, the polycarboxylate detergent builder being present at a level of from about 2% to about 14%; said composition having a pH of from about 1 to about 5.5, and from about 2 to about 4 when said dicarboxylic acid detergent builder is present.

5,384,064

HYDROCHLORIC ACID PICKLING ACCELERATOR

Joseph C. Peterson, Carmel, Ind., assignor to Crown Technology, Inc., Indianapolis, Ind.

Filed Dec. 14, 1993, Ser. No. 167,576
Int. Cl.[6] C11D *7/08*; C23G *1/02*
U.S. Cl. 252—142 6 Claims



1. A hydrochloric acid pickling accelerator for batch and continuous hydrochloric acid pickling baths for all types of steel, comprising an admixture of from about 10 to about 15 percent by weight glycol, from about 20 to about 30 percent by weight calcium chloride, from about 3 to about 6 percent by weight phosphoric acid, from about 32 to about 57 percent by weight water, and from about 0.5 to about 2 percent by weight of a fluorinated surfactant.

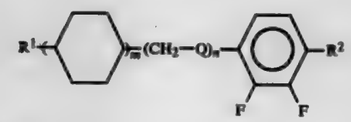
5,384,065

MATRIX LIQUID-CRYSTAL DISPLAY

Thomas Geelhaar, Mainz, Germany; Bernhard Rieger, Kanagawa, Japan; Volker Reiffenrath, Rossdorf; Ekkehard Bartmann, Erzhausen, both of Germany, and David Coates, Dorset, Great Britain, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

Filed Sep. 4, 1991, Ser. No. 754,823
Claims priority, application Germany, Sep. 4, 1990, 4027981
Int. Cl.[6] C09K *19/30, 19/52*; C07C *25/13*; G02F *1/13*
U.S. Cl. 252—299.63 7 Claims

1. An active liquid-crystal display based on the principle of electrically controlled birefringence, having
two plane-parallel outer plates, which, together with a frame, form a cell,
integrated nonlinear elements for switching individual pixels on the outer plates,
a nematic liquid-crystal mixture of negative dielectric anisotropy and high specific resistance which is located in the cell,
electrode layers covered by alignment layers on the insides of the outer plates, and
a tilt angle between the longitudinal axis of the molecules at the surface of the outer plates and the outer plates of from about 85° to 95 °, wherein the nematic liquid-crystal mixture has a birefringence (Δn) between 0.04 and 0. 10 and a dielectric anisotropy of −0.5 to −5.0 and contains at least one compound of formula I



in which
R^1 and R^2 are each independently of one another, an alkyl or alkenyl radical having up to 16 carbon atoms, it being possible for one or two CH_2 groups in these radicals to be replaced by —O— or —S—,
Q is 0 or CH_2,
m is 1 or 2 and
n is 0 or 1.

5,384,066

ELECTROOPTICAL SYSTEM

Elke Poetsch, Mühltal; Raymond Jubb, Darmstadt; Ulrich Finkenzeller, Pfunkstadt; Thomas Jacob, Ober-Ramstadt; Jörg Ohngemach, Reinheim, and Stefan Wilhelm, Heppenheim, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Jan. 27, 1992, Ser. No. 826,967
Claims priority, application Germany, Jan. 25, 1991, 4102215; Feb. 12, 1991, 4104183
Int. Cl.[6] C09K *19/52*; G02F *1/13*
U.S. Cl. 252—299.01 17 Claims

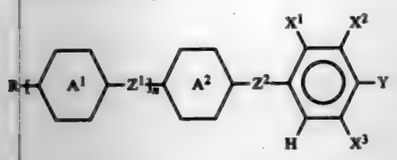
1. An electrooptical system
which comprises between 2 electrode layers, a liquid-crystal mixture and an optically transparent polymeric medium, one of the electrode layers being formed as an active matrix having nonlinear addressing elements integrated into the pixel, while the other electrode layer forms the counterelectrode,
whose liquid-crystal molecules have an irregular alignment in the switched-off state,
in which one of the refractive indices of the liquid-crystal mixture essentially corresponds to the refractive index of

the medium n_m and/or in which the quotient of the mass of the liquid-crystal mixture and the mass of the optically transparent medium is 1.5 or more, and

which has reduced transmission in one of the two switching states compared with the other state, irrespective of the polarization of the incident light,

and wherein

the liquid-crystal mixture comprises not more than 15% by weight of nitrile compounds, and at least one compound of formula I



I

wherein

Z^1 and Z^2, independently of one another, are a single bond, $-CH_2CH_2-$, —COO—, —OCO— or —C≡C—,

A^1— and —A^2—, independently of one another, are trans-1,4-cyclohexylene, 1,4-phenylene, 2-fluoro-1,4-phenylene, 3-fluoro-1,4-phenylene, 2,3-difluoro-1,4-phenylene or 3,5-difluoro-1,4-phenylene, or one of —A^1— and —A^2— is pyrimidine-2,5-diyl, pyridine-2,5-diyl or trans-1,3-dioxane-2,5-diyl,

X^1, X^2 and X^3, independently of one another, are H or F,

Y is —F, —Cl, —OCF_3, —$OCHF_2$ or —CF_3,

n is 0, 1 or 2, and

R is alkyl having up to 12 carbon atoms in which, in addition, one or two non-adjacent CH_2 groups may be replaced by —O— and/or —CH=CH—, and

the polymerization of the optically transparent medium is initiated by a photoinitiator which forms free radicals.

5,384,067

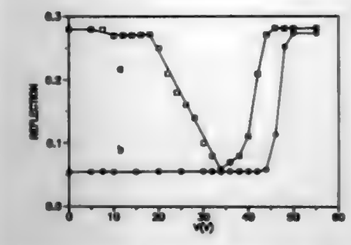
GREY SCALE LIQUID CRYSTAL MATERIAL

J. William Doane, and Deng K. Yang, both of Kent, Ohio, assignors to Kent State University, Kent, Ohio

Continuation-in-part of Ser. No. 694,840, May 2, 1991, abandoned. This application May 18, 1992, Ser. No. 885,154

Int. Cl.[6] C09K *19/52*; G02F *1/13*

U.S. Cl. 252—299.01 2 Claims



1. A light modulating device comprising liquid crystalline light modulating material comprising phase-separated polydomains of polymer network dispersed in liquid crystal, said liquid crystal being a chiral nematic having positive dielectric anisotropy and said polymer being present in an amount less than about 10% by weight based on the combined weight of liquid crystal and polymer, wherein a proportion of said material is in a first optical state and the remainder of said material is in a second optical state, cell wall structure treated to align the liquid crystal molecules by application of a coating upon the cell wall structure, and means for establishing an electrical field through said material, said means being suitable for providing an AC pulse of sufficient voltage and duration to change the proportion of said material in said first optical state, whereby the intensity of light reflected may be selectively adjusted.

5,384,068

SWITCHABLE COLUMNAR LIQUID-CRYSTALLINE SYSTEMS

Harald Bock; Wolfgang Helfrich, and Gerd Heppke, all of Berlin, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 14, 1992, Ser. No. 929,947

Claims priority, application Germany, Aug. 17, 1991, 4127307

Int. Cl.[6] C09K *19/52, 19/32*; G02F *1/13*

U.S. Cl. 252—299.01 24 Claims

1. An electro-optically switchable columnar liquid-crystalline system having a plurality of columns, wherein the columns have ferroelectric transverse polarization.

5,384,069

POLYMERIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE

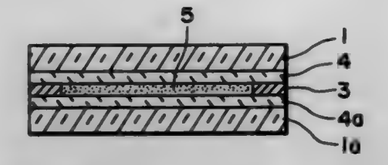
Kazuo Yoshinaga, Machida; Yutaka Kurabayashi, Yokohama; Toshikazu Ohnishi, Atsugi; Yukiko Futami, Sagamihara, and Takeshi Miyazaki, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 613,452, Nov. 14, 1990, abandoned, which is a continuation of Ser. No. 195,084, May 17, 1988, abandoned. This application Sep. 3, 1992, Ser. No. 938,596

Claims priority, application Japan, May 18, 1987, 62-119047; May 21, 1987, 62-122470; May 21, 1987, 62-122471; May 30, 1987, 62-137856; May 30, 1987, 62-137857

Int. Cl.[6] C09K *19/00*; G02F *1/13*

U.S. Cl. 252—299.01 15 Claims



1. A liquid crystal device, comprising:

a chiral smectic liquid crystal layer of a polymeric liquid crystal composition, and

a pair of electrode plates sandwiching the liquid crystal layer for applying a voltage across the liquid crystal layer so as to select an orientation state of the liquid crystal molecules in chiral smectic phase based on the polarity of the voltage;

said polymeric liquid crystal composition comprising:

an optically active polymer mesomorphic compound selected from the group consisting of: (a) side chain-type polymer mesomorphic compounds having 10 or more recurring units and having a mesogen unit in their side chains, and (b) main chain-type polymer mesomorphic compounds having 5 or more recurring units and having a mesogen unit in their main chain; and

a non-polymeric mesomorphic compound having a chiral smectic phase.

5,384,070

USE OF OPTICALLY ACTIVE TETRAHYDROFURAN-2-CARBOXYLIC ACID ESTERS AS DOPANTS IN LIQUID-CRYSTAL MIXTURES, LIQUID-CRYSTAL MIXTURES CONTAINING SAME AND NOVEL OPTICALLY ACTIVE TETRAHYDROFURAN-2-CARBOXYLIC ACID ESTERS

Wolfgang Hemmerling, Sulzbach; Hans-Rolf Dübal, Königstein; Claus Escher, Mühltal; Gerhard Illian, Frankfurt am Main; Yoshio Inoguchi, Tokyo; Ingrid Müller, Hofheim; Mikio Murakami, Königstein; Dieter Ohlendorf, Liederbach, and Rainer Wingen, Hattersheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

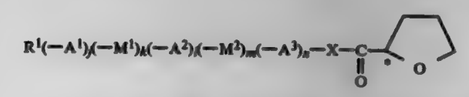
Continuation of Ser. No. 884,306, May 11, 1992, abandoned, which is a continuation of Ser. No. 392,344, Aug. 11, 1989, abandoned. This application May 20, 1993, Ser. No. 65,080

Claims priority, application Germany, Aug. 13, 1988, 3827599

Int. Cl.[6] C09K *19/34*

U.S. Cl. 252—299.61 5 Claims

1. A dopant for ferroelectric liquid-crystal mixtures, which comprises an optically active tetrahydrofuran-2-carboxylic acid ester of the general formula (I)

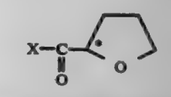


(I)

in which the symbols and indices have the following meaning:

* indicates an optically active carbon atom,

R^1 is



or a straight-chain or branched alkyl radical containing 1 to 16 carbon atoms or a straight-chain or branched alkenyl radical containing 3 to 16 carbon atoms, it being possible for these radicals themselves to contain asymmetric carbon atoms, for one or more non-adjacent —CH_2— groups to be replaced by —O—, —S—, —CO—, —O—CO— and/or —CO—O—, and for one or more hydrogen atoms to be replaced by fluorine, chlorine, bromine or CN,

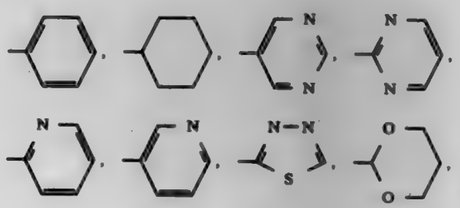
j and l are zero, 1 or 2,

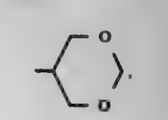
k and m are zero or 1,

n is zero, 1 or 2,

with the following proviso: if j and/or l=zero, k=zero; if n=zero, m=zero; the sum of j+l+n is not less than 1 and not more than 3,

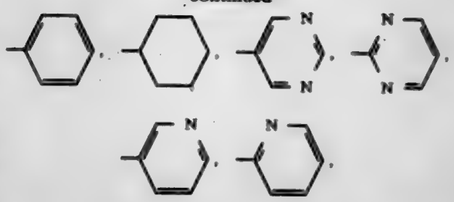
—A^1, —A^2 is





—A^3 is

-continued



—M^1, —M^2 is —CO—O, —O—CO, —CH_2O, —OCH_2 and X is O.

5,384,071

CHIRAL LIQUID CRYSTAL COMPOUNDS

George W. Gray; David Lacey; Kenneth J. Toyne; Richard M. Scrowston; Ibrahim G. Shenouda, all of Hull; Lawrence K. M. Chan, Northolt, all of England; Adam Jackson, Trondheim, Norway; Madeline J. Bradshaw, Nr Newent, England; Victoria Brimmell, Earls Croome, England; Jennifer Constant, Powick, England; Edward P. Raynes, Malvern, England, and Amarjit K. Samra, Bromsgrove, United Kingdom, assignors to Secretary of State for Defence in her Britannic Majesty's Government of the U.K. of Gt. Britian and Northern Ireland, London, England

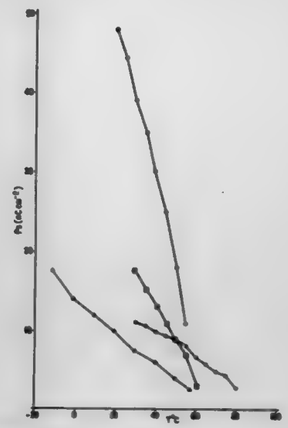
Continuation of Ser. No. 734,105, Jul. 24, 1991, abandoned, which is a continuation of Ser. No. 305,730, Feb. 1, 1989, abandoned. This application Jan. 8, 1993, Ser. No. 3,827

Claims priority, application United Kingdom, Jun. 23, 1986, 8615316

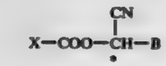
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.[6] C09K *19/30, 19/12*; C07C *255/00*

U.S. Cl. 252—299.63 9 Claims

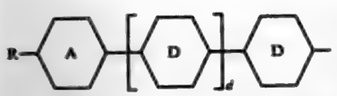


1. An optically active dopant suitable for inclusion in a ferroelectric smectic liquid crystal mixture, said dopant having the structure



Formula I

in which X is a group having the formula:



where R is selected from hydrogen, or C_{1-12} alkyl or alkoxy, each of the rings D is the same or different and are independently selected from phenyl and halogen substituted phenyl, A is selected from phenyl, halogen and substituted phenyl and trans-cyclohexyl, d is 0 to 1, and B is selected from C_{1-12} straight chain or branched chain alkyl and alkyl alicyclic.

5,384,072

METHYLENECYCLOBUTANE DERIVATIVES

Eike Poetsch, Mühltal; Werner Binder, Dieburg, and Thomas Geelhaar, Mainz, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP92/00478, § 371 Date Sep. 15, 1993, § 102(e) Date Sep. 15, 1993, PCT Pub. No. WO92/16483, PCT Pub. Date Oct. 1, 1992

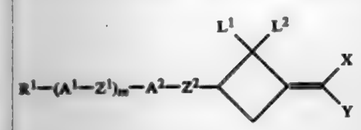
PCT Filed Mar. 4, 1992, Ser. No. 119,071

Claims priority, application Germany, Mar. 16, 1991, 4108713

Int. Cl.[6] C09K *19/30*; C07C *69/74*; G02F *1/13*

U.S. Cl. 252—299.63 **13 Claims**

1. A methylenecyclobutane derivative of formula I



in which

R^1 is halogen, CN, CF_3, $—OCF_3$, $—OCF_2H$, or an alkyl, alkenyl or perfluoroalkyl radical having up to 15 carbon atoms which is unsubstituted or monosubstituted by CN, halogen or CF_3, wherein one or more CH_2 groups in said radical may each, independently of one another, be replaced by —S—,



—O—, —CO—, —CO—O—, —O—CO— or —O—CO—O— in such a way that S and/or O atoms are not linked directly to one another,

A^1 and A^2 are each, independently of one another, a

(a) trans-1,4-cyclohexylene radical in which, in addition, one or more non-adjacent CH_2 groups may be replaced by —O— and/or —S—,

(b) 1,4-phenylene radical in which, in addition, one or two CH groups may be replaced by N,

(c) 1,3-cyclobutylene, 1,3-bicyclo(1,1,1)-pentylene, 1,4-cyclohexenylene, 1,4-bicyclo(2,2,2)-octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl and 1,2,3,4-tetrahydronaphthalene-2,6-diyl radical,

wherein the radicals (a) and (b) may be monosubstituted or polysubstituted by CN or halogen,

L^1 and L^2 are each H, F or Cl,

Z^1 and Z^2 are each, independently of one another $—CH_2CH_2—$, —C≡C—, $—CH_2O—$, $—OCH_2—$, —CO—O—, —O—CO—, —CH=N—, —N=CH—, $—CH_2S—$, $—SCH_2—$, a single bond or an alkylene group having 3 to 6 carbon atoms in which, in addition, one CH_2 group may be replaced by —O—, —CO—O—, —O—CO—, —CH halogen- or —CHCN—,

X and Y are each independently of one another, F, Cl, Br, CF_3, CN, COO-alkyl or alkyl having 1 to 6 carbon atoms, one of the radicals X and Y is alternatively H, and

m is 0, 1, 2 or 3,

with the proviso that, in the case where m=0, A^2 is 1,4-phenylene and Z^2 is a single bond, and X and Y are not simultaneously F.

5,384,073

LIGAND GOLD BONDING

Brian L. Shigekawa, Chapel Hill, and Yung-Ao Hsieh, Cary, both of N.C., assignors to AKZO N.V., Arnhem, Netherlands

Division of Ser. No. 622,462, Dec. 5, 1990, Pat. No. 5,294,369. This application Jan. 21, 1994, Ser. No. 185,103

Int. Cl.[6] B01J *13/00*; G01N *33/553, 33/552*

U.S. Cl. 252—313.1 **6 Claims**

1. A process for coating gold sol microparticles comprising:

a) mixing gold sol microparticles with an alcohol solution of at least one compound selected from the group consisting of alkanethiol, di-thiol and tri-thiol compounds thereby producing coated gold sol microparticles;

b) centrifuging said coated gold sol microparticles; and

c) resuspending the coated gold sol microparticles in buffer.

5,384,074

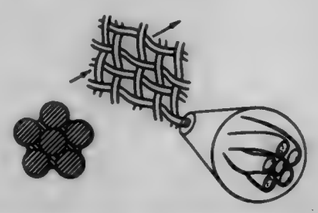
CARBURETOR METERING SYSTEM AND WICK

John R. C. Pedersen, No. 3 Priors Road, Cheltenham, England GL525AB

Division of Ser. No. 404,839, Sep. 8, 1989, Pat. No. 5,207,207. This application Apr. 30, 1993, Ser. No. 56,372

Int. Cl.[6] F02M *17/24*

U.S. Cl. 261—107 **7 Claims**



1. A carburetor metering system for absorbing liquid fuel for vaporization into an air flow, comprising a wick in the form of a cloth of woven strands and means for suspending said cloth in the air flow, said strands comprising at least two fibers arranged with one central fiber and at least one fiber twisted around the central fiber.

5,384,075

ORGANOPOLYSILOXANE COMPOSITION AND PROCESS FOR PRODUCING CURED PRODUCT OF THE SAME

Takehide Okami, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,588

Claims priority, application Japan, Mar. 27, 1992, 4-140876

Int. Cl.[6] B29C *45/00*

U.S. Cl. 252—511 **6 Claims**

1. An organopolysiloxane composition having a volume resistivity of 10^7 Ωcm or below, comprising:

(A) an organopolysiloxane having at least two alkenyl groups in its molecule and a viscosity at 25° C. of from 100 to 200,000 cSt,

(B) an organohydrogenpolysiloxane having at least two silicon-bonded hydrogen atoms in its molecule,

(C) a platinum group metal catalyst,

(D) an organosilicon compound which has at least one silicon-bonded hydrogen atoms in its molecule and in which at least one member selected from the group consisting of epoxy group-containing organic groups and alkoxy groups is attached to a silicon atom, and

(E) an electrically conductive filler.

5,384,076

RESISTIVE FILM-FORMING COMPOSITION AND ELECTRONIC COMPONENTS USING THE SAME

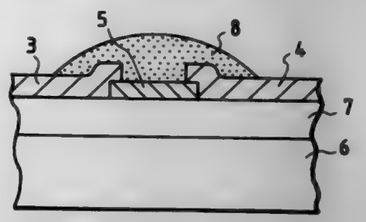
Katsuhiro Sato; Kaoru Torikoshi; Hiroyuki Tanaka; Fumiaki Tambo, and Yutaka Akasaki, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 844,853

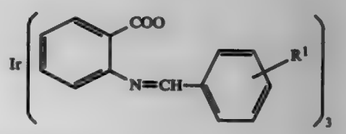
Claims priority, application Japan, Mar. 7, 1991, 3-041679

Int. Cl.[6] H01B *1/00*

U.S. Cl. 252—518 **11 Claims**



1. A resistive film-forming composition to be coated on a substrate and calcined to form a resistive film, which contains an organic iridium compound selected from a compound represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom, an alkyl group, or an alkoxy group, a compound represented by formula (II):

$Ir(R^4COCR^3COR^5)_3$

wherein R^3 represents a hydrogen atom or an alkyl group; and R^4 and R^5 each represent an alkyl group.

5,384,077

PHOTOCHROMIC NAPHTHOPYRAN COMPOUNDS

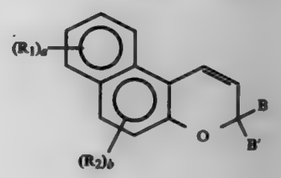
David B. Knowles, Apollo, Pa., assignor to Transitions Optical, Inc., Pinellas Park, Fla.

Filed Jun. 21, 1993, Ser. No. 80,250

Int. Cl.[6] G02B *5/23, 27/00*; C07D *319/18, 311/92*

U.S. Cl. 252—586 **19 Claims**

5. A photochromic article comprising an organic host material and a photochromic amount of a naphthopyran compound represented by the following graphic formula:

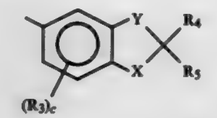


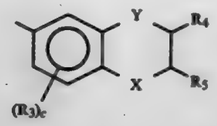
wherein,

(a) R_1 and R_2 are each C_1–C_{10} alkyl, C_5–C_7 cycloalkyl, halogen, R(R')N—, or the group, —O—L, wherein R and R' are each hydrogen or C_1–C_3 alkyl, L is C_1–C_{12} alkyl, phenyl(C_1–C_6)alkyl, C_1–C_6 alkylphenyl, C_1–C_6 alkylcarbonyl, halo(C_1–C_4)alkylcarbonyl, C_1–C_4 monoalkylaminocarbonyl, acetonyl, pyridyl, substituted or unsubstituted arycarbonyl, said aryl group being phenyl or naphthyl, said aryl substituents being C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, C_5–C_7 cycloalkyl, or C_1–C_4 alkyl substituded C_5–C_7 cycloalkyl, said halogen (or halo) groups being chloro, fluoro, or bromo; and a and b are each the integers 0, 1, or 2, provided that the sum of a and b is not mor than 2;

(b) B is the substituted or unsubstituted aryl group, naphthyl or phenyl, said aryl substituents being C_1–C_5 alkyl, halo(C_1–C_5)alkyl, hydroxy, C_1–C_5 alkoxy, C_1–C_4 alkoxy(C_1–C_4)alkyl, halogen, or R(R')N—, wherein R and R' are each hydrogen or C_1–C_3 alkyl, and said halogen (or halo) groups being fluorine, chlorine, or bromine; and

(c) B' is selected from the groups represented by the following graphic formulae:





(I)

wherein X is oxygen and Y is carbon or oxygen; R_4 and R_5 are each hydrogen or C_1–C_5 alkyl; each R_3 is a C_1–C_5 alkyl, C_1–C_5 alkoxy, hydroxy, or halogen, said halogen being chloro, fluoro, or bromo, and c is an integer from 0 to 3.

5,384,078

SOLUBLE HIGHLY REACTIVE FORM OF CALCIUM AND REAGENTS THEREOF

Reuben D. Rieke, Lincoln, Nebr., assignor to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation of Ser. No. 62,135, May 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 738,828, Aug. 1, 1991, Pat. No. 5,211,889. This application Dec. 15, 1993, Ser. No. 167,726

Int. Cl.[6] C07F *3/04*; C07D *305/00, 309/00*; C07C *2/02*

U.S. Cl. 260—665 R **35 Claims**

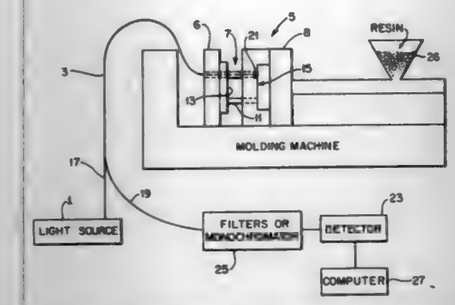
1. A calcium complex comprising the reaction product of a conjugated diene and a soluble calcium species; said soluble calcium species comprising formally zerovalent calcium metal atoms and a polyene solubilizing agent in an ethereal, polyethereal, or hydrocarbon solvent.

5,384,079

METHOD FOR DETECTING THERMODYNAMIC PHASE TRANSITIONS DURING POLYMER INJECTION MOLDING

Anthony J. Bur, Rockville; Francis W. Wang, Gaithersburg, both of Md.; Charles L. Thomas, Philadelphia, and Joseph L. Rose, State College, both of Pa., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jan. 6, 1993, Ser. No. 1,728
Int. Cl.[6] B29C *45/76*
U.S. Cl. 264—21 **11 Claims**



1. A method of detecting thermodynamic phase transitions in a polymer during injection molding comprising the steps of:
selecting a polymer for injection molding;
selecting a fluorescent dye to detect thermodynamic phase transitions in said polymer based on a desired temperature response or a desired molecular size;
mixing said fluorescent dye with said polymer;
injecting said fluorescent dye and said polymer into a mold;
exciting said fluorescent dye with a light source;
adjusting temperature of said polymer to effect a phase transition in said polymer;
detecting changes in fluorescence intensity in said fluorescent dye caused by heat of crystallization or collapse of free volume cell size at various time intervals during said step of adjusting;
developing a fluorescence intensity profile by plotting said changes in fluorescence intensity versus time; and
determining phase transitions in said polymer from changes in slope of said fluorescence intensity profile.

5,384,080

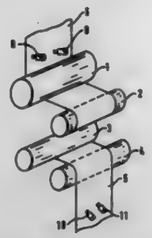
METHOD AND APPARATUS FOR THE REDUCTION OF THE SAG AND/OR OF THE VARYING STRESS PROFILE OF A FLATTENED TUBULAR FILM WEB PRODUCED BY A BLOWN FILM PROCESS

Werner Feistkorn, Saerbeck, and Klaus-Peter Voss, Lengerich, both of Germany, assignors to Windmöller & Hölscher, Lengerich, Germany

Filed Jun. 3, 1991, Ser. No. 709,319
Claims priority, application Germany, Jun. 6, 1990, 4018150; Jul. 31, 1990, 4024326
The portion of the term of this patent subsequent to Dec. 24, 2009, has been disclaimed.
Int. Cl.[6] B29C *47/92*
U.S. Cl. 264—40.6 **11 Claims**

1. A method for the reduction of sag in a flattened web of tubular film produced by a blown film process comprising moving the film lengthwise and during movement of the film measuring the sag transversely across the film, passing the film through a heating zone and a cooling zone and using measurements of the sag for controlling heating and cooling of the film in said zones to reduce the sag.

8. Apparatus for the reduction of sag in a flattened web of tubular film produced by a blown film process comprising at least two rolls over which the film is driven in a lengthwise direction, one of said rolls being heated and the rolls being driveable at different speeds respectively to stretch the film,



and control means for heating said one roll and driving the rolls at different speeds dependent on measurements of the sag to reduce the sag according.

5,384,081

PROCESS FOR PRODUCTION OF SILICON NITRIDE MATERIAL

Gerhard Wötting, Coburg; Martin Knoch, Mitwitz, and Klaus Kramer, Rödenthal, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Sep. 24, 1993, Ser. No. 125,787
Claims priority, application Germany, Oct. 6, 1992, 4233602
Int. Cl.[6] C04B *35/58*
U.S. Cl. 264—65 **12 Claims**

1. A process for the preparation of a dense Si_3N_4 material by normal pressure (1 bar) sintering in nitrogen of mouldings which have been produced from mixtures of Si_3N_4 powder and sintering additives without being embedded in a powder packing and are sintered at temperatures of 1775°±75° C., wherein the sintering additives used are a mixture or a mixed oxide compound of MgO, Al_2O_3 and one or more oxides of the group comprising Y_2O_3 and rare earth oxides in a quantity of ≧7.5% by weight, based on the total powder mixture, further wherein the specific surface area of the total powder mixture is ≧12 m^2/g, the oxygen content of the Si_3N_4 powder in the mixture amounts to ≧1.2% by weight, the carbon content of the mixture is ≦0.5% by weight and the other metallic impurities, excluding the sintering additives, amount to ≦0.2% by weight.

5,384,082

PROCESS OF MAKING SPIN-ORIENTED POLYESTER FILAMENTS

Hans R. E. Frankfort, Kinston, N.C.; Benjamin H. Knox, Wilmington, and Girish A. Pai, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 35,988, Mar. 23, 1993, and Ser. No. 753,529, Sep. 3, 1991, Pat. No. 5,229,060, and Ser. No. 753,769, Sep. 3, 1991, Pat. No. 5,261,472, each is a continuation-in-part of Ser. No. 338,251, Apr. 14, 1989, Pat. No. 5,066,447, which is a continuation-in-part of Ser. No. 53,309, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 824,363, Jan. 30, 1986, abandoned, said Ser. No. 85,266, is a continuation-in-part of Ser. No. 5,672, Jan. 19, 1993, Pat. No. 5,228,553, and a continuation-in-part of Ser. No. 15,733, Feb. 10, 1993, Pat. No. 5,250,245, each is a continuation-in-part of Ser. No. 647,381, Jan. 29, 1991, abandoned, and a continuation-in-part of Ser. No. 860,766, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,371, Jan. 29, 1991, abandoned, said Ser. No. 85,266, is a continuation-in-part of Ser. No. 786,585, Nov. 1, 1991, Pat. No. 5,223,198, and a continuation-in-part of Ser. No. 786,582, Nov. 1, 1991, Pat. No. 5,244,616, and a continuation-in-part of Ser. No. 786,584, Nov. 1, 1991, Pat. No. 5,223,197. This application Jan. 29, 1993, Ser. No. 85,266
Int. Cl.[6] D01D *5/088, 10/02;* D01F *6/62;* D02J *1/22*
U.S. Cl. 264—103 **26 Claims**

1. A process for preparing spin-oriented polyester filaments (B), that are of high boil-off shrinkage (S) and high shrinkage power (P_s), involving first melt-spinning a polyester polymer having a glass transition temperature (T_g) of 40° to 80° C. and a zero-shear polymer melting point ($T_M°$) of 240° to 280° C. at a withdrawal speed in the range of 2 to 6 Km/min, and quenching to a temperature below said temperature (T_g), to form polyester filaments (A) of low shrinkage (S), followed by treating said filaments (A) by rapidly heating to a treatment temperature above said temperature (T_g) and up to [0.775($T_M°$+273)–273], and then immediately and rapidly cooling the filaments to below said temperature (T_g), wherein said heating and cooling are carried out at rates sufficiently rapid to provide filaments (B) characterized by:
i) a residual draw-ratio (RDR) of 1.4 to 1.9, a post yield modulus (M_{py}) of less than 12 g/dd, and high shrinkage (S) such that the value of (1-S/S_m) is between 0.25 and 0.9; where RDR is (1+100/E_B,%), E_B being the elongation-to-break, and S_m is [(6.5-RDR)/6.5]×100%;
ii) a high maximum shrinkage tension (ST_{max}) of 0.1 g/d to 0.5 g/d at a peak shrinkage tension temperature T(ST_{max}) between [0.65($T_M°$+273)–273] and [0.725($T_M°$+273)–273]; and
iii) a shrinkage modulus (M_s) of up to 5 g/d; and high shrinkage power (P_s) of 1.5 to 12 (g/d) %;
and wherein said filaments (A) are characterized by:
iv) a residual draw-ratio (RDR) between 1.4 and 1.9 and low shrinkage (S) such that the value of (1-S/S_m) is at least 0.9; and
v) a maximum shrinkage tension (ST_{max}) less than 0.15 g/d at a peak shrinkage tension temperature T(ST_{max}) less than [0.70($T_M°$+273)–273].

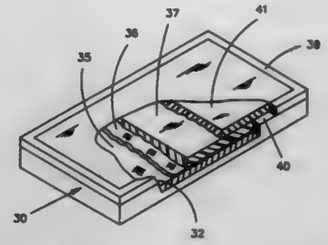
5,384,083

METHOD FOR FORMING A GLOVE ATTACHMENT

Frederic S. Dawn, Houston; Walter W. Guy, Friendswood; Joseph J. Kosmo, Seabrook, all of Tex.; Arthur P. Drennan, Westford, and Richard P. Tschirch, Westwood, both of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Aug. 14, 1992, Ser. No. 929,556
Int. Cl.[6] B29C *39/12, 67/14*
U.S. Cl. 264—130 **6 Claims**

1. A method of constructing a thin, lightweight, flexible, durable composite structure that is functional over a wide range of temperatures in a space environment for attachment to glove areas for enhancing frictional characteristics including the steps of:
constructing a mold with a bottom surface arranged in a frictional pattern,
applying a release agent to the mold for casting;
disposing a first liquid silicone rubber compound which can set at ambient temperatures in the mold to form a first layer of material of selected uniform thickness of approximately 18 to 20 mils;
permitting the first liquid silicone rubber to set to a gel state,
disposing a second liquid silicone rubber compound which can set at ambient temperatures over the first liquid silicone rubber compound and forming the second liquid



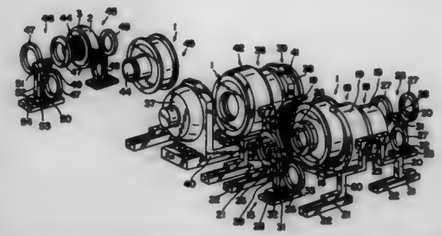
silicone rubber compound to a selected uniform thickness of approximately 18 to 20 mils;
overlaying the second liquid silicone rubber compound with a meta-aramid mesh fabric having a thickness less than the thickness of said second liquid silicone rubber compound;
forcing the fabric into said second liquid silicone rubber compound to extrude said second liquid silicone rubber compound through the fabric mesh;
smoothing off the surface of said second liquid silicone rubber compound whereby the thickness of the first and second silicone rubber layers is between 36 and 40 mils; and
curing said first and second silicone rubber compounds.

5,384,084

ROAD VEHICLE TIRE MANUFACTURING METHOD

Karl J. Siegenthaler, Roma-Ostia, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 81,046
Claims priority, application Italy, Jul. 1, 1992, T092A 000554
Int. Cl.[6] B29B *13/02;* B29C *35/02*
U.S. Cl. 264—237 **6 Claims**



1. A road vehicle tire manufacturing method comprising the steps of successively feeding a toroidal forming mold completely housing a finished green tire having a bead portion and a tread portion through a first preheating station wherein first heating means are connected to the forming mold for preheating only the bead portion and tread portion of the green tire; thus feeding said mold through a second curing station spaced apart from the first preheating station wherein the mold is

connected to a curing unit pending completion of the curing process, and then feeding said mold through a third postinflation station spaced apart from the second curing station wherein the tire is engaged by means for cooling the bead portions of the tire.

5,384,085

METHOD OF MAKING GRAPHITE COMPOSITE SHAFTS

Guy M. Houser, and Robert B. Sandman, Jr., both of Spirit Lake, Iowa, assignors to Berkley, Inc., Spirit Lake, Iowa

Filed Sep. 2, 1993, Ser. No. 116,118
Int. Cl.[6] B28B *7/30*; B29C *33/58*
U.S. Cl. 264—313 **22 Claims**



1. A method of making a graphite composite shaft having a straight shaft portion and at least one bend, which comprises:
(a) providing a mandrel with a flexible portion to form that portion of the shaft having the at least one bend;
(b) covering at least some of the mandrel, including those sections of the flexible portion of the mandrel which are used to form the at least one bend and those portions of the mandrel used to form the straight shaft portion, with graphite composite material;
(c) compressing the graphite composite material applied to both the flexible portion of the mandrel and to those portions of the mandrel used to form the straight shaft portion prior to curing of the graphite composite material on the mandrel, wherein the compressing step comprises compressing the graphite composite material applied to the flexible portion of the mandrel separately from the graphite composite material applied to those portions of the mandrel used to form the straight shaft portion;
(d) bending the flexible portion of the mandrel into a bent configuration for forming the at least one bend in the shaft;
(e) curing the graphite composite material on the mandrel to form a rigid, graphite composite shaft while holding the flexible portion of the mandrel in the bent configuration; and
(f) sliding the mandrel out of the rigid, graphite composite shaft with the flexible portion of the mandrel being sufficiently flexible to pass out through the rigid, graphite composite shaft without fracturing the shaft.

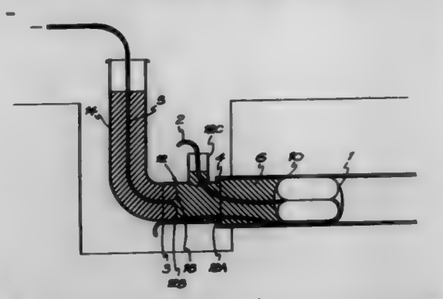
5,384,086

LINING OF PIPELINES OR PASSAGEWAYS

Edward P. Smith, Ravensthorpe, Great Britain, assignor to Insituform (Netherlands) BV, Rotterdam, Netherlands

PCT No. PCT/GB91/00060, § 371 Date Jun. 29, 1992, § 102(e) Date Jun. 29, 1992, PCT Pub. No. WO91/10555, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 16, 1991, Ser. No. 866,165
Claims priority, application United Kingdom, Jan. 18, 1990, 9001137
Int. Cl.[6] B29C *63/36*; F16L *55/165*
U.S. Cl. 264—516 **12 Claims**

1. A method of lining the interior of a horizontal pipeline or passageway by everting into the pipeline or passageway from one end thereof, a lining tube comprising a resin absorbent material impregnated with synthetic resin, said method comprising the steps of
(a) providing a terminating and filling coupling at said one end, said coupling comprising a hollow T-shaped body defining two arms and a leg, and being arranged so that one of said arms is sealingly connected to said one end of the pipeline or passageway and the leg extends upwardly;
(b) positioning a movable backstop within the pipeline or passageway at said one end of said pipeline or passageway;
(c) everting the leading end of the lining tube into the other arm of the coupling so that the resin impregnated everted face lies a spaced distance from and to the opposite side of the leg of the coupling from said backstop;



(d) filling through said leg the space between said everting face and said back stop with a mass of curable fluid synthetic resin; and
(e) thereafter everting said lining tube so that said mass of fluid resin and said backstop move along the pipeline or passageway and said lining tube progressively everts against the interior surface of said pipeline or passageway.

5,384,087

ALUMINUM-SILICON CARBIDE COMPOSITE AND PROCESS FOR MAKING THE SAME

Clive Scorey, Cheshire, Conn., assignor to Ansetek, Specialty Metal Products Division, Wallingford, Conn.

Filed Apr. 6, 1992, Ser. No. 863,787
Int. Cl.[6] B22F *3/18*
U.S. Cl. 419—10 **20 Claims**



1. A process for continuously forming a reinforced aluminum strip material which comprises:
providing an aluminum matrix material in powdered form and a reinforcing material in powdered form;
blending said powdered aluminum matrix material and said powdered reinforcing material in an inert atmosphere;
roll compacting said blended materials in an inert atmosphere to form a green strip having a first thickness; and
directly hot working said blended and roll compacted materials at a temperature no lower than about 150° F. below the solidus temperature of the aluminum matrix material to bond particles of said aluminum matrix material to particles of said reinforcing material and to form a thin strip material having a second thickness less than said first thickness.

5,384,088

OXIDE SUPERCONDUCTIVE MATERIAL OF Tl (THALLIUM) AND PB (LEAD) SYSTEM AND METHOD FOR MANUFACTURING THE SAME

Junichi Sato; Masahiro Seido; Akira Nomoto; Tomoichi Kamo, and Katsuzo Aihara, all of Ibaraki, Japan, assignors to Hitachi Cable, Ltd. and Hitachi Ltd., both of Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 967,612
Claims priority, application Japan, Oct. 25, 1991, 3-279883; Oct. 8, 1992, 4-270207
Int. Cl.[6] B22F *3/16*
U.S. Cl. 505—120 **15 Claims**

1. A method for manufacturing an oxide superconductive material of Tl and Pb system, comprising the steps of:
preparing a powdery precursor having a crystal structure of 1212 phase as a main component, said powdery precursor comprising Tl, Pb, Sr, Ca and Cu; and
processing said powdery precursor mechanically and thermally to provide said oxide superconductive material having a crystal structure of 1223 phase and/or 1234 phase as a main component.

5,384,089

YELLOW KARAT GOLD CASTING ALLOYS

Lawrence H. Diamond, 692 Mildred Ave., Teaneck, N.J. 07666

Filed May 2, 1994, Ser. No. 235,962
Int. Cl.[6] C22C *5/02, 30/00*
U.S. Cl. 420—511 **5 Claims**

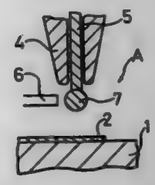
1. A yellow gold 10 karat alloy suitable for investment casting of articles of jewelry consisting essentially, by weight, of approximately:
41.67 parts gold
28.5 parts copper
7.08 parts silver
5.0 parts zinc
1.0 part germanium
and one or more grain refining components selected from the group consisting of:
about 0.04 parts iridium
0.83 parts nickel
2.0 parts cobalt
0.04 parts ruthenium;
said alloy being substantially free of deoxidizing components other than germanium.

5,384,090

FINE WIRE FOR FORMING BUMP ELECTRODES USING A WIRE BONDER

Toshinori Ogashiwa, Tokyo, Japan, assignor to Tanaka Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 139,808, Dec. 30, 1987, abandoned. This application Oct. 30, 1992, Ser. No. 970,232
Claims priority, application Japan, Jan. 30, 1987, 62-021202; May 27, 1987, 62-130595; Jul. 31, 1987, 62-193340
Int. Cl.[6] C22C *13/00, 11/00, 28/00, 30/00*
U.S. Cl. 420—555 **28 Claims**



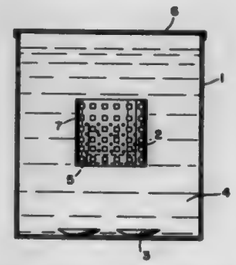
1. A fine alloy wire for forming bump electrodes using a wire bonder, said fine wire comprising a Sn alloy including 0.001 wt % to 50 wt % of at least one additional element selected from the group consisting of Pb, In, Be, B, C, Mg, Al, Si, P, Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, Se, Zr, Nb, Mo, Pd, Ag, Cd, Sb, Te, Ir, Pt, Au, Tl, Bi, and mixtures thereof, and a balance of Sn, and said fine wire is made under a rapid cooling and condensation process having a time of 10^3 to 10^5 ° C./sec.

5,384,091

METHOD AND DEVICE FOR DISINFECTING CONTACT LENSES

Carlo P. Rontome, and Santiag N. Padilla, both of Madrid, Spain, assignors to Dirygesa, S.A., Madrid, Spain

Continuation of Ser. No. 695,317, May 3, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,488
Claims priority, application Spain, May 3, 1990, 9001251
Int. Cl.[6] A61L *2/16*
U.S. Cl. 422—30 **4 Claims**



1. A method for disinfecting a contact lens with a disinfectant and later neutralizing the disinfectant, comprising the steps of:
providing a container containing a hydrogen peroxide disinfectant;
placing a contact lens to be disinfected into the container containing the hydrogen peroxide disinfectant;
providing a receptacle with openings therein, the receptacle being separate from the container;
placing a reducing agent, a pH adjusting agent and an osmotic pressure adjusting agent into the receptacle, the reducing agent being selected from the group consisting of an enzymatic catalyst, and catalase, the pH adjusting agent being selected from the group consisting of boric acid and borax, tartaric acid and sodium bicarbonate, citric acid and sodium carbonate, and citric acid and sodium bicarbonate, and the osmotic pressure adjusting agent being selected from the group consisting of potassium chloride, and sodium edetate; and
placing the receptacle with the reducing agent, the pH adjusting agent and the osmotic pressure adjusting agent into the container, the receptacle serving as a physical barrier between the hydrogen peroxide disinfectant and reducing agent, the number and configuration of the openings preventing a gaseous reduction process product from escaping from the receptacle until the pressure inside the receptacle is greater than the surface tension at the openings, thus delaying the reduction of the hydrogen peroxide disinfectant until the contact lens is disinfected.

5,384,092

TREATMENT OF INFECTIOUS WASTES

James W. Sawhill, 20803 Bryant St., Canoga Park, Calif. 01306; Leon D. Freeman, 49 Alta Way, Corte Madera, Calif. 94925, and Carl McKinney, 1357 W. Meseto, Mesa, Ariz. 85202

Filed Apr. 19, 1993, Ser. No. 47,276
Int. Cl.[6] A61L *2/18*; B02C *23/26*
U.S. Cl. 422—32 **13 Claims**

1. The treatment of infectious hospital waste which comprises the steps of:
a. providing infectious hospital waste which
contains up to 35 weight percent plastics including chlori-

nated polymers, proteinaceous matter comprising bone, blood and tissue and spore-forming pathogenic microorganisms which comprises:

b. mixing said infectious hospital waste with from 5 to 10 volumes of aqueous sodium hydroxide having a concentration from 0.5 to about 5.0 weight percent per volume of waste, sufficient to raise the pH of the mixture to a value of from 11.5–13, heating and maintaining the resultant liquid mixture at a temperature from about 165° F. to 190° F. for a period from about 1–3 hours to obtain a resultant liquid mixture; and

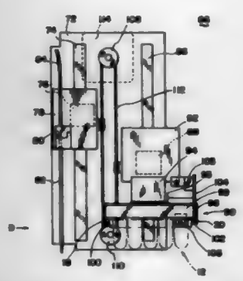
c. neutralizing the resultant liquid mixture with a mineral acid to reduce the pH of the liquid mixture to a value from about 7.5 to 9.5, adjusting the temperature of the liquid mixture to 120° to 170° F., adding to the liquid mixture a proteinase enzyme, and maintaining the liquid mixture at the aforesaid temperature for a period from about 30 to about 120 minutes, sufficient to digest the proteinaceous matter in the waste and obtain a sterilized, protein-free, liquid residue substantially free of said pathogenic microorganisms.

5,384,093

APPARATUS FOR ASPIRATING AND DISCHARGING A LIQUID SAMPLE

Toshihiro Ootani, and Takayoshi Izumi, both of Kobe, Japan, assignors to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Mar. 23, 1993, Ser. No. 35,400
Claims priority, application Japan, Apr. 3, 1992, 4-029020[U]
Int. Cl.[6] G01N *33/00*
U.S. Cl. 422—63 **2 Claims**



1. An apparatus for aspirating and discharging a liquid sample, said apparatus comprising:

a pipet for aspirating and discharging a liquid sample,

an arm for holding the pipet, said pipet extending downwardly from said arm,

arm guide means for guiding a movement of said arm in a vertical direction,

a reaction plate holding part for holding a reaction plate formed in one body with a plurality of reaction containers,

reaction plate holding part guide means for guiding a movement of the reaction plate holding part in the vertical direction,

a pair of pulleys,

a belt extending around the pulleys, having said arm attached to one side of said belt and said reaction plate holding part attached on the other side of said belt, and

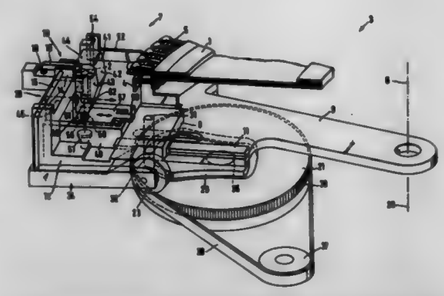
a driving source for rotating said belt vertically.

5,384,094

DIAGNOSTIC PROCESSING STATION

Gottlieb Schacher, Ebikon, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 19, 1993, Ser. No. 49,753
Claims priority, application Switzerland, Apr. 30, 1992, 1390/92
Int. Cl.[6] G01N *37/00*
U.S. Cl. 422—64 **5 Claims**



1. A processing station for making fluorescence polarization measurements on samples in a plurality of cells under examination in an analytical apparatus, the analytical apparatus containing a conveyor for conveying the cells, the processing station being separated from the conveyor, but being apt to mechanically communicate with the conveyor, the processing station comprising:

(a) measuring means for making fluorescence polarization measurements on the sample in the cell at a measuring position; and

(b) an automatically controlled change-over and positioning means for removing an individual cell from an original position on the conveyor, transferring the removed cell to the measuring position in the measuring means, and returning the cell to the original position on the conveyor after the fluorescence polarization measurement is completed, the change-over and positioning means comprising:

(1) a control disc having a first control groove and a second control groove;

(2) a stepping motor for rotating the control disc at predetermined angles;

(3) electronic control means for controlling the operation of the stepping motor;

(4) a rotatable swivel arm, one end of which is mounted on a rotational axis which coincides with a rotational axis of the conveyor, the swivel arm having a first extension arm which via a first guide roller cooperates with the first groove control of the control disc for effecting an angular movement of the swivel arm;

(5) a gripping device mounted on a slide which cooperates with a first guide track on the swivel arm and via a pin and a second guide roller with the second control groove of the control disc for effecting movement of the slide along a second guide track on the swivel arm, the gripping device comprising tongs which are adapted to be opened and closed by a control shaft which via a second extension arm of the swivel arm and a roller cooperates with cams disposed on the control disc; and

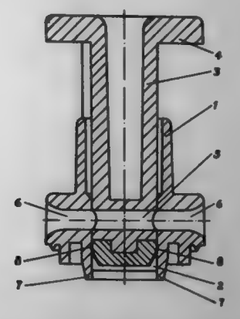
(6) pivotable hood means for screening the cell from outside light during the fluorescence polarization measurement, the pivotable hood means being mounted on the gripping device; the swivel arm further having a third extension arm which via a pin cooperates with the second guide track of the swivel arm for pivoting the pivotable hood means.

5,384,095

APPARATUS FOR THE TRANSFER OF A DEFINED SPECIMEN QUANTITY FROM AN OUTER SPACE INTO A TEST CHAMBER

Horst Golz, Wedel; Joachim Griefan, and Jörg P. Maurer, both of Hamburg, all of Germany, assignors to ANDOS Technik für die Medizin GmbH, Hamburg, Germany

Continuation-in-part of Ser. No. 742,310, Aug. 8, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 11,848
Claims priority, application Germany, Aug. 8, 1990, 9011527; Aug. 23, 1990, 9012113
Int. Cl.[6] B01L *3/02*
U.S. Cl. 422—100 **9 Claims**



1. In an apparatus for transferring a defined quantity of a specimen from an outer space to a reagent contained in a test chamber by a transfer slide mechanism that is displaceably disposed in a bore of a housing, said bore serving as a sealing seat, with said slide mechanism being provided with channel means that establishes the specimen quantity and is in the form of a capillary tube, whereby said transfer slide mechanism and said channel means are movable out of a filling position, where said channel means communicates with a receiving opening that in turn communicates with said outer space in order to fill said channel means with said specimen quantity, and into a test position wherein said receiving opening is closed by said transfer slide mechanism and said specimen quantity is introduced into said test chamber in order to empty said channel means, the improvement wherein:

said housing bore has an opening for communicating with said test chamber and said housing including at said housing bore opening a sealing lip that engages said transfer slide mechanism in a sealing and wiping manner when said transfer slide mechanism is moved out of said filling position thereof and into said test position, whereby in said filling position of said transfer slide mechanism, the inside diameter of said sealing lip is less than the outer diameter of said transfer slide mechanism in the vicinity of said channel means thereof and is also less than the inside diameter of said housing bore in the vicinity of said receiving opening of said housing.

5,384,096

MICROCOLLECTION TUBE ASSEMBLY

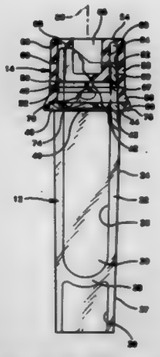
James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 12, 1993, Ser. No. 60,787
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[6] A61B *5/14*; B01L *3/14*; B65D *41/18*; C12M *1/24*
U.S. Cl. 422—102 **9 Claims**

1. A collection assembly comprising:

a cap comprising a longitudinal axis, a top portion, a bottom portion, an annular skirt extending from said top portion to said bottom portion and having an inner surface and an outer surface, an inner inverted skirt portion surrounded by said inner surface of said annular skirt and extending from said top portion toward said bottom portion, an annular space between said inner surface of said annular skirt and said inverted skirt portion, and a cam follower extending from said bottom portion of said annular skirt; and

a container comprising an open top portion, a closed bottom portion, a sidewall extending from said top portion to said



bottom portion and having an inner and an outer surface, an integral collector extending from said top portion, a cap seating flange associated with said outer surface of said sidewall comprising an upper surface edge and an outer surface extending from said upper surface edge and a reservoir positioned within said cap seating flange and at least one lug having a cam surface positioned within said reservoir.

5,384,097

SPECIMEN CONTAINER

Emilio A. Brouwer, 6061 Collins Ave. #17-F, Miami Beach, Fla. 33140

Filed Jul. 23, 1993, Ser. No. 96,349
Int. Cl.[6] B01L *3/00*; B65D *69/00*
U.S. Cl. 422—102 **2 Claims**



1. A kit for collecting specimens, comprising:

A. an elongated, tubular trocar means for collecting a specimen having first and second open ends and including a permeable lateral wall so that only moisture of the specimen collected can pass through;

B. first elongated jacket means for cooperatively receiving said first end;

C. second elongated jacket means for cooperatively receiving said second end and adapted to enclose said elongated trocar means in cooperative combination with said first elongated jacket means;

D. rubber band means for urging said first and second elongated jacket means against each other; and

E. mixer means that is cooperatively received within said elongated trocar means and, upon actuation by user, capable of stirring the specimen collected; and

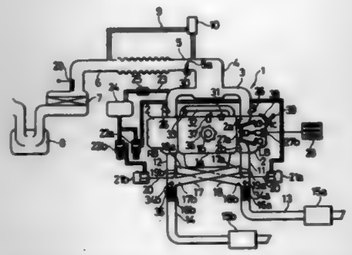
F. blade means removably mounted on said first end for cutting a section of said specimen having a hollow central opening of substantially the same dimension of said first end.

5,384,098

EXHAUST GAS RECIRCULATION SYSTEM FOR AN ENGINE

Koji Morikawa, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 114,061
Claims priority, application Japan, Sep. 24, 1992, 4-254676
Int. Cl.[6] G05D *7/00*; F01N *3/00, 7/08*
U.S. Cl. 422—111 6 Claims



2. An exhaust gas purification system for an internal combustion engine comprising a pair of exhaust pipes connected to an exhaust port provided on a set of engine cylinders for emitting exhaust gas from each cylinder, an oxygen sensor provided in each of said exhaust pipes at a downstream position from said exhaust port for detecting a concentration of oxygen, and a catalyst inserted in each of said exhaust pipes at said downstream position of said oxygen sensor for purifying said exhaust gas;

a pair of bypasses for connecting one of said exhaust pipes and the other of said exhaust pipes in position between said exhaust port and said catalyst;

an inlet of each of said bypasses provided at a position upstream of said oxygen sensor for introducing said exhaust gas to the other of said exhaust pipes;

an outlet of said bypass provided at the position of said oxygen sensor for directly sensing said concentration of oxygen in said exhaust gas from the other of said exhaust pipes; and

a changeover valve provided in each of said exhaust pipes at a junction of each of said exhaust pipes and said inlet of each of said bypasses to changeover the exhaust gas flow between said exhaust pipes through said bypasses.

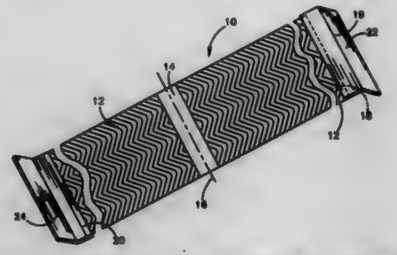
5,384,099

CORE ELEMENT FOR CATALYTIC CONVERTER

David T. Sheller, Garrettsville, Ohio, assignor to Camet Company, Hiram, Ohio

Continuation of Ser. No. 880,082, May 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 838,547, Feb. 19, 1992, abandoned. This application Jul. 8, 1993, Ser. No. 89,055
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] F01N *3/28*
U.S. Cl. 422—174 27 Claims

1. A core element for a core of a catalytic converter comprising (a) a corrugated thin metal strip and (b) oppositely directed bent metal tabs secured to each end of said strip, each of said tabs being generally rectangular in shape and having opposed shorter edges and opposed longer edges, said longer edges being coextensive in dimension with the width of said corrugated thin metal strip, each of said tabs being secured to said corrugated thin metal strip along one of the longer edges,



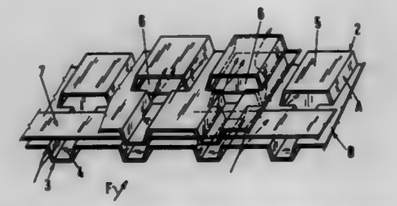
the opposite edge being free, and each of the tabs being bent along one or more lines parallel to the longer edges of the tab.

5,384,100

BAFFLE ASSEMBLY FOR CATALYTIC CONVERTER

Jean-Pierre Freund, Strasburg, France, assignor to Sotralentz S.A., Drulingen, Germany

Filed Sep. 8, 1993, Ser. No. 118,386
Claims priority, application France, Sep. 8, 1992, 92 10831
Int. Cl.[6] B01J *35/04*
U.S. Cl. 422—180 7 Claims



1. A baffle assembly for a catalytic converter through which a fluid flows axially, the assembly comprising:

a stack of generally identical baffle plates each lying in a respective plane, and each formed to one side of the respective plane with a row of axially open-ended bumps having tops and, adjacent to the bump row and and to the other side of the respective plane, with a row of axially open-ended grooves having bottoms and being substantially narrower than the bumps, each bump of a respective plate being axially aligned with a respective groove of the respective plate; and

a plurality of flat spacer strips sandwiched between the tops of the bumps and the bottoms of the grooves of adjacent baffle plates with each row of bumps overlying the row of bumps of the adjacent baffle plate and each row of grooves overlying the row of grooves of the adjacent baffle plate, the bumps and grooves forming substantially parallel axially throughgoing passages for a fluid.

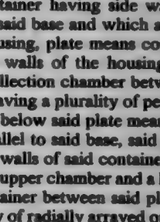
5,384,101

METHOD AND APPARATUS FOR ACHIEVING HIGH REACTION RATES IN SOLID-GAS REACTOR SYSTEMS

Uwe Rockenfeller, Boulder City, Nev., assignor to Rocky Research, Boulder City, Nev.

Division of Ser. No. 320,562, Mar. 8, 1989. This application Jun. 16, 1992, Ser. No. 899,345
Int. Cl.[6] B01J *35/02*
U.S. Cl. 422—211 15 Claims

1. A reaction apparatus comprising one or more reaction chambers containing a solid reactant adapted to form a reaction product by adsorbing and desorbing a gaseous reactant on said solid reactant said solid reaction product having an increased or decreased volume as compared to said solid reactant prior to said adsorption or desorption reaction, each of said one or more reaction chambers having a reaction chamber volume defined by reaction chamber walls and a reactant support surface, and wherein said reaction chamber walls and/or said reactant support surface are moveable and biased and form movable volumetric expansion control means for maintaining contact with said solid reactant and said reaction product



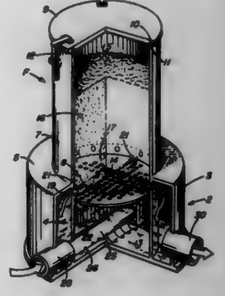
substantially throughout said adsorption and said desorption reactions, whereby said reaction chamber walls and/or said reactant support surfaces provide moveable volumetric expansion control means for restricting the volumetric expansion and optimizing the density of said reaction product, and whereby said reaction chamber walls and said reactant support surface maintain contact with said of reaction product during said adsorption and desorption reactions.

5,384,102

CHEMICAL FEEDER

Richard H. Ferguson, New Martinsville, W. Va., and Charles R. Wiedrich, Murrysville, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1993, Ser. No. 98,680
Int. Cl.[6] B01D *11/02*; E04H *3/16*; E03B *11/00*; B65D *88/54*
U.S. Cl. 422—264 19 Claims



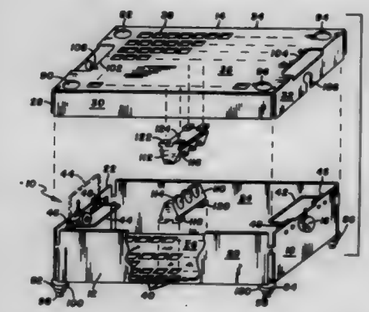
1. Apparatus for delivering a solution of a solid chemical material, comprising a housing having a base and upwardly extending side walls, said base and side walls defining a cavity, an elongated substantially vertical hollow container within said cavity, said container having side walls, the bottom of which are affixed to said base and which are spaced from the side walls of said housing, plate means connecting the upper terminus of the side walls of the housing to the container, thereby defining a collection chamber between said container and housing, a grid having a plurality of perforations mounted within said container below said plate means, but spaced from and substantially parallel to said base, said grid being in close proximity to the side walls of said container, thereby dividing said container into an upper chamber and a lower chamber, the side wall of said container between said plate means and said grid having a plurality of radially arrayed openings that permit liquid communication between said upper chamber and said collection chamber, means to deliver liquid in which said chemical material is soluble to said lower chamber of said container, and means to remove solution of said chemical material from said collection chamber.

5,384,103

INSTRUMENT TRAY

Curtis H. Miller, Burnsville, Minn., assignor to Micromedics, Inc., Eagan, Minn.

Continuation of Ser. No. 853,034, Mar. 17, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 149,030
Int. Cl.[6] A61L *2/06*
U.S. Cl. 422—310 15 Claims



1. A tray for use in sterilizing, storing and handling sets of surgical instruments, the tray being stackable on top of a similar tray when the similar tray is uncovered and when the similar tray is covered by a cover having a plurality of apertures, the tray comprising:

a tray body having a tray floor with an inner surface and an outer surface, and a plurality of tray walls including a pair of opposed tray sides and a pair of opposed tray ends, each of the tray walls is connected to the tray floor and each of the tray sides is connected to each of the adjacent tray ends so as to define a corner therebetween;

at least one surgical instrument support member removably attached to the inner surface of the tray floor; and

a plurality of foot members where each foot member is attached to the outer surface of the tray floor, each foot member having a first segment connected to the outer surface of the tray floor, a second segment connected to the first segment and of smaller size than the first segment, and a third segment connected to the second segment and of smaller size than the first segment;

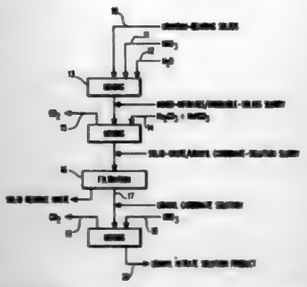
wherein the first and second segments as the tray define a first shoulder which selectively engages an edge of the tray walls at one of the corners of a similar uncovered tray with the second segment of the tray positioned within the tray walls of the similar uncovered tray and the first segment of the tray resting on the edge of the tray walls of the similar uncovered tray, and the second and third segments of the tray define a second shoulder which selectively engages an area on a of a cover similar covered tray adjacent to an aperture in the cover on the similar covered tray with the third segment of the tray positioned within the aperture of the cover on the similar covered tray and the second segment of the tray resting on the adjacent area around the aperture.

5,384,104

URANIUM CARBONATE EXTRACTION PROCESS

Ronald O. Noe, Hopkins, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1992, Ser. No. 976,608
Int. Cl.[6] C22B *60/02*
U.S. Cl. 423—15 **14 Claims**



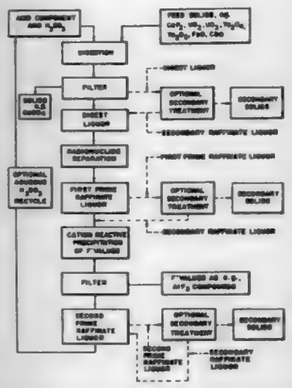
1. A process for extracting uranium from uranium-bearing solids, comprising the steps of:
a. oxidizing, pulverizing, and batch sizing said solids to a size suitable for a filter means;
b. dissolving said solids in an acid bath;
c. neutralizing said acid bath to form a slurry;
d. filtering said slurry through a filter means to form a filter cake;
e. washing said filter cake, thereby producing a uranium-containing filtrate stream;
f. acidifying said uranium-containing filtrate stream: and
g. precipitating uranium from said acidified filtrate stream.

5,384,105

METAL AND FLUORINE VALUES RECOVERY FROM MINERAL ORE TREATMENT

Bryan L. Carlson, Johnson City, Tenn., assignor to Eco Tek, Inc., Erwin, Tenn.

Continuation-in-part of Ser. No. 891,167, May 29, 1992, Pat. No. 5,273,725. This application Nov. 15, 1993, Ser. No. 153,820
Int. Cl.[6] C01G *33/00*
U.S. Cl. 423—65 **5 Claims**



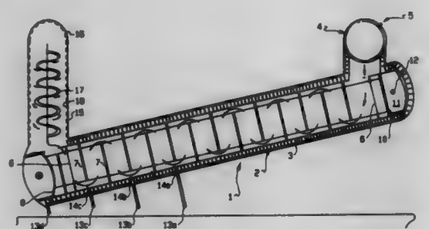
1. The process for recovering Ta and/or Nb values from highly flourinated ore materials comprising;
(a) contacting said materials with an acid component comprising HNO_3 or HCl or mixtures thereof, and H_3BO_3 wherein the H_3BO_3 to acid component molar ratio is from about 1/10 to about 1/1,
(b) maintaining the temperature between about 55 C. and about 85 C.,
(c) reacting said materials with said acid for a sufficient period to substantially solubilize the major portion of said material and to substantially insolubilize all Ta and/or Nb values, and
(d) separating the solids containing the Ta and/or Nb values from solution.

5,384,106

METHOD FOR REMOVING POLLUTANTS FROM A GAS STREAM USING A FRACTIONAL CONDENSING HEAT EXCHANGER

Arthur F. Johnson, Boulder, Colo., assignor to Energy Conservation Partnership Ltd., Boulder, Colo.

Continuation-in-part of Ser. No. 97,783, Jul. 26, 1993, Pat. No. 5,344,617, which is a division of Ser. No. 888,931, May 26, 1992, Pat. No. 5,230,870, and a continuation-in-part of Ser. No. 730,417, Jul. 16, 1991, Pat. No. 5,273,727. This application Apr. 4, 1994, Ser. No. 223,075
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[6] C01B *17/00*
U.S. Cl. 423—235 **10 Claims**



1. A method for removing pollutants of sulfur, nitrogen, and metals from a flue gas containing the same, comprising the steps of:
introducing an ammoniacal substance into the flue gas in an amount sufficient to react with substantially all of the sulfur and nitrogen;
providing a heat exchanger having arrays of tubes arranged at an angle of between about 10 to 60 degrees from the horizontal, and a cooling fluid which passes through the tubes of the heat exchanger;
directing the combined flue gas and ammoniacal substance past the array of tubes along a serpentine pathway relative to the tubes to cool the flue gas and condense the flue gas to form a condensate solution of ammonium sulfate or ammonium sulfite compounds from the flue gas;
collecting and removing the condensate solution from the flue gas at several locations below the tubes along the pathway.

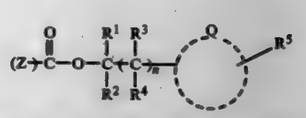
5,384,107

IODINATED AROMATIC COMPOUNDS

Baldev Singh; Edward R. Bacon, both of East Greenbush, N.Y., and Carl R. Illig, Phoenixville, Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Continuation of Ser. No. 990,306, Dec. 14, 1992, abandoned. This application Aug. 3, 1994, Ser. No. 285,595
Int. Cl.[6] A61K *49/04*
U.S. Cl. 424—5 **7 Claims**

1. A compound having the structure



wherein (Z—COO is the residue of diatrizoic acid;
n is an integer from 0 to 6;
R^1 and R^2 are independently H, alkyl, fluoroalkyl, cycloalkyl, aryl, aralkyl, alkoxy or aryloxy;
R^3 and R^4 are independently H, alkyl, fluoroalkyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, halogen, hydroxy or acylamino;
Q represents the atoms necessary to complete a phenyl ring; and
R^5 is COO-alkyl.

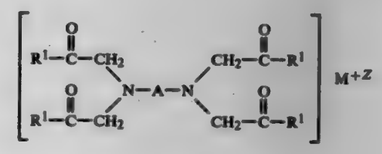
5,384,108

MAGNETIC RESONANCE IMAGING AGENTS

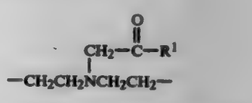
Raghavan Rajagopalan, Maryland Heights, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Apr. 24, 1989, Ser. No. 341,978
Int. Cl.[6] A61K *49/00*
U.S. Cl. 424—9 **19 Claims**

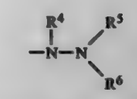
1. A complex having the following formula:



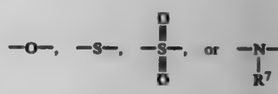
wherein A is —CHR^2—CHR^3 or



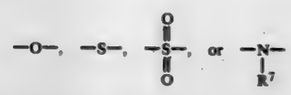
M^{+Z} is a paramagnetic ion of an element with an atomic number of 58–70, and a valence, Z, of +2 or +3; R^1 groups may be the same or different and are selected from the group consisting of —O^- and



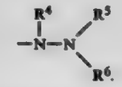
wherein R^4, R^5 and R^6 may be the same or different and are hydrogen, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl or acylaminoalkyl where the carbon-containing portions contain from 1 to about 6 carbon atoms, or R^5 and R^6 joined together with the adjacent nitrogen form a heterocyclic ring of five, six or seven members, wherein 0 to 1 members other than the nitrogen are



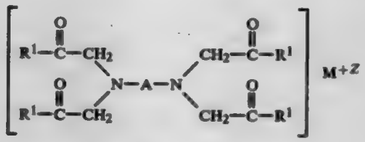
and which members are unsubstituted or substituted by hydroxy, alkyl, aryl, hydroxyalkyl, aminoalkyl, aminoaryl, alkylamino, or carbamoyl, wherein the substituents contain from 1 to about 6 carbon atoms, or R^4 and R^5 joined together with the nitrogens to which each is attached form a heterocyclic ring of five, six or seven members, wherein 0 or 1 members other than the nitrogens are



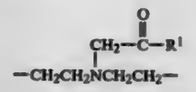
and which members are unsubstituted or substituted by hydroxy, alkyl, aryl, hydroxyalkyl, aminoalkyl, aminoaryl, alkylamino, or carbamoyl wherein the substituents contain from 1 to about 6 carbon atoms;
R^2 and R^3 may be the same or different and are hydrogen, alkyl having from 1 to about 6 carbon atoms, phenyl or benzyl;
R^7 is hydrogen, alkyl, hydroxylalkyl, alkoxyalkyl, aminoalkyl or acylaminoalkyl wherein the carbon-containing portions contain from 1 to about 6 carbon atoms;
and wherein 2 or 3 of the R^1 groups are —O^- and the remainder of the R^1 groups are



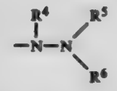
12. A method of performing an NMR diagnostic procedure, which comprises administering to a warm-blooded animal an effective amount of a complex of the formula



wherein A is —CHR^2—CHR^3— or



M^{+Z} is a paramagnetic ion of an element with an atomic number of 21–29, 42–44, or 58–70, and a valence, Z, of +2 or +3, R^1 groups may be the same or different and are selected from the group consisting of —O^- and

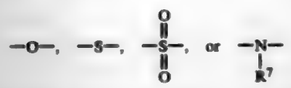


wherein R^4, R^5 and R^6 may be the same of different and are hydrogen, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl or acylaminoalkyl where the carbon-containing portions contain from 1 to about 6 carbon atoms, or R^5 and R^6 joined together with the adjacent nitrogen form a heterocyclic ring of five, six or seven members, wherein 0 to 1 members other than the nitrogen are



and which members are unsubstituted or substituted by hy-

droxy, alkyl, aryl, hydroxyalkyl, aminoalkyl, aminoaryl, alkylamino, or carbamoyl, wherein the substituents contain from 1 to about 6 carbon atoms, or R^4 and R^5 joined together with the nitrogens to which each is attached form a heterocyclic ring of five, six or seven members, wherein 0 or 1 members other than the nitrogens are

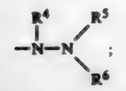


and which members are unsubstituted or substituted by hydroxy, alkyl, aryl, hydroxyalkyl, aminoalkyl, aminoaryl, alkylamino, or carbamoyl wherein the substituents contain from 1 to about 6 carbon atoms;

R^2 and R^3 may be the same or different and are hydrogen, alkyl having from 1 to about 6 carbon atoms, phenyl or benyzl;

R^7 is hydrogen, alkyl, hydroxylalkyl, alkoxyalkyl, aminoalkyl or acylaminoalkyl wherein the carbon-containing portions contain from 1 to about 6 carbon atoms;

and wherein 2 or 3 of the R^1 groups are $—O^-$ and the remainder of the R^1 groups are



and then exposing the animal to an NMR imaging procedure, thereby imaging at least a portion of the body of the warm-blooded animal.

5,384,109

DIAGNOSTIC MAGNETOMETHY USING SUPERPARAMAGNETIC PARTICLES

Jo Klaveness; Thorfinn Ege, both of Oslo, Norway, and Scott M. Rocklage, Los Gatos, Calif., assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/EP91/00619, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/15243, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 30, 1991, Ser. No. 930,521

Claims priority, application United Kingdom, Apr. 2, 1990, 9007408

Int. Cl.[6] A61B 5/055

U.S. Cl. 424—9 11 Claims

1. A method of generating a magnetometric image of the human or non-human animal body comprising administering to said body a physiologically tolerable superparamagnetic material and generating a magnetometric signal of at least part of said body into which said material distributes.

5,384,110

EXHAUST GAS CLEANER AND METHOD OF CLEANING EXHAUST GAS

Gyo Muramatsu; Kiyohide Yoshida; Satoshi Sumiya, and Akira Abe, all of Kumagaya, Japan, assignors to Kabushiki Kaisha Riken, Tokyo, Japan

Division of Ser. No. 765,580, Sep. 25, 1991, Pat. No. 5,208,202. This application Dec. 18, 1992, Ser. No. 993,092

Claims priority, application Japan, Sep. 25, 1990, 2-256218; Sep. 25, 1990, 2-256219; Sep. 25, 1990, 2-256220; Sep. 25, 1990, 2-256221; Sep. 25, 1990, 2-256222

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[6] B01J 23/04

U.S. Cl. 423—239.1 5 Claims

1. A method of cleaning an exhaust gas containing substantially no fine carbonaceous particles by removing nitrogen oxides from said exhaust gas, comprising the step of bringing said exhaust gas into contact with a catalyst mixture consisting essentially of:

(a) 10–80% by weight of one or more alkali metal elements;

(b) 10–80% by weight of one or more transition metal elements in Group IB, Group IIB, Group VB, Group VIB, Group VIIB, and Group VIII of the Periodic Table, excluding platinum-group elements, and Sn; and

(c) 10–80% by weight of one or more rare earth elements

at 200°–500° C., so that unburned hydrocarbons existing in said exhaust gas can serve as agents for reducing said nitrogen oxides in an oxidizing atmosphere.

5,384,111

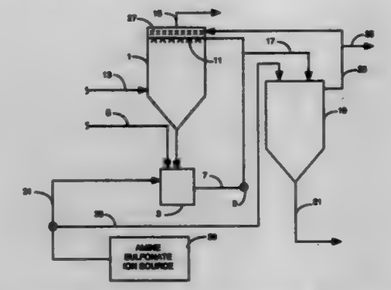
MAGNESIUM-ENHANCED LIME SCRUBBING OF SULFUR DIOXIDE WITH PRODUCTION OF A HIGH SOLIDS CONTENT SLUDGE

Shiaw C. Tseng, Pittsburgh; Daniel W. Berisko, Coraopolis, and Manyam Babu, Upper St. Clair, all of Pa., assignors to Dravo Lime Company, Pittsburgh, Pa.

Filed Feb. 3, 1994, Ser. No. 191,413

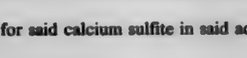
Int. Cl.[6] C01B 17/48

U.S. Cl. 423—242.1 14 Claims



1. A process for removing sulfur dioxide from a gaseous stream by contact with an aqueous scrubbing medium containing lime and a magnesium ion content of between about 2,500 to 10,000 parts per million in a wet scrubbing unit, where calcium sulfite solids are produced and removed as an effluent from the wet scrubbing unit as an aqueous sludge, comprising:

adding to said aqueous scrubbing medium in said aqueous scrubbing unit at least one amine sulfonate ion of the formula



where R is H or OH, and R′ is H or SO_3, with R and R′ not both being H;

as a dewatering aid for said calcium sulfite in said aqueous sludge.

5,384,112

COMPOUNDS

Quintes R. M. Clarkson, Weybridge, England, assignor to Beecham Group p.l.c., England

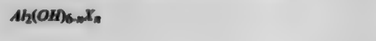
Continuation of Ser. No. 539,791, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 169,866, Mar. 17, 1988, abandoned. This application Jan. 22, 1993, Ser. No. 8,078

Claims priority, application United Kingdom, Mar. 19, 1987, 8706583; Aug. 18, 1987, 8719458; Dec. 15, 1987, 8729215

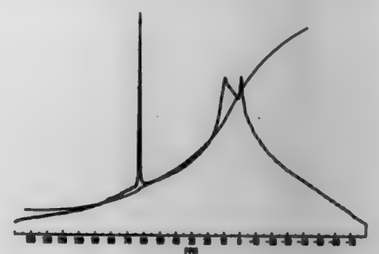
Int. Cl.[6] A61K 7/38, 9/12; C01B 7/00

U.S. Cl. 423—462 4 Claims

1. An aluminum halohydrate of the formula



wherein $0.8 \leq n \leq 2.0$ and X is fluorine, chlorine, bromine or iodine, at least 50% of the total aluminum of said aluminum



halohydrate being present in a form which has a Relative Retention Time (as hereinbefore defined) in the range 0.82 to 0.91 and which is an Al_{13} complex.

5,384,113

STABILIZERS TO PREVENT AUTORADIOLYSIS OF RADIOLABELED PEPTIDES AND PROTEINS

Edward A. Deutsch, Maryland Heights, Mo.; Wilhelmus T. Goedemans, Bergen; Martinus T. Maria de Jong, Hoogkarspel, both of Netherlands; Kathleen M. Miller, St. Louis, and James W. Brodack, Florissant, both of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation of Ser. No. 751,825, Aug. 29, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 135,882

Int. Cl.[6] A61K 49/02, 43/00

U.S. Cl. 424—1.69 21 Claims

1. A method of preventing autoradiolysis of radiolabeled peptides by including a stabilizer selected from the group consisting of gentisic acid, genetisyl alcohol and water soluble salts, esters, and mixtures thereof in a pharmaceutically acceptable carrier containing a biologically active peptide radiolabeled with a radionuclide selected from the group consisting of ^{111}In, ^{67}Ga, ^{169}Yb, ^{125}I, ^{123}I, and ^{201}Tl, wherein said stabilizer is present in an amount effective to prevent autoradiolysis of the radiolabeled biologically active peptide.

15. A composition for preparing a radiolabeled octreotide preparation stable to autoradiolysis comprising:

a quantity of DTPA-octreotide, wherein the DTPA-octreotide is labeled with ^{111}In; and

a stabilizer selected from the group consisting of gentisic acid, gentisyl alcohol, and the water soluble salts, esters, derivatives, and mixtures thereof.

5,384,114

OPACIFIER FOR WATER-BASED COMPOSITIONS

Teresa J. Dowell, Downers Grove; Gerald P. Newell, Hanover Park, and Eugene Zeffren, Lincolnshire, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

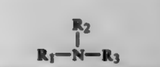
Continuation of Ser. No. 859,123, Mar. 27, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 97,596

Int. Cl.[6] A61K 7/06

U.S. Cl. 424—70.1 12 Claims

1. A method of opacifying a surfactant-containing, water-based composition comprising the step of incorporating a sufficient amount of an opacifier into the water-based composition to reduce the transparency of the water-based composition, said opacifier consisting essentially of:

(a) about 1% to about 10% by weight of the water-based composition of an amine having the general structural formula,



wherein R_1 is an alkyl group including at least 16 carbon atoms, and R_2 and R_3 are hydrogen, and wherein the amine is a solid compound at room temperature; and

(b) a sufficient amount of acid such that essentially no solid particles of the amine are present in the composition and such that the composition has a pH of about 5.3 to 8.1, said acid selected from the group consisting of an inorganic mineral acid, an aliphatic carboxylic acid including up to about 22 carbon atoms, an aromatic carboxylic acid, and combinations thereof.

5,384,115

PHOTOPROTECTION COMPOSITIONS COMPRISING A RADICAL SCAVENGING COMPOUND AND AN ANTI-INFLAMMATORY AGENT

Donald L. Bissett, Hamilton; Rodney D. Bush, Cincinnati, and Ranjit Chatterjee, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 543,945, Jun. 26, 1990, which is a division of Ser. No. 346,435, Jun. 26, 1989, Pat. No. 4,954,332, which is a division of Ser. No. 112,575, Oct. 22, 1987, Pat. No. 4,847,017. This application Aug. 20, 1993, Ser. No. 110,028

Int. Cl.[6] A61K 7/42, 7/44, 7/48, 9/10

U.S. Cl. 424—59 9 Claims

1. A photoprotective composition for topical application comprising:

(a) a safe and photoprotectively effective amount of the radical scavenging compound 6-hydroxy-2,5,7,8-tetramethyl-chroman-2-carboxylic acid;

(b) a safe and photoprotectively effective amount of an anti-inflammatory agent selected from the group consisting of a steroidal anti-inflammatory agent; a non-steroidal anti-inflammatory agent which is an oxicam, a fenamate, or a pyrazole; or is selected from the group consisting of acetic acid derivatives selected from the group consisting of diclofenac, fenclofenac, indomethacin, sulindac, rolmerin, isoxepac, furofenac, tiopinac, zidometacin, acemetacin, fentiazac, zomepirac, clidanac, and felbinac, or propionic acid derivatives selected from the group consisting of ibuprofen, naproxen, benoxaprofen, flurbiprofen, ketoprofen, fenoprofen, fenbufen, indoprofen, pirprofen, carprofen, oxaprozin, pranoprofen, miroprofen, tioxaprofen, suprofen, alminoprofen, and tiaprofenic, or 2,6-di-tert-butylphenol derivatives selected from the group consisting of 4-(4′-pentyn-3′-one-2,6-di-t-butylphenol, 4-(5′-hexynoyl)-2,6-di-t-butylphenol, 4-((S)-(−)-3′-methyl-5′-hexynoyl)-2,6-di-t-butylphenol, 4-((R)-(+)-3′-methyl-5′-hexynoyl)-2,6-di-t-butylphenol, and 4-(3′,3′-dimethoxy propionyl)-2,6-di-t-butylphenol, or 2-naphthyl-containing ester compounds selected from the group consisting of (S)-naproxen-(S)-2-butylester, (S)-naproxen-(R)-2-butylester, (S)-naproxol-(R)-2-methyl butyrate, (S)-naproxol-(S)-2-methyl butyrate, diasteromeric mixtures of (S)-naproxen-(S)-2-butyl ester and (S)-naproxen-(R)-2-butyl ester, and diasteromeric mixtures of (S)-naproxol-(R)-2-methyl butyrate and (S)-naproxol-(S)-2-methyl butyrate; and a natural anti-inflammatory agent selected from the group consisting of candelilla wax, alpha-bisabolol, aloe vera, Manjistha, and Guggul; and

(c) a safe and effective amount of a topical carrier.

5,384,116
SYNTHETIC MELANIN AS A SUNSCREEN AND TANNING AGENT
John Pawelek; Michael P. Ober, both of Hamden, Conn., and Seth J. Orlow, Long Island City, N.Y., assignors to Yale University, New Haven, Conn.
Division of Ser. No. 867,851, Apr. 13, 1992, Pat. No. 5,227,459, which is a continuation-in-part of Ser. No. 674,489, Mar. 25, 1991, Pat. No. 5,225,435, which is a continuation of Ser. No. 603,111, Oct. 25, 1990, Pat. No. 5,218,079, which is a continuation of Ser. No. 525,944, May 18, 1990, Pat. No. 5,216,116. This application Mar. 25, 1993, Ser. No. 16,418
Int. Cl.[6] C09G 63/06
U.S. Cl. 424—63 4 Claims

1. A composition for a sun screen for hair or skin or for providing a naturally-appearing tan to mammalian skin comprising a soluble melanin in admixture with a physiologically acceptable carrier, the soluble melanin having been produced by polymerizing a dihydroxyindole-carboxylic acid in an aqueous reaction medium in the presence of a 3 amino-tyrosine compound.

5,384,117
ANTIPERSPIRANT
Tuan M. Vu, Brighton, Mass.; Thomas J. Krafton, South Hampton, N.H., and Alan M. Phippa, Framingham, both of Mass., assignors to The Gillette Company, Boston, Mass.
Continuation of Ser. No. 510,019, Apr. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 347,073, May 3, 1989, abandoned. This application Nov. 12, 1992, Ser. No. 974,673
Int. Cl.[6] A61K 7/32, 7/34, 7/38
U.S. Cl. 424—66 24 Claims

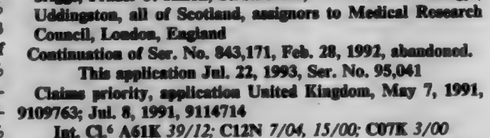
1. A substantially clear essentially anhydrous antiperspirant composition comprising an antiperspirant effective amount of an aluminum chlorohydrate or aluminum-zirconium chlorohydrate antiperspirant salt in solid particulate form suspended in an essentially anhydrous vehicle, said antiperspirant salt being substantially free of opacifying contaminants and the refractive indices of said antiperspirant salt and said vehicle being between about 1.46 and about 1.56 and matching to within about 0.02 such that the relative turbidity of said antiperspirant composition is less than 800 FTU.

5,384,118
GEL HAIRDRESSING COMPOSITION
Lila S. LaValle, 7705 Hiawatha La., Rockville, Md. 20855-2601
Filed Sep. 13, 1993, Ser. No. 119,659
Int. Cl.[6] A61K 7/06
U.S. Cl. 424—70.13 3 Claims

1. A hairdressing gel composition consisting of: 60.00% by weight of deionized water, 25.00% by weight of SD alcohol 40, 0.75% by weight of PVP/VA copolymer, 0.10% by weight of carrageenan, 5.00% by weight of glycerin, 0.10% by weight of panthenol, 0.10% by weight of dimethicone, 0.50% by weight of methyl gluceth-20, 0.05% by weight of myreth-3 laurate, 0.50% by weight of ceteth-20, 0.10% by weight of tetrasodium EDTA, 1.00% by weight of carbomer 940, 0.25% by weight of triethanolamine, 0.10% by weight of methylchloroisothiazolinone, 0.10% by weight of methylisothiazolinone, 0.25% by weight of styrene/acrylate copolymer, 1.00% by weight of petrolatum, 1.00% by weight of vegetable oil, 1.00% by weight of coconut oil, 1.00% by weight of olive oil, 1.00% by weight of mineral oil, 0.10% by weight of microcrystalline wax, 0.50% by weight of lanolin, and 0.05% by weight of vitamin E.

5,384,119
METHOD OF PREVENTING NEUTROPHIL MEDIATED CONNECTIVE TISSUE DAMAGE
Michael J. Jansen, Oregonia, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio
Continuation of Ser. No. 105,557, Aug. 12, 1993, abandoned. This application Oct. 29, 1993, Ser. No. 146,833
Int. Cl.[6] A61K 31/74
U.S. Cl. 424—78.08 11 Claims

1. A method of controlling connective tissue degradation by administering to a patient in need thereof a therapeutically effective amount of a compound of the formula:



wherein n is a whole number within the range of 5 to 10 inclusive and the pharmaceutically acceptable salts thereof.

5,384,120
ATTRACTANTS AND LURES FOR COCKROACHES AND PALMETTOS
Mel Blum, Wantagh, N.Y., assignor to Burlington Bio-Medical & Scientific Corp., Farmingdale, N.Y.
Filed Sep. 8, 1989, Ser. No. 405,613
Int. Cl.[6] A01N 25/00
U.S. Cl. 424—84 8 Claims

1. A mixture comprising propyl cyclo hexyl acetate and a blatticide.

5,384,121
METHOD FOR THE EXTRACTION OF SESQUITERPENE LACTONES
Alan Rhodes, Cambridgeshire, United Kingdom, assignor to Rhodes Technology, Cambridgeshire, United Kingdom
PCT No. PCT/GB92/00036, § 371 Date Jul. 8, 1993, § 102(e) Date Jul. 8, 1993, PCT Pub. No. WO92/11857, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 8, 1992, Ser. No. 87,672
Claims priority, application United Kingdom, Jan. 11, 1991, 9100581
Int. Cl.[6] A61K 35/78, 31/34
U.S. Cl. 424—195.1 4 Claims

1. A method for the preparation of a sesquiterpene lactone-containing extract of *Tanacetum parthenium* which comprises treating *Tanacetum parthenium* with a solvent selected from the group consisting of methanol, ethanol, isopropanol, and mixtures thereof.

5,384,122
HERPESVIRUS PARTICLES AND VACCINE
Charles Cunningham, Kirkintilloch; John McLauchlan, Bishopbriggs; Fraser J. Rixon, Strathblane, and Jozsef F. Szilagyi, Uddingston, all of Scotland, assignors to Medical Research Council, London, England
Continuation of Ser. No. 843,171, Feb. 28, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 95,041
Claims priority, application United Kingdom, May 7, 1991, 9109763; Jul. 8, 1991, 9114714
Int. Cl.[6] A61K 39/12; C12N 7/04, 15/00; C07K 3/00
U.S. Cl. 424—231.1 17 Claims

1. Isolated non-infectious, light (L)-particles of a herpesvirus, said particles being lighter than virions and comprising tegument surrounded by an envelope, but which lack a capsid and the viral DNA within the capsid.

5,384,123
TOPICAL COMPOSITION AND METHOD FOR REJUVENATING SKIN
Albert Metsada, 3 Gordon Street, Kiryat Hayovel, Jerusalem, Israel
Filed Jul. 7, 1993, Ser. No. 86,863
Claims priority, application Israel, Sep. 8, 1992, 103101
Int. Cl.[6] A61K 35/78; C07G 17/00
U.S. Cl. 424—195.1 14 Claims

1. A topical composition for rejuvenating skin texture, comprising a first active ingredient comprising cayenne pepper for stimulating the flow of blood in the arteries leading to the muscles, and the capillaries feeding the muscles, adjacent the skin; and a second active ingredient selected from the group consisting of vaccinium myrtillus, gingko biloba, thyme, or a mixture thereof, for stimulating the flow of blood in the capillaries adjacent skin cells, said first active ingredient being present in an amount sufficient to stimulate the flow of blood in the arteries leading to the muscles, and the capillaries feeding the muscles, adjacent the skin, and said second active ingredient being present in an amount sufficient to stimulate the flow of blood in the capillaries adjacent skin cells.

7. A method for rejuvenating skin texture, comprising applying to the skin surface a topical composition comprising a first active ingredient comprising cayenne pepper for stimulating the flow of blood in the arteries leading to the muscles, and the capillaries feeding the muscles, adjacent the skin; and a second active ingredient selected from the group consisting of vaccinium myrtillus, gingko biloba, thyme, or a mixture thereof, for stimulating the flow of blood in the capillaries adjacent skin cells, said first active ingredient being present in an amount sufficient to stimulate the flow of blood in the arteries leading to the muscles, and the capillaries feeding the muscles, adjacent the skin, and said second active ingredient being present in an amount sufficient to stimulate the flow of blood in the capillaries adjacent skin cells.

5,384,124
SOLID POROUS UNITARY FORM COMPRISING MICRO-PARTICLES AND/OR NANO-PARTICLES, AND ITS PREPARATION
Frederic Courteille, Cachan; Anne Coutel, Antony; Guy Lebreton, Gif-Sur-Yvette, and Michel Veillard, Sceaux, all of France, assignors to Farmalyoc, France
Continuation of Ser. No. 382,286, Jul. 20, 1989, abandoned. This application Feb. 12, 1992, Ser. No. 835,012
Claims priority, application France, Jul. 21, 1988, 8809864
Int. Cl.[6] A61F 6/06; A61K 9/22, 9/62; B01J 13/04
U.S. Cl. 424—430 17 Claims

1. A solid, porous unitary form comprising a combination of a primary unitary form which disintegrates in aqueous medium and a secondary unitary form, the secondary unitary form having controlled dissolution and controlled release of an active principle contained in the secondary unitary form, said secondary unitary form comprising particles having a diameter up to 2 mm and containing a predetermined amount of one or more active principles, said solid, porous unitary form being obtained by A) forming a paste by mixing
i) particles of the secondary unitary form, the particles having a diameter up to 2 mm and containing a predetermined quantity of at least one active principle;
ii) at least one thickening or binding agent and/or extender;
iii) at least one stabilizing agent to prevent settling and/or rising to the surface of the particles having a diameter up to 2 mm;
iv) optionally at least one other active principle or mixture of particles having a diameter up to 2 mm and containing an active principle; and
v) water in an amount sufficient to adjust the viscosity of the paste such that the paste is sufficiently fluid to allow regular division and the paste is sufficiently viscous to avoid sedimentation of the particles,
and B) lyophilizing the paste to obtain the solid, porous unitary form which is a combination of the primary unitary form and the secondary unitary form.

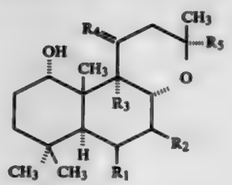
5,384,125
BURN DRESSING
Ascanio DiPippo, Middletown, R.I.; William A. Lobse, and Tom Ladas, both of Parsippany, N.J., assignors to Water-Jel Technologies, Inc., Carlstadt, N.J.
Continuation of Ser. No. 779,180, Oct. 18, 1991, abandoned, and a continuation-in-part of Ser. No. 642,503, Jan. 17, 1991, abandoned, and Ser. No. 642,603, Jan. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 512,621, Apr. 11, 1990, Pat. No. 5,009,890, which is a continuation of Ser. No. 83,395, Aug. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 32,268, Mar. 31, 1987, abandoned. This application Nov. 19, 1992, Ser. No. 979,386
Int. Cl.[6] A61F 13/00
U.S. Cl. 424—443 25 Claims

100 110 115

1. A burn dressing comprising a pocket-sized and storage-stable package containing therein a sterile burn dressing suitable for emergency burn treatment comprising a non-woven carrier impregnated with a bacteriostatic aqueous gel or thickened aqueous solution for treatment of a skin burn comprised of about 80 to about 98% water, and having a viscosity of about 1,000 to about 12,000 cps, as measured using a Brookfield No. 3 spindle at about 20 rpm, wherein the dressing carrier includes a plurality of pouches or voids and is effective to carry about 12 to about 25 grams of the aqueous burn treatment per gram of the carrier for delivery to the burn, and to release the burn treatment upon application to the burn.

5,384,126
COMPOSITION BASED UPON HYDRATED LIPIDIC LAMELLAR PHASES OR LIPOSOMES CONTAINING AT LEAST ONE DERIVATIVE OF LABDANE
Frederic Bonte; Alain Meybeck, both of Courbevoie, and Christian Marechal, Paris, all of France, assignors to LVMH Recherche, Colombes, France
PCT No. PCT/FR90/00611, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO91/02525, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 14, 1990, Ser. No. 768,292
Claims priority, application France, Aug. 17, 1989, 89 10986
Int. Cl.[6] A61K 9/127
U.S. Cl. 424—450 10 Claims

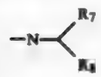
1. A method for promoting pigmentation of the epidermis comprising applying on the desired area, an effective amount to promote pigmentation of the epidermis of at least one composition comprising hydrated lipidic lamellar phases or liposomes containing at least in part, a component selected from a derivative of labdane, of formula I hereinbelow:



(I)

in which:
R_1 and R_2 are identical or different and each represent a

hydroxy group of an —O—CO—R_6 group in which R_6 represents an alkyl radical having from 1 to 7 atoms of carbon, alkoxy radical having from 1 to 7 atoms of carbon or alkenyl radical having from 1 to 7 atoms of carbon, optionally substituted by one or more hydroxy or



groups

in which R_7 and R_8 each represent an atom of hydrogen, an alkyl radical having from 1 to 4 atoms of carbon or R_7 and R_8 represent together and with the atom of nitrogen, a heterocyclic radical such as piperidino, morpholino, N'-methylpiperazino;

R_3 represents an atom of hydrogen or a hydroxy group;

R_4 represents an atom of oxygen or the assembly



R_5 represents an ethyl or vinyl radical;

optionally in a pharmaceutically or cosmetically acceptable excipient.

5,384,127

STABLE LIPOSOMAL FORMULATIONS OF LIPOPHILIC PLATINUM COMPOUNDS

Roman Perez-Soler; Insook Han, and Abdul R. Khokhar, all of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 709,121, May 31, 1991, Pat. No. 5,186,940, which is a division of Ser. No. 914,591, Oct. 7, 1986, Pat. No. 5,041,581, which is a continuation-in-part of Ser. No. 788,750, Oct. 18, 1985, abandoned. This application Dec. 29, 1992, Ser. No. 998,413

The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.

Int. Cl.[6] A61K *37/22, 31/28;* **C07F** *15/00*

U.S. Cl. 424—450 **11 Claims**

1. A complex having the structure

DACH—Pt—R_2

where DACH is diaminocyclohexane, and where each R group is independently a linear alkyl carboxylato group having from about 5 to about 18 carbon atoms.

8. A method of inhibiting tumor growth, including the step of administering to a mammal an amount effective to inhibit tumor growth of a composition which includes (a) a complex having the structure

DACH—Pt—R_2

where DACH is diaminocyclohexane, and where each R group is independently a linear alkyl carboxylato group having from about 5 to about 18 carbon atoms, and (b) at least one phospholipid in the form of a liposome; where the complex is entrapped in the liposome.

5,384,128

METHOD OF AND COMPOUNDS FOR TREATMENT FOR CYSTIC FIBROSIS

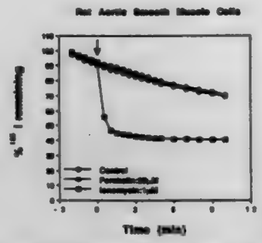
Elias Meezan, and Rongxiang Wang, both of Birmingham, Ala., assignors to University of Alabama Research Foundation, Birmingham, Ala.

Filed Mar. 2, 1993, Ser. No. 25,627

Int. Cl.[6] A61K *37/22, 9/70;* **A61F** *9/02;* **A61L** *9/04*

U.S. Cl. 424—450 **22 Claims**

1. A method of increasing the permeability of epithelial cells to a chloride ion in a subject comprising administering a permeability enhancing amount of a composition comprising a nontoxic, nonionic surfactant having (1) a critical micelle concentration of less than about 10 mM and a hydrophile-lipophile balance number of from about 10 to 20, and (2) a suitable hydrophobic organic group joined by a linkage to a suitable hydrophilic polyol.



5,384,129

PELLETS CONTAINING DIHYDROPYRIDINE DERIVATIVES PROCESS FOR THE PRODUCTION THEREOF AND USE AS RAPID ACTION DOSAGE IN HEART AND CIRCULATORY DISEASES

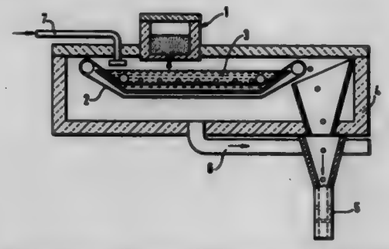
Jean-Christian Wunderlich, Heidelberg; Ursula Schick, Wiesloch; Jurgen Freidenreich, Schriesheim, and Jurgen Werry, Ludwigshafen, all of Germany, assignors to ALFATEC Pharma GmbH, Heidelberg, Germany

Filed Apr. 30, 1992, Ser. No. 876,877

Claims priority, application Germany, Jan. 17, 1992, 4201173

Int. Cl.[6] A61K *9/48, 9/20;* **A01N** *65/00*

U.S. Cl. 424—451 **19 Claims**



1. Dihydropyridine derivative containing dried cryopellets comprising a pharmacologically effective amount of a dihydropyridine derivative, the amount and activity whereof being essentially undiminished by the cryopelleting, dispersed in a matrix at least 50% w/w whereof comprising substantially of skeleton forming water soluble hydrophilic macromolecular material having a maximum molecular weight distribution under 10^5 D selected from the group consisting of gelatin, fractionated gelatin, succinylated gelatin, collagen hydrolysates, and mixtures thereof.

5,384,130

SPHERICAL SEED CORES, SPHERICAL GRANULES AND PROCESS FOR PRODUCTION THEREOF

Etsuo Kamada, Nobeoka, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

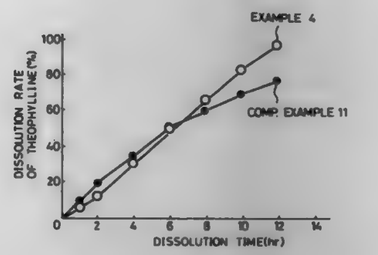
Continuation of Ser. No. 686,481, Apr. 17, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 3,661

Claims priority, application Japan, Apr. 18, 1990, 2-100251; Dec. 21, 1990, 2-404734

Int. Cl.[6] A61K *9/62;* **B32B** *5/16*

U.S. Cl. 424—461 **15 Claims**

1. A pharmacologically inactive seed core comprising at least 50% by weight microcrystalline cellulose having an average degree of polymerization of 60 to 375 wherein the seed core has an average particle size of 100 to 1000 μm, a tapped bulk density of at least 0.65 g/ml, an aspect ratio of at least 0.7, a water absorption capacity of 0.5 to 1.5 ml/g, and a friability of no more than 1%,



wherein the seed core is to be coated with a powdery layer comprising a pharmacologically active ingredient to prepare a granule.

5,384,131

Patent Not Issued For This Number

5,384,132

STABILIZED GONADOTROPIN CONTAINING PREPARATIONS

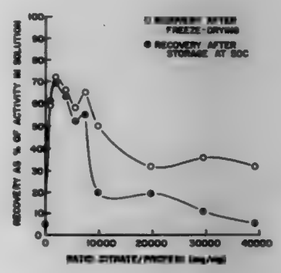
Andreas L. J. De Meere, Wesplk, and Marinus A. De Ruiter, Oss, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Division of Ser. No. 914,227, Jul. 13, 1992, Pat. No. 5,270,057, which is a continuation of Ser. No. 672,509, Mar. 20, 1991, abandoned. This application Sep. 3, 1993, Ser. No. 116,420

Claims priority, application European Pat. Off., Mar. 20, 1990, 90200665

Int. Cl.[6] A61K *9/14, 37/38*

U.S. Cl. 424—499 **6 Claims**



1. A stabilized, lyophilized human chorionic gonadotropin (HCG) composition comprising:

one part by weight HCG and

one to ten thousand parts by weight of at least one salt of an organic acid selected from the group consisting of salts of citric acid, tartaric acid, aspartic acid, isocitric acid and glutamic acid.

5,384,133

PHARMACEUTICAL FORMULATIONS COMPRISING MICROCAPSULES

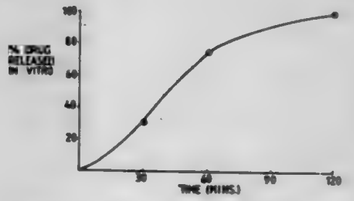
Robert N. Boyes, St. Albans, England; Thomas R. Tice, Birmingham, Ala.; Richard M. Gilley, Birmingham, Ala., and Kenneth L. Pledger, Huntsville, Ala., assignors to Innovata Biomed Limited, Edinburgh, United Kingdom

Continuation of Ser. No. 860,854, Mar. 27, 1992, abandoned, which is a continuation of Ser. No. 317,452, filed as PCT/GB87/00566, Aug. 11, 1987, abandoned. This application Jun. 29, 1993, Ser. No. 84,747

Claims priority, application United Kingdom, Aug. 11, 1986, 8619519; Jan. 5, 1987, 8700063

Int. Cl.[6] A61K *9/12, 9/14, 9/40*

U.S. Cl. 424—501 **25 Claims**



1. A pharmaceutical formulation suitable for inhalation, comprising:

(i) microcapsules having an average diameter of from 0.1 to 10 μm which consist essentially of a biodegradable, biocompatible wall-forming polymer encapsulating a drug, the polymer having a molecular weight of greater than 10,000 daltons, and

(ii) a lipid-soluble surfactant which is selected from the group consisting of sorbitan trioleate, sorbitan monolaurate, sorbitan monooleate, sorbitan monopalmitate, sorbitan monostearate, a polyoxamer and a surface active fatty acid, which is present in an amount of from 1 to 25% by weight of the microcapsules and which is incorporated within the polymer forming the wall of the microcapsules.

5,384,134

ANTI-INFLAMMATORY FORMULATIONS FOR INFLAMMATORY DISEASES

Robert D. Kross, Bellmore, N.Y., and Elliott J. Siff, Westport, Conn., assignors to Alcide Corporation, Norwalk, Conn.

Continuation of Ser. No. 930,088, Aug. 14, 1992, abandoned, which is a division of Ser. No. 543,655, Jun. 26, 1990, abandoned, which is a division of Ser. No. 202,758, Jun. 3, 1988, Pat. No. 4,956,184, which is a continuation-in-part of Ser. No. 190,798, May 6, 1988, abandoned. This application Sep. 1, 1993, Ser. No. 115,461

Int. Cl.[6] A61K *33/14, 31/19*

U.S. Cl. 424—661 **7 Claims**

1. A method for reducing tissue inflammation comprising topically applying a pharmaceutically effective amount of an anti-inflammatory composition comprising a mixture of a first solution, cream, or gel consisting essentially of a chlorine dioxide liberating compound and a second solution, cream, or gel consisting essentially of a protic acid, wherein the chlorine dioxide liberating compound comprises a metal chlorite, and wherein the chlorite ion concentration in the form of chlorous acid is no more than about 15% by weight of the total amount of chlorite ion concentration in the composition and wherein the gel or cream optionally contains a thickener.

5,384,135
PROCESS FOR THE MANUFACTURE OF AN ALCOHOL-FREE BEER HAVING THE ORGANOLEPTIC PROPERTIES OF A LAGER TYPE PALE BEER

Henri J. J. Calswaerts, Fribourg, Switzerland, assignor to Brasserie Du Cardinal Fribourg S.A., Fribourg, Switzerland

Filed Feb. 23, 1993, Ser. No. 21,253
Claims priority, application Switzerland, Mar. 10, 1992, 776/92
Int. Cl.[6] C12G *3/08, 3/12;* C12C *11/04*
U.S. Cl. 426—14 18 Claims

1. A process for the manufacture of an alcohol-free pale beer whose organoleptic properties are those of a lager beer, comprising

the manufacture of a lager type alcoholic pale beer from pale malts containing from about 12% to about 1.3% of nitrogenous substances and from 20% to 30% of brown malts mashed so as to obtain a wort whose attenuation is of the order of 50% and original gravity of the order of 16%,

the dealcoholization of the said alcoholic pale beer by evaporation, under high vacuum, of at least about 50% of the volume of this beer, wherein said dealcoholization comprises a decarbonation stage and a distillation stage,

at least one dilution with water, wherein the said water is deoxygenated and demineralized water having a total hardness of less than 1.8° dH.

5,384,136
PSYLLIUM-ENRICHED DOUGH PRODUCTS AND METHOD FOR MAKING THE SAME

Grace H. Lai, Portage, Mich., and Richard D. Wullschleger, Blandon, Pa., assignors to Kellogg Company, Battle Creek, Mich.

Filed Sep. 17, 1993, Ser. No. 123,353
The portion of the term of this patent subsequent to Jan. 17, 2012, has been disclaimed.
Int. Cl.[6] A21D *8/02;* A23L *1/0526*
U.S. Cl. 426—19 14 Claims

1. A dough product comprising

a) at least one flour ingredient,

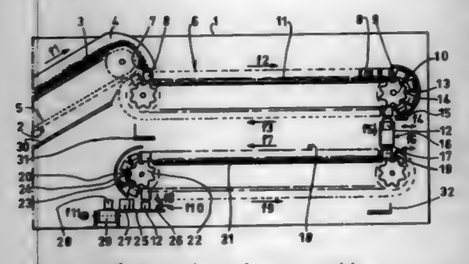
b) a leavening agent, and

c) an amount of prewetted psyllium ranging from about 1.0 to about 5.0 grams per one ounce of said dough product.

5,384,137
PROCESS FOR DRAINING CURD

Giuseppe F. Bolioli, Moretta/Cuneo, and Giovanni Prella, Vercelli, both of Italy, assignors to Nestec S.A., Vevey, Switzerland

Filed Apr. 8, 1992, Ser. No. 865,303
Claims priority, application European Pat. Off., May 6, 1991, 91107282.5
Int. Cl.[6] A23C *19/02*
U.S. Cl. 426—36 8 Claims



1. A process for preparing a cheese comprising:

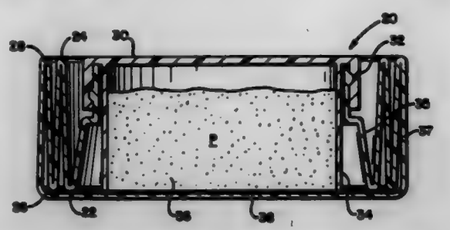
introducing curd grains into a conveyor compartment suitable for statically containing the grains and for statically draining the grains while transporting the compartment; and

transporting the compartment containing the grains and statically draining the grains for a time for draining, syneresis and forming of the grains into a loaf.

5,384,138
COLLAPSIBLE CONTAINERS

Edward S. Robbins, III, 459 North Ct., Florence, Ala. 35630, and Ted Bell, Killen, Ala., assignors to Edward S. Robbins, III, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 576,080, Aug. 31, 1990, Pat. No. 5,224,613, and a continuation-in-part of Ser. No. 598,385, Oct. 18, 1990, Pat. No. 5,114,011, and a continuation-in-part of Ser. No. 706,853, May 29, 1991. This application Jun. 26, 1991, Ser. No. 719,711
Int. Cl.[6] B65D *81/32, 81/34*
U.S. Cl. 426—111 9 Claims

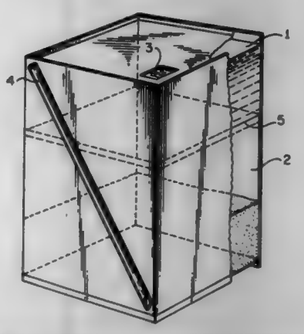


1. A collapsible, thin wall, plastic container comprising a closed end, an annular peripheral side wall, an open upper end defined by the top of said side wall, and a removable cap securable to said open end; said annular peripheral side wall having an upper portion adjacent said open upper end, a lower portion adjacent said closed end, and plural intermediate portions between said upper end and said lower end; said cap having a top wall, a radially outer depending skirt, a radially inner depending skirt and a sealable chamber defined by said cap top wall and said inner annular skirt extending downwardly from said top wall to an open lower end closed by a removable seal; said peripheral side wall varying in diameter from said open end to said closed end and including means for enabling axial collapse of the container to a compact, collapsed condition; said means for enabling axial collapse being configured such that a plurality of substantially vertically oriented concentric folds are formed in said plural intermediate portions of said annular peripheral side wall lying radially between remaining uncollapsed upper and lower portions of said annular peripheral side wall when the container is in the collapsed condition, and such that said concentric folds have upper edges substantially level with said cap top wall; said radially inner skirt portion having an axial length substantially corresponding to said concentric folds and said uncollapsed upper and lower portions of said annular peripheral side wall such that said radially inner skirt provides axial support for said container in said collapsed condition; and said radially outer depending skirt having means to secure said cap to said open upper end.

5,384,139
METHOD FOR THE PRESERVATION OF FOOD COMPOSITIONS OF THE PANCAKE, FRITTER AND SIMILAR PASTE TYPE

André Vasseneix, Saint Denis de l'Hotel, France, assignor to Denis France, Rennes, France

Continuation of Ser. No. 870,763, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 477,807, Feb. 21, 1990, abandoned. This application Sep. 3, 1993, Ser. No. 115,784
Claims priority, application France, Jun. 24, 1988, 88 08515
Int. Cl.[6] B65D *25/08*
U.S. Cl. 426—128 2 Claims



1. A method for extending the shelf life of a batter composition including flour, egg yolks, egg whites, and a liquid, said method comprising the steps:

preparing a powder phase including dried egg whites, and flour having unaltered starch grains which are capable of cross linking during batter cooking;

preparing a sterilized liquid phase including egg yolks and the liquid;

aseptically packaging the prepared powder phase, containing the unaltered starch grains, in a first packaging enclosure;

sealing the first enclosure with an inert gas atmosphere therein;

aseptically packaging the liquid phase in a second packaging enclosure; and

then storing the phases separately, in a single packaging unit, with the flour being maintained such that the starch grains remain unaltered and capable of cross-linking when the phases are mixed and the resulting batter is cooked;

the phases, present in the first and second packaging enclosures, remaining separated therein, and being of sufficient composition to form a cooking batter upon mixing of the phases.

2. A package for preserving batter ingredients, the package comprising: a lower aseptically packaged enclosure, filled with an inert gas atmosphere, the lower enclosure containing a powder phase comprising dried egg whites, and flour having unaltered starch grains which are capable of cross linking during batter cooking;

an upper aseptically packaged enclosure containing a sterilized liquid phase including egg yolks and liquid;

the phases being present in amounts sufficient to form a cooking batter upon mixing the two phases;

a perforatable membrane separating the powder and liquid phases thereby permitting the phases to be mixed when the batter is to be prepared;

a lid defining the top of the upper enclosure and having an opening formed therein; and

a perforatable member normally closing the opening;

wherein a stirring member can perforate the perforatable member and the membrane, to allow stirring of the phases within the container, to form a cooking batter.

5,384,140
PROCESS FOR PREPARING TENDER, JUICY MICROWAVEABLE MEAT

Simon Gagel, Forest Hills; ShiowShuh Shoen, New Hyde Park, and John Moyer, Garden City, all of N.Y., assignors to DCA Food Industries, Inc., Garden City, N.Y.

Filed Dec. 8, 1992, Ser. No. 986,676
Int. Cl.[6] A23L *1/314, 1/315, 1/318*
U.S. Cl. 426—243 39 Claims

1. A process for preparing coated microwaveable raw poultry meat which will be juicy and tender after microwave cooking, comprising the steps of:

(A) intimately contacting raw poultry meat with an aqueous solution having a pH of 5.0–9.0, a cation normality of 0.021–0.196 Na^+, 0.010–0.086 K^+ and 0.003–0.030 Ca^{++}, and a cation normality ratio of $Na^+/K^+/Ca^{++}$, of 2–10-/1–6/1–4, the contact continuing until the water gain in the meat is at least 8% of the initial weight of the meat; and

(B) thereafter applying to the raw meat a dry powdery coating agent, including starch in an amount of no more than 45% by weight and protein in an amount of no more than 45% by weight, until a 3–15% pick-up based on the weight of the meat is achieved;

whereby, during subsequent microwave cooking of the raw meat, the coating agent forms a starch-and-protein cross-linked continuous skin-like film which controls the heating rate and the microwave penetration depth so that microwave energy absorption is at least initially higher at the film than in the interior of the meat, and bumping and the resultant formation of dry, tough parts in the meat are reduced.

5,384,141
TEA PROCESS

Andrew J. Dyks, Irthlingborough; Paul M. Hart, Rushden, both of United Kingdom, and Hans U. Ter Meer, Frankfurt am Main, Germany, assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 720,985, Jun. 25, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,515
Claims priority, application United Kingdom, Jul. 3, 1990, 9014756
Int. Cl.[6] A23F *3/16*
U.S. Cl. 426—478 2 Claims

1. A process for separating an aqueous tea extract into a lighter colored aqueous phase and a darker colored aqueous phase, which comprises the steps of:

(a) concentrating the extract to a concentration of from 6% to 45% by weight of tea solids,

(b) inducing a phase separation into two distinct aqueous phases by a method selected from the group consisting of:

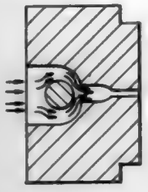
1) super-cooling the concentrated aqueous tea extract during a period of at least 5 hours to a temperature between the freezing point of said extract and a temperature just below 5° C. without stirring and without ice crystal formation, the concentration prior to the chilling being greater than 20% by weight tea solids when the extract is an extract of green tea or black tea;

2) freezing the concentrated tea extract below 5° C. at a rate of from 0.5° to 5° C. per minute, the concentration of the extract prior to the freezing being greater than 20% by weight tea solids; and

3) centrifuging the concentrated tea extract at a temperature below 5° C., the concentration of the extract prior to the centrifuging being greater than 20% by weight tea solids; and

(c) isolating the distinct separated aqueous phases, one of which is a lighter colored phase and the other of which is a darker colored phase.

5,384,142
PROCESS FOR PREPARING TEXTURED DOUGH PRODUCTS
William D. Henson, Duncanville, Tex., assignor to Recot, Inc., Plano, Tex.
Filed Jun. 21, 1993, Ser. No. 78,862
Int. Cl.[6] A21D *8/00*; A23P *1/00*
U.S. Cl. 426—496 11 Claims



1. A process for producing a laminated dough product having a desired texture, the process comprising the steps of:
feeding a dough mass through an inlet of an extrusion die into a chamber located within the die, the chamber extending between said inlet and an outlet of the die;
forcing the dough mass past a divider disposed within said chamber to divide the dough mass into separate dough masses;
reuniting the separate dough masses to form a laminated dough mass which will selectively, partially delaminate upon subsequent processing; and
extruding the laminated dough mass through the outlet of the die.

5,384,143
PROCESS FOR THE PRODUCTION OF CANNED COFFEE
Masahiro Koyama, and Shigeo Shinkawa, both of Kanagawa, Japan, assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation of Ser. No. 651,377, filed as PCT/JP90/00828, Jun. 26, 1990, abandoned.
This application Jun. 29, 1993, Ser. No. 83,315
Claims priority, application Japan, Jun. 27, 1989, 1-162807
Int. Cl.[6] A23F *5/26*
U.S. Cl. 426—546 4 Claims

1. A process for the production of canned coffee, comprising the steps of:
(a) preparing a hot coffee extract by extracting coffee beans with hot water to obtain coffee extract at a high temperature;
(b) preparing a cold extract of coffee by rapidly cooling said hot coffee extract to a temperature between about 10° and about 20° C.;
(c) adding at least one antioxidant in a concentration about 0.1 to about 0.01% by weight selected from the group consisting of erythorbic acid, ascorbic acid and water-soluble salts thereof to said cold extract;
(d) filling a can with said cold extract containing said at least one antioxidant without heating said cold extract;
(e) replacing headspace air contained in said can with a mixed gas comprising at least two gases selected from the group consisting of steam, carbon dioxide gas, and nitrogen gas, a portion of the mixed gas dissolving in the coffee extract to reduce the pressure and create a negative pressure in the can after hermetically sealing the filled can;
(f) hermetically sealing the filled can containing said mixed gas; and
(g) sterilizing the sealed can at a temperature of at least 115° C. for about 20 minutes,
the mixed gas being present in said headspace such that after hemetically sealing the can, the degree of pressure reduction is about 30 cm Hg and the total amount of oxygen in the can is less than 0.3 ml per 100 ml of beverage.

5,384,144
PSYLLIUM ENRICHED PASTA PRODUCTS AND METHOD FOR MAKING SAME
Aimee M. Bedard, Kalamazoo; Grace H. Lai, Portage, both of Mich.; Richard D. Wullschleger, Blandon, Pa., and James G. Kincaid, Battle Creek, Mich., assignors to Kellogg Company, Battle Creek, Mich.
Filed Sep. 17, 1993, Ser. No. 123,342
Int. Cl.[6] A23L *1/0526*
U.S. Cl. 426—557 22 Claims

1. A pasta product comprising:
a. at least one pasta flour; and
b. prewetted psyllium.

5,384,145
LOW-FAT, FROZEN WHIPPED TOPPING
Alexander A. Gonsalves, Libertyville; Everett D. Dudley, Jr., Chicago, and Gerard J. Hogan, Mount Prospect, all of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Aug. 19, 1993, Ser. No. 109,281
Int. Cl.[6] A23L *1/19*; A23P *1/08*
U.S. Cl. 426—565 9 Claims

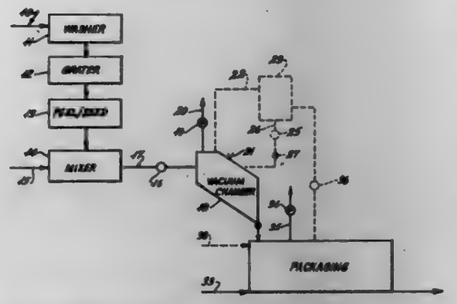
1. A low-fat, frozen whipped topping formulation which easily and consistently whips to a high overrun in commercial processing, having a total solids level of about 38 to 50% by weight and comprising water, water-soluble carbohydrates, fat, chemical emulsifier, water-soluble protein and hydrocolloid stabilizing agent and containing on a weight basis from 8 to 15% fat, from 0.05 to 1% hydrocolloid stabilizing agent, about 1.4 to 2.2 parts chemical emulsifier per 100 parts of fat, about 5.0 to 6.0 parts by weight of water-soluble protein per 100 parts of fat and wherein the formulation is free of non-fat milk solids.

5,384,146
FROZEN WHIPPED TOPPINGS
Alexander A. Gonsalves, Libertyville, and Gerard J. Hogan, Mount Prospect, both of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Aug. 31, 1993, Ser. No. 114,885
Int. Cl.[6] A23G *9/00*
U.S. Cl. 426—565 6 Claims

1. In a milk solids-containing, frozen whipped topping formulation having an overrun in excess of 250%, a solids level of about 38 to 60%, including fat, water-soluble carbohydrates, hydrocolloid stabilizing agents, emulsifying agents and sodium caseinate the improvement being the presence of glassy sodium polyphosphates having an average chain length of n=18 to about n=50 at a level of 0.01 to 0.1%.

5,384,147
METHOD OF PROCESSING AVOCADO PULP
Clifford L. Hilpert, Vega, Tex., assignor to INT Equipment Sales, Inc., Vega, Tex.
Continuation of Ser. No. 745,833, Aug. 16, 1991, abandoned.
This application Oct. 20, 1993, Ser. No. 138,383
Int. Cl.[6] B65B *31/02*; A23B *7/148*
U.S. Cl. 426—615 4 Claims

1. A method of processing and packaging fresh avocados comprising the steps of:
A) washing, peeling and seeding a fresh avocado;
B) mixing the avocado to form a pulp having a predetermined chunky consistency;
C) introducing the pulp into a vacuum chamber;
D) applying a high vacuum to the pulp within the vacuum chamber, the high vacuum being approximately 99% absolute such that the pressure within the vacuum chamber is reduced to between approximately 0.14 and 0.15 psi and retaining the high vacuum for a period of up to approximately one minutes, sufficient to remove substantially all oxygen from the cells of the pulp;
E) thereafter increasing the pressure within the vacuum chamber to substantially atmospheric pressure at a rate not to exceed 5% of the difference between the total vacuum pressure applied therein and atmospheric pressure per second, such that the rate preserves the chunky consistency of the pulp; and

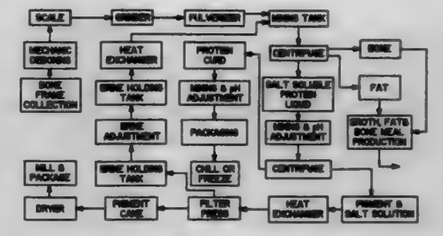


F) subsequently packaging the pulp from the vacuum chamber while applying at least a partial vacuum to the pulp within the packaging before the packaging is sealed.

5,384,148
CARAMEL CONFECTIONS AND PROCESSES FOR PREPARING AND USING
William R. Lynch; Larry D. Smith, both of Milford, Del.; Matthew J. Wiant, Aston, Pa.; Robert R. Bianca, Collierville, Tenn., and David Kelley, Jr., Dagsboro, Del., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Dec. 1, 1992, Ser. No. 983,445
Int. Cl.[6] A23G *3/00*; A23L *1/36*
U.S. Cl. 426—632 19 Claims

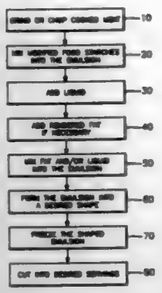
1. A method for producing a meltable caramel confectionery material comprising the steps of:
(a) preparing a fluid caramel by cooking an aqueous mixture of milk solids, including milk protein, and sugar, at a temperature above 200° F., the cooking taking place in a cooking vessel in the presence of sufficient initial moisture so that essentially all of the sugars are dissolved, cooking continuing for a time effective to develop a caramel flavor and to reduce the moisture to a level of below 6%;
(b) removing the fluid caramel from the cooking vessel, forming it into sheets and cooling the sheets to form caramel brittle;
(c) grinding the caramel brittle to a powder having an average particle size of from about 0.001 to about 0.06 inches;
(d) mixing from 5 to 35% of the caramel brittle powder with 30 to 60% granulated sugar, 10 to 45% fat, and 10 to 25% milk solids to produce a coarse mixture;
(e) refining the coarse mixture by passing it through a series of hydraulic refiner rolls to obtain an average particle size of 0.0004 to 0.0020 inches;
(f) mixing the refined mixture with an emulsifying agent and additional vegetable fat and heating the resulting mixture at a temperature of at least 100° F. with continuous mixing to reduce the moisture level to less than about 1%; and thereafter,
(g) cooling the mixture.

5,384,149
INTEGRATED PROCESS FOR PRODUCING MEAT PROTEIN, BROTH, MYOGLOBIN PIGMENT, FAT AND BONE MEAL
Rudy Lin, Naperville, Ill., assignor to Armour Swift-Eckrich, Downers Grove, Ill.
Filed Mar. 2, 1994, Ser. No. 205,514
Int. Cl.[6] A23L *1/312*, *1/313*
U.S. Cl. 426—646 16 Claims



1. A method of making functional and natural meat muscle protein, meat muscle pigment, broth, animal fat and bone meal from animal carcass by-products, said method comprising:
a) comminuting animal carcass by-products under conditions sufficient to break meat muscle cell membranes thereby releasing meat muscle protein;
b) contacting the comminuted animal carcass by-products with saline having an ionic strength between about 0.1 to 0.9, under conditions suitable to form a solid-phase fraction and a solution-phase fraction, wherein said solid-phase fraction contains bone, fat, fat soluble organic materials, and connective tissue and said solution-phase fraction contains soluble meat muscle protein and myoglobin pigment;
c) separating the solid-phase fraction of step (b) from the solution-phase fraction of step (b);
d) adjusting the pH of the solution-phase fraction to the isoelectric point of said meat muscle protein so as to precipitate the soluble meat muscle protein in the solution-phase fraction of step (c), thereby forming a meat muscle protein curd fraction, and a solution-phase fraction containing myoglobin pigment;
e) separating the meat muscle protein curd fraction of step (d) from the solution-phase myoglobin pigment fraction;
f) adjusting the pH of the protein curd fraction of step (e) to a pH selected from between about 5.5 to 7.0 to form a meat muscle protein product, and adding a nitrogen oxide generating compound to said solution-phase pigment fraction of step (e), thereby denaturing the myoglobin pigment in the solution-phase myoglobin pigment fraction;
g) filtering the denatured myoglobin pigment of step (f) to form a meat myoglobin pigment cake and a residual saline solution;
h) drying and milling the meat pigment cake of step (g) to form a powder, and recycling the residual saline solution of step (g) to step (b);
i) cooking the solid-phase fraction of step (c) under conditions sufficient to convert substantially all connective tissue in said fraction into soluble collagen, thereby forming a broth-fat fraction-and a bone-residue fraction;
j) drying and milling the bone-residue fraction of step (i) to form a bone-meal;
k) separating the broth-fat fraction of step (i) into fat and broth fractions;
l) refining the fat of step (k) to produce a fat-product; and
m) concentrating the broth of step (k) to form a broth-product.

5,384,150
PROCESS FOR MAKING A COOKED, PUREED MEAT PRODUCT
James W. Heeps, 4028 Walnut St., Allentown, Pa. 18104
Continuation of Ser. No. 997,557, Dec. 28, 1992, Pat. No. 5,322,705. This application May 23, 1994, Ser. No. 247,686
The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.
Int. Cl.[6] A23L *1/314, 1/317*
U.S. Cl. 426—646 14 Claims



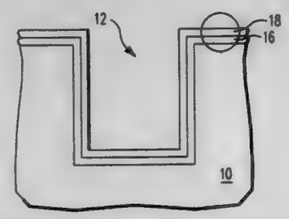
1. A process for producing a pureed cooked meat product, said process comprising the steps of:
grinding a cooked meat to form ground cooked meat particles;
mixing a modified food starch with said ground cooked meat particles to produce a ground meat/starch mixture, said modified food starch being a cook-up starch capable of binding liquid only after heat activation;
adding a liquid to said ground meat/starch mixture, said liquid being a member selected from the group consisting of water, broths and mixtures thereof;
mixing said liquid and said ground meat/starch mixture to produce a pureed cooked meat product; and
shaping said pureed cooked meat product into a desired shape.

5,384,151
INGAASP/GAAS DIODE LASER
Manijeh Razeghi, Wilmette, Ill., assignor to Northwestern University, Evanston, Ill.
Continuation-in-part of Ser. No. 105,379, Aug. 11, 1993. This application Oct. 6, 1993, Ser. No. 132,561
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—58 10 Claims



1. A method for the preparation of a strained layer heterostructure for a diode laser by LP-MOCVD comprising the steps of:
a) preparing a substrate;
b) growing, in succession, the following layers on said substrate:
1) a first cladding layer doped with an doping agent consisting of silane or H_2S;
2) a waveguide layer of $Ga_xIn_{1-x}As_yP_{1-y}$ where $0 \leq x \leq 1$ and $0 \leq y \leq 1$;
3) an undoped active layer of $Ga_xIn_{1-x}As_yP_{1-y}$, where $0 \leq x \leq 1$ and $0 \leq y \leq 1$;
4) a waveguide layer of $Ga_xIn_{1-x}As_yP_{1-y}$, where $0 \leq x \leq 1$ and $0 \leq y \leq 1$;
5) a second doped cladding layer, and
c) controlling the thickness of said active layer and said waveguide layers to total between 5000 Å and 1 micron.

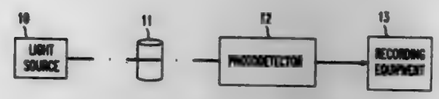
5,384,152
METHOD FOR FORMING CAPACITORS WITH ROUGHENED SINGLE CRYSTAL PLATES
Jack C. Chu, Long Island City; Louis Lu-Chen Hsu, New York, both of N.Y.; Toshio Mii, Essex Junction, Vt.; Joseph F. Shepard, Hopewell Junction; Scott R. Stiffler, Brooklyn; Manu J. Tejwani, Yorktown Heights, and Edward J. Vishnesky, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 881,944, May 12, 1992, Pat. No. 5,245,206. This application Jun. 1, 1993, Ser. No. 69,473
Int. Cl.[6] H01L *21/70*; B05D *5/12*
U.S. Cl. 427—81 13 Claims



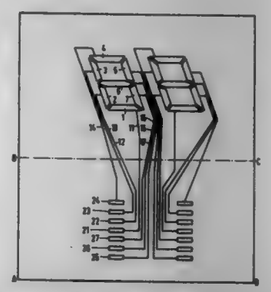
1. A method of forming a capacitor comprising the steps of:
providing a substrate of a first material;
forming by heteroepitaxial growth a roughened layer of a crystalline material over a surface of said substrate, said crystalline material being lattice mismatched with respect to said first material;
forming a first layer of conductive material over said roughened layer to form a first capacitor plate;
forming a layer of insulating material over said first capacitor plate; and
forming a second layer of conductive material over said layer of insulating material to form a second capacitor plate.

5,384,153
MONITORING ELECTROLESS PLATING BATHS
Alfred J. Grady, Jr., Richmond, Va.; Sudarshan Lal, Glen Rock, N.J.; Mary J. Mitchell, Chesterfield, Va.; Yutaka Okinaka, Madison, N.J.; Craig G. Smith, Upper Macungie Township, Lehigh County; Harvey S. Trop, Lower Macungie Township, Lehigh County, both of Pa., and Chwan-Tsann Wang, Richmond, Va., assignors to AT&T Corp., Murray Hill, N.J.
Filed Mar. 10, 1993, Ser. No. 28,847
Int. Cl.[6] B05D *1/00*
U.S. Cl. 427—98 14 Claims

1. A method of monitoring the effectiveness of solutions used in plating articles comprising:
applying the solutions to a specimen which permits light to be transmitted therethrough; and
while the specimen is being plated, measuring the level of light transmission therethrough and determining a time in which light transmission decreases to a particular value based on a curve of the decrease in light transmission as a function of time.



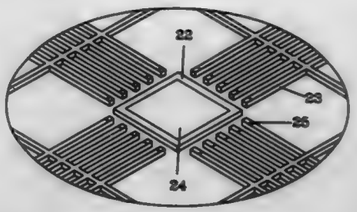
5,384,154
METHOD OF SELECTIVELY PROVIDING A PATTERN OF A MATERIAL OTHER THAN GLASS ON A GLASS SUBSTRATE BY ELECTROLESS METALLIZATION
Johannes W. G. De Bakker; Lambertus G. J. Fokkink; Andreas M. T. P. Van Der Putten, and Henricus A. M. Kox, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 77,972, Jun. 15, 1993, abandoned, which is a continuation of Ser. No. 896,267, Jun. 10, 1992, abandoned. This application May 4, 1994, Ser. No. 238,190
Claims priority, application European Pat. Off., Jun. 12, 1991, 91201439
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—123 15 Claims



1. A method of metallizing only a pattern of a material other than glass provided on a glass substrate, said method comprising adding a reducing agent other than $SnCl_2$ and a water-soluble polymer to an aqueous solution of a Pd salt to thereby form a stabilized Pd sol, bringing said pattern and glass substrate into contact with said stabilized Pd sol to thereby activate only said pattern, removing said glass substrate and the resultant activated pattern from contact with said stabilized Pd sol, rinsing said glass substrate and said activated pattern with water and then treating said glass substrate and said pattern with an electroless metallization bath to thereby metallize only said pattern.

5,384,155
SILVER SPOT/PALLADIUM PLATE LEAD FRAME FINISH
Donald C. Abbott, Norton, and Robert M. Fritzsche, Attleboro Falls, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 4, 1992, Ser. No. 893,911
Int. Cl.[6] C23C *26/00*
U.S. Cl. 427—125 8 Claims

1. A method for spot plating the parts of the lead frame internal to the plastic package prior to encapsulating a semiconductor device, comprising the steps of:
plating the entire lead frame with a first metal; and



spot plating selected portions of the lead frame, which portions are within the plastic package after encapsulation, over said first plated metal, with silver.

5,384,156
REVERSIBLE METHOD OF MAGNETIC FILM ANNEALING
Roger F. Belt, Morris Township, Morris County, and John B. Ings, Rockaway Township, Morris County, both of N.J., assignors to Litton Systems, Inc., Morris Plains, N.J.
Filed Aug. 23, 1993, Ser. No. 110,785
Int. Cl.[6] H01F *10/02*
U.S. Cl. 427—127 16 Claims

1. A method for adjusting the magnetic properties of an iron containing monocrystalline magneto-optic bismuth iron garnet film which comprises:
(a) annealing said film at reduction conditions; and then
(b) annealing said film at oxidation conditions.

5,384,157
TUNGSTEN OXIDE FILM, PROCESS FOR PRODUCING SAME AND ELECTROCHROMIC DEVICE USING SAME
Fumiaki Tambo, Minami-Ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 990,747
Claims priority, application Japan, Dec. 20, 1991, 3-354309
Int. Cl.[6] B05D *1/00*
U.S. Cl. 427—126.3 6 Claims

1. A process for producing a tungsten oxide film which comprises the steps of:
reacting a tungstate with a salt of an organic compound represented by formula (I) to obtain a tungstic acid compound;
mixing said tungstic acid compound with an organic solvent to prepare a composition;
applying said composition onto a substrate; and heating said composition at sufficiently high temperature to remove said solvent from said composition and form a tungsten oxide film:

$$R_1R_2R_3NH^+X^- \quad (I)$$

wherein R_1, R_2, and R_3 each represents a hydrogen atom or a saturated or unsaturated hydrocarbon group having from 1 to 20 carbon atoms, and X^- represents a halogen atom.

5,384,158

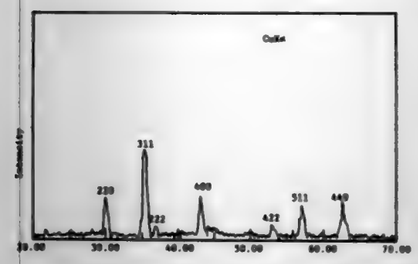
METHOD FOR PREPARING A MAGNETIC RECORDING MEDIUM

Tsung-Shune Chin; Wei-Der Chang, and Ming-Cheng Deng, all of Hsinchu, Taiwan, Prov. of China, assignors to National Science Council, Taipei, Taiwan, Prov. of China

Continuation of Ser. No. 57,648, May 4, 1993, abandoned. This application Mar. 24, 1994, Ser. No. 217,370

Int. Cl.[6] H01F *10/02*

U.S. Cl. 427—129 **28 Claims**



1. A method for preparing a magnetic recording medium comprising steps of:

(a) providing a substrate;

(b) providing a solution consisting essentially of ions of cobalt, manganese, and iron in deionized water; and

(c) preheating the substrate and spraying said solution onto the preheated substrate at an elevated temperature to uniformly distribute droplets thereon and form a magnetic recording medium film on said substrate.

5,384,159

PROCESS FOR RESTORING DISCHARDED SILICONE-POLYCARBONATE PARTS

Gregory R. Gillette, Clifton Park, and Karen K. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 22, 1993, Ser. No. 124,884

Int. Cl.[6] B32D *35/00*

U.S. Cl. 427—140 **6 Claims**

1. A process for selectively removing a defective silicone hardcoat layer from a silicone-polycarbonate composite comprising a silicone hardcoat layer, an intermediate thermoplastic acrylic primer layer and a polycarbonate substrate which process comprises the sequential steps of:

(1) effecting contact at a temperature of about 40° C. to about 100° C. between the silicone-polycarbonate composite and an aqueous alkaline bath having a concentration of from 20% to 40% by weight of the bath of an alkali metal hydroxide or a hydroxide of ammonium or tetraalkylammonium to provide a pH in the range of at least 12 and up to about 14 while the bath is agitated for a time sufficient to effect substantially complete removal of the silicone hard coat layer from the silicone-polycarbonate composite without removing the thermoplastic acrylic primer layer,

(2) washing and thereafter drying the resulting polycarbonate composite of (1) and

(3) applying a silicone hardcoat to the thermoplastic acrylic primary layer to form a silicone-polycarbonate composite.

5,384,160

METHOD OF COATING A SURFACE

Joseph Frazzitta, 279 Cherry Pl., East Meadow, N.Y. 11554

Filed Mar. 11, 1993, Ser. No. 29,681

Int. Cl.[6] B05D *1/36, 5/00*

U.S. Cl. 427—288 **42 Claims**

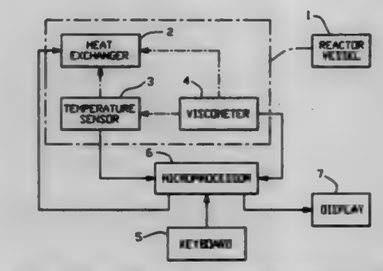
1. A method for depositing an aqueous coating composition onto an ink layer or uninked surface in a printing process comprising:

1). Depositing a first layer of ink onto a surface to be coated;

2). Drying said ink layer;

3). Determining a desired viscosity of an aqueous coating composition to be deposited onto said ink layer or said surface, said composition comprising:

a. about 15% to about 85% by weight of a film-forming polymer, said film-forming polymer comprising a mixture of high molecular weight and low molecular weight film-forming polymers, said mixture of polymers comprising about 10% to about 90% by weight of a high molecular weight film-forming polymer and about 10% to about 90% by weight of a low molecular weight film-forming polymer, said high molecular weight film-forming polymer having an average molecular weight



ranging from about 30,000 to about 5,000,000 and said low molecular weight having an average molecular weight ranging from about 100 to about 20,000;

b. an amount of a wetting agent effective to substantially eliminate levelling problems after deposition caused by surface tension; and

c. the remainder of said composition comprising a mixture of water or water and at least one solvent in the form of a volatile organic compound;

4). Determining the temperature above or below ambient temperature at which said composition attains the viscosity determined in step 3);

5). Maintaining the viscosity of said composition at the temperature determined in step 4); and

6). Depositing onto said ink layer or said surface said aqueous coating composition at said temperature.

5,384,161

SYSTEM FOR MAKING BRIGHT ALUMINUM PARTS

Richard C. Elsfeller, Greenland, and John Clark, Stratham, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Division of Ser. No. 886,496, May 22, 1992, Pat. No. 5,290,625. This application Jan. 3, 1994, Ser. No. 176,788

Int. Cl.[6] B05D *3/02, 1/02*

U.S. Cl. 427—250 **1 Claim**

1. A process for manufacturing an aluminum part comprising the steps of:

providing an aluminum base;

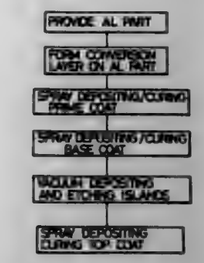
chemically combining the aluminum base with chromium to form a chromate conversion coating layer on said aluminum base formed as a compound of the aluminum base;

spray depositing and curing a primer coat on said chromate conversion coating layer, said primer coat being a polyurethane material and having a thickness of from 0.1 to 2.0 mils;

thereafter spray depositing and curing a basecoat on said primer coat to cover said primer coat and to form a dielectric barrier, said basecoat being a polyurethane material and having a thickness of from 0.1 to 2.0 mils;

vacuum depositing indium to form a film having a thickness of 25 to 2000 angstroms covering said basecoat including a plurality of discrete islands of the indium appearing

macroscopically as a continuous film and having a plurality of macroscopically unobservable channels between the islands to maintain the film electrically non-conductive over said basecoat;



spray depositing and curing a layer of clear resinous protective dielectric topcoat to completely cover said vacuum deposited indium film whereby said channels are filled for bonding said indium film to said basecoat.

5,384,162

METHOD AND APPARATUS FOR SIMULTANEOUSLY APPLYING A MULTI-LAYERED COATING AT HIGH SPEEDS

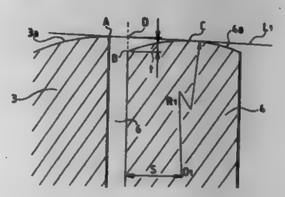
Shinsuke Takahashi, and Norio Shibata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1992, Ser. No. 962,846

Claims priority, application Japan, Oct. 18, 1991, 3-297695

Int. Cl.[6] B05D *3/12; B05C 3/02*

U.S. Cl. 427—356 **4 Claims**



1. A method for simultaneously coating a plurality of layers of coating liquid onto a running web to form a laminated structure comprising the step of continuously extruding said coating liquids from forwardmost ends of a plurality of slots in a coating head onto said web, said web continuously running along a back edge surface and a doctor edge surface of said coating head, wherein a doctor edge surface of said coating head for forming a coated layer other than a lowermost coated layer on said web has an arc-shaped sectional contour, and, with a distance between an intersection and an upstream end of said doctor edge designated by t and said intersection coinciding with a position where a straight line tangentially extending along said doctor edge surface and another edge surface located upstream of and adjacent to said doctor edge surface intersects a perpendicular line extending upward of said upstream end of said doctor edge surface, said distance t is within a range of 5 $\mu m \leqq t \leqq 30$ μm.

5,384,163

CELLULOSE ESTERS MOIDIFIED WITH ANHYDRIDES OF DICARBOXYLIC ACIDS AND THEIR USE IN WATERBORNE BASECOATS

Anna M. Budde, Livonia, Mich.; L. Daniel Sand, Jonesborough, Tenn.; Alan R. Dunn, and Chung M. Kuo, both of Kingsport, Tenn., assignors to BASF Corporation, Southfield, Mich.

Filed Oct. 23, 1991, Ser. No. 781,472

Int. Cl.[6] C08L *1/14*

U.S. Cl. 427—385.5 **27 Claims**

1. A thermosetting coating composition comprising a cellulose mixed ester having a number average molecular weight of between 5,000 and 100,000, and reactive components comprising a crosslinker having at least two functional sites capable of reacting during curing of the coating, wherein the cellulose mixed ester comprises:

A. a first residue that is a residue of a cyclic dicarboxylic acid anhydride, present in an amount of from 3 to 35 weight percent of the cellulose ester;

B. a second residue that is at least one member selected from the group consisting of:

i. an oleophilic monocarboxylic acid residue that is at least one member selected from the group consisting of residues of monocarboxylic acids having at least 3 carbon atoms, wherein the oleophilic monocarboxylic acid residue is present in an amount of from 10 to 65 weight percent of the cellulose ester;

ii. a hydrophilic monocarboxylic acid residue that is a residue of acetic acid wherein the hydrophilic monocarboxylic acid residue is present in an amount of from 1 to 45 weight percent of the cellulose ester,

wherein a degree of substitution within the cellulose mixed ester is from 2 to 3.

5,384,164

FLAME SPRAYED COATINGS OF MATERIAL FROM SOLID WIRE OR RODS

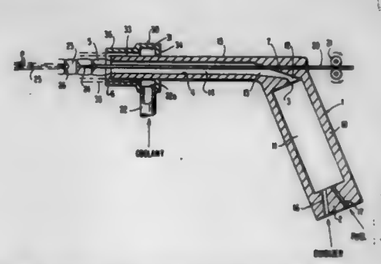
James A. Browning, c/o Browning Thermal Systems, Inc., P.O. Box 477, Enfield, N.H. 03748

Filed Dec. 9, 1992, Ser. No. 988,287

The portion of the term of this patent subsequent to Dec. 13, 2011, has been disclaimed.

Int. Cl.[6] B05D *1/08*

U.S. Cl. 427—449 **4 Claims**



1. In a flame spray method including steps of:

feeding a rod of solid material to be flame sprayed in and through a flame to heat, atomize and project a spray of particles against a workpiece to be coated, the improvement comprising:

controlling transit of said particles in molten droplet form over a path of travel of said particles from a tip of said rod to a surface of the workpiece such that initially liquid droplets of said material separated from and projected from the tip of the rod are at least partially solid at a moment of impact against a surface of the workpiece, spacing the workpiece from a point of separation of the liquid droplets from the tip of the rod at a stand-off distance sufficient to cause the liquid droplets to pass through an initial upstream liquid region and a contiguous down-

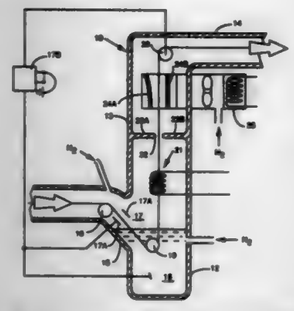
stream transition region from liquid to at least partially solid, wherein said flame is a supersonic flame, and said method further comprises continuously combusting under pressure a continuously supplied compressible combustible gas and fuel mixture including oxygen within an internal burner combustion chamber and discharging combustion product gases from a combustion chamber orifice through an expansion nozzle open at its downstream end via a nozzle extension and forming a supersonic jet exiting said nozzle extension, and said step of controlling the transit of the liquid droplets over the path of travel of the particles to be sprayed from the tip end of the rod to said surface of the workpiece comprises feeding said rod axially through said nozzle extension and causing a flow of liquid coolant to exit from an annulus about an outer periphery of the nozzle extension, and at an exit end of said nozzle extension as an annular coolant stream flowing along an outer surface of the supersonic jet downstream of the exit end of the nozzle extension from the tip of said rod towards said workpiece to thereby effect rapid cooling of the liquid droplets to at least partially solid form prior to impact on the workpiece surface, while substantially reducing the stand-off distance between the exit of the nozzle extension and the workpiece.

5,384,165

METHOD AND APPARATUS TO GALVANIZE A FERROUS SUBSTRATE

Thomas A. Sellitto, Madison, Ohio, assignor to SMS Engineering Inc., Pittsburgh, Pa.

Filed Jun. 11, 1993, Ser. No. 75,327
Int. Cl.[6] B05D *1/04*
U.S. Cl. 427—461 11 Claims



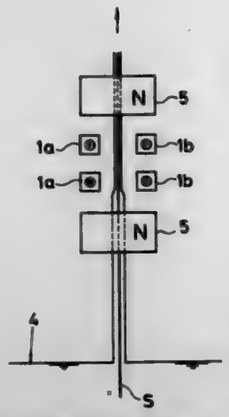
1. The method of coating a ferrous substrate with zinc, said method including the steps of:
introducing said substrate to a coating chamber having an inert atmosphere therein;
electro-statically depositing a layer of zinc powder on said substrate;
liquefying the zinc powder on the substrate;
reflowing the liquid zinc on the substrate to create a zinc iron alloy interface; and
cooling the substrate and the reflowed zinc coating thereon below the liquidous temperature of the zinc in an inert atmosphere.

5,384,166

METHOD FOR CONTROLLING COATING WEIGHT ON A HOT-DIPPED STEEL STRIP

Toshio Sato; Toshio Ishii; Shunichi Sugiyama, and Akira Yada, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 899,723, Jun. 17, 1992, abandoned.
This application Nov. 10, 1993, Ser. No. 150,759
Claims priority, application Japan, Jun. 25, 1991, 3-180417; Jun. 25, 1991, 3-180418; Jun. 25, 1991, 3-180419; Jun. 25, 1991, 3-180420; Aug. 26, 1991, 3-238762
Int. Cl.[6] B05D *1/04*
U.S. Cl. 427—547 6 Claims



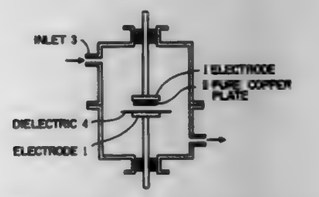
1. An improved method of controlling a coating weight on a hot-dipped steel strip, comprising the steps of:
positioning wiping nozzle means adjacent first and second surfaces of a steel strip that is drawn out of a coating bath;
positioning alternating current conducting paths in said wiping nozzle means, each of said alternating current conducting paths being positioned in said wiping nozzle means so as to be respectively in parallel with each of the first and second surfaces of the steel strip above the coating bath;
each of said alternating current conducting paths having a small cross-sectional area relative to a surface area of each of said first and second surfaces of said steel strip positioned adjacent to said alternating current conducting paths;
jetting gas from the wiping nozzle means onto the steel strip that has been drawn out of the coating bath; and
magnetically saturating the steel strip by flowing alternating currents through said alternating current conducting paths to generate an induced alternating current in the steel strip, that has a phase that is opposite to a phase of the alternating currents flowing through said alternating current conducting paths, thereby creating a peak value in a magnetic pressure that acts on areas of the first and second surfaces of the steel strip that are small relative to the surface area of each of the first and second surfaces of the steel strip, said magnetic pressure being generated by an interaction of the induced alternating current with the alternating currents flowing through the alternating current conducting paths whereby control of said coating weight on said hot-dipped steel strip is improved by providing said peak magnetic pressure on said areas of said first and second surfaces of said steel strip that are small relative to the surface area of each of the first and second surfaces of the steel strip.

5,384,167

METHOD FOR THE SURFACE TREATMENT OF A METAL BY ATMOSPHERIC PRESSURE PLASMA

Atsushi Nishiwaki, 1-11, Funakoshi-cho 2-chome, Chuo-ku, Osaka; Norihito Ikemiya, Takatsuki; Hiroshi Uchiyama; Hideo Inagaki, both of Hirakata; Yasuo Sawada, Tokyo, and Kazumi Ogino, Osaka, all of Japan, assignors to E.C. Chemical Co., Ltd., Osaka; C. Itoh Fine Chemical Co., Ltd., Tokyo and Atsushi Nishiwaki, Osaka, all of Japan

Filed Mar. 15, 1993, Ser. No. 31,492
Claims priority, application Japan, Sep. 4, 1992, 4-260566
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—569 7 Claims



1. A method for the surface treatment of a metal, which comprises the steps of:
placing at least a surface to be treated of a metal to be treated between two electrodes facing each other under an atmosphere of a mixed gas consisting of an inert gas and a reactant gas; and
plasma exciting said mixed gas under atmospheric pressure to effect glow discharge between said electrodes.

5,384,168

FERROELECTRIC LIQUID-CRYSTAL DISPLAY OF HIGH CONTRAST AND BRIGHTNESS

Hans-Rolf Dübal, Königstein/Taunus, Germany; Takamasa Harada, Inzai, Japan; Heinz Rieger, Hofheim am Taunus, Germany; Norbert Rösch, Frankfurt am Main, Germany, and Peter Wegener, Königstein/Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 19, 1991, Ser. No. 688,898
Claims priority, application Germany, Apr. 21, 1990, 4012750
Int. Cl.[6] C09K *19/00*
U.S. Cl. 428—1 10 Claims

1. A ferroelectric liquid-crystal display device of high contrast and brightness comprising a ferroelectric liquid-crystal layer which is surrounded on both sides by layers which are, in sequence starting from the ferroelectric liquid-crystal layer, at least one alignment layer, electrodes and outer plates and also at least one polarizer, wherein the alignment layer comprises within the layer, as a mixture component of the material of the alignment layer, or at the surface, as an additional layer between the alignment layer and the ferroelectric liquid-crystal layer, a component which renders the alignment layer amphiphilic.

5,384,169

PROCESS FOR THE PREPARATION OF CLOSURES FOR PACKAGING CONTAINERS

Klaus-Markus Waschinski, Senden; Arno Schmitz, Nottuln, and Ute Rübartsch, Dülmen, all of Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Munster, Germany

PCT No. PCT/EP90/00136, § 371 Date Sep. 27, 1991, § 102(e) Date Sep. 27, 1991, PCT Pub. No. WO90/10041, PCT Pub. Date Sep. 7, 1990
PCT Filed Jan. 25, 1990, Ser. No. 743,287
Claims priority, application Germany, Feb. 23, 1989, 3905545
Int. Cl.[6] B29D *22/00*; B32B *31/00*
U.S. Cl. 428—34.1 13 Claims

7. A packaging container with a closure, the inside of which has been coated and stoved with a sealing composition, wherein the sealing composition comprises:
A) 65 to 93% by weight of a liquid, blocked diisocyanate,
B) 2 to 15% by weight of a liquid diamine, liquid polyamine., or a mixture thereof,
C) 0 to 25% by weight of pigments, fillers, or a mixture thereof,
D) 0 to 20% by weight of one or more reactive diluents, and
E) 0 to 8% by weight of auxiliaries and additives, where the sum of the proportions by weight of the components A to E is 100% by weight in each case.

5,384,170

LAMINATED FILM WITH A STARCHY MATRIX AND LOW PERMEABILITY AND METHODS FOR ITS PRODUCTION

Catia Bastioli, Novara; Vittorio Bellotti, Fontaneto D'Agogna; Giancarlo Romano, Novara, and Maurizio Tosin, Serravalle Sesia, all of Italy, assignors to Novamont S.P.A., Milan, Italy

Continuation of Ser. No. 741,131, Aug. 7, 1991, abandoned. This application Jun. 24, 1993, Ser. No. 82,348
Claims priority, application Italy, Aug. 9, 1990, 67634A90
Int. Cl.[6] B29D *22/00*
U.S. Cl. 428—34.1 13 Claims

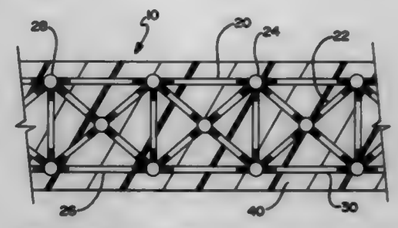
1. A laminated film, comprising at least one first layer of polymeric material which has a starchy matrix and is insoluble in water, and a second layer of hydrophobic material adhering to the first layer, wherein the polymeric material comprises a composition including destructured starch and a synthetic thermoplastic polymer, said synthetic thermoplastic polymer being selected from the group consisting of (a) polyvinyl alcohol and (b) copolymers of an olefin selected from the group consisting of ethylene, propylene, isobutene and styrene with acrylic acid, vinyl alcohol or vinyl acetate, the polymeric material further including a high boiling plasticiser and having a water content prior to conditioning of no more that 6% by weight.

5,384,171

STRUCTURALLY NETWORKED MATRIX CERAMIC COMPOSITE MATERIAL

Bryan P. Prucher, 52 N. Main, Clarkston, Mich. 48347

Filed Dec. 5, 1991, Ser. No. 802,601
Int. Cl.[6] B28B *21/00*
U.S. Cl. 428—34.4 13 Claims



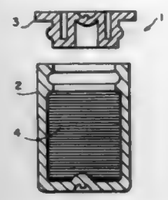
1. A structurally networked matrix ceramic composite material comprising:
(a) a repeatable three-dimensional skeletal non-foam ceramic molded structure formed from a first material, the structure defining a non-random network of structural members connected to common load distributing attachment points;
(b) a sub-strata of an energy absorbing second material different from the first material, the second material operatively attached to and surrounding the ceramic structure; and
wherein the structural members and common attachment points cooperate to define a three-dimensional load bearing structure a desired shape.

5,384,172
MULTI-LAYER PLASTIC FUEL TANK
Yutaka Takado; Toshikazu Nakaseto; Tetsuro Nogata, all of Yokohama; Eiji Tezuka, and Toshio Yokoi, both of Toyota, all of Japan, assignors to Tonen Chemical Corporation, Tokyo and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan
Continuation of Ser. No. 715,246, Jun. 14, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,756
Claims priority, application Japan, Jun. 15, 1990, 2-157055; Jun. 15, 1990, 2-157056
Int. Cl.[6] B65D *88/02, 88/12*
U.S. Cl. 428—35.7 5 Claims



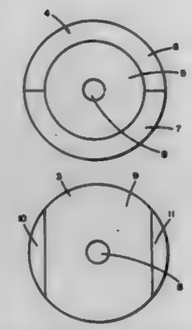
1. A heat and impact resistant blow-molded, multi-layer plastic fuel tank consisting of an inner and an outer high-density polyethylene layer, a central polyamide gas barrier layer and a modified high-density polyethylene layer between the central polyamide layer and the inner and outer high-density polyethylene layers, wherein
(a) said high-density polyethylene layers having a density of 0.935 g/cm^3 or more and a total thickness of 1.5–5.2 mm;
(b) said polyamide layer being made of a polyamide copolymer comprising 90–60 weight % of polyamide 6 and 10–40 weight % of polyamide 66 and having a thickness of 20–500 μm; and
(c) said modified high-density polyethylene layer being made of high-density polyethylene modified with an unsaturated carboxylic acid or a derivative thereof and having a total thickness of 20–500 μm; the ratio of the total thicknesses of said layers (a), (b) and (c) being 99–60:0.5–20:0.5–20.

5,384,173
CONTAINER FOR PHOTOGRAPHIC FILM, ITS PRODUCTION AND PHOTOGRAPHIC FILM PACKAGE
Mutsuo Akao, and Koji Inoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 7, 1993, Ser. No. 57,846
Claims priority, application Japan, May 8, 1992, 4-115055
Int. Cl.[6] G03C *3/00*
U.S. Cl. 428—35.7 16 Claims



1. A container for a photographic film having a body made of thermoplastic resin, said body comprising an open-ended portion and a wall portion, said open-ended portion having a lip, said wall portion having an inner surface, wherein said inner surface possesses a roughened area having a variation in height of 0.001 to 5 μm.

5,384,174
ADHESIVE SHEET
William J. Ward, Hull, and Jil F. Philistin-Rabaud, Anlaby, both of United Kingdom, assignors to Smith & Nephew plc, United Kingdom
Continuation of Ser. No. 603,700 filed as PCT/GB89/00563, May 22, 1989, abandoned. This application Feb. 26, 1993, Ser. No. 24,852
Claims priority, application United Kingdom, May 21, 1988, 8812096
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—40 13 Claims



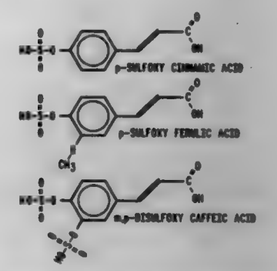
1. An adhesive sheet material for use on the skin which comprises a film backing layer which has upon at least a portion of one surface thereof a pressure sensitive adhesive layer, a removable release liner covering the adhesive layer and a removable support layer attached to the surface of the backing layer remote from the pressure sensitive adhesive layer wherein the stripping load required to separate the release liner from the adhesive layer is at least 25% greater than the stripping load required to separate the support layer from the backing layer and the release liner is stiffer than the support layer.

5,384,175
MAGNETIC RECORDING DISC COMPRISING A NON-MAGNETIC UNDERLAYER AND A MAGNETIC LAYER COMPRISING FERROMAGNETIC PARTICLES AND A BINDER
Masaya Kojima; Kazuhiro Niitsuma; Satoru Hayakawa; Toshio Kawamata, and Yasushi Endo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 13, 1992, Ser. No. 959,795
Claims priority, application Japan, Oct. 14, 1991, 3-264778; Oct. 28, 1991, 3-281665
Int. Cl.[6] G11B *23/00*
U.S. Cl. 428—64 4 Claims

1. A magnetic recording disc comprising a nonmagnetic support having thereon a nonmagnetic layer mainly comprising nonmagnetic particles and a binder resin, and a magnetic layer having a coercive force of 1,400 Oe or more and mainly comprising ferromagnetic metal particles and a binder resin, in this order, wherein said nonmagnetic particles in said non magnetic layer are partially or entirely electrically conductive particles and 3 to 20% by weight of said nonmagnetic particles in said nonmagnetic layer is carbon black having an average particle size of 40 mμm or less and a DBP oil absorption of 300 ml/100 g or more, said magnetic layer has a thickness of 0.5 μm or less, said ferromagnetic metal particles in said magnetic layer have an orientation ratio of 0.85 or more, and both of said

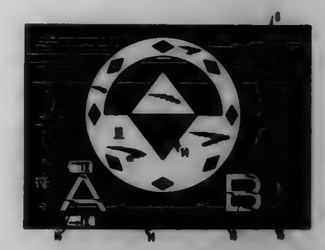
binder resin which is contained in the nonmagnetic layer and said binder resin which is contained in the magnetic layer comprise polyisocyanate.

5,384,176
PHENOLIC ACID SULFATE ESTERS FOR PREVENTION OF MARINE BIOFOULING
Richard C. Zimmerman, 392 Gibson Ave., Pacific Grove, Calif. 93950; Randall S. Alberte, 4001 N. Ninth St., Arlington, Va. 22203; James S. Todd, 811 Estrella St., Walla, Walla, Wash. 99362, and Phillip Crews, 777 Monterey, Santa Cruz, Calif. 95060
Filed Dec. 11, 1992, Ser. No. 989,274
Int. Cl.[6] B32B *9/04*
U.S. Cl. 428—68 10 Claims



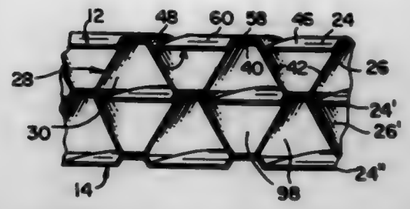
7. An article of manufacture resistant to marine biofouling, comprising:
an artificial surface; and
an antifouling layer on said surface with said antifouling layer consisting essentially of one or more compounds selected from the group consisting of sulfooxyphenylcarboxylic acids.

5,384,177
PICTURE, PATTERN AND INFORMATION CARRIER AND METHOD FOR ITS PRODUCTION
Karl-Heinz Rissmann, Jakobinenstrasse 12-16, W-8510 Fürt, Germany
Filed Oct. 16, 1992, Ser. No. 962,432
Int. Cl.[6] B32B *3/28;* B65D *73/00;* B29C *63/00*
U.S. Cl. 428—182 32 Claims



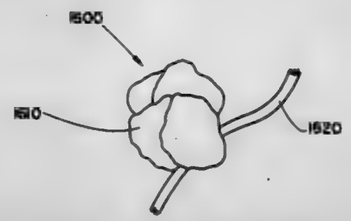
1. A two-dimensional information carrier comprising a corrugated material formed with a plurality of undulating waves, some of said waves being pressed flat to form flat sections, said flat sections being delineated from the remaining part of the corrugated material which has not been pressed flat by demarcation lines, said demarcation lines defining the outline of an information pattern, said information pattern representing communicable information desired to be communicated to persons viewing the two-dimensional information carrier.

5,384,178
TUBE SETTLER ASSEMBLY
Palle Rye, Reading, Pa., assignor to Brentwood Industries, Inc., Reading, Pa.
Filed Oct. 4, 1993, Ser. No. 131,064
Int. Cl.[6] B32B *3/28;* F02M *17/28;* C10J *1/08*
U.S. Cl. 428—182 19 Claims



1. An assembly comprising a first corrugated sheet and a second generally planar sheet, the corrugations forming alternating apices on opposite sides and equidistant from a central major plane in the first sheet, the apices in the first sheet being connected by angled walls, the second sheet having a central major plane which is generally parallel to the central major plane of the first sheet, the second sheet having complementary regions disposed in overlapping adjacent complementary relation to, and abutting the apices of, the first sheet, and undulating regions disposed between the complementary regions, the undulating regions alternating above and below the central major plane of the second sheet, the undulating regions alternating above the central major plane of the second sheet having a peak wavefront and the undulating regions alternating below the central major plane of the second sheet having a valley wavefront, whereby the wavefronts of the undulating regions are angled with respect to longitudinal axes of the complementary regions to an extent necessary to interlock adjacent first and second sheets.

5,384,179
PARTICULATE POLYMERIC COMPOSITIONS HAVING INTERPARTICLE CROSSLINKED AGGREGATES OF FINE PRECURSORS
Donald C. Roe; Charles J. Berg, and Frank H. Lahrman, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 2, 1990, Ser. No. 502,942
Int. Cl.[6] B32B *23/02*
U.S. Cl. 428—192 38 Claims



1. A polymeric composition containing particulate absorbent interparticle crosslinked aggregates, said interparticle crosslinked aggregates comprising (i) substantially dry precursor particles of substantially water-insoluble, absorbent, hydrogel-forming, polymer material, and (ii) an interparticle crosslinking agent reacted with said polymer material of said precursor particles to form crosslink bonds between said precursor particles, said interparticle crosslinked aggregates being present in the polymeric composition in an amount such that the polymeric composition has a mass average particle size at least

about 50% greater than the mass average particle size of said precursor particles, said mass average particle size of said precursor particles being less than about 300 microns.

5,384,180

ELECTROSTATIC RECORDING MEDIUM

Tomio Oki, and Kiyoshi Iwamoto, both of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1993, Ser. No. 112,350

Claims priority, application Japan, Aug. 28, 1992, 4-251928; Sep. 18, 1992, 4-273407

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 **11 Claims**

1. An electroconductive substrate comprising an electroconductive layer on at least one side of a base sheet, wherein said electroconductive layer contains an electroconductive pigment, a normal salt, and a water soluble or water dispersible binder; the binder contains 20 to 85 weight % of starch and the normal salt is maintained at 10 to 100 parts by weight with respect to 100 parts by weight of said electroconductive pigment.

5,384,181

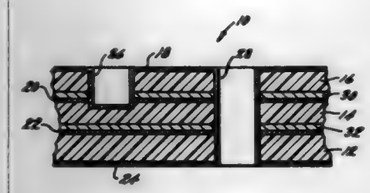
LOW VOLUME FRACTION CERAMIC FILLED FLUOROPOLYMERIC COMPOSITE MATERIAL

David J. Arthur, Norwood; Gwo S. Swei, Northboro, both of Mass.; Allen F. Horn, III, Danielson, and Brett Kilhenny, Storrs, both of Conn., assignors to Rogers Corporation, Rogers, Conn.

Continuation of Ser. No. 641,427, Jan. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 367,241, Jun. 16, 1989, Pat. No. 5,061,548, which is a continuation-in-part of Ser. No. 15,191, Feb. 17, 1987, Pat. No. 4,849,284, and a continuation-in-part of Ser. No. 279,474, Dec. 2, 1988, Pat. No. 5,149,590. This application Oct. 5, 1993, Ser. No. 131,870

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—195 **45 Claims**



1. An electrical substrate material comprising:
fluoropolymeric material;
ceramic filler material, said ceramic filler material including fused amorphous silica, said filler material being in an amount of at least about 26 to less than 45 volume percent of the total substrate material; and
said ceramic filler being coated by a silane coating.

5,384,182

MAGNETIC RECORDING MEDIUM AND A METHOD FOR PRODUCING THE SAME WHEREIN THE MEDIUM HAS TWO MAGNETIC LAYERS DIFFERING IN DEGREE OF ORIENTATION

Takeo Ito, Yokohama, and Hirotaka Yokoyama, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

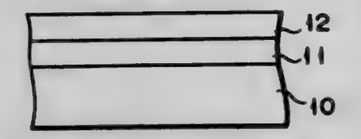
PCT No. PCT/JP91/00623, § 371 Date Jan. 6, 1992, § 102(e) Date Jan. 6, 1992, PCT Pub. No. WO91/18387, PCT Pub. Date Nov. 28, 1991

PCT Filed May 10, 1991, Ser. No. 781,213

Claims priority, application Japan, May 11, 1990, 2-122699

Int. Cl.[6] G11B *5/00*

U.S. Cl. 428—212 **21 Claims**



1. A magnetic recording medium comprising:
a first longitudinally oriented magnetic layer comprising a base support with a binder and a needle-like crystal magnetic powder coated thereon; and
a second longitudinally oriented magnetic layer comprising a binder and a hexagonal system ferromagnetic powder coated on said first longitudinally oriented magnetic layer;
said first and second magnetic layers having simultaneously regulated longitudinal orientation rates, the longitudinal orientation rate of said first magnetic layer being at least 0.7 and less than 0.89 and the longitudinal orientation rate of said second magnetic layer being at least 0.55 but smaller than the longitudinal orientation rate of the first layer.

5,384,183

DEGRADABLE FILMS

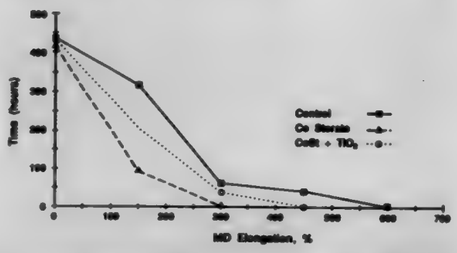
Joe Taylor, Calgary, Canada, assignor to Novacor Chemicals, Ltd., Calgary, Canada

Filed May 17, 1993, Ser. No. 62,603

Claims priority, application Canada, Jul. 23, 1992, 2074578

Int. Cl.[6] B32B *7/02*

U.S. Cl. 428—216 **7 Claims**



1. A photodegradable polyethylene sheet material having a thickness from 0.1 to 5 mills consisting essentially of polyethylene, from 200 to 400 parts per million of a cerium salt of a $C_{16\text{-}20}$ fatty acid and from 1,000 to 20,000 ppm of titanium dioxide having a particle size of less than 0.05 microns.

5,384,184

POLYESTER BLOCK COPOLYMER AND ELASTIC YARN COMPOSED THEREOF

Noritsugu Saiki; Toshitsugu Matsuki, and Masayuki Hayashi, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 797,138, Nov. 22, 1991, abandoned. This application Sep. 28, 1993, Ser. No. 128,314

Int. Cl.[6] D03D *15/08*; C08G *63/688*

U.S. Cl. 428—230 **11 Claims**

1. A polyester block copolymer having an inherent viscosity of at least 0.6, which comprises (A) 30 to 90% by weight of polyester segments comprised of at least 70 mols percent of benzenedicarboxylic acid as the main acid component and a diol having 5 to 12 carbon atoms between the hydroxyl groups as the main glycol component and (B) 70 to 10% by weight of polyester segments comprising an aromatic dicarboxylic acid as the main acid component and ethylene glycol, trimethylene glycol, tetramethylene glycol or 1,4-cyclohexane dimethanol as the main glycol component, wherein (i) when a polyester having an inherent viscosity of at least 0.6 is formed by polycondensation of the components constituting the polyester segments (A), the melting point of the obtained polyester is lower than 50° C. or the obtained polyester is amorphous, and (ii) when a polyester having an inherent viscosity of at least 0.6 is formed by polycondensation of the components constituting the polyester segments (B), the melting point of the polyester is higher than 180° C.

5,384,185

CONDUCTING REINFORCED PLASTICS

Dirk A. Bovenschen, Renswoude, and Rudolf G. Goossens, Lichtenvoorde, both of Netherlands, assignors to Lantor B.V., Netherlands

Filed Mar. 19, 1993, Ser. No. 33,386

Claims priority, application European Pat. Off., Mar. 20, 1992, 92200816

Int. Cl.[6] B32B *5/02*

U.S. Cl. 428—235 **16 Claims**

1. Use of an assembly comprising at least one non-conductive or substantially non-conductive carrier material and at least one conductive fibre web which has been provided on at least one side of the carrier material, with fibres of the conductive web having been brought into electrically conductive contact, through the carrier material with the other side of the carrier material, the conductive fibres being present in an amount ranging from 5–100 weight % based upon the weight of the fibre web and having an aspect ratio of 500 or more, for making a reinforced plastics material.

5,384,186

NON-DESTRUCTIVE CARRIERS FOR CYCLODEXTRIN COMPLEXES

Toan Trinh, Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 521,307, May 9, 1990, abandoned. This application Oct. 19, 1992, Ser. No. 963,245

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[6] D06M *10/08*; B32B *5/16*

U.S. Cl. 428—240 **28 Claims**

1. An article of manufacture comprising an effective amount of active/cyclodextrin inclusion complex suspended in solid polyalkylene glycol carrier material where said carrier material is attached to a substrate selected from the group consisting of: solid absorbent particles; paper; woven fabric; nonwoven fabric; natural fibers; synthetic fibers; polymeric films; formed polymeric articles; and mixtures thereof, the weight ratio of said active/cyclodextrin inclusion complex to said solid polyalkylene glycol carrier material being from about 1:1 to about 1:5.

5,384,187

BIODEGRADABLE RESIN COMPOSITIONS AND LAMINATES BASED THEREON

Tomoyoshi Uemura, Ibaraki; Yoshimi Akamatsu, Amagasaki; Yuichi Yoshida, Kobe, and Yoshikazu Moriwaki, Osaka, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/00633, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO92/20739, PCT Pub. Date Nov. 26, 1992

PCT Filed May 15, 1992, Ser. No. 961,707

Claims priority, application Japan, May 15, 1991, 3-140948; Jul. 1, 1991, 3-188016; Aug. 27, 1991, 3-242535; Aug. 30, 1991, 3-280749; Aug. 30, 1991, 3-280750

Int. Cl.[6] B32B *27/06, 27/18*; C08L *3/00, 29/04*

U.S. Cl. 428—262 **6 Claims**

1. A biodegradable resin composition comprising a saponified ethylene-vinyl acetate copolymer having an ethylenevinyl acetate copolymer having an ethylene content of 20 to 60 mole a vinyl acetate saponification degree of not less than 90 mole a melt flow index of 1 to 100 g/10 min as measured under a load of 2160 g at 210° C., and a melt viscosity ratio of η_{60}/η_5 of 0.8 to 2.5 where η_{60} means the melt viscosity after 60 minutes of standing at 250° C. and the η_5 means the melt viscosity after 5 minutes of standing at 250° C. and a starch-based macromolecular substance,
wherein said saponified ethylene-vinyl acetate copolymer and said starch-based macromolecular substance occur in a ratio of 80:20 through 20:80 and
wherein one of said saponified ethylene-vinyl acetate copolymer and said starch-based macromolecular substance is fed to an extruder via its main feeder and melted in the extruder and the other is fed in a molten state to the extruder via a side feeder, and said saponified ethylene-vinyl acetate copolymer and said starch-based macromolecular substance are blended together in a molten state in the extruder.

5. A laminate comprising a layer composed of a biodegradable resin composition comprising a saponified ethylenevinyl acetate copolymer having an ethylene content of 20 to 60 mole % a vinyl acetate saponification degree of not less than 90 mole %, a melt flow index of 1 to 100 g/10 min as measured under a load of 2160 g at 210° C., and a melt viscosity ratio η_{60}/η_5 of 0.8 to 2.50 where η_{60} means the melt viscosity after 60 minutes of standing at 250° C. and η_5 means the melt viscosity after 5 minutes of standing at 250° C. and a starch-based macromolecular substance,
wherein said saponified ethylene-vinyl acetate copolymer and said starch-based macromolecular substance occur in a ratio of 80:20 through 20:80 and
wherein one of said saponified ethylene-vinyl acetate copolymer and said starch-based macromolecular substance is fed to an extruder via its main feeder and melted in the extruder and the other is fed in a molten state to the extruder via a side feeder, and said saponified ethylene-vinyl acetate copolymer and said starch-based macromolecular substance are blended together in a molten state in the extruder
and a layer of substrate material selected from the group consisting of a thermoplastic resin, paper, woven cloth, nonwoven cloth, metal, foil and wood board.

5,384,188

INTUMESCENT SHEET

Alan R. Lebold, Niagara Falls, and John D. Ten Eyck, Lewiston, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Nov. 17, 1992, Ser. No. 977,390

Int. Cl.[6] B32B *5/16*; C09K *21/00*

U.S. Cl. 428—283 **14 Claims**

1. A homogeneous flexible, resilient, intumescent mat comprising

(a) about 15 wt % to about 60 wt % fibers, at least half of which are inorganic fibers;
(b) about 3 wt % to about 9 wt % binder;
(c) about 20 wt % to about 60 wt % unexpanded vermiculite; and
(d) about 5 wt % to about 60 wt % expandable graphite.

5,384,189
WATER-DECOMPOSABLE NON-WOVEN FABRIC
Hideo Kuroda, and Yasunori Sakamoto, both of Kanagawa, Japan, assignors to Lion Corporation, Tokyo, Japan
Filed Jan. 27, 1993, Ser. No. 9,760
Int. Cl.[6] D04H *1/58*; B32B *27/00*; D02G *3/00*; A61F *13/20*
U.S. Cl. 428—288 **11 Claims**

1. A water-decomposable non-woven fabric comprising a water-dispersible fiber layer, each fiber of which is bound with one another using a water-soluble binder consisting essentially of an unsaturated carboxylic acid/unsaturated carboxylic acid ester copolymer in which 1 to 60 mole % of the repeating units derived from the unsaturated carboxylic acid is in the form of a salt and which is soluble in tap water but is insoluble in an aqueous solution containing not less than 0.5% by weight of a neutral inorganic salt comprising a monovalent ion; the water-dispersible fiber layer being composed of a mixture of 40 to 90% by weight of fibers having a crimp number of 5/inch to 19/inch, 10 to 60% by weight of fibers having a crimp number of 20/inch to 25/inch, and not more than 10% by weight of fibers having a crimp number of 26/inch to 30/inch; and a content of the binder in the non-woven fabric being 1 to 30% by weight relative to the total weight of the non-woven fabric and wherein the fibers have a length of 5 to 30 mm.

5,384,190
CONDUCTIVE SUBSTRATE COMPRISING CARBON BLACK AND INORGANIC POWDERS
Yoshiaki Kaburaki, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 707,456, May 30, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,318
Claims priority, application Japan, Jun. 4, 1990, 2-144403
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—323 **5 Claims**

1. A conductive substrate including a substrate layer with at least one surface thereof having a conductive layer formed thereover, said conductive layer comprising a carbon black and at least one electrically conductive material having a needle-shaped crystal structure in addition to said carbon black in proportion of from 10 to 100 parts of said electrically conductive material per 100 parts by weight of said carbon black, wherein said needle-shaped crystal structure has a 5–100 μm diameter in its longitudinal axis and a 0.1–1 μm diameter in its transverse axis, said electrically conductive material being at least one powdery inorganic composition of zinc oxide, titanium dioxide, aluminum oxide, calcium carbonate, barium sulfate, mica, potassium titanate, aluminum boride, or silicon carbide, which is doped with at least one electrically conductive material of tin oxide, antimony oxide, gold, silver or copper.

5,384,191
AMORPHOUS SILICA FILLER
Masahide Ogawa; Kiyoshi Abe, both of Shibata; Masao Takahashi, Kita-kanbara; Yuuzi Washio, Kita-kanbara; Kazumitsu Enomoto, Kita-kanbara, and Toshio Kitsu, Shibata, all of Japan, assignors to Mizusawa Industrial Chemicals, Ltd., Tokyo, Japan
Division of Ser. No. 851,910, Mar. 16, 1992, Pat. No. 5,266,397. This application Jul. 22, 1993, Ser. No. 95,245
Claims priority, application Japan, Mar. 15, 1991, 3-74421; Mar. 15, 1991, 3-74422
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—323 **9 Claims**



1. A resin film containing 0.01 to 10 parts by weight of an antiblocking agent, wherein said anti-blocking agent comprises amorphous silica particles which have an average primary particle diameter (D1) of from 100 to 270 nm, an apparent specific gravity of from 0.24 to 0.55 g/cm^3, a specific surface area of from 200 to 500 m^{2}g, a silica elementary particle diameter (DO) of from 5 to 15 nm, and an agglomeration degree (DA) defined by the ratio of D1/DO of from 10 to 50.

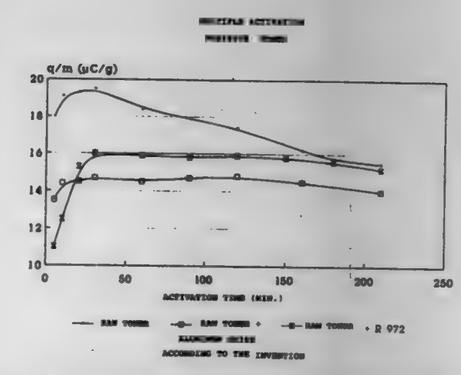
5,384,192
BLOCK AND GRAFT COPOLYMERS AS ADHESION PROMOTERS
Timothy E. Long, Hilton; Bradley K. Coltrain, Fairport, and David M. Teegarden, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 11, 1993, Ser. No. 29,726
Int. Cl.[6] B32B *27/04*
U.S. Cl. 428—336 **10 Claims**

1. A structure comprising an inorganic oxide substrate having thereon an organic polymer layer, characterized in that, interposed between said substrate and said organic polymer layer, there is an adhesion promoting layer of a block or graft copolymer, one component of which is compatible with said organic polymer and a second of which is a poly(vinylphenol) component that is capable of hydrogen bonding with said inorganic oxide substrate.

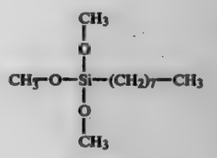
5,384,193
STABILIZED AND CARBONACEOUS EXPANDED FIBERS
Kyung W. Suh, Granville; William G. Stobby, Johnstown, both of Ohio, and Francis P. McCullough, Jr., Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 990,957, Dec. 15, 1992, abandoned, which is a division of Ser. No. 554,778, Jul. 19, 1990, Pat. No. 5,188,893. This application Mar. 28, 1994, Ser. No. 218,038
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—375 **7 Claims**

1. A fibrous structure comprising a multiplicity of non-flammable expanded non-graphitic carbonaceous polymeric asymmetric porous hollow fibers, said fibers having an LOI value greater than 40, a char percentage value greater than 65, a thermal conductivity less than 1 BTU ft/hr ft^2°F, an elemental carbon content of less than 85 percent, said fibers being expanded at least 5% greater than the fiber being non-expanded.

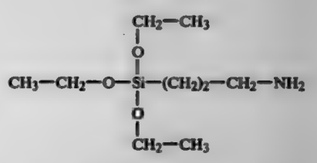
5,384,194
SURFACE-MODIFIED PYROGENICALLY PRODUCED ALUMINUM OXIDE
Hans Deusser, Karlstein; Dieter Kerner, Hanau; Jürgen Meyer, Stockstadt; Günther Michael, Karlstein, and Andreas Stubbe, Rodenbach, all of Germany, assignors to DeGussa Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 28, 1993, Ser. No. 12,163
Claims priority, application Germany, Jan. 31, 1992, 4202694
Int. Cl.[6] B32B *1/00*
U.S. Cl. 428—405 **3 Claims**



1. A pyrogenically produced aluminum oxide which has been surface modified with a mixture of silane A and silane B corresponding to the chemical formulae:



Silane A



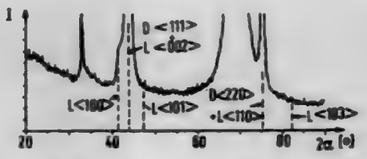
Silane B

said surface-modified, pyrogenically produced aluminum oxide having the following physico-chemical properties:

Surface	(m^2/g)	50 to 150
Stamping Density	(g/l)	50 to 90
Drying loss	(%)	<5
Annealing loss	(%)	5.0 to 15
C content	(%)	0.5 to 12
pH		4 to 8

the ratio of aluminum oxide to silane mixture being in the range 0.5 to 40 parts by weight of silane per 100 parts by weight aluminum oxide.

5,384,195
ANTIFRICTION BODY HAVING AN ANTIFRICTION LAYER
Peter Bachmann, Würselen; Dieter Leers, Stolberg-Breinig, and Detlef Wiechert, Aledorf, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 63,345, May 18, 1993, abandoned. This application May 24, 1993, Ser. No. 66,950
Claims priority, application Germany, May 22, 1992, 4216993
Int. Cl.[6] G11B *5/22*
U.S. Cl. 428—408 **6 Claims**



1. A magnetic head slider (3), the antifriction surface of said slider being provided with an antifriction layer (4) which contains diamond crystals and which antifriction layer (4) is provided by means of a CVD process, characterized in that said antifriction layer (4) contains hexagonal lonsdaleite crystals whose volume percentage in the antifriction layer (4), with respect to the volume percentage of diamond crystals, is selected to be such that the intensity ratio, measured on the antifriction layer, between the <100> diffraction peak of lonsdaleite and the <111> the diffraction peak of diamond in the X-ray diffraction spectrum exceeds 0.02.

5,384,196
POLYARYLENE SULFIDE COMPOSITE MATERIALS AND PREPARATION THEREOF
Hiroshi Inoue, and Tamotsu Ise, both of Yokkaichi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan
Filed Oct. 1, 1992, Ser. No. 955,268
Claims priority, application Japan, Oct. 1, 1991, 3-278968; Sep. 4, 1992, 4-260567
Int. Cl.[6] B32B *9/04*
U.S. Cl. 428—411.1 **24 Claims**

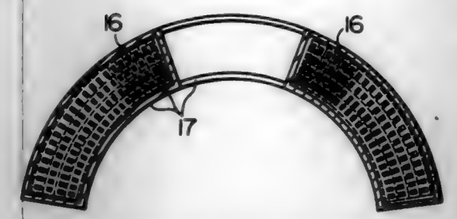
1. A polyarylene sulfide composite material which is prepared by a process comprising at least two steps:
(A) treating layer-structure silicate material with an aqueous solution of an organic onium salt or a solution of an organic silazane or halogenated organosilane dissolved in an organic solvent in which the layer-structure silicate is swellable, so as to form an organomodified layer-structure complex; and
(B) reacting the thus formed organomodified layer-structure complex with a polyarylene sulfide in a polar organic solvent in which the polyarylene sulfide is soluble and the organomodified layer-structure complex is dispersed evenly such that layers of silicate mineral are separated discretely into individual layers or laminates containing a few layers with a mean distance of at least 30 Å between the centers of gravity of individual single layers and at least 50% of the silicate mineral is dispersed without forming masses consisting of large numbers of silicate mineral layers, so as to provide a polyarylene sulfide composite material,
said polyarylene sulfide composite material comprising 100 parts by weight of the polyarylene sulfide and from about 0.1 to about 150 parts by weight of said organomodified layer-structure silicate complex, said polyarylene sulfide and said organomodified layer-structure silicate complex being linked through either ionic or covalent bonding.

5,384,197

SUPERCONDUCTING MAGNET COIL AND CURABLE RESIN COMPOSITION USED THEREIN

Toru Keyama, Hitachi; Koo Hoajo, Ibaraki; Masao Suzuki, Hitachi; Akio Takahashi, Hitachiota; Akio Mukoh, Mito; Keiji Pakuzki, and Seiji Nunata, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 799,964, Nov. 29, 1991, abandoned. This application Dec. 22, 1993, Ser. No. 171,780
Claims priority, application Japan, Nov. 30, 1990, 2-329058
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—457 10 Claims



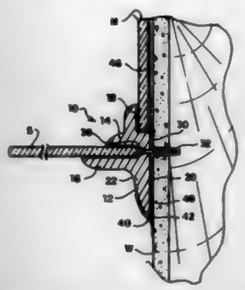
1. A superconducting magnet coil which comprises a coil of a composite superconductor comprising a plurality of thin superconducting wires made of an alloy or intermetallic compound selected from the group consisting of an Nb—Ti alloy, Nb_3Sn, Nb_3Al and V_3Ga, and a stabilizer selected from the group consisting of copper and aluminum contacting said thin superconducting wires; and a cured product of a curable resin composition comprising at least one epoxy resin selected from the group consisting of diglycidyl ether of bisphenol A, diglycidyl ether of biaphenol F, diglycidyl ether of bisphenol AF and diglycidyl ether of bisphenol AD, all having a number-average molecular weight of 1,000–50,000, with which the coil has been impregnated, the cured product having a thermal shrinkage factor of 1.5–0.3% when cooled from the glass transition temperature to 4.2K, a bend-breaking strain of 2.9–3.9% at 4.2K and a modulus of 500–1,000 kg/m^2 at 4.2K.

5,384,198

WALL SHELF BRACKET

Charles E. Hodges, 6640 Golfclub Dr., Diamondhead, Miss. 39525

Filed Sep. 10, 1993, Ser. No. 118,582
Int. Cl.[6] A47G 1/16
U.S. Cl. 248—466 10 Claims



11. A mirror and shelf support for use with a mirror and a shelf comprising:
a vertical plate having at least a shoulder;
upper and lower horizontal projections extending from said plate, said upper and lower horizontal projections defining a shelf-receiving channel therebetween;
a vertical mirror stop extending from said shoulder of said plate; said mirror stop and said shoulder defining an L-shaped engaging member, said L-shaped engaging member cooperating with a supporting surface to define a mirror receiving aperture configured so said mirror and shelf support is adapted to carry and support the mirror directly against the supporting surface; said mirror and shelf support defining a monolithic construction.

5,384,199

CARBON PAPER AND METHOD FOR MAKING SAME

Gene D. Carlson, Crocker Township, Polk County, Iowa, and Alfredo R. Dela Cruz, Alpharetta, Ga., assignors to Frye Copystystems, Inc., Des Moines, Iowa

Filed Mar. 22, 1993, Ser. No. 34,135
Int. Cl.[6] B41M 5/10
U.S. Cl. 428—488.1 9 Claims

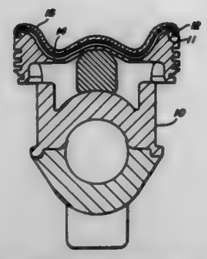
1. In combination:
a carbon paper comprising a sheet of paper having opposite surfaces and a film of carbon based hot melt ink coated on at least one of said opposite flat surfaces of said sheet of paper;
said carbon based hot melt ink comprising a wax material, carbon black, and a third material selected from the group consisting essentially of liquid butyl stearate, C_1 to C_8 alkyl stearates, solid esters of stearic acid, and C_{12} to C_{18} saturated and unsaturated primary amides; said third material being present in a percentage of ¼% to 5% by weight of said hot melt ink.

5,384,200

THERMAL BARRIER COATING AND METHOD OF DEPOSITING THE SAME ON COMBUSTION CHAMBER COMPONENT SURFACES

David C. Giles, West Bloomfield; Roger E. Begin, Dearborn; David R. Dugger, Howell, and Eric W. Paskvan, Brighton, all of Mich., assignors to Detroit Diesel Corporation, Detroit, Mich.

Continuation of Ser. No. 781,090, Dec. 24, 1991, abandoned. This application Apr. 18, 1994, Ser. No. 228,929
Int. Cl.[6] B22F 7/00
U.S. Cl. 428—552 5 Claims



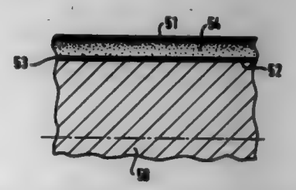
1. In a compression ignition internal combustion engine, a thermal barrier coating for the surfaces of the combustion chamber components, comprising:
a metallic layer having a thickness between 0.003–0.006 inches deposited on the component surface;
a ceramic layer having a thickness between 0.010–0.015 inches and a volume porosity of 10–15% deposited on the metallic layer to impede the flow of heat therethrough, wherein the metallic layer creates a mechanical bond between the component surface and the ceramic layer, allows for a smooth transition between the differing physical properties of the component and the ceramic layer and serves as a corrosion barrier by protecting the component from combustion gases and contaminants;
the metallic layer comprising a MCrAlY material selected from the group consisting of nickel base alloy, cobalt base alloy, nickel cobalt base alloy and iron base alloy;
the ceramic layer is comprised of eight percent Yttria partially stabilized zirconia comprised essentially of the following materials by percentage weight:
7.0–9.0 wt % Y_2O_3
0.0–1.5 wt % SiO_2
0.0–0.5 wt % CaO
0.0–0.8 wt % MgO
0.0–0.4 wt % Fe_2O_3
0.0–0.2 wt % Al_2O_3
0.0–0.2 wt % TiO_2
Balance ZrO_2
the metallic layer being comprised of particles having a spherical morphology, the ceramic layer being comprised of particles having a spherical morphology.

5,384,201

TOOL FOR TREATING SURFACES OF STRUCTURAL PARTS AND CARRIER MATERIAL FOR THE SAME

Ludwig Finkbeiner, Walheim, and Manfred Wilhelm, Nuesdorf, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 864,616, Apr. 7, 1992, Pat. No. 5,233,738. This application Mar. 18, 1993, Ser. No. 33,033
Claims priority, application Germany, May 31, 1991, 4117814; Sep. 28, 1992, 4232429
Int. Cl.[6] B22F 5/00
U.S. Cl. 428—552 9 Claims



8. A carrier material for a tool for treating surfaces, on which a non-metallic hard layer is to be applied, the carrier material including a metal alloy with a homogeneous fine-grain structure; and an activating layer applied in form of a net over said metal alloy and cohesively connected with said metal alloy.

9. A tool for treating surfaces of structural parts comprising a carrier material which is composed of a metal alloy with a homogenous fine-grained structure and formed as a material selected from the group consisting of a high pressure sintered material and a superspeed steel material; a non-metallic hard layer applied on said carrier material; and an activating layer applied on said carrier material between said carrier material and said hard layer, said superspeed steel material having an average hardness of 68–70 HRC over its whole diameter.

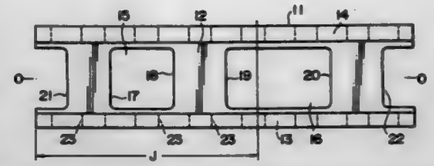
5,384,202

END RECESSED RETAINER FOR USE IN A LINEAR MOTION GUIDE UNIT

Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 815,019, Dec. 26, 1991, abandoned. This application Apr. 2, 1993, Ser. No. 41,917
Claims priority, application Japan, Dec. 28, 1990, 2-405624[U]
Int. Cl.[6] F16C 29/04, 29/06
U.S. Cl. 428—577 3 Claims

1. A stock retainer member for making a retainer of a desired first length for use in a linear motion guide unit which unit includes a rail, a slider and a plurality of rolling members in the retainer and interposed between said rail and said slider, said retainer comprising an elongated body having a pair of opposite ends, each of which is formed with an open recessed portion which is engageable with a stopper provided at each end of said guide unit, said stock retainer member having a length greater than the desired first length of the retainer and including an elongated horizontal section and a pair of vertical sections extending vertically from opposite sides of said horizontal section, thereby defining a substantially U-shaped cross section, said horizontal section of said stock retainer member being non-symmetrical end-to-end and formed with a plurality of enclosed generally rectangular windows, each generally rectangular window having substantially identical end shapes, wherein the distance between the end peripheries of one generally rectangular window differs from the distance between the end peripheries of an immediately adjacent generally rectangular window along the longitudinal axis of the horizontal section and wherein one of said end shapes of one generally rectangular window will form one of said recessed portions of said retainer and one of said end shapes of another generally rectangular window will form the other of said recessed portions of said retainer and wherein the stock retainer member is cutable transversely of said windows to provide a retainer of said desired first length and to define said recessed portions.

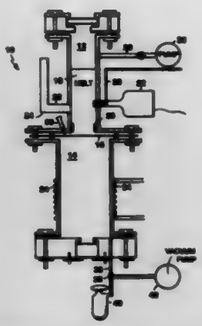


5,384,203

FOAM METALLIC GLASS

Robert E. Apfel, New Haven, Conn., assignor to Yale University, New Haven, Conn.

Filed Feb. 5, 1993, Ser. No. 14,206
Int. Cl.[6] B22D 25/06, 27/15
U.S. Cl. 428—613 16 Claims



1. A method of making a solid foam material comprising:
in a chamber heating a starting material that is normally solid at room temperature to a temperature that is above its melting point;
injecting a blowing liquid into the melted material to produce a mixture; and
rapidly decompressing the mixture to vaporize the blowing liquid so that its latent heat of vaporization cools the starting material sufficiently to produce the solid foam material.

5,384,204

TAPE AUTOMATED BONDING IN SEMICONDUCTOR TECHNIQUE

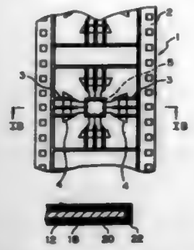
Kazuhito Yamato; Norio Wakabayashi; Masao Nakazawa; Shinichi Wakabayashi; Norio Wada; Fumio Kuraishi, and Toshihiko Shimada, all of Nagano, Japan, assignors to Shinko Electric Industries Co. Ltd., Nagano, Japan

Continuation of Ser. No. 99,051, Jul. 28, 1993, abandoned, which is a continuation of Ser. No. 735,828, Jul. 25, 1991, abandoned. This application Dec. 14, 1993, Ser. No. 166,620

Claims priority, application Japan, Jul. 27, 1990, 2-200183; Jul. 27, 1990, 2-200184

Int. Cl.[6] H01L *23/498*

U.S. Cl. 428—626 7 Claims



1. A tape useful for an automatic bonding process when manufacturing a high-frequency semiconductor device, said tape comprising: an electrically insulating flexible film; a plurality of electrically conductive circuit patterns consisting of copper or copper-alloy formed on said insulating film; each of said circuit patterns having an inner lead portion and an outer lead portion; a solder plated film, consisting of tin or tin-lead plated film, formed on said inner and outer lead portions of the respective circuit pattern;

a first plated film and a second plated film formed on at least said outer lead portion as underlayers of said solder formed film;

said first plated film formed on said circuit pattern consisting essentially of nickel; and

said second plated film formed on said first plated film consisting of gold and/or palladium.

5,384,205

MULTI-LAYER SLIDE BEARING HAVING AL-SN ALLOY LAYER WITH HIGH FATIGUE STRENGTH AND CONFORMABILITY

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya, and Yoshiaki Sato, Gifu, all of Japan, assignors to Daido Metal Company Ltd., Tokyo, Japan

Filed Sep. 24, 1993, Ser. No. 125,745

Claims priority, application Japan, Oct. 26, 1992, 4-287370

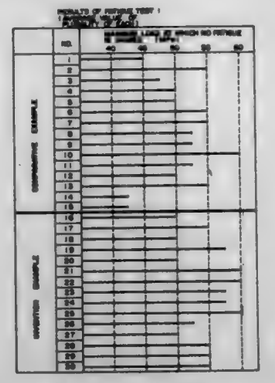
Int. Cl.[6] F16C *33/12*

U.S. Cl. 428—643 21 Claims

1. A multi-layer slide bearing comprising an Al—Sn bearing alloy layer which has high fatigue strength and good conformability with a mating sliding contact member, further comprising a backing steel plate and an intermediate bonding layer of another aluminium alloy,

wherein said Al—Sn bearing alloy consists essentially of, by weight, 7 to 20% Sn, and balance of Al and unavoidable impurities, and has a hardness of Hv 50 to 80,

said intermediate bonding layer of the aluminium alloy consists essentially of, by weight, at least one of up to 1.7% Mn, up to 1.2% Cu and up to 1.8% Mg, and balance of Al and unavoidable impurities, and a hardness rate of said intermediate bonding layer of the aluminium alloy to said



Al—Sn bearing alloy in terms of Vickers hardness (Hv) exceeds 70% and is not more than 90%.

5,384,206

HIGH-STRENGTH COLD-ROLLED STEEL STRIP AND MOLTEN ZINC-PLATED HIGH-STRENGTH COLD-ROLLED STEEL STRIP HAVING GOOD FORMABILITY AND METHOD OF PRODUCING SUCH STRIPS

Kohsaku Ushioda; Naoki Yoshinaga, and Osamu Akisue, all of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

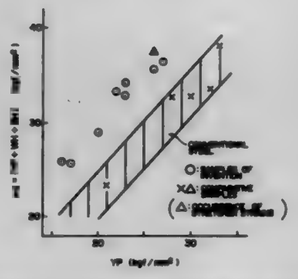
PCT No. PCT/JP92/00384, § 371 Date Sep. 3, 1993, § 102(e) Date Sep. 3, 1993, PCT Pub. No. WO92/16668, PCT Pub. Date Jan. 10, 1992

PCT Filed Mar. 13, 1992, Ser. No. 117,842

Claims priority, application Japan, Mar. 18, 1991, 3-074201; Jun. 12, 1991, 3-140481

Int. Cl.[6] B32B *15/18*; C21D *7/02, 9/52*

U.S. Cl. 428—659 15 Claims



6. A method of producing a high-strength cold-rolled steel strip characterized by the steps of finishing the hot-rolling of a slab, having baking hardenability ≧3 kgf/mm^2, a WH amount of ≧4 kgf/mm^2 and average r value not less than 1.6, yield ratio not more than 0.55 and, having a chemical composition consisting essentially of, by weight, 0.0005–0.01% C, not more than 0.8% Si, more than 0.5% but not more than 3.0% Mn, 0.01–0.12% P, 0.0010–0.015% S, 0.01–0.1% Al, 0.0005–0.0060% N, not less than 0.0001% but less than 0.0005% B, the contents of B and N being made to satisfy B/N ≦0.48, 0.005–0.1% Nb, the content of Nb being made to satisfy Nb ≧93/12 (C-0.0015), and the balance Fe and incidental impurities, at a temperature of not less than (Ar$_3$—100)° C.;

taking it up at a temperature ranging from room temperature to 750° C.; cold-rolling it at a rolling rate of not less than 60%; and setting an annealing temperature during continuous annealing to 700°–900° C.

5,384,207

ELECTRONIC APPARATUS WITH BATTERY POWER SOURCE

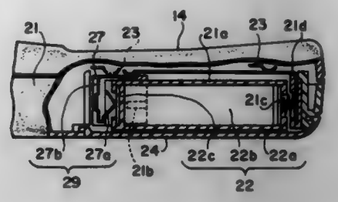
Daisuke Ohtani, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 12, 1993, Ser. No. 89,556

Claims priority, application Japan, Jul. 15, 1992, 4-187808

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—9 7 Claims



1. An electronic apparatus having a battery power source contained therein, comprising:

battery compartment means for alternatively receiving at least one first battery and at least one second battery, said second battery being shorter than said first battery, each of said batteries having at least one first terminal at a first longitudinal end portion thereof;

holder means for filling a vacancy in said battery compartment means when the second battery is mounted, said holder means being formed to be capable of being selectively attached to a first end of said battery compartment means with orientation of said holder means reversed, said holder means including a cavity formed in a first side thereof for receiving an end portion of the first battery to thereby provide a space for accommodating the first battery;

terminal means for electric connection with the first terminal of the first and second batteries, said terminal means being attached to a second side of said holder means opposite to said first side of said holder means where said cavity is formed, said terminal means including a first portion facing outside of said holder means to contact with the first terminal of the second battery, and a second portion facing said cavity to contact with the first terminal of the first battery; and

resilient means provided at a second end of said battery compartment means for pressing the first and second batteries against said terminal means.

5,384,208

CELL STRUCTURE FOR ELECTROLYZER UNITS AND FUEL CELLS

Rolf A. Brand, Ottobrunn; Hans Hofmann, Mühlheim, and Jürgen Hildebrandt, München, all of Germany, assignors to Deutsche Aerospace AG, Germany

Filed Mar. 15, 1993, Ser. No. 31,327

Claims priority, application Germany, Mar. 13, 1992, 4208057

Int. Cl.[6] H01M *2/18*; C25B *9/00*

U.S. Cl. 429—34 22 Claims

1. A cell for electrolyzer and fuel cell units having a plurality of cells which are electrically and geometrically arranged in series, said cell comprising:

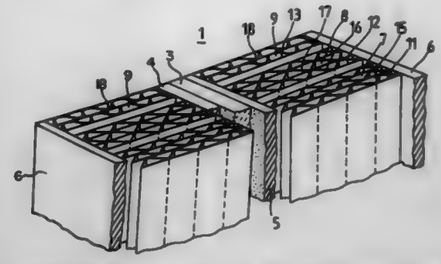
a gas separator comprising a diaphragm in the form of a flat plate which divides the cell into an anode space and a cathode space, said diaphragm being permeable to an electrolyte;

two metallic layer electrode elements sandwiched against said diaphragm, on opposite sides thereof, said two electrode elements being permeable to said electrolyte;

two gastight, electrically conductive bipolar cell partitions arranged parallel to one another and to said two electrode elements at opposite ends of said cell, said two bipolar cell partitions separating said cell from adjacent cells, said two bipolar cell partitions being made of sheet metal;

a first of said two cell partitions and of said two electrode elements defining said cathode space therebetween, and a second of said two cell partitions and of said two electrode elements defining said anode space therebetween;

each of said cathode space and said anode space being at least partially filled by respective electrically conductive, elastically deformable spacer arrangements which are



mechanically and electrically connected between said electrode elements and said cell partitions whereby said spacer arrangements provide electric current conducting paths between said electrode elements and said cell partitions, and enclose said cell on lateral sides thereof;

said spacer arrangements comprising lamellar structural elements which are gas permeable and electrolyte permeable, at least in an axial direction perpendicular to said diaphragm and in a vertical direction parallel to a plane of said diaphragm; and

said lamellar structured elements comprising a plurality of identical layers of approximately axially and vertically aligned wall elements which are maintained in parallel spaced relationship and in close proximity to each other, by a plurality of spacers therebetween.

5,384,209

HYDRIDABLE MATERIAL FOR THE NEGATIVE ELECTRODE OF A NICKEL-HYDRIDE STORAGE CELL

Jacques Bonet, Paris; Bernard Knosp, Neuilly Sur Seine; Annick Percheron-Guegan, and Olivier Canet, both of Paris, all of France, assignors to Saft, Romainville, France

Continuation of Ser. No. 944,938, Sep. 15, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 139,884

Claims priority, application France, Sep. 11, 1992, 92-10858

Int. Cl.[6] H01M *4/38*

U.S. Cl. 429—59 13 Claims



1. A hydridable material for the negative electrode of a nickel-hydride storage cell mainly comprising a Laves phase of

the C14 hexagonal type ($MgZn_2$), characterized by the general formula:

$$(Zr_{1-a}A_a)(Ni_{1-(b+c+d+e)}Mn_bAl_cCo_dM_e)_t$$

where: $1.9 \leq t \leq 2.1$; $0 < b \leq 0.6$; $0 \leq a \leq 0.3$; $0 < c \leq 0.4$; $b+c+d+e \leq 0.8$; $0 < d \leq 0.4$; $0 \leq e \leq 0.6$

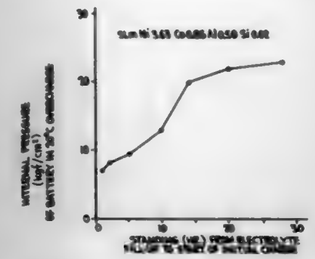
where A represents at least one element from Ti, Y, Ce, Ca, and Mg, and where M is chosen from Cr and Si.

5,384,210

HYDROGEN-OCCLUSION ALLOY FOR THE ELECTRODES OF A SEALED-TYPE STORAGE BATTERY

Jun Furukawa, Iwaki, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Kanagawa, Japan

Division of Ser. No. 64,866, May 24, 1993, Pat. No. 5,322,527.
This application Mar. 21, 1994, Ser. No. 215,476
Claims priority, application Japan, Jun. 9, 1992, 4-174814
Int. Cl.[6] C22C *28/00*; H01M *10/34, 4/38*
U.S. Cl. 429—59 2 Claims



1. A hydrogen-occlusion alloy for an electrode of a sealed-type storage battery, said alloy comprising $SLmNi_aCo_bAl_cM_d$ wherein SLm is a mixture of at least 70 wt. % lanthanum, 20 wt. % or less of neodymium and at least one other rare earth element, M is silicon or germanium, and a, b, c and d are as follows: $3.0 \leq a \leq 3.8$, $0.6 \leq b < 1.4$, $0.3 \leq c \leq 0.7$ and d is $0.01 \leq d \leq 0.05$ when M is silicon and d is $0.01 \leq d \leq 0.3$ when M is germanium.

5,384,211

OXIDATION RESISTANT ENVELOPED SEPARATOR

Wai M. Choi, Newton, Mass., and Werner Boehnstedt, Henstedt-Ulzburg, Germany, assignors to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 27, 1993, Ser. No. 127,656
Int. Cl.[6] H01M *2/14*
U.S. Cl. 429—136 19 Claims

1. A battery separator comprising a sheet of microporous plastic filled with an inert filler, wherein the sheet has been folded back upon itself so as to create a crease line and to form an envelope having sealed edges formed at the crease and along outer adjacent edges of the separator, and wherein the portion of the enveloped separator adjacent the crease has



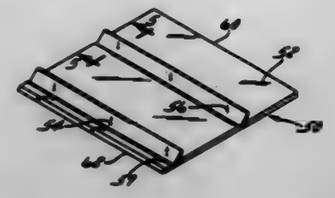
from about 5 to about 1000% greater amount of processing oil than the remainder of the separator.

5,384,212

FLEX-RIB PLAQUES FOR BATTERIES

Jerome R. Heiman, Campbellsport, and Jack Bruss, Elm Grove, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Apr. 25, 1994, Ser. No. 232,376
Int. Cl.[6] H01M *2/10, 2/14*
U.S. Cl. 429—143 22 Claims



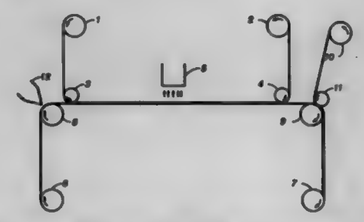
1. A battery including a container and at least one cell element located within the container, a flex-rib anti-vibration plaque located within the container and intermediate a surface thereof and a cell element, the plaque including a generally planar base and at least one elongate, flexible rib extending at an acute angle therefrom.

5,384,213

METHOD FOR MAKING SOLID ELECTROLYTES EMPLOYING LOW BOILING POINT SOLVENTS

Ib I. Olsen, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Jun. 8, 1993, Ser. No. 73,833
Int. Cl.[6] H01M *6/18*
U.S. Cl. 429—192 18 Claims



1. A process for making a solid electrolyte comprising:
(i) solvating a solid matrix-forming monomer or a partial polymer thereof in a solvent comprising at least one low boiling point solvent component having a boiling point not greater than 100° C. and which is capable of solvating an electrolytic salt;
(ii) coating the solvated monomer or partial polymer onto an electrode to form a layer of electrolyte precursor;
(iii) covering said electrolyte precursor with a protective sheet layer which is substantially impervious to said solvent but which allows passage of radiation which cures the uncured electrolyte; and
(iv) curing the electrolyte precursor by radiation through the sheet layer.

5,384,214

MANUFACTURING OF ZINC-ALKALINE BATTERIES

Sachiko Sagihara; Akira Miura, both of Katano, and Akira Ohta, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 19,651, Feb. 19, 1993, abandoned. This application Apr. 11, 1994, Ser. No. 225,938
Claims priority, application Japan, May 25, 1992, 4-132171
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—206 20 Claims



1. A zinc-alkaline battery comprising a zinc alloy as an active ingredient and an alkaline electrolyte comprising 0.005 to 0.5 wt. % of yttrium hydroxide based on the zinc alloy;
said zinc alloy containing at least one element selected from the group consisting of bismuth, lithium, calcium and aluminum, and said zinc alloy being free from mercury, lead, cadmium, indium and thallium; and
said yttrium hydroxide being prepared by subjecting a yttrium salt as a starting material to a neutralizing treatment in an aqueous solution thereof.

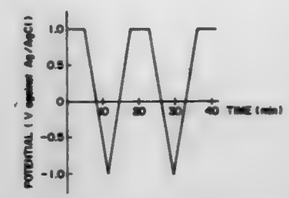
5,384,215

POLYPYRROLE SHAPED MATERIAL, PROCESS FOR PRODUCTION THEREOF, AND SECONDARY BATTERY

Kazuhiko Sato; Tsuneo Hagiwara, both of Hino, and Michio Yamaura, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP91/01559, § 371 Date May 13, 1993, § 102(e) Date May 13, 1993, PCT Pub. No. WO92/09112, PCT Pub. Date May 29, 1992
PCT Filed Nov. 14, 1991, Ser. No. 50,488
Claims priority, application Japan, Nov. 16, 1990, 2-308546
Int. Cl.[6] H01M *4/60*
U.S. Cl. 429—213 8 Claims

1. A polypyrrole shaped material having a film thickness of about 100 μm to about 2,000 μm, characterized in that when the polypyrrole shaped material is assembled into a tri-electrode cell comprising the polypyrrole shaped material as a positive electrode, platinum as a negative electrode, a lithium metal as a reference electrode and $LiClO_4$ or $LiBF_4$ as an electrolyte and said tri-electrode cell is subjected to discharging at a current density of 10 mA/cm^2 and controlled-potential charging at 3.6 V,
(i) at the completion of the discharging, the concentration of chlorine or fluorine in the polypyrrole shaped material is 30% or below of that at the completion of the charging, and
(ii) at the completion of the charging, the distribution of chlorine or fluorine concentration in the thickness direction of the polypyrrole shaped material, defined by the following formula is 50% or less:



distribution of chlorine or fluorine concentration = $[(Imax - Imin)/Imax] \times 100(\%)$

wherein Imax is the maximum chlorine or fluorine concentration in the thickness direction of the shaped material, and Imin is the minimum chlorine or fluorine concentration in the thickness direction of the shaped material.

5,384,216

PASTE-TYPE ELECTRODE FOR ALKALI SECONDARY CELL

Hirohito Teraoka, Ichikawa; Katsuyuki Hata, Yamato; Kunihiko Miyamoto, Ichikawa, and Kouji Ishiwa, Yokohama, all of Japan, assignors to Toshiba Battery Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,067
Claims priority, application Japan, May 27, 1992, 4-135268
Int. Cl.[6] H01M *4/52*
U.S. Cl. 429—223 12 Claims

1. A paste-type electrode for an alkali secondary cell consisting essentially of:
a three-dimensional substrate; and
paste filled into said three-dimensional substrate and containing an activation substance and at least one type of conductive material selected from the group consisting of metal cobalt and a cobalt compound, said activation substance comprising nickel hydroxide which has the half value width of the peak of (101) plane in X-ray diffraction (2θ) being 0.8° or higher.

5,384,217

BATTERY PLATES HAVING ROUNDED LOWER CORNERS

Richard R. W. Binder, Menomonee Falls; Daniel J. Cantillon, Sussex, and Jeffrey J. Schneider, Waukesha, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Jul. 6, 1992, Ser. No. 909,247
Int. Cl.[6] H01M *4/72, 2/18, 4/73, 2/14, 4/18, 2/02*
U.S. Cl. 429—225 9 Claims

1. In a battery plate for use in a lead-acid battery, the plate comprising a conductive grid covered with an active lead material, the grid comprising a generally rectangular outer frame having a pair of sides, a top and a bottom spanned by grid elements forming a mesh, the frame having a pair of upper corners, a pair of lower corners, and an electrically conductive tab extending from a location on the top of the frame between the two upper corners, the improvement which comprises:
the plate has been formed by expanding a strip of lead alloy, and the two upper corners are square and the two lower corners have a rounded shape lacking a sharp edge which would tend to cut an adjacent separator element, and the sides of the frame are substantially straight and free of projections.
2. A plate element for use in a lead-acid battery, comprising:

a separator envelope joined along its sides and bottom end and having an open upper end; and

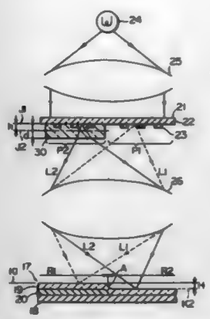
a battery plate comprising a conductive grid formed by expanding a strip of lead alloy and having an active lead material applied thereto, which plate is inserted into the separator envelope bottom end first, wherein the grid comprises a generally rectangular outer frame having a pair of sides, a top and a bottom spanned by grid elements forming a mesh, the frame having a pair of upper corners and a pair of lower corners, with an electrically conductive tab extending from a location on the top of the frame, the plate being substantially completely inserted into and covered by the envelope except for the tab, which extends out of the open upper end of the envelope, and the two lower corners of the plate have a rounded shape lacking a sharp edge which would tend to cut the separator envelope.

5,384,218

PHOTOMASK AND PATTERN TRANSFER METHOD FOR TRANSFERRING A PATTERN ONTO A SUBSTRATE HAVING DIFFERENT LEVELS

Akira Tokui, and Maria O. DeBeeck, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,389
Claims priority, application Japan, Mar. 31, 1992, 4-074983
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 5 Claims



1. A photomask for projecting a transfer pattern onto a wafer having first and second regions with different surface level positions, said photomask comprising:

a transparent substrate;

first and second mask patterns, each mask pattern including a plurality of light shielding members disposed on said transparent substrate for projection of the first and second mask patterns onto separate first and second regions of a wafer, respectively, the first region being disposed at a first level of the wafer and the second region being disposed at a second level of the wafer different from the first level; and

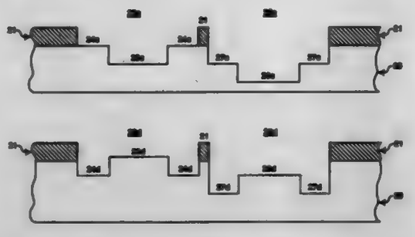
an optical-path-length varying layer covering the second mask pattern, but not the first mask pattern, for changing the optical path length of light transmitted through the second mask pattern with respect to the optical path length of light transmitted through the first mask pattern by a length corresponding to the difference between the second level and the first level of the wafer.

5,384,219

RETICLE WITH STRUCTURALLY IDENTICAL INVERTED PHASE-SHIFTED FEATURES

Giang T. Dao, Fremont; Qi De Qian, Santa Clara; Nelson N. Tam, Foster City; Eng T. Gaw, San Jose, and Harry H. Fujimoto, Sunnyvale, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 12,564, Feb. 2, 1993, Pat. No. 5,348,826, which is a continuation-in-part of Ser. No. 933,400, Aug. 21, 1992, Pat. No. 5,302,477, which is a continuation-in-part of Ser. No. 933,341, Aug. 21, 1992, Pat. No. 5,300,379. This application Aug. 31, 1993, Ser. No. 114,953
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 14 Claims



1. a method of patterning a radiation sensitive layer comprising the steps of:

exposing a first region with radiation having a first phase;

exposing a second region proximate said first region with radiation having a second phase, said second phase shifted approximately 160–200 degrees relative to said first phase;

exposing a third region proximate said second region with radiation having a third phase, said third phase shifted approximately 160–200 degrees relative to said second phase; and

exposing a fourth region proximate said third region with radiation having a fourth phase, said fourth phase shifted approximately 160–200 degrees relative to said third phase, wherein if there is any phase error between said first and said second regions, and said fourth and said third regions, said phase error between said first and second region is in the same direction as said phase error between said fourth and said third region.

5,384,220

PRODUCTION OF PHOTOLITHOGRAPHIC STRUCTURES

Recai Sezi, Roettenbach; Horst Borndoerfer; Rainer Leuschner, both of Erlangen; Michael Sebald, Heusdorf-hannberg; Siegfried Birkle, Hoechstadt A/Aisch, and Hellmut Ahne, Roettenbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 20, 1991, Ser. No. 811,706
Claims priority, application Germany, Dec. 20, 1990, 4041002
Int. Cl.[6] G03F 7/36, 7/38
U.S. Cl. 430—8 12 Claims

1. A method for the photolithographic production of structures in the submicron range, comprising the steps of:

- applying to a substrate a photoresist layer comprising a polymer having carboxylic acid anhydride and carboxylic acid tert. butyl ester groups, a photoinitiator which releases an acid when exposed to UV light or electron beams or x-rays, and a solvent,
- drying the photoresist layer,
- exposing the photoresist layer in an imagewise manner to UV light or electron beams or x-rays,
- subjecting the exposed photoresist layer to a post exposure bake,
- subjecting the baked photoresist layer to liquid silylation in a non-polar, aprotic silylation solution comprising a silylation agent selected from the group consisting of aminosilanes and aminosiloxanes, and
- dry-developing the silylated photoresist layer in an anisotropic oxygen plasma,

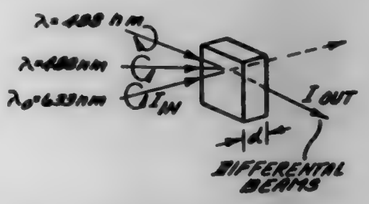
where the post exposure bake is conducted in such a way that the photoresist becomes hydrophilic in the exposed areas.

5,384,221

BIREFRINGENT AZO DYE POLYMER ERASABLE OPTICAL STORAGE MEDIUM

Gajendra D. Savant, Pasadena, and Tomasz P. Jannson, Torrance, both of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Continuation of Ser. No. 626,189, Dec. 12, 1990, abandoned. This application Apr. 21, 1993, Ser. No. 51,252
Int. Cl.[6] G03C 1/00; G11C 13/02
U.S. Cl. 430—19 19 Claims



14. A method of recording comprising:

providing an optical storage medium having a diffraction efficiency greater than 40% at less than a 1 millisecond response time including a transparent polymer and an isomerizable AZO dye by

preparing a solution of the transparent polymer and a solution of the isomerizable AZO dye,.

mixing the solution of the transparent polymer and the solution of the isomerizable AZO dye to form a mixed solution, including a solvent selected from the group consisting of water, dimethyl formamide, N-methyl pyrolidone, dimethyl sulfoxide, ethyl alcohol and isopropyl alcohol,

coating the mixed solution on a substrate so as to obtain a coated substrate having a film of the mixed solution having a thickness of at least 10 μm, and

heating the coated substrate to a temperature of from 50° C. to 90° C.;

exposing the optical storage medium to a variably polarizable laser beam; and

focusing said beam to a spot on the optical storage medium, wherein the isomerizable AZO dye remains in the film.

5,384,222

IMAGING MEMBER PROCESSES

Sharon E. Normandin, Macedon; Kathleen M. Carmichael, Williamson; Donald P. Sullivan, Rochester, all of N.Y.; Nancy A. Listigovers, Oakville, Canada; Trevor I. Martin, Burlington, Canada, and Gordon K. Hamer, Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1993, Ser. No. 84,106
Int. Cl.[6] G03G 5/04
U.S. Cl. 430—58 24 Claims

1. A process for the preparation of a photogenerating composition consisting essentially of mixing titanyl phthalocyanine Type IV with the AB block copolymer polystyrene-4-vinyl pyridine in a suitable solvent, and wherein said block copolymer has a weight average molecular weight of from about 7,000 to about 80,000.

5,384,223

PHOTOCONDUCTIVE IMAGING MEMBERS WITH POLYMER BINDERS

Nancy A. Listigovers, Oakville; Trevor I. Martin, Burlington, both of Canada; Sharon E. Normandin, Macedon; Kathleen M. Carmichael, Williamson, both of N.Y.; Gordon K. Hamer, Mississauga, Canada, and Donald P. Sullivan, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1993, Ser. No. 84,107
Int. Cl.[6] G03G 5/05
U.S. Cl. 430—59 34 Claims

1. A photoconductive imaging member comprised of a supporting substrate, a photogenerating layer comprised of photogenerating pigments dispersed in a polystyrene/polyvinyl pyridine (A_n-B_m) block copolymer wherein n represents the degree of polymerization of A and m represents the degree of polymerization of B, and a charge transport layer, and wherein said block copolymer has a weight average molecular weight of from about 8,000 to about 35,000.

5,384,224

TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Hirohide Tanikawa; Hiroaki Kawakami; Masatsugu Fujiwara, all of Yokohama; masashi Jinbo, Asaka, and Tsutomu Omuna, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,002
Claims priority, application Japan, Mar. 6, 1992, 4-082930
Int. Cl.[6] G03G 9/087
U.S. Cl. 430—106 33 Claims

1. A toner for developing an electrostatic image, comprising: a binder resin and a hydrocarbon wax having a weight-average molecular weight of 800 to 3600, wherein the toner shows a storage modulus of at least 1×10^3 dyn/cm^2, a loss modulus in the range of 5×10^2–5×10^4 dyn/cm^2 and a ratio of loss modulus/storage modulus (loss tangent) of below 0.9 as measured under conditions of a frequency of 0.1 Hz and a temperature of 200° C.; and the toner provides a DSC curve, as measured by a differential scanning calorimeter, showing an onset temperature of heat absorption of at most 105° C. and a heat-absorption peak temperature in the range of 90°–120° C. on temperature increase, and a heat evolution peak temperature in the range of 62°–75° C. and a heat evolution peak intensity ratio of at least 5×10^{-3} on temperature decrease.

5,384,225

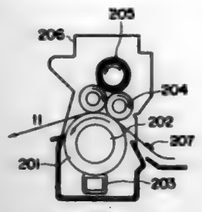
LIQUID DEVELOPER FOR LATENT ELECTROSTATIC IMAGES

Tsuneo Kurotori, Tokyo; Masaku Mochizuki; Kenzo Ariyama, both of Yokohama; Kenji Kojima, Tokyo; Ichiro Tsurusoka, Nihonbashi; Katsuhiro Echigo, Yokohama, and Mayumi Miyao, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 544,210, Jun. 26, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 984,274
Claims priority, application Japan, Jun. 30, 1989, 1-166826; Jul. 3, 1989, 1-169831
Int. Cl.[6] G03G 9/00
U.S. Cl. 430—116 8 Claims

1. A liquid developer for developing latent electrostatic images, which comprises (i) a carrier liquid comprising 5 vol %

or more of at least one component selected from the group consisting of a phenylmethyl silicone oil and a cyclic dimethyl polysiloxane, and (ii) toner particles dispersed in said carrier liquid.



5,384,226
PROCESS FOR PRODUCING TONER

Akihiro Kanakura, Hirakata; Takahito Kishida, Yao; Naoya Yabuuchi, Saita, and Masayuki Maruta, Neyagawa, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/01393, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/07304, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 14, 1991, Ser. No. 852,266
Claims priority, application Japan, Oct. 15, 1990, 2-277400
Int. Cl.[6] G03G *9/087*
U.S. Cl. 430—137 **2 Claims**

1. A process for producing a toner which comprises dissolving or dispersing a polymerizable composition comprising:
(I) a vinyl monomer,
(II) an acrylic resin-grafted polyolefin in which the acrylic resin graft contains monomer units having a polar functional group in an amount of 0.1 to 40% by weight, said monomer units being derived from monomers selected from the group consisting of hydroxyl group-containing monomers, carboxy group-containing monomers, amino group-containing (meth)acrylates, N-substituted (meth)acrylamides, epoxy group-containing monomers, N-vinylpyrrolidone, acrylonitrile and mixtures thereof, and
(III) a colorant
in a dissolution or dispersion solvent and then polymerizing it, wherein no deposition of said acrylic resin-grafted polyolefin (II) occurs when said acrylic resin-grafted polyolefin (II) is dissolved or dispersed in a mixed solution of one volume of said vinyl monomer (I) and two or more volumes of said dissolution or dispersion solvent.

5,384,227
IMAGE FORMING MATERIALS PREPARED USING 2-DIAZO-1,2-NAPHTHOQUINONE COMPOUNDS HAVING FLUORINE ATOM CONTAINING SUBSTITUENT GROUPS

Kan Wakamatsu; Yuichi Wakata; Masato Satomura, and Tomiso Namiki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 736,343, Jul. 26, 1991, Pat. No. 5,312,905. This application Jul. 20, 1993, Ser. No. 93,722
Claims priority, application Japan, Jul. 27, 1990, 2-200909; Dec. 1, 1990, 2-400059
Int. Cl.[6] G03F *7/023*
U.S. Cl. 430—156 **13 Claims**

1. An image forming material which comprises a layer superposed on a support, said layer containing a 2-diazo-1,2-naphthoquinone compound substituted at the 4- or 5-position by a substituent group represented by formula (III):

$$-SO_2-NR^4R^5 \quad \text{(III)}$$

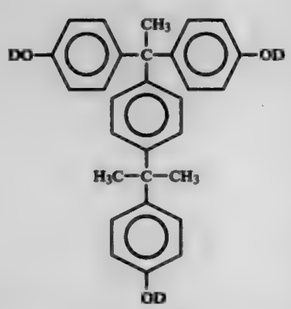
wherein each of R^4 and R^5 independently represents a substituent group containing an alkyl group which has 2 to 20 carbon atoms and is substituted by at least 3 fluorine atoms.

5,384,228
ALKALI-DEVELOPABLE POSITIVE-WORKING PHOTOSENSITIVE RESIN COMPOSITION

Kousuke Doi; Satoshi Nifkura, both of Samukawa; Nobuo Tokutake; Hidekatsu Kohara, both of Chigasaki, and Toshimasa Nakayama, Chigasaki, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 46,230, Apr. 13, 1993, abandoned. This application Oct. 8, 1993, Ser. No. 134,287
Claims priority, application Japan, Apr. 14, 1992, 4-119571
Int. Cl.[6] G03F *7/023, 7/30*
U.S. Cl. 430—192 **7 Claims**

1. An alkali-developable positive-working photosensitive resin composition which comprises, as a uniform blend:
(a) an alkali-soluble novolac resin;
(b) a 1,2-quinone diazide sulfonic acid ester of a condensation product having a weight-average molecular weight in the range from 400 to 2000 obtained by the condensation reaction between phenol and a hydroxybenzaldehyde in the presence of an acidic catalyst; and
(c) an aromatic compound represented by the general formula



in which at least one of the groups denoted by D is a naphthoquinone-1,2,-diazide-sulfonyl group, the remainder, if any, of the groups denoted by D being each a hydrogen atom.

5,384,229
PHOTOIMAGEABLE COMPOSITIONS FOR ELECTRODEPOSITION

Daniel Y. Pui, Millbury; Stephen S. Rodriguez, Monument Beach, and Roger F. Sinta, Woburn, all of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

Filed May 7, 1992, Ser. No. 879,598
Int. Cl.[6] G03C *1/492*
U.S. Cl. 430—270 **22 Claims**

1. An emulsified photoimageable electrodepositable photoresist composition comprising:
a phenolic resin containing one or more acid labile groups and being essentially free of any at least partially ionized carrier groups prior to photoactivation of the composition, a carrier resin containing functional groups that are at least partially ionized in an amount sufficient to enable electrodeposition and essentially free of acid labile groups, and a photoacid generator compound.

5,384,230
PROCESS FOR FABRICATING PRINTED CIRCUIT BOARDS

N. Edward Berg, 43 Smith Rd., Bedford, N.H. 03110

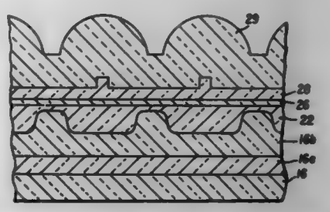
Filed Mar. 2, 1992, Ser. No. 845,266
Int. Cl.[6] G03F *7/00*
U.S. Cl. 430—313 **7 Claims**

1. In a process for forming interconnection lines on a circuit board substrate, wherein a circuit board substrate is covered with a photoresist layer which is exposed through a mask to UV light, the improvement which comprises the steps in sequence of:
(a) covering said photoresist layer directly with a light sensitive emulsion layer, said emulsion layer being formed in situ from a silver halide emulsion;
(b) exposing said emulsion layer to a predetermined pattern of light of a first wavelength to which said silver halide emulsion is sensitive;
(c) developing said exposed emulsion layer whereby to form a mask including both substantially opaque and substantially transparent portions in direct contact with said photoresist;
(d) exposing said masked board to light of a second wavelength to which said photoresist is sensitive whereby to expose areas of the photoresist underlying said transparent portions;
(e) removing said exposed emulsion layer; and
(f) processing said exposed photoresist in a conventional manner.

5,384,231
FABRICATING LENS ARRAY STRUCTURES FOR IMAGING DEVICES

James A. Johnson, Leroy, and Madhav Mehra, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1993, Ser. No. 111,361
Int. Cl.[6] G03F *7/26*
U.S. Cl. 430—321 **2 Claims**



2. In a method of forming an integral lens array on a light-sensitive charge coupled device (CCD), which CCD defines a plurality of sensing elements, the lens array having a separate lens for each image sensing element, comprising the steps of:
a) conformally coating the CCD to provide an SiO_2 layer which has peaks and valleys;
b) depositing a layer of B_2O_3 at a temperature selected to cause the B_2O_3 to puddle and fill in all the valleys regions of the conformally coated layer;
c) plasma etching the conformally coated SiO_2 layer and the B_2O_3 layer at substantially the same rates until a sufficient amount of the deposited B_2O_3 layer is removed to provide a planarized surface;
d) providing a color filter array on the planarized surface;
e) providing a second SiO_2 layer with seed portions on the color filter array; and
f) forming a lens array on the second SiO_2 layer with each lens corresponding to a seed portion.

5,384,232
PROCESS FOR RAPID ACCESS DEVELOPMENT OF SILVER HALIDE FILMS USING PYRIDINIUM AS DEVELOPMENT ACCELERATORS

Julie C. Bishop, Old Bridge, N.J.; Dominic M. Chan, Wilmington, Del.; Dennis S. Donald, Mendenhall, Pa.; Ladovic Fodor, Monmouth Junction, N.J.; William R. Pangratz, Middletown, N.J.; Glenn M. Russo, Mullica Hill, N.J., and John R. Shock, Princeton Junction, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

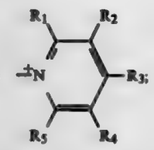
Continuation-in-part of Ser. No. 801,367, Dec. 2, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 40,247
Int. Cl.[6] G03C *5/18, 5/26*
U.S. Cl. 430—440 **15 Claims**

1. A process for developing exposed negative silver halide photographic elements comprising developing said elements in a photographic developer comprising at least one developing agent selected from the group consisting of
(a) ascorbic acid,
(b) ascorbic acid derivatives,
(c) alkali salts of (a) and (b), and
(d) mixtures of (a) through (c);
for a development time less than 1 minute, in the presence of a development accelerator having the general formula:

$$[A-(CH_2)_m-(Y)_n-(Z)_k-(CH_2)_p-B, qX]$$

$$(A-(CH_2)_m-(Y)_n-(Z)_k-(CH_2)_p-B)\ qX$$

wherein A is



B is selected from the group consisting of A, hydrogen, phenyl, sulfonate, protonated substituted amino groups, unprotonated substituted amino groups, protonated unsubstituted amino groups, and unprotonated unsubstituted amino groups;
Y is a carbonyl or an ester group;
Z is phenylene;
m is an integer from 0 to 8;
p is an integer from 0 to 8;
k is 0 or 1;
n is 0 or 1;
with the proviso that m+n+p+k is greater than 0, and further with the proviso that when n is 1, m +p is greater than 0;
R_1 through R_5 [R_9] are independently selected from the group consisting of hydrogen, halogen, amino, saturated alky containing 1 to 10 carbon atoms and unsaturated alkyl containing 1 to 10 carbon atoms, wherein adjacent R groups can form a saturated or unsaturated ring;
X is a counterion; and
q is an integer from 0 to 2 and is selected to balance the charge of the development accelerator.

5,384,233

CHEMICALS KIT INCLUDING A CONTAINER FORMED OF MULTILAYER FILM, FOR PROCESSING PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

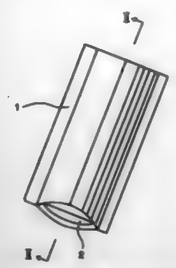
Satoru Kase; Hiroshi Kobayashi; Tsuyoshi Haraguchi, and Hiroshi Yamashita, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 7, 1993, Ser. No. 73,350

Claims priority, application Japan, Jun. 15, 1992, 4-155128; Jun. 15, 1992, 4-155129; Jun. 15, 1992, 4-155130; Jun. 18, 1992, 4-159576

Int. Cl.[6] G03C *7/00, 5/42, 5/44, 5/18*

U.S. Cl. 430—461 11 Claims



1. A photographic processing chemicals kit comprising a solution contained in a sealed flexible container,

wherein said solution is a bleaching agent comprising a compound represented by Formula B:

Formula B

$$X_2—A—COOM^3$$

wherein X_2 represents a hydroxyl group, a halogen atom, an amino group or a —$COOM^3$ group, A represents an alkylene group, M^3 represents a hydrogen atom, an ammonium group, an alkali metal atom or an organic ammonium group, and

said flexible container is composed of a multilayer film comprising at least one layer of a polyolefin resin or a polyethylene-vinyl acetate copolymer resin, and at least one layer of a resin selected from the group consisting of:

A. ethylene-vinyl alcohol copolymer resins,
B. polyamide resins,
C. acrylonitrile resin,
D. polyethylene terephthalate resin,
E. polyhalogenated vinylidene resin,
F. polyhalogenated vinyl resin,
G. polyethylene resin deposited with ceramic, and
H. polyethylene terephthalate resin deposited with ceramic.

5,384,234

SILVER HALIDE COLOR PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Fumitaka Ueda; Junji Nishigaki, and Akihiko Ikegawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1993, Ser. No. 85,174

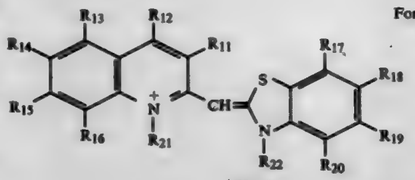
Claims priority, application Japan, Jul. 6, 1992, 4-200165

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—504 11 Claims

1. A silver halide color photosensitive material comprising a support having thereon at least one blue sensitive silver halide emulsion layer which contains a yellow color forming color coupler, at least one green sensitive silver halide emulsion layer which contains a magenta color forming color coupler and at least one red sensitive silver halide emulsion layer which contains a cyan color forming color coupler, and in which at least one light-sensitive silver halide emulsion layer imparts an interlayer effect to the red sensitive emulsion layer, wherein the layer which imparts the interlayer effect is spectrally sensitized with a sensitizing dye represented by formula (I), and includes a development inhibitor releasing compound represented by formula (II):

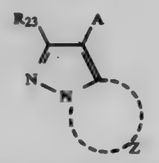
Formula (I)



$(X_1^-)_n$

wherein R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, R_{19} and R_{20}, which are the same or different, each represent a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a halogen atom, an aryloxycarbonyl group, an alkoxycarbonyl group, an amino group, an acyl group, a cyano group, a carbamoyl group, a sulfamoyl group, a carboxyl group or an acyloxy group, R_{21} and R_{22}, which are the same or different, each represent an alkyl group, X_1^- represents a counteranion, n is 0 or 1, and n=0 in cases where an intramolecular salt is formed;

Formula (II)



wherein R_{23} represents a hydrogen atom or a substituent group, Z represents a group of non-metal atoms which is required to form a five-membered azole ring which contains from 2 to 4 nitrogen atoms, wherein the azole ring may have substituent groups, A represents a group which is eliminated by a coupling reaction with an oxidized form of a developing agent to form a development inhibitor or a precursor thereof, or A represents a group which is eliminated by a coupling reaction with an oxidized form of a developing agent and then reacts with another molecule of an oxidized form of a developing agent to form a development inhibitor or a precursor thereof.

5,384,235

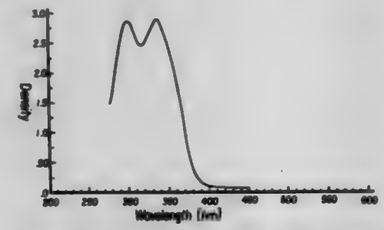
PHOTOGRAPHIC ELEMENTS INCORPORATING POLYMERIC ULTRAVIOLET ABSORBERS

Tien-Teh Chen; Edward Schofield, both of Penfield; Hwei-Ling Yau, and Lal C. Vishwakarma, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

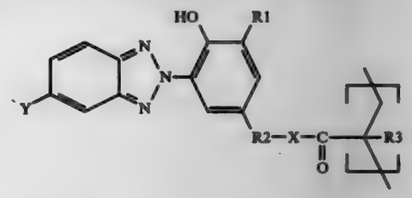
Filed Jul. 1, 1992, Ser. No. 907,008

Int. Cl.[6] G03C *1/815, 1/825*

U.S. Cl. 430—512 13 Claims



1. A silver halide color photographic element comprising a hydrophilic colloidal dispersion layer containing an ultraviolet absorber to stabilize an image dye formed from processing the element, the absorber being in the form of a homopolymer or copolymer having repeating units of formula I:



(I)

wherein:

X is 0 or NH;

Y is H or halogen;

R1 is selected from the group consisting of H, halogen, alkoxy , straight chain or branched alkyl group of 1 to 8 carbons;

R2 is C_2–C_{10} alkylene which may be straight chain or branched; and

R3 is H or CH_3;

and wherein the molar ratio of repeating units other than formula I to repeating units of formula I, is no more than 4 to 1.

5,384,236

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Koushin Matsuoka; Yasuhiro Shimada, and Hiroyuki Yoneyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

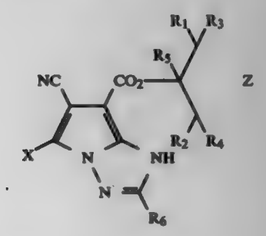
Filed Jun. 8, 1994, Ser. No. 257,189

Claims priority, application Japan, Jun. 8, 1993, 5-163254

Int. Cl.[6] G03C *7/38*

U.S. Cl. 430—558 19 Claims

1. A silver halide color photographic material comprising a support having provided thereon at least one layer containing at least one cyan coupler represented by formula (I)



(I)

wherein

R_1 and R_2 each represent a substituent except methyl group;

R_3, R_4, R_5 and R_6 each represent a hydrogen atom or a substituent;

Z represents a non-metallic atom or a non-metallic atomic group necessary for forming a ring and the non-metallic atomic group off Z may optionally be substituted by substituent(s); and

X represents a hydrogen atom, or a group of splitting off from the formula by coupling reaction with an oxidation product of an aromatic primary amine color developing agent.

5,384,237

QUATERNARY-AMMONIUM PHENYLSULFONYLACETATE THERMAL-DYE-BLEACH AGENTS

Dian E. Stevenson, Saffron Walden; Mark P. Kirk, Stortford, both of England; Sylvia A. Farnum, Lakeland, Minn.; William C. Frank, Roseville, Minn.; Randall H. Helland, Maplewood, Minn.; Jonathan P., Kitchin, White Bear Lake, Minn.; Roger A. Mader, Stillwater, Minn.; Mark B. Minen; Richard A. Newmark, both of St. Paul, Minn.; William D. Ramsden, Afton, Minn.; Kumars Sakizadeh, Woodbury, Minn.; Terence D. Spawn, Maplewood, Minn., and George V. Tiers, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 993,642, Dec. 21, 1992, Pat. No. 5,334,627.

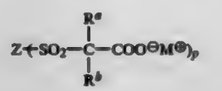
This application Jan. 25, 1994, Ser. No. 187,171

Int. Cl.[6] G03C *1/08*

U.S. Cl. 430—566 6 Claims

1. A thermal-carbanion-generating agent comprising:

(a) a compound of the general formula I:



I

wherein:

each of R^a and R^b are individually selected from: hydrogen, an alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group, an aryl group, and a heterocyclic group;

p is one or two, and when p is one, Z is a monovalent group selected from: an alkyl group, a cycloalkyl group, an alkenyl group, an alkynyl group, an aralkyl group, an aryl group, and a heterocyclic group, and when p is two, Z is a divalent group selected from: an alkylene group, an arylene group, an alkenylene group, an alkylnylene group, an aralkylene group, a cycloalkylene group, and a heterocyclic group; and,

M^+ is a cation which will not react with carbanion generated from the thermal-carbanion-generating agent in such manner as to render said carbanion ineffective as a bleaching agent for a dye; and

(b) a carboxylic or a phenylsulfonylacetic acid.

5,384,238

POSITIVE-ACTING PHOTOTHERMOGRAPHIC MATERIALS

Richard J. Ellis, Great Dunmow; Ranjan C. Patel, Little Hallingbury, and Robert J. D. Nairne, Pinnacles, all of Great Britain, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 948,641, Sep. 23, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 185,327

Claims priority, application United Kingdom, Oct. 14, 1991, 9121789

Int. Cl.[6] G03L *1/498*

U.S. Cl. 430—617 14 Claims

1. A positive-acting photosensitive element comprising a support having at least a first layer and a second layer on one surface thereof, which first and second layers define a non-photosensitive, heat-developable medium and a photosensitive photocurable medium; said non-photosensitive heat developable medium consisting essentially of a non-photosensitive reducible silver source, and a reducing system comprising a reducing agent for silver ion and toner, such that said first layer comprises said non-photosensitive reducible silver source and said photocurable medium and said second layer comprises said reducing system; wherein exposure of said positive-acting photosensitive element to actinic radiation causes curing of said photosensitive photocurable medium in the exposed areas, said curing preventing said reducing agent for silver ion and/or said toner of said reducing system from interacting with

said non-photosensitive reducible silver source during thermal processing and in which said photosensitive photocurable medium consists essentially of a free radical curable resin and a photoinitiator therefor which is a combination of an oxonol dye and an onium salt having an absorbance to radiation in the wavelength range of 340 to 440 nm, which photoinitiator upon exposure to said actinic radiation or during subsequent thermal processing undergoes a loss of absorption in said wavelength range 340-440 nm.

5,384,239

METHOD FOR ANALYZING THE GLYCATION OF HEMOGLOBIN

Alexander Saunders, San Carlos, Calif., assignor to Chronomed, Inc., San Carlos, Calif.

Continuation of Ser. No. 681,693, Apr. 8, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,025

Int. Cl.[6] A01N *1/02*; C12Q *1/00, 1/54*; G01N *33/72*

U.S. Cl. 435—2 **4 Claims**

1. A method of determining an individual history of blood sugar control which comprises:

(a) taking a sample of red blood cells from the individual, wherein over the life of the red blood cells hemoglobin has been glycosylated to form a glycohemolobin, said reaction being an Amadori rearrangement, which is slowly reversible;

(b) separating the red blood cells according to age into a plurality of cohorts, and determining the average age of the red blood cells in each cohort, the average age differing from cohort-to-cohort;

(c) measuring the average glycohemoglobin levels of said red blood cells on a cohort-by-cohort basis, and correlating said average glycohemoglobin level with said average age for each cohort, while correcting for the reversibility of the Amadori rearrangement, so as to obtain a history of the individual's blood sugar levels over the lifespan of said red blood cells; and

(d) examining said history for trends indicative of changes in blood sugar control;

wherein the correction is made by applying a transform of the form

$$Y = y\frac{a}{e^{-bt}}$$

where y is the untransformed mean glycohemoglobin level for the cohort, a and b are constants, e is the base of the natural logarithm and t is time.

5,384,240

BASE DISSOCIATION ASSAY

Jones M. Hyman, Durham, N.C., assignor to Akzo Nobel, N.V., Arnhem, Netherlands

Filed Nov. 25, 1992, Ser. No. 981,689

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **12 Claims**

1. A method to enhance the detection of antigen in a sample by forming an immunocomplex of the antigen with a capture antibody, wherein in the sample the antigen is complexed with an antibody as an immunocomplex, comprising adding a reagent having a basic pH to the sample to adjust the pH to a pH greater than about 8.0, thereby dissociating the immunocomplex and releasing antigen; contacting the sample having a pH of greater than about 8.0 with a capture antibody bound to a solid substrate, whereby new immunocomplexes are formed; and detecting the presence or absence of the new immunocomplexes, thereby determining the presence or absence of said antigen.

5,384,241

SPECIFIC BINDING ASSAY COMPOUND WITH INHIBITIVE SELF-QUENCHING CHARACTERISTICS

Stanley Kline, Brooklyn, N.Y., assignor to Enzo Diagnostics, Inc., Farmingdale, N.Y.

Continuation of Ser. No. 96,182, Sep. 11, 1987, abandoned. This application Nov. 29, 1989, Ser. No. 443,812

Int. Cl.[6] C07H *21/00*; G01N *33/53*; C12Q *1/68*

U.S. Cl. 435—6 **13 Claims**

1. A compound comprising:

(i) a specific binding partner for an analyte, wherein said specific binding partner is comprised of individual monomeric units and is selected from tile group consisting of an oligonucleotide, a polynucleotide, a protein, and a saccharide; and

(ii) a plurality of polymers, each polymer comprising a plurality of self-quenching emitter moieties alternating with a plurality of isocharged functionalities, wherein the polymers are substituted into the monomeric units of the specific binding partner, said isocharged functionalities repelling each other and said emitter moieties to an extent sufficient to inhibit self-quenching of said emitter moieties;

wherein the monomers of the specific binding partner are covalently bound directly to the polymers or through linkage groups, in a manner which does not substantially inhibit specific binding between the analyte and the specific binding partner and which does not substantially interfere with the energy emission of the emitter moieties.

5,384,242

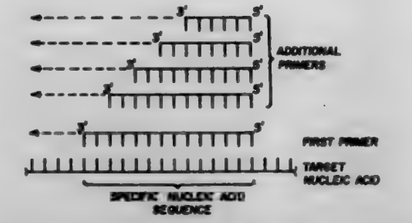
DIAGNOSTIC KIT, PRIMER COMPOSITION AND THEIR USE FOR REPLICATION OR DETECTION OF NUCLEIC ACIDS

Fred T. Oakes, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 339,436, Apr. 17, 1989, abandoned. This application Jun. 9, 1992, Ser. No. 895,759

Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/04*; C12N *15/00*

U.S. Cl. 435—6 **32 Claims**



1. A primer composition useful for amplification or replication of a predetermined single-stranded target nucleic acid, said composition comprising an aqueous mixture of:

a) a first oligonucleotide primer which is substantially complementary to and hybridizable with a first specific nucleic acid sequence of said single-stranded target nucleic acid, and

b) at least one additional oligonucleotide primer which is at least substantially complementary to and hybridizable with an additional nucleic acid sequence of said single-stranded target nucleic acid, wherein said additional nucleic acid sequence of said single-stranded target nucleic acid is either:

i) inclusive of only a portion of said first nucleic acid sequence, and each of said additional oligonucleotide primers being shorter than said first oligonucleotide primer, and the bases at the 5' end of said first and additional primers are identical, or

ii) inclusive of only a portion of said first nucleic acid sequence, and each of said additional oligonucleotide primers is of the same length as said first oligonucleotide primer, and each of said additional oligonucleotide primers overlaps said first oligonucleotide primer by at least one base.

5,384,243

METHOD FOR SCREENING AN AGENT FOR ITS ABILITY TO PREVENT CELL TRANSFORMATION

J. Silvio Gutkind, Silver Spring, Md., and Keith C. Robbins, Reston, Va., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 683,967, Apr. 12, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 989,981

Int. Cl.[6] C12N *5/00, 15/00*; C12Q *1/24, 1/04*

U.S. Cl. 435—6 **9 Claims**

1. A method of identifying reversal of transformation of NIH/3T3 cells, comprising:

(1) introducing a DNA vector contain a gene encoding m1 or m3 type acetyliholine receptor linked to phosphatidylinositol metabolism into NIH/3T3 cells.

(2) culturing said cells on medium containing an agonist of said receptor,

(3) determining the amount of agonist-dependent neoplastic transformation;

(4) culturing said cells on medium lacking said agonist; and

(5) determining the amount of neoplastic transformation, wherein a decrease in the amount of transformation determined in step (5) compared to that determined in step (3). indicates that the neoplastic transformation caused by said agonist has been reversed.

5,384,244

DETECTION OF SCHISTOSOMIASIS ANTIBODIES

Cynthia L. Chappell, 4337 Betty St., Bellaire, Tex. 77401; Marc H. Dresden, deceased, late of Houston, Tex. by Judith H. Dresden, legal representative, 3610 Underwood, Houston, Tex. 77025

Continuation-in-part of Ser. No. 447,799, Dec. 8, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 960,121

Int. Cl.[6] G01N *33/569*

U.S. Cl. 435—7.22 **9 Claims**



7. A method for testing for schistosomiasis antibodies in a human wherein the method compriaes the steps of:

(a) immobilizing a synthetic peptide reagent selected from the group consisting of SMP 11 and SMP 22 or combinations thereof containing sequence Lys Val Leu Lys Ser Gly Lys Asn Asp (SEQ ID NO:1) on a supportive substrate;

(b) obtaining serum from blood collected from the human for testing;

(c) applying the serum to the supportive substrate under conditions suitable to cause a measurable specific binding reaction to take place between schistosomiasis antibodies present in the serum and the synthetic peptide reagent; and

(d) determining the presence of the measurable specific binding reaction.

5,384,245

STABLE, SINGLE-LIQUID ALPHA-AMYLASE REAGENT

Shing F. Kwan, Ventura, Calif., assignor to Ivan E. Modrovich, Camarillo, Calif.

Filed May 4, 1992, Ser. No. 878,347

Int. Cl.[6] C12Q *1/40*; C12N *9/96*

U.S. Cl. 435—22 **24 Claims**

1. In a stable single liquid alpha-amylase reagent composition comprising an aqueous solution of at least one substrate which is hydrolyzed when mixed with body fluid containing alpha-amylase to yield directly or indirectly by a reaction involving alpha-amylase a detectable label released to the reaction mixture, the rate of formation of such detectable label being proportional to the amount of alpha-amylase present in the sample and at least one exo-enzyme to cooperate with the alpha-amylase in the formation of such detectable label, said substrate being present in a concentration sufficient to prevent the substrate from limiting the rate of hydrolysis thereof, said reagent composition being stable against substrate and enzyme degradation for at least 6 months at 2 to 10° C., the improvement wherein the at least one exo-enzyme comprises alpha-glucosidase from *Bacillus Stearothermophilus* in an amount sufficient to complete the assay within 10 minutes at an assay temperature of 37° C.

5,384,246

DETERMINATION OF IONS IN FLUIDS BY A PROCESS INVOLVING DISPLACEMENT OF INDICATOR IONS

Michael N. Berry, Eden Hills, Australia; Michael-Harold Town, Oberhausen, Germany; Georg-Burkhard Kresse, Penzberg, Germany, and Uwe Hermann, Bernried, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany and The Flinders University of South Australia, South Australia, Australia

Division of Ser. No. 696,326, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 302,799, Jan. 19, 1989, abandoned. This application Jun. 22, 1992, Ser. No. 907,732

Claims priority, application Australia, Apr. 10, 1987, PI1365; Jun. 5, 1987, PI2311

Int. Cl.[6] C12Q *1/40, 1/00, 1/34, 1/26*

U.S. Cl. 435—22 **23 Claims**

1. Process for the determination of the concentration of an analyte ion in a fluid sample, comprising measuring the activity of an enzyme stimulated by an indicator ion, said enzyme selected from the group consisting of a transferase, a hydrolase, an oxidoreductase or a lyase in the presence of a selective binding agent and said indicator ion, wherein the selective binding agent forms a complex with the indicator ion and the indicator ion is displaced stoichiometrically from the complex by the analyte ion, whereby the displaced indicator ion stimulates the activity of the enzyme, wherein the activity of the enzyme is proportional to the concentration of analyte ion in the fluid sample.

5,384,247

DETERMINATION OF SODIUM IONS IN FLUIDS

Michael N. Berry, Eden Hills, Australia; Michael-Harold Town, Oberhausen, Germany; Georg-Burkhard Kresse, Penzberg, and Uwe Hermann, Bernried, both of Germany, assignors to Boehringer Mannheim, GmbH, Mannheim, Germany and The Flinders University of South Australia, South Australia, Australia

Division of Ser. No. 696,326, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 302,799, Jan. 19, 1989, abandoned. This application Jun. 22, 1992, Ser. No. 907,736

Claims priority, application Australia, Apr. 10, 1987, PI1365; Jun. 5, 1987, PI2311

Int. Cl.[6] C12Q *1/40, 1/68, 1/26*

U.S. Cl. 435—22 **38 Claims**

1. Process for the determination of the concentration of sodium ions in a fluid sample, comprising measuring the activity of an enzyme whose activity is stimulated by sodium ions

and is selected from the group consisting of a transferase or a hydrolase in the presence of a first selective binding agent which binds to sodium ions in the fluid sample, said first selective binding agent being present in an amount sufficient to increase the ratio of the activity of the enzyme to the concentration of free sodium ions in the fluid sample to within an optimal range for measurement of the concentration of sodium ions in the fluid sample, wherein the measured activity of said enzyme is proportional to the concentration of said sodium ions in the fluid sample.

5,384,248

PROCESS FOR MEASURING AN ANALYTE WITH AN OXIDASE AND AN OXIDIZABLE COLOR REAGENT AND SURFACTANTS

Yoshitsugu Sakata, Otsu; Toshiro Hanada, Amagasaki; Ryosuke Matsuda, Osaka, and Yoshiyuki Matsuda, Ibaraki, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 921,958, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 533,558, Jun. 5, 1990, abandoned. This application Apr. 15, 1994, Ser. No. 228,002
Claims priority, application Japan, Jun. 9, 1989, 1-147000
Int. Cl.[6] C12Q *1/46, 1/36, 1/62, 1/60*
U.S. Cl. 435—25 **21 Claims**

1. A process for measuring the presence of or quantity of an analyte or an enzymatic activity in a body fluid, which process comprises reacting an oxidase with the analyte to be measured, reacting an oxidase with a substance produced by an enzymatic reaction corresponding to the enzymatic activity to be measured, or reacting a substrate with an enzyme to be measured which enzyme has the activity of an oxidase, in a measuring system, and measuring hydrogen peroxide produced by optically measuring the color developed by the reaction of the hydrogen peroxide with an oxidizable color reagent, said measuring system comprising at least one member selected from the group consisting of cationic surfactants and amphoteric surfactants in a concentration of from 0.001 to 10%.

5,384,249

α2→3 SIALYLTRANSFERASE

Katsutoshi Sasaki, Machida; Etsuyo Watanabe, Kawasaki; Tatsunari Nishi, Machida; Susumu Sekine; Nobuo Hanai, both of Sagamihara, and Mamoru Hasegawa, Kawasaki, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,587
Claims priority, application Japan, Dec. 17, 1991, 3-333661; Apr. 10, 1992, 4-091044
Int. Cl.[6] C12P *21/00*; C12N *9/10*
U.S. Cl. 435—68.1 **3 Claims**

1. An isolated Gal(1,3/1,4)GlcNAc α2→3 sialytransferase having an amino acid sequence as designated by Seq. ID:P 2 or 7.

5,384,250

EXPRESSION AND PURIFICATION OF CLONED ALPHA-FETOPROTEIN

Robert A. Murgita, Montreal, Canada, assignor to McGill University, Montreal, Canada

Continuation of Ser. No. 767,435, Sep. 27, 1991, abandoned. This application Oct. 8, 1993, Ser. No. 133,773
Int. Cl.[6] C12P *21/06*; A61K *35/14*; C12N *15/00*
U.S. Cl. 435—69.6 **4 Claims**

1. A method of using a prokaryotic cell for producing biologically active human alpha-fetoprotein unfused to additional amino acids comprising providing a transformed prokaryotic cell comprising a recombinant DNA molecule encoding said human alpha-fetoprotein operably linked to an expression control element which directs the expression of said human alpha-fetoprotein, and

culturing said transformed cell and purifying said alpha-fetoprotein wherein said alpha-fetoprotein is treated with a solubilizing agent, and then renatured to produce said biologically active alpha fetoprotein.

5,384,251

PROCESS FOR PRODUCING NUCLEOSIDES

Hiroshi Yamauchi, Toda; Hideki Utsugi, and Yuichiro Midorikawa, both of Chosi, all of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Division of Ser. No. 602,221, Oct. 26, 1990, Pat. No. 5,258,301. This application May 4, 1993, Ser. No. 56,745
Claims priority, application Japan, Feb. 28, 1989, 1-48785; Aug. 4, 1989, 1-203556
Int. Cl.[6] C12P *19/38, 19/40*; C12N *1/20*
U.S. Cl. 435—87 **3 Claims**

1. In a process for enzymatically producing nucleosides by the use of nucleoside phosphorylase, the improvement which comprises culturing *Bacillus stearothermophilus* TH 6-2 (FERM BP-2758) to produce a nucleoside phosphorylase, and using said nucleoside phosphorylase to produce said nucleosides.

5,384,252

MOLECULES WITH ANTIBODY COMBINING SITES THAT CATALYZE CARBOCYCLIC RING FORMATION FROM 5,6-ETHYLENICALLY UNSATURATED SULFONATE MOLECULES

Kim Janda, San Diego, Calif., assignor to The Scripps Research Institute, La Jolla, Calif.

Filed Jan. 10, 1994, Ser. No. 179,253
Int. Cl.[6] C12P *5/00*; C12N *9/00, 5/12*
U.S. Cl. 435—166 **11 Claims**

1. Monoclonal antibody molecules or paratope-containing portions thereof that catalyze carbocyclic ring formation of an ethylenically unsaturated sulfonate molecule to form a 6-membered ring, said paratope binding:

(a) to a substrate molecule having a hydrocarbon chain that contains ethylenic unsaturation and a carbon atom bonded to a sulfonate leaving group that are positioned within said chain such that said ethylenic unsaturation is at a 5,6-position in the chain relative to the sulfonate-bearing carbon atom; and

(b) to an analog of said substrate molecule that is a piperidine N-oxide whose nitrogen atom is located at a ring position that is the same as that of the carbon atom bonded to the sulfonate in said substrate molecule, said N-oxide nitrogen atom being additionally bonded to a moiety that is structurally similar to said sulfonate, said analog containing at least two 6-membered rings or one 6-membered ring structure plus a hydrocarbyl substituent that can fold to approximate the structure of a 6-membered ring.

5,384,253

GENETIC TRANSFORMATION OF MAIZE CELLS BY ELECTROPORATION OF CELLS PRETREATED WITH PECTIN DEGRADING ENZYMES

Richard A. Krzyzek, Edina; Cheryl R. M. Laursen, St. Paul, and Paul C. Anderson, Minneapolis, all of Minn., assignors to DeKalb Genetics Corporation, DeKalb, Ill.

Filed Dec. 28, 1990, Ser. No. 635,279
Int. Cl.[6] C12N *15/00, 15/05*
U.S. Cl. 435—172.3 **21 Claims**

1. A method for producing a transgenic *Zea mays* plant comprising:

(a) incubating a population of cultured *Zea mays* cells with at least one pectin-degrading enzyme in an aqueous osmoticum so as to partially degrade the walls of said cells to yield a population of transformation-competent *Zea mays* cells;

(b) electroporating the population of transformation-competent *Zea mays* cells in a buffered aqueous osmoticum comprising recombinant DNA to yield a population of transgenic *Zea mays* cells stably transformed with said DNA;

(c) growing transgenic *Zea mays* callus tissue from said cells; and

(d) regenerating a population of fertile transgenic *Zea mays* plants from said transgenic callus tissue; wherein said plants comprise said DNA which is heritable.

5,384,254

IMMOBILIZATION OF BIOMOLECULES ON A FLUOROCARBON SURFACE MODIFIED WITH A POLY(FLUOROALKYL) SUGAR REAGENT

Rene Areatzen; Prabhakar K. Jadhav; Robert K. Kobos, and Bruce E. Smart, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

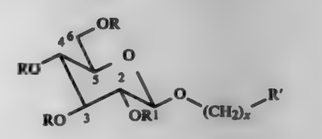
Division of Ser. No. 586,173, Sep. 21, 1990, Pat. No. 5,243,037. This application May 20, 1993, Ser. No. 63,676
Int. Cl.[6] C12N *11/06, 11/08*; C07H *15/00*; C07K *3/18*
U.S. Cl. 435—181 **24 Claims**

17. A support for immobilization of a biomolecule consisting essentially of:

(a) a fluorocarbon surface, wherein the fluorocarbon surface is a solid fluorocarbon polymer; and

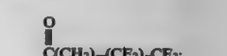
(b) a poly(fluoroalkyl) sugar reagent containing a sugar having multiple hydroxy groups to which are attached a plurality of fluoroalkyl anchor groups that are securely adsorbed to the surface of said fluorocarbon polymer and a spacer containing a reactive group capable of coupling to a biomolecule, wherein said sugar reagent has a structure selected from the group consisting of

(i):

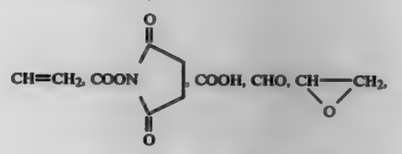


wherein:

R is selected from

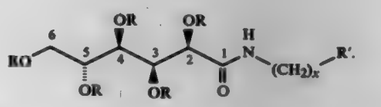


m=1–5;
n=3–20;
x=1–10; and
R′ is selected from the following structures:

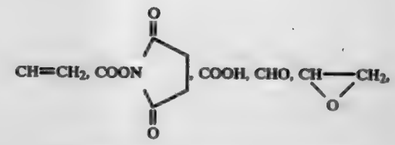


CONHNH$_2$, CH_2NH_2, $CH_2NHCOOCH_2Ph$,

(ii):

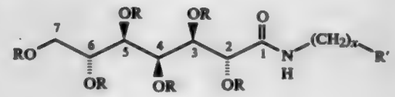


wherein:
R is selected from $CO(CH_2)_m(CF_2)_nCF_3$;
x=1–10;
m=1–5;
n=3–20; and
R′ is

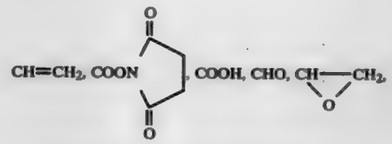


CONHNH$_2$, CH_2NH_2, $CH_2NHCOOCH_2Ph$,

(iii):



wherein:
R is $CO(CH_2)_m(CF_2)_nCF_3$;
x=2–10; and
R′ is selected from



CONHNH$_2$, CH_2NH_2, $CH_2NHCOOCH_2Ph$, and

(iv):



wherein:
R is $CO(CH_2)_m(CF_2)_nCF_3$;
m=1–5;
n=3–20;
R′ is CH_2OCH_2Ph, H, phenyl, CH_3 or C_2H_5; and
x=1–20.

5,384,255

UBIQUITIN CARRIER ENZYME E2-F1, PURIFICATION, PRODUCTION, AND USE

Aaron J. Ciechanover; Nava Blumenfeld, and Hedva Gonen, all of Haifa, Israel, assignors to Rappaport Family Institute for Research in the Medical Sciences, Haifa, Israel

Filed Jun. 21, 1993, Ser. No. 80,073
Int. Cl.[6] C12N *9/10, 15/54*
U.S. Cl. 435—193 **1 Claim**

1. Isolated E2-F1 enzyme which is substantially pure, wherein said E2-F1 enzyme does not bind to anion exchange resin in neutral pH, and comprises the amino acid sequences of SEQ ID NO:3, SEQ ID NO:4 and SEQ ID NO:5 and wherein said E2-F1 enzyme is capable of stimulating protein degradation of non N-end rule substrates and N-α-acetylated substrates.

5,384,256

PECTIN-MODIFIED LIPASE FROM *MUCOR JAVANICUS* WITH LOWERED SATURATED/UNSATURATED FATTY ACID RATIO

Oliver Chaniel, Lausanne, and Helmut Traitler, Corsenaux, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Apr. 6, 1993, Ser. No. 43,357

Claims priority, application European Pat. Off., Apr. 23, 1992, 92107094

Int. Cl.[6] C12N 9/22, 11/10, 11/08, 9/96

U.S. Cl. 435—198 10 Claims

1. A process for modifying a native lipase comprising the steps of mixing the native lipase, which is obtained from *Mucor javanicus* and which has a medium-chain and long-chain fatty acid substrate specificity, with pectin in an acidic aqueous solution to bind the lipase to the pectin, separating non-solubilized pectin from the aqueous solution, and recovering the solution containing the lipase bound to the pectin.

5,384,257

GLUCOSE ISOMERASES WITH AN ALTERED PH OPTIMUM

Anne-Marie Lambair, Heverlee; Ignace Lasters, Antwerp; Nadir Mrabet, Hoeilaart, all of Belgium; Wilhelmus J. Quax, Voorschoten, Netherlands; Jan M. Van der Laan, Groningen, Netherlands, and Onno Misset, Delft, Netherlands, assignors to Gist-brocades, N.V., Delft, Netherlands and Plant Genetics System, NV, Brussels, Belgium

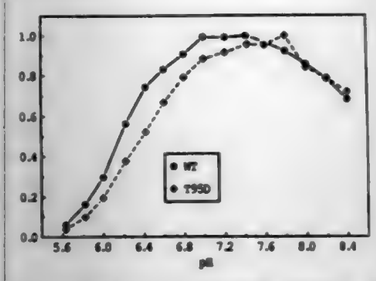
Continuation of Ser. No. 637,399, Jan. 4, 1991. This application Aug. 26, 1993, Ser. No. 112,703

Claims priority, application European Pat. Off., Jan. 4, 1990, 90200030; Jan. 4, 1990, 90200037

The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.

Int. Cl.[6] C12N 13/61, 9/92, 15/70, 15/74

U.S. Cl. 435—234 15 Claims



1. A substantially pure, recombinantly produced, modified procaryotic glucose isomerase containing a modification wherein at least one and no more than four amino acid residues from the corresponding naturally occurring glucose isomerase within a sphere of 15 Å of a bivalent metal cation coordination site is replaced by a more negatively charged amino acid, which modified glucose isomerase exhibits an altered pH/activity profile wherein at least the acidic part of the pH/activity profile is shifted to a higher pH value and wherein said modified glucose isomerase retains glucose isomerase activity.

5,384,258

***BACILLUS STEAROTHERMOPHILUS* AND *E. COLI* PLASMIDS**

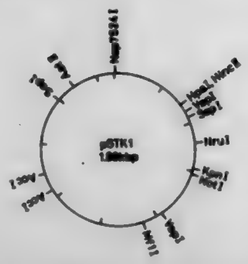
Noriyuki Nakayama, and Shinya Nakamoto, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Nov. 8, 1993, Ser. No. 148,988

Claims priority, application Japan, Dec. 24, 1992, 4-343721; Mar. 26, 1993, 5-067261

Int. Cl.[6] C12N 15/75, 15/00

U.S. Cl. 435—320.1 7 Claims


pSTK1
1880bp
Nae I
Hind III
Nae I
Nae I
Hpa I
Hpa I
Nae I

5,384,263

METHOD TO PRODUCE IMMUNODIAGNOSTIC REAGENTS

Lawrence M. Kauvar, San Francisco, Calif., assignor to Terrapin Technologies, Inc., South San Francisco, Calif.

Continuation of Ser. No. 255,906, Oct. 11, 1988, Pat. No. 5,217,869, which is a continuation-in-part of Ser. No. 108,130, Oct. 13, 1987, abandoned. This application Jun. 4, 1993, Ser. No. 72,190

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[6] G01N *33/543, 33/577*

U.S. Cl. 436—518 **6 Claims**

1. A method to obtain product antibodies specifically and strongly reactive with a desired analyte which comprises:

a) obtaining a mimotope for said analyte by a method which comprises reacting a panel of starting antibodies representative of the resting B cell repertoire of a mammal with said analyte so as to identify analyte-reacting antibodies reactive with said analyte and then reacting each of a panel of candidate mimotopes representative of a random set of three dimensional contours with said analyte-reacting antibodies to identify at least one mimotope which reacts with said analyte-reacting antibodies;

b) immunizing a subject with one or more mimotopes so identified and

c) recovering product antibodies from the serum of the subject.

5,384,264

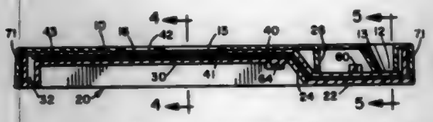
METHOD AND APPARATUS FOR SINGLE STEP ASSAYS OF LIGAND-CONTAINING FLUIDS

Tod M. Chen, Chino, and Yi-Ping Wang, Escondido, both of Calif., assignors to Syntron Bioresearch, Inc., Vista, Calif.

Filed Nov. 5, 1992, Ser. No. 972,378

Int. Cl.[6] G01N *33/543, 33/552, 33/558*

U.S. Cl. 436—525 **18 Claims**



1. An apparatus for use in assays of fluid samples to detect the presence of one or more ligands of interest therein, comprising:

(a) a substantially fluid-tight housing having an entry and first and second display ports therein, said entry port for addition of fluid sample to the housing and, said entry and display ports being in fluid communication with one another by means of capillary action through at least one porous membrane, said housing further having a floor divided into two planes, wherein one end of said floor is in a substantially lower but parallel plane to the other end of said floor;

(b) a slope separating the two planes of the housing floor, wherein the slope is at an angle which is sufficient to slow the passage of fluid sample through the porous membrane;

(c) a first porous membrane disposed along the lower end of the housing floor in fluid communication with said entry port to which is movably bound a first antiligand complementary to the ligands of interest suspected of existing in the fluid sample, said first antiligand is bound to a label capable of producing a detectable signal indicative of the presence of ligand(s) of interest in the fluid sample;

(d) a second, porous membrane disposed along the higher end of the housing floor in fluid communication with the first, porous membrane, to which the second, porous membrane is immovably bound:

(i) one or more second antiligands complementary to the ligands of interest in the fluid sample, said second antiligands being bound beneath said first display port; and

(ii) first ligands complementary to said first antiligands, said first ligands being bound immovably beneath said second display port;

(e) one or more fluid gulleys in the higher end of the housing floor to capture excess sample fluid from the second, porous membrane; and

(f) an absorbent means in fluid communication with said second porous membrane for capturing excess fluid sample from said second porous membrane.

5,384,265

BIOMOLECULES BOUND TO CATALYTIC INORGANIC PARTICLES, IMMUNOASSAYS USING THE SAME

David A. Kidwell, Alexandria, Va., and Susan M. Conyers, Evanston, Ill., assignors to Geo-Centers, Inc., Newton Centre, Mass. and The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 26, 1993, Ser. No. 37,981

Int. Cl.[6] G01N *33/553*

U.S. Cl. 436—525 **18 Claims**

1. A method for detecting an analyte in a sample, comprising:

(i) contacting a sample which may contain an analyte with a biomolecule which is bonded to a catalytically active colloidal metal particle, said biomolecule being a specific binding complement of said analyte, to obtain an analyte-biomolecule-colloidal metal particle complex;

(ii) separating said analyte-biomolecule-colloidal metal particle complex from said sample;

(iii) contacting said analyte-biomolecule-colloidal metal particle complex with a substrate which forms a product in a reaction catalyzed by the colloidal metal particle of said complex; and

(iv) detecting said analyte-biomolecule-colloidal metal particle complex by detecting said product produced by a reaction of said substrate by the colloidal metal particle of said complex to indicate the presence or absence of said analyte in the sample,

wherein said colloidal metal particle comprises a metal selected from the group consisting of platinum, palladium, silver and mixture thereof; and said biomolecules is selected from the group consisting of antibodies, antigens, avidin, streptavidin, biotin, proteins bonded to a hapten, and nucleic acids.

5,384,266

ELECTRONIC DEVICE MANUFACTURE USING ION IMPLANTATION

Jeffrey A. Chapman, Burgess Hill, England, assignor to U.S. Philips Corporation, New York, N.Y.

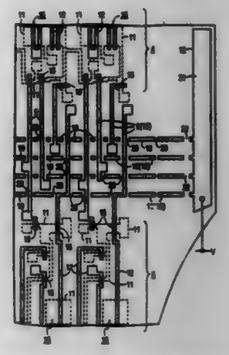
Filed Dec. 3, 1993, Ser. No. 160,990

Claims priority, application United Kingdom, Dec. 11, 1992, 9225906

Int. Cl.[6] H01L *21/266*

U.S. Cl. 437—21 **14 Claims**

1. A method of manufacturing an electronic device having an insulating substrate on which thin-film circuit elements are formed by steps which include depositing films of various materials on the substrate, etching the films into a desired pattern, and implanting ions in areas of at least one of the films, wherein before the implantation step there is provided on the substrate a thin-film pattern which comprises a group of tracks and a discharge path, which discharge path extends from within the group outwards towards a periphery of the substrate and serves to mitigate charging of the tracks during the ion implantation, which method is characterised in that the thin-film pattern provides along the length of the discharge path a series of discharge gaps which separate successive thin-film regions of the path and across which, during the ion implantation step, charge leakage occurs between the separate successive regions of the path, the tracks of the group being



separated by respective discharge gaps from adjacent regions of the path.

5,384,267

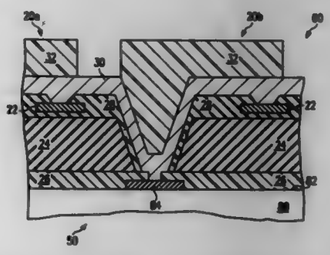
METHOD OF FORMING INFRARED DETECTOR BY HYDROGEN PLASMA ETCHING TO FORM REFRACTORY METAL INTERCONNECTS

Larry D. Hutchins, Richardson, and Rudy L. York, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 19, 1993, Ser. No. 140,390

Int. Cl.[6] H01L *31/18, 21/44*

U.S. Cl. 437—3 **29 Claims**



1. A method of fabricating a metal interconnect pattern for use in electrically coupling two component structures in a hybrid solid state system comprising the steps of:

forming a metal film layer wherein metal is a refractory metal or refractory metal alloy, on at least one of the component structures;

placing a pattern of photoresist material on the metal layer with the photoresist pattern corresponding to the desired metal interconnect pattern;

placing the component structure in an RF chamber; and

dry etching the metal film layer with hydrogen plasma to form the desired metal interconnect pattern.

5,384,268

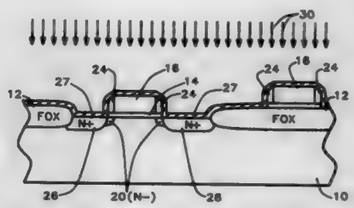
CHARGE DAMAGE FREE IMPLANTATION BY INTRODUCTION OF A THIN CONDUCTIVE LAYER

Water Lur, Taipei; Ben Chen, Hsin-Chu, and Cheng H. Huang, Hsin Chu, all of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsin Chu, Taiwan, Prov. of China

Filed Jan. 22, 1993, Ser. No. 7,713

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—20 **26 Claims**



1. The method of manufacture of an integrated circuit comprising:

providing, on a silicon substrate, a pattern of silicon gate electrodes over a gate dielectric;

depositing a thin conducting layer superadjacent to said pattern of gate electrodes and providing means to ground said conducting layer to said substrate; and

performing high-dose ion implantation through said conducting layer to form implanted regions underlying said conducting layer wherein said conducting layer grounds all electric charge resulting from said ion implantation whereby said gate electrodes and said gate dielectric are protected from charge damage during said ion implantation in the manufacture of said integrated circuit.

5,384,269

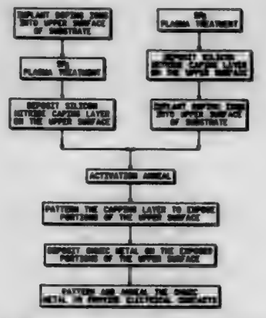
METHODS FOR MAKING AND USING A SHALLOW SEMICONDUCTOR JUNCTION

Jaeshin Cho, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 987,870, Dec. 9, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 221,546

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—22 **14 Claims**



1. A method for making a shallow junction in a gallium arsenide substrate comprising the steps of:

implanting doping ions into an upper surface of the substrate;

treating the upper surface of the substrate with an SF_6 plasma;

depositing a silicon nitride layer on the upper surface;

simultaneously diffusing sulfur into the substrate while activating the doping ions; and

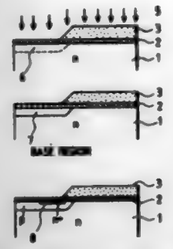
depositing an ohmic metal layer on the upper surface after the step of diffusing sulfur.

5,384,270

METHOD OF PRODUCING SILICON CARBIDE MOSFET

Katsunori Ueno, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 10, 1993, Ser. No. 149,824
Claims priority, application Japan, Nov. 12, 1992, 4-301439
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—40 **4 Claims**



1. A method of producing a silicon carbide MOSFET in which a second conductivity type base region is selectively formed in a surface layer of a first conductivity type semiconductor layer of silicon carbide, a first conductivity type base region is selectively formed in a surface layer of said second conductivity type base region, and a gate electrode is provided, through an insulating film, on a surface of said second conductivity type base region between said first conductivity type base region and an exposed portion of said first conductivity type semiconductor layer, said method comprising the steps of:

forming the gate electrode having an inclined surface at its end portion;

injecting impurity ions into a region of the first conductivity type semiconductor layer which is not covered with the gate electrode and into a region just under said inclined surface; and

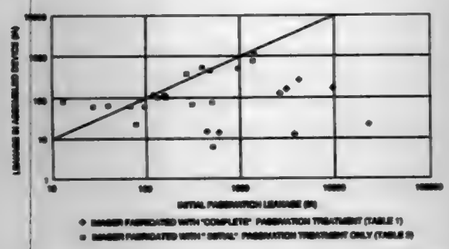
then forming the second conductivity type base region through heat treatment.

5,384,271

METHOD FOR REDUCTION OF OFF-CURRENT IN THIN FILM TRANSISTORS

Robert F. Kwasnick, and George E. Possin, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1993, Ser. No. 130,807
Int. Cl.[6] H01L *21/24*
U.S. Cl. 437—40 **13 Claims**



1. A method of fabricating a thin film transistor (TFT) having relatively low off-current comprising the steps of:

forming a TFT body having a gate electrode, a gate dielectric layer disposed over said gate electrode, a semiconductor layer disposed over said gate dielectric layer, a doped semiconductor layer disposed over said semiconductor layer, and a source-drain metal layer disposed over said doped semiconductor layer;

forming a channel region in said TFT body, said channel region being exposed and defined by etching said source-drain metal layer, the underlying doped semiconductor layer, and a portion of the underlying semiconductor layer so as to form source and drain electrodes; and

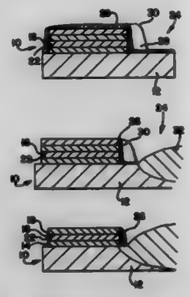
passivating the channel region, the step of passivating further comprising the steps of wet etching the exposed channel region for a first etch time, dry etching the exposed channel region for a second etch time, wet etching the exposed channel region for a third etch time, treating the exposed channel region with a cleansing solution, and annealing the exposed channel region.

5,384,272

METHOD FOR MANUFACTURING A NON-VOLATILE, VIRTUAL GROUND MEMORY ELEMENT

Effiong E. Ibok, and Bradley T. Moore, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 28, 1994, Ser. No. 266,744
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—43 **11 Claims**



1. A method for manufacturing a memory element, said memory element for storing an electrical charge, said storage of said electrical charge defining the storage state of said memory element, said memory element including a floating gate for storing said charge, a bit line region for reading and writing said storage state, and a control gate for electrically coupling said floating gate and said bit line region, the method comprising the steps of:

depositing a first polysilicon layer on a silicon substrate;

forming a first oxide layer on said first polysilicon layer;

depositing a barrier nitride layer on said first oxide layer;

patterning said first polysilicon layer, said first oxide layer and said barrier nitride layer, said patterned first polysilicon layer forming said floating gate;

doping a region of said silicon substrate adjacent said floating gate to form said bit line region;

oxidizing said bit line region in a wet ambient, said wet ambient including both oxygen and water;

stripping said barrier nitride layer;

depositing a second polysilicon layer; and

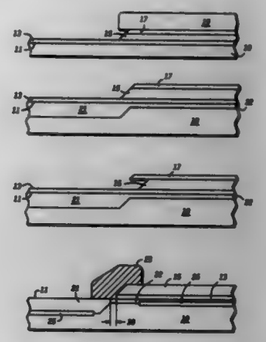
patterning said second polysilicon layer to form said control gate.

5,384,273

METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING A SHORT GATE LENGTH

Robert B. Davies, Tempe; Charles B. Anderson, Maricopa; Lawrence S. Klingbell, Jr., Chandler, and George B. Norris, Phoenix, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 26, 1994, Ser. No. 233,290
Int. Cl.[6] H01L *21/335, 21/31*
U.S. Cl. 437—41 **15 Claims**



6. A method of fabricating a channel region of a semiconductor device, comprising the steps of:

providing a semiconductor material, having a top surface;

forming a first silicon nitride layer over the top surface of the semiconductor material;

annealing the first silicon nitride layer;

forming an insulating layer over the silicon nitride layer;

forming a second silicon nitride layer over the insulating layer;

forming a masking layer over a portion of the second silicon nitride layer;

undercutting a portion of the second silicon nitride layer and a portion of the insulating layer;

removing the masking layer;

annealing the second silicon nitride layer after the step of removing the masking layer;

ion implanting a channel region into the semiconductor material so that the channel region has a first and a second portion wherein the first portion extends deeper into the semiconductor material from the top surface than the second portion;

undercutting a portion of the insulating layer;

removing the second silicon nitride layer and a portion of the first silicon nitride layer which does not have the insulating layer formed thereover; and

forming a gate layer on the top surface of the semiconductor material over a portion of the first and the second portions of the channel region; and

forming a source region and a drain region in a portion of the semiconductor material, using the gate layer as a mask.

5,384,274

METHOD OF MAKING A COMBINED SEMICONDUCTOR DEVICE AND INDUCTOR

Kaoru Kanehachi, Tokyo, Japan, assignor to Nippon Precision Circuits Inc., Tokyo, Japan

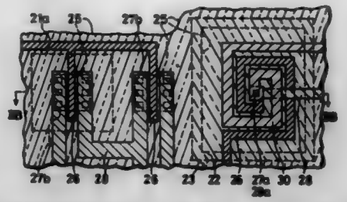
Continuation of Ser. No. 42,938, Apr. 5, 1993, abandoned. This application May 12, 1994, Ser. No. 241,946
Claims priority, application Japan, Apr. 6, 1992, 4-083509
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—47 **13 Claims**

1. A process for producing a semiconductor device, comprising the steps of:

forming a first insulation layer in a given region on a first surface of a semiconductor substrate;

simultaneously forming:

a first conductor comprising an inductor extending across a part of said given region of said first insulation layer, and



a second conductor on said first surface outside of said given region, said second conductor comprising an electrode of an MOS transistor; and

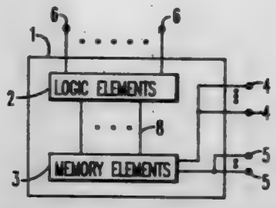
forming a cavity in a second surface of said semiconductor substrate in alignment with said given region.

5,384,275

METHOD OF MANUFACTURING A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, AND AN ELECTRONIC CIRCUIT DEVICE

Kazuhiro Sakashita, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,594
Claims priority, application Japan, Aug. 20, 1992, 4-221313
Int. Cl.[6] H01L *27/00*; G06F *7/38*
U.S. Cl. 437—51 **17 Claims**



1. A method of manufacturing a configurable semiconductor integrated circuit device, said semiconductor integrated circuit device being loaded with a logic when provided under a logic function specifying mode with logic function specifying data through a logic function specifying data input terminal, said configurable semiconductor integrated circuit device performing, under a regular operation mode and through a regular logic input/output terminal, logic operations which are defined by said logic function specifying data, said configurable semiconductor integrated circuit device receiving said logic function specifying data through said logic function specifying data input terminal, said method comprising the steps of:

(a) providing logic circuit data;

(b) providing logic function specifying basic data which define basic logics;

(c) setting said semiconductor integrated circuit device into said logic function specifying mode and providing said semiconductor integrated circuit device with said logic function specifying basic data so as to set said basic logics into said semiconductor integrated circuit device;

(d) setting said semiconductor integrated circuit device into said regular operation mode so as to render said semiconductor integrated circuit device capable of performing basic logic operations which are defined by said logic function specifying basic data;

(e) generating logic function specifying final data based on

said logic circuit data, a part of said generating logic function specifying final data being attained by utilizing said basic logic operations of said semiconductor integrated circuit device; and

(f) setting said semiconductor integrated circuit device into said logic function specifying mode and providing said semiconductor integrated circuit device with said logic function specifying final data.

5,384,276

METHOD OF FABRICATING A MEMORY DEVICE WITH A MULTILAYER INSULATING FILM

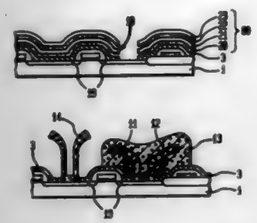
Hisashi Ogawa, Katano; Yutaka Nabeshima, and Masanori Fukumoto, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 606,605, Oct. 31, 1990, Pat. No. 5,164,337. This application Jul. 2, 1992, Ser. No. 907,862

Claims priority, application Japan, Nov. 1, 1989, 1-286819; Nov. 1, 1989, 1-286821

Int. Cl.[6] H01L *21/70, 27/00*

U.S. Cl. 437—52 **4 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:

forming switching transistors on a semiconductor substrate;

forming on the semiconductor substrate an insulating film to cover said switching transistors;

forming on said insulating film a multi-layer film consisting of two or more kinds of insulating layers;

performing first etching to form contact holes in said multi-layer film and said insulating film, said contact holes reaching active regions of said switching transistors;

performing second etching to etch the sides of said multi-layer film and said insulating film and thereby forming grooves in the sides thereof;

forming a conductive film to cover said sides of said multi-layer film and said insulating film; and

performing third etching to remove said multi-layer film.

5,384,277

METHOD FOR FORMING A DRAM TRENCH CELL CAPACITOR HAVING A STRAP CONNECTION

Louis L. Hsu; Toshio Mii, both of Fishkill; Joseph F. Shepard, and Seiki Ogura, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,875

Int. Cl.[6] H01L *21/70, 27/00*

U.S. Cl. 437—52 **14 Claims**

1. A method of forming a set of memory cells for a MOS DRAM in a set of cell areas of a silicon substrate, each memory cell having an access transistor formed on an epi top surface of a single crystal epitaxial silicon layer and connected between an input/output contact and a trench storage capacitor, comprising the steps of:

preparing said epi layer;

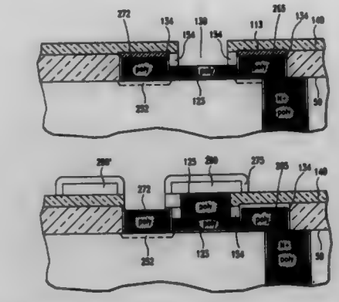
forming a set of said trench storage capacitors in said epi having a conductive center electrode insulated from said epi, said center electrode having a conductive trench top surface;

forming a gate stack set of layers comprising a gate oxide layer on said epi top surface, at least one gate poly layer above said gate oxide layer and a gate nitride layer above said gate poly layer;

forming a set of isolation apertures isolating said cell areas by etching said gate nitride and said gate poly layers down to said gate oxide layer in a set of isolation areas covering an isolation portion of said trench top surface and extending between adjacent cell areas, whereby said trench top surface has a strap portion outside said isolation aperture and within said cell area;

depositing isolation oxide in said isolation apertures and polishing said isolation oxide using said gate nitride as a polish stop down to an isolation surface defined by said gate nitride;

patterning and etching down to said gate oxide layer a set of source-drain apertures covering source and drain portions of said cell, said set of source-drain apertures including a strap aperture subset of said set of source-drain apertures



exposing said strap portions of said trench top surfaces, said strap aperture subset being aligned with said isolation regions and individual pairs of said set of source-drain apertures being separated by a transistor gate portion of said gate stack;

implanting an LDD dose of ions within said set of source-drain apertures;

forming LDD sidewalls within said set of source-drain apertures;

implanting sources and drains within said set of source-drain apertures, thereby defining a self-aligned access transistor comprising a source, a drain and a transistor gate portion lying between said source and drain;

depositing a source/drain conductor material within said set of source-drain apertures, thereby forming a surface strap connection between said trench capacitor and said access transistor and a source contact above said source;

polishing said source/drain conductor to said isolation surface using said isolation oxide as a polish stop; and

opening a gate contact aperture in said gate nitride leaving a pair of nitride gate sidewalls separating said gate contact aperture from said LDD sidewalls.

5,384,278

TIGHT CONTROL OF RESISTOR VALVES IN A SRAM PROCESS

Scott G. Singlevich, Colorado Springs, Colo., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 976,696, Nov. 16, 1992, abandoned. This application Jul. 7, 1994, Ser. No. 271,544

Int. Cl.[6] H01L *21/70*

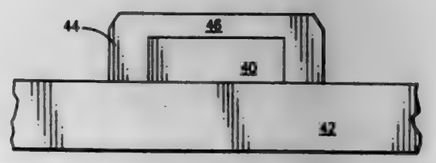
U.S. Cl. 437—52 **20 Claims**

1. A method of forming a resistor having a resistivity value

substantially immune to subsequent processing, said method comprising the steps of:

forming a resistor region in a layer of polycrystalline silicon, said resistor region being doped to the resistivity value;

forming an insulating oxide layer having a first thickness superjacent said resistor region such that said insulating oxide surrounds said resistor region; and



removing an upper portion of said insulating oxide layer such that said first thickness is reduced to a second thickness; and

removing a first and a second lateral portion of said insulating oxide layer such that an insulating oxide cap is formed having a top portion and a first and a second side portion, thereby protecting the resistivity value from subsequent processing.

5,384,279

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING A SILICON BODY IN WHICH SEMICONDUCTOR REGIONS ARE FORMED BY ION IMPLANTATIONS

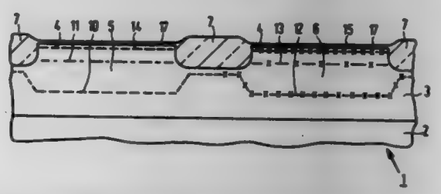
André Stolmeijer; Paulus M. T. M. Van Attekum; Hubertus Den Blanken; Paulus A. Van Der Plas, and Reinier De Werdt, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 349,367, May 9, 1989, abandoned. This application Oct. 27, 1993, Ser. No. 144,091

Claims priority, application Netherlands, Sep. 9, 1988, 8802219

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—57 **7 Claims**



1. A method of manufacturing a semiconductor device consisting essentially of the steps of

(a) insulating a number of areas of a silicon body with field oxide,

(b) forming semiconductor regions between said number of areas of field oxide, said semiconductor regions adjoining a surface of said silicon body, said semiconductor regions being formed by

(i) forming an implantation mask at said surface, said implantation mask having windows at a first portion of said semiconductor regions,

(ii) performing at least one step of ion implanting of n-type dopants into said silicon body through said windows at least at a first energy to form a maximum doping concentration of said n-type dopants at a first depth in said silicon body,

(iii) removing said implantation mask,

(iv) performing at least one step of ion implanting of p-type dopants into said silicon body over said surface, said p-type dopants being implanted into a second portion of semiconductor regions adjacent to said first portion of said semiconductor regions at least at a second energy to form a maximum doping concentration of said p-type dopants at substantially said first depth in said silicon body,

(v) forming a layer of gate oxide on said surface of said silicon body, and thereafter

(vi) carrying out another ion implantation of p-type dopant at a third energy lower than said second energy and at a dose to form p-type dopant at a concentration higher than that of said n-type dopant on said surface.

5,384,280

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE ISOLATED BY A TRENCH

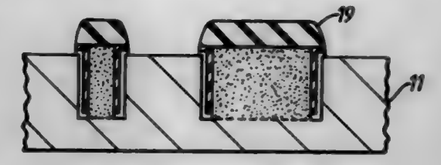
Masami Aoki, and Hiroshi Takato, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 30, 1992, Ser. No. 906,654

Claims priority, application Japan, Jul. 1, 1991, 3-160629

Int. Cl.[6] H01L *21/308*

U.S. Cl. 437—67 **8 Claims**



1. A manufacturing method for semiconductor devices, comprising the steps of:

(a) etching a semiconductor substrate to form a trench having a side wall, an upper corner portion and a bottom surface on the substrate;

(b) forming an insulating layer on the side wall of the trench;

(c) refilling the trench with a semiconductor epitaxial growth layer;

(d) overfilling the upper corner portion of the trench with the epitaxial layer; and

(e) oxidizing the overfilled epitaxial growth layer, whereby an isolating portion to isolate semiconductor devices on the substrate is formed.

5,384,281

NON-CONFORMAL AND OXIDIZABLE ETCH STOPS FOR SUBMICRON FEATURES

Donald M. Kenney, Shelburne, and Stephen E. Luce, Underhill, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1992, Ser. No. 997,847

Int. Cl.[6] H01L *21/44*

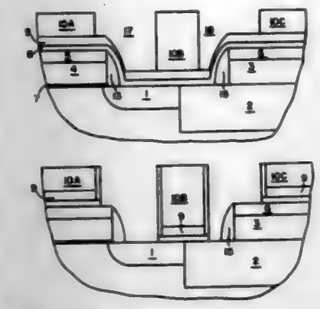
U.S. Cl. 437—189 **15 Claims**

1. A process for etching narrow features in a semiconductor substrate comprising the steps of:

(a) depositing, by an orientation-sensitive deposition technique, a first film in a plurality of cavities in a semiconductor substrate, whereby said first film is deposited preferentially on surfaces parallel to a long axis of said semiconductor substrate;

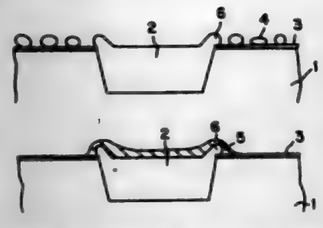
(b) depositing a second film over said first film, said second

film comprising a material that can be selectively etched in the presence of said first film;



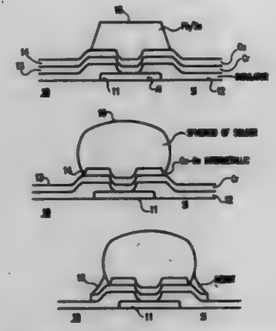
(c) directionally etching said second film using said first film as an etch stop; and
(d) removing said first film from said cavities.

5,384,282
METHOD FOR PRODUCING AN EMBEDDED OPTOELECTRONIC INTEGRATED CIRCUIT
Tetsuo Shiba, and Shogo Takahashi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 695,981, May 6, 1991, abandoned. This application Jul. 7, 1993, Ser. No. 87,086
Claims priority, application Japan, Oct. 29, 1990, 2-294082
Int. Cl.[6] H01L *21/205, 27/14*
U.S. Cl. 437—90 6 Claims



1. A method for producing an embedded optoelectronic integrated circuit in a substrate including a planar surface, the optoelectronic integrated circuit comprising an optical element and a signal processing element in the substrate contiguous with the planar surface of the substrate comprising:
depositing a mask film on a surface of a semiconductor substrate and removing a predetermined region of said mask film to produce a selective growth mask;
etching said substrate using said selective growth mask as an etching mask to produce a recess in said substrate;
growing a crystalline semiconductor material for making an optical element in the recess using said selective growth mask to limit growth of said crystalline semiconductor material beyond the recess;
covering said crystalline semiconductor material grown in the recess with a film;
etching and thereby removing any extraneous matter deposited on said selective growth mask and not covered by said film;
flattening the surface of said substrate by grinding portions of the grown crystalline material that protrude from the surface;
removing said selective growth mask; and
polishing the surface to a mirror finish by mechanochemical etching.

5,384,283
RESIST PROTECTION OF BALL LIMITING METAL DURING ETCH PROCESS
Richard E. Gegenwarth, and Anthony F. Arnold, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 10, 1993, Ser. No. 166,183
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—183 14 Claims

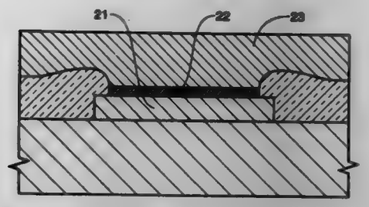


1. A method of forming a metallic contact on an integrated circuit comprising the steps of:
a) depositing a first layer of metal;
b) depositing a second layer of metal;
c) plating and patterning a layer of solder above said second layer of metal;
d) reflowing the patterned solder by melting to form a set of spheroidal solder ball contacts having a bottom diameter abutting said second layer of metal:
e) etching the second layer of metal using the solder ball contacts as a mask;
f) applying a positive photoresist having a viscosity, and a solvent having a chemical composition, at a temperature such that the solvent wets the solder at said bottom diameter;
g) exposing and stripping said photoresist using the solder ball contacts as a self aligned exposure mask, thereby forming a protective ring about said bottom diameter: and
h) etching said first layer of metal, so that said solder is resting on a shoulder of said first layer of metal, the etched first layer of metal forming a disk under each solder ball contact larger than a disk formed by the second layer of metal.

5,384,284
METHOD TO FORM A LOW RESISTANT BOND PAD INTERCONNECT
Trung T. Doan, and Mark E. Tuttle, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Filed Oct. 1, 1993, Ser. No. 130,225
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—190 24 Claims

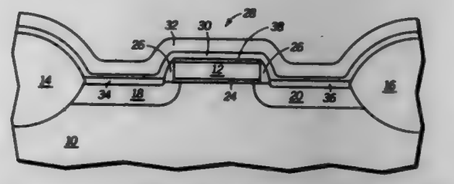
1. A process to form a pad interconnect, said process comprising:
a) forming a conductive supporting layer serving as said pad;

b) bonding an intermediate conductive layer to said conductive supporting layer; and



c) adhering an interconnecting material, comprising a conductive epoxy material, to said intermediate conductive layer.

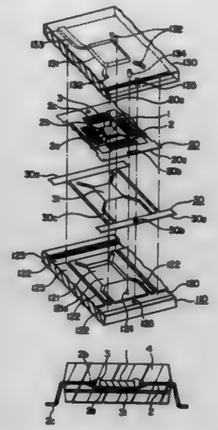
5,384,285
PROCESS FOR FABRICATING A SILICIDE LAYER IN A SEMICONDUCTOR DEVICE
Arkalgud Sitaram; Papa D. Mandar, and Jeffrey T. Wetzel, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 26, 1993, Ser. No. 96,809
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—200 14 Claims



1. A process for fabricating a silicide layer in a semiconductor device comprising the steps of:
providing substrate having a silicon surface;
providing a transition-metal layer to overlie the silicon surface;
providing a capping layer selected from the group consisting of boron nitride and boron oxynitride to overlie the transition-metal; and
reacting components of the transition-metal layer with the silicon surface in an inert gas ambient to form a transition-metal silicide layer,
wherein the capping layer is exposed to the ambient during formation of the silicide layer.

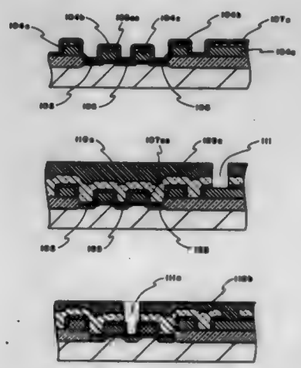
5,384,286
PROCESS FOR ENCAPSULATING A SEMICONDUCTOR CHIP, LEADFRAME AND HEATSINK
Tatsuya Hirai, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 12, 1992, Ser. No. 928,285
Claims priority, application Japan, Aug. 16, 1991, 3-205885
Int. Cl.[6] H01L *21/52, 21/56, 21/58, 21/60*
U.S. Cl. 437—207 7 Claims

1. A method for producing a semiconductor device comprising:
disposing a heat-sinking frame including supporting rails and a heat-sinking plate disposed between, coplanar with, and suspended from the supporting rails on a lower mold with the supporting rails being supported by the lower mold and with the heat-sinking plate spaced from the lower mold by a gap;
disposing a leadframe having a die pad and a semiconductor chip mounted on the die pad on the lower mold with a gap between each part of the leadframe and the heat-sinking frame;
clamping an upper mold to the lower mold; and



injecting plastic resin between the clamped upper and lower molds and around the semiconductor chip within the clamped upper and lower molds to form molded plastic resin encapsulating the semiconductor chip, a portion of the leadframe, and the heat-sinking plate in one body.

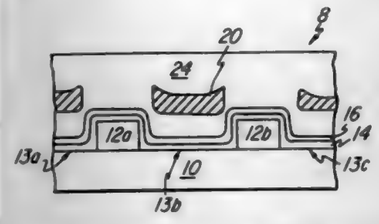
5,384,287
METHOD OF FORMING A SEMICONDUCTOR DEVICE HAVING SELF-ALIGNED CONTACT HOLES
Tadashi Fukase, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Dec. 11, 1992, Ser. No. 989,349
Claims priority, application Japan, Dec. 13, 1991, 3-329209
Int. Cl.[6] H01L *21/265, 21/70*
U.S. Cl. 437—228 3 Claims



1: A method of forming a semiconductor device comprising:
forming a conductor film on an insulating film covering a semiconductor substrate, forming over the whole surface a silicon oxide film to be used as a mask, and then forming an aluminum oxide film as a mask;
patterning said aluminum oxide film as a mask, said silicon oxide film as a mask, and said conductor film into the same geometry to form lines made of said conductor film, said

silicon oxide film mask and said aluminum oxide film mask being formed on the top face of each line,
forming windows in areas in said aluminum oxide film as a mask, so that said lines are formed through said windows;
forming over the whole surface, and etching back, an aluminum oxide film to form aluminum oxide film spacers on the side faces of each line;
forming diffused layers of a conductivity type in regions at the surface of said semiconductor substrate;
forming over the whole surface a silicon oxide dielectric film; and
then performing anisotropic dry etching of said dielectric film with fluorocarbon gas in order to simultaneously form self-aligned contact holes extending downwardly through said windows to said diffused layers.

5,384,288
METHOD OF FORMING A PLANARIZED INSULATION LAYER
Peter S. Ying, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 988,386, Dec. 8, 1992, Pat. No. 5,285,102, which is a continuation of Ser. No. 735,504, Jul. 25, 1991, abandoned. This application Feb. 1, 1994, Ser. No. 191,131
Int. Cl.[6] H01L *21/465*
U.S. Cl. 437—228 **24 Claims**



1. A method for forming a planar insulating layer over the surface of a semiconductor workpiece, comprising the steps of:
providing a semiconductor workpiece, said workpiece including at least two elevated regions separated by at least one low region;
forming a layer of blocking material on the surface of said workpiece:
forming a first material region over said low region;
forming an insulating layer over the surface of said workpiece including said first material region;
heating said workpiece in the presence of a reactive ambient such that said insulation layer reflows and such that said first material region reacts with said reactive ambient to expand said first material by forming an insulation layer.

5,384,289
REDUCTIVE ELIMINATION CHEMICAL VAPOR DEPOSITION PROCESSES UTILIZING ORGANOMETALLIC PRECURSOR COMPOUNDS IN SEMICONDUCTOR WAFER PROCESSING
Donald L. Westmoreland, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
Filed Jun. 17, 1993, Ser. No. 78,617
Int. Cl.[6] H01L *21/283*; C23C *16/46*
U.S. Cl. 437—245 **33 Claims**

1. A method of chemical vapor depositing a layer on a semiconductor wafer comprising:
positioning a semiconductor wafer within a chemical vapor deposition reactor;
providing an organometallic reductive elimination precursor source in a non-gaseous form, the non-gaseous organometallic precursor compound containing at least two ligands bonded to a linking atom;
subjecting the non-gaseous organometallic reductive elimination precursor to temperature and pressure conditions which vaporize the non-gaseous organometallic reductive elimination precursor into a source gas, and providing the source gas into the chemical vapor deposition reactor having the semiconductor wafer positioned therein;
subjecting the source gas to reactive conditions within the reactor effective to impart a reductive elimination reaction of the precursor which reduces the linking atom from the precursor and which oxidizes the ligands to generate gaseous molecules having all atoms in a non-radical closed shell, non-ionic configuration, with the gaseous molecules being expelled from the reactor; and
depositing a layer on the wafer, the layer comprising the reduced linking atom.

5,384,290
POROUS CERAMIC BEADS
Rasto Brezny, Catonsville, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.
Division of Ser. No. 110,607, Aug. 23, 1993, Pat. No. 5,322,821. This application Dec. 16, 1993, Ser. No. 168,804
Int. Cl.[6] C04B *38/06*
U.S. Cl. 501—81 **13 Claims**

1. A method of making substantially spherical porous ceramic particles, said method comprising:
a) forming a slurry by combining ceramic particles with a first liquid capable of reacting with an organic prepolymer,
b) mixing said slurry with the organic prepolymer to form a mixture,
c) combining said mixture with a second liquid, wherein the first liquid is immiscible in the second liquid, to form a dispersed phase of said mixture in the second liquid, wherein the prepolymer polymerizes to form rigid spherical particles,
d) separating said rigid particles from said second liquid, and
e) firing said rigid particles to remove said propolymer and first liquid and to sinter the ceramic to form said porous ceramic particles.

5,384,291
CARBOTHERMAL SYNTHESIS PRECURSORS
Alan W. Weimer, and Kevin J. Nilsen, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jun. 25, 1993, Ser. No. 83,112
Int. Cl.[6] C04B *35/52*
U.S. Cl. 501—81 **11 Claims**

1. A crush-resistant, porous aggregate comprising carbon, at least one oxide, a binder and, optionally, at least one nonoxide, the binder being a product of a condensation reaction between at least one first reactant that is selected from the group consisting of monosaccharides, disaccharides, polysaccharides, and soy protein, and at least one second reactant having at least one reactive nitrogen-containing moiety, the product being present in an amount within a range of from about 0.1 to about 25 percent by weight, based upon total aggregate weight.

5,384,292
SILICON NITRIDE COMPOSITE SINTERED BODY AND PROCESS FOR PRODUCING THE SAME
Jin-Joo Matsui; Osamu Komura; Akira Yamakawa, and Masaya Miyake, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan
Continuation of Ser. No. 48,464, Apr. 14, 1993, abandoned. This application Mar. 31, 1994, Ser. No. 220,457
Int. Cl.[6] C04B *35/58*
U.S. Cl. 501—97 **1 Claim**

1. A composite sintered body consisting essentially of:
(1) grains of silicon nitride and/or sialon,
(2) at least two sintering aids selected from the group consisting of Y_2O_3, Al_2O_3, AlN, and MgO, and

(3) foreign particles,
said grains consisting essentially of granular crystals having an average particle size of 0.05 to 3 μm in terms of minor axis, and an aspect ratio of 10 or less, and isometric crystals having an average particle size of 1 μm or less;
said foreign particles being at least one compound selected from the group consisting of oxides, nitrides, carbides, and silicides of elements of Groups IIa, IIIa, IVa, Va, VIa, IIb, IIIb, and IVb, of the Periodic Table, excluding Si and C, dispersed in the crystal grains or in the crystal grains and in the grain boundary phase, in an amount of 0.01 to 20% by volume, said particles having a thermal expansion coefficient of 5×10^{-6}° C. to 20×10^{-6}° C. and an average particle size of 1 to 500 nm.

5,384,293
RARE EARTH OXIDE-ALUMINA-SILICA SINTERED BODY AND METHOD OF PRODUCING THE SAME
Mamoru Omori, 1-1-42, and Toshio Hirai, 3-4-91, both of Takamori, Izumi-ku, Sendai-shi, Miyagi 981-31, Japan
PCT No. PCT/JP92/01236, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO93/06058, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 28, 1992, Ser. No. 66,005
Claims priority, application Japan, Sep. 26, 1991, 3-273602
Int. Cl.[6] C04B *35/10, 35/50*
U.S. Cl. 501—128 **13 Claims**

1. A rare earth oxide-alumina-silica sintered body being a mixture of 5–95 wt % rare earth oxide, limited to lanthonoids, 94.9–4.9 wt % alumina and 0.1–10 wt % silica and having an average crystal grain size of not more than 30 μm.

5,384,294
SOL-GEL DERIVED LEAD OXIDE CONTAINING CERAMICS
Gintong Teowee; Jonathan M. Boulton, and Donald R. Uhlmann, all of Tucson, Ariz., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 30, 1993, Ser. No. 159,967
Int. Cl.[6] C04B *35/49*
U.S. Cl. 501—134 **15 Claims**

1. A method for preparing precursor solutions for PbO-based ceramics comprising mixing metal cations in alkanolamines and then adding the mixture to lead carboxylates in alcohol.

5,384,295
METHOD OF CREATING A PILLARED LAYERED CLAY (PILC)
William R. McWhinnie, Solihull, and Stephen P. Bond, Birmingham, both of England, assignors to British Technology Group Limited, London, England
PCT No. PCT/GB92/00082, § 371 Date Aug. 30, 1993, § 102(e) Date Aug. 30, 1993, PCT Pub. No. WO92/12793, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 15, 1992, Ser. No. 94,876
Claims priority, application United Kingdom, Jan. 29, 1991, 9101858; Feb. 20, 1991, 9103588
Int. Cl.[6] B01J *20/12, 21/16*
U.S. Cl. 502—5 **10 Claims**

1. A method of creating a pillared layered clay (PILC), said method comprising the steps of:
selecting as a pillaring precursor an electrically neutral molecule containing a metal atom bonded directly to an aryl group;
contacting a clay with said pillaring precursor to produce a reaction mixture; and
delivering energy to said reaction mixture to intercalate said precursor into said clay;
whereby protons donated from sites of Bronsted acidity in said clay cleave a carbon-metal bond to yield an organic fragment of said precursor and a metal-containing pillaring fragment.
7. A method according to claim 1, wherein said energy is microwave energy.

5,384,296
THERMALLY STABLE NOBLE METAL-CONTAINER ZEOLITE CATALYST
Ying-Yea P. Tsao, Lahaska, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.
Filed Aug. 16, 1993, Ser. No. 106,668
Int. Cl.[6] B01J *37/10, 29/06*
U.S. Cl. 502—66 **16 Claims**

1. A zeolite catalyst composition comprising (a) a zeolite component comprising framework aluminum, (b) non-framework alumina occupying the pores of the zeolite which alumina is derived from said framework aluminum by calcining said zeolite which has an initial Al_2O_3 content of at least 1 wt % at a temperature of at least 600° C. in an oxygen-containing atmosphere containing about 10 to 100 torr water for more than 1 hour and (c) a noble metal component, the presence of component (b) imparting significantly increased resistance to agglomeration and/or migration of component (c) when the catalyst composition is subjected to elevated temperature compared to the catalyst composition wherein said calcining of step b) is carried out in an oxygen-containing atmosphere containing less than 10 torr water.

5,384,297
HYDROCRACKING OF FEEDSTOCKS AND CATALYST THEREFOR
Ricardo Prada, Caracas; Roberto Galiasso, San Antonio; Yilda Romero, La Victoria; Edito Reyes, and Edilberto Rodriguez, both of Los Teques, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela
Continuation-in-part of Ser. No. 837,806, Feb. 18, 1992, Pat. No. 5,254,240, which is a continuation-in-part of Ser. No. 697,118, May 8, 1991, Pat. No. 5,229,347. This application Sep. 28, 1993, Ser. No. 127,805
Int. Cl.[6] B01J *29/10, 29/30*
U.S. Cl. 502—66 **16 Claims**

1. A catalyst comprising a porous, catalytically active support comprising alumina, titania and a pentasil crystalline zeolite in which the alumina is present in an amount in the range of about 95 parts by weight to about 70 parts by weight, the titania in an amount in the range of about 0.0.1 parts by weight to about 10 parts by weight, and the zeolite is present in an amount in the range of about 5 to about 50 parts by weight, said porous support having a surface area in the range of about 200 m^2/gram to about 450 m^2/gram and at least about 95 percent of the pores thereof having a pore diameter in the range of about 20 Angstroms to about 600 Angstroms, and three catalytically-active moieties on said support, said moieties consisting essentially of a transition element of Group VIB of the Periodic Table of Elements, a transition element of the first transition series of Group VIII of the Periodic Table of Elements, and a transition element of the second transition series of Group VIII of the Periodic Table of Elements, said Group VIB transition element being present in an amount in the range of about 5 weight percent to about 30 weight percent, expressed as the weight of the corresponding oxide and based on the weight of the catalyst, said Group VIII first transition series element being present in an amount in the range of about 2 weight percent to about 10 weight percent, expressed as the weight of the corresponding oxide and based on the weight of the catalyst, and said Group VIII second transition series element being present in an amount in the range of about 0.005 weight percent to about 1 weight percent, expressed as the weight of the metal and based on the weight of the catalyst.

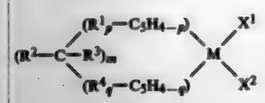
5,384,298

CATALYST FOR POLYMERIZATION OF OLEFIN AND PROCESS FOR PRODUCTION OF OLEFIN POLYMER

Kiyoshi Inahara, and Akihiro Yano; both of Mie, Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,184
Claims priority, application Japan, Dec. 27, 1991, 3-358191
Int. Cl.[6] B01J *31/00*
U.S. Cl. 502—104 18 Claims

1. A catalyst for polymerization of an olefin, comprising a solid catalyst component (A), containing a transition metal compound having formula (1):



(1)

supported on a solid inorganic compound, wherein M is a transition metal of Group 4b of the Periodic Table of Elements; X^1 and X^2 are, independently, halogen, hydrogen, alkylalkoxy, saturated or unsaturated alkyl; R^1, R^2, R^3, and R^4 are, independently, hydrogen, saturated or unsaturated $C_{1\text{-}100}$ alkyl; m is an integer of 1 to 6; and p and q are, independently, an integer of 0 to 4, wherein said solid inorganic compound has been prepared by the process comprising contacting an inorganic oxide which is solid under polymerization conditions with an organometallic compound of the formula (a), (b), or (c):

$$AlR_3 \quad (a)$$

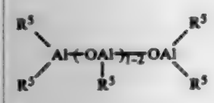
wherein R' is $C_{1\text{-}6}$ alkyl or halogen,

$$MgR'_2 \quad (b)$$

wherein R' is $C_{1\text{-}6}$ alkyl or halogen, or

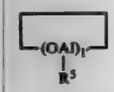
$$SiR''_4 \quad (c)$$

wherein R'' is $C_{1\text{-}6}$ alkyl or halogen; and
a catalyst component (B) containing an organic aluminum compound having formula (2)



(2)

where 1 is an integer of 2 to 100, and R^5 is $C_{1\text{-}6}$ alkyl group, an organic aluminum compound of formula (3)



(3)

where 1' is an integer of 2 to 100, and R^5 is a $C_{1\text{-}6}$ alkyl group or a mixture of (2) and (3).

5,384,299

IONIC METALLOCENE CATALYST COMPOSITIONS

Howard W. Turner; Gregory G. Hlatky, and Richard R. Eckman, all of Houston, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 737,611, Jul. 30, 1991, Pat. No. 5,198,401, which is a continuation-in-part of Ser. No. 535,977, Jun. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 133,480, Dec. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 8,800, Jan. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 133,052, Dec. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 11,471, Jan. 30, 1987, abandoned. This application Feb. 19, 1993, Ser. No. 19,726
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[6] C08F *4/643*
U.S. Cl. 502—155 15 Claims

1. An ionic polymerization catalyst comprising (1) a cation derived from a bis(cyclopentadienyl) Group IV-B metal compound by abstracting a ligand to create a positively charged species and (2) a stabilizing non-coordinating anion, said anion being sufficiently labile to permit displacement by an olefin, diolefin and/or acetylenically unsaturated monomer during polymerization.

5,384,300

STABILIZED CATALYST CARRIER AND IMPROVED CARRIER CONFIGURATION FOR CATALYTIC COMBUSTION SYSTEM

Jennifer S. Feeley, Clinton; Dianne O. Simone, Edison; Leonard M. Quick, Bridgewater, and Martha M. Hamil, Highland Park, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Apr. 28, 1993, Ser. No. 54,374
Int. Cl.[6] B01J *21/00, 23/40*
U.S. Cl. 502—252 16 Claims

1. In a catalyst member comprising a carrier comprising a silica-alumina-magnesia material and having a plurality of gas flow passages extending therethrough defined by channel walls and a catalyst material comprising a catalytic component disposed on the channel walls and effective to catalytically support the combustion of a gaseous carbonaceous fuel, the improvement comprising that prior to applying the catalyst material to the carrier a coating comprising alumina is applied to the channel walls and the alumina-coated carrier is exposed to steam for a time and under conditions sufficient to induce the alumina to interact with the silica-alumina-magnesia material so that the carrier is stabilized against interaction with the catalyst material.

7. The catalyst member of claim 1 wherein the catalytic component comprises a palladium catalytic component.

5,384,301

CATALYST FOR ELEMENTAL SULFUR RECOVERY PROCESS

Maria Flytzani-Stephanopoulos, Winchester, and Wei Liu, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 791,491, Nov. 12, 1991, Pat. No. 5,242,673. This application Jul. 23, 1993, Ser. No. 97,367
Int. Cl.[6] B01J *23/10*
U.S. Cl. 502—304 10 Claims

1. A metal oxide composite catalyst formulation for the reduction of sulfur dioxide by a reducing gas to produce elemental sulfur, having an empirical formula selected from the group consisting of:

$$(FO_2)_{1-a}(RO)_a]_{1-k}M_k,$$

$$[(FO_2)_{1-a}(RO_{1.5})_a]_{1-k}M_k, \text{ and}$$

$$[Ln_xZr_{1-x}O_{2-0.5x}]_{1-k}M_k$$

wherein:
FO_2 is a fluorite-type oxide,
Ln is a rare earth element having an atomic number from 57 to 65, or a mixture thereof,
RO is an alkaline earth oxide,
$RO_{1.5}$ is a group IIIB oxide, rare earth oxide, or a mixture thereof,
M is a transition metal, or a mixture thereof,
n is a number having a value from 0.0 to about 0.35,
k is a number having a value greater than 0.0 to about 0.5, and
x is a number having a value from about 0.45 to about 0.55.

5,384,302

CATALYST CARRIER

William H. Gerdes, Hudson; Donald J. Remus, Stow; Thomas Szymanski, Hudson, and James A. Welford, Stow, all of Ohio, assignors to Norton Chemical Process Products Corp., Worcester, Mass.

Filed Sep. 8, 1993, Ser. No. 118,487
Int. Cl.[6] B01J *32/00, 21/04;* C01F *7/02*
U.S. Cl. 502—439 20 Claims

1. An alpha alumina based catalyst carrier having a crush strength of at least 5 pounds and a packing density of at least 38 pounds/cubic foot which comprises first and second alpha alumina components with a first alpha alumina component in the form of particles having an median crystallite size of from about 0.4 to about 4 microns providing from about 95 to about 40% of the total weight of alpha alumina in the carrier and a second alpha alumina component generated in situ by a sol-gel process and providing the balance of the alpha alumina in the carrier.

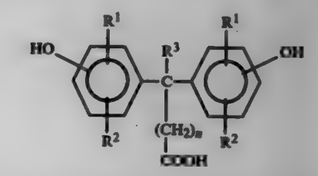
5,384,303

THERMOSENSITIVE RECORDING MATERIAL

Masaki Nishimura, Tokyo, and Kunitaka Toyofuku, Sakura, both of Japan, assignors to New Oji Paper Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,693
Claims priority, application Japan, Sep. 30, 1991, 3-251364
Int. Cl.[6] B41M *5/34*
U.S. Cl. 503—209 6 Claims

1. A thermosensitive recording material comprising:
a substrate sheet and
a thermosensitive colored image-forming layer formed on a surface of the substrate sheet and comprising a substantially colorless dye precursor, a color developing agent reactive with the dye precursor upon heating to thereby develop a color, and a binder,
said color developing agent comprising at least one diphenol carboxylic acid compound of the formula (I):



(I)

wherein R^1 and R^2 respectively and independently from each other represent a member selected from the group consisting of hydrogen and halogen atoms and alkyl, alkoxyl, acyl and aryl groups, R^3 represents a member selected from the group consisting of a hydrogen atom and alkyl groups, and n represents zero or an integer of from 1 to 8, and
the colored image-forming layer further comprising a colored image-stabilizing agent comprising at least one member selected from the group consisting of organic aziridine compounds having at least one aziridinyl group and organic epoxy compounds having at least one epoxy group.

5,384,304

RECEIVING ELEMENT SUBBING LAYER FOR USE IN THERMAL DYE TRANSFER

Teh-Ming Kung, Rochester, and Brian T. Pope, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 20, 1994, Ser. No. 247,194
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 20 Claims

15. A process of forming a dye transfer image comprising:
a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and
b) transferring a dye image to a dye-receiving element comprising a support having thereon a dye image-receiving layer to form said dye transfer image,
wherein the receiving element comprises a polyolefin-coated substrate or a polyolefin substrate having thereon, in order, a subbing layer and a dye image-receiving layer, and wherein the subbing layer comprises a reaction product of a mixture of
a) an aminofunctional organo-oxysilane, and
b) a hydrophobic organo-oxysilane.

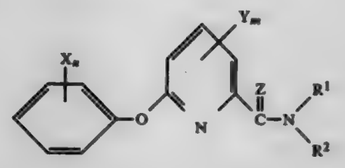
5,384,305

HERBICIDAL CARBOXAMIDE COMPOUNDS

Christopher J. Foster, Faversham; Terence Gilkerson, Canterbury; Richard Stocker, Rochester, and Ian J. Gilmore, Sittingbourne, all of England, assignors to Shell Research Limited, United Kingdom

Filed Nov. 4, 1991, Ser. No. 787,647
Claims priority, application United Kingdom, Nov. 28, 1990, 9025828
Int. Cl.[6] C07D *213/56;* A01N *43/40*
U.S. Cl. 504—130 9 Claims

8. A method of combating undesired plant growth at a locus, which method comprises treating the locus with an effective amount of a compound defined by formula I



wherein
n is an integer from 1 to 5 and each X independently represents a hydrogen or halogen atom, an alkyl or alkoxy group optionally substituted by one or more of the same or different substituents selected from halogen atoms and cyano, hydroxy and alkoxy groups, or a cyano, nitro, alkenyloxy, alkynyloxy, alkylthio, haloalkylthio, alkenylthio or alkynylthio group;
m is 0 or an integer from 1 to 3 and each Y independently represents a halogen atom or an alkyl or haloalkyl group;
Z represents an oxygen atom or a sulphur atom;
R^1 and R^2 each, independently, represents a hydrogen atom, an alkyl group optionally substituted by one or more of the same or different substituents selected from halogen atoms or hydroxy, cyano, alkoxy, alkylthio, alkoxycarbonyl, or mono- or di-alkylamino groups, an alkenyl, alkynyl, cycloalkyl, or optionally substituted cycloalkylalkyl group, or a hydroxy, alkoxy, alkenyloxy, alkynyloxy, alkoxycarbonyl, amino, mono- or di-alkylamino, alkoxycarbonylamino group, an arylamino group optionally substituted by a halogen atom, or a dialkylcarbamoyl group; or
R^1 and R^2 together represent an alkylene chain which is

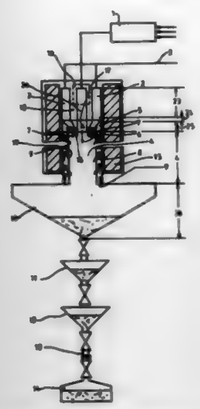
optionally interrupted by an oxygen or sulphur atom or by a group —NR— in which R represents a hydrogen atom or an alkyl group together with a carrier.

5,384,306

FINE-PARTICLE OXIDE CERAMIC POWDERS

Theo König, Laufenburg-Rotzel, and Dietmar Fister, Murg-Niederhof, both of Germany, assignors to H. C. Starck GmbH and Co., Goslar, Germany

Filed Apr. 27, 1993, Ser. No. 53,003
Claims priority, application Germany, May 4, 1992, 4214724
Int. Cl.[6] C04B *35/50*
U.S. Cl. 501—152 **13 Claims**



1. Fine-particle oxide ceramic powders of the metal oxides MeO, where

Me = at least one of Al, Si, Zr, Hf, Ta, Nb, Mo, W, V, La and Y,

wherein the powders have a particle size of 1.0 nm to 500 nm and less than 1% of the individual particles of said powder deviate by more than 40% from the average particle size and no individual particles of said powder deviate by more than 60% from the average particle size, further wherein any Al_2O_3 present is in the α-phase and any SiO_2 present is in crystalline form.

5,384,307

OXIDE SUPERCONDUCTOR TAPE HAVING SILVER ALLOY SHEATH WITH INCREASED HARDNESS

Kenneth W. Lay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 13,480, Jan. 29, 1993, abandoned, and a continuation of Ser. No. 787,421, Nov. 4, 1991, abandoned.
This application Jan. 18, 1994, Ser. No. 181,732
Int. Cl.[6] H01B *13/00, 12/00*
U.S. Cl. 505—430 **1 Claim**

1. A method for making an oxide superconductor body comprising an oxide superconductor material in a precipitation hardened silver sheath which comprises reaction sintering, in an oxidizing atmosphere consisting essentially of about 3 to about 14 volume percent oxygen and a balance of an inert gas selected from the group consisting of argon and nitrogen, a precursor deposit of a ceramic oxide superconductor material in a sheath of a silver alloy comprising a solute metal selected from the group consisting of yttrium, zirconium, aluminum, lithium, alkaline earths, and lanthanides, in an amount of from about 0.5 to about 4 atomic percent to form finely divided solute metal oxide particles thereby increasing the hardness of the silver sheath through dispersion hardening during the reaction sintering, and forming a continuous oxide superconductor core within the dispersion hardened silver sheath.

5,384,308

COMPOSITION AND METHOD FOR ENHANCING WOUND HEALING

R. I. Heakin, 6601 Broxburn Dr., Bethesda, Md. 20817

Filed Jun. 14, 1993, Ser. No. 76,058
Int. Cl.[6] A61K *37/16, 35/37*
U.S. Cl. 514—8 **5 Claims**

1. A medicinal composition for enhancing the wound process in humans consisting essentially of a therapeutic wound healing enhancing effective amount of the protein Lumicarmine having the following characteristics:

about 80% of the total amino acid residues being proline, glycine, and glutamic acid,

about 10% of the total amino acid residues being lysine and arginine, and

a pink violet color after gel electrophoresis and staining with Coomassie Brilliant Blue R-250

in a pharmaceutically acceptable vehicle for topical application.

5,384,309

CYCLIZED PEPTIDES AND THEIR USE AS PLATELET AGGREGATION INHIBITORS

Peter L. Barker, El Granada; John P. Burnier, Pacifica, and Eugene D. Thorsett, Moss Beach, all of Calif., assignors to Genentech, Inc., San Francisco, Calif.

Filed Jul. 17, 1989, Ser. No. 380,957
Int. Cl.[6] A61K *37/00, 37/02*; C07K *5/00, 7/00*
U.S. Cl. 514—11 **57 Claims**

1. A compound of the formula:

wherein

R_1 and R_9 are the same or different and are selected from the group consisting of hydroxy, C_1–C_8 alkoxy, C_2–C_{12} alkenoxy, C_6–C_{12} aryloxy, di-C_1–C_8 alkylamino-C_1–C_8-alkoxy, acylamino-C_1–C_8-alkoxy selected from the group acetylaminoethoxy, nicotinoylaminoethoxy, and succinamidoethoxy, pivaloyloxyethoxy, C_6–C_{12} aryl-C_1–C_8-alkoxy, hydroxy-C_2–C_8-alkoxy, dihydroxy-C_3–C_8-alkoxy, and a substituted heteroatom $NR_{10}R_{11}$;

R_{10}, R_{11} and R_{14} are the same or different and are selected from the group consisting of hydrogen, C_1–C_8-alkyl, C_3–C_8-alkenyl, C_6–C_{12}-aryl, and C_6–C_{12}-aryl-C_1–C_8-alkyl; R_2, R_3, R_5, R_6, R_7, R_8 are the same or different and are selected from the group consisting of hydrogen, C_1–C_{12} alkyl which include branched and unsaturated alkyl groups, substituted C_1–C_8 alkyl where the substituent(s) are selected from the group consisting of halo, C_1–C_8 alkoxy, C_6–C_{12} aryloxy, isothioureido, ureido, amino, C_1–C_8 alkylamino, di-C_1–C_8 alkylamino, hydroxy, amino-C_2–C_8 alkylthio, amino-C_2–C_8 alkoxy, acetamido, benzamido, C_6–C_{12} arylamino, guanidino, phthalimido, mercapto, C_1–C_8 alkylthio, C_6–C_{12} arylthio, carboxy, carboxamide, carbo-C_1–C_8 alkoxy, C_6–C_{12} aryl-C_1–C_8 alkyl, C_6–C_{12} aryl-C_2–C_8 alkenyl, aromatic heterocyclo-C_1–C_8 alkyl, aromatic heterocyclo-C_2–C_8 alkenyl where the heterocyclic groups have 5–10 ring atoms and contain up to two O, N, or S heteroatoms, substituted C_6–C_{12}-aryl-C_1–C_8alkyl and substituted aromatic heterocyclo-C_1–C_8 alkyl where the subsituent(s) are selected from the group consisting of halo, dihalo, C_1–C_8 alkyl, hydroxy, C_1–C_8 alkoxy, amino, guanidino, isothioureido, ureido, aminoC_1–C_8alkyl, phenyloxy, acetamido, benzamido, di-C_1–C_8 alkylamino, C_1–C_8 alkylamino, carboxyl, C_6–C_{12} aroyl, C_1–C_8 alkanoyl and the heterocyclic groups as defined above, optionally either R_5 or R_6 is phenyl;

R_4 is selected from the group consisting of hydrogen, C_1–C_8 alkyl, C_3–C_{10} cycloalkyl, C_6–C_{12} aryl, and C_6–C_{12} aryl-C_1–C_8-alkyl;

R_2 and R_3, R_5 and R_6, or R_7 and R_8 maybe joined together to form a ring of three to six carbon atoms or a ring of two to five carbon atoms and one O or S heteroatom or substituted heteroatom NR_{12};

R_{12} is selected from the group consisting of C_1–C_8-alkyl, C_3–C_8-alkenyl, C_6–C_{12}-aryl, C_6–C_{12}-aryl-C_1–C_8-alkyl, C_1–C_8 alkanoyl, and C_6–C_{12} aroyl;

R_2 or R_3 may be joined with R_4 to form an alkylene bridge of from two to five carbon atoms or an alkylene bridge of from two to four carbon atoms and one O or S heteroatom;

X is an O or S heteroatom or S heteroatom beating one or two O heteroatoms or substituted NR_{13} heteroatom or a methylene group;

R_{13} is selected from the group consisting of hydrogen, C_1–C_8-alkyl, C_3–C_8-alkenyl, C_6–C_{12}-aryl, C_6–C_{12}-aryl-C_1–C_8-alkyl, C_1–C_8 alkanoyl, and C_6–C_{12} aroyl;

n is an integer from 1 to 6;

m is 1;

and the pharmaceutically acceptable salts thereof, provided that the chirality of the carbon atom bearing the $(CH_2)m$ sidechain is S.

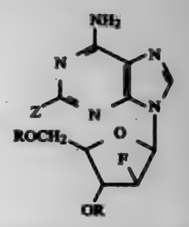
5,384,310

2'-FLUORO-3-HALOARABINOADINOSINES AND THEIR PHARMACEUTICAL COMPOSITIONS

John A. Montgomery, and John A. Secrist, III, both of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Continuation-in-part of Ser. No. 355,358, May 23, 1989, Pat. No. 5,034,518. This application May 10, 1991, Ser. No. 693,646
The portion of the term of this patent subsequent to Jul. 23, 2006, has been disclaimed.
Int. Cl.[6] A61K *31/70*; C07H *19/19*
U.S. Cl. 514—46 **10 Claims**

1. A pharmaceutical composition comprising a compound of the formula



wherein R, each which may be the same or different, is hydrogen or a protecting group; wherein Z is a halogen of the group F, Cl, and Br; and pharmaceutically acceptable salts thereof, said composition being in combination with a pharmaceutically acceptable carrier for oral, topical, or parenteral administration.

5,384,311

LIQUID CONCENTRATE COMPOSITIONS

Robert N. Antenucci, Hamilton; Richard L. Berndt, Highland Park, and Kas Mohammed, Hillsboro, all of, assignors to McNeil-PPC, Inc., Milltown, N.J.

Continuation of Ser. No. 628,287, Dec. 14, 1990, abandoned.
This application Aug. 18, 1992, Ser. No. 931,888
Int. Cl.[6] A01N *43/04*; C07H *11/00*; C07G *3/00*; A61K *9/68*
U.S. Cl. 514—53 **7 Claims**

1. A liquid sucralose concentrate composition consisting essentially of sucralose, a preservative system selected from the group consisting of potassium sorbate, sodium benzoate, potassium benzoate, methyl gallate, propyl gallate, ethylenediaminetetraacetate, methyl paraben, propyl paraben and mixtures thereof, a buffering system selected from the group consisting of citric acid and sodium citrate, citric acid and potassium citrate, phosphoric acid and sodium phosphate, phosphoric acid and potassium phosphate, arginine and arginine HCl, lysine and lysine HCl, tartaric acid and sodium tartrate, tartaric acid and potassium tartrate, adipic acid and sodium adipate, adipic acid and potassium adipate, malic acid and sodium malate, malic acid and potassium malate, and sodium phosphate monobasic and sodium phosphate dibasic and a liquid wherein the pH of the compoisition is from about pH 4.0 to about pH 5.5.

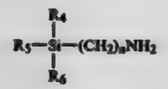
5,384,312

SUBSTITUTED SILYL ALKYLENE AMINES

Daniel G. Schirlin, Lampertheim; Jean-Noël Collard, Balbronn, and Charles Danzin, Strasbourg, all of France, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 690,431, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 500,446, Mar. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 463,850, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 178,113, Apr. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 47,847, May 8, 1987, abandoned. This application Apr. 30, 1992, Ser. No. 875,938
Int. Cl.[6] C03C *3/097*
U.S. Cl. 514—63 **16 Claims**

1. A method of treating Parkinson's Disease which comprises treating a patient suffering from Parkinson's Disease with an effective amount of a compound of the formula



and the pharmaceutically acceptable salts thereof, wherein

n is an integer 1 or 2,

R_4 is $C_{1\text{-}10}$ alkyl,

R_5 is $C_{1\text{-}10}$ alkyl or —$(CH_2)_m$-X,Y-subtituted aryl,

R_6 is cyclohexylmethyl or —$(CH_2)_m$-X,Y-substituted aryl, with each of X and Y being H, OH, halogeno, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}6}$ alkoxy, CF_3, CN or NO_2, and m is an integer 1 to 4.

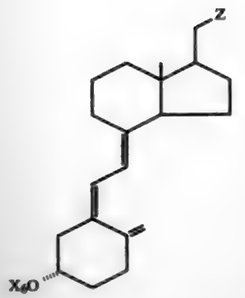
5,384,313

21-NORVITAMIN D COMPOUNDS

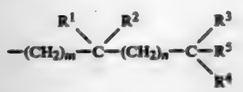
Hector F. DeLuca, Deerfield, Wis., and Jerzy Wicha, Warsaw, Poland, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 24, 1993, Ser. No. 157,888
Int. Cl.[6] C07C *401/00*
U.S. Cl. 514—167 **5 Claims**

1. A compound having the formula



where X_6 may be hydrogen or a hydroxy-protecting group, and Z is selected from the group consisting of Y, —OY, —CH-$_2$OY, —C═CY and —C═CHY, where the double bond may have the cis or trans stereochemical configuration, and where Y is selected from the group consisting of hydrogen, methyl, —CR^{5}O and a radical of the structure,



where m and n independently represent integers from 0 to 5, where R^1 is selected from the group consisting of hydrogen, hydroxy, protected-hydroxy, fluoro, trifluoromethyl, and C_{1-5} alkyl, which may be straight-chain or branched and optionally bear a hydroxy or protected-hydroxy substituent, and where each of R^2, R^3, and R^4 independently is selected from the group consisting of hydrogen, fluoro, trifluoromethyl, and C_{1-5} alkyl, which may be straight-chain or branched and optionally bear a hydroxy or protected-hydroxy substituent, and where R^1 and R^2, taken together, represent an oxo group, or an alkylidene group, $=CR^2R^3$ or the group —(CH_2)p—, where p is an integer from 2 to 5, and where R^3 and R^4, taken together, represent an oxo group, or the group —(CH_2)q, where q is an integer from 2 to 5, and where R^5 represents hydrogen, hydroxy, protected hydroxy, or C_{1-5} alkyl.

5,384,314

1α-FLUORO-25-HYDROXY-16-ENE-23-YNE-CHOLECALCIFEROL

Thomas L. Doran, West Orange; Shiau-Jan Shiuey, Nutley, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 11, 1994, Ser. No. 212,453
Int. Cl.^{6} C07C *401/00*
U.S. Cl. 514—167 **13 Claims**

1. The compound, 1α-fluoro-25-hydroxy-16-ene-23-yne-cholecalciferol.

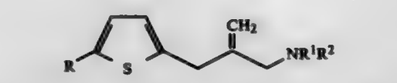
5,384,315

THIOPHENE SUBSTITUTED CYCLOAMINES, COMPOSITIONS AND USE

Kiong H. Lai, Guelph; Wan S. Yu, Toronto, both of Canada, and Robert A. Davis, Cheshire, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn. and Uniroyal Chemical Ltd./Ltee, Elmira, Canada

Filed Feb. 14, 1994, Ser. No. 195,308
Int. Cl.^{6} A61N *43/40, 43/84*; C07D *409/06, 413/06*
U.S. Cl. 514—231.5 **11 Claims**

1. A compound having the structural formula



(I)

where R is C_1–C_8 alkyl, C_3–C_6 cycloalkyl, phenyl or substituted phenyl; N, R^1 and R^2 form a monocyclic or bicyclic nitrogen heterocycle which is at least partially saturated and which may contain oxygen or sulfur or be substituted with lower alkyl; and physiologically acceptable salts thereof.

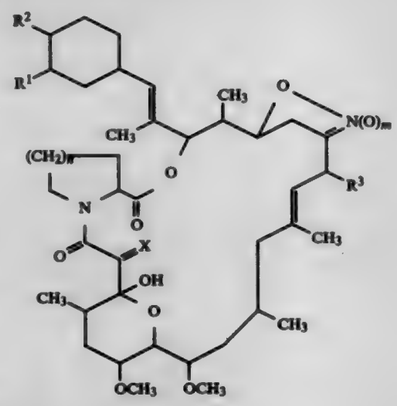
5,384,316

4,16-DIAZATETRACYCLO [23.3.1.1.14,17.0 4,9] TRIACONTA-16,19-DIENE-2,3,10-TRIONE DERIVATIVES

David K. Donald, Ashby-de-la-Zouch, and Mark Furber, Kegworth, both of England, assignors to Fisons plc, Suffolk, England

PCT No. PCT/GB91/01384, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/03441, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 14, 1991, Ser. No. 975,544
Claims priority, application United Kingdom, Aug. 18, 1990, 9018196; Feb. 2, 1991, 9102305
Int. Cl.^{6} A61K *31/42, 31/435*; C07D *498/22*
U.S. Cl. 514—183 **7 Claims**

1. A compound of formula I,



(I)

wherein
R^1 represents OH or OCH_3;
R^2 represents OH or H;
R^3 represents methyl, ethyl, propyl or allyl;
X represents O, (H,OH) or (H,H);
m represents 0 or 1;
n represents 1 or 2;
or a pharmaceutically acceptable derivative thereof; provided that when n is 1, then R^3 is allyl or propyl.

7. A method of effecting immunosuppression which comprises administering a therapeutically effective amount of a compound of formula I, as defined in claim 1, or a pharmaceutically acceptable derivative thereof, to a patient.

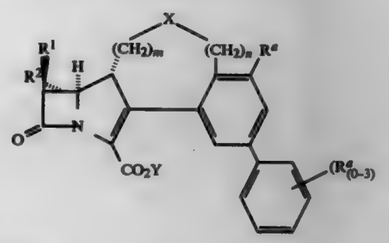
5,384,317

BRIDGED BIPHENYL CARBAPENEM COMPOUNDS, COMPOSITIONS CONTAINING SUCH COMPOUNDS AND METHODS OF USE

Frank P. DiNinno, Old Bridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 2, 1993, Ser. No. 101,134
Int. Cl.^{6} C07D *487/00*; A01N *42/00*; A61K *31/395*
U.S. Cl. 514—210 **14 Claims**

1. A compound represented by formula I:



I

wherein:
m is an integer 0, 1, 2, 3, 4 or 5;
n is an integer 0, 1, 2, 3 or 4;
X represents a member selected from the group consisting of:
(a) a bond; (b) —O—; (c) —S(O)$_x$— with x equal to 0, 1 or 2; (d) —C(O)—; (e) —NR′—; (f) —CH═CH—; (g) —C(O)NR′ ; (h) —NR′C(O)—; (i) —CO$_2$—;(j) —OC-(O)—; (k) —SO$_2$NR′— and (l) —NR′SO$_2$— with R′ representing H, C_1 to C_4 alkyl or acetyl;
the values of m, n and X being selected such that ring B constitutes a 6 to 10 membered ring;
Y represents H, a negative charge, a pharmaceutically acceptable ester, a biolabile ester, a carboxylate protecting group or a metal cation;
R^1 and R^2 independently represent H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2— or $(CH_3)_2CF$—;
each R^q independently represents hydrogen or a member selected from the group consisting of:
a) —CF_3;
b) a halogen atom selected from the group consisting of: —Br, —Cl, —F, and —I;
c) —OC_{1-4} alkyl, wherein the alkyl is optionally mono-substituted by R^q, where R^q is a member selected from the group consisting of: —OH, —OCH_3, —CN, —F, —CF_3, and —COOM^a where M^a is H, alkali metal or methyl; —S(O)$_xR^z$. where x=0 or 2 and R^z=C_{1-4} alkyl, —C_{2-4} alkenyl, —C_{2-4} alkynyl; —C(O)C_{1-4} alkyl, and —C_{1-4} alkyl substituted with —CF_3, —Br, —I, —F, —Cl or —OCH_3;
d) —OH;
e) —OC(O)R^z, where R^z is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;
—OC(O)N(R^y)R^z, where R^y and R^z are independently H, C_{1-4} alkyl, (optionally mono-substituted by R^q as defined above), or are taken together to represent a 3- to 5-membered alkylidene radical which forms a ring (optionally substituted with R^q as defined above), or a 2- to 4-membered alkylidene radical interrupted by —O—, —S—, —S(O)— or —S(O)$_2$— which forms a ring, said ring being optionally mono-substituted with R^q as defined above;
g) —S(O)$_n$—R^z, where n=0–2, and R^z is defined above;
h) —SO_2N(R^y)R^z, where R^y and R^z are as defined above;
i) N_3;
j) —N(R^t)C(O)H, where R^t is H or C_{1-4} alkyl, said alkyl group being optionally mono-substituted with R^q as defined above;
k) —N(R^t)C(O)C_{1-4} alkyl, wherein R^t is as defined above;
l) —N(R^t)C(O)OC_{1-4} alkyl, where R^t is as defined above;
m) —N(R^t)C(O)N(R^y)R^z where R^t, R^y and R^z are defined above;
n) —N(R^t)SO_2R^z, where R^z and R^t are as defined above;
o) —CN;
p) a formyl or acetalized formyl radical which is selected from the group consisting of: —C(O)H and —CH-$(OCH_3)_2$;
q) —$C(OCH_3)_2$ C_1–C_4 alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
r) —C(O)R^z, where R^z is as defined above;
s) —(C═NOR^z)$R^y$where R^y and R^z are as defined above, except they may not be joined together to form a ring;
t) —C(O)OC_{1-4} alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
u) —C(O)N(R^y)R^z, where R^y and R^z are as defined above;
v) —C(O)N(OR^y)R^z, where R^y and R^z are as defined above, except they may not be joined together to form a ring;
w) —C(S)N(R^y)R^z where R^y and R^z are as defined above;
x) —COOM^a where M^a is as defined above;
y) —SCN;
z) —SCF_3;
aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a $C_1$14 C_4 alkyl optionally substituted by R^q as defined above;
ab) an anionic function selected from the group consisting of: phosphono which is P═O(OM^a)$_2$; alkylphosphono which is P═O(OM^a)(OC_{1-4} alkyl; alkylphosphinyl which is P═O(OM^a)C_{1-4} alkyl; phosphoramido which is selected from the group consisting of P═O(OM^a)N-R^yR^z and P═O(OM^a)NHR^x; sulfino which is SO^2M^a; sulfo which is SO^3M^a; acylsulfonamides selected from the group consisting of $SO_2NM^aCONR^yR^z$ and SO_2N-M^aCN,

where
R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, said R^q, M^a, R^y and R^z being as defined above;
ac) a C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH, or N(C_1–C_4 alkyl) and in which one additional carbon may be replaced by the NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and them are one or two carbonyl moieties present in the ring;
ad) a C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents a) to ac) above and phenyl which is optionally substituted by R^q as defined above;
ae) a C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents a) to ac) above;
af) a C_1–C_4 alkyl radical;
ag) a C_1–C_4 alkyl group mono-substituted by one of the substituents a)–ac) above;
ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from S and NR^t (where R^t is as defined above) and one of the saturated carbon atoms of the

oxazolidinone ring is optionally mono-substituted by one of the substituents a) to ag) above.

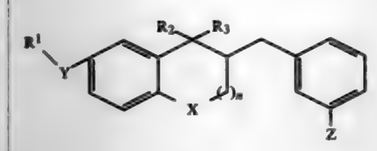
5,384,318

SUBSTITUTED SULFONAMIDES AND RELATED COMPOUNDS IN THE TREATMENT OF ASTHMA, ARTHRITIS AND RELATED DISEASES

James F. Eggler, Stonington; Anthony Marfat, Mystic; Lawrence S. Melvin, Jr., Ledyard, and Hiroko Masamune, Noank, all of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US89/02748, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992
PCT Filed Jun. 22, 1989, Ser. No. 835,997
Int. Cl.[6] C07D *215/14, 401/06;* A61K *31/47*
U.S. Cl. 514—212 12 Claims

1. A compound of the formula



(I)

wherein

R^1 is quinolyl, substituted quinolyl, benzothiazolyl, substituted benzothiazolyl, benzopyrimidinyl, substituted benzopyrimidinyl, wherein said substituted quinolyl, substituted benzothiazolyl, and substituted benzopyrimidinyl are substituted with one or more substituents that are independently selected from the group consisting of fluoro, bromo, chloro, phenyl, hydroxy, trifluoromethyl and $(C_1–C_4)$alkyl;

R^2 and R^3 are each H or OH;

Y is CH_2O, C_2H_2 or C_2H_4;

X is CH_2O, S, NH or NR^7;

R^7 is $(C_1–C_4)$alkyl;

n is an integer from 0–3; and

Z is CONHW, wherein

W is SO_2Q, COQ or Q, wherein

Q is hydrogen, phenyl, substituted phenyl, $(C_1–C_8)$ alkyl, cycloalkyl, tetrazolyl, or thiazolyl, wherein the foregoing substituted phenyl groups are substituted with one or more substituents independently selected from the group consisting of chloro, fluoro and $(C_1–C_4)$alkoxy;

and the pharmaceutically acceptable acid addition and cationic salts thereof.

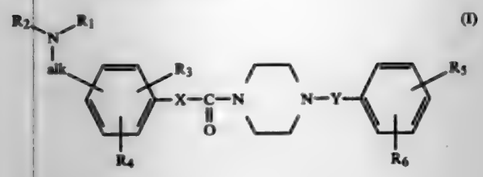
5,384,319

AMINOALKYLPHENYL COMPOUNDS

Pier G. Ferrini, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 20, 1993, Ser. No. 170,131
Claims priority, application Switzerland, Jan. 6, 1993, 25/93
Int. Cl.[6] A61K *31/495, 31/54;* C07D *295/182, 295/192*
U.S. Cl. 514—227.8 11 Claims

1. A compound of formula I



(I)

wherein

alk is lower alkylene;

(i) R_1 is

(a) hydrogen, lower alkyl, lower alkoxy-lower alkyl, or lower alkoxy-lower alkoxy-lower alkyl,

(b) phenoxy-lower alkyl or phenyl-lower alkoxy-lower alkyl, the phenyl group in each being unsubstituted or substituted by at least one substituent selected from lower alkyl, trifluoromethyl, lower alkoxy, halogen and hydroxy, or

(c) N-lower alkylamino-lower alkyl or N,N-dilower alkylamino-lower alkyl; and

R_2 is

(a) lower alkenoyl, (carboxy, lower alkoxycarbonyl, carbamoyl, N-lower alkyl-carbamoyl, N,N-dilower alkyl carbamoyl, or cyano)-lower alkenoyl, halo-lower alkanoyl, amino-lower alkanoyl, N-lower alkylamino-lower alkanoyl, N-[(carboxy or lower alkoxycarbonyl)-loweralkylamino]-lower alkanoyl, N,N-dilower alkylamino-lower alkanoyl, C4,6lower alkyleneamino-lower alkanoyl, morpholino-lower alkanoyl, thiomorpholino-lower alkanoyl, piperazino-lower alkanoyl (wherein the piperazino ring is unsubstituted or substituted in the 4-position by lower alkyl or by lower alkanoyl), hydroxy-lower alkanoyl, lower alkoxy-lower alkanoyl, lower alkanoyloxy-lower alkanoyl, lower alkylthio-lower alkanoyl, lower alkylsulfinyl-lower alkanoyl, or lower alkylsulfonyl-lower alkanoyl,

(b) phenylthio-lower alkanoyl, phenylsulfinyl-lower alkanoyl, or phenylsulfonyl-lower alkanoyl, the phenyl group in each of these three radicals being unsubstituted or substituted by at least one substituent selected from lower alkyl, lower alkoxy, halogen and hydroxy, or

(c) carboxy-lower alkanoyl, lower alkoxycarbonyl-lower alkanoyl, carbamoyl-lower alkanoyl, N-lower alkylcarbamoyl-lower alkanoyl, N,N-diloweralkylcarbamoyl-lower alkanoyl, cyano-lower alkanoyl, carbamoyl, N-lower alkylcarbamoyl, N,N-dilower alkylcarbamoyl, carboxycarbonyl, lower alkoxycarbonyl-carbonyl, (carbamoyl, N-lower alkylcarbamoyl, or N,N-dilower alkylcarbamoyl)-carbonyl, lower alkanoyl, carboxy, lower alkoxycarbonyl, or phenyl-lower alkoxycarbonyl wherein the phenyl group is unsubstituted or substituted by at least one of lower alkyl, lower alkoxy, halogen, and hydroxy; or

(ii) R_1 is lower alkoxy-lower alkyl and

R_2 is hydrogen;

R_3 and R_4 are each independently of the other hydrogen, lower alkyl, halogen, lower alkoxy, or lower alkylthio;

R_5 and R_6 are each independently of the other hydrogen, lower alkyl, halo-lower alkyl, lower alkoxy, lower alkylthio, halogen, amino, lower alkylamino, dilower alkylamino, or alkanoylamino; and

X and Y are each independently of the other a direct bond, lower alkylene, or lower alkenylene;

or a pharmaceutically acceptable salt thereof.

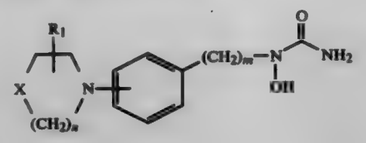
5,384,320

N-HYDROXYUREA DERIVATIVES WHICH INHIBIT LIPOXYGENASE

Kazuo Ando, Taketoyo, and Takafumi Ikeda, Handa, both of Japan, assignors to Pfizer Inc, New York, N.Y.

Filed Dec. 10, 1993, Ser. No. 162,104
Claims priority, application Japan, Jun. 13, 1991, 3-142123
Int. Cl.[6] A61K *31/535, 31/40;* C07D *295/155*
U.S. Cl. 514—231.2 14 Claims

1. A compound of the formula



and the pharmaceutically acceptable salts thereof, wherein:

X is $—CH_2—$, —O— or —S—;

m is 1 to 3;

n is 1 or 2; and

R_1 is hydrogen, C_1 to C_4 alkyl, aryl or aryl substituted with one or more substituents selected independently from the group consisting of halogen, nitro, cyano, C_1 to C_{10} alkyl, C_1 to C_{10} halosubstituted alkyl, C_1 to C_6 alkoxy, alkoxycarbonyl having from one to ten carbon atoms in the alkoxy moiety, aminocarbonyl, alkylaminocarbonyl having from one to ten carbon atoms in the alkyl moiety and dialkylaminocarbonyl having from one to ten carbon atoms in each of the alkyl moieties.

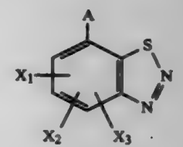
5,384,321

MICROBICIDAL COMPOSITIONS

Walter Kunz, Oberwil, and Rolf Schurter, Binningen, both of, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 951,300, Sep. 24, 1992, Pat. No. 5,260,423, which is a continuation of Ser. No. 841,676, Feb. 26, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 105,096
Claims priority, application Switzerland, Mar. 6, 1991, 666/91
Int. Cl.[6] A01N *43/72*
U.S. Cl. 504—261 12 Claims

1. A composition for controlling or preventing infestation by harmful microorganisms, which comprises as active component, at least one compound of formula I



(I)

in which:

X_1, X_2 and X_3 independently of one another are hydrogen, methyl, methoxy, methylthio, halogen or nitro;

A is C_1–C_2alkyl which is substituted by a minimum of 1 and a maximum of 3 X—C_1–C_4alkyl groups, methyl which is substituted by 2 or 3 halogen atoms, ethyl which is substituted by hydroxyl and/or not more than 4 halogen atoms, vinyl which is unsubstituted or substituted by not more than 3 halogen atoms; furthermore ethynyl, propargyl, formyl, acetyl, acetyl which is substituted by not more than 3 halogen atoms, or one of the groups $C(R)=N—N(R_2)R_3$, $C(N=N—U_1)=N—NH—U_1$, $CH(R)—[N(R_1)]_n—N(R_2)R_3$, $C(R)(CN)OR_4$, $C(R)=N(O)_nR_3$, $CH(R)—O—N=C(R_1)R_2$, $CH(R)—O—N=C(CN)—CONH—R_5$, $C(R_6)=N—(O)_nR$, $CH(R)—Y—E—R_3$, $CO—[C(OR)_2]_nQ$, $C(Q)=CH—OR$ or $T—Q$;

in which furthermore:

n is zero or 1;

X and Y independently of one another are oxygen or sulfur;

R and R_1 independently of one another are hydrogen or C_1–C_2alkyl; R_2 is hydrogen, C_1–C_8alkyl, C_3–C_6alkenyl, C_3–C_6alkynyl, C_3–C_7cycloalkyl, benzyl or cyano; R_3 is hydrogen, C_1–C_6alkyl, C_3–C_6alkenyl, C_3–C_6alkynyl, C_3–C_7cycloalkyl, benzyl or is an aryl radical U;

R_4 is hydrogen, C_1–C_6alkyl, $Si(C_1–C_6alkyl)_3$ or $OCOC_1$–C_3alkyl;

R_5 is hydrogen or $CONHR_1$;

R_6 is $N(R_1)R_2$, hydrazino or Q;

E is CO or SO_2;

U and U_1 independently of one another are a phenyl radical which is unsubstituted or monosubstituted or polysubstituted by identical or different substituents from the series comprising methyl, methoxy, halogen, trifluoromethyl, nitro or cyano;

T is C_1–C_2alkylene, methylene which is substituted by amino, hydroxyl or halogen, the substituents being independent of one another, or is ethenylene which is unsubstituted or substituted by halogen or cyano;

Q is COXR or cyano;

with the exception of the following compounds:

7-formyl-1,2,3-benzothiadiazole;

7 -acetyl-1,2,3 -benzothiadiazole;

6-chloro-7-formyl-1,2,3-benzothiadiazole;

6-methylthio-7-formyl-1,2,3-benzothiadiazole;

4-bromo-6-chloro-7-formyl-1,2,3-benzothiadiazole;

6-methoxy-7-formyl-1,2,3-benzothiadiazole;

7-hydroxyiminomethyl-1,2,3-benzothiadiazole;

6-methoxy-7-hydroxyiminomethyl-1,2,3-benzothiadiazole; and

7-dibromoacetyl-1,2,3-benzothiadiazole; together with an inert carder.

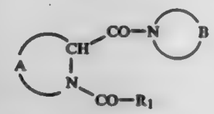
5,384,322

NITROGEN-CONTAINING BICYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS THEREOF

Michel Vincent, Bagneux; Georges Remond, Versailles; Bernard Portevin, Elancourt; Yolande Herve, Puteaux; Jean Lepagnol, Chatou, and Guillaume de Nanteuil, Suresnes, all of France, assignors to Adir Et Compagnie, Courbevoie, France

Division of Ser. No. 950,958, Sep. 25, 1992, Pat. No. 5,286,732.
This application Sep. 30, 1993, Ser. No. 129,651
Claims priority, application France, Sep. 27, 1991, 91 11693
Int. Cl.[6] A61K *31/46;* C07D *417/06*
U.S. Cl. 514—299 11 Claims

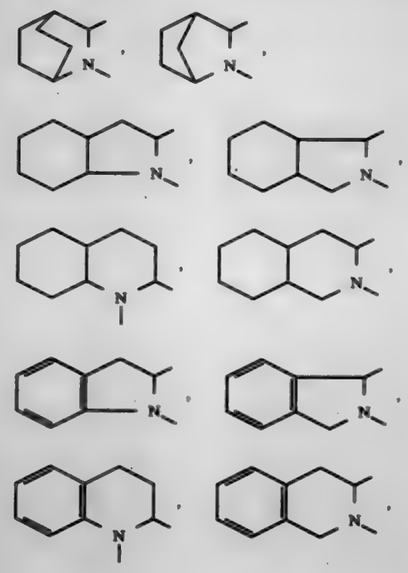
1. A compound selected from those formula (I):



(I)

in which:

A represents, with the carbon and nitrogen atoms to which it is attached, a heterocycle selected from the group consisting of:

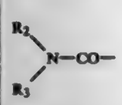


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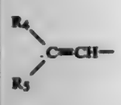


B represents, with the nitrogen atom to which it is attached, a 1,3-thiazolidine ring,

R_1 represents linear or branched (C_1–C_6) alkoxy, benzyloxy, phenoxy, or linear or branched (C_1–C_6) alkyl, linear or branched (C_2–C_6) cycloalkyl, each of the alkyl, alkenyl, or cycloalkyl being optionally substituted by one or more groups, which are identical or different, selected from: phenyl, naphthyl, (C_3–C_7) cycloalkyl, (C_3–C_7) phenylcycloalkyl, trifluoromethyl, (diC_3–C_7 cycloalkyl)methylthio,



(in which R_2 and R_3, which are different, represent hydrogen, phenyl, benzyl, or (C_3–C_7 cycloalkyl)-methyl,



(in which

R_4 represents phenyl, (C_3–C_7)cycloalkyl, or (diC_3–C_7 cycloalkyl)methyl, and

R_5 represents hydrogen, phenyl, (C_3–C_7) cycloalkyl, or trifluoromethyl,

their enantiomers, diastereoisomers and epimers, as well as their addition salts with a pharmaceutically-acceptable acid.

5,384,323

STABILIZED DOPAMINERGIC COMPOSITIONS

Joachim Botz, Heidelberg; Atilla Batu, Darmstadt, and Herbert Seeger, Modautal, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

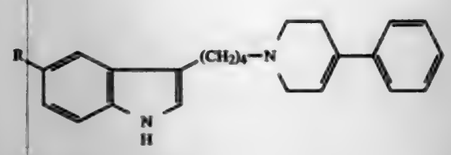
Filed Dec. 14, 1992, Ser. No. 989,857

Claims priority, application Germany, Dec. 14, 1991, 4141268

Int. Cl.[6] A61K *31/435*

U.S. Cl. 514—339 8 Claims

1. A pharmaceutical composition, comprising a compound of formula I,



wherein R is OH or COOH,

or a physiological acceptable salt thereof, embedded in pregelatinized starch.

5,384,324

INSECTICIDALLY ACTIVE CYANO COMPOUNDS

Kozo Shiokawa, Kawakazaki; Shinichi Tsuboi, Hino; Koichi Moriya, Tokyo; Ikuro Honda, Tanashi; Yumi Hattori, and Katsuhiko Shibuya, both of Hachioji, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

Continuation of Ser. No. 678,382, Apr. 1, 1991, abandoned, which is a division of Ser. No. 584,398, Sep. 14, 1990, Pat. No. 5,066,808, which is a continuation of Ser. No. 419,428, Oct. 10, 1989, abandoned. This application Apr. 30, 1993, Ser. No. 55,402

Claims priority, application Japan, Oct. 21, 1988, 63-264020; Mar. 13, 1989, 64-057813

Int. Cl.[6] C07D *277/32;* A01N *43/78*

U.S. Cl. 514—365 9 Claims

1. A cyano compound of the formula



(I)

wherein

Z is thiazolyl substituted by halogen, C_{1-2}-alkyl, or CF_3

R^1 is hydrogen, cyano or C_{1-4} alkyl,

m is 0 or 1,

R^2 is hydrogen, C_{1-6} alkyl, C_{3-4} alkenyl unsubstituted or substituted by halogen, C_{3-4} alkynyl, C_{3-8} cycloalkyl unsubstituted or substituted by methyl, unsubstituted phenyl or phenyl substituted by halogen, unsubstituted benzyl or benzyl substituted by halogen, hydroxy, C_{1-4} alkoxy or $—CH_2—Z$, in which Z is as defined above,

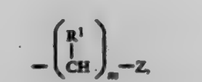
R^3 is $—O—R^4$, $—S—R^4$ or



in which R^4 is C_{1-6} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl, C_{3-8} cycloalkyl, unsubstituted phenyl or phenyl substituted by halogen, unsubstituted benzyl or benzyl substituted by halogen, or $—(CH_2)_n—Z$, in which n is 1 or 2 and

Z has the same meaning as stated above, and

R^5 and R^6 are hydrogen, C_{1-9} alkyl unsubstituted or substituted by at least one substituent selected one substituent selected from the group consisting of halogen, hydroxy, mercapto, C_{1-2} alkoxy, C_{1-2} alkylthio, C_{3-6} cycloalkyl, amino, C_{1-2} monoalkylamino, C_{2-4}(in total)-di-alkylamino, carboxy, C_{1-2} alkoxy-carbonyl and cyano, unsubstituted C_{3-4} alkenyl or C_{3-4} alkenyl substituted by halogen, C_{3-4} alkynyl, unsubstituted phenyl or phenyl substituted by halogen, unsubstituted benzyl or benzyl substituted by halogen, C_{1-4} alkoxy, hydroxy, formyl, C_{1-4} alkoxycarbonyl, C_{1-4} alkylamino, C_{2-4}(in total)di-alkylamino, amino or



in which R^1, Z and m have the same meanings as stated above, and in addition,

R^5 and R^6 may form, together with the N atom to which they are bonded, a pyrrolidino, piperidino, morpholino, piperazino or isoxazolidino ring which is unsubstituted or substituted by C_{1-2} alkyl.

5,384,325

HETEROBICYCLIC DERIVATIVES WITH FUNGICIDAL ACTIVITY

Giovanni Camaggi, Novara; Lucio Filippini, San Donato Milanese; Marilena Gamneroli, Monza; Raul Riva, Novara; Carlo Garavaglia, Caggiono; Ernesto Signorini, Mulazzo, and Mario Ferri, Milan, all of Italy, assignors to Isagro S.r.l., Milan, Italy

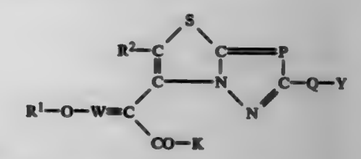
Filed Apr. 25, 1994, Ser. No. 232,745

Claims priority, application Italy, Apr. 27, 1993, MI 93/A/000819

Int. Cl.[6] A61K *31/425;* C07D *277/60*

U.S. Cl. 514—368 32 Claims

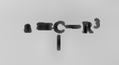
1. Compounds based on heterobicyclic derivatives, having the general formula (I):



(I)

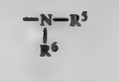
wherein:

P and W, which are the same or different from each other, represent a nitrogen atom, or a



moiety;

K represents an $—O—R^4$ moiety, or an



moiety;

R^1 and R^4, which are the same or different from each other, represent a linear or branched C_1–C_8 alkyl or halo-alkyl group;

R^2, R^3, R^5 and R^6, which are the same or different from each other, represent a hydrogen atom or a linear or branched C_1–C_8 alkyl or haloalkyl group;

Q represents a direct bond; an oxygen atom; a linear or branched C_1–C_8 alkyl group; a linear or branched oxoalkyl moiety of the type:

$—(C_nH_{2n})—O—$;

$—O—(C_mH_{2m})—$; a carbonylic group of



type;

Y represents a linear or branched C_1–C_8 alkyl group; a C_3–C_6 cycloalkylic group; a phenyl, naphthyl, a five- or six-membered heterocyclic group containing from 1 to 3 heteroatoms selected from nitrogen, oxygen or sulfur, also fused with a benzene ring, all of them being optionally substituted with one or more of:

halogens, such as fluorine, chlorine, bromine, iodine;

linear or branched C_1–C_6 alkyl or haloalkyl groups;

linear or branched C_1–C_6 alkoxy or haloalkoxy groups;

nitrile groups;

linear or branched C_2–C_8 carboalkoxy or carbamoyl groups;

$—(V)_r—Z$ groups in which:

Z represents a phenyl group, a C_5–C_{10} heterocyclic group in which the heteroatoms are selected from oxygen, nitrogen or sulfur, optionally substituted with:

halogens, such as fluorine, chlorine, bromine, iodine;

linear or branched C_1–C_6 alkyl groups;

linear or branched C_1–C_6 alkoxy or haloalkoxy groups;

nitrile groups;

V represents an oxygen or sulfur atom, or a carbonylic group;

n and m, which are the same or different from each other, are an integer comprised within the range of from 0 to 6;

r is either zero or 1.

5,384,326

GIRONDALONES

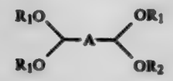
Kevin F. Gironda, Alpha, N.J.; Peter Ossi-Gylmah, Horsham, and Barry C. Lange, Lansdale, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 12, 1991, Ser. No. 794,753

Int. Cl.[6] C07D *275/03, 275/04;* A01N *43/80*

U.S. Cl. 514—372 4 Claims

1. Girondalone compounds of the formula I



(I)

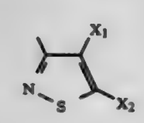
wherein

A is a residue of a dialdehyde of the formula

OHC—A—CHO;

R_1 is independently selected from the group consisting of R_2 and (C_1–C_{18})alkyl and;

R_2 is



(II)

wherein

(i) X_1 and X_2 can be joined to form a 5 or 6 membered fused carbocyclic ring, said ring being saturated, unsaturated, or aromatic; or

(ii) X_1=Cl, H, methyl, or Br; and X_2=H, Cl, or Br.

5,384,327

ANTICONVULSANT SORBOPYRANOSE SULFAMATES

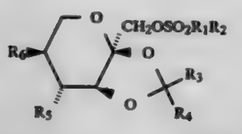
Michael J. Costanzo, Ivyland, and Bruce E. Maryanoff, New Hope, both of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Filed Dec. 22, 1992, Ser. No. 994,735

Int. Cl.[6] A61K *31/35;* C07D *311/94*

U.S. Cl. 514—456 9 Claims

1. A compound represented by the formula (I):



wherein R_1 and R_2 are the same or different and selected from any of hydrogen or C_1 to C_4 alkyl; wherein R_3 and R_4 are the same or different and are selected from any of hydrogen or C_1 to C_4 alkyl;

wherein R_5 and R_6 are the same or different and are selected from any of azido, halogen, hydroxyl, sulfamoyl (H_2NSO_2O), C_1 to C_4 alkoxy, C_1 to C_4 alkyl thiocarbonate ($RSC(O)O$), C_1 to C_4 alkyl carbonate ($ROC(O)O$), or C_1 to C_4 alkyl carboxylate ($RC(O)O$), wherein R is C_1–C_4 alkyl;

the enantiomers and mixtures thereof;

and the pharmaceutically acceptable salts and solvates thereof.

9. A method of treating a mammal suffering from convulsions comprising treating that mammal with the compound of claim 1 in an amount sufficient to treat the convulsions.

5,384,328

OXYSULFONYL CARBAMATES

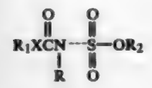
Joseph A. Picard, and Drago R. Sliskovic, both of Ypsilanti, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 15,662, Feb. 9, 1993, Pat. No. 5,245,068, which is a continuation of Ser. No. 738,772, Aug. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 606,006, Oct. 30, 1990, abandoned. This application May 21, 1993, Ser. No. 65,716

Int. Cl.[6] A61K *31/27*

U.S. Cl. 514—490 **18 Claims**

1. A pharmaceutical composition for regulating cholesterol comprising an effective amount of a compound of the following formula and a pharmaceutically acceptable carrier:



wherein X is oxygen or sulfur;

wherein R is hydrogen, a straight or branched alkyl group having from 1 to 8 carbon atoms or benzyl; wherein R_1 is selected from:

(a) phenyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from
phenyl,
an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,
an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched;
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,
$—(CH_2)_pNR_3R_4$ wherein p is zero or one, and each of R_3 and R_4 is selected from hydrogen or a straight or branched alkyl group having 1 to 4 carbon atoms;

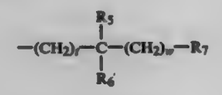
(b) 1- or 2-naphthyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from
phenyl,
an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,
an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched;
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,
$—(CH_2)_pNR_3R_4$ wherein p, R_3 and R_4 have the meanings defined above; or

(c) $—(CH_2)_s—Q$ wherein s is a number of from 0 to 3 and Q is a 5- or 6-membered monocyclic or fused bicyclic heterocycle containing at least 1 to 4 nitrogen, oxygen or sulfur atoms in at least one ring member; and wherein R_2 is selected from:

(a) phenyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from
phenyl,
an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,
an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched;
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,
$—(CH_2)_pNR_3R_4$ wherein p is zero or one, and each of $R_3$and R_4 is selected from hydrogen or a straight or branched alkyl group having 1 to 4 carbon atoms;

(b) 1- or 2-naphthyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from
phenyl,
an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,
an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched;
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,
$—(CH_2)_pNR_3R_4$ wherein p, R_3 and R_4 have the meanings defined above;

(c) the group



wherein X is oxygen or sulfur;

wherein t is zero or 1 to 4; w is zero or 1 to 4 with the proviso that the sum of t and w is not greater than 5; R_5 and R_6 are independently selected from hydrogen or alkyl having from 1 to 6 carbon atoms, or when R_5 is hydrogen, R_6 can be selected from the groups defined for R_7; and R_7 is phenyl or phenyl substituted with from 1 to 3 substituents selected from a straight or branched alkyl group having from 1 to 6 carbon atoms, straight or branched alkoxy group having from 1 to 6 carbon atoms, phenoxy, hydroxy, fluorine, chlorine, bromine, nitro, trifluoromethyl, —COOH, COOalkyl wherein alkyl has from 1 to 4 carbon atoms, or
$—(CH_2)_pNR_3R_4$ wherein p, R_3 and R_4 have the meanings defined above;

(d) $—(CH_2)_s—Q$ wherein s is a number of from 0 to 3 and Q is a 5- or 6-membered monocyclic or fused bicyclic heterocycle containing at least 1 to 4 nitrogen, oxygen or sulfur atoms in at least one ring member; or

(e) a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms and which is saturated or contains from 1 to 3 double bonds; and pharmaceutically acceptable salts thereof with the proviso that one of R_1 and R_2 is phenyl or substituted phenyl.

5,384,329

OLIGOMERIC THIOCARBONATES

James A. Green, II, Chino, and Donald C. Young, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

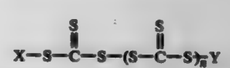
Continuation of Ser. No. 458,283, Dec. 28, 1989, Pat. No. 5,288,753. This application Dec. 30, 1993, Ser. No. 176,344

The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.[6] A01N *31/02*, *37/02*, *37/36*; C07C *329/02*

U.S. Cl. 514—512 **20 Claims**

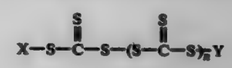
1. A method for controlling animal and fungal pests which comprises applying an oligomeric thiocarbonate to an area in which the pests are to be controlled, wherein the oligomeric thiocarbonate has the formula



X and Y independently are selected from the group consisting of inorganic cations and organic cations; n is at least 1; the inorganic cations are selected from the group consisting of alkali metal cations, alkaline earth metal cations, and transition metal cations; the organic cations have the formula $R_1R_2R_3R_4Q^+$; R_1, R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen and C_1–C_{30} organic radicals selected from the group consisting of alkyl, aryl, arylalkyl, and alkylaryl groups, provided that at least one of R_1, R_2, R_3, and R_4 is an organic radical; and Q^+ is selected from the group consisting of ammonium, phosphonium, arsonium, and stibonium.

18. A method for controlling animal and fungal pests which comprises applying a composition to an area in which the pests are to be controlled, wherein the composition comprises:

(a) an oligomeric thiocarbonate having the formula



X and Y independently are selected from the group consisting of inorganic cations and organic cations; n is at least 1; the inorganic cations are selected from the group consisting of alkali metal cations, alkaline earth metal cations, and transition metal cations; the organic cations have the formula $R_1R_2R_3R_4Q^+$; R_1, R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen and C_1–C_{30} organic radicals selected from the group consisting of alkyl, aryl, arylalkyl, and alkylaryl groups, provided that at least one of R_1, R_2, R_3, and R_4 is an organic radical; and Q^+ is selected from the group consisting of ammonium, phosphonium, arsonium, and stibonium; and

(b) a stabilizing agent selected from the group consisting of sulfides having the formula M_mS_y and bases, wherein M is selected from the group consisting of ammonium, alkali metals, alkaline earth metals, and organosubstituted heteroatomic cations; m is 2 when M is monovalent; m is 1 when M is divalent; and y is at least 2.

5,384,330

PHARMACEUTICALLY ACTIVE 1,2,4-TRIAMINO-BENZENE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Hans-Reinhold Dieter, Darmstadt; Jurgen Engel, Alsenau; Bernhard Kutscher, Maintal; Emanuel Polymeropoulos, Frankfurt; Stefan Szelenyi, Schwalg, and Berad Nickel, Mahltal, all of Germany, assignors to Asta Medica Aktiengesellschaft, Germany

Filed Jan. 8, 1993, Ser. No. 2,458

Claims priority, application Germany, Jan. 8, 1992, 4200259

Int. Cl.[6] A61K *31/24*

U.S. Cl. 514—535 **5 Claims**

1. A compound selected from the group consisting of 2-amino-4-(4-fluorobenzylamino)-1-ethoxycarbonylaminobenzene and 2-amino-4-(4-trifluoromethylbenzylamino)-1-ethoxycarbonylamino benzene, and pharmaceutically acceptable acid addition salts thereof.

5,384,331

KETAMINE ANALOGUES FOR TREATMENT OF THROMBOCYTOPENIA

Timothy P. Kogan, Half Moon Bay, and Todd C. Somers, Montara, both of Calif., assignors to Genentech, Inc., San Francisco, Calif.

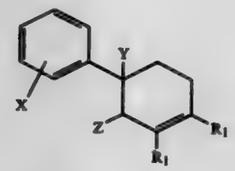
Division of Ser. No. 732,363, Jul. 18, 1991, Pat. No. 5,250,732. This application May 28, 1993, Ser. No. 69,245

Int. Cl.[6] A61K *31/135*; C07C *233/06*

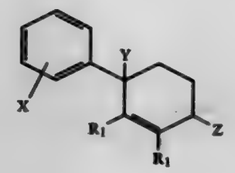
U.S. Cl. 514—646 **4 Claims**

1. A method for treating a mammal for thrombocytopenia comprising administering to a mammal in need of such treatment a therapeutically effective amount of a composition comprising a compound represented by the following structural formulae I or II

I



II



where:

X is selected from one or more of the group
hydrogen;
halogen;
C_1–C_6 alkyl; and
C_1–C_6 alkoxy;

Y is selected from the group
hydroxy;
$—NHR_2$; and
$—NR_2R_3$;

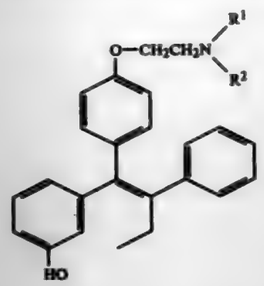
Z is selected from the group;
oxo;
C_2–C_4 alkylenedioxy;
hydroxy; and
C_1–C_6 alkoxy;

R_1, each occurrence, is independently selected from the group;

hydrogen; and
C_1–C_6 alkyl;
R_2 and R_3 are independently selected from the group:
unsubstituted or substituted C_1–C_6 alkyl;
unsubstituted or substituted C_6–C_{14} aryl;
unsubstituted or substituted C_1–C_6 alkanoyl;
unsubstituted or substituted C_7–C_9 aralkyl; and
biotinoyl;
wherein the substitutents are selected from one or more of the group halo; cyano; azido; nitro; amino; amidino; imino; aminomethyleneamino; iminomethylamino; guanidino; N-aminoguanidino; C_1–C6-alkylamino; C_2–C_{10}-dialkylamino; C_2–C_{10}alkylideneamino; C_2–C_6-acylamino; formylamino; N-(C_1–C_6)alkyl-N-(C_1–C_6)acylamino; C_1–C_6alkylsulfonamido; N-(C_1–C_6)alkyl-N-(C_1–C_6)-alkylsulfonylamino; thioformamido; N-(C_1–C_6)alkyl-N-thioformylamino; thio(C_1–C_6)acylamino; N-(C_1–C_6)alkyl-N-thio(C_1–C_6)acylamino; thioureido; C_2–C_6-alkylsulfinamido; N-(C_1–C_6)alkyl-N-(C_1–C_6)alkylsulfinylamino; N,N-di(C_1–C10)acylamino; carboxy; C_2–C_6 carbalkoxy; formyl; C_2–C_6 alkylcarbonyl; formyloxy; C_2–C_6 alkanoyloxy; carbamoyl (carboxamido); N-(C_1–C_6)alkylcarboxamido; N,N-di(C_1–C_{10})alkylcarboxamido; carbamoyloxy; N-(C_1–C_6) carbamoyloxy; N, N-di(C_1–C_6)alkyicarbamoyloxy; mercapto; C_1–C_6 alkylsulfinyl; C_1–C_6 alkylsulfonyl; C_1–C_6 alkylsulfonato; C_1–C_6 alkylthio; sulfonamido; N-(C_1–C_6)alkylsulfonamido; N,N-di(C_1–C_6)alkylsulfonamido; hydroxy; C_1–C_6 alkyloxy; C_1–C_6 alkyl optionally substituted with halo amino, C_1–C_6 alkylamino, carboxy, C_1–C_4 alkoxy, and hydroxy; C_2–C_6 alkenyl; C_2–C_6 alkynyl; C_3–C_6 cycloalkyl; C_6–C_{10} aryl optionally substituted with halo, amino, C_1–C6 alkylamino, carboxy; C_1–C_6 alkoxy, and hydroxy; and heterocycloalkyl and beteroaryl having from 1 to 3 rings, each ring having from 0–3 betero atoms selected from N, O, and S provided that at least one ring contains a heteroatom optionally substituted with halo, amino, C_1–C_6alkylamino, carboxy, C_1–C4 alkoxy, and hydroxy;
R_2 and R_3 taken together may form C_4–C_8-alkylene or C_4–C_8-oxydialkylene in a pharmaceutically acceptable excipient or carrier.

5,384,332
METHODS FOR INHIBITING AORTAL SMOOTH MUSCLE CELL PROLIFERATION AND RESTENOSIS WITH 1,1,2-TRIPHENYLBUT-1-ENE DERIVATIVES
Steven A. Fontana, Martinsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed May 11, 1994, Ser. No. 241,240
Int. Cl.[6] A61K *31/135*
U.S. Cl. 514—648 4 Claims

1. A method for inhibiting aortal smooth muscle cell proliferation comprising administering to a human in need of treatment an effective amount of a compound of formula I



(I)

wherein
R^1 and R^2 may be the same or different provided that, when R^1 and R^2 are the same, each is a methyl or ethyl group, and, when R^1 and R^2 are different, one of them is a methyl or ethyl group and the other is a benzyl group;
or a pharmaceutically acceptable salt thereof.

5,384,333
BIODEGRADABLE INJECTABLE DRUG DELIVERY POLYMER
Patricia A. Davis, and Scott Cousins, both of Miami, Fla., assignors to University of Miami, Miami, Fla.
Filed Mar. 17, 1992, Ser. No. 852,948
Int. Cl.[6] A01N *25/26*; A61K *37/22, 9/50*
U.S. Cl. 514—772.3 10 Claims

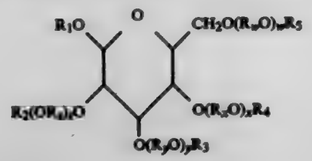
2. A drug delivery composition for injection into a body, comprising a pharmaceutically active agent physically mixed with a biodegradable block co-polymer of formula:

A—B—A

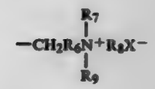
wherein A is a hydrophobic polymer or oligomer and B is a hydrophilic polymer or oligomer;
wherein the biodegradable block co-polymer comprises from 30 to 99.5% by weight of said drug delivery composition and is solid at a temperature in the range 20° to 37° C. and flowable in the range of 38° to 52° C.; and
wherein A is selected from the group consisting of polyglycolic acid, polyethylene terephthalate, polybutyl lactone polycaprolactone, D-polylactic acid, L-polylactic acid, polyglutamic acid, poly L-lysine, and poly L-aspartic acid; and
wherein B is selected from the group consisting of polyethylene glycol, polypropylene glycol and polyvinyl alcohol.

5,384,334
ALKOXYLATED ALKYL GLUCOSIDE ETHER QUATERNARIES USEFUL IN PERSONAL CARE
Stuart B. Polovsky, Old Bridge, N.J.; Harold L. Moshel, Brooklyn, N.Y.; Joseph P. Pavlichko, Helmetta, and Amnon Friedman, Marlboro, both of N.J., assignors to Amerchol Corporation, Edison, N.J.
Continuation-in-part of Ser. No. 447,052, Dec. 7, 1989, Pat. No. 5,138,043. This application Aug. 7, 1992, Ser. No. 927,158
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[6] A61K *47/00*; C07H *15/00*
U.S. Cl. 514—777 9 Claims

5. A personal care composition comprising a carrier and from about 0.1 to about 10 weight percent of a quaternary nitrogen-containing ether substituted, alkoxylated alkyl glucoside compound represented by the structural formula:



wherein:
R_5, R_5, R_5 and R_5 are ethylene or propylene;
R_1 is C_{1-18} alkyl;
w, x, y and z provide an alkoxy molar substitution, MS, defined by the average moles of alkoxy substituents represented by $R_{5-5}O$ in the formula as the average sum of w, x, y and z, per mole of compound, of from about 1 to about 200; and
R_2, R_3, R_4 and R_5 are hydrogen, an unsubstituted or oxygen-containing hydrocarbyl selected from the group consisting of alkyl, cycloalkyi, phenyi and aralkyl having from 1 to 26 carbon atoms or a quaternary nitrogen-containing group represented by the structural formula:



wherein:
R_6 is a hydroxyalkylene having from 1 to 10 carbon atoms;
R_7, R_8 and R_9 are an unsubstituted or oxygen-containing hydrocarbyl selected from the group consisting of alkyl, cycloalkyl, phenyl and aralkyl having from 1 to 26 carbon atoms; and
X is a halide, a sulfate anion, a phosphate anion or an organic anion selected from the group consisting of mono and dibasic carboxylic acids, oxylate, citrate, tartarate, toluene, sulfonate, succinate and phthalate having from 1 to 18 carbon atoms;
provided that at least one R_2, R_3, R_4 or R_5 is said quaternary nitrogen-containing group.

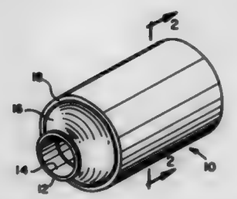
5,384,335
METHANOL SYNTHESIS USING A CATALYST COMBINATION OF ALKALI OR ALKALINE EARTH SALTS AND REDUCED COPPER CHROMITE
John W. Tierney; Irving Wender, and Vishwesh M. Palekar, all of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.
Division of Ser. No. 675,139, Mar. 26, 1991, Pat. No. 5,221,652. This application Mar. 31, 1993, Ser. No. 40,644
Int. Cl.[6] C07C *29/08, 29/154, 29/16*
U.S. Cl. 518—700 20 Claims

1. A process for the slurry synthesis of methanol from a gaseous mixture comprising carbon monoxide and hydrogen, the process comprising the step of adding to a carrier alcohol a catalyst combination comprising copper chromite and a basic alkali metal compound selected from the group consisting of oxides, hydroxides, formates, carbonates, bicarbonates, chromates and acetates, in an amount effective to catalyze the synthesis of methanol via a carbonylation/hydrogenolysis concurrent synthesis, in which the carrier alcohol undergoes carbonylation to yield in corresponding alkyl formate and the alkyl formate undergoes hydrogenolysis to yield methanol and the carrier alcohol, said basic alkali metal compound being solubilized in said carrier alcohol during methanol synthesis.

5,384,336
BUBBLE COLUMN, TUBE SIDE SLURRY PROCESS AND APPARATUS
Robert M. Koros, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 956,188, Oct. 5, 1992, abandoned. This application Nov. 30, 1993, Ser. No. 159,407
Int. Cl.[6] C07C *1/04, 1/06*
U.S. Cl. 518—700 7 Claims

1. A hydrocarbon synthesis process comprising reacting a gaseous mixture of hydrogen and carbon monoxide at a pressure of 1 to 100 atmospheres and a temperature of about 175° C. to about 400° C. in the presence of a hydrocarbon synthesis catalyst dispersed in a liquid thereby forming a slurry liquid, wherein the catalyst dispersion is disposed in a plurality of vertically arranged elongated reaction tubes having an L/D (length/diameter) of at least about 10, each tube being surrounded by a common heat transfer medium disposed within the shell of a shell and tube reactor, the heat transfer medium not being in fluid communication with the slurry liquid.

5,384,337
POROMERIC MATERIAL HAVING UNIFORMLY DISTRIBUTED ELECTRETS FOR MAINTAINING AN ELECTROSTATIC CHARGE
William D. Budinger, 16 Southridge Dr., Kennett Square, Pa. 19348
Filed Feb. 5, 1993, Ser. No. 14,018
Int. Cl.[6] C08J *9/28*
U.S. Cl. 521—68 13 Claims



1. A poromeric material for maintaining an electrostatic charge, the poromeric material having a thickness, length and width, the material comprising a matrix of fibers, a polymeric binder for binding the matrix, and electrets present substantially uniformly as part of the polymeric binder throughout the thickness, length and width of the poromeric material to provide a concentration of electrets that is substantially uniform regardless of wear of the poromeric material.

5,384,338
CFC AND HCFC-FREE RIGID INSULATING FOAMS HAVING LOW-K FACTORS AND DECREASED FLAMMABILITY
Thomas L. Fishback, Gibraltar; Curtis J. Reichel, Southgate, and James S. Dailey, Trenton, all of Mich., assignors to BASF Corporation, Parsippany, N.J.
Continuation-in-part of Ser. No. 999,752, Dec. 31, 1992, abandoned. This application Oct. 26, 1993, Ser. No. 143,547
Int. Cl.[6] C08J *9/14*
U.S. Cl. 521—131 14 Claims

1. A rigid polymer foam having enhanced flame retardant properties prepared by reacting an organic polyisocyanate with one or more polyols at an isocyanate index of from 90 to 500, said foam comprising a blowing agent mixture comprising an aliphatic hydrocarbon and a fully halogenated bromohalocarbon having at least 1 bromine atom and from 1 to 3 carbon atoms at an aliphatic hydrocarbon/brominated halocarbon mole ratio of about 10:1 to 1:2.

5,384,339
EPOXY BASED BALANCING COMPOUND AND METHOD FOR BALANCING A ROTOR UTILIZING AN ULTRAVIOLET-CURABLE EPOXY RESIN COMPOSITION
Dona R. Starkey, 2507 CR 60, Auburn, Ind. 46706
Filed Mar. 9, 1993, Ser. No. 28,217
Int. Cl.[6] C08F *2/50*; B32B *31/00*
U.S. Cl. 522—3 51 Claims

1. A method of balancing a rotor which comprises applying to the rotor a balancing composition which comprises an epoxy resin, a photoinitiator in an amount sufficient to cause cationic polymerization and cure said resin upon the application of ultraviolet light (about 10 nm to about 400 nm), and a filler in an amount to give said composition a specific gravity above 1.1, said filler not being ultraviolet light opaque and selected from a group consisting of quartz, silica, and the combination thereof, and exposing the balancing composition at ambient temperature to ultraviolet light of less than 40 watts per square centimeter for less than 30 seconds and curing said resin.

5,384,340

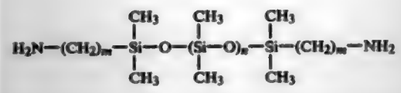
MOISTURE-CURABLE AND PHOTOCURABLE SILICONE COMPOSITION

Osamu Hara, Tsukui, and Kunihiko Nakajima, Machida, both of Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,706
Claims priority, application Japan, Apr. 20, 1992, 4-143102
Int. Cl.[6] C08G 77/18, 77/20; C08F 12/50
U.S. Cl. 522—99 4 Claims

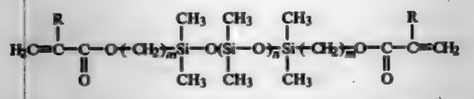
1. A moisture-curable and photocurable silicone composition comprising at least one organopolysiloxane, a photopolymerization catalyst and a moisture-curing catalyst, said organopolysiloxane being selected from the group consisting of:

(a) a reaction product obtained by addition-reacting a reactive polysiloxane represented by the following general formula (I):



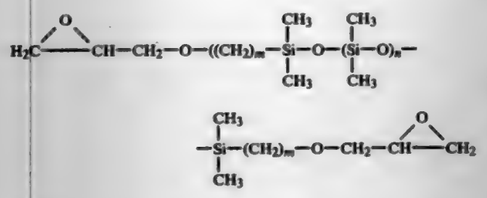
wherein m is 2 to 5 and n is 50 to 10,000, with a reactive silane compound having in one molecule two or three hydrolyzable groups and (meth)acryl or epoxy group, in a quantitative relation of less than equivalent, and then addition-reacting the resulting addition reaction product with a second compound having in one molecule at least one vinyl group and at least one epoxy or isocyanato group;

(b) a reaction product obtained by addition-reacting a reactive polysiloxane represented by the following general formula (II):



wherein R is H or CH_3, m is 2 to 5 and n is 50 to 10,000, with a reactive silane compound having in one molecule two or three hydrolyzable groups and a primary amino group, in a quantitative relation of less than equivalent, and then addition-reacting the resulting addition reaction product with a second compound having in one molecule at least one vinyl group and at least one (meth)acryl, epoxy or isocyanato group; and

(c) a reaction product obtained by addition-reacting a reactive polysiloxane represented by the following general formula (III):



wherein m is 2 to 5 and n is 50 to 10,000, with a reactive compound having in one molecule two or three hydrolyzable groups and a primary amino group, in a quantitative relation of less than equivalent, and then addition-reacting the resulting addition reaction product with a second compound having in one molecule at least one vinyl group and at least one (meth)acryl, epoxy or isocyanato group.

5,384,341

ACTINIC-RADIATION-CURING HOT-MELT PRESSURE-SENSITIVE COMPOSITION

Makoto Itagaki, Fujisawa; Eiichi Kawasaki, Yokohama; Kazuya Shinkoda, Kanagawa, and Kousuke Suewaka, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 27, 1993, Ser. No. 172,805
Claims priority, application Japan, Dec. 28, 1992, 4-348204; May 28, 1993, 5-126831; Nov. 4, 1993, 5-275112
Int. Cl.[6] C08F 2/48; C09J 31/04, 133/10
U.S. Cl. 522—111 18 Claims

1. An actinic-radiation-curing, hot-melt, pressure-sensitive adhesive composition, which comprises 90 to 50 parts by weight of a high-molecular-weight polymer (A), wherein, to a main chain that is made up of, as a main component, an alkyl (meth)acrylate whose alkyl group has 1 to 12 carbon atoms and has a number-average molecular weight of 8,000 to 100,000 and has a glass transition temperature of −75° to −20° C., at least one polymer component that is made by copolymerization of at least one monomer having an ethylenically unsaturated group in the molecule and has a number-average molecular weight of 500 to 30,000 and a glass transition temperature of −80° to 100° C. is bonded as a branched chain, and the branched chain and/or the main chain has at least one ethylenically unsaturated group; and 10 to 50 parts by weight of a low-molecular-weight polymer (B) that is made by polymerization of at least one monomer having at least one ethylenically unsaturated group, having or not having an ethylenically unsaturated group in the polymer and has a number-average molecular weight of 500 to 8,000 and a glass transition temperature of −80° to 100° C.

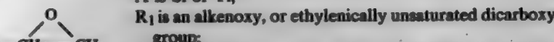
5,384,342

VINYL ETHER URETHANE SILANES

David M. Szum, Marengo, Ill., assignor to DSM Desotech, Inc., Elgin, Ill.

Filed Aug. 30, 1993, Ser. No. 113,997
Int. Cl.[6] C07F 7/04, 7/10; B32B 17/02; C09J 201/10
U.S. Cl. 522—172 8 Claims

1. A compound of the Formula:



wherein:

A is Si or Ti;

R_1 is an alkenoxy, or ethylenically unsaturated dicarboxylate group;

R_2 is a 2 to 18 carbon linear, branched or cyclic alkyl, alkenyl, alkynyl, acyl, aryl or poly(alkoxy);

R_3 contains a urethane, urea, or thiourethane linkage;

R_4 is a 2 to 18 carbon linear, branched, or cyclic alkyl, alkenyl, alkynyl, aryl or acyl non-hydrolyzable silyl linking group;

R_5 is a 1 to 18 carbon linear, branched, or cyclic alkyl, alkenyl, alkynyl, aryl or acyl;

R_6 is 2 to 18 carbon alkoxy or alkenoxy, or halogen; and n is 0 to 2.

5,384,343

WATER ABSORBING POLYMERS

David Farrar; Peter Flesher; Malcolm Skinner; John Clarke, and David Marshall, all of West Yorkshire, England, assignors to Allied Colloids Limited, England

Continuation of Ser. No. 483,969, Feb. 15, 1990, abandoned, which is a continuation of Ser. No. 150,277, Jan. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 91,551, Aug. 31, 1987, Pat. No. 4,880,858, and a continuation-in-part of Ser. No. 835,602, Mar. 3, 1986, Pat. No. 4,690,971. This application Jul. 20, 1992, Ser. No. 915,887
Claims priority, application United Kingdom, Jan. 30, 1987, 8702052; Jul. 20, 1987, 8717093; Aug. 13, 1987, 8719215; Aug. 13, 1987, 8719216
The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.
Int. Cl.[6] C08K 11/00
U.S. Cl. 523—129 14 Claims

1. A process in which a wet sticky mass of particulate material selected from organic material and inorganic material is converted to a crumbly or flowable solid by mixing into the mass of particulate material, water absorbent polymer particles that are selected from starch acrylonitrile graft copolymers and polymers formed by polymerization of water soluble ethylenically unsaturated monomer or monomer blend, and in which the polymer particles have an effective dry size within the mixture of at least 90% below 50 μm and are mixed into the mass of particulate material while the particle are in the form either of a dry powder having a particle size above 50 μm and which consists of internally bonded friable aggregates of finer particles below 50 μm in size, or of a dispersion of particles below 50 μm in size in water immiscible liquid.

5,384,344

FRICTION MATERIAL CONTAINING BT RESIN DUST

Nobuo Kamioka, Kasukabe; Hiroshi Tokumura, Hanyu, and Toru Yoshino, Gyoda, all of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo and Akebond Research and Development Centre Ltd., Hanyu, both of Japan

Continuation of Ser. No. 828,507, Jan. 31, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,319
Claims priority, application Japan, Feb. 8, 1991, 3-039108
Int. Cl.[6] C08J 5/14
U.S. Cl. 523—149 2 Claims

1. A friction material having heat-resistant properties, comprising:

from 10–40 wt. % of reinforcing fiber, from 40–75 wt. % of inorganic filler, from 1–20 wt. % of BT resin dust which modifies the frictional properties of the friction material, and from 5–20 wt. % of a thermosetting phenolic resin binder which binds the components of the friction material.

5,384,345

COMPOSITIONS CONTAINING HOLLOW MICROSPHERES

Paul E. Naton, North Ridgeville, Ohio, assignor to Outey Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 851,852, Mar. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 809,421, Dec. 17, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 94,500
Int. Cl.[6] C08K 7/28
U.S. Cl. 523—218 31 Claims

1. A composition comprising a mixture of

(A) from about 5% to about 60% by weight of at least one water-insoluble polymer selected from acrylonitrile-butadiene-styrene polymer, polyvinyl chloride, chlorinated polyvinyl chloride or mixtures thereof;

(B) from about 1% to about 30% by weight of glass or synthetic resinous hollow microspheres;

(C) from about 10% to about 85% by weight of at least one volatile organic liquid which is a solvent for the polymer of (A); and

(D) from about 0.1% to about 5% by weight of at least one solid particulate inorganic filler.

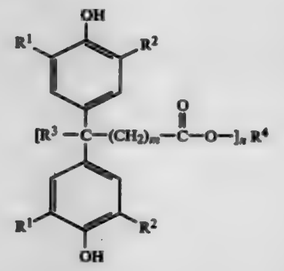
5,384,346

POLYVINYL BUTYRALS HAVING IMPROVED THERMAL STABILITY AND LIGHT RESISTANCE

Matthias Gutweiler, Taunusstein; Ulrich Hutten, Kelkheim; Gerhard Pfahler, Augsburg, and Hermann Schindler, Wallau, all of Germany, assignors to Hoechst AG, Germany

Filed May 6, 1993, Ser. No. 58,896
Claims priority, application Germany, May 8, 1992, 4215141
Int. Cl.[6] C08K 5/58, 5/37, 5/3435
U.S. Cl. 524—100 14 Claims

1. A polyvinyl butyral having improved thermal stability and if desired improved light resistance, with contents of oxidation stabilizers and with or without plasticizers, the oxidation stabilizers consist of polynuclear phenols of the formula I



I

where

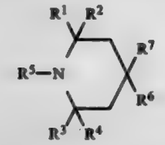
R^1 and R^2, are individually selected from the group consisting of H, C_1–C_8-alkyl and C_4–C_8-cycloalkyl,

R^3 is H or —CH_3

R^4 is C_1—C_{18} -alkyl when n=1 or —C_pH_{2p}— with p=1 to 8 when n=2,

optionally in combination with synergistically acting nitrogen-containing or sulfur-containing costabilizers selected from the group consisting of

a) nitrogen-containing compounds of the formula II



II

where R^1, R^2, R^3 and R^4 are individually selected from the group consisting of C_1–C_4 alkyl and C_4–C_8-cycloalkyl,

R^5 is H, C_1–C_{18}-hydroxyalkyl, C_1–C_{18}-alkoxy or C_1–C_{18}-acyloxy,

R^6 and R^7 are individually H or a monovalent organic radical having 1 to 30 carbon atoms, optionally including one or more heteroatoms, which may be different with the proviso that R^6 and R^7 are not both hydrogen, or R^6 and R^7 together with the carbon atom of the piperidine ring form a monocyclic or polycyclic of up to 60 carbon atoms, which may include one or more heteroatoms, which may be different, and in addition polymeric or copolymeric forms of compounds of the formula II,

b) nitrogen-containing compounds selected from the group consisting of aliphatic carboxylic acid hydrazides or dicarboxylic acid dihydrazides having 2 to 12 carbon atoms,

c) sulfur-containing compounds selected from the group consisting of di(C_4–C_{18})-alkyl sulfides and disulfides, thiotin compounds of the formula $R_xSn(—S—CH_2—COOR)_y$ where x+y=4, x, y=1 to 3, and R is C_1–C_{18}-alkyl thiodipropionates,
or mixtures of co-stabilizers of compounds of
a) to c), optionally
d) light stabilizers, and optionally
e) plasticizers and conventional antiadhesion agents.

5,384,347

FLAME-RESISTANT PLASTICS CONTAINING TRIHYDRAZINOTRIAZINE, TRIGUANIDINOTRIAZINE OR SALTS THEREOF

Heinrich Horacek, Puchenau, Austria, assignor to Chemie Linz Gesellschaft m.b.H., Linz, Austria

Filed Dec. 28, 1993, Ser. No. 174,373
Claims priority, application Austria, Dec. 28, 1992, 2589/92
Int. Cl.[6] C08K *5/3492, 5/55, 5/52*
U.S. Cl. 524—100 6 Claims

1. A flame retardant polyolefin, polyvinyl chloride, unsaturated polyester resin, polyurethane or polystyrene which contains 1 to 40% by weight of trihydrazinotriazine, triguanidinotriazine or the phosphoric or boric acid salts thereof or mixtures thereof as flame retardants.

5,384,348

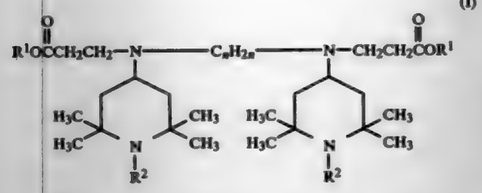
HINDERED PIPERIDINE STABILIZERS AND PRODUCTION THEREOF

Kenji Kimura, Ibaraki; Motohiko Samizo, Osaka; Shinya Tanaka, Toyonaka; Yukihiro Honda, Ibaraki; Manji Sasaki, Nishinomiya, and Shinichi Yachigo, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 5, 1993, Ser. No. 56,880
Claims priority, application Japan, May 13, 1992, 4-120430; Feb. 15, 1993, 5-025416
Int. Cl.[6] C08K *5/34*
U.S. Cl. 524—103 35 Claims

1. A stabilized organic material composition, comprising an organic material and a hindered piperidine compound represented by the formula (I),

(I)



wherein R^1 is a 2,2,6,6-tetramethyl-4-piperidyl group, a hydrogen atom, a C_1–C_{18} alkyl group, or a C_7–C_{18} arylalkyl group; R^2 is a hydrogen atom, a C_1–C_{10} alkyl group, a C_1–C_{18} alkyloxy group, or a hydroxyl group; and n is an integer of 2 to 8.

5,384,349

CONJUGATED DIENE/MONOVINYLARENE COPOLYMERS AND PREPARATION THEREOF

William J. Trepka; Nathan E. Stacy, and George A. Moczygemba, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 6, 1993, Ser. No. 163,966
Int. Cl.[6] C08K *5/15, 5/09, 5/10*; C08L *9/06*
U.S. Cl. 524—111 18 Claims

1. A composition consisting essentially of a conjugated diene/monovinylarene block copolymer and an effective amount of a thermal stabilizing agent selected from the group consisting of ascorbic acid, citric acid, and disodium citrate, and mixtures thereof:
wherein said monovinylarene contains from 8 to 18 carbon atoms and is present in an amount in the range of from about 5 weight percent to about 95 weight percent based on weight of the total copolymer; and
wherein said conjugated diene contains from 4 to 12 carbon atoms and is present in an amount in the range of from about 95 weight percent to about 5 weight percent based on the weight of the total copolymer.

5,384,350

BINDERS FOR STORAGE-STABLE COATING COMPOSITIONS

Christine Fliedner, Bonn; Friedhelm Schnippering, Siegburg-Braschoss; Karl-Martin Rödder, deceased, late of Troisdorf-Spich, all of Germany by Krista Rödder, administrator , and Reinhard Mattes, Rheinfelden, Germany, assignors to Hüls Aktiengesellschaft, Marl, Germany

Filed Aug. 6, 1993, Ser. No. 102,862
Claims priority, application Germany, Aug. 11, 1992, 4226546
Int. Cl.[6] C08K *5/24*; C08L *33/06*
U.S. Cl. 524—261 4 Claims

1. A binder composition having a flash point above 21° C. for storage-stable coating compositions, said binder composition comprising a mixture of unhydrolyzed silicic acid esters, a curing agent, an anti-settling agent, and a solvent mixture containing n-butyl acetate.

5,384,351

ISOCYANATE REACTIVE BLENDS AND INTERNAL MOULD RELEASE COMPOSITIONS

Herbert R. Gillis, Sterling Heights, Mich., assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 760,191, Sep. 16, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 117,641
Claims priority, application United Kingdom, Oct. 3, 1990, 9021524
Int. Cl.[6] C08K *5/04, 5/34*; C10M *105/08*
U.S. Cl. 524—399 6 Claims

1. An internal mould release composition comprising:
(a) a metal salt of a carboxylic acid having 8–24 carbon atoms, said metal being selected from lithium, magnesium, calcium, barium, iron, cobalt, nickel, aluminum, copper, cadmium and zinc, and
(b) a polysiloxane polymer having organic groups which are reactive with isocyanate groups in a weight ratio between about 1:9 and 9:1 polysiloxane polymer to metal salt.

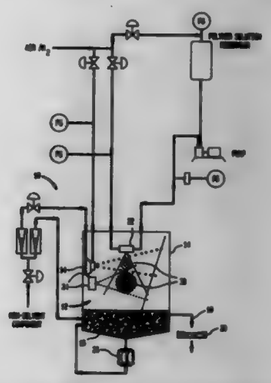
5,384,352

SELF LUBRICATING POLYBENZIMIDAZOLE SHAPED ARTICLES

Todd E. Andres; Edwardo Alvarez, both of Houston, Tex.; William M. Cooper, Clinton; O. Richard Hughes, Chatham Township, Morris County, both of N.J., and Wendell G. Whiteside, Houston, Tex., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Jul. 28, 1993, Ser. No. 98,541
Int. Cl.[6] C08K *3/04, 3/16, 3/38*
U.S. Cl. 524—404 23 Claims

1. A self lubricating, compactible polybenzimidazole composition comprising a high temperature aromatic polybenzimidazole intimately combined with solid lubricants wherein the composition comprises from about 5 to about 95 weight percent of polybenzimidazole and from about 95 to about 5 weight percent of solid lubricants selected from the group consisting of graphite, fluorographite, boron nitride, boric acid, boric oxide, molybdenum sulfide, and mixtures thereof, based on the total weight of the composition, wherein the solid



lubricants include graphite and boron nitride in a weight ratio from about 10:1 to about 1:10.

5,384,353

GLASS REINFORCED PC/ABS BLEND WITH TOUGHNESS

Linda M. Gemmell, Belpre, Ohio; Otho W. Tennant, Washington, W. Va., and Robert R. Gallucci, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed May 12, 1993, Ser. No. 60,896
Int. Cl.[6] C08K *3/40*
U.S. Cl. 524—494 20 Claims

1. A thermoplastic resin composition comprising:
a) an aromatic polycarbonate resin present at a level of from 10 to 80 percent by weight based on the total weight of the composition, and
b) a rubber modified vinyl aromatic-vinyl cyanide graft copolymer resin present at a level of from 10 to 80 percent by weight based on the total weight of the material, and
c) glass fibers present at a level of from 5 to 50 percent by weight based on the total weight of the composition, said glass fibers having been treated with a coating agent comprising a polyolefin wax.

5,384,354

POLYESTER FILM FOR LAMINATION ONTO METAL SHEET FOR PROCESSING OF SAID SHEET, AND USE THEREOF

Kinji Hasegawa, Hachioji; Takeo Asai, and Yoji Murakami, both of Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP93/00041, § 371 Date Sep. 15, 1993, § 102(e) Date Sep. 15, 1993, PCT Pub. No. WO93/14152, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 14, 1993, Ser. No. 119,100
Claims priority, application Japan, Jan. 16, 1992, 4-005753; Jan. 16, 1992, 4-005754; Feb. 12, 1992, 4-057191
Int. Cl.[6] C08L *67/02*; C08K *3/26, 3/34, 3/08*
U.S. Cl. 524—539 11 Claims

1. A polyester film for lamination onto a metal sheet formed substantially from a composition comprising a molten mixture of
component (A) 99 to 60% by weight of a copolyethylene terephthalate having an ethylene terephthalate unit as the main recurring unit and having a melting point of 210 to 245° C., and
component (B) 1 to 40% by weight of a polybutylene terephthalate or a copolybutylene terephthalate having a butylene terephthalate unit as the main recurring unit and having a melting point of 180 to 223° C., and
component C, a lubricant having an average particle diameter of 2.5 μm or less, wherein the lubricant is a sperical mono-dispersed lubricant having a long diameter ratio to short diameter ratio of 1.0 to 1.2, and
wherein the film
(i) has a plane orientation coefficient of 0.08 to 0.16,
(ii) has a heat shrinkage at 150° C. of 10% or less, and
(iii) has a density of less than 1.385 g/cm^3.

5,384,355

ENHANCED POLYMER CONCRETE COMPOSITION

William C. Allen, Pasadena, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 773,256, Oct. 9, 1991, Pat. No. 5,276,074, which is a continuation of Ser. No. 458,998, Dec. 29, 1989, Pat. No. 5,122,554. This application Dec. 17, 1993, Ser. No. 169,977
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[6] C08K *3/00*
U.S. Cl. 524—650 45 Claims

1. A composition for forming a solid material, the composition characterized as a two component mixture which comprises:
an aggregate component consisting essentially of a filler material comprising silicious particles having an average particle cross-sectional dimension less than 100 microns and a cement material substantially composed of a material which can form a solid binder material when reacted with a minimum quantity of water characterized as a hydrating water;
a liquid component comprising styrene and one or more reactive unsaturates; and
wherein the aggregate component is essentially free of acrylamide, and wherein the composition contains reacted and free water in an amount less than said hydrating water.

5,384,356

LIQUID COATING COMPOSITION FORMING A LIQUID CRYSTAL DISPLAY ELEMENT INSULATING FILM

Tatsuya Nogami, and Rie Sakai, both of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jan. 11, 1993, Ser. No. 2,908
Claims priority, application Japan, Jan. 14, 1992, 4-4961
Int. Cl.[6] C08K *5/22*
U.S. Cl. 524—726 5 Claims

1. A liquid coating composition for the formation of a liquid crystal display element insulating film, which comprises a hydrolyzed product of a tetraalkoxysilane of the general formula (1):

$$Si(OR)_4 \quad (1)$$

Wherein R represents an alkyl group of 1 to 5 carbon atoms;
a trialkoxysilane of the general formula (2):
$R^1Si(OR^2)_3$ (2)
Wherein R^1 represents an alkyl group, alkenyl group or aryl group, and R^2 represents an alkyl group of 1 to 5 carbon atoms;
an aluminum salt; and
a deposition inhibitor,
dissolved in an organic solvent.

5,384,357
INFRARED RADIATION CURABLE ORGANOPOLYSILOXANE COMPOSITIONS
Lionel M. Levinson, Schenectady; William N. Schultz, Niskayuna; Larry N. Lewis; Chris A. Sumpter, both of Scotia, and Michael A. Zambrum, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 2, 1992, Ser. No. 970,498
Int. Cl.[6] C08L 83/04
U.S. Cl. 524—770 7 Claims

1. A smooth flowable infrared radiation curable organopolysiloxane composition having a pot-life of at least two hours comprising by weight,
A) 100 parts of a poly(alkenylorganosiloxane),
B) 1 to 20 parts of a siloxane hydride,
(C) 0.001 to 10.0 parts of an infrared radiation absorbent material,
(D) an amount of a platinum group metal catalyst in combination with a platinum group metal catalyst inhibitor, or a latent platinum group metal catalyst which is sufficient to effect a hydrosilylation reaction between (A) and (B), and
(E) at least a major amount of a zeolite.

5,384,358
PROCESS FOR THE PRODUCTION OF HYDROXY-FUNCTIONAL COPOLYMERS
Christian Wamprecht, Neuss; Hans-Ulrich Meier-Westhues, Leverkusen; Jürgen Meixner, and Günter Ruf, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 18, 1993, Ser. No. 32,921
Claims priority, application Germany, Mar. 20, 1992, 4209035
Int. Cl.[6] C08G 63/48, 63/91
U.S. Cl. 525—28 9 Claims

1. A process for the production of a hydroxy-functional copolymer by radical-initiated copolymerization of monomers in the absence of a solvent comprising
a) heating to a polymerization temperature of from about 130° to about 200° C. a mixture comprising
A) from about 5 to about 30 parts by weight of at least one polyester polyol with a hydroxyl number of from about 40 to about 180 at an acid value of less than 12 and a glass transition temperature of from about −40° to about 80° C. and
B) from about 1 to about 10 parts by weight of an olefinically unsaturated maleic acid di(cyclo)alkyl ester having from 1 to 12 carbon atoms in the (cyclo)alkyl group, and
b) adding to the mixture from a)
C) from about 42 to about 93,5 parts by weight of a monomer mixture of
(1) from 0 to about 70 parts by weight of methyl methacrylate,
(2) from 0 to about 60 parts by weight of at least one (cyclo)alkyl ester of acrylic and/or methacrylic acid having 2 to 18 carbon atoms in the (cyclo)alkyl group,
(3) from about 10 to about 60 parts by weight of at least one vinyl aromatic,
(4) from about 6 to about 40 parts by weight of
(i) hydroxyalkyl esters of acrylic and/or methacrylic acid having from 2 to 6 carbon atoms in the hydroxyalkyl group and/or
(ii) a reaction product of at least one ester of (i) with ε-caprolactone having a molecular weight of no greater than 500, and
(5) from 0 to about 5 parts by weight of an olefinically unsaturated carboxylic acid,
in which the sum of the parts by weight of (1), (2), (3), (4) and (5) is 100, and
D) from about 0.5 to about 8 parts by weight of an initiator for radical polymerization at a temperature of from about 130° to about 200° C. with the sum of A), B), C) and D) being 100.

5,384,359
COMPATIBILIZED COMPOSITIONS OF POLYPHENYLENE ETHER, POLYESTER RESINS AND POLYCARBONATE-POLYESTER COPOLYMERS
Gregory R. Chambers, Delmar, N.Y.; Gary F. Smith, Evansville, Ind., and John B. Yates, III, Glenmont, N.Y., assignors to General Electric Company, Pittsfield, Mass.
Filed Nov. 8, 1989, Ser. No. 433,533
The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.
Int. Cl.[6] C08L 67/02, 69/00, 71/12
U.S. Cl. 525—64 28 Claims

1. A thermoplastic composition comprising an admixture of:
(a) polyphenylene ether resin;
(b) polyester resin; and
(c) compatibilizer for (a) and (b) consisting essentially of polycarbonate-polyester copolymer formed by copolymerizing a polycarbonate component and a polyester component in an amount sufficient to compatibilize components (a) and (b).

5,384,360
THERMALLY STABLE BLENDS OF PRE-EXTRUDED POLYPHENYLENE ETHER, DIENE BASED RUBBER AND DIALKYLAMINES
William D. Richards, Scotia, and James E. Pickett, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 850,606, Mar. 13, 1992, abandoned, which is a continuation of Ser. No. 628,811, Dec. 17, 1990, abandoned. This application Sep. 20, 1993, Ser. No. 122,954
Int. Cl.[6] C08L 25/10, 71/12
U.S. Cl. 525—68 3 Claims

1. A polyphenylene ether composition which has enhanced impact strength when initially molded and which resists loss of impact strength upon being thermally recycled at temperatures in the range of 250° C.–350° C., or thermally aged at a temperature of 50° C.–200° C., consisting essentially of by weight, from about 5 to about 400 parts of a diene based rubber, per 100 parts of a polyphenylene ether, which blend of polyphenylene ether and diene based rubber is an extrudate of a mixture selected from the class consisting of,
(b) a blend of a diene based rubber, a pre-extruded polyphenylene ether and about 1 to about 6 parts by weight of a dialkylamine having a boiling point of at least 150° C., per 100 parts of polyphenylene ether, and
(c) a blend of a diene based rubber and a preextruded mixture of polyphenylene ether and about 1 to about 6 parts by weight of a dialkylamine having a boiling point of at least 150° C., per 100 parts of polyphenylene ether.

5,384,361
CORE-SHELL ABS COPOLYMERS AND METHOD FOR THEIR PREPARATION
James J. Scobbo, Jr., Guilderland, and Gregory J. Stoddard, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 15,958, Feb. 8, 1993, abandoned. This application Nov. 8, 1993, Ser. No. 148,547
Int. Cl.[6] C08L 51/04, 55/02
U.S. Cl. 525—74 5 Claims

1. A method for preparing a core-shell copolymer in which the shell is at least partially chemically linked to the core, which comprises preparing in the melt a blend consisting essentially of (A) a composition comprising an aliphatic diene polymer with (B) a copolymer of an alkenylaromatic compound and an ethylenically unsaturated nitrile, said copolymer

B containing units derived from an ethylenically unsaturated azide.

5,384,362
VINYL-SULFONATED AND NON-SULFONATED HYDROXY FUNCTIONAL POLYURETHANE COPOLYCARBONATE COPOLYMERS PREPARED FROM MACROMONOMERS AND THEIR USE IN MAGNETIC RECORDING MEDIA
James G. Carlson, Maplewood, and Jeffrey T. Anderson, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 852,937, Mar. 13, 1992, Pat. No. 5,244,739, which is a continuation of Ser. No. 543,343, Jun. 25, 1990, abandoned. This application Sep. 10, 1993, Ser. No. 119,413
Int. Cl.[6] C08G 18/04
U.S. Cl. 525—77 13 Claims

1. A copolymer comprising:
(a) a polyurethane backbone;
(b) at least one SO_3M group pendant from the polyurethane backbone, wherein the polyurethane backbone has an SO_3M equivalent weight of from about 2,000 to about 100,000, and wherein M is selected from the group consisting of H^+, NR_4^+ wherein each R can independently be H^+ or an alkyl group, Li^+, Na^+, K^+, and mixtures thereof;
(c) at least two crosslinkable hydroxy groups pendant from the polyurethane backbone, wherein the polyurethane backbone has a hydroxy equivalent weight of from about 500 to about 50,000; and
(d) at least one vinyl polymeric segment pendant from the polyurethane backbone.

5,384,363
COMPOSITIONS OF POLYPHENYLENE ETHER, POLYESTER, LINEAR TAPERED BLOCK COPOLYMERS AND FURTHER ELASTOMERIC MATERIALS
John B. Yates, III, Gleamont, N.Y., assignor to General Electric Company, Pittsfield, Mass.
Division of Ser. No. 589,871, Sep. 28, 1990, Pat. No. 5,237,005. This application Jun. 11, 1993, Ser. No. 76,298
Int. Cl.[6] C08L 25/10, 67/03, 71/12
U.S. Cl. 525—89 34 Claims

1. A thermoplastic composition comprising:
A) polyphenylene ether capped with an epoxytriazine compound;
B) thermoplastic polyester resin;
C) a linear, tapered, block copolymer comprising blocks of A1 and B1, wherein A1 is at least one polymerized vinyl aromatic block, and B1 is a hydrogenated, partially hydrogenated, or non-hydrogenated block derived from at least one polymerized conjugated diene, said at least one polymerized vinyl aromatic block being present in the range of from about 50% to about 90% by weight, based on the weight of the tapered copolymer; and
D) an elastomeric material.

5,384,364
STABILIZED DETERSIVE-SYSTEM CONTAINING WATER SOLUBLE FILM ARTICLE
Michael E. Besse, Golden Valley; Deborah A. Ihas, St. Paul., and Keith E. Olson, Apple Valley, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.
Continuation of Ser. No. 789,615, Nov. 8, 1991, which is a continuation of Ser. No. 548,286, Jul. 3, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 11,348
Int. Cl.[6] C11D 17/00, 3/02, 7/08
U.S. Cl. 252—90 29 Claims

1. A detersive system contained within a water soluble package comprising:
(a) About 80 to 99.5 wt.-% of a water soluble film package;
(b) A detersive system comprising at least one strongly acidic film degrading component; and
(c) About 0.5 to 20 wt.-% of a water soluble barrier coating;
wherein the water soluble barrier coating is disposed about and



adheres to the film degrading component to prevent the film degrading component from promoting film degradation and the water soluble barrier coating comprises a particulate material having an average particle size of less than about 200 microns.

5,384,365
RELEASE AGENTS
Kazuyuki Hanada; Iwao Misaizu; Masashi Saito; Katsutoshi Torii, and Katsumi Kuriyama, all of Nihonbashi, Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd. and Ukima Colour & Chemicals Mfg. Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 813,020, Dec. 24, 1991, abandoned. This application Dec. 29, 1993, Ser. No. 175,181
Claims priority, application Japan, Dec. 28, 1990, 2-415405
Int. Cl.[6] C08L 83/08
U.S. Cl. 525—105 9 Claims

1. In a release agent comprising a resin selected from the group consisting of polyvinyl butyral resins, polyvinyl formal resins, acrylic resins, polyurethane resins, polyester resins, vinyl chloride/vinyl acetate/vinyl alcohol copolymer resins, alkyl resins, epoxy resins, polybutadiene resins, polyurea resins, modified cellulose resins, silicone resins, melamine resins, fluororesins, polyamide resins, phenoxy resins, and siloxane-modified polyester resins obtained by the reaction of siloxane compounds containing one or more active hydrogen groups with ε-caprolactone, wherein said resin comprises at least one siloxane moiety and at least one hydrolyzable silyl group,
wherein the improvement comprises reacting at least said one hydrolyzable silyl group with a silane coupling agent containing at least one free isocyanate group.

5,384,366
PROCESS FOR PREPARING ELASTOMERIC THERMOPLASTIC BLENDS AND BLENDS THUS OBTAINED
Guido Paganelli, Via Marocco 20, 20127 Milano, Italy
Filed Jul. 14, 1993, Ser. No. 92,262
Claims priority, application Italy, Jul. 17, 1992, MI 92A 001747
Int. Cl.[6] C08L 23/26; C08C 19/00
U.S. Cl. 525—133 24 Claims

1. A process for preparing a thermoplastic elastomeric blend comprising the steps of:
(a) masticating and subjecting to dynamic vulcanization a blend comprising a polyolefin elastomer selected from the group consisting of copolymers of two or more monoolefins and copolymers of two or more monoolefins and a diene, a first part of a vulcanizing agent, and a crystalline polyolefin thermoplastic resin in an amount not higher than 25 PHR, considered on the polyolefin elastomer without extension oil;
(b) thereafter masticating and subjecting to dynamic vulcanization a blend comprising the product obtained from step (a), a crystalline thermoplastic polyolefin resin in a amount not higher than 53 PHR and a second part of a vulcanizing agent; and
(c) proportioning said vulcanizing agent between steps (a) and (b) so that the amount of the vulcanizing agent used in

step (a) is in an amount by weight of 25% to 85% with respect to the sum of said first part of vulcanizing agent used in said step (a) plus said second part of vulcanizing agent used in said step (b).

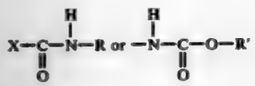
5,384,367

CARBAMATE UREA OR URETHANE-FUNCTIONAL EPOXY ACRYLIC WITH POLYACID

Shanti Swarup, Gibsonia; Brij N. Sharma, Pittsburgh, and B. Keith Johnston, Arnold, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 19, 1993, Ser. No. 47,904
Int. Cl.[6] C08L *33/14, 33/02, 67/02, 75/04*
U.S. Cl. 525—169 7 Claims

1. A curable composition comprising an epoxy group-containing acrylic copolymer having pendant groups of the structure



wherein X is



R is H or an alkyl of 1–18 carbon atoms, or R is bonded to X and forms part of a five- or six-membered ring; and R' is an alkyl of 1–18 carbon atoms, and a polyacid curing agent which is a carboxylic acid group-containing oligomer or polymer.

5,384,368

PROCESS FOR PRODUCING WATER ABSORBENT RESIN

Masashi Date, Osaka; Takashi Sumiya, and Hitoshi Takai, both of Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Japan

Filed Feb. 24, 1994, Ser. No. 201,234
Claims priority, application Japan, Mar. 31, 1993, 5-98832
Int. Cl.[6] C08F *8/30*
U.S. Cl. 525—186 9 Claims

1. A process for producing water absorbent resin comprising a step of adding 0.01–10 parts by weight of a high-molecular crosslinking agent (B) which has at least 2 azetidinium salt groups in the molecule and has a weight-average molecular weight of at least 1000 to 100 parts by weight of water absorbent resin particles (A) which have a carboxylic acid group and/or carboxylic acid salt group and a step of heat-crosslinking the vicinity of the surface of the water absorbent resin particles (A).

5,384,369

PARTIALLY CROSSLINKED COMPOSITION COMPRISING POLYMERS OF PROPYLENE AND OF ETHYLENE

Sibylle Brosius; Erhard Seiler, both of Ludwigshafen; Harald Schwager, Speyer; Gerhard Kress, Ludwigshafen, and Lothar Schlemmer, Maxdorf, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 847,121, Mar. 6, 1992, abandoned. This application May 6, 1994, Ser. No. 238,791
Claims priority, application Germany, Mar. 9, 1991, 4107665
Int. Cl.[6] C08L *23/26*
U.S. Cl. 525—193 7 Claims

1. A partially crosslinked polymer composition having a degree of crosslinking such that the melt flow index at 230° C. and a weight of 2.16 kg is from 0.01 to 10 g/min., said composition comprising

a) a polymer which is the result of a multi-step sequential polymerization reaction and comprises from 25 to 95% by weight of polypropylene and from 5 to 75% by weight of propylene copolymer with copolymerized C_2–C_{10}-alk-1-enes, the comonomer content being from 1 to 45% by weight, based on the total polymer,

b) a random ethylene copolymer containing from 5 to 20% by weight of copolymerized C_3–C_{10}-alk-1-enes and having a density at room temperature of from 0.89 to 0.925 g/cm^3, and

c) an organosilane compound of the formula I

$$A_{4-n}SiR_n \qquad (I)$$

where A are identical or different acrylates or methacrylates or vinyl groups, R are identical or different C_1–C_8-alkoxy or C_1–C_8-acetoxy groups, and n is 1, 2 or 3, and obtained by reacting a polymer mixture of the polymer a) and the random ethylene copolymer b) with the organosilane compound c) in the presence of a free-radical initiator and in the presence of a condensation catalyst at from 180° to 280° C., at from 1 to 100 bar and at a mean residence time of the reaction mixture of from 0.2 to 10 minutes.

5,384,370

RUBBERS SWELLABLE WITH WATER AND AQUEOUS SOLUTIONS AND THE METHOD FOR PRODUCING THE SAME

Petr Vondráček; Petr Lopour, and Jiří Šulc, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation of Ser. No. 931,104, Aug. 14, 1992, abandoned, which is a continuation of Ser. No. 746,048, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 527,173, May 22, 1990, abandoned. This application Jan. 31, 1994, Ser. No. 189,305
Claims priority, application Czechoslovakia, May 24, 1989, 3127-89
Int. Cl.[6] C08L *27/10*
U.S. Cl. 525—209 2 Claims

1. A rubber composition comprising a rubber matrix which comprises

a vulcanized non-silicone rubber selected from the group consisting of natural rubber, butadiene-styrene rubber, bromobutyl rubber, and ethylene-propylene rubber and

a hydrogel filler lightly crosslinked by a crosslinking agent, the amount of agent used to crosslink the hydrogel filler ranging up to 3 wt. percent based upon the total weight of the hydrogel filler and agent, the hydrogel filler being present in an amount ranging from about 20 to about 120 weight parts per 100 weight parts of the non-silicone rubber and being selected from the group consisting of polymers and copolymers of monomethacrylates of glycols, polyols, and dihydroxyesters, amides of acrylic or methacrylic acid, their N-mono and N,N-disubstituted derivatives, and the multiblock copolymer of acrylonitrile with acrylamide or acrylic acid,

the rubber matrix being vulcanizable at a temperature up to 150° C., wherein the composition is thermoformable, possesses shape memory after thermoforming, and is swellable with water and aqueous solutions.

5,384,371

CONTINUOUS PROCESS FOR PRODUCING ADDUCTED EPM OR EPDM OIL SOLUTION

Tony L. Caines, and Michael L. Junker, both of Baton Rouge, La., assignors to DSM Copolymer, Inc., Baton Rouge, La.

Continuation of Ser. No. 949,336, Sep. 22, 1992, abandoned, which is a continuation of Ser. No. 484,378, Feb. 23, 1990, abandoned. This application Apr. 5, 1993, Ser. No. 42,866
Int. Cl.[6] C08F *255/04, 255/06, 8/32;* C10M *145/16*
U.S. Cl. 525—285 37 Claims

1. A process for the production of an adducted EPM or EPDM oil solution comprising reacting (a) an antioxidant polyamine composition in the presence of (b) an aliphatic or phenolic alcohol ethoxylate with (c) a grafted polymer of (1) ethylene, (2) at least one olefinic hydrocarbon having from 3–16 carbon atoms, and (3) optionally a polyene monomer containing 5–10 carbon atoms, said polymer having been grafted with a graft monomer in the form of an unsaturated dicarboxylic acid, acid ester or anhydride dispersed in an oil solution and reacting the resulting mixture for a time and temperature sufficient to form an imide adduct.

5,384,372

SHORTSTOPPING OF FREE RADICAL POLYMERIZATIONS

Richard R. Lattime, Munroe Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 30, 1994, Ser. No. 220,328
Int. Cl.[6] C08F *2/42*
U.S. Cl. 526—83 5 Claims

1. A method for terminating a free radical initiated emulsion polymerization comprising adding to the emulsion a shortstopping agent selected from the group consisting of isopropylhydroxylamine and salts thereof.

5,384,373

MODIFIED COPOLYMERS OF ETHYLENE-ALPHA OLEFIN CARBOXYLIC ACIDS

Osborne K. McKinney, Lake Jackson; David A. Eversdyk, Angleton, and Michael E. Rowland, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 65,510, May 20, 1993, abandoned, which is a continuation of Ser. No. 952,484, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 814,239, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 591,580, Oct. 2, 1990, abandoned, which is a division of Ser. No. 316,257, Feb. 27, 1989, Pat. No. 4,988,781, which is a continuation-in-part of Ser. No. 44,865, Apr. 30, 1987, abandoned. This application May 18, 1994, Ser. No. 245,517
Int. Cl.[6] C08F *220/06, 2/38*
U.S. Cl. 526—212 24 Claims

1. A random, homogeneous, single-phase interpolymer product having a melt flow rate in the range of about 0.1 to about 300 g/10 minutes. as determined by ASTM D-1238 (190° C./2160 g), comprising about 65% to about 99% by weight of ethylene monomer, the remaining percentage comprising (a) at least one olefinically-unsaturated comonomer selected from the group consisting of unsaturated carboxylic acids, and (b) a minor amount of a telogenic modifier, said interpolymer being further characterized as having product improvements over those achievable without the presence of said telogenic modifier, which is at least one selected from the group consisting of alkanes, alkenes, alcohols, ketones, hydrogen, silanes, cyclic hydrocarbons, aromatic hydrocarbons, halogenated hydrocarbons, sulfoxides, ethers, esters, amines, amides, nitriles, anhydrides, furans, aldehydes, cyanates, or sulfides, at concentrations from about 0.0001 weight % to about 10 weight %, said product improvements being further characterized by the product having less long chain branching and either narrower molecular weight distribution or less high molecular weight polymer fractions or both narrower molecular weight distribution and less high molecular weight polymer fractions where less high molecular weight polymer fractions are indicated by lower cumulative fractional weight percent at a high molecular weight fraction, and wherein said interpolymer product has a gel rating less than 2.

5,384,374

CURING FLUOROCARBON ELASTOMERS

Miguel A. Guerra, Woodbury, and David A. Stivers, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 829,010, Jan. 10, 1992, Pat. No. 5,266,650, which is a continuation-in-part of Ser. No. 639,961, Jan. 11, 1991, abandoned. This application Jul. 27, 1993, Ser. No. 97,955
Int. Cl.[6] C08F *14/22, 214/22;* C08K *5/02*
U.S. Cl. 525—326.4 16 Claims

1. A fluorocarbon elastomer composition comprising

(A) fluorocarbon elastomer gum, and

(B) monohydroxy terminated fluorinated mono- or polyether of linear and regular structure, and

wherein said hydroxy is reactive with said gum.

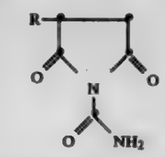
5,384,375

UREA DERIVATIVES OF MALEATED POLYOLEFINS

Thomas D. Roberts, Longview, Tex., assignor to Eastman Kodak Company, Kingsport, Tenn.

Filed Feb. 28, 1994, Ser. No. 203,138
Int. Cl.[6] C08F *8/30*
U.S. Cl. 525—327.6 5 Claims

1. A composition comprising the urea derivative of succinylated polyolefins of the formula;



wherein R is a polyolefin attached at any point along the hydrocarbon chain.

5,384,376

ORGANIC/INORGANIC HYBRID MATERIALS

Scott E. Tunney, Ontario; Gary A. Rakes, Rochester, and Bradley K. Coltrain, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,387
Int. Cl.[6] C08L *77/00*
U.S. Cl. 525—431 16 Claims

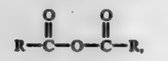
1. A composition comprising:

(a) a functionalized silsesquioxane, said silsesquioxane is represented by structure I:

$$(R^1SiO_{1.5})_x(R^2SiO_{1.5})_y \qquad I$$

wherein R^1, R^2 and R^3 each independently represent substituted or unsubstituted, branched or straight chain C_1–C_{20} alkyl, alkenyl, alkynyl groups; C_6–C_{18} substituted or unsubstituted aromatic groups;

wherein said substituents may be selected from —CO_2R, —NRH, —CO_2H,



—NH_2, halide, or —OH groups (wherein R is a branched or straight, C_1–C_{20} alkyl, alkenyl, alkynyl, or C_6–C_{18} aromatic group), and

x is an integer from 0.02 to 0.50,

y is an integer from 0.98 to 0.02, and

z is an integer from 0 to 0.50, with the proviso that R^1 is functionalized with one or more of the listed substituents, and

(b) an organic component having endgroups reactive with the functionalized substituents of the silsesquioxane, wherein the organic backbone of the organic component is selected from polyimides, polyquinoxolines, poly ether ketones, poly ether sulfones, or polyesters and the reactive endgroups of the organic component are independently selected from $—CO_2R$, —NRH, $—CO_2H$,



$—NH_2$, halide, or —OH groups (wherein R is a branched or straight, C_1–C_{20} alkyl, alkenyl, alkynyl, or C_6–C_{18} aromatic group).

5,384,377

TONERS FOR POLYESTERS

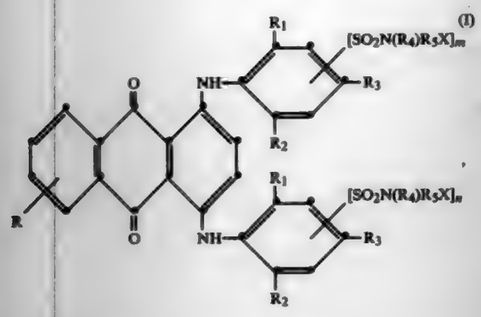
Max A. Weaver; Wayne P. Pruett, both of Kingsport; Gerry Rhodes, Piney Flats; Samuel D. Hilbert, Jonesborough, and William W. Parham, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 116,419, Sep. 3, 1993. This application Feb. 16, 1994, Ser. No. 197,527

Int. Cl.[6] C08F *20/38*; C08G *63/685*

U.S. Cl. 525—437 **14 Claims**

1. A method for imparting whiteness to a polyester normally appearing yellow, which comprises copolymerizing or admixing in said polyester in an amount sufficient to improve the apparent whiteness of said polyester, at least one blue 1,4-bis(2,6-dialkylanilino) anthraquinone compound of formula (I),



(I)

wherein:

R is selected from the group consisting of hydrogen, C_{1-6} halogen, carboxy, and C_1–C_6



R_1 and R_2 are independently C_1–C_6-alkyl;

R_3 is selected from the group consisting of hydrogen, halogen, C_1–C_6-alkyl, substituted C_1–C_6-alkyl, hydroxy, C_1–C_6-alkoxy, substituted C_1–C_6-alkoxy, cyano, thiocyano, C_1–C_6-alkylthio, substituted C_1–C_6-alkylthio, C_1–C_6-alkylsulfonyl, substituted C_1–C_6-alkylsulfonyl, C_1–C_6-alkoxycarbonyl, carboxy, aryloxy, arylthio, arylsulfonyl, and $SO_2(R_4)R_5X$ when m and/or n are zero;

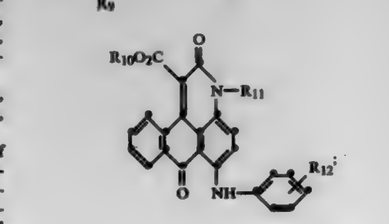
R_4 is selected from the group consisting of hydrogen, C_1–C_6-alkyl, substituted C_1–C_6-alkyl, C_3–C_8-alkenyl, C_3–C_8-alkynyl, C_3–C_7-cycloalkyl and aryl;

R_5 is a linking group selected from the group consisting of C_1–C_8-alkylene, C_1–C_6-alkylene-Z-C_1–C_6-alkylene, arylene-C_1–C_6-alkylene, arylene-Z-C_1–C_6-alkylene, C_3–C_7-cycloalkylene, C_1–C_6-alkylene-cycloalkylene-C_1–C_6-alkylene, C_1–C_6-alkylene-arylene-C_1–C_6-alkylene, and C_1–C_6-alkylene-Z-arylene-Z-C_1–C_6-alkylene, wherein Z is selected from —O—, —S— or SO_2;

X is hydrogen or a polyester reactive group; and

m and n are independently 0 or 1; with the proviso that at least one polyester reactive group is present;

along with at least one red anthraquinone or anthrapyridone compound of formulae (II)–(X),



II



III

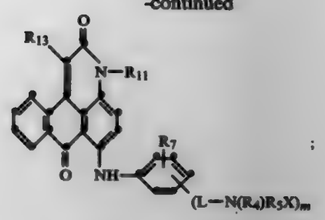
IV

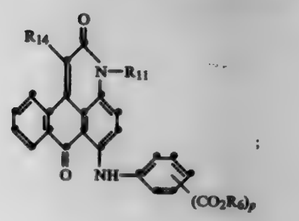
V

VI

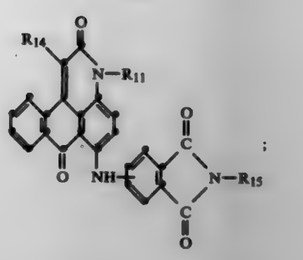
VII

-continued





and



wherein:

R_6 is selected from the group consisting of hydrogen, C_1–C_6-alkyl, substituted C_1–C_6-alkyl, C_3–C_7-cycloalkyl and aryl;

R_7 is hydrogen or one to three groups selected from C_1–C_6-alkyl, C_1–C_6-substituted alkyl, C_1–C_6-alkanoylamino, halogen, C_1–C_6-alkyl C_1–C_6-alkoxy, and C_1–C_6-alkylthio;

R_8 and R_9 are the same or different and are selected from the group consisting of C_1–C_6-alkyl, substituted C_1–C_6-alkyl, C_3–C_7-cycloalkyl and aryl;

R_{10} is selected from the group consisting of C_1–C_6-alkyl, C_3–C_7-cycloalkyl and aryl;

R_{11} is selected from the group consisting of hydrogen, C_1–C_{12}-alkyl, substituted C_1–C_{12}-alkyl, C_3–C_7-cycloalkyl and aryl;

R_{12} is hydrogen or one to three groups selected from the group consisting of C_1–C_6-alkyl, substituted C_1–C_6-alkyl, C_1–C_6-alkoxy, substituted C_1–C_6-alkoxy, C_1–C_6-alkylthio, substituted C_1–C_6-alkylthio, halogen, C_1–C_6-alkanoylamino, aroylamino, C_1–C_6-alkylsulfonylamino and arylsulfonylamino;

R_{13} and R_{14} are selected from hydrogen, cyano and CO_2R_{10};

R_{15} is R_4 or R_5X as previously defined;

L is —CO— or $—SO_2—$; X is as previously defined; m is 0 or 1; and p is 1 or 2; with the provisos that R_{13} is hydrogen when m is 0 and when the compound of formulae (II) to (X) is copolymerized, at least one polyster reactive group is present.

5,384,378

COPOLYMERS WITH NON-LINEAR OPTICAL PROPERTIES AND THE USE THEREOF

Karl-Heinz Etzbach, Frankenthal; Stefan Beckmann, Mannheim; Oskar Nuyken, Munich; Peter Strohriegl, Hassmeltal, and Harry Mueller, Muenchberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

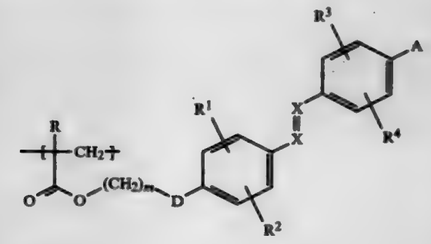
Filed Sep. 21, 1993, Ser. No. 124,050

Claims priority, application Germany, Sep. 26, 1992, 4232394

Int. Cl.[6] C08F *270/02*

U.S. Cl. 526—256 **8 Claims**

1. A copolymer with non-linear optical properties, comprising repeating units of the formula (I)



(I)

where

D is an electron donor,

A is an electron acceptor,

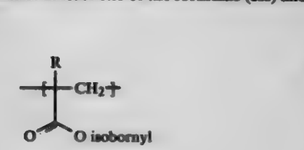
R^1, R^2, R^3 and R^4 can be the same as or different from one another, and are each H, alkyl of 1–6 carbons, cycloalkyl of 5 or 6 carbons, or R^3 and R^4 are each CN, NO_2, SO_3CH_3 or CHO, or R^1 forms with R^2, or R^3forms with R^4, a fused-on ring,

X is CH and/or N,

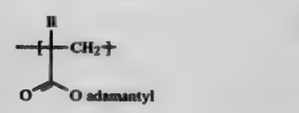
m is an integer from 2 to 11, and

R is hydrogen or methyl,

and repeating units of at least one of the formulae (III) and (IV)



(III)



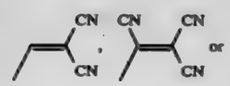
(IV)

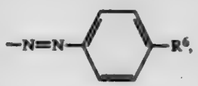
2. A copolymer as claimed in claim 1, wherein in formula (I)

D is NR^5 or O

$—X=X—$ is $—N=N—$, $—N=CH—$, $—CH=N—$ or $—CH=CH—$

A is H, NO_2, CN, CHO, SO_3CH_3,





R^5 is C_1–C_6-alkyl, C_5–C_7-cycloalkyl, phenyl, benzyl, tolyl or a crosslinkable group and R^6 is H, NO_2, CN, SO_3CH_3 or CHO.

3. A copolymer as claimed in claim 2, wherein the crosslinkable group R^5 is vinyl, allyl, methallyl, methacryl, acryl, $-(CH_2)_n-O-CO-CH=CH_2$, $-(CH_2)_n-O-CO-C(CH_3)=CH_2$ with n−1 to 8, oxiranyl or thiiranyl.

5,384,375

SULFUR-CONTAINING POLY(METHDACRYLATE

Martina Bader, Griesheim; Patrik Hartmann, Buettelborn, and Gerhard Schwian, Dieburg, all of Germany, assignors to Roehm GmbH Chemische Fabrik Patentabteilung, Darmstadt, Germany

Filed Oct. 12, 1993, Ser. No. 134,737

Claims priority, application Germany, Oct. 10, 1992, 4234251

Int. Cl.[6] C08F *12/30*

U.S. Cl. 526—286 **3 Claims**

1. A sulfur-containing poly(meth)acrylate comprising the radical polymerization product of

i) monomers of formula I:



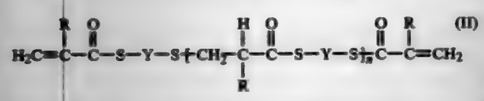
(I)

where

Y represents a $C_{2\text{-}12}$ alkyl group, a $C_{2\text{-}12}$ branched alkyl group, a $C_{3\text{-}12}$ cyclic alkyl group, a $C_{6\text{-}14}$ aryl group, or a $C_{7\text{-}26}$ alkaryl group, wherein the carbon chains of Y may be interrupted by one or more ether or thioether groups; and

R represents hydrogen or methyl; and

ii) units of at least one monomer of formula II:



(II)

where R and Y have the same meanings as above; and

n is an integer in the range 1 to 6.

5,384,380

POLYMERIZABLE COMPOSITIONS AND HIGH REFRACTIVE PLASTIC LENS OBTAINED THEREFROM

Hiroyuki Kaneoaki; Kouji Uegami, both of Amagasaki, and Keishiro Nagao, Ikoma, all of Japan, assignors to Daiso Co., Ltd., Osaka, Japan

Filed Jan. 13, 1994, Ser. No. 181,124

Claims priority, application Japan, Jan. 14, 1993, 5-004795

Int. Cl.[6] C08G *18/04*

U.S. Cl. 526—292.9 **15 Claims**

1. A polymerizable composition constituted by adding isocyanate by 0.1 to 2 equivalent to the alcoholic hydroxyl group in a mixture dissolving component A prescribed below by 20 to 60 parts by weight to a total of 80 to 40 parts by weight of component B and component C in the ratio specified below:

[Component A]

A multifunctional (meth)acrylate possesing at least one alcoholic hydroxyl group, and also possessing at least one aromatic ring replaced by at least one halogen atom other than fluorine or phenyl group, and two or more (meth)acryloyl groups in a molecule;

[Component B]

A multifunctional (meth)acrylate possessing at least one aromatic ring having neither halogen atom nor phenyl group as substituent, and posessing two or more (meth)acryloyl groups in a molecule, or a mixture of radically polymerizable multifunctional unsaturated monomer including the compound; 5 to 80 wt. %:

[Component C]

A mixed solution of a styrene type compound, or a radically polymerizable monofunctional unsaturated monomer including the compound; 95 to 20 wt. %.

5,384,381

GRAFT COPOLYMERS HAVING IMPROVED PHASE BINDING BETWEEN THE GRAFT BASE AND THE GRAFTED-ON POLYMER PHASE

Klaus Kohlhammer, Marktl; Hermann Petersen, Burghausen, and Walter Dobler, Taun, all of Germany, assignors to Wacker Chemie GmbH, Munich, Germany

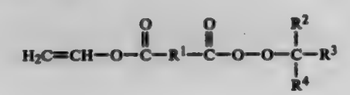
Division of Ser. No. 967,662, Oct. 28, 1992, Pat. No. 5,304,609. This application Nov. 15, 1993, Ser. No. 152,740

Claims priority, application Germany, Oct. 31, 1991, 4135984

Int. Cl.[6] C08F *218/04, 4/34*

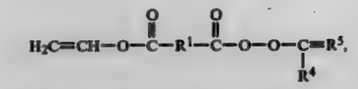
U.S. Cl. 526—330 **3 Claims**

1. Peroxy group-containing copolymers containing from 0.01 to 20% by weight of peroxy monovinyl esters of the formula I or II



(I)

or



(II)

wherein R^1 is a chemical bond or a linear or branched alkyl chain having 1 to 10 carbon atoms or a cycloalkyl group having 3 to 10 carbon atoms, R^2 and R^3 are an alkyl group having 1 to 4 carbon atoms, R^4 is an alkyl group or an alkyl-substituted phenyl group having 1 to 12 carbon atoms or a cycloalkyl group having 3 to 12 carbon atoms, and R^5 is a cycloalkyl group having 3 to 12 carbon atoms and from 80 to 99% by weight of at least one comonomer selected from the group consisting of the (meth)acrylates of alcohols having 1 to 10 carbon atoms, vinyl esters of saturated aliphatic carboxylic acids having 2 to 10 carbon atoms, olefins, vinylaromatic compounds, vinyl halides and vinyl ethers.

5,384,382

CROSSLINKABLE POLYSILANE COMPOSITIONS AND CURED PRODUCTS THEREOF

Shigeru Mori; Eiichi Tabei, and Hisashi Umehara, all of Kawasaki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1993, Ser. No. 96,273

Claims priority, application Japan, Jul. 31, 1992, 4-225166; Jul. 31, 1992, 4-225167; Jul. 31, 1992, 4-225168; Jul. 31, 1992, 4-225169

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **24 Claims**

1. A crosslinkable polysilane composition comprising

(A) an alkenylsiloxy-terminated polysilane,

(B) an organohydrogensiloxane or organohydrogensilane having at least three hydrosilyl groups in a molecule, and

(C) a hydrosilylation catalyst.

5,384,383

PRISTINE PHENYLPROPYLALKYLSILOXANES

Gary E. Legrow, Midland, and Jean E. Sudbery-Holtschlag, Saginaw, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

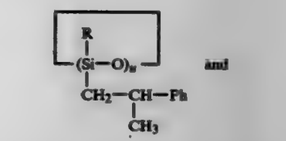
Filed Jan. 31, 1994, Ser. No. 189,531

Int. Cl.[6] C08G *77/06*

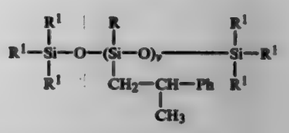
U.S. Cl. 528—23 **15 Claims**

1. Pristine phenylpropylalkylsiloxanes selected from the group consisting of:

(I) a mixture consisting essentially of

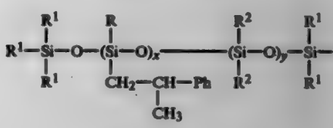


and

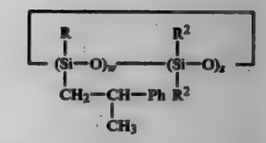


and

(II) a mixture consisting essentially of



and



wherein Ph represents a phenyl group, each R is independently an alkyl group having 1 to 4 carbon atoms; each R^1 is independently an alkyl radical having 1 to 6 carbon atoms; each R^2 is independently selected from the group consisting of monovalent hydrocarbon groups having from 1 to 14 carbon atoms and monovalent substituted hydrocarbon groups having from 1 to 10 carbon atoms; u has a value of 3 to 6; v has a value of 1 to 50; x has a value of 1 to 50, y has a value of 1 to 99, with the proviso that x+y=2 to 100; w has a value of 1 to 5, and z has a value of 1 to 5, with the further proviso that w+z=3 to 6;

wherein the pristine phenylpropylalkylsiloxanes detectable silicon hydride (—SiH), free organics (—C=—), and free inorganics, and is odorless and colorless.

5,384,384

SELF-ADHESIVE SILICONE COMPOSITIONS

Yoshifumi Inoue, and Masatoshi Arai, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 85,390

Claims priority, application Japan, Jul. 3, 1992, 4-200515

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—24 **11 Claims**

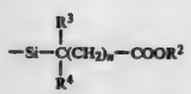
1. A self-adhesive silicone composition which comprises:

(A) an organopolysiloxane expressed by the following average unit equation (1):

$$(R^1)_x—SiO_{(4-x)/2} \quad (1)$$

wherein R^1 is either a substituted or an unsubstituted monovalent hydrocarbon group and Z is a number in the range from 1.98 to 2.01, and having a viscosity at 25° C. of at least 300 cSt,

(B) an organic silicon compound which possesses at least one group expressed by the following equation (2) within the molecule:



(2)

wherein R^2 is a substituted or an unsubstituted monovalent hydrocarbon group, R^3 and R^4 are independently either a hydrogen atom, methyl group, or ethyl group, and n is an integer 0, 1, or 2, and

(C) an organic peroxide.

5,384,385

TWO-COMPONENT POLYURETHANE REACTIVE COMPOSITIONS

Rainer Trinks, Dormagen; Otto Ganster, Odenthal, and Heinrich Königshofen, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 13, 1992, Ser. No. 976,078

Claims priority, application Germany, Nov. 21, 1991, 4138246

Int. Cl.[6] C08G *18/08*

U.S. Cl. 528—52 **5 Claims**

1. A two-component polyurethane reactive composition containing an isocyanate component a.), a component b.) containing:

b1.) 100 parts by weight of a hydroxyl group-containing compound having a molecular weight of at least 400 and a funtionality of at least 2,

b2.) from 5–35 parts by weight of a hydroxyl group containing chain low molecular weight chain lengthening agent having a molecular weight of from 62–400 and a functionality of at least 2,

b3.) from 0.5–10 parts by weight of at least one compound which stabilizes against separation selected from the group consisting of dicyandiamide, guanidine, derivatives of guanidine containing at least one N—H bond, and compounds having a N—H group or NH_2 group and a C—N multiple bond or N—N multiple bond in which the nitrogen atom of the C—N group or a nitrogen atom of the N—N group is directly attached to the nitrogen atom of the N—H or NH_2 group,

b4.) from 0–20 parts by weight of at least one aliphatic, aromatic, or cycloaliphatic diamine or triamine having a molecular weight of at least 60,

b5.) optionally a catalyst for the reaction of a) with b), and

b6.) optionally auxiliary agents and additives.

5,384,386

SYNTHETIC RESINS

Klaus Hazuka, Friedelsheim, and Gerhard Hoffmann, Otterstadt, both of Germany, assignors to BASF Lacke & Farben AG, Muenster, Germany

Continuation of Ser. No. 976,311, Nov. 13, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 207,263

Claims priority, application Germany, Nov. 15, 1991, 4137639

Int. Cl.[6] C08G *65/26*

U.S. Cl. 528—107 **8 Claims**

1. A synthetic resin comprising products which are obtained by first reacting

A) epoxy-carrying resins obtained by mixing or reacting

a1) a polyhydric phenol which is a phenolic epoxy carrying building block with an epoxide equivalent weight of from 150 to 500 with

a2) at least one compound selected from the group consisting of
- α_{21}) polyoxyalkylenepolyols
- α_{22}) polyoxyalkylenepolyepoxides
- α_{23}) polyoxyalkylenepolyamines and
- α_{24}) polyhydric aliphatic alcohols

and optionally reacting these mixtures or reaction products with

α_3) phenolic compounds which react monofunctionally towards epoxides

with

B) monocarboxylic acids of 5 to 30 carbon atoms

and

C) amines which contain at least one primary and one tertiary amino group

and thereafter reacting the reaction product of A), B) and C) with

D) formaldehyde-donating compounds.

5,384,387

AMINE-FUNCTIONALIZED POLYESTER

John A. Tyrell, Williamsville, N.Y., and Gary F. Smith, Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed May 4, 1993, Ser. No. 57,237
Int. Cl.[6] C08G 69/08, 69/44
U.S. Cl. 528—292 17 Claims

1. An aromatic amine-functionalized polyester resin comprising units derived from:

(a) a diol selected from the group consisting of tetramethylene glycol, ethylene glycol, trimethylene glycol, 2-methyl-1,3 propane glycol, decamethylene glycol, cyclohexane dimethanol, neopentylene glycol, 1,3-propylene glycol and 1,6-hexanediol;

(b) a dicarboxylic acid or ester forming reactive derivatives thereof; and

(c) an aromatic amino acid, ester or alcohol, wherein said diol is present in an amount ranging from 25 to 60 percent by weight, said component (b) being present in an amount ranging from 35 percent by weight to 75 percent by weight, and said component (c) being present in an amount ranging from 0.5 to 15 percent by weight based on the total weight of components (a), (b) and (c).

5,384,388

METHOD OF PRODUCING COPOLYMERIZED POLYCARBONATES

Takeshi Sakashita; Tomoshi Shimoda, both of Iwakuni, and Takashi Nagai, Otake, all of Japan, assignors to GE Plastics Japan, Tokyo, Japan

Continuation of Ser. No. 863,922, Apr. 6, 1992, abandoned. This application Sep. 3, 1993, Ser. No. 116,304
Claims priority, application Japan, Apr. 9, 1991, 3-076478; Feb. 21, 1992, 4-033306
Int. Cl.[6] C08G 64/00
U.S. Cl. 528—204 3 Claims

1. An improved copolymerized polycarbonate prepared by melt polycondensing two or more aromatic dihydroxy compounds with a carbonate diester in the presence of a catalyst selected from the group consisting of alkali metal compounds and alkaline-earth metal compounds wherein the improvement comprises melt-polycondensing aromatic dihydroxy compounds wherein

resorcin, substituted resorcins or mixtures thereof are 2–90 mole % of the aromatic dihydroxy compounds

whereby the copolymerized polycarbonate has a glass transition temperature in the range of from 100° C. to 150° C., a thermal decomposition temperature in the range of from 350° C. to 380° C. and a melt flow rate at a temperature of 280° C. and under a load of 1.2 kg of from 5 to 30 g/10 min.

5,384,389

PROCESS FOR THE PRODUCTION OF POLYCARBONATES

Wolfgang Alewelt; Hermann Kauth, and Steffen Kühling, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 19, 1993, Ser. No. 155,393
Claims priority, application Germany, Dec. 3, 1992, 4240588
Int. Cl.[6] C08G 79/02
U.S. Cl. 528—168 6 Claims

1. In the process for producing an aromatic polycarbonate resin by polycondensing oligocarbonate melt the improvement comprising passing said oligocarbonate melt through a heated tube dwell time under 20 minutes and simultaneously introducing into said tube a quantity of inert gas, said polycondensing being carried out at temperatures of 200° C. to 400° C., said oligocarbonates having a weight average molecular weight a of 2000 to 20000, said quantity being at least 1 m^3 of said gas per kg of oligocarbonate melt, said heated tube having a length-/diameter ratio of 10/1 to 200/1, said process being further characterized in that the ratio of polycarbonate throughput (in kg/h) to tube volume (in liters) is about 20/1 to 2/1.

5,384,390

FLAME-RETARDANT, HIGH TEMPERATURE RESISTANT POLYIMIDE FIBERS AND PROCESS FOR PRODUCING THE SAME

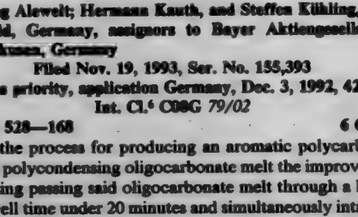
Claus Schobesberger; Klaus Weinrotter; Herbert Griesser, all of Vöcklabruck, and Sigrid Seidl, Seewalchen, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Sep. 23, 1991, Ser. No. 763,807
Claims priority, application Austria, Oct. 15, 1990, 2077/90
Int. Cl.[6] C08G 73/10; D01F 6/00
U.S. Cl. 528—353 6 Claims

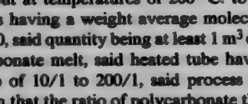
1. The product of the process for producing flame-retardant, high temperature resistant polyimide fibers of the general formula



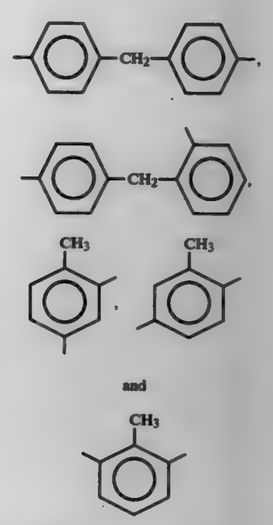
wherein n is an integer larger than 1, A is a tetravalent aromatic group selected from



or



wherein X represents CO, CH_2, O, S, CF_2 and R is at least one of the following divalent aromatic groups selected from the group consisting of



and

which process comprises

preparing a solution of an appropriate polyimide in an aprotic organic solvent,

spinning said solution so as to obtain crude fibers,

washing said crude fibers with water to remove solvent and obtain washed crude fibers,

drying said washed crude fibers to a moisture content of less than 5% by mass so as to obtain dried crude fibers,

subjecting said dried crude fibers to a heat-treatment at a temperature ranging between 315° C. and 450° C. so as to obtain heat-treated crude fibers, and

cooling said heat-treated crude fibers, the improvement wherein subjecting of said dried crude fibers to a heat-treatment and cooling of said heat-treated crude fibers are effected in the unstretched state of said crude fibers.

5,384,391

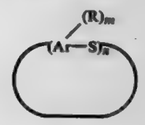
POLYARYLENE SULFIDE AND PREPARATION THEREOF

Hiroshi Miyata; Hiroshi Inoue, both of Mie, and Akira Akimoto, Kanagawa, all of Japan, assignors to Tosoh Corporation, Tokyo, Japan

Continuation of Ser. No. 924,930, Aug. 5, 1992, abandoned. This application Dec. 27, 1993, Ser. No. 173,871
Claims priority, application Japan, Aug. 6, 1991, 3-219325; Oct. 15, 1991, 3-293850
Int. Cl.[6] C08G 65/40; C08L 71/10
U.S. Cl. 528—377 14 Claims

1. A process for producing polyarylene sulfides which comprises:

providing at least one cyclic arylene sulfide oligomer of the formula



I

wherein S represents a sulfur atom, groups Ar, which may be the same or different, each represent an arylene radical having 6–24 carbon atoms, groups R, which may be the same or different, represent a electron donor group selected from the group consisting of a C_1-C_{12} alkyl radical, or a C_1-C_{12} alkoxy radical, and a primary, secondary or tertiary amino group, n is an integer of from 2 to 50, and m is an integer of from 0 to 15, and

heating said cyclic oligomer I in the presence of a ring opening polymerization catalyst so as to form polyarylene sulfide, wherein the ring opening polymerization catalyst comprises an ionic compound of formula II

$$(R')_p-B-(D^-M^+)_q \qquad II$$

where R' represents a member selected from the group consisting of a hydrogen atom, an alkyl group containing 1–12 carbon atoms, an alkoxy group containing 1–12 carbon atoms, an arylene group containing 6–24 carbon atoms, a primary, secondary or tertiary amino group, a carboxyl group or an ester thereof, a cyano group, a sulfonic acid group, and a halogen atom,

B represents an organic group containing 1–24 carbon atoms,

D^- represents an anionic species of sulfur,

M^+ represents a member selected from the group consisting of a monovalent metallic ion, an ion of a monohalide of a divalent metal, an ammonium ion and a phosphonium ion,

p is an integer in the range of from 0 to 15, and

g is an integer in the range of from 1 to 15.

5,384,392

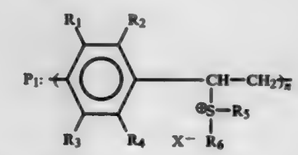
PROCESS TO PRODUCE POLYPARAPHENYLENE VINYLENE OR POLYPARATHIENYLENE VINYLENE POLYMERS

Olivier Sagnes, Corbreuse; Jean-Claude DuBois, St. Remy Les Chevreuses; Valérie Massardier; Tran van Hoang, both of Villeurbanne, and Alain Guyot, Lyon, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Jun. 17, 1992, Ser. No. 899,903
Claims priority, application France, Jun. 18, 1991, 91 07421
Int. Cl.[6] C08F 6/00
U.S. Cl. 528—380 7 Claims

1. A process to produce polyparaphenylene vinylene polymers, which comprises:

contacting a polyelectrolyte precursor P_1 containing sulfonium groups, where P_1 is



and where n is the degree of polymerization,

R_1, R_2, R_3 and R_4 are hydrogen, alkyl, alkoxy, sulfonic or alkylsulfonic groups,

R_5 and R_6 are alkyl groups, and

X is a halogen ion,

with a sufficient amount of a concentrated strong acid to remove the sulfonium groups, said process being carried out without a pyrolysis step.

5,384,393

COPOLYMER OF CARBON MONOXIDE AND PROPYLENE AND PROCESS FOR ITS FORMATION

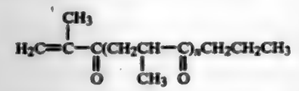
Paul K. Hanna, East Windsor, N.J.; Andrzej M. Plotowski, Peekskill, N.Y., and David L. Kershner, Tenafly, N.J., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 96,576, Jul. 23, 1993, abandoned, which is a continuation of Ser. No. 911,822, Jul. 10, 1992, abandoned, which is a division of Ser. No. 595,069, Oct. 10, 1990, abandoned. This application Apr. 29, 1994, Ser. No. 235,207

Int. Cl.[6] C08G 67/02

U.S. Cl. 528—392 4 Claims

1. A linear alternating copolymer of carbon monoxide and propylene which is substantially free of ester and ether linkages and which consists essentially of the formula



where n ranges from about 10 to about 300.

5,384,394

TUMOR CELL GROWTH INHIBITOR

Toshi Komatsuzaki, Kumagaya; Hitoshi Toyoda, Agso; Daisuke Uchida, Tokyo, and Kazunori Hanada, Ageo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

Continuation of Ser. No. 707,012, May 29, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 193,778

Claims priority, application Japan, Jun. 6, 1990, 2-146143; Feb. 1, 1991, 3-011950

Int. Cl.[6] C07K 7/10

U.S. Cl. 530—324 4 Claims

1. A tumor cell growth inhibitor which is a peptide obtainable from the culture supernatant of 3T3 cell-derived cell line and which has the following properties:

(a) molecular weight

3,700±370 daltons when measured by SDS polyacrylamide gel electrophoresis under reducing and non-reducing conditions;

(b) column property

substantially no amount of the inhibitor is adsorbed onto an anionic exchange resin column at pH of about 7.4 but is adsorbed onto a cationic exchange resin column at pH of about 5.0;

(c) physiological activity

the inhibitor has an inhibitory activity on human promyelogenic leukemia cells and human uterocervical tumor-derived cells, and

said peptide having the following amino acid sequence:

Sequence ID No. 1:

1 2 3 4 5 6 7 8 9 10
Val—Gln—Ile—Thr—Lys—Cys—Ser—Ser—Asp—Met—

11 12 13 14 15 16 17 18 19 20
Asp—Gly—Tyr—Cys—Leu—His—Gly—Gln—Cys—Ile—

21 22 23 24 25 26 27 28 29 30
Tyr—Leu—Val—Asp—Met—Arg—Glu—Lys—Phe—Cys—

31 32 33 34 35 36 37 38 39 40
Arg—Cys—Glu—Val—Gly—Tyr—Thr—Gly—Leu—Arg—

41 42 43 44 45 46
Cys—Glu—His—Phe—Phe—Leu

or

Sequence ID No. 2:

1 2 3 4 5 6 7 8 9 10
Val—Gln—Ile—Thr—Lys—Cys—Ser—Ser—Asp—Met—

-continued

11 12 13 14 15 16 17 18 19 20
Asp—Gly—Tyr—Cys—Leu—His—Gly—Gln—Cys—Ile—

21 22 23 24 25 26 27 28 29 30
Tyr—Leu—Val—Asp—Met—Arg—Glu—Lys—Phe—Cys—

31 32 33 34 35 36 37 38 39 40
Arg—Cys—Glu—Val—Gly—Tyr—Thr—Gly—Leu—Arg—

41 42 43 44
Cys—Glu—His—Phe.

5,384,395

METHOD FOR THE ISOLATION OF PRIMARY-TOXIC COMPOUNDS OR ALLERGENS FROM PLANT MATERIAL

Lubertus Berrens, Utrecht, Netherlands, assignor to Laboratorios Leti S.A., Barcelona, Spain

Division of Ser. No. 597,009, Oct. 16, 1990, abandoned. This application Oct. 22, 1991, Ser. No. 780,328

Int. Cl.[6] A61K 35/78

U.S. Cl. 530—379 2 Claims

1. A method for the separation from plant material of allergenic IgE-binding compounds for the production of IgE-binding allergens from said compounds, said compounds having a molecular weight less than 12,000 Da selected from the group consisting of terpenoids having at least one reactive carbonyl or epoxy or vinyl group and benzoquinones, comprising forming an aqueous extract of plant material containing glycosides, removing from said aqueous extract components having a molecular weight over 12,000 Da, subjecting the remaining aqueous extract containing said glycosides to hydrolysis in order to obtain a hydrolyzed material containing aglycones, isolating aglycones from said hydrolyzed material, and chemically conjugating the isolated aglycones to a carrier protein which is non-allergenic and has a molecular weight of at least 20,000 Da and which contains at least two cysteine amino acid residues to produce IgE-binding allergens.

5,384,396

PROCESS FOR THE DEOXYGENATION OF NUCLEOSIDES

Chung K. Chu, Athens, Ga., and Yaoquan Chen, Shanghai, China, assignors to The University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation-in-part of Ser. No. 318,694, Mar. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 159,246, Feb. 23, 1988, abandoned. This application Mar. 7, 1991, Ser. No. 665,751

Int. Cl.[6] C07H 19/00

U.S. Cl. 536—27.14 18 Claims

1. A process for the deoxygenation of one or both of the 2'- or 3'-hydroxyl groups of a nucleoside without N-alkylation of the heterocyclic base of said nucleoside comprising:

protecting hydroxyl groups on the nucleoside that are not to be deoxygenated;

reacting the unprotected hydroxyl groups in base with carbon disulfide and a 3-haloproprionontrile of the formula XCH_2CH_2CN or a 2-nitroethylhalide of the formula $XCH_2CH_2NO_2$, wherein X is chloro, bromo, or iodo, to form a 2' or 3'-O-(cyanoethylthio or nitroethylthio)thiocarbonyl; and then

reductively eliminating the (cyanoethylthio or nitroethylthio)thiocarbonyl to a 2' or 3'-hydrogen moiety.

5,384,397

TETRAPHENYLPORPHYRIN COMPOUNDS AND METHOD

Xunu Zhang, Mountain View, Calif.; Erich Uffelman, Lexington, Va., and James P. Collman, Palo Alto, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 973,030, Nov. 9, 1992, Pat. No. 5,274,090. This application Nov. 9, 1993, Ser. No. 149,207

Int. Cl.[6] C01B 13/00, 13/18; C07B 47/00

U.S. Cl. 540—143 14 Claims

1. A method of forming a water-soluble oxygen carrier comprising:

reacting meso-α,α,α,α-tetrakis(o-aminophenyl)porphyrin with acryloyl chloride or acryloyl bromide to produce a tetraacrylamide porphyrin;

reacting said tetraacrylamide porphyrin with an amine to produce a meso-α,α,α,α-tetrakis(o-(3-aminopropanoylamino)phenyl)porphyrin;

inserting into the porphyrin, a metal selected from the group consisting of iron and cobalt.

5. A water-soluble oxygen carrier comprising:

a meso-α,α,α,α-tetrakis(o-propanoylamino)phenylporphyrin in which the 3-carbons of the propanoyl groups are each covalently bound to an amine nitrogen; and

iron or cobalt is bound to the pyrrole nitrogens of the porphyrin.

5,384,398

HIGH MOLECULAR MASS N,O-SULPHATED HEPAROSANS, PROCESS FOR THEIR PREPARATION AND THE PHARMACEUTICAL COMPOSITIONS WHICH CONTAIN THEM

Jean-Claude Lormeau, Kremlin Bicetre; Bruno Chevallier, Villejuif, and Marc L. V. Salome, Castanet-Tolosan, all of France, assignors to Elf Sanofi, Paris, France

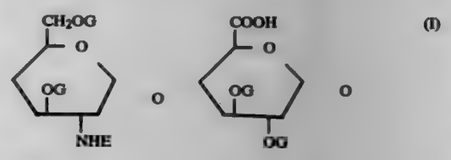
Division of Ser. No. 983,371, Nov. 30, 1992, Pat. No. 5,314,876. This application Feb. 3, 1994, Ser. No. 191,450

Claims priority, application France, Nov. 28, 1991, 91 14725

Int. Cl.[6] C12P 19/04; C12N 1/20

U.S. Cl. 536—21 20 Claims

1. A method of using N,O-sulphated heparosans of chains or a mixture of chains of molecular mass between 1.5×10^4 and 4.0×10^6 Da, the molecular mass being determined by exclusion HPLC, which comprise repeated disaccharide units of formula I:



(I)

in which:

E represents an acetyl group in 0 to 80% of the disaccharide units, and a sulfate group or a hydrogen atom in the remaining disaccharide units, and

G represents a hydrogen atom or a sulfate group comprising depolymerizing the N,O-sulphated heparosans to obtain N,O-sulphated heparosans having a molecular mass less than 1.5×10^4 Da, as determined by exclusion HPLC.

5,384,399

OXAZINONE COMPOUNDS FOR THE PREPARATION OF TAXOL

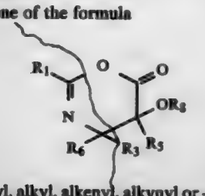
Robert A. Holton, Tallahassee, Fla., assignor to Florida State University, Tallahassee, Fla.

Division of Ser. No. 603,041, Oct. 30, 1990, Pat. No. 5,136,060, which is a continuation-in-part of Ser. No. 436,235, Nov. 14, 1989, Pat. No. 5,015,744. This application Jun. 15, 1992, Ser. No. 898,438

Int. Cl.[6] C07D 305/00, 413/12

U.S. Cl. 544—97 26 Claims

1. An oxazinone of the formula



wherein R_1 is aryl, alkyl, alkenyl, alkynyl or —OR_7, R_3, R_5 and R_6 are independently selected from hydrogen alkyl, alkenyl, alkynyl, and aryl, R_7 is alkyl, alkenyl, alkynyl, or aryl, and R_8 is a hydroxyl protecting group.

5,384,400

ESTERS OF PECTIC AND PECTINIC ACID

Vittorio Crescenzi, Rome, and Lanfranco Callegaro, Padova, both of Italy, assignors to M.U.R.S.T. (Italian Ministry for Universities and Scientific and Technological Research), Rome, Italy

Filed Jan. 13, 1993, Ser. No. 3,732

Claims priority, application Italy, Jan. 13, 1992, PD92A000004

Int. Cl.[6] C08B 37/06; C13F 3/00; A61K 6/00

U.S. Cl. 536—2 20 Claims

1. Pectic and pectinic acids totally or at least 5% and at the most 95% esterified in which the esterifying component is derived from

aliphatic alcohols with a maximum of 34 carbon atoms which are substituted in the aliphatic chain with one or two substituents selected from the group consisting of amino, C_{1-4}-hydrocarbylamino, di-(C_{1-4} hydrocarbyl-)amino, mercapto, aldehydo, keto, carboxyl, C_{1-4}-alkoxy and C_{1-4}-alkoxycarbonyl,

phenyl-C_{1-4}-alkyl alcohols, in which the phenyl ring may be substituted by 1–3 substituents selected from the group consisting of methyl, hydroxy and halogen, and wherein the alkyl chain may be substituted by one or two units selected from the group consisting of free amino groups, mono- or diethylated amino groups, pyrrolidine and piperidine groups,

aliphatic-cycloaliphatic, cycloaliphatic and heterocyclic alcohols with a maximum of 34 carbon atoms,

and salts of such partially esterified pectic and pectinic acids with inorganic or organic bases.

5,384,401

CHEMICAL PRODUCT USABLE AS A NON-RADIOACTIVE CARRIER

Keietsu Takahashi, Itami; Nobuo Ueda, Kawanishi, and Masaaki Hazue, Amagasaki, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 771,218, Oct. 4, 1991, abandoned, which is a division of Ser. No. 947,093, Dec. 29, 1986, Pat. No. 5,077,389, which is a division of Ser. No. 558,333, Dec. 5, 1983, Pat. No. 4,666,697. This application Mar. 22, 1994, Ser. No. 215,671

Claims priority, application Japan, Dec. 8, 1982, 57-215857; Dec. 8, 1982, 57-215858; Dec. 8, 1982, 57-215859; Dec. 8, 1982, 57-215860

Int. Cl.[6] C08B *31/00, 37/02;* **C08F** *16/34;* **C07C** *317/02, 233/00*

U.S. Cl. 536—18.7 **13 Claims**

1. A non-radioactive carrier which comprises (1) a unit of non-physiologically active polyformyl compound having 3 to 4,000 formyl groups per molecule, and (2) at least two units of an amino group-containing chelating compound bonded to the polyformyl compound with intervention of a methyleneamine linkage (—CH=N—) or a methyleneamine linkage (—CH_2NH—) formed by a condensation between a formyl group in the polyformyl compound and an amino group in the chelating compound.

5,384,402

BICHROMOPHORIC CYANO-CONTAINING METHINE DYES AND TRANSFER THEREOF

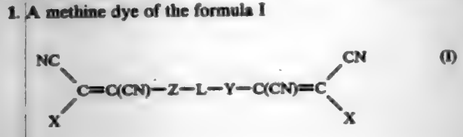
Volker Bach, Neustadt; Karl-Heinz Etzbach, Frankenthal, and Ruediger Sens, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 199,355, Feb. 18, 1994, which is a continuation of Ser. No. 851,779, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 650,220, Feb. 4, 1991, abandoned. This application Jun. 7, 1994, Ser. No. 255,936

Int. Cl.[6] C09B *23/14, 23/00;* **B41M** *5/38*

U.S. Cl. 544—105 **3 Claims**

1. A methine dye of the formula I



(I)

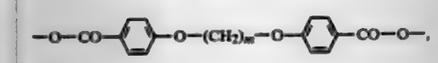
where

L is a bridge member which does not permit any conjugation of π-electrons between Z and Y of the formula

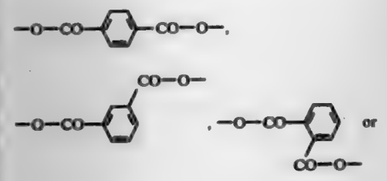
—E'—D—E^2—

wherein

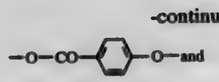
D is a chemical bond, oxygen, —SO_2— —O—CO—O—, 1,4-cyclohexylene, phenylene, —O—CO—(CH_2)$_p$—CO—O, —O—(CH_2)$_m$—O—,



where p is from 1 to 10 and m is from 2 to 10,



-continued

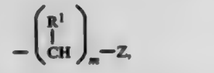


and

E^1 and E^2 are identical or different and each is independently of the other a chemical bond or C_1–C_{15}-alkylene,

X is identical or different in its two appearances, denoting in each case cyano, C_1–C_6-alkoxycarbonyl or C_1C_6-monoalkylcarbamoyl, wherein alkyl may in each case be interrupted by 1 or 2 oxygen atoms, or C_5–C_7-cycloalkoxycarbonyl, C_5–C_7-monocycloalkylcarbamoyl, phenoxycarbonyl or monophenylcarbamoyl, and

Z and Y are identical or different and, together with the bridge member L, are each independently of the other a radical of the formula



where

R^2 and R^3 are identical or different and each is independently of the other hydrogen, C_1–C_8-alkyl, C_1–C_6 alkoxy, $C_{1\text{-}6}$ alkanoylamino or C_1–C_6-alkylsulfonylamino.

5,384,403

PROCESS FOR THE PREPARATION OF AMINOTRIAZINE DERIVATIVES

Thomas Rapold, Kaisten, and Marcel Senn, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 40,691, Mar. 31, 1993, abandoned. This application Feb. 9, 1994, Ser. No. 194,185

Int. Cl.[6] C07D *253/08, 253/06*

U.S. Cl. 544—182 **4 Claims**

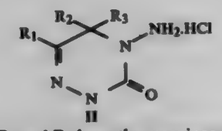
1. A process for the preparation of a compound of formula III



(III)

wherein R_1 is hydrogen, C_1–C_{12}alkyl, C_3–C_6cycloalkyl, C_1–C_4alkoxy-C_1–C_6alkyl, C_1–C_2haloalkyl, phenyl, benzyl, phenethyl, phenpropyl, phenbutyl or phenpentyl, or a phenyl, benzyl, phenethyl, phenpropyl, phenbutyl or phenpentyl radical that is mono- or di-substituted by halogen, C_1–C_5alkyl, C_1–C_2-haloalkyl, methoxy and/or ethoxy; R_2 is hydrogen, C_1–C_6alkyl or C_3–C_6cycloalkyl, or is phenyl that is unsubstituted or substituted by C_1–C_{12}alkyl, halogen or by C_1–C_{12}haloalkyl; or R_1 and R_2 together form a saturated or unsaturated 3- to 7-membered carbocycle; R_3 is hydrogen or C_1–C_6alkyl and Z is —N=CH— or —NH—CH_2—,

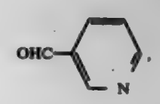
which process comprises reacting an aminotriazinone of formula I



(I)

II

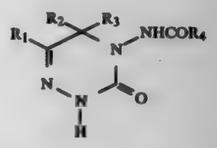
wherein R_1, R_2 and R_3 have the meanings above with an aldehyde of formula IV



(IV)

and, if desired, convening the resulting pyridyl-methyleneamino-triazinone by selective reduction into pyridyl-methylamino-triazinone,

wherein the aminotriazinone of the formula I is prepared by the solvolysis of a compound of formula II



(II)

wherein R_1 is hydrogen, C_1–C_{12}alkyl, C_3–C_6cycloalkyl, C_1–C_4alkoxy-C_1–C_6alkyl, C_1–C_2haloalkyl, phenyl, benzyl, phenethyl, phenpropyl, phenbutyl or phenpentyl, or a phenyl, benzyl, phenethyl, phenpropyl, phenbutyl or phenpentyl radical that is mono- or di-substituted by halogen, C_1–C_5alkyl, C_1–C_2-haloalkyl, methoxy and/or ethoxy; R_2 is hydrogen, C_1–C_6alkyl or C_3–C_6cycloalkyl, or is phenyl that is unsubstituted or substituted by C_1–C_{12}alkyl, halogen or by C_1–C_{12}haloalkyl; or R_1 and R_2 together form a saturated or unsaturated 3- to 7-membered carbocycle; R_3 is hydrogen or C_1–C_6alkyl; and R_4 is H, C_1–C_4-alkyl, C_3–C_6-cycloalkyl, C_1–C_4-alkyl substituted by 1 to 9 chlorine atoms, C_1–C_3-alkoxy, C_1–C_3-alkylthio, phenyl, pyridyl, or phenyl or pyridyl which is substituted with 1 to 3 substituents selected from the group of halogen, methyl, ethyl, methoxy, methylthio or nitro, in the presence of gaseous hydrogen chloride in an alcoholic medium.

5,384,404

PROCESS FOR MANUFACTURING MELAMINE FROM UREA

Jing M. Lee, 11602 Blair Meadow, Stafford, Tex. 77477

Filed Nov. 5, 1993, Ser. No. 147,848

Int. Cl.[6] C07D *251/60*

U.S. Cl. 544—201 **11 Claims**

1. A process for manufacturing melamine from urea, comprising the steps of:

(a) supplying urea and a fluidizing amount of ammonia to a reactor at a pressure from about 1.4 MPa to about 2.0 MPa and a temperature effective to substantially convert the urea in the presence of a catalyst to melamine and form an effluent stream comprising melamine, ammonia and carbon dioxide;

(b) quenching the effluent stream to form a vapor-liquid mixture essentially free of solids;

(c) separating the vapor-liquid mixture into a concentrated aqueous melamine product stream essentially free of solids, ammonia and carbon dioxide, and a high pressure vapor stream essentially free of urea and melamine;

(d) contacting the high pressure vapor stream with an aqueous ammonia stream in an absorption zone refluxed with liquid ammonia to form a concentrated aqueous ammonium carbamate stream and an overhead ammonia vapor stream essentially free of carbon dioxide;

(e) condensing ammonia from the overhead vapor stream to form a liquid ammonia stream;

(f) vaporizing a portion of the liquid ammonia stream to form the fluidizing ammonia for supply to the reactor.

5,384,405

PROCESS FOR MAKING N-HYDROXYL-2-THIO-QUINAZOLIN-4-ONES

Rahim Hani, Cheshire; Phillip T. Berkowitz, Woodbridge, and John L. Peterson, Milford, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 770,834, Oct. 4, 1991, Pat. No. 5,298,249. This application Jan. 10, 1994, Ser. No. 179,274

Int. Cl.[6] C07D *239/95*

U.S. Cl. 544—285 **5 Claims**

1. A process for producing 2-N-hydroxythiourea benzoate which comprises:

(a) reacting 2-nitrobenzoate with a zinc reducing agent in the presence of ammonium chloride in a solvent consisting essentially of water plus tetrahydrofuran at a reaction temperature of between about —10° C. and about 20° C. in order to reduce the 2-nitrobenzoate to an aromatic hydroxylamine derivative thereof, and

(b) reacting said aromatic hydroxylamine derivative with isothiocyanate to produce 2-N-hydroxythiourea benzoate.

3. A process for producing an N-hydroxy-quinazolinone compound which comprises the steps of:

(a) reacting a 2-nitrobenzoate with a zinc reducing agent in the presence of ammonium chloride in a solvent consisting essentially of water plus tetrahydrofuran at a reaction temperature of between about —10° C. and about 20° C. in order to reduce the 2-nitrobenzoate to an aromatic hydroxylamine derivative thereof, and

(b) reacting said aromatic hydroxylamine derivative with isothiocyanate to produce a 2-N-hydroxythiourea benzoate compound, and

(c) reacting said 2-N-hydroxythiourea benzoate compound with a base in a cyclization reaction to produce the N-hydroxyquinazolinone compound, with the proviso that said N-hydroxyquinazolinone compound be selected from the group consisting of 1-hydroxy-3-methyl-2-thio-1,2-dihydroquinazoline-4(3H)-one and sodium salts and zinc salts thereof, 1-methyloxy-3-methyl-2-thioxo-1,2-dihydroquinazo-line-4(3H)-one, 1-acetoyloxy-3-methyl-2-thioxo-1,2-dihydroquinazoline-4(3H)-one, 1-carbonic acid-3-methyl-2-thioxo-1,2-dihydroquinazoline-4(3H)-one, and 1-N-methylcarbamate-3-methyl-2-thio-1,2-dihydroquinazoline-4(3H)-one.

5,384,406

WATER-SOLUBLE BIOLOGICALLY ACTIVE AMMONIUM SALTS

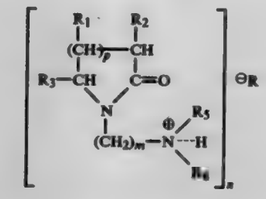
Kolazi S. Narayanan, Palisades Park; Ratan K. Chaudhuri, Butler, and Robert B. Login, Oakland, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Continuation of Ser. No. 705,200, May 24, 1991, Pat. No. 5,221,791. This application May 6, 1993, Ser. No. 58,567

Int. Cl.[6] C07D *211/40*

U.S. Cl. 546—243 **21 Claims**

1. A biologically active compound having the formula



wherein m has a value of from 1 to 3; n has a value of from to 4 and is equal to the free valences in anion R; p has a value of from 1 to 3; R_1, R_2 and R_3 are each independently selected from the group of hydrogen, and C_1 to C_2 alkyl; R_5 and R_6 are each independently selected from the group of hydrogen,

hydroxyalkyl and alkoxyalkyl radicals having from 1 to 10 carbon atoms and R is the anion of a biologically active, water-insoluble organic compound having at least 1 deprotonized hydrogen and derived from a biologically active organic, acidic compound having from 2 to 24 carbon atoms which is selected from the group of a carboxylic, thiocarbonic, sulfonic, sulfinic, thiosulfonic, thioacid, arsanilic and phosphorous containing acids, each of which has a pKa value less than 5.

5,384,407

7-SUBSTITUTED QUINOLONES AND NAPHTHYRIDONES AS ANTIBACTERIAL AGENTS

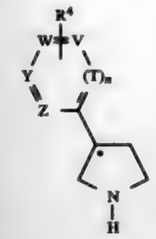
Edgardo Laborde, Canton, and Mel Schroeder, Dexter, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 14,286, Feb. 5, 1993, Pat. No. 5,342,844, which is a division of Ser. No. 832,188, Feb. 6, 1992, Pat. No. 5,221,676. This application Mar. 30, 1994, Ser. No. 221,145

Int. Cl.[6] C07D *239/24, 207/04*

U.S. Cl. 544—298 **2 Claims**

1. A compound of the formula



wherein * denotes an asymmetric carbon atom; T, V, W, Y, Z, and n are taken together to form a heteroaromatic ring selected from the group consisting of 2- and 3-pyrrolyl, 2- and 3-furanyl, 2- and 3-thiophenyl, 2-, 4-, and 5-imidazolyl, 2-, 4-, and 5-thiazolyl, 1,3,4-triazol-2-yl, 1,3,4-oxadiazol-2-yl, 5-tetrazolyl, 3-and 4-pyridazinyl, 2-, 4-, and 5-pyrimidinyl, 2-pyrazinyl, 2-, 3-, and 4-pyridinyl, and R^4 is hydrogen or one, two or three substituents independently selected from C_1–C_4-alkyl, halo-substituted C_1–C_4-alkyl, hydroxy-substituted C_1–C_4-alkyl, halogen, hydroxy, C_1–C_4-alkoxy, mercapto, amino, mono-(C_1–C_4-alkyl) amino, di-(C_1–C_4-alkyl) amino, formamido, mono-(C_1–C_4-alkyl) amido, di-(C_1–C_4-alkyl) amido, cyano, nitro, C_1–C_4-alkoxycarbonyl, carboxyl, aminomethyl, mono-(C_1–C_4-alkyl) aminomethyl, di-(C_1–C_4-alkyl)aminomethyl, wherein free hydroxy and amino groups may be protected.

5,384,408

SUBSTITUTED PYRAZINE AND ITS SALTS, COMPOSITIONS CONTAINING THEM AND THEIR USE IN MEDICINE

Raymond Baker, Much Hadham, England; Victor J. Lotti, Harleysville, Pa., and Graham A. Showell, Welwyn Garden City, England, assignors to Merck Sharpe & Dohme Ltd., Hoddesdon, United Kingdom

Continuation-in-part of Ser. No. 748,612, Aug. 22, 1991, abandoned. This application Mar. 10, 1993, Ser. No. 28,853

Int. Cl.[6] C07D *453/02*; A61K *31/495*

U.S. Cl. 544—336 **2 Claims**

1. A compound selected from 3(R)-[2-(6-trifluoromethyl-pyrazin)yl]-1-azabicyclo[2.2.2]octane or pharmaceutically acceptable salts thereof.

5,384,409

PROCESS FOR PRODUCING 5-AMINO-3-METHYLPYRAZOLE

Kenji Saito, Hirakata; Masahito Sekiguchi, Ibaraki; Shinzaburo Masaki, Toyonaka; Hiroshi Yoshihara, Oita; Kazuhiko Takahashi, Ibaraki; Kazuya Minamisaka, Takatsi, and Takashi Kawai, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP92/01233, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO93/06088, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 28, 1992, Ser. No. 66,033

Claims priority, application Japan, Sep. 27, 1991, 3-249040; Sep. 27, 1991, 3-249051; Jul. 29, 1992, 4-202338

Int. Cl.[6] C07D *231/38*

U.S. Cl. 548—371.4 **8 Claims**

1. A process for producing 5-amino-3-methylpyrazole which comprises the steps of:

(a) reacting 2,3-dichloropropene with hydrocyanic acid in the presence of water and a cuprous salt at a pH of from 3 to 8 to obtain a reaction intermediate comprising at least one compound selected from the group consisting of 3-chloro-3-butenonitrile and 2,3-butadienenitrile, and

(b) reacting the reaction intermediate with hydrazine.

5,384,410

REMOVAL OF BORONIC ACID PROTECTING GROUPS BY TRANSESTERIFICATION

Charles A. Kettner, Wilmington, Del., assignor to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Mar. 24, 1993, Ser. No. 36,378

Int. Cl.[6] C07D *207/14*; C07F *5/02, 5/04*

U.S. Cl. 548—405 **8 Claims**

1. A method for the preparation of a compound of formula (II)

$$R^1\text{-}X_n\text{-}NHCH(R^2)\text{-}B(OH)_2 \quad \text{(II)}$$

wherein

R^1 is

a) hydrogen,

b) an N-terminal protecting group,

c) $—SO_2(CH_2)_m$-aryl, wherein aryl is phenyl, napthyl or biphenyl substituted with one, two or three substituents selected from the group consisting of halo (F, Cl, Br, I,), —CN, C1-C10-alkyl, C3-C8-cycloalkyl, C2-C10-alkenyl, C2-C10-alkynyl, $—OR^7$, $—NO_2$, $—CF_3$, $—S(O)_rR^8$, $—NR^6R^7$, $—COR^7$, $—CO_2R^7$, $—CONR^6R^7$;

X is a peptide of 1–20 amino acids;

R^2 is

a) C1-C10-alkyl,

b) C2-C10-alkyl-Y,

c) $—(CH_2)_m$-aryl, wherein aryl is as defined above;

Y is

a) $—NHC(NH)NH_2$,

b) $—NH_2$,

c) $—SC(NH)NH_2$,

d) $—OR^9$,

e) $—SR^9$;

R^5 and R^6 are independently

a) H,

b) C1-C8-alkyl,

c) C1-C8-alkoxy,

d) C3-C8-cycloalkyl,

e) $—CO_2R^7$,

f) $—(CH_2)_m$-phenyl;

R^7 is

a) H,

b) phenyl,

c) benzyl,

d) C1-C8-alkyl;

R^8 is

a) phenyl,

b) C1-C4-alkyl,

c) C1-C4-alkoxy,

d) $—CF_3$;

R^9 is

a) H,

b) C1-C2-alkyl,

c) phenyl or phenyl optionally substituted with a substituent selected from the group consisting of halo (F, Cl, Br, I), —CN, C1-C10-alkyl, C3-C8-cycloalkyl, C2-C10-alkenyl, C2-C10-alkynyl, $—OR^7$, $—NO_2$, $—CF_3$, $—S(O)_rR^8$, $—NR^6R^7$, $—COR^7$, $—CO_2R^7$, $—CONR^6R^7$;

n is 0 or 1;

m is 0 to 2;

r is 0 to 2;

comprising suspending a compound of the formula

$$R^1\text{-}X_n\text{-}NHCH(R^2)\text{-}BR^3R^4 \quad \text{(I)}$$

wherein R^1, R^2, X, Y, R^5, R^6, R^7, R^8, R^9, n, m and r are as defined above; and

R^3 and R^4 are

a) C1-C8-alkoxy, or

b) when taken together R^3 and R^4 form a cyclic boronic ester where said chain or ring contains from 2 to 20 carbon atoms and, optionally, a heteroatom selected from the group consisting of N, S, or O,

in a mixture of water and a water-immiscible organic solvent in which said compound of formula (II) is less soluble than in water, said mixture containing an organic boronic acid acceptor which is more soluble in the water-immiscible organic solvent than in water and is selected from the group consisting of phenyl boronic acid, butyl boronic acid, pentyl boronic acid, hexyl boronic acid or cyclohexyl boronic acid, said organic boronic acid acceptor being present in a amount equal to at least 1 equivalent of said compound of formula (I), wherein the amount of water present in said mixture is sufficient to completely dissolve the compound of formula (H) formed and the amount of water-immiscible organic solvent present in said mixture is sufficient to completely dissolve said organic boronic acid acceptor and the boronic ester reaction product formed; stirring the resulting reaction mixture for approximately one hour before allowing the reaction mixture to separate into two distinct phases; separating the phases; and recovering the compound of formula (II) from the separated aqueous phase.

5,384,411

IMMOBILIZATION OF PH-SENSITIVE DYES TO SOLID SUPPORTS

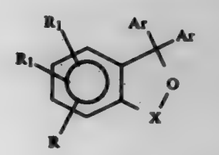
Karin M. Robotti, Foster City, and Carl A. Myerholtz, Cupertino, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 20, 1991, Ser. No. 718,062

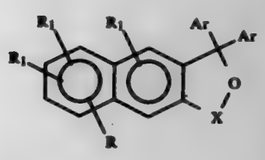
Int. Cl.[6] C07D *327/04, 307/78, 307/92*

U.S. Cl. 549—31 **12 Claims**

1. A compound represented by either formula I, II or III:



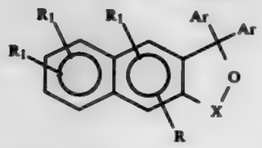
I;



II;

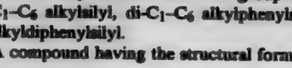
and

-continued



III;

wherein R is



wherein p is an integer equal to zero or one; q is an integer equal to zero or one; R_6 is hydrogen or an alkyl group of from 1 to about 6 carbon atoms; R_7 is an alkylene group of from 1 to about 6 carbon atoms; Z is a reactive functionality selected from the group consisting of carboxylic acid groups, amine groups, hydroxyl groups, unsaturated aliphatic groups of 2 carbon atoms, and epoxides; and t is an integer equal to at least 1; each R_1 is hydrogen; each Ar is independently a 4-hydroxyphenyl or 4-hydroxynapthyl group having from 0 to 3 compatible substituents selected from the group consisting of alkyl of from 1 to 6 carbon atoms, halo and nitro; and X is >C═O or $>SO_2$.

5,384,412

SACCHARIDE INTERMEDIATES IN THE FORMATION OF THE CALICHEAMICIN AND ESPERAMICIN OLIGOSACCHARIDES

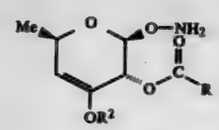
Kyriacos C. Nicolaou, La Jolla, Calif.; Robert D. Groneberg, Oaks, Pa.; Erwin P. Schreiner, Vienna, Austria, and Wilhelm Stahl, Frankfurt am Main, Germany, assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 695,251, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 520,245, May 7, 1990, abandoned. This application Nov. 5, 1992, Ser. No. 972,246

Int. Cl.[6] C07D *233/00, 315/00*

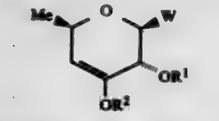
U.S. Cl. 549—214 **16 Claims**

1. A compound having the structural formula



wherein R is a moiety selected from the group consisting of hydrogen, C_1–C_5 alkyl, pheayl and m-chlorophenyl; and R^2 is a moiety selected from the group consisting of tri-C_1–C_6 alkylsilyl, di-C_1–C_6 alkylphenylsilyl, and C_1–C_6 alkyldiphenylsilyl.

5. A compound having the structural formula



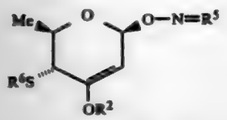
where R^1 is hydrogen or COR, and R is a moiety selected from the group consisting of hydrogen, C_1–C_6 alkyl, pheayl and m- chlorophenyl;

R^2 is a moiety selected from the group consisting of tri-

C_1–C_6 alkylsilyl, di-C_1–C_6 alkylphenylsilyl, and C_1–C_6 alkyldiphenylsilyl; and

—W is (i) an N-hydroxy cyclic imido group, —ON=R^4, in which R^4 has 4 to about 8 carbon atoms or (ii) an O,N-disubstituted oxime group, —ON=R^5, that is a reaction product of a hydroxylamine and a compound that is selected from the group consisting of a C_1–C_6 alkyl ketone or aldehyde and a tetrahydropyranone, with the proviso that R^1 is COR when —W is —ON=R^4.

12. A compound having the structural formula



wherein R^2 is a moiety selected from the group consisting of tri-C_1–C_6 alkylsilyl, di-C_1–C_6 alkylphenylsilyl, and C_1–C_6 alkyldiphenylsilyl;

—ON=R^5 is an O,N-disubstituted oxime group that is a reaction product of a hydroxylamine and a compound that is selected from the group consisting of a C_1–C_6 alkyl ketone or aldehyde and a tetrahydropyranone; and

R^6 is selected from the group consisting of hydrogen, C_1–C_6 alkyl, benzoyl, m-chlorobenzoyl, C_1–C_6 alkyl oxycarbonyl and N-carbonyl imidazyl.

5,384,413

PROCESS FOR THE PREPARATION OF TETRAFLUOROPHTHALIC ACID AND/OR TETRAFLUOROPHTHALIC ANHYDRIDE

Ralf Pfirmann, Griesheim, and Theodor Papenfuhs, Frankfurt, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

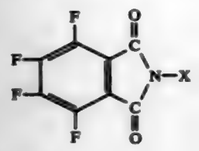
Filed Jul. 12, 1993, Ser. No. 90,794

Claims priority, application Germany, Jul. 10, 1992, 4222719

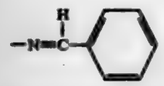
Int. Cl.[6] C07D 307/83

U.S. Cl. 549—246 **25 Claims**

1. A process for the preparation of tetrafluorophthalic acid and/or tetrafluorophthalic anhydride, which comprises reacting a compound of the formula



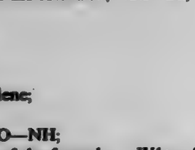
in which X is a radical



which is optionally mono- or polysubstituted on the aromatic nucleus by fluorine and/or chlorine and/or alkyl groups having 1 to 4 carbon atoms, or is a radical



in which R_1 and R_2 are identical or different and are a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an alkyl—CO— group having 1 to 6 carbon atoms in the alkyl radical or an aryl group or aryl—CO— group which is optionally mono- or polysubstituted on the aromatic nucleus by fluorine and/or chlorine and/or alkyl groups having 1 to 4 carbon atoms, or R_1 and R_2 together form a radical of the formula



in which R_3 is a hydrogen atom, a chlorine atom or a fluorine atom, with water, and subsequently removing the water still present by azeotropic distillation or extracting the tetrafluorophthalic acid and/or its anhydride with a water-insoluble solvent or solvent mixture.

5,384,414

BENZOPYRAN DERIVATIVES

Shuichi Ohuchida; Masaki Toda, and Tsumoru Miyamoto, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 936,285, Aug. 28, 1992, Pat. No. 5,266,709, which is a division of Ser. No. 736,321, Jul. 26, 1991, Pat. No. 5,169,957, which is a division of Ser. No. 491,876, Mar. 12, 1990, Pat. No. 5,055,598. This application Aug. 18, 1993, Ser. No. 107,576

Claims priority, application Japan, Mar. 13, 1989, 1-60317; Oct. 30, 1989, 1-282805

Int. Cl.[6] C07D 311/92, 311/04

U.S. Cl. 549—389 **4 Claims**

1. A benzopyran derivative of the formula:

(IA)

wherein R^{1a} is hydrogen, C1–4 alkyl or C1–4 alkoxy; or two R^{1a} taken together with 7th- and 8th-carbon to which they are attached form C6 carbocyclic ring;

R^{2a} is hydrogen or C1–4 alkyl;

R^{3a} is hydrogen, C2–4 acyl or benzoyl;

na is 1–3;

Ya is C1–7 alkylene, C2–7 alkenylene or C2–7 alkynylene;

Ma is

i) bond or

ii) a group of the formula: —Da—Ba;

Da is

i) —O— or

ii) —S—;

Ba is

i) C1–4 alkylene;

Za is

i) —NH—CO—NH;

Wa is a group of the formula: —W1a—Aa—W2a;

Aa is

i) a group of the formula: —Ea—(Ga)—;

Ea is

i) bond,

ii) —O— or

iii) —S—;

(Ga) is C4–10 carbocyclic or C4–10 carbocyclic ring substituted by one to three C1–4 alkyl, C1–4 alkoxy, halogen, a group of the formula: —$COOR^{7a}$, trihalomethyl or acetamido; W1a and W2a each, independently, is

i) bond

ii) C1–4 alkylene,

iii) C2–4 alkenylene or

iv) C2–4 alkynylene

R^{4a} is hydrogen or C1–4 alkyl;

R^{5a} is hydrogen, C1–4 alkyl or amino

R^{7a} is hydrogen or C1–4 alkyl; with the proviso that:

i) Da is bonded to Ya and Ba is bonded to Za;

ii) Ea is bonded to W1a and (Ga) is bonded to W2a;

iii) a double or triple bond in alkenylene or alkynylene is not directly bonded to oxygen; and

iv) when Aa represents —O—(Ga)— or —S—(Ga)—, W1a does not represent a bond; or

a pharmaceutically acceptable acid addition salt thereof.

5,384,415

PROCESS FOR THE PREPARATION OF BROMINATED COMPOUNDS, ESPECIALLY FROM ALCOHOLS

Jean-Manuel Mas, Villeurbanne, and Pascal Metivier, Lyon, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 985,756, Dec. 4, 1992, Pat. No. 5,241,086, which is a continuation of Ser. No. 849,837, Mar. 12, 1992, abandoned, which is a continuation of Ser. No. 632,666, Dec. 27, 1990, abandoned, which is a continuation of Ser. No. 365,977, Jun. 13, 1989, abandoned. This application May 28, 1993, Ser. No. 68,071

Claims priority, application France, May 2, 1989, 89 05811

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[6] C07D 309/02; C07C 69/63

U.S. Cl. 549—428 **14 Claims**

1. A process for the preparation of a brominated compound, of formula R_1R_2CH—Br, which comprises the steps of reacting at a temperature of 0° C. to 60° C. at least one compound selected from the group consisting of a chloroformate having the formula (3), a chlorosulfite having the formula (4) and a chlorophosphite having the formula (5) or (6):

(3)

(4)

(5)

(6)

wherein R_1 and R_2 may be identical or different and are selected from the group consisting of a heterocyclic ring containing at least one heteroatom selected from oxygen, sulfur and nitrogen, a hydrogen atom, an alkyl, alkenyl or alkynyl radical, said alkyl, alkenyl or alkynyl radical being linear or branched, a cycloalkyl, alkylcycloalkyl, terpene, $—CO_2R_3$, $—(CH_2)_n—CO_2R_3$, $—COR_3$, $—SOR_3$ or SO_2R_3 radical, n being an integer, and R_3 being selected from the group consisting of a hydrogen atom, an alkyl, alkenyl or alkynyl radical, said alkyl, alkenyl or alkynyl radical being linear or branched, and an aryl radical, said aryl radical being unsubstituted or substituted, with the proviso that R_3 is not a hydrogen atom in the $—SOR_3$ or $—SO_2R_3$ moiety, with a brominating agent for a time sufficient to obtain at least one brominated compound and subsequently heating the brominated compound.

5,384,416

METHYLDIOXOLAN

Friedrich Karrer, Zofingen; Hans-Peter Buser; Gerardo Ramos, both of Arlesheim; Alfred Rindlisbacher, Muttenz; Luigi M. Venanzi, Zurich, all of Switzerland, and Thomas R. Ward, Ithaca, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 839,453, Feb. 20, 1992, Pat. No. 5,280,041. This application Sep. 21, 1993, Ser. No. 124,411

Claims priority, application Switzerland, Feb. 25, 1991, 572/91

Int. Cl.[6] C07D 317/22

U.S. Cl. 549—453 **2 Claims**

1. A process for the preparation of the compound of formula I,



(I)

which comprises reacting the diol of formula IV

(IV)

in the presence of the stereoselective catalyst of formula V

(V)

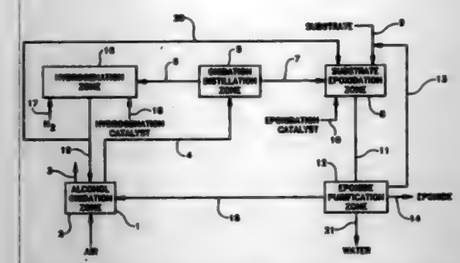
with a propionaldehyde acetal of formula VI

(VI)

wherein R is C_1–C_4alkyl.

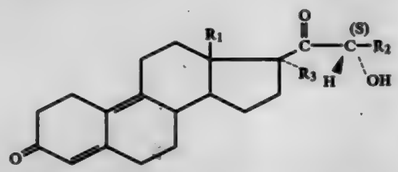
5,384,417
NOVEL HEPTITOLS
George W. J. Fleet, Oxford, and Bryan G. Winchester, London, both of United Kingdom, assignors to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 75,940, Jun. 14, 1993, Pat. No. 5,300,699, which is a division of Ser. No. 954,199, Sep. 29, 1992, Pat. No. 5,290,703. This application Jan. 18, 1994, Ser. No. 181,716
Int. Cl.[6] C07D 307/20
U.S. Cl. 549—476 1 Claim
1. 1-Amino-2,5-anhydro-1-deoxy-D-glycero-D-talo-heptitol.

5,384,418
INTEGRATED PROCESS FOR EPOXIDE PRODUCTION
John G. Zajacek, Devon; John C. Jubin, Jr., West Chester, both of Pa., and Guy L. Crocco, Wilmington, Del., assignors to Arco Chemical Technology, L.P., Greenville, Del.
Continuation-in-part of Ser. No. 186,716, Jan. 25, 1994, abandoned. This application May 10, 1994, Ser. No. 241,215
Int. Cl.[6] C07D 301/12, 303/04
U.S. Cl. 549—531 12 Claims

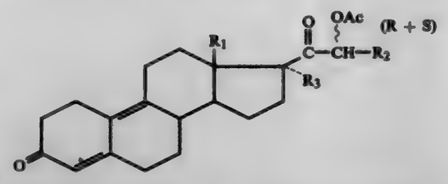


1. An integrated process for producing an epoxide comprising the steps of
(a) contacting an aliphatic secondary alcohol selected from isopropanol and sec-butanol with molecular oxygen in a liquid phase at a temperature of 50° to 200° C. to form an oxidant mixture comprised of 40 to 90 weight percent aliphatic secondary alcohol, 5 to 35 weight percent of an aliphatic ketone corresponding to said aliphatic secondary alcohol, 1 to 20 weight percent hydrogen peroxide, and 0 to 35 weight percent water;
(b) separating substantially all of the aliphatic ketone from the oxidant mixture so as to provide a hydrogen peroxide-containing stream comprised of hydrogen peroxide, aliphatic secondary alcohol, less than 1 weight percent aliphatic ketone, and less than 0.5 weight percent aliphatic ketone peroxides;
(c) reacting the aliphatic ketone separated in step (b) with hydrogen in the presence of a heterogeneous hydrogenation catalyst wherein said hydrogenation catalyst is comprised of a transition metal selected from palladium, platinum, ruthenium, chromium, rhodium and nickel at a temperature of 20° to 175° C. and a hydrogen pressure of 0.5 to 100 atmospheres to convert the aliphatic ketone to the aliphatic secondary alcohol and recycling at least a portion of the aliphatic secondary alcohol for use in step (a);
(d) contacting the hydrogen peroxide-containing stream with an ethylenically unsaturated substrate and a catalytically effective amount of a titanium silicalite at a temperature of from 40° C. to 120° C. wherein the molar ratio of substrate:hydrogen peroxide is from 1:2 to 10:1, to form an epoxidation reaction mixture comprised of aliphatic secondary alcohol, epoxide, and water and
(e) separating the aliphatic secondary alcohol present in the epoxidation reaction mixture from the epoxide and recycling at least a portion of the aliphatic secondary alcohol for use in step (a).

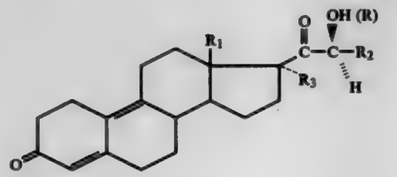
5,384,419
PREPARATION PROCESS FOR 20-KETO-21(S) HYDROXY STEROID COMPOUNDS AND INTERMEDIATES
Jean Bucudia, Le Perreux Sur Marne; Jean-Yves Godard, Le Raincy; Philippe Mackiewicz, Livry Gargan, and Christian Richard, Rosny Sous Bois, all of France, assignors to Roussel-Uclaf, France
Filed Jun. 2, 1993, Ser. No. 71,199
Claims priority, application France, Jul. 23, 1992, 92 09077
Int. Cl.[6] C07J 5/00
U.S. Cl. 552—536 10 Claims
1. A process for the preparation of a compound of the Formula



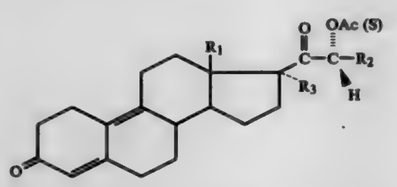
wherein R_1 is alkyl of 1 to 3 carbon atoms, R_2 is alkyl of 1 to 12 carbon atoms, and R_3 is alkyl of 1 to 4 carbon atoms, said process comprising reacting a compound of the Formula



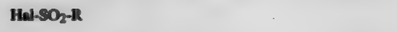
wherein R_1, R_2 and R_3 are as defined above in the form of a mixture of isomers on the 21-position with a diastereo selective hydrolysis agent to obtain a mixture of compounds of the Formulae



and

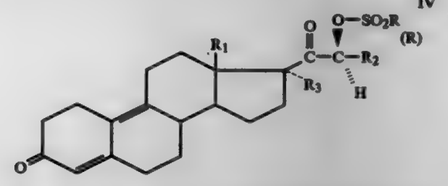


reacting the mixture with a compound of the Formula



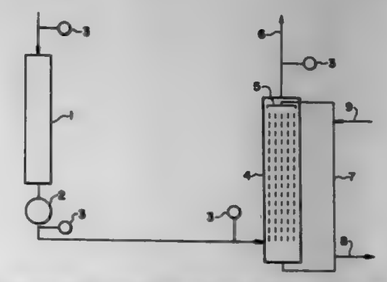
wherein Hal is halogen and R is selected from the group consisting of alkyl of 1 to 6 carbon atoms, $—CX_3$, and phenyl optionally substituted with at least one alkyl of 1 to 3 carbon

atoms, and X is fluorine, chlorine, or bromine, to obtain a mixture of a compound of Formula II_1 and a compound of the Formula



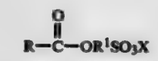
and either reacting the mixture with an alkali metal acetate to obtain the compound of Formula II_1, and subjecting the compound of Formula II_1 to solvolysis in a basic medium or reacting the mixture of the compound of Formula II_1 and the compound of Formula IV with a basic and nucleophilic hydroxylating agent to obtain the compound of Formula I.

5,384,420
PRODUCTION OF ETHYLENE OXIDE
James R. Jennings, Cleveland; Percy Hayden, Guisborough, and Andrew J. Allchurch, Cleveland, all of England, assignors to Imperial Chemical Industries plc, London, England
PCT No. PCT/GB91/00975, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO91/19705, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 18, 1991, Ser. No. 971,919
Claims priority, application United Kingdom, Jun. 19, 1990, 9013662; Apr. 8, 1991, 9107345
Int. Cl.[6] C07D 301/32, 303/04
U.S. Cl. 549—541 18 Claims



1. A process in which a gas stream from a reaction in which ethylene oxide is produced by reacting ethylene with oxygen which gas stream comprises oxides of nitrogen and steam is cooled to form a condensate comprising at least 70% of water by weight, condensed water is removed and ethylene oxide is then recovered from the gas stream and wherein, after the condensation step and before the recovery of ethylene oxide, the gas stream is contacted with a stream comprising a spray of an aqueous solution of an alkali to wash impurities from it.

5,384,421
PROCESS FOR MAKING SODIUM ACYLISETHIONATES
James F. Day, Charlotte, N.C.; Wolf-Dieter Mueller, Hofheim, Germany, and Rainer H. R. Muth, Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Filed Aug. 21, 1992, Ser. No. 934,062
Int. Cl.[6] C07C 303/32
U.S. Cl. 554—92 13 Claims
1. A process for making salts of acylisethionates of Formula I:



wherein:
R is selected from the group consisting of
A) saturated straight chain hydrocarbyl groups having from about 5 to about 31 carbons;
B) unsaturated straight chain hydrocarbyl groups having from about 5 to about 31 carbons and containing one unsaturation;
C) saturated branched chain hydrocarbyl groups having from about 5 to about 31 carbons; and
D) unsaturated branched chain hydrocarbyl groups having from about 5 to about 31 carbons and containing one unsaturation;
R^1 is a saturated or unsaturated straight chain C_2–C_4 hydrocarbyl group selected from the group consisting of ethylene, propylene and butylene; and
X is selected from the group consisting of sodium, potassium, lithium and ammonium; and
wherein:
1) said method comprises a direct esterification of at least one fatty acid of Formula II: RCOOH, with at least one hydroxyalkanesulfonic acid salt of Formula III: HOR^1SO_3X, where R, R^1, and X have the same meanings as defined for Formula I, and wherein the ratio of said fatty acid of Formula II to the salt of Formula III is from about 2.0:1.0 to about 1.0:1.0;
2) said direct esterification is done at a temperature between about 180 degrees and 240 degrees C. in the presence of from about 0.05 to about 1.0 percent by weight of the initial reaction mass of a catalyst selected from the group consisting of at least one member of the group consisting of:
a) one or more alkane sulfonic acids and hydroxyalkanesulfonic acids of Formula IV: R^2SO_3H, where R^2 is selected from the group consisting of straight chain and branched saturated alkyls having from 1 to 4 carbons, and straight chain and branched saturated hydroxyalkyls of 2 to 4 carbons having one hydroxyl group where the hydroxyl group can be anywhere on the R^2 chain;
b) one or more aryl sulfonic acids of Formula VI: R^3SO_3H, where R^3 is selected from the group consisting of phenyl and tolyl;
c) one or more inorganic acids selected from the group consisting of sulfuric acid, phosphoric acid, hypophosphoric acid and boric acid and anhydrides of the foregoing acids;
d) one or more heavy metal salts selected from the group consisting of zinc sulfate, zirconium sulfate, zinc isethionate, zinc borate, aluminum sulfate, stannous sulfate, titanium sulfate, cadmium sulfate and tungsten phosphate;
e) one or more metallic oxides selected from the group consisting of zinc oxide, aluminum oxide, magnesium oxide, cerium oxide, didymium oxide, zirconium oxide and lanthanium oxide;
f) mixtures of two or more of the catalysts selected from the group comprising the catalysts listed in groups a), b), c), d) and e); and
g) soaps formed with said heavy metal or said metallic oxides;
3) allowing the reaction to proceed toward completion while maintaining said temperature and removing water from said reaction mixture;
4) adding paraffin wax to said reaction mixture after the condensation reaction has substantially ceased;
5) resuming said reaction until no further condensation can be achieved under the reaction conditions;
6) slowly lowering the pressure in the reaction vessel containing said reaction mass at an initial temperature

between 180 degrees and 240 degrees C. to less than 80 millimeters of mercury absolute and agitating said reaction mass so that the foam is kept to a minimum;

7) distilling off fatty acids from the reaction mass until the fatty acid content of said reaction mass is less than 15 weight percent;

8) cooling said reaction mass to a temperature below 180 degrees C.;

9) adding to said cooled reaction mass a mixture of:

a) one or more fatty acids of Formula V: R^4COOH, where R^4 is a saturated or unsaturated alkyl group of 7 to 31 carbons; and

b) one or more anhydrous alkali metal salts selected from the group consisting of carbonates, bicarbonates and hydroxides where the alkali metal is selected from the group consisting of sodium, potassium and lithium.

5,384,422

PROCESS FOR THE PRODUCTION OF LIGHT-COLORED α-SULFOFATTY ACID ALKYL ESTER ALKALI METAL SALT PASTES

Dietmar Colignon, Erkrath; Erich Dorra, Duesseldorf; Guenter Pauthel, Haan; Wolfgang Schmidt, Monheim, and Norbert Wrede, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/00951, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/18874, PCT Pub. Date Dec. 12, 1991

PCT Filed May 21, 1991, Ser. No. 952,714

Claims priority, application Germany, May 30, 1990, 4017467

Int. Cl.[6] C07C *303/32*

U.S. Cl. 554—98 **16 Claims**

1. A process for the production of a light colored paste of an α-sulfofatty acid alkyl ester alkali metal salt which comprises:

(1) contacting a fatty acid alkyl ester that does not contain sulfatable or sulfonatable groups other than the α-CH_2 group with gaseous sulfur trioxide, wherein the sulfur trioxide is present in at least a 10% molar excess, to form a crude sulfonation product;

(2) passing said crude sulfonation product through a post-reaction zone until a degree of sulfonation of at least 90% is reached, wherein said post-reaction zone is comprised of a cascade comprised of at least two tank reactors each of which is maintained at a temperature of from about 60° C. to about 100° C., and wherein the crude sulfonation product is mechanically agitated in the tanks, and the crude sulfonation product has a residence time in the post-reaction zone of from about 10 to about 60 minutes; and

(3) bleaching and neutralizing the product of step (2) to form a light colored paste of an α-sulfofatty acid alkyl ester alkali metal salt.

5,384,423

5-CYCLOALKYL-PROPANAMIDES

Philip T. Hambleton, Covingham; Charles J. R. Hedgecock, Wootton Bassett; David P. Kay, Purton; Elizabeth A. Kno, Covingham, and Wilfred R. Tully, Cirencester, all of Great Britain, assignors to Roussel-Uclaf, France

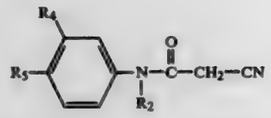
Division of Ser. No. 785,087, Oct. 30, 1991, Pat. No. 5,240,960. This application Apr. 22, 1993, Ser. No. 51,178

Claims priority, application United Kingdom, Oct. 30, 1990, 90-23535; Mar. 15, 1991, 91-05516

Int. Cl.[6] C07C *255/40*

U.S. Cl. 558—392 **1 Claim**

1. A compound of the formula



(IV)

wherein R_5 is $—CF_3$, R_2 is hydrogen or methyl and R_4 is methyl.

5,384,424

PROCESS FOR THE SELECTIVE PREPARATION OF 4,4-METHYLENE-BIS-(N-PHENYLALKYLCARBAMATE)

Jae S. Oh, and Eung J. Kim, both of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

Filed Jun. 25, 1992, Ser. No. 904,736

Claims priority, application Rep. of Korea, Jun. 26, 1991, 91-10676; Dec. 24, 1991, 91-24291

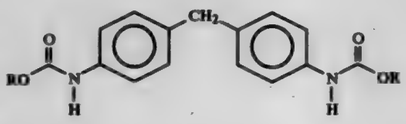
Int. Cl.[6] C07C *261/00*

U.S. Cl. 560—25 **16 Claims**

1. A process for preparing 4,4-methylene-bis-(N-phenylalkylcarbamate) of formula (I), which comprises:

condensing N-phenylalkylcarbamate of formula (II) with a methylating agent in the presence of an acidic ion-exchange resin or an aqueous inorganic acid as a catalyst, and a non-polar aprotic solvent to produce a condensation product; and

filtrating the condensation product at a temperature greater than the melting point of N-phenylalkylcarbamate to separate 4,4-methylene-bis-(N-phenylalkylcarbamate) of formula (I):



(I)



(II)

wherein:

R is a lower alkyl group having 8 or fewer carbon atoms.

5,384,425

DIUREA DERIVATIVES USEFUL AS MEDICAMENTS AND PROCESSES FOR THE PREPARATION THEREOF

Noriki Ito, Saitama; Tomoyuki Yamaga, Tokyo; Yuichi Iizumi, Chiba, and Tomio Araki, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 906,735, Jun. 30, 1992, Pat. No. 5,227,492, which is a continuation of Ser. No. 764,604, Sep. 24, 1991, Pat. No. 5,166,429, which is a division of Ser. No. 592,604, Oct. 4, 1990, abandoned, which is a division of Ser. No. 296,443, Jan. 11, 1989, abandoned. This application Oct. 7, 1993, Ser. No. 64,850

Claims priority, application Japan, Jan. 20, 1988, 63-10090; Jul. 19, 1988, 63-180119

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[6] C07C *69/017*

U.S. Cl. 560—138 **1 Claim**

1. 1,3-Bis[[3-(p-acetoxyphenyl)-1-cycloheptylureido]methyl]benzene.

5,384,426

PROCESS FOR THE PREPARATION OF ISOPROPYL ACETATE

Kyuichi Ohyama, Ohtake; Giichi Shimada, Iwakuni; Yuichi Tokumoto, Yokohama, and Kazuo Sakamoto, Zama, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Dec. 7, 1993, Ser. No. 163,304

Claims priority, application Japan, Dec. 8, 1992, 4-351915

Int. Cl.[6] C07C *67/04*

U.S. Cl. 560—247 **8 Claims**

1. A process for the preparation of isopropyl acetate by the reaction of propylene having impurities with acetic acid which comprises the following steps:

(a) separating a reaction mixture obtained in a reaction system into gas phase and liquid phase;

(b) cooling said gas phase to separate into a condensate and a non-condensate;

(c) mixing said condensate with said liquid phase to make a reaction crude mixture, and then charging said reaction crude mixture into a first distillation column to separate into a column-top-mixture having low-boiling-point ingredients and a column-bottom-mixture having high-boiling-point ingredients;

(d) charging said column-top-mixture into a second distillation column to obtain a column-top-mixture containing low-boiling-point ingredients and a column-bottom-mixture containing isopropyl acetate;

(e) recirculating said column-bottom-mixture in the second distillation column to the first distillation column while distilling off said column-top-mixture;

(f) charging said column-bottom-mixture in the second distillation column into a third distillation column to obtain a column-top-mixture consisting essentially of isopropyl acetate and a column-bottom-mixture containing acetic acid and high-boiling-point ingredients;

(g) charging said column-bottom-mixture in the third distillation column into a fourth distillation column to distill off a column-top-mixture containing minor amounts of acetic acid while recirculating a side-stream-mixture containing acetic acid to said reaction system and discharging a column-bottom-mixture containing high-boiling-point ingredients.

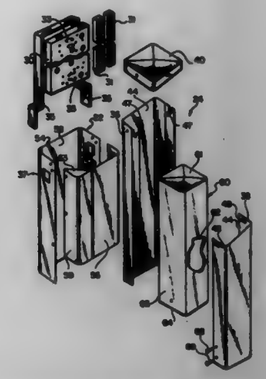
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5,384,427

FLOOD PROTECTION PEDESTAL

Thomas G. Volk, Grayslake; Matthew Leschinger, Wheaton, both of Ill., and Jimmy W. Parkerson, Greenville, Miss., assignors to Reliance Comm/Tec Corporation, Mayfield Heights, Ohio

Filed Sep. 20, 1991, Ser. No. 763,348
Int. Cl.[6] H02G 9/02
U.S. Cl. 174—38 7 Claims



1. A flood protection pedestal for protecting telecommunications equipment and the like retained therein from water damage during flood conditions in the surrounding environment, said flood protection pedestal comprising: a hollow, open ended base assembly; an axially elongated damage-resistant, heavy gauge structural cover assembly having an open end, said cover assembly being removably attached to said base assembly; a rigid light gauge thin-walled air trapping unitary liner separate and independent from said cover assembly positioned between said damage-resistant cover assembly and telecommunications equipment to be retained within said damage-resistant cover assembly, said rigid thin-walled unitary liner being integrally formed of plastics material and having external dimensions and shape substantially similar to the internal dimensions and shape of said damage resistant structural cover assembly for interfitting closely spaced inside an inner surface of said cover assembly a single opening in said rigid thin-walled unitary liner substantially coincident with said open end of said cover assembly for receiving telecommunications equipment therethrough, said open end of said unitary liner communicating with the ambient atmosphere, said rigid thin-walled unitary liner entrapping a body of air from said ambient atmosphere when water rises above the opening for protecting telecommunications equipment retained therein.

5,384,428

RECEPTACLE WALL PLATE WITH BUILT-IN PROTECTION CIRCUITRY

Lionel T. V. Luu, Hong Kong, Hong Kong, assignor to Pacsema Co. Ltd., Kowloon, Hong Kong

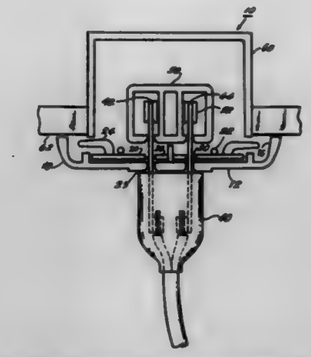
Filed Dec. 22, 1992, Ser. No. 995,737
Int. Cl.[6] H01R 13/453
U.S. Cl. 174—66 3 Claims

1. A receptacle wall plate for an electrical outlet having built-in protection means for protecting electrical devices, comprising:

a planar face plate having a plurality of apertures for receiving live, neutral and ground prongs of a plug of an electrical device drawing a load current, said face plate having an inner surface and rounded edges extending toward a surface of a wall on which the wall plate is mounted, said face plate and edges forming a hollow body;

a printed circuit board containing a protection circuit mounted in said hollow body, said protection circuit including means for protecting the electrical devices from surges, said protection circuit drawing a relatively low electrical current as compared to the load current drawn by the electrical device; and

means for supplying electricity to said protection circuit when the plug is inserted through said aperture of said face plate comprising a plurality of contact blades mounted on said printed circuit board and extending at least partially over each of said live and neutral apertures,



such that when the plug is inserted through said face plate and makes electrical contact with said electrical outlet:

(i) electricity is supplied via the plug to said protection circuit; and

(ii) said electrical device is protected;

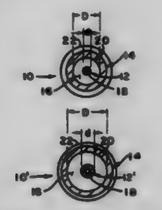
the live and neutral prongs of said plug, when inserted, being contacted by a pair of said contact blades, said blades being biased against the prongs to facilitate contact therewith, said contact blades being flexible and formed of a relatively thin conductor for carrying the relatively low current drawn by the protection circuit.

5,384,429

LOW IMPEDANCE SURGE PROTECTIVE DEVICE CABLES FOR POWER LINE USAGE

Jeffry M. Balson, Owego, and C. Peter Rau, Apalachin, both of N.Y., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 24, 1993, Ser. No. 80,507
Int. Cl.[6] H01B 11/18
U.S. Cl. 174—102 R 16 Claims



1. A cable for use in power distribution networks for connecting a surge protective device (SPD) in parallel with feeder lines of the network to sense voltage surges on the feeder lines and clamp the voltages to a level at which loads connected downstream are protected from excessive levels of voltage comprising:

conductor means including an inner conductor and an outer conductor, said inner and outer conductors being coaxial with each other with said inner conductor being disposed within said outer conductor, and said inner and outer conductors being of a low resistivity material with the

aspect ratio of said inner and outer conductors being approximately 1.05–1.56;

dielectric means disposed between said inner and outer conductors, said dielectric means including a dielectric material having a predetermined permittivity; and,

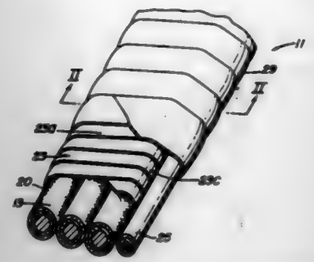
cover means fitting over said outer conductor, said cover means being an electrically insulating cover, the aspect ratio of said conductors, and the permittivity of said dielectric means substantially reducing the "let through" voltage to which the loads are subjected in the event of a voltage surge as compared to the "let through" voltage to which they are subjected when conventional cables are used to connect the SPD.

5,384,430

DOUBLE ARMOR CABLE WITH AUXILIARY LINE

Roger B. Anthony, Claremore, and David H. Neuroth, Tulsa, both of Okla., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed May 18, 1993, Ser. No. 63,995
Int. Cl.[6] H01B 7/00
U.S. Cl. 174—115 **24 Claims**



1. A cable for a submersible well pump, comprising in combination:

three insulated power conductors, each power conductor having an axis, the power conductors being assembled in an aligned side by side position in contact with each other and with a single plane passing through all of the axes;

an inner armor comprising a strip wrapped helically around the assembled power conductors to hold the power conductors in the side by side position;

at least one auxiliary line having an axis and assembled in side by side position in contact with one side of the inner armor of the assembled power conductors, with the axis of the auxiliary line being in the same plane as the axes of the assembled power conductors; and

an outer armor comprising a strip wrapped helically around the auxiliary line and around the inner armor to hold the auxiliary line in the side by side position.

5,384,431

JOINT ASSEMBLY FOR POWER AND SIGNAL COUPLING BETWEEN RELATIVELY ROTATABLE STRUCTURES

Alain Tusques, Alta Loma, Calif., assignor to Schaeffer Magnetics, Inc., Chatsworth, Calif.

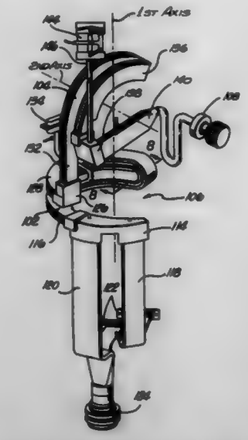
Continuation-in-part of Ser. No. 737,784, Jul. 30, 1991, Pat. No. 5,210,378. This application May 11, 1993, Ser. No. 59,536
Int. Cl.[6] H01B 7/08
U.S. Cl. 174—117 F **9 Claims**

1. A joint assembly, comprising:

a first structure;

a first flexible member having a plurality of transmitting elements that can carry signals, said first flexible member having a predefined shape defining a predefined path, a first surface facing a first direction and a second surface facing a second opposite direction, said first flexible member having a first end operatively connected to said first structure and a second end adapted to move about a first axis in approximately said predefined path such that said first surface of a portion of said first flexible member faces said second direction;

a second flexible member having a plurality of transmitting elements that can carry said signals, said second flexible member having a predefined shape defining a predefined path, a first surface facing a third direction and a second surface facing a fourth opposite direction, said second



flexible member having a first end operatively connected to said second end of said first flexible member and a second end adapted to move about a second axis in approximately said predefined path such that said first surface of a portion of said second flexible member faces said fourth opposite direction; and,

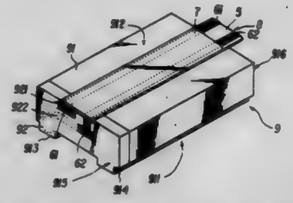
a second structure operatively connected to said second end of said second flexible member and adapted to rotate about the first axis of said first flexible member and the second axis of said second flexible member.

5,384,432

TWO-LAYERED TAPE LEAD WIRE FOR MAGNETIC HEAD

Tetsuya Noro, Tokyo; Masahiko Itoh, Sagamihara; Nobuya Ohyama, Tokyo; Hiroshi Kanai, Tokyo, and Masaharu Ishizaka, Tokyo, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 28, 1993, Ser. No. 68,141
Int. Cl.[6] H01B 7/08
U.S. Cl. 174—117 FF **3 Claims**



1. A magnetic head comprising: a tape lead wire having a bend of about 90° near a connection to an output electrode of a magnetic transducer element wherein said tape lead wire comprises a polymer resin film and a conductor film which is directly deposited on the surface of said polymer resin film

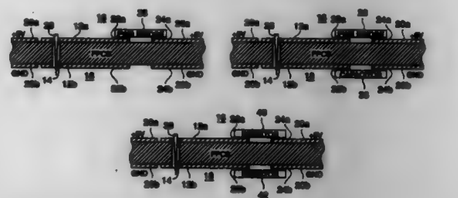
without the use of a bonding layer and has a total thickness of 100 μm or less.

5,384,433

PRINTED CIRCUIT STRUCTURE INCLUDING POWER, DECOUPLING AND SIGNAL TERMINATION

Robert Osana, Jr., San Jose; Jeffery A. Ausman, Milpitas, and David R. Halbert, Campbell, all of Calif., assignors to Aptix Corporation, San Jose, Calif.

Continuation of Ser. No. 785,435, Oct. 29, 1991. This application Mar. 16, 1993, Ser. No. 32,723
Int. Cl.[6] H05K 1/00
U.S. Cl. 174—250 **4 Claims**



1. A printed circuit board comprising:

first and second surfaces,

an insulating board material separating and electrically insulating said first and second surfaces,

a first array of conductive contact pads disposed on said first surface and a second array of conductive contact pads aligned with said first array of conductive contact pads disposed on said second surface so that individual ones of said first array of conductive contact pads are disposed directly over individual ones of said second array of conductive contact pads, said conductive contact pads having component-mounting holes disposed therethrough so that component mounting holes of said individual ones of said first array of conductive contact pads and component mounting holes of said individual ones of said second array of conductive contact pads form vias through said insulating board material, said first array of conductive contact pads electrically insulated from said second array of conductive contact pads,

a structure for providing power distribution, decoupling and signal termination including

an array of conductive attachment lands arranged in adjacent pairs and disposed on at least said first surface, each of said pairs including a first attachment land and a second attachment land, said first and second attachment lands insulated from one another and separated by a distance selected to allow surface mounting attachment of standard sized components therebetween on said at least said first surface of the printed circuit board,

a conductive power distribution plane disposed on said first surface and insulated from said conductive contact pads and said second attachment lands disposed thereon,

said first attachment land of each of said pairs on said first surface of the printed circuit board electrically connected to said power distribution plane, and said second attachment land of each of said pairs on said at least said first surface of the printed circuit board electrically connected to one of said conductive contact pads, and

a number of shorting pins inserted through said vias thereby forming electrical connections between corresponding individual ones of said first array of conductive contact pads and corresponding individual ones of said second array of conductive contact pads, said number being an integer greater than zero and less than the total number of vias in the printed circuit board,

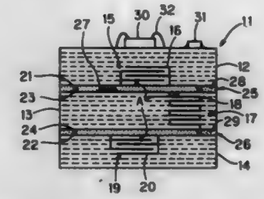
each of said attachment lands adapted to receive a lead of a surface mounted device.

5,384,434

MULTILAYER CERAMIC CIRCUIT BOARD

Harufumi Mandai, and Kimihide Sugo, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Mar. 1, 1993, Ser. No. 24,537
Claims priority, application Japan, Mar. 2, 1992, 4-081648; Mar. 2, 1992, 4-081649
Int. Cl.[6] H05K 1/00
U.S. Cl. 174—258 **17 Claims**



1. A multilayer ceramic circuit board, comprising:

a first substrate element containing a fired first ceramic material;

a second substrate element, being superposed on said first substrate element, containing a fired second ceramic material having electric characteristics different from those of said first ceramic material and being fired separately from said first ceramic material; and

conductive bonding means for electrically connecting and mechanically bonding said first and second substrate elements together for integrating the first and second substrate elements.

5,384,435

MOUNTING TERMINAL PINS IN SUBSTRATES

Robert M. Fuerst, Maple Park, and Fred L. Krehbiel, Chicago, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 28, 1994, Ser. No. 187,962
Int. Cl.[6] H05K 1/02
U.S. Cl. 174—262 **16 Claims**



1. An electronic device, comprising:

a flat flexible dielectric substrate less than 0.050 inch thick and having a generally round hole of a given diameter;

a ductile conductive film on the substrate in an area at least about said hole;

a generally round terminal pin inserted into the hole in the substrate in contact with the conductive film, the pin having a given diameter greater than that of the hole; and

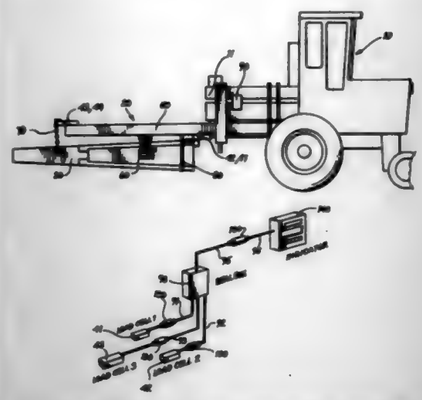
wherein the difference between the diameter of the pin and the diameter of the hole is on the order of 5% to 50% of the diameter of the hole.

5,384,436

APPARATUS AND METHOD FOR ELECTRICALLY WEIGHING BALES IN A MOBILE CROP BALER

Gary E. Pritchard, 6807 N. 62nd Dr., Glendale, Ariz. 85301

Filed Jun. 30, 1993, Ser. No. 84,878
Int. Cl.[6] G01G *19/08*; B30B *15/00*
U.S. Cl. 177—136 26 Claims



1. In a mobile crop baler which produces crop bales at a rear end of the baler as it advances across a field of a crop to be baled and having a system for weighing the bales including a bale-receiving-structure coupled to the baler for receiving the bales discharged from the baler and means for reading out and adjusting a bale-weight-indicative signal wherein the improvement comprises:

a pair of load cells fixedly mounted in spaced relation to each other to the rear end and transversely the longitudinal axis of the baler,

a bale-receiving-structure having first and second ends, the first end pivotably connected to the pair of load cells,

a first rigid, longitudinal support member extending rearwardly from the rear end of the baler to which is fixedly mounted a third load cell,

the second end of the bale-receiving-structure being supported by a tether attached to the third load cell,

each load cell having an output for transmitting a bale-weight-indicative output signal, and

the outputs of the load cells coupled to the readout means.

5,384,437

TORQUE BAR SUSPENSION SCALE WITH STRAP ASSEMBLIES

John Paul, and Adrian J. Paul, both of Duncan, Okla., assignors to Adrian J. Paul Company, Duncan, Okla.

Continuation of Ser. No. 32,088, Mar. 17, 1993, Pat. No. 5,308,935, which is a continuation of Ser. No. 975,030, Nov. 12, 1992, Pat. No. 5,320,395, which is a continuation of Ser. No. 731,558, Jul. 17, 1991, Pat. No. 5,205,370. This application Feb. 7, 1994, Ser. No. 192,474
Int. Cl.[6] G01G *21/08*
U.S. Cl. 177—256 6 Claims

1. A torque bar suspension scale for weighing an object comprising:

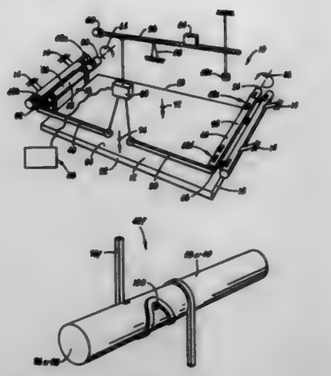
a frame;

a platform having a first end and a second end and an upper surface for supporting the objects to be weighed;

a torque bar having a first end and a second end, the torque bar being disposed near the first end of the platform; and

a strap assembly connected to the platform and the torque bar and the frame for rotatingly supporting the torque bar whereby the torque bar is rotated in a direction in response to an object being disposed on the platform for weighing, the strap assembly comprising:

a strap having a substantially rectangular shaped cross section having a width and a thickness and comprising



a plurality of individual strands woven and interconnected to form the strap wherein the strands are constructed of Kevlar ® fibers; and

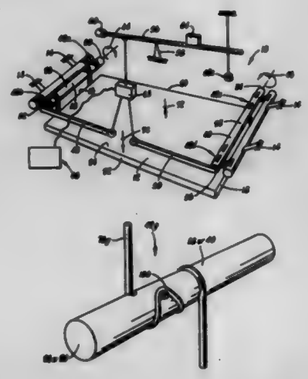
a clamp assembly connecting the strap to the torque bar, the frame and the platform.

5,384,438

TORQUE BAR SUSPENSION SCALE WITH STRAP ASSEMBLIES

John Paul, Duncan, Okla., assignor to Adrian J. Paul Company, Duncan, Okla.

Division of Ser. No. 32,088, Mar. 17, 1993, Pat. No. 5,308,935, which is a continuation of Ser. No. 975,030, Nov. 12, 1992, Pat. No. 5,230,395, which is a continuation of Ser. No. 731,558, Jul. 17, 1991, Pat. No. 5,205,370. This application Dec. 2, 1993, Ser. No. 161,295
Int. Cl.[6] G01G *21/08*
U.S. Cl. 177—256 1 Claim



1. A torque bar suspension scale for weighing an object comprising:

a frame;

a platform having a first end and a second end and an upper surface for supporting the objects to be weighed;

a torque bar having a first end and a second end, the torque bar being disposed near the platform;

a strap assembly connected to the platform and the torque bar and the frame for rotatingly supporting the torque bar whereby the torque bar is rotated in a direction in response to an object being disposed on the platform for weighing, the strap assembly comprising:

a strap having a circularly shaped cross section, the strap comprising a plurality of individual strands woven and interconnected to form the strap wherein the strands are constructed of Kevlar ® fibers; and

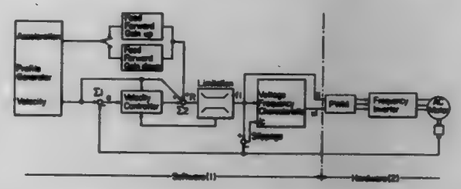
a clamp assembly connecting one the strap to one of the torque bar, the frame and the platform.

5,384,439

ADAPTIVE DIGITAL VELOCITY CONTROL LOOP FOR A HIGH PERFORMANCE ELEVATOR DOOR SYSTEM WITH LOW COST

Christoph M. Ernecke; Michael Barten, and Mustapha Tountaoui, all of Berlin, Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 16, 1993, Ser. No. 18,485
Int. Cl.[6] B66B *13/14*
U.S. Cl. 187—316 2 Claims



1. An adaptive digital controller for controlling the motion of an elevator door, comprising:

a profile generator, for providing a dictated door acceleration signal and a dictated velocity signal;

gain means, for providing a feedforward gain including a gain up when the dictated door acceleration is positive and a gain down when the dictated door acceleration is negative, in response to said dictated acceleration signal;

a velocity sensing means responsive to rotation of an elevator door motor for providing an actual velocity signal;

a first summer responsive to said dictated velocity signal and said actual velocity signal for providing the difference between said velocities;

a velocity controller, responsive to said difference and responsive to the dictated velocity signal for providing a dictated stator frequency signal wherein the gain of said velocity controller is adapted to said dictated velocity signal;

a second summer responsive to said feedforward gain, said dictated velocity signal and said dictated stator frequency for providing a sum;

a frequency to voltage conversion means responsive to said sum for providing a reference stator voltage and

a pulse width modulator responsive to said sum and said reference stator voltage for providing three-phase stator voltages; and

an induction motor responsive to said three-phase stator voltages for moving said elevator door.

5,384,440

AUTOMOTIVE SEAT SWITCH ASSEMBLY

Joseph Wnuk, Westland, and Lawrence T. Wargo, Clinton Township, Macomb County, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

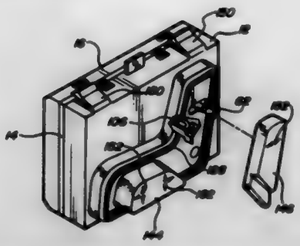
Filed Dec. 17, 1992, Ser. No. 991,783
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—5 R 15 Claims

1. An automobile seat switch assembly for controlling seat movement comprising:

a switch housing comprising a front cover, a middle switch plate, and a back cover, said switch plate being an insert molded, unitary switch plate with a plurality of electrical conductors molded therein and having an outer support surface with a plurality of conductor contact surfaces,

a plurality of switch actuator assemblies, each said switch actuator assembly comprising

a contactor for electrically contacting a respective said contact surface,



a contactor actuator slidably mounted to a rail member for sliding movement to actuate said contactor, and

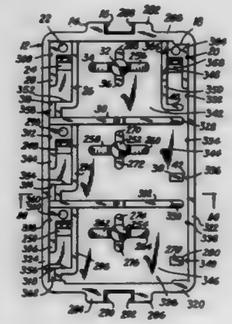
a pair of spaced support posts extending from said housing, said rail member being mounted to said support posts, wherein said rail member and said support posts are configured for snap lock engagement, and said front cover enclosing said switch actuator assemblies,.

5,384,441

ELECTRICAL ROCKER TYPE SWITCH

David B. Balaban, Hauppauge, and Anthony Tufano, North Massapequa, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 984,397, Dec. 9, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 168,587
Int. Cl.[6] H01H *3/12*
U.S. Cl. 200—339 16 Claims



1. An electrical switch comprising:

a housing having a base member and four side walls joined so as to form a rectangle having an open top, said base member having an interior surface;

input means connected to said housing and suitable for direct contact by a user;

actuating means movable in response to movement of said input means; said actuating means comprising an actuating arm integral with said input means;

said actuating arm comprising an actuating portion and a reinforcing portion, said actuating portion effectuating on/off control of said electrical switch in response to said user contact;

toggle means comprising a toggle arm integral with said input means responsive to movement of said input means

for retaining said switch in a position caused by said contact by said user;

a toggle spring having a first end and a second end connected to said toggle arm at said first end and to a pin extending from said interior surface of said base member towards said open top of said housing at said second end, said toggle spring which is compressed during the first half of travel of said input means and expands during the second half of travel of said input means;

two spring stops extending upwardly from said interior surface of said base member towards said open top of said housing that support a side portion of said toggle spring at either end of said input means travel;

two spring rests extending upwardly from said interior surface of said base member towards said open top of said housing to support said toggle spring and space said second end of said toggle spring above said interior surface of said base member;

at least one fixed terminal assembly each having a first contact thereon; and

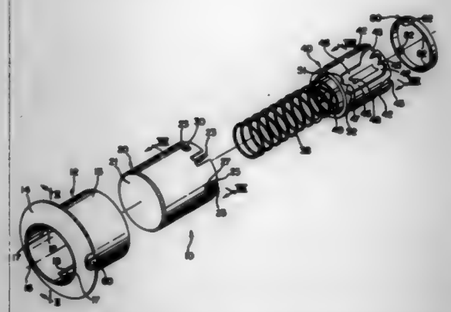
a brush assembly comprising at least one movable brush arm, each arm having a second contact thereon, said at least one movable brush arm responsive to movement of said actuating means to cause its associated one of said second contacts to electrically connect to and disconnect from a respective first contact.

5,384,442

CONTROL KNOB ASSEMBLY FOR A COOKING APPLIANCE

Richard E. Danner, Troy, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 5, 1993, Ser. No. 846
Int. Cl.[6] H01H *13/62*
U.S. Cl. 200—566 **9 Claims**



1. A control knob assembly for a cooking appliance comprising:

a cylindrical control knob having a depressible, closed end and a second, open end;

said control knob defining an axis and being movable axially and locatable in a first, retracted non-operating position, and a second, extended operating position;

said control knob further being rotatable about said axis when in said extended operating position to permit selection between energized and non-energized positions;

a cylindrical drum slidable within said control knob;

said control knob moveable from said extended operating position to said retracted non-operating position after movement to said energized position, and, by rotation of said control knob about said axis prior to movement to said energized position to selectively permit said control knob to slidably move axially with respect to said cylindrical drum.

5,384,443

FLUSH CUP EXTENDERS FOR ELECTRICAL DISCHARGE MACHINES

Jim Swartzbaugh, 1430 W. Pioneer St., Brea, Calif. 92621

Filed Jan. 25, 1993, Ser. No. 8,636
Int. Cl.[6] B23H *1/00, 7/02, 1/10*
U.S. Cl. 219—69.12 **16 Claims**



1. In an electric discharge machine having an upper flush cup and a lower flush cup for flushing fluid substantially about a wire electrode, said upper and lower flush cups each having a base respectively attached to one of an upper guide and lower guide, said flush cups each extending to form a nozzle at an external end and said flush cups being provided with fluid from a source of fluid, the improvement comprising:

at least one of the flush cups having the nozzle with a surrounding thread means about the nozzle; and

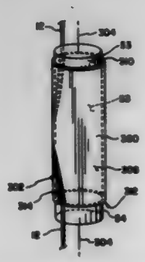
a flush cup extender affixed onto the thread means for optimum flushing for a cutting process to be performed, the flush cup extender being selected from a plurality of hollow flush cup extenders having differently shaped extension nozzles.

5,384,444

SLEEVE FORMING WIRE PASSAGEWAY AROUND PICKUP

Thomas J. Truty, South Barrington, Ill.; Jule L. French, Yoder, and Kevin M. Newell, Marion, both of Ind., assignors to Basix Technologies Ltd., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 78,007, Jun. 16, 1993, which is a continuation-in-part of Ser. No. 995,887, Dec. 23, 1992, Pat. No. 5,319,175. This application Sep. 13, 1993, Ser. No. 120,241
Int. Cl.[6] B23H *7/10*; B23K *9/00*
U.S. Cl. 219—69.12 **22 Claims**



17. An apparatus for transferring electric current to or from a moving conductive wire traveling between two points, said apparatus comprising:

an electrically-conductive member having an outer surface;

a support body having a bore therein, said conductive member received in said bore; and,

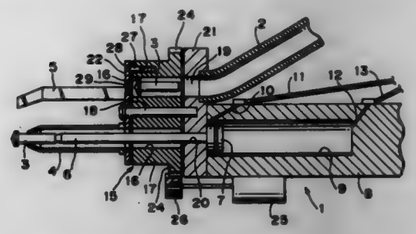
a sleeve in said support body bore between said conductive member and said support body, said sleeve having a channel communicating with said conductive member outer surface and providing a wire passageway, said conductive wire traveling through said wire passageway and in contact with said conductive member outer surface.

5,384,445

STUD WELDING GUN

Eiji Nakagami, Aichi, Japan, assignor to Emhart Inc., Newark, Del.

Filed Aug. 13, 1993, Ser. No. 106,479
Claims priority, application Japan, Aug. 24, 1992, 4-059174
Int. Cl.[6] B23K *9/20*
U.S. Cl. 219—98 **1 Claim**



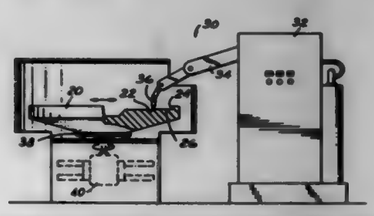
1. A stud welding gun having a collet to hold a stud in a position at which the stud is welded to a base material, a piston to load a stud into the collet for welding thereof, and a feed pipe to automatically feed studs one by one, characterized in that a stud receiving member to receive and store studs is provided between the collet and the stud feed pipe, and said receiving member is formed with at least two stud receivers, the stud receivers being capable of moving between a first position in which each stud receiver receives a stud and a second position which communicates with the collet and in which a stud is pushed out by the piston and loaded into the collet, one of the stud receivers staying in the first position while another stud receiver is in the second position.

5,384,446

METHOD OF CONTROLLING THE LENGTH OF METAL CHIPS

Edward D. Ratkowski, 18045 St. Louis, Detroit, Mich. 48234

Continuation of Ser. No. 650,466, Feb. 4, 1991, Pat. No. 5,200,593. This application Jan. 25, 1993, Ser. No. 8,335
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.69 **4 Claims**



1. A method of machining a workpiece comprising the steps of:

(i) directing a laser beam onto a workpiece and continuously moving the laser beam along a workpiece surface to etch a first path into the workpiece surface;

(ii) cutting material away from the workpiece along a second path, with a second path intersecting the first path to the define break points for chips of removed material; and

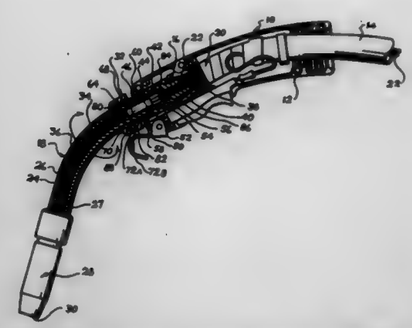
(iii) wherein said the first path defines a continuing pattern on the workpiece, and the second path sequentially intersects several points on the first path, the distance between subsequent intersection points defining the length of a chip that is removed from the workpiece, the pattern being selected such that the maximum chip length is less than a desired maximum.

5,384,447

ELECTRIC ARC WELDING GUN

Valgene E. Raloff, Grant Park; Frank J. Britto, Jr., Bensenville, and Glen A. Jones, Wilmington, all of Ill., assignors to Bernard Welding Equipment Company, Beecher, Ill.

Filed Jan. 6, 1993, Ser. No. 1,083
Int. Cl.[6] B23K *9/173*
U.S. Cl. 219—137.31 **24 Claims**



1. In a welding apparatus adapted to supply welding wire, electrical power and shielding gas to a workpiece, the improvement comprising:

a) a body tube having a tapered portion defining a first angle;

b) an end fitting having a tapered portion defining a second angle;

c) the tapered portion of the body tube being releasably connectable with the tapered portion of the end fitting; and

d) the first angle differing from the second angle by an amount sufficient for facilitating separation of the tapered portion of the body tube from the tapered portion of the end fitting.

5,384,448

THERMALLY STABLE SOLENOID UTILIZING WOUND ELECTRIC HEATING WIRE

James J. Kabasko, R.R. #3, Box 395-B, Lake Ariel, Pa. 18436

Filed Mar. 18, 1992, Ser. No. 853,596
Int. Cl.[6] H05B *1/00*
U.S. Cl. 219—209 **3 Claims**

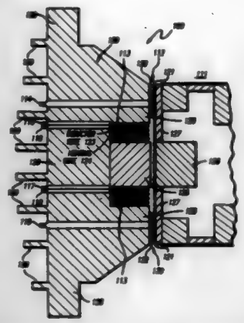
1. A thermally stable solenoid comprising:

first means for providing an inductive force, said first means including an inductive coil wound around an axis;

second means for selectively providing heat to said first means, said second means including a heating coil wound around said axis; and

means for activating said heating coil in response to the

activation of said inductive coil to provide heat whereby the heat generated by said activated inductive coil and

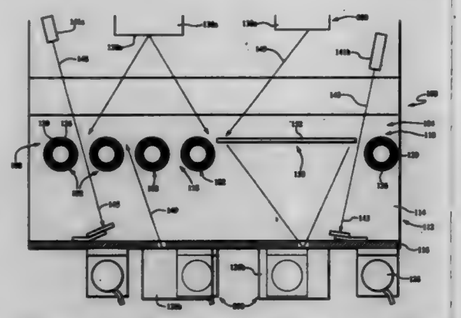


said activated heating coil is substantially constant throughout the range of operation of said inductive coil.

5,384,449
AUTHORIZATION MATCHING SYSTEM
Roger L. Peirce, Los Altos, Calif., assignor to Visa International Service Association, San Mateo, Calif.
Filed Apr. 28, 1992, Ser. No. 876,727
Int. Cl.[6] G06K 5/00
U.S. Cl. 235—380 11 Claims

1. A transaction card payment and authorization matching system, comprising:
a transaction card issued to a cardholder as a means for transferring value from a cardholder to a merchant, said transaction card carrying cardholder data;
an issuer who issues transaction cards;
an acquirer in communication with the issuer via a data control center;
remote terminal means located at a point of a transaction and in communication with the acquirer, said remote terminal including means for reading the data carried on said card and means for entering data including the amount of the transaction, and said remote terminal means including means for forwarding said transaction amount via the acquirer to the data control center for authorization;
said data control center including means for assigning an identification code representative of said transaction to the transaction and forwarding said identification code to the issuer and the acquirer for inclusion in records of the transaction; and
means for comparing the identification code representative of said transaction in said records to verify that said records represent the transaction.

5,384,450
BAR CODE READER FOR A SINGULATED PRODUCT STREAM
Walter C. Goetz, Jr., Arlington, Tex., assignor to ElectroCom Automation L.P., Arlington, Tex.
Filed Apr. 6, 1992, Ser. No. 864,574
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 16 Claims

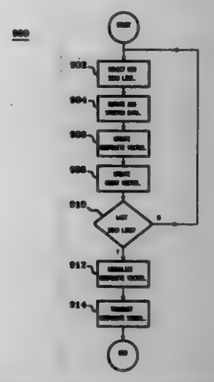


1. Bar code reading apparatus, comprising: transport means for moving a stream of products along a transport path through a scanning zone wherein a side of each product is affixed with an identifying bar code;
at least one raster scanner positioned above the transport path and directed toward the scanning zone for reading a ladder oriented bar code affixed on a top side of a product passing through the scanning zone and outputting an information signal according to the top scanned ladder code;
at least one line scanner positioned above the transport path and directed toward the scanning zone for reading a picket oriented bar code affixed on a top side of a product passing through the scanning zone and outputting an information signal according to the top scanned picket code;
at least one line scanner positioned below the transport path and directed toward the scanning zone for reading a picket oriented bar code affixed on a bottom side of a product passing through the scanning zone and outputting an information signal according to the bottom scanned picket code; and
processing means for receiving and decoding the information signals from the raster and line scanners to identify the affixed bar code on each product.

5,384,451
METHOD AND APPARATUS FOR DECODING BAR CODE SYMBOLS USING COMPOSITE SIGNALS
Christopher E. Smith, Newtown, and Earle Timothy, Clinton, all of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.
Filed Jan. 29, 1993, Ser. No. 11,642
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 20 Claims

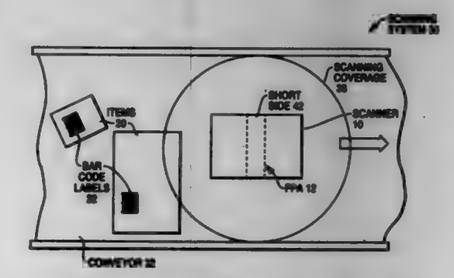
1. A method for reading a bar code symbol in a pixel image, comprising the steps of:
(a) selecting a first scan line crossing at least a first portion of said symbol;
(b) transforming said first portion, wherein said transforming comprises the steps of rotating said first portion to an angle substantially parallel to either a row or column of pixels in said image and stretching said first portion;
(c) generating a composite signal in accordance with said transformed first portion;

(d) selecting a second scan line crossing at least a second portion of said symbol;
(e) transforming said second portion, wherein said transforming compriaes the steps of rotating said second portion to an angle substantially parallel to either a row or



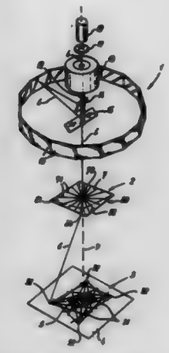
column of pixels in said image and stretching said second portion;
(f) updating said composite signal in accordance with said transformed second portion; and
(g) decoding said symbol in accordance with said composite signal.

5,384,452
QUASI-ONE-DIMENSIONAL FOCAL PLANE ARRAY FOR VISION SCANNERS
Duanfeng He, Duluth, Ga., assignor to NCR Corporation, Dayton, Ohio
Filed May 10, 1993, Ser. No. 59,205
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 16 Claims



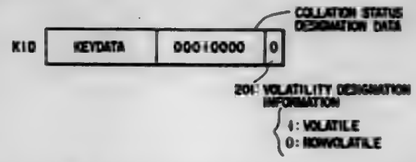
1. A vision scanner comprising:
a focal plane array having at least two rows of pixels for producing a plurality of images of a plurality of portions of a bar code label as the portions move across the focal plane array, wherein each of the images is substantially smaller than an image of the entire bar code label; and
circuit means for decoding the images of the portions, only one image at a time, after the one image has been produced, and for combining the decoded images to decode the bar code label.

5,384,453
BAR CODE SCANNER WITH A SCANNING PATTERN DIVIDER
Ke- Ou Peng, Delft, Netherlands, assignor to Opticon Sensors Europe BV, Hoofddorp, Netherlands
Filed Mar. 3, 1993, Ser. No. 25,987
Claims priority, application European Pat. Off., Mar. 6, 1992, 92200642
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—467 12 Claims



1. A bar code scanner, comprising:
a laser source for providing a laser beam;
deflecting means for deflecting said laser beam, said deflecting means being rotatable around an axis of rotation substantially coinciding with the laser beam and being arranged to deflect said laser beam into a 360° scanning field;
a scanning pattern generator set up to receive said deflected laser beam from said deflecting means in said 360° scanning field to generate a first scanning pattern comprising several non-overlapping scanning lines in a first scanning plane;
a pattern divider for intercepting and dividing at least part of the pattern generated by the pattern generator into at least two divisional patterns and for projecting the divisional patterns in a second scanning plane so as to form an altered scanning pattern, in which at least some divisional patterns projected in the second scanning plane overlap each other.

5,384,454
PORTABLE ELECTRONIC APPARATUS
Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 4, 1993, Ser. No. 26,425
Claims priority, application Japan, Mar. 6, 1992, 4-049586
Int. Cl.[6] G06K 19/06; G06F 17/60
U.S. Cl. 235—492 11 Claims



1. A portable electronic apparatus having a memory section and a control section for controlling access to the memory section from an outside to allow selective inputting/outputting of data, comprising:
first means for storing at least one first collation information;

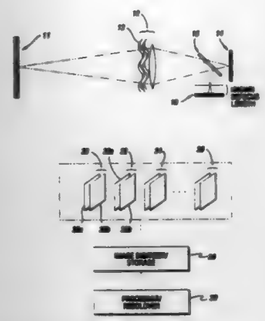
second means for collating the first collation information and second collation information which is inputted from the outside and for providing a result of collation;
third means for storing the result of collation by the collating means;
fourth means for storing a first information indicating whether the collation result stored in the third means is to be cleared or not;
means for performing a given processing in response to an instruction inputted from the outside; and
means for clearing the collation result stored in the third means after completion of the given processing, when the first information indicates that the collation result is to be cleared.

5,384,455

MEASUREMENT-DIVERSE SPECKLE IMAGING

Richard G. Paxman, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Apr. 12, 1993, Ser. No. 46,094
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—201.9 **25 Claims**



1. An imaging apparatus comprising:
a plurality of measurement-diverse detectors, each detector including means for acquiring a plurality of specklegram images of an object;
storage memory for storing the acquired images in digital form;
a processor; and
logic for accessing the stored images and estimating the object.

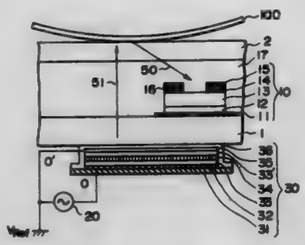
5,384,456

IMAGE SENSOR IN WHICH ILLUMINATION BY ELECTROLUMINESCENT DEVICE IS SYNCHRONIZED WITH READING OPERATION

Toshihiro Saika, Zama; Hidemasa Mizutani, Sagamihara; Noriyuki Kaifu, Hachioji, and Toshio Kameshima, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,326
Claims priority, application Japan, Aug. 29, 1991, 3-242461; Aug. 30, 1991, 3-244159
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—208.1 **3 Claims**

1. An image sensor for storing charge responsive to received light reflected from a document to be read, said image sensor comprising:
an electroluminescent device including capacitance components for emitting pulses of light to illuminate a document to be read;
a photosensor array for performing a reading operation; and
an electroluminescent device driving circuit, of a separate excitation type, an operation of which is synchronized with an external pulse, the electroluminescent device driving circuit employing said capacitance components of the electroluminescent device itself, whereby an illumination operation by said electroluminescent device is synchronized with the reading operation by said photosensor array.

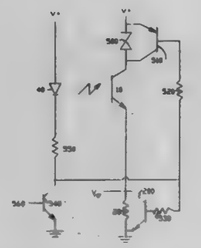


5,384,457

LOW POWER OPTOELECTRONIC DEVICE AND METHOD

René Sommer, Prilly, Switzerland, assignor to Logitech, Inc., Fremont, Calif.

Continuation of Ser. No. 717,187, Jun. 18, 1991, Pat. No. 5,256,913. This application Aug. 10, 1992, Ser. No. 927,796
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214 R **11 Claims**



1. In a photosource/photodetector circuit having a photosource, a photodetector and a load in which the photosource is switched on and off, a method of selectively varying load comprising the steps of
applying an active component in parallel with the load, the active component being switchable between low impedance and high impedance states,
switching the active component to a low impedance state when the photosource is off, and
switching the active component to a high impedance state when the photosource is on.

5,384,458

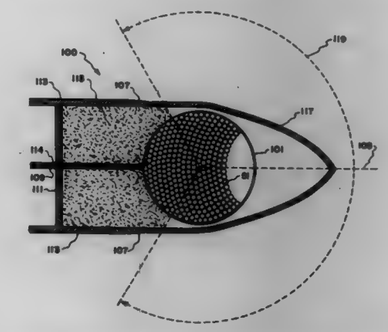
PHOTONIC ELECTROMAGNETIC FIELD SENSOR FOR USE IN A MISSILE

Donald P. Hilliard, Oxnard, and Dean L. Mensa, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 958,404, Sep. 30, 1992, Pat. No. 5,243,196. This application Jun. 1, 1993, Ser. No. 69,819
Int. Cl.[6] H01J *5/16*
U.S. Cl. 250—227.17 **18 Claims**

1. An electromagnetic field sensor for use in a target seeking missile, said electromagnetic field sensor measuring the angle of arrival of incoming electromagnetic waves reflected from a target, said electromagnetic field sensor comprising:

a Luneberg lens having a front hemispherical portion and a rear hemispherical portion;
a radome affixed to the forward end of said target seeking missile;
a boresight for said electromagnetic field sensor, said boresight extending symmetrically through said radome and defining a forward direction;
said radome having a field of view, said field of view of said radome being defined by a first angle of about one hundred thirty five degrees in a clockwise direction from said boresight and a second angle of about one hundred thirty five degrees in a counterclockwise direction from said boresight, said radome receiving said electromagnetic waves reflected from said target which are within the field of view of said radome and then passing said received electromagnetic waves through said radome;
said Luneberg lens being mounted within said radome to intercept said electromagnetic waves passing through said radome;
a plurality of electro-optic crystals, each of said electro-optic crystals having first and second surfaces intersecting an optical path and a third surface;
said plurality of electro-optic crystals being positioned on and covering a substantial portion of the outer surface of the front hemispherical portion of said Luneberg lens and the entire outer surface of the rear hemispherical portion



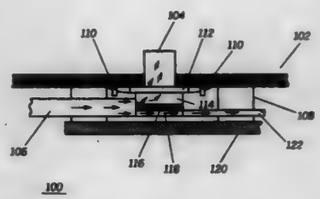
of said Luneberg lens, said Luneberg lens focusing each of said electromagnetic waves intercepted by said Luneberg lens on the third surface of one of said electro-optic crystals;
a light source for transmitting monochromatic light along said optical paths through each of said plurality of electro-optic crystals;
each of said electro-optic crystals upon which one of said electromagnetic waves is focused by said Luneberg lens modulating said monochromatic light as said monochromatic light traverses said electro-optic crystal;
each of said electro-optic crystals upon which one of said electromagnetic waves is focused by said Luneberg lens modulating the monochromatic light only when the frequency of said electromagnetic wave is within the microwave frequency range of the electromagnetic spectrum; and
a plurality of detectors, each of said detectors being positioned along one of said optical paths downstream from one of said electro-optic crystals for detecting said modulated monochromatic light exiting from the second surface of said one electro-optic crystal;
each of said detectors, responsive to said modulated monochromatic light, providing an electrical signal indicative of the angle of arrival of said one electromagnetic wave focused by said Luneberg lens on said one electro-optic crystal.

5,384,459

ILLUMINATED SWITCH AND KEYPAD ASSEMBLY HAVING A LIGHT GRADIENT AND A LIGHT CONDUCTIVE ELASTOMERIC ASSEMBLY

Joseph Patino, Plantation; Henry A. Bogut, Coral Springs, and Pedro P. Hernandez, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1993, Ser. No. 69,319
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—229 **10 Claims**



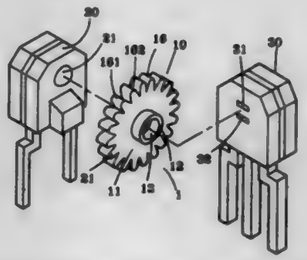
1. A switch assembly, comprising:
a light source for providing light;
an optical decoder;
first and second switches optically coupled to both the light source and the optical decoder, said first and second switches can each be operated between first and second states, each of the first and second switches comprising:
an illuminatable switch portion;
light reception means for receiving light from the light source and providing some of said light to the illuminatable switch portion; and
a light gradient coupled to the light reception means for controlling the amount of light which is sent to the optical decoder when the switch is switched from the first to the second state;
the light gradients on the first and second switches are different from one another such that each one blocks a different amount of light from getting through to the optical decoder; and
the optical decoder can determine whether the first and second switches are in the second state by the amount of light received at the optical decoder.

5,384,460

ENCODER WITH A LIGHT EMITTING EDITING WHEEL

Dennis Tseng, 8F-6, No. 100, Sec. 2, Hoping E. Rd., Taipei, Taiwan, Prov. of China, assignor to Silitek Corporation and Dennis Tseng, Taipei, Taiwan, Prov. of China

Filed Nov. 3, 1993, Ser. No. 145,213
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—231.14 **13 Claims**



1. An encoder with a light emitting editing wheel, comprising
an editing wheel defining a wheel body and a hole in its middle, said editing wheel being mounted on a shaft mem-

ber and being actuated to rotate thereon via suitable transmission means, a plurality of light focusing means being disposed along the circumference of said editing wheel, a light receiving means being provided radially on said wheel body, said light focusing means being interconnected with said light receiving means to focus light transmitted from said light receiving means into a plurality of light points;

a light source disposed at a perpendicular position above said editing wheel, said light source sending said light to said light receiving means of said editing wheel; and

a sensor means being disposed adjacent to said light focusing means, a pair of light detecting means being provided at said sensor means thereon, said light detecting means being capable of sending an active signal as a light point of said plurality of light points is received thereon.

5,384,461

PROCESS FOR THE MANUFACTURE OF A MULTIPOLAR ELONGATE-ELECTRODE LENS OR MASS FILTER

Joseph P. R. Jullien, Kautsford; Jonathan H. Batey, Kingsley, and Robert Mellor, Middlewich, all of Great Britain, assignors to Fisons plc, Ipswich, England

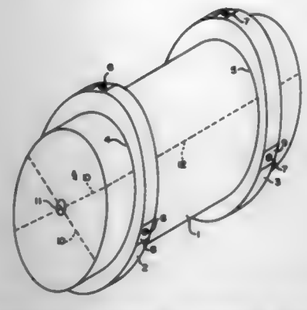
PCT No. PCT/GB92/00835, § 371 Date Feb. 3, 1994, § 102(e) Date Feb. 3, 1994, PCT Pub. No. WO92/21141, PCT Pub. Date Nov. 26, 1992

PCT Filed May 8, 1992, Ser. No. 140,195

Claims priority, application United Kingdom, May 10, 1991, 9110207

Int. Cl.[6] H01J *49/42, 3/18*

U.S. Cl. 250—292 **20 Claims**



1. A method of manufacturing a multipolar electrode structure for focusing or mass-filtering a beam of charged particles, wherein said structure comprises a plurality of elongate electrodes disposed substantially parallel to an axis, said method comprising:

a) providing a sufficient number of blanks of electrically conductive material to permit the manufacture of all of said elongate electrodes, each of said blanks comprising enough material for at least one said electrode;

b) providing insulating supporting means into which all of said blanks can be mounted and which is capable of maintaining said electrodes in fixed spatial relationship to each other after completion of steps c) and d);

c) assembling all said blanks and said supporting means so that said blanks occupy at least the space to be occupied by said electrodes; and

d) without disturbing the position of said blanks relative to said supporting means removing material from all said blanks to generate said electrodes in position in said supporting means.

5,384,462

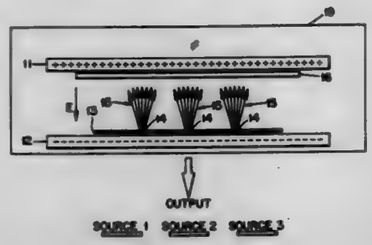
PROCESS AND APPARATUS FOR LOCALIZING A SOURCE OF CHARGED PARTICLES USING AN ELECTRIC FIELD

Roy C. Levitt, 1107 Timber Trail Rd., Towson, Md. 21204

Filed Dec. 8, 1992, Ser. No. 987,194

Int. Cl.[6] G01T *1/29*

U.S. Cl. 250—374 **7 Claims**



1. An apparatus for characterizing a radioactive source of electrically charged particles comprising:

two electrodes, the electrodes being chargeable such that an electric field is formed therebetween when the electrodes are charged;

a substrate disposed between the two electrodes for supporting the radioactive source; and

means, disposed between the two electrodes, for detecting electrically charged particles emitted by the radioactive source,

wherein the electric field directs the electrically charged particles emitted by the source to the detecting means when the electrodes are charged.

5,384,463

PATTERN INSPECTION APPARATUS AND ELECTRON BEAM APPARATUS

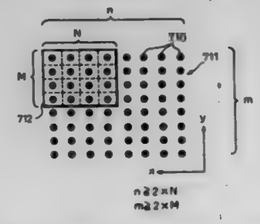
Ichiro Honjo; Kenji Sagishima, and Masaki Yamabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 10,984, Jan. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 897,451, Jun. 10, 1992, abandoned. This application May 5, 1994, Ser. No. 238,349

Claims priority, application Japan, Jun. 10, 1991, 3-137692; Sep. 20, 1991, 3-241549; Nov. 14, 1991, 3-298838; Nov. 29, 1991, 3-316676; Jan. 31, 1992, 4-016270; Jul. 16, 1992, 4-189281

Int. Cl.[6] H01J *37/06, 37/30*

U.S. Cl. 250—398 **7 Claims**



1. An electron beam system comprising a multiple electron-beam source having a plurality of electron emitters disposed in a matrix, in which a target region of a sample placed opposite to the multiple electron-beam source is irradiated with electron beams emitted from the electron emitters, wherein the total number of unit areas to be irradiated by said electron beam is N×M, and the total number of electron emitters composing the multiple electron-beam source is n×m, and n×m is greater than N×M.

5,384,464

PROCESS AND APPARATUS FOR OPTICAL NEAR FIELD MICROLITHOGRAPHY

Frederique De Fornel; Jean-Pierre Goudonnet, both of Dijon, France, and James Mantovani, Statesboro, Ga., assignors to SIM (Societe d'Investissement dans la Microscopie) S.A., Auxerre, France

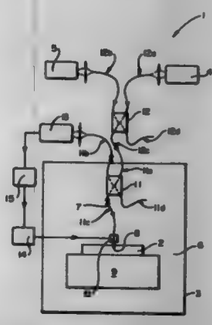
PCT No. PCT/FR90/00682, § 371 Date May 7, 1992, § 102(e) Date May 7, 1992, PCT Pub. No. WO91/04513, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 21, 1990, Ser. No. 842,184

Claims priority, application France, Sep. 22, 1989, 89 12497

Int. Cl.[6] H01J *37/304*

U.S. Cl. 250—492.2 **10 Claims**



1. Direct scanning microlithography process on a wafer-shaped substrate having a surface by at least one of an optical beam and an electronic beam for achieving photomechanical or electromechanical lithography of submicrometric structures on the surface of the substrate, the process comprising:

holding a source of at least one of an optical beam and an electronic beam for lithography at a close distance to the substrate using a waveguide proximity probe comprising a fiber optic proximity probe having an end, with the source being aligned with the end of the waveguide;

aligning a point of impact of the at least one of an optical beam and an electronic beam with a point of impact of a coherent light wave which is injected into the waveguide, so that, in positioning the end above the surface of the substrate, a coupling coefficient between a propagation mode of the waveguide and a propagation mode of an electrical field of a light wave reflected by the surface and guided in return by the waveguide, is assimilated with a rapidly decreasing function that depends upon the distance.

5,384,465

SPECTRUM ANALYZER IN AN ION IMPLANTER

David G. Armour, Salford; Johnathan G. England, Horsham; Neil Bryan, Hull, and Jakob A. Van der Berg, Didsbury, all of United Kingdom, assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Sep. 17, 1993, Ser. No. 123,504

Int. Cl.[6] H01J *37/317*

U.S. Cl. 250—492.21 **51 Claims**

1. An ion implanter for implanting ions into a substrate wafer, comprising means for generating an ion beam, means for receiving charged particles ejected from said ion beam, first means for rejecting those of the received charged particles below a first predetermined energy, second means for rejecting those of said received charged particles above a second predetermined energy, said first predetermined energy being lower than said second predetermined energy, means to count the number of received charged particles between said first and second predetermined energies, and scanning means for scanning said first and second predetermined energies to determine the energy at which said number is a maximum.

5,384,466

ELECTRON BEAM LITHOGRAPHY APPARATUS AND A METHOD THEREOF

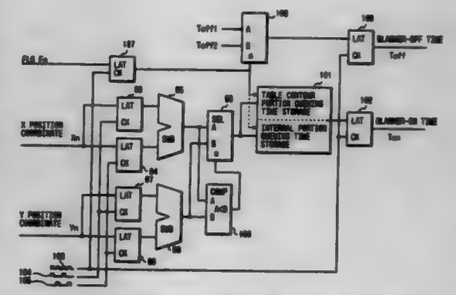
Kazumitsu Nakamura, Hsinchu, Taiwan, Prov. of China, and Rikio Tomiyoshi, Mito, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Instruments Engineering Co., Ltd., Katsuta, both of Japan

Filed May 20, 1993, Ser. No. 64,685

Claims priority, application Japan, Jan. 1, 1992, 4-140274

Int. Cl.[6] H01J *37/302*

U.S. Cl. 250—492.22 **15 Claims**



1. An electron beam lithography apparatus comprising:

a) a means for exposing a specimen to an electron beam;

b) a blanker for blocking exposure of the electron beam on said specimen;.

c) a deflector for deflecting said electron beam according to an applied voltage;

d) a time selector for selecting either one of a first period of time during which a voltage applied to said deflector is ensured to stabilize from its transient state to a substantially stable state and a second period of time within the first period of time which is shorter than the first period of time; and

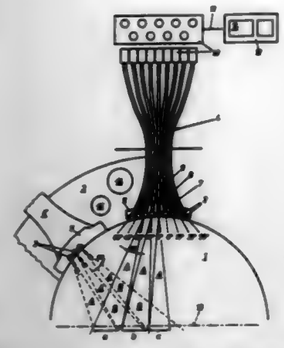
e) a blanker controller for controlling said blanker to be operated in accordance with a selection of the time selector.

5,384,467

OPTOELECTRONIC MEASURING DEVICE FOR MONITORING A COMBUSTION CHAMBER

Anton Plimon, Graz; Harald A. Philipp, Wegersfeld, and Ernst Winklhofer, St. Johann ob Hohenburg/Stmk., all of Austria, assignors to AVL Gesellschaft fiir Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof.Dr.Dr.h.c. Hans List, Graz, Austria

Filed Oct. 14, 1993, Ser. No. 135,554
Claims priority, application Austria, Oct. 16, 1992, 2047/92
Int. Cl.[6] H01J *5/16*
U.S. Cl. 250—554 **14 Claims**



1. Optoelectronic measuring device for monitoring combustion processes in a combustion chamber of an internal combustion engine during operation, comprising optical sensor means and an evaluation unit connected to said optical sensor means, wherein said optical sensor means are placed in a sealing element bounding said combustion chamber, which sealing element is positioned in a plane cutting said combustion chamber, wherein said sensor means are directed at adjacent sections of an interior diameter of said sealing element for the purpose of generating a one-dimensional image of said combustion processes.

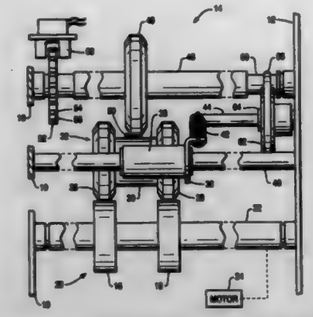
5,384,468

APPARATUS AND METHOD FOR INDICATING THE THICKNESS OF RECORD MEDIA BY FORCING A SPACED ROLLER INTO ENGAGEMENT WITH A PULSE GENERATOR

Douglas L. Milne, West Ferry; Ian McIntosh, Monifieth; John Peebles, and James Swinton, both of Dundee, all of Scotland, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 4, 1993, Ser. No. 143,507
Claims priority, application United Kingdom, Jul. 22, 1993, 9315143
Int. Cl.[6] G01N *21/86;* **G01V** *9/04*
U.S. Cl. 250—560 **23 Claims**

1. Apparatus for indicating the thickness of record media which is passed along a feed path, comprising;
a first roll set;
a second roll set mounted for rotation on an arm pivoted at a point remote from the axis of rotation of said second roll set, said second roll set being positioned to normally engage said first roll set;
means for driving said first roll set;
means urging said second roll set toward engagement with said first roll set;
a third roll rotatable about an axis of rotation positioned so that said third roll is normally spaced a predetermined distance from said second roll set and is thus normally disengaged therefrom;
a pulse generating device coupled to said third roll; and
means for counting the pulses generated by said pulse generating device;
whereby when record media is driven between said first and second roll sets by said driving means, if the media is



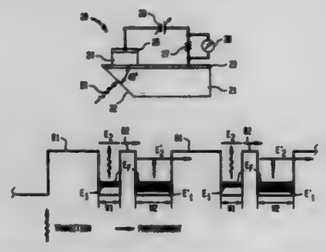
greater in thickness than said predetermined distance, the second roll set rocks on its remote pivot to engage said third roll and to rotate said third roll to cause pulses to be generated by said pulse generating means and counted by said counting means.

5,384,469

VOLTAGE-TUNABLE, MULTICOLOR INFRARED DETECTORS

Kwong-Kit Choi, Tinton Falls, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 21, 1993, Ser. No. 79,793
Int. Cl.[6] H01L *31/06*
U.S. Cl. 257—21 **15 Claims**



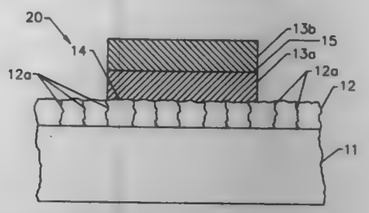
1. A semiconductor superlattice structure comprising:
a plurality of doped semiconductor layers forming quantum well units, each said unit having at least two doped quantum wells therein, each said doped quantum well having a lower energy level, a higher energy level, and a Fermi level, wherein, at a zero bias, the Fermi levels of each of said doped quantum wells are substantially equal; wherein, at a predetermined bias, the Fermi levels of said doped quantum well units are different; and wherein the lower energy levels of each quantum well are different from one another;
a set of first semiconductor layers forming quantum potential barriers each located between adjacent ones of said quantum well units, said first potential barriers substantially impeding the tunneling therethrough of electrons at said lower energy levels; and
a set of second semiconductor layers forming quantum potential barriers each located between adjacent ones of said doped quantum wells in each of said quantum well units, said second potential barriers permitting electrons at said lower levels to tunnel therethrough and preventing energy-level coupling between adjacent ones of said doped quantum wells.

5,384,470

HIGH TEMPERATURE RECTIFYING CONTACT INCLUDING POLYCRYSTALLINE DIAMOND AND METHOD FOR MAKING SAME

Takeshi Tachibana, Osaka, Japan; Dale G. Thompson, Jr., Chapel Hill, and Jeffrey T. Glass, Apex, both of N.C., assignors to Kobe Steel, USA, Inc., Research Triangle Park, N.C.

Filed Nov. 2, 1992, Ser. No. 970,252
Int. Cl.[6] H01L *23/48, 23/52*
U.S. Cl. 257—77 **26 Claims**



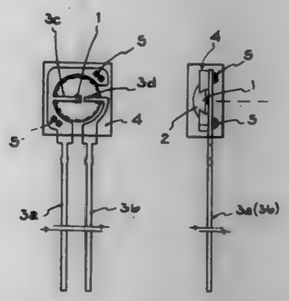
1. A semiconductor device comprising:
a doped polycrystalline semiconducting diamond layer; and
a refractory metal carbide layer on said polycrystalline semiconducting diamond layer and forming a rectifying contact therewith, said refractory metal carbide layer and said polycrystalline semiconducting diamond layer defining a substantially chemically nonreactive interface therebetween for reducing outdiffusion of carbon atoms from said polycrystalline semiconducting diamond layer to said refractory metal carbide layer to thereby reduce electrically active defects in said polycrystalline semiconducting diamond layer, said refractory metal carbide layer having a plurality of portions of different predetermined proportions of refractory metal and carbon.

5,384,471

OPTO-ELECTRONIC COMPONENT WITH NARROW APERTURE ANGLE

Werner Schairer, Weinsberg; Jörg Angerstein, Flein; Siegfried Giebler, Wüstenrot; Jürgen Riedel, Gemmingen, and Thomas Mistele, Ilsfeld, all of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Sep. 30, 1993, Ser. No. 128,659
Claims priority, application Germany, Oct. 2, 1992, 4233125; Apr. 7, 1993, 4311530
Int. Cl.[6] H01L *31/12*
U.S. Cl. 257—98 **9 Claims**



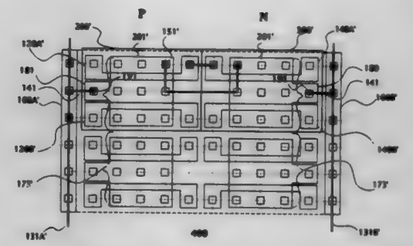
1. An opto-electronic component having a narrow aperture angle, comprising: a semiconductor chip for either emitting radiation or reacting to radiation mounted on a first side of a metal support strip which includes a plurality of part-strips, a parabolic reflector disposed adjacent said first side of said support strip, said reflector being provided with engaging elements, onto which said support strip is latched, to connect said reflector to said support strip such that said semiconductor chip mounted on said support strip is substantially at the focal point of the parabolic surface of said reflector.

5,384,472

SYMMETRICAL MULTI-LAYER METAL LOGIC ARRAY WITH CONTINUOUS SUBSTRATE TAPS AND EXTENSION PORTIONS FOR INCREASED GATE DENSITY

Patrick Yin, Fremont, Calif., assignor to Aspec Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 898,203, Jun. 10, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,680
Int. Cl.[6] H01L *22/10, 27/02*
U.S. Cl. —204 **12 Claims**



1. An integrated circuit gate array structure comprising:
a semiconductor substrate in which are located a plurality of columns of semiconductor material of a first conductivity type and a plurality of columns of semiconductor material of a second conductivity type;
active areas formed within the columns to which can be connected conductive material, thereby forming active regions, each of the active regions including a contact point region, the contact point region including a plurality of contacts for electrical connection thereto; the contact point region including an extension portion for allowing for the connection outside the active region without affecting any other connections to the structure; and
tap regions formed outside the columns, each of the tap regions being associated with one pair of the columns, the tap regions being doped with an opposite material than their respective columns thereby allowing current and voltage characteristics of the columns to be controlled.

5,384,473

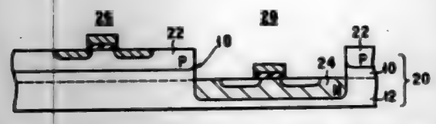
SEMICONDUCTOR BODY HAVING ELEMENT FORMATION SURFACES WITH DIFFERENT ORIENTATIONS

Susumu Yoshikawa, and Akira Sudo, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 30, 1992, Ser. No. 953,808
Claims priority, application Japan, Oct. 1, 1991, 3-253899
Int. Cl.[6] H01L *27/02, 29/04, 27/04*
U.S. Cl. 257—255 **13 Claims**

1. A semiconductor body comprising:
a first semiconductor substrate having a first and a second main surface, a first surface orientation appearing at said first main surface;
a second semiconductor substrate having a third main surface, a second surface orientation different from said first surface orientation appearing at the third main surface,

and the third main surface being in contact with the second main surface of said first semiconductor substrate; and



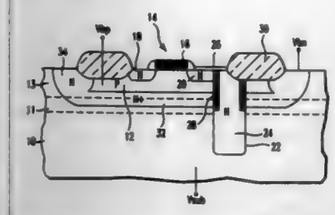
at least one opening made in said first semiconductor substrate, at which the third main surface of said second semiconductor substrate appears.

5,384,474

DOUBLE GRID SUBSTRATE PLATE TRENCH

Jong W. Park, Essex Junction, and Steven H. Voldman, Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 819,159, Jan. 9, 1992, abandoned. This application Nov. 5, 1993, Ser. No. 149,146
Int. Cl.[6] H01L *29/78, 27/02, 27/04*
U.S. Cl. 257—304 7 Claims



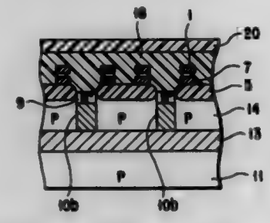
1. A dynamic random access memory device comprising:
a semiconductor substrate having a first region of a first conductivity type,
at least one array of dynamic memory cells, each cell comprising an access transistor coupled to a storage capacitor, the transistor of each memory cell being formed within a second region of said first conductivity type of said semiconductor substrate, each access transistor having a control electrode, a data line contact region, a storage node region, and a channel region;
a plurality of signal storage capacitors formed in a plurality of trenches in said substrate, each capacitor including a signal storage node and a reference voltage node separated by a dielectric insulator, at least a portion of the reference voltage node being formed in said first region of said substrate and the signal storage node of each capacitor being formed in one of said trenches and connected to a corresponding storage node region of one of said access transistors;
means for physically and electrically isolating all of the channel region of said access transistors within said one array from said first region of said substrate, said isolating means comprising a third region of opposite conductivity type to said first region, a first portion of said third region being formed laterally between said first and second regions, said first portion of said third region intersecting all of said trenches, said third region further comprising a second subregion extending substantially around said array and extending between said reference voltage node region and the surface of said substrate;
means for biasing said first, second and third regions of said substrate to first, second and third different voltages; and
the signal storage capacitor includes an insulating layer at the top of each of said trenches having a thickness greater than the thickness at the bottom of said trenches.

5,384,475

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Masamitsu Yahata, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 8, 1992, Ser. No. 957,555
Claims priority, application Japan, Oct. 9, 1991, 3-261642
Int. Cl.[6] H01L *23/48, 21/265*
U.S. Cl. 257—314 19 Claims



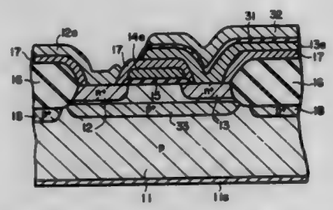
1. A semiconductor device comprising:
a first conductivity type semiconductor substrate;
a second conductivity type diffused wiring region formed on a surface of said semiconductor substrate, said diffused wiring region comprising a plurality of lines each of which is isolated from each other and extends in a line;
a first conductivity type epitaxial layer formed on a surface of said semiconductor substrate including said diffused wiring region;
a second conductivity type element region formed on a surface of said epitaxial layer; and
a second conductivity type internal contact, formed by a diffused region, for electrically connecting said diffused wiring region to said element region.

5,384,476

SHORT CHANNEL MOSFET WITH BURIED ANTI-PUNCH THROUGH REGION

Jun-ichi Nishizawa, and Tadahiro Ohmi, both of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation of Ser. No. 179,782, Aug. 20, 1980, abandoned. This application Jun. 9, 1987, Ser. No. 62,333
Claims priority, application Japan, Aug. 25, 1979, 54-108377; Sep. 7, 1979, 54-115491
Int. Cl.[6] H01L *27/108*
U.S. Cl. 257—345 19 Claims



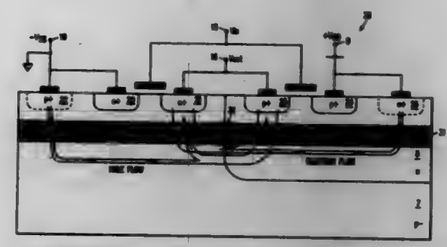
1. A semiconductor device formed with an insulation-gate transistor having a semiconductor substrate, and having, closer to a surface of said substrate, a source semiconductor region of one conductivity type and a low resistance and a channel semiconductor region of the opposite conductivity type and a high resistivity defined between said source region and a drain region, and having a gate electrode formed on a surface of said channel region via a gate insulator layer, wherein:
at least a portion of said gate electrode contacting said gate insulator layer is formed with a material which has a relatively high built-in voltage relative to said source region and which is selected from a group consisting of a metal, a metal silicide and a highly-doped polysilicon of a conductivity type opposite to that of said source region,
a deep semiconductor region (33) of said opposite conductivity type having an impurity concentration higher than that of the channel region and extending along at least a part of said effective channel length but being effectively separated from and located at a depth sufficiently lower than said source region so as to reduce junction capacitance between said deep region and said source region;
an effective channel length of less than 1 μm defined by the distance between said source and said drain regions,
said gate insulator layer being less than 500 Å, and
the relationship $L/D > 0.9$, where L represents the effective channel length and D represents the depth from the surface of said semiconductor region.

5,384,477

CMOS LATCHUP SUPPRESSION BY LOCALIZED MINORITY CARRIER LIFETIME REDUCTION

Constantin Bulucea, Milpitas; Esin Dermitzioglu, Cupertino, and Sheldon Aronowitz, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 9, 1993, Ser. No. 28,456
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—372 6 Claims



1. A CMOS integrated circuit for latchup suppression, comprising:
a silicon substrate having an upper surface and a subsurface region generally parallel to the upper surface and located at a predetermined distance beneath the upper surface;
a plurality of transistors formed within the silicon substrate, each transistor having at least a source region and a drain region; and
minority carrier lifetime reducing impurities implanted into the subsurface region, wherein the impurities are selected from the group consisting of calcium and strontium.

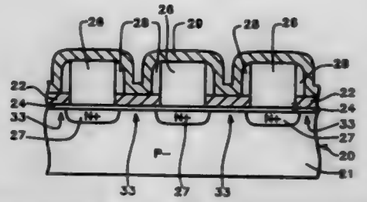
5,384,478

MASK ROM PROCESS

Gary Hong, Hsinchu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Division of Ser. No. 98,046, Jul. 28, 1993, Pat. No. 5,308,777. This application Feb. 14, 1994, Ser. No. 194,737
Int. Cl.[6] H01L *29/68*
U.S. Cl. 257—365 20 Claims

1. A semiconductor ROM device comprising
a first conductivity type layer on one surface of a semiconductor substrate,
a gate oxide layer formed on the surface of said substrate,
a first set of conductive structures consisting essentially of polysilicon formed on said gate oxide layer with a plurality of buried bit lines in said substrate beneath said gate oxide layer implanted between said polysilicon structures with channel regions between said buried bit lines,
insulating structures above said buried bit lines between said first set of conductive structures and in contact therewith,
a second conductive structure consisting essentially of polysilicon formed on the remaining structure on said workpiece, said second conductive structure extending down into electrical contact with said first conductive structures above said channel regions,



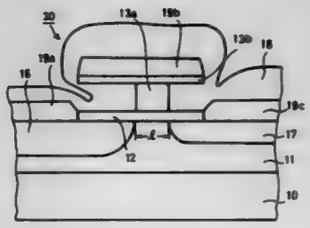
a ROM code implant formed in said substrate in said channel below said first conductive layer beneath the space between the surfaces of said second conductive structure where said second conductive structure extends between said insulating structures.

5,384,479

FIELD EFFECT TRANSISTOR WITH T-SHAPED GATE ELECTRODE

Akihiko Tsuiguchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 958,788
Claims priority, application Japan, Oct. 14, 1991, 3-296384
Int. Cl.[6] H01L *29/76, 29/94, 23/48, 23/52*
U.S. Cl. 257—412 22 Claims



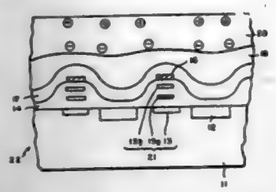
1. A semiconductor device comprising:
a substrate;
a semiconductor epitaxial layer of a first conductivity type disposed on said substrate;
source and drain regions having a conductivity type opposite the conductivity type of said semiconductor epitaxial layer disposed in said semiconductor epitaxial layer and spaced from each other;
an insulating layer overlying at least a portion of said semiconductor epitaxial layer; and
a gate electrode disposed on said insulating layer and comprising lower and upper gate electrode sections having respective central axes perpendicular to said semiconductor epitaxial layer, said upper gate electrode section having a longer gate length than said lower gate electrode section, said lower gate electrode section being disposed on said insulating layer between said source and drain regions with the central axis of said lower gate electrode section displaced closer to said drain region than the central axis of said upper gate electrode section, said source region not extending beneath said lower gate electrode section in said semiconductor epitaxial layer.

5,384,480

CLEAR-MOLD SOLID-STATE IMAGING DEVICE USING A CHARGE COUPLED DEVICE

Shun-ichi Naka, Habikino, and Takayoshi Ishida, Sakurai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 22, 1993, Ser. No. 6,923
Claims priority, application Japan, Jan. 22, 1992, 4-009335
Int. Cl.[6] H01L *29/161, 29/205, 29/225, 33/00*
U.S. Cl. 257—414 6 Claims



6. A clear-mold solid-state imaging device including a charge coupled device, the clear-mold solid-state imaging device comprising:

a light receiving section for converting incident light into electric charges;.

a transparent resin covering at least the light receiving section, the transparent resin including moving ions; and

a moving ion blocking layer provided between the light receiving section and the transparent resin, for blocking movement of the moving ions;

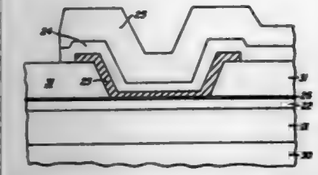
wherein the moving ion blocking layer is formed of a polystyrene resin having a thickness of at least 3.0 μm.

5,384,481

ANTIFUSE CIRCUIT STRUCTURE FOR USE IN A FIELD PROGRAMMABLE GATE ARRAY AND METHOD OF MANUFACTURE THEREOF

Monta R. Holzworth, Santa Clara; Richard Klein, Mountain View; Pankaj Dixit, San Jose, and William P. Ingram, III, Los Altos, all of Calif., assignors to Crosspoint Solutions, Inc., Santa Clara, Calif.

Continuation of Ser. No. 642,617, Jan. 17, 1991, abandoned. This application Apr. 2, 1993, Ser. No. 41,924
Int. Cl.[6] H01L *27/02*
U.S. Cl. 257—530 6 Claims



1. An antifuse structure in an integrated circuit device, said integrated circuit device formed within and on a semiconductor substrate, said antifuse structure comprising

a first metal layer on a first insulating layer over said substrate;

a first refractory metal layer on said first metal layer;

a relatively thin layer having silicon on said first refractory metal layer, said relatively thin layer comprising metal silicide;

an amorphous silicon layer comprising hydrogen on said relatively thin layer;

a second refractory metal layer on and in contact with said amorphous silicon layer; and

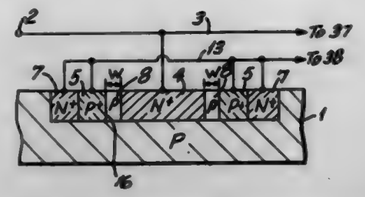
a second metal layer on said second refractory metal layer.

5,384,482

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING INPUT PROTECTIVE CIRCUIT

Yasutaka Nakashiba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 18, 1993, Ser. No. 63,917
Claims priority, application Japan, May 18, 1992, 4-124811
Int. Cl.[6] H01L *27/04, 27/12*
U.S. Cl. 257—547 18 Claims



1. An input protective circuit for a semiconductor integrated circuit device having a semiconductor integrated circuit provided in a first portion of a semiconductor substrate, an input bonding pad provided on a second portion of said semiconductor substrate, an input wiring layer for connecting said input bonding pad to said semiconductor integrated circuit, a reference potential wiring layer for supplying a reference potential to said semiconductor integrated circuit, said input protective circuit being provided in a third portion of said semiconductor substrate and coupled between said input wiring layer and said reference potential wiring layer for clamping an abnormal voltage from said input bonding pad, said input protective circuit comprising:

a first semiconductor region of a first conductivity type, said first semiconductor region being of high impurity density and connected to said input wiring layer;

a second semiconductor region of a second conductivity type formed apart from said first semiconductor region, said second semiconductor region being of high impurity density and connected to said reference potential wiring layer; and

an electric field intensity relaxing region of low impurity density formed between said first and second semiconductor regions in contact with said first semiconductor region and further with said second semiconductor region, said electric field intensity relaxing region having one of said first and second conductivity types to form a PN junction with one of said first and second semiconductor regions, and said electric field intensity relaxing region allowing a depletion layer extending from said PN junction to reach the other of said first and second semiconductor regions through said electric field intensity relaxing region when said abnormal voltage is applied to said input bonding pad so that a breakdown phenomenon occurs between said first and second semiconductor regions to clamp said abnormal voltage.

5,384,483

PLANARIZING GLASS LAYER SPACED FROM VIA HOLES

Kuei-Wu Huang, Irving, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Feb. 28, 1992, Ser. No. 843,507
Int. Cl.[6] H01L *29/46, 29/54, 29/62*
U.S. Cl. 257—644 10 Claims

1. A structure in an integrated circuit, comprising:

a conductive element on an underlying region in the integrated circuit;

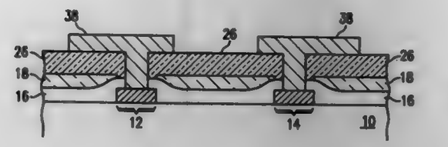
a first insulating layer overlying the underlying region and the conductive element, wherein the first insulating layer has an upper surface, and has higher and lower topographical regions therein;

a layer of planarizing material which fills in the lower topographical regions of the first insulating layer, such layer having a planar upper surface, wherein the planarizing material layer upper surface is higher than the first insulating layer upper surface over the conductive element;

an opening through the planarizing material layer, and partway through the first insulating layer, over the conductive element;

a second insulating layer overlying the layer of planarizing material, and overlying the first insulating layer in the opening; wherein said first and second insulating layers each has a different composition than said planarizing layer; and

a second opening through the first and second insulating layers exposing a portion of the conductive element, wherein the second opening is smaller than, and located within, the first opening, and wherein the planarizing material is separated from the second opening by portions of the first and second insulating layers.

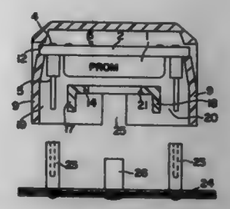


5,384,484

ELECTRONIC READ-ONLY MEMORY MODULE

Werner Haug, Langnau, Switzerland, assignor to Frama AG, Lauperswil, Switzerland

Filed Feb. 22, 1993, Ser. No. 21,345
Claims priority, application Switzerland, Mar. 10, 1992, 00757/92-1
Int. Cl.[6] H01L *23/10, 23/32*
U.S. Cl. 257—690 2 Claims



1. An electronic read-only memory module electrically connectable to a primary electrical circuit board, said module comprising:

a casing having a base;

a memory unit enclosed in said casing and having a plurality of connecting leads extending to the exterior of said casing and from said base;

a secondary electrical circuit board, said casing base being positioned adjacent said secondary circuit board;

a plurality of secondary contact elements projecting from said secondary circuit board and having free ends connectable with mating primary contact elements on the primary circuit board, said plurality of secondary contact elements being electrically connected to corresponding ones of said connecting leads of said memory unit;

a casing cap having an open bottom and walls encompassing and fixedly holding said secondary circuit board, said casing, and said secondary contact elements, such that said free ends of said secondary contact elements are set back inwardly with respect to a plane containing said casing cap open bottom; and

a closure wall contained within and attached to said casing cap, such that said casing is located between said casing cap and said closure wall, and such that a gap is provided laterally and between said casing cap and said closure wall for clear passage of said secondary contact elements; wherein

said closure wall comprises depending side edges to define a U-shaped cross section for said closure wall, said gap being defined by said casing cap and said side edges of said closure wall.

5,384,485

CONTACT STRUCTURE FOR CONNECTING AN ELECTRODE TO A SEMICONDUCTOR

Kenji Nishida, and Noriaki Sato, both of Tokyo, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 948,622, Sep. 22, 1992, abandoned, which is a continuation of Ser. No. 697,748, May 6, 1991, abandoned, which is a continuation of Ser. No. 354,609, May 22, 1989, abandoned. This application Aug. 18, 1993, Ser. No. 115,242
Claims priority, application Japan, May 27, 1988, 63-129832
Int. Cl.[6] H01L *23/48, 29/76, 23/52, 29/40*
U.S. Cl. 257—751 6 Claims



1. A contact structure for connecting a semiconductor device to a wiring electrode, comprising:

a semiconductor region forming a part of the semiconductor device, said semiconductor region having a major surface;

a first contact layer of reduced resistivity, said first contact layer having an upper major surface and a lower major surface and provided on the major surface of the semiconductor region;

an insulating structure having an upper major surface and a lower major surface, said insulating structure provided on the upper major surface of the first contact layer to bury the first contact layer underneath;

a penetrating hole opened through the insulating structure to expose a part of the upper major surface of the first contact layer, said penetrating hole being defined by a side wall extending from the lower major surface to the upper major surface of the insulating structure, said penetrating hole being further defined by a bottom edge at the lower major surface of the insulating structure and a top edge at the upper major surface of the insulating structure;

a second contact layer of reduced resistivity provided on the part of the upper major surface of the first contact layer exposed by the penetrating hole, said second contact layer extending from the bottom edge of the penetrating hole along the side wall to beneath the top edge of the penetrating hole, said second contact layer having a concaved upper surface such that the second contact layer has a wall thickness, measured perpendicularly to the side wall of the penetrating hole, which is maximum at the bottom edge of the penetrating hole and decreases towards the top edge;

a conductor layer forming the wiring electrode provided above the second contact layer and extending over the concaved upper surface of the second contact layer and extending over the upper major surface of the insulating structure; and

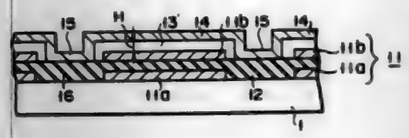
a diffusion barrier layer interposed between the second contact layer and the conductor layer and in contact with both the second contact layer and the conductor layer, said diffusion barrier layer extending continuously along the concaved upper surface of the second contact layer and extending directly on the upper major surface of the insulating structure, said diffusion barrier layer preventing a reaction between the second contact layer and the conductor layer.

5,384,486

INTEGRATED CIRCUIT DEVICE HAVING SIGNAL WIRING STRUCTURE OF ULTRAHIGH-SPEED PERFORMANCE

Mitsuo Kosno, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 724,717, Jul. 2, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 26,195
Claims priority, application Japan, Jul. 2, 1990, 2-172705
Int. Cl.[6] H01L *27/10, 27/15, 23/48, 29/46*
U.S. Cl. 257—752 7 Claims



1. An integrated circuit device, comprising:
a substrate;
a plurality of circuit elements arranged on said substrate and having terminals;
a plurality of signal lines connected between said terminals of said circuit elements; and
a ground line provided close to said signal lines for controlling transmission characteristics of said signal lines, said ground line including a high-potential direct current power source line and a low-potential direct current power source line, said high-potential direct current power source line and said low-potential direct current power source line being vertically stacked and separated by a dielectric layer therebetween, said high-potential and low potential direct current power source lines and at least one of said signal lines extending in a parallel direction with each other, wherein the thickness of the dielectric layer is sufficiently thin compared with a width of said high-potential and low-potential direct current power source lines so that the impedance of said high-potential and low potential direct current power source lines is sufficiently less than the impedance between the signal lines so that said high-potential and low-potential direct current power source lines have substantially the same potential in terms of a high frequency and thereby function as a single ground line for the signal line.

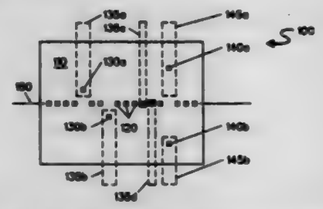
5,384,487

OFF-AXIS POWER BRANCHES FOR INTERIOR BOND PAD ARRANGEMENTS

Michael D. Rostoker, San Jose; Nicholas F. Pasch, Pacifica, and Joe Zeiayeta, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed May 5, 1993, Ser. No. 58,120
Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—786 18 Claims

1. A semiconductor device comprising:
a semiconductor die having a planar surface, a centroid, a peripheral area, an interior area within the peripheral area, an axis defined on the planar surface of the semiconductor die which passes substantially over the centroid, and a width perpendicular to the axis;
circuitry formed within the die;
a first plurality of relatively many bond pads disposed on the planar surface of the die in a linear configuration along the axis;
a second plurality of relatively few bond pads disposed on the planar surface of the die, within the interior area and spaced away from the centerline, the second plurality of bond pads being disposed on either side of the first plurality of bond pads; and
further comprising:
a first limit line defined on the surface of the die to one side of the axis, parallel to the axis and located a first distance



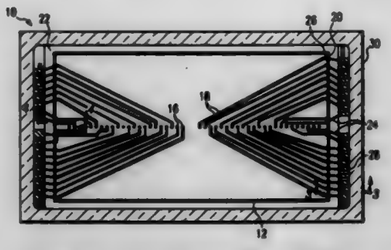
from the axis equal to approximately one-quarter of the width of the die;
a second limit line defined on the surface of the die to an opposite side of the axis, parallel to the axis and located a second distance from the axis equal to approximately one-quarter of the width of the die; and
a placement area on the surface of the die between the first limit line and the second limit line;
wherein:
the second plurality of bond pads is disposed entirely within the placement area.

5,384,488

CONFIGURATION AND METHOD FOR POSITIONING SEMICONDUCTOR DEVICE BOND PADS USING ADDITIONAL PROCESS LAYERS

Shahin Golshan; Craig A. St. Martin, and Craig W. Rhodine, all of Midland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 898,868, Jun. 15, 1992, abandoned. This application Oct. 3, 1993, Ser. No. 135,867
Int. Cl.[6] H01L *23/48, 29/46, 29/62, 29/64*
U.S. Cl. 257—786 9 Claims



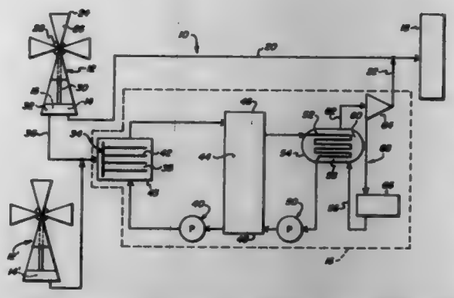
1. An integrated circuit device using additional process layers for positioning bond pads, comprising:
a semiconductor chip having an active circuit formed in a face thereof, said chip having opposed end edges;
a plurality of bond pads in electrical contact with said active circuit oriented along a center line of said chip;
an insulating layer overlying said active circuit and having vias to enable electrical connection to said bond pads through said vias;
a patterned conductive layer overlying said insulating layer and said vias, forming conductive vias for transferring signals from said bond pads;
said patterned conductive layer also forming a plurality of conductive trace lines connecting said conductive vias to said end edges of said chip; and
a plurality of wire bonds oriented along each of said end edges for being connected to terminal ends of said trace lines.

5,384,489

WIND-POWERED ELECTRICITY GENERATING SYSTEM INCLUDING WIND ENERGY STORAGE

Alphonse H. Bellac, 461 Old Stamford Rd., New Canaan, Conn. 06840

Filed Feb. 7, 1994, Ser. No. 192,432
Int. Cl.[6] F05D *9/02*; F22B *1/28*
U.S. Cl. 290—44 20 Claims



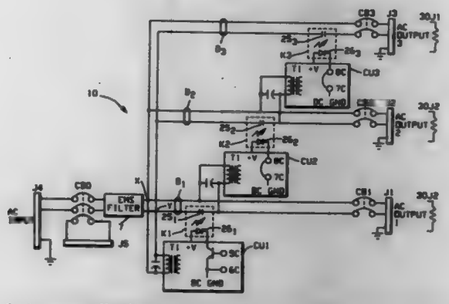
1. A wind-powered electricity generator system comprising:
blades mounted to rotate a shaft of the generator in response to wind and create electricity;
a resistance heater operable with electricity from the generator;
switch means actuable in response to the amount of electricity created by the generator for applying electricity to said resistance heater;
thermal fluid heated by said resistance heater for storing wind power;
a heat exchanger utilizing the heated thermal fluid to create steam; and
a steam-powered electricity generator for creating electricity with the steam during periods when wind speed can not create enough electricity to meet demand.

5,384,490

UNIVERSAL POWER DISTRIBUTION SYSTEM

Harry E. Swartz, Jr., Sun City, Calif., assignor to UNISYS Corporation, Blue Bell, Pa.

Filed Jun. 15, 1992, Ser. No. 898,633
Int. Cl.[6] H02J *3/14*
U.S. Cl. 307—38 12 Claims



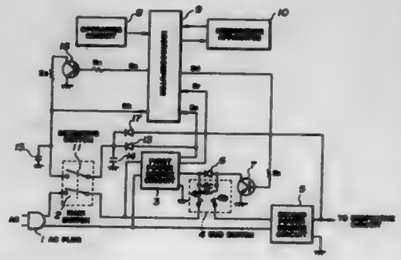
1. A power distribution system for controlling power distribution to electrical loads connected to separate distribution channels in a supporting metallic cabinet frame, comprising:
(a) means for distributing a unitary single alternating current power source into multiple distribution channels;
(b) means for time-sequencing the application of power to each of the said distribution channels so that there will be no damaging inrush line currents;
(c) means, in each of said distribution channels for controlling the activation or non-activation of alternating current flow to electrical loads in each of said distribution channels, each of said means including:
(c1) solid state relay means having an on/off status to regulate the flow of current in the said distribution channel;
(c2) power control unit means for controlling the on/off status of said solid state relay means and including:
(c2a) circuit means for delaying the on-status of said solid state relay means for at least three AC input cycles and no longer than five AC input cycles when AC power is applied to said power control unit means.

5,384,491

MAIN SWITCH FEEDING A CONTROLLABLE ON/OFF SUB-SWITCH

Katsuto Suizu, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 25, 1993, Ser. No. 36,848
Claims priority, application Japan, Mar. 26, 1992, 4-068639
Int. Cl.[6] H04N *5/63*
U.S. Cl. 307—113 7 Claims



1. A power source switch circuit characterized by comprising:
a main switch arranged on an electric power feeding line from an alternating current power source and switching on/off an electric power feed;
a first power source circuit generating a first direct current power source voltage when said main switch is switched on;
a sub-switch arranged on an electric power feeding line on the output side of said main switch and controlled to be switched on/off by a controlling signal;
a second power source circuit generating a second direct current power source voltage when said sub-switch is switched on;
a first electricity storing means for holding a voltage;
a second electricity storing means for holding the voltage from said first electricity storing means for a predetermined period;
a third switch arranged between said first electricity storing means and second electricity storing means, operating to be switched on as interlocked with the engagement of said main switch and feeding as a detecting signal the voltage held by said first electricity storing means to said second electricity storing means; and
a controlling signal generating means operated by the first direct current power source voltage from said first power

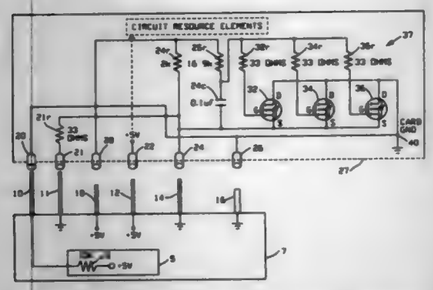
source circuit and generating said controlling signal for switching on said sub-switch in response to the detecting signal fed to said second electricity storing means.

5,384,492

PROTECTIVE SYSTEM FOR INSERTION/EXTRACTION OF PC BOARDS IN A POWERED-UP ENVIRONMENT

Robert H. Carlson, Laguna Niguel, and Daniel L. Baker, Rancho Santa Margarita, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 20, 1992, Ser. No. 979,141
Int. Cl.[6] H02H *7/20*
U.S. Cl. 307—147 **6 Claims**



1. Apparatus for minimizing rapid current variations in a power supply supplying the circuitry elements of a printed circuit board comprising:

(a) a backplane for connection to said printed circuit board, said backplane including:

(a1) a plurality of male connecting pins of specified different lengths which initiate a timed sequence period of connection to the female sockets of said printed circuit board;

(a2) an N-Volt power supply supplying N volt potential to particular ones of said male connecting pins;

(b) said printed circuit board including:

(b1) a plurality of female connection sockets which align correspondingly to said male connection pins;

(b2) a current variation minimization circuit which acts to slow down changes in current drawn by said printed circuit board from said N-volt power supply during the said sequence period of connection, said current variation minimization circuit including:

(b2a) a plurality of Field Effect Transistors (FET) forming a FET Group, each FET having a Source Terminal (S), a Gate Terminal (G), and a Drain Terminal, (D);

(b2b) resistor-capacitor circuit elements connecting said N-volt power supply to each Gate G of said FET Group;

(b2c) a card ground connecting each Drain D to a ground terminal on said printed circuit board;

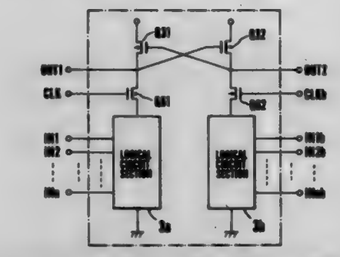
(b2d) said Source S of each FET group connected to a precharge ground socket terminal on said printed circuit board.

5,384,493

HI-SPEED AND LOW-POWER FLIP-FLOP

Katsuya Furuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,249
Claims priority, application Japan, Oct. 3, 1991, 3-256123; Jan. 13, 1992, 4-003946
Int. Cl.[6] H03K *3/356, 3/289*
U.S. Cl. 327—203 **12 Claims**



1. A semiconductor integrated circuit comprising:

first and second cross-coupled transistors each having its source/drain path connected to a first voltage potential;

a first logical circuit section for receiving at least a first input signal, the first logical circuit section being connected to a second voltage potential;

a second logical circuit section for receiving at least a second input signal complementary to the first input signal, the second logical circuit section being connected to the second voltage potential;

a third transistor having its source/drain path connected between the source/drain path of the first transistor and the first logical circuit section and having a gate terminal for receiving a first clock signal;

a fourth transistor having its source/drain path connected between the source/drain path of the second transistor and the second logical circuit section and having a gate terminal for receiving a second clock signal;

a first output connected to a node between the source/drain path of the first transistor and the source/drain path of the third transistor for outputting a first output signal; and

a second output node connected to a node between the source/drain path of the second transistor and the source/drain path of the fourth transistor for outputting a second output signal.

5,384,494

PROGRAMMABLE HOLD-OFF FOR INTEGRATED CIRCUIT I/O PINS

Bradley S. Henson, Lakewood, and William D. Farwell, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 13, 1993, Ser. No. 48,723
Int. Cl.[6] H03K *3/289*
U.S. Cl. 327—202 **2 Claims**

1. A hold-off circuit for an integrated circuit having interior logic, comprising:

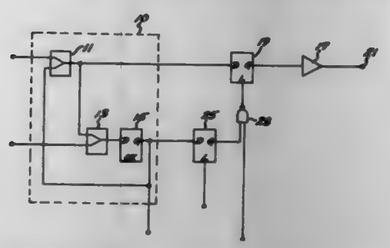
a hold-off latch for receiving an output signal from the interior logic of the integrated circuit, and for providing a hold-off latch output;

an output buffer responsive to said latch output for providing a buffered output;

a hold select latch for storing a hold-off value indicative of whether hold-off is on or off, and for providing a hold select latch output; and

gating means responsive to said hold select latch output and a hold clock for controlling said hold-off latch;

said hold-off latch being transparent regardless of the state of the hold clock when said hold select latch is storing a hold-off value indicative of hold-off being not on, and said hold-off latch being controlled by said hold clock when



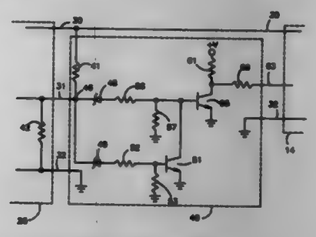
said hold select latch is storing a hold-off value indicative of hold-off being on.

5,384,495

WIRING ERROR DETECTOR FOR DOOR OPERATOR

Dennis W. Waggamon, North Canton, and Louis G. Whitaker, Alliance, both of Ohio, assignors to GMI Holdings, Inc., Alliance, Ohio

Continuation of Ser. No. 649,553, Feb. 1, 1991, abandoned. This application Dec. 8, 1993, Ser. No. 164,307
Int. Cl.[6] E05F *15/10, 15/20*; H02H *7/08*
U.S. Cl. 307—326 **9 Claims**



1. A door operator system comprising:

a door opener for opening and closing a door across a doorway;

a control circuit for operating the door opener, the control circuit having an input for receiving a first signal indicating the presence of an obstruction in the doorway and a second signal indicating the absence of an obstruction in the doorway;

an obstruction detection means for sensing obstructions in the doorway, the obstruction detection means having an output for sending a third signal indicating the presence of an obstruction and a fourth signal indicating the absence of an obstruction;

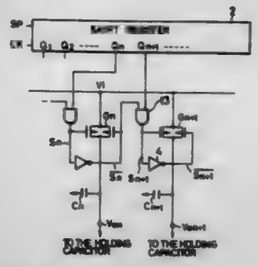
an error detector circuit connected between the control circuit and the obstruction detection means, the error detector circuit providing the first signal on the control circuit input when the third signal is received on the obstruction detection means output, the error detector circuit providing the second signal on the control circuit input when the fourth signal is received on the obstruction detection means output, the error detector circuit and the obstruction detection means providing a splitter circuit connected to the output of the obstruction detection means for maintaining the fourth signal on the obstruction detection means output within a predetermined range of signals during normal operation of the obstruction detection means, the error detector circuit including a signal sensing circuit for sensing if the signal received on the obstruction detection means output is outside the predetermined range, whereby a short circuit or an open circuit in the obstruction detection means output results in the first signal on the control circuit input.

5,384,496

SAMPLE AND HOLD CIRCUIT

Shigeki Tanaka, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1993, Ser. No. 85,039
Claims priority, application Japan, Jul. 9, 1992, 4-182280
Int. Cl.[6] G11C *27/02*; H03K *5/159*
U.S. Cl. 327—94 **7 Claims**



1. A sample and hold circuit comprising:

a common input bus line on which an analog signal is to be applied;

a plurality of combinations of analog switches and capacitors connected to said input bus line;

means for sequentially supplying a sampling control signal to said analog switches; and

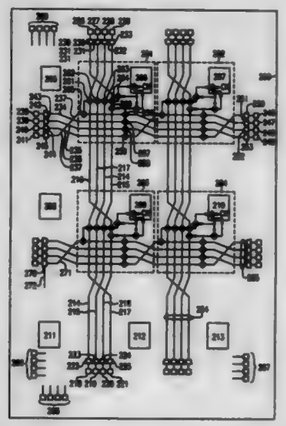
means for preventing said plurality of analog switches from being made conductive at the same time.

5,384,497

LOW-SKEW SIGNAL ROUTING IN A PROGRAMMABLE ARRAY

Barry K. Britton, Schnecksville, Pa.; Dwight D. Hill, San Carlos, Calif., and William A. Oswald, Allentown, Pa., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 4, 1992, Ser. No. 971,501
Int. Cl.[6] H03K *19/177, 19/00*
U.S. Cl. 326—44 **12 Claims**



1. An integrated circuit comprising an array of programma-

ble logic cells and bondpads for supplying input signals; wherein each cell comprises routing conductors and a programmable logic element;

Characterized in that at least some of said bondpads are programmably coupled to global signal routing conductors through programmable input buffers;

wherein a first group of adjacent global signal routing conductors runs parallel to a first axis of the array and is continuous across said array, and a second group of adjacent global signal routing conductors runs parallel to a second axis of the array;

and wherein said first and second groups of adjacent conductors each have an inner conductor that is nearest to a programmable logic element, and an outer conductor that is furthest from said programmable logic element, wherein the outer conductor of each group crosses over the inner conductor at least once per cell;

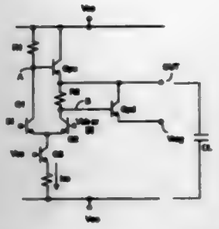
and wherein a programmable cross-connect programmably connects a conductor of said first group to at least one conductor of said second group.

5,384,498

DC-COUPLED ACTIVE PULL-DOWN ECL CIRCUIT WITH SELF-ADJUSTING DRIVE CAPABILITY

Thomas S. W. Wong, San Jose, Calif., assignor to Synergy Semiconductor, Santa Clara, Calif.

Filed Apr. 30, 1993, Ser. No. 56,199
Int. Cl.[6] H03K *19/086*
U.S. Cl. 326—31 25 Claims



1. A DC-coupled switching circuit, comprising:

first and second transistors coupled between an upper rail voltage and a lower rail voltage, each said first and second transistor having an emitter coupled to a common emitter node;

said first transistor having an input lead coupled to receive a first input signal, and said second transistor having an input lead coupled to receive a second input signal;

a current source, coupled to said common emitter node, said current source sinking output current through one of said first or said second transistor to said lower rail voltage;

a pull-up transistor having an input lead coupled to receive an inverted input signal from said first transistor, having a first output lead coupled to said upper rail voltage and having a second output lead resistively coupled to an output lead of said second transistor;

said second output lead of said pull-up transistor providing a signal output port for said circuit; and

a pull-down transistor having an input lead coupled to said output lead of said second transistor, having a first output lead coupled to said signal output port, and having a second output lead coupled to a Vreg reference port receiving a Vreg reference voltage;

said Vreg reference voltage having a magnitude causing said pull-down transistor to turn-on when a signal at said signal output port transitions from logic state "1" to logic state "0" and then to self-terminate and remain biased in a near on state;

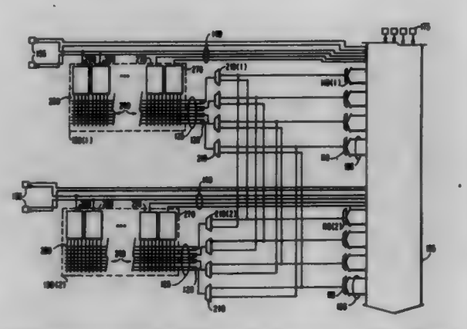
wherein operation of said pull-down transistor self-adjusts to a load coupled to said signal output port, affecting transition time of a logic state "1" to logic state "0" signal output node transition.

5,384,499

HIGH-DENSITY ERASABLE PROGRAMMABLE LOGIC DEVICE ARCHITECTURE USING MULTIPLEXER INTERCONNECTIONS

Bruce B. Pedersen, San Jose; David Chiang, Saratoga; Francis B. Heile, Santa Clara; Cameron McClintock, Mountain View; Hock-Chuen So, Redwood City, and James A. Watson, Santa Clara, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 43,146, Mar. 31, 1993, Pat. No. 5,268,598, which is a continuation of Ser. No. 957,091, Oct. 6, 1992, abandoned, which is a continuation of Ser. No. 691,640, Apr. 25, 1991, Pat. No. 5,241,224. This application Sep. 17, 1993, Ser. No. 123,435
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—39 32 Claims



1. A programmable logic device for producing a plurality of first signals, each of which is a programmable logic function of a plurality of second signals, the programmable logic device comprising:

a plurality of logic array blocks, each of which has a plurality of inputs and at least one output with each output carrying a respective one of the plurality of first signals;

a plurality of global conductors, each global conductor being fed by a respective one of the plurality of second signals;

a plurality of first multiplexers, each of which has a plurality of inputs with each input being connected to a respective one of the global conductors, and an output; and

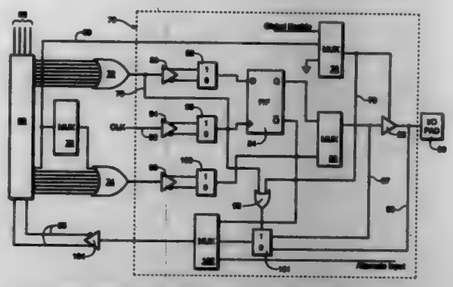
a plurality of second multiplexers, each of which has a plurality of inputs with each input being connected to the output of a uniquely respective one of the first multiplexers, and an output connected to the input of a respective one of the logic array blocks, wherein each of the global conductors has two unique paths through two different first multiplexers to a single logic array block and each global conductor also has two unique paths from each one of the first multiplexers through two different second multiplexers to two different logic array blocks.

5,384,500

PROGRAMMABLE LOGIC DEVICE MACROCELL WITH AN EXCLUSIVE FEEDBACK AND AN EXCLUSIVE EXTERNAL INPUT LINE FOR A COMBINATORIAL MODE AND ACCOMMODATING TWO SEPARATE PROGRAMMABLE OR PLANES

Mark A. Hawes, and Paul S. Zagar, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Continuation of Ser. No. 804,505, May 15, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,865
Int. Cl.[6] H03K *19/173*
U.S. Cl. 326—39 2 Claims



1. A programmable logic device comprising:

a) an AND array having multiple inputs and multiple product term outputs;

b) first and second OR arrays, each OR array receiving, as inputs, product term outputs from the AND array, each OR array having a single sum-of products output; and

c) an output macrocell having

c1) a first input for receiving the sum-of-products output from the first OR array;

c2) a second input for receiving the sum-of-products output from the second OR array;

c3) a third input for receiving a single product term output from the AND array;

4) means for generating a registered signal, said means for generating having a first input coupled to the sum-of-products output of said first OR array, and a second input coupled to a clock signal;

c5) a first multiplexer having a first input for receiving the registered signal, and a second input for receiving a non-registered signal derived from the sum-of-products term output of said second OR array, said first multiplexer having an output, and being operable so as to select between the registered signal and the non-registered signal, and providing the signal so selected at its output;

c6) a tri-statable gate which either couples the selected signal to an input/output terminal or decouples the selected signal from the input/output terminal;

c7) a logic gate having an output, a first input coupled to the sum-of-products term output of said first OR array, and a second input coupled to the single product term output from the AND array; and

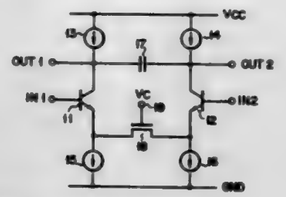
c8) a second multiplexer having an output coupled to at least one of said inputs of said AND array, said second multiplexer also having first and second inputs, said first input being coupled to the output of said first multiplexer, and said second input being coupled to the input/output terminal, said second multiplexer being controlled by the output of said logic gate.

5,384,501

INTEGRATION CIRCUIT INCLUDING A DIFFERENTIAL AMPLIFIER HAVING A VARIABLE TRANSCONDUCTANCE

Mikio Koyama, and Hiroshi Tanimoto, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 715,772, Jun. 14, 1991, Pat. No. 5,227,681. This application May 4, 1993, Ser. No. 56,392
Claims priority, application Japan, Jun. 15, 1990, 2-155514; Mar. 26, 1991, 3-61664
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[6] H03F *3/45*
U.S. Cl. 327—336 13 Claims



1. An integration circuit comprising:

a differential amplifier including current sources connected to a voltage source, and at least first and second bipolar transistors having emitter electrodes, base electrodes connected to input terminals, and collector electrodes connected to said current sources, respectively, said first and second bipolar transistors serving as amplifying elements;

a capacitor connected between said collectors of said first and second bipolar transistors, for serving as a load of said differential amplifier;

a control terminal to which a control voltage is applied; and

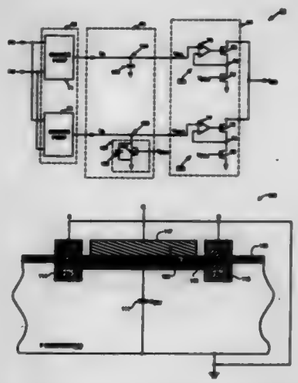
a field effect transistor having source and drain electrodes respectively connected to the emitter electrodes of said first and second bipolar transistors, and a gate electrode connected to said control terminal.

5,384,502

PHASE LOCKED LOOP CIRCUITRY WITH SPLIT LOOP FILTER

Andrew M. Volk, Loomis, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 24, 1993, Ser. No. 82,282
Int. Cl.[6] H03B *1/00*; H03K *3/26*, *5/13*; G05F *5/00*
U.S. Cl. 327—157 14 Claims



1. A filter circuit of a phase locked loop circuitry fabricated

on a single substrate for providing an error voltage proportional to an amount of a phase difference of a comparison of a reference signal and a feedback signal, wherein the filter circuit is coupled to a phase comparator of the phase locked loop circuitry for receiving the comparison of the reference and feedback signals, wherein the filter circuit comprises:

(A) a first capacitor having a first end coupled to an output of the phase comparator and a second end coupled to ground for generating a first error voltage with respect to the comparison of the reference and feedback signals, wherein the first capacitor is formed by (1) taking a gate of a metal-oxide-semiconductor field effect transistor (MOSFET) as the first end of the first capacitor and (2) connecting a source, a drain, and a substrate of the MOSFET together as the second end of the first capacitor such that the first capacitor is independent of parasitic capacitance, wherein the MOSFET is fabricated by a low cost standard digital metal-oxide-semiconductor process not requiring any analog processing;

(B) a transistor and capacitor circuit having a first end coupled to the output of the chase comparator and a second end coupled to the around for generating a second error voltage with respect to the comparison of the reference and feedback signals, wherein the transistor and capacitor circuit includes a second capacitor and a transistor functioning as a resistor coupled between the first and second ends of the transistor and capacitor circuit, wherein each of the first and second capacitors has a capacitance that is independent of each other and can be accurately set:

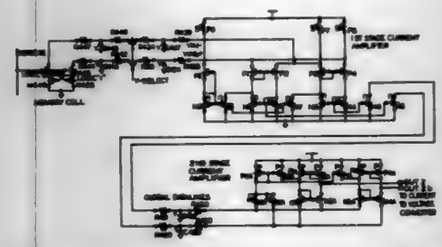
(C) add circuitry coupled to receive the first error voltage at the first end of the first capacitor and the second error voltage at the first end of the transistor and capacitor circuit for adding the first and second error voltages to generate the error voltage.

5,384,503

SRAM WITH CURRENT-MODE READ DATA PATH

Loo-Loan Shu; Kurt Knorpp, both of c/o Sony Microelectronics Design Center, Sony Corporation, San Jose, Calif. 95134, and Katsunori Seno, c/o Device Tech. Div., ULSI R&D Group, Atsugi Tech Center, Sony Corp., Atsugi-shi, Kanagawa-ken, Japan

Filed Sep. 9, 1992, Ser. No. 942,296
Int. Cl.[6] H03K *5/22*
U.S. Cl. 327—52 **9 Claims**



6. A current detecting differential amplifier having complementary outputs and low input impedance, comprising, in combination: first and second input transistors each connected to receive one of two differential current inputs, respectively, for providing complementary outputs corresponding to said differential inputs, means for cross coupling said first and second input transistors to provide positive feedback and thereby lower the input impedance thereof, bias means for biasing both of said first and second input transistors into conduction, whereby both of said input transistors remain conducting irrespective of the levels of said differential inputs, and first and second output transistors connected to said first and second input transistors for supplying said complementary output signals with a high output impedance, whereby plural stages of the amplifier may be connected in cascade without increasing the response time thereof more than a minor amount;

a pair of pull-up transistors connected between each of said differential inputs and a source of potential, and a bias current source connected to a control input of each of said pull-up transistors,

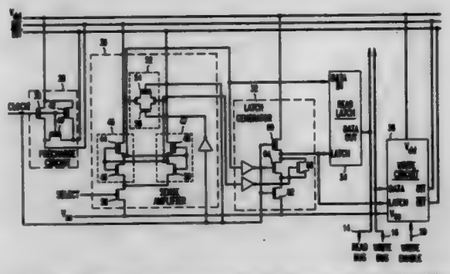
said bias current source comprising first and second bias transistors connected in series between said source of potential and a common reference potential, and means for connecting a junction of said first and second bias transistors to control inputs of each of said pull-up transistors.

5,384,504

SENSE AMPLIFIER POWERED FROM BIT LINES AND HAVING REGENERATIVELY CROSS-COUPLING MEANS

Alexander G. Dickinson, 78 Valley Ave., Highlands, N.J. 07732; Mehdi Hatamian, 12 Tower Rd., Freehold, N.J. 07728, and Sailesh K. Rao, 1138 Tiffany La., Lakewood, N.J. 08701

Filed Oct. 22, 1992, Ser. No. 965,137
Int. Cl.[6] G01R *19/00*; H03K *3/284, 3/01*; G11C *7/00*
U.S. Cl. 327—51 **8 Claims**



1. A sense amplifier connected to bit lines associated with a memory cell of an array of memory cells, the sense amplifier generating a sensed output indicative of the value of the bit stored at said memory cell, the sense amplifier comprising:

pair of inverters having respective source-to-drain current paths and respective control nodes;

means for regeneratively cross-coupling said control nodes and said current paths; and

means for connecting each of said bit lines into a respective one of said current paths so as to power said sense amplifier.

5,384,505

DELAYED-PULSE GENERATOR HAVING MEANS FOR STABILIZING THE CHARGING CURRENT

Tetsuya Takahashi, Kanagawa, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 852,408, Mar. 16, 1992, abandoned. This application Mar. 10, 1994, Ser. No. 212,395
Claims priority, application Japan, Mar. 18, 1991, 3-052024
Int. Cl.[6] H03K *5/159*; G05F *3/16*
U.S. Cl. 327—262 **3 Claims**

1. A delayed-pulse generator comprising:

a first and a second power supply terminal;

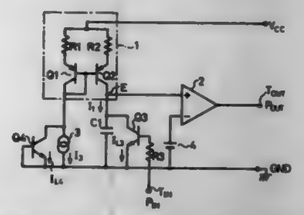
a comparator circuit having a first input terminal coupled to receive a reference voltage which sets a threshold voltage therefor, said comparator circuit providing a pulse when an input potential at a second input terminal thereof exceeds said reference voltage;

a capacitor having one end connected to said second power supply terminal, the other end of said capacitor being connected to said second input terminal of said comparator circuit;

a current-mirror circuit coupled to output an output current which charges said capacitor;

a first transistor for discharging said capacitor with a predetermined timing;

a constant-current source connected between said current-mirror circuit and said second power supply terminal, for setting said output current supplied from said current-mirror circuit; and



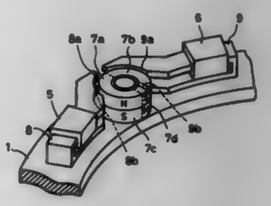
a second transistor connected in parallel and in a forward-direction with respect to said constant-current source said second transistor having a leakage current which is the same as said leakage current of said first transistor so that said capacitor is enabled to be charged by said output current without being affected by a leakage current of said first transistor.

5,384,506

STEPPER MOTOR

Chikara Aoshima, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1993, Ser. No. 67,043
Claims priority, application Japan, May 29, 1992, 4-163740; Feb. 23, 1993, 5-057927
Int. Cl.[6] H02K *37/12*
U.S. Cl. 310—49 R **11 Claims**



1. A stepper motor comprising:

a cylindrical rotor made of a permanent magnet which has been magnetized radially, said rotor having two magnetized layers formed in an axial direction thereof;

a plurality of stators, each of said stators having a plurality of magnetic pole portions which are disposed such that they oppose an outer periphery of said rotor, said magnetic pole portions of said stators opposing one of the magnetized layers of said rotor;

a plurality of yokes made of a permeable material, said plurality of yokes being separated from said stators in the axial direction of said rotor, wherein end portions of said yokes oppose the other magnetized layer of said rotor, wherein said plurality of yokes are shifted from said stators at a predetermined angle; and

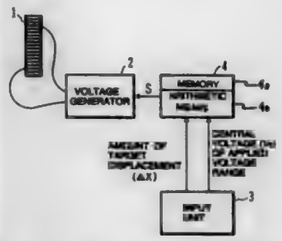
a plurality of coils disposed such that each coil excites a corresponding stator.

5,384,507

METHOD OF AND DEVICE FOR DRIVING PIEZO-ELECTRIC ELEMENTS AND SYSTEM FOR CONTROLLING MICROMOTION MECHANISM

Ryuji Takada, and Eiichi Hazaki, both of Tsuchiura, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01569, § 371 Date Jul. 19, 1993, § 102(e) Date Jul. 19, 1993
PCT Filed Nov. 30, 1992, Ser. No. 90,218
Claims priority, application Japan, Nov. 29, 1991, 3-316823
Int. Cl.[6] H01L *41/09*
U.S. Cl. 310—317 **33 Claims**



1. A method of driving a piezo-electric element by setting an amplitude (ΔV) of a range of a voltage applied to said piezo-electric element in accordance with a target amount of displacement (ΔX), applying the voltage to said piezo-electric element in accordance with said amplitude of said applied voltage range and causing said target amount of displacement, said method comprising the steps of:

(a) setting an approximate expression representing a relationship between said amplitude (ΔV) of said applied voltage range, a reference voltage (Vo) relative to said applied voltage range and an amount of displacement (G) per unit voltage of said piezo-electric element with respect to said piezo-electric element;

(b) obtaining said amplitude (ΔV) of said applied voltage range for producing said target amount of displacement in said reference voltage by inputting said target amount of displacement (ΔX) and said reference voltage (Vo) and using said approximate expression;

(c) determining said applied voltage range (Vmin~Vmax) for producing said target amount of displacement from said obtained amplitude of said applied voltage range and said inputted reference voltage (Vo); and

(d) applying said voltage to said piezo-electric element on the basis of said applied voltage range determined.

5,384,508

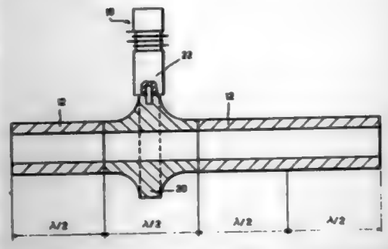
MODULAR UNIT FOR A TUBULAR ULTRASONIC REACTOR

Philippe Vaxelaire, 6 rue Henri Jaccax, 74100 Ville-La Grand, France

PCT No. PCT/FR92/00029, § 371 Date Jul. 19, 1993, § 102(e) Date Jul. 19, 1993, PCT Pub. No. WO82/00260, PCT Pub. Date Feb. 4, 1982
PCT Filed Jan. 15, 1992, Ser. No. 90,133
Claims priority, application France, Jan. 17, 1991, 91 00499
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—334 **11 Claims**

1. Modular reactor unit for continuous ultrasonic treatment of materials and/or reagents characterized in that it comprises a tubular metal body (12) having a cylindrical interior (14) and a circular transverse cross-section open at a feed end (16) and a discharge end (18), in that the exterior surface of said tubular metal body has in the vicinity of the nodal zone a projecting radially collar (20) coaxial with said tube, and in that at least one ultrasonic converter (22) is disposed radially and attached

to said collar at its periphery, the frequency of said converter (22) being equal to the frequency of vibration of said collar (20)



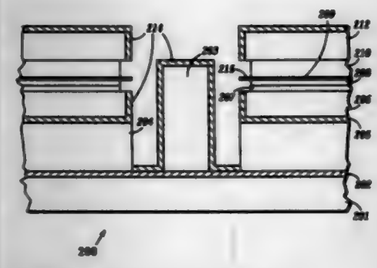
and to the frequency of longitudinal vibration of said tubular metal body (12).

5,384,509

FIELD EMISSION DEVICE WITH HORIZONTAL EMITTER

Robert C. Kane, Woodstock, Ill., and Kevin B. Hilgers, Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 18, 1991, Ser. No. 732,297
Int. Cl.[6] H01J *19/24*
U.S. Cl. 313—309 7 Claims



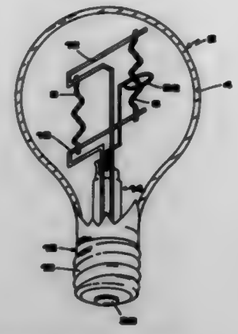
4. A field emission device comprising:
a supporting substrate having a generally planar major surface;
a device anode, including a selectively formed region including one of a conductive and semiconductive material, supported by said substrate with a surface thereof being disposed generally perpendicular to the major surface of said substrate;
a plurality of layers of materials supported on said substrate adjacent said device anode and further disposed substantially symmetrically about said device anode, said plurality of layers of materials including a first layer of intrinsic semiconductor material, a conductive layer, and a second layer of intrinsic semiconductor material stacked to each provide a surface generally parallel to and spaced from the surface of said device anode, the surface of the conductive layer operating as an emitter; and
another layer of conductive material selectively deposited on the provided surfaces of said first layer of intrinsic semiconductor material and said second layer of intrinsic semiconductor material to form spaced apart gate extraction electrodes spaced from and on either side of said conductive layer and disposed generally parallel to and spaced from the surface of said device anode.

5,384,510

INCANDESCENT LAMP WITH AN IMPROVED FILAMENT IMPLEMENTATION

Bruce H. Arnold, 2023 Ripley Ave., Redondo Bch, Calif. 90278-5046

Filed Jul. 6, 1992, Ser. No. 908,071
Int. Cl.[6] H01K *1/18*
U.S. Cl. 313—316 1 Claim



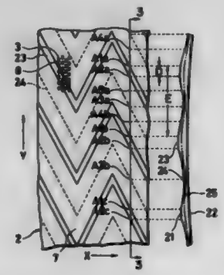
1. An incandescent lamp comprising:
an envelope;
a reentrant stem attached to, and surrounded by, a lamp base;
at least two parallel incandescent filaments within said envelope;
connective means for electrically energizing said filaments simultaneously within said envelope; and
at least one restraining means for restraining one of said filaments, said restraining means comprising a first straight section substantially perpendicular to the filaments and supported by the reentrant stem, and a second hollow circular section attached to said first section and having its diameter substantially larger than that of said one of the filaments so as to surround and not physically touch said one filament, said restraining means being electrically not connected to said connective means.

5,384,511

VARIBLE-THICKNESS SHADOW MASK FOR COLOR CATHODE-RAY TUBES

Takeo Fujimura, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 946,673, Sep. 18, 1992, abandoned. This application Mar. 1, 1994, Ser. No. 203,754
Claims priority, application Japan, Sep. 19, 1991, 3-239056
Int. Cl.[6] H01J *29/07*
U.S. Cl. 313—402 35 Claims



1. A shadow mask for a color cathode-ray tube, comprising:

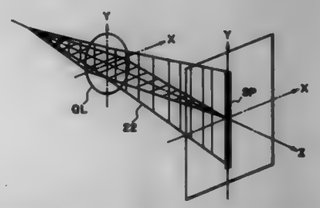
a metal sheet with apertures for passage of electron beams, wherein
said metal sheet has a front surface and a back surface;
said back surface has a concave curvature;
said front surface generally follows the curvature of said back surface but has an undulating profile comprising ribs and troughs, said troughs separating said ribs and having center lines;
said metal sheet has a local thickness that is maximum at said ribs and gradually becomes thinner toward said center lines of said troughs;
said ribs have a zig-zag configuration; and
said center lines of said troughs have a zig-zag configuration.

5,384,512

ELECTRON GUN FOR CATHODE-RAY TUBE

Eiji Kamohara, Fukaya, and Shigeru Sugawara, Saitama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 738,456, Jul. 31, 1991, abandoned. This application Apr. 22, 1994, Ser. No. 232,345
Claims priority, application Japan, Jul. 31, 1990, 2-202641
Int. Cl.[6] H01J *29/48*
U.S. Cl. 313—414 11 Claims



1. An electron gun for a cathode-ray tube including a phosphor screen, comprising:
a cathode for generating an electron beam;
a plurality of electrodes constituting:
a prefocusing lens for prefocusing the electron beam;
a quadruple main focusing lens for both focusing the electron beam in one of a horizontal and vertical direction and causing a divergence effect in another of said horizontal and vertical direction, the quadruple main focusing lens focusing the electron beam on said phosphor screen by focusing mainly in said one direction; and
an asymmetrical secondary focusing lens for both suppressing the divergence effect of said quadruple main focusing lens and focusing the electron beam on said phosphor screen, said asymmetrical secondary focusing lens having a focusing effect mainly in the direction of said divergence effect of said quadruple main focusing lens.

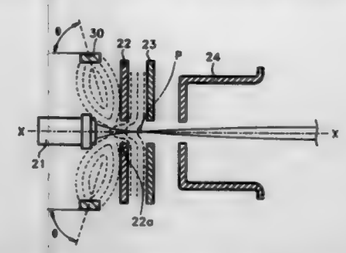
5,384,513

CATHODE RAY TUBE WITH IMPROVED FOCUSING CHARACTERISTICS

Seong-hun Ji, Pusan, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 29, 1992, Ser. No. 998,123
Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-25431
Int. Cl.[6] H01J *29/46*
U.S. Cl. 313—442 8 Claims

1. A cathode ray tube comprising:
an electron gun including a triode comprising a cathode, a control electrode and a screen electrode;
a funnel having a neck portion for housing the electron gun, the neck portion having an inner wall and a panel connected to said funnel to form a vacuum container;
a magnetic substance attached to the inner wall of the neck portion positioned between said cathode and said control electrode, said magnetic substance forming a radial magnetic field having a central axis including an inclination angle within the range of 20° to 40° with respect to the



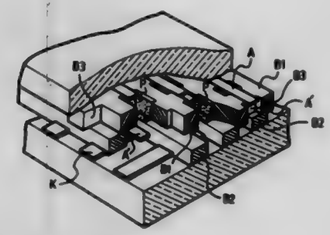
central axis of said electron gun, said magnetic substance focusing electron beam emitted from said cathode toward an the electron beam passing hole of said control electrode.

5,384,514

PLASMA DISPLAY DEVICE

Dae-il Kim, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Aug. 30, 1991, Ser. No. 753,045
Claims priority, application Rep. of Korea, Sep. 7, 1990, 90-14149
Int. Cl.[6] H01J *17/49*
U.S. Cl. 313—585 6 Claims



1. A plasma display panel comprising:
a front plate including an inner surface;
a rear plate spaced apart from said front plate having an inner surface facing the inner surface of said front plate;
a plurality of stripe-like anodes arranged in parallel on the inner surface of said front plate;
a plurality of stripe-like cathodes disposed on the inner surface of said rear plate and arranged parallel to each other and perpendicular to the stripe-like anodes;
a plurality of elongated first barrier walls disposed on the inner surface of said front plate parallel to said stripe-like anodes, each wall having a lower edge and a pair of side edges, and each wall being located between adjacent stripe-like anodes;
a plurality of elongated second barrier walls disposed on said rear plate parallel to said first barrier walls and crossing said cathodes, each wall having an upper edge and a pair of side edges, said first elongated barrier walls being stacked on said second elongated barrier walls in a skewed fashion such that the side edges of said first and second barrier walls are out of alignment and the lower edge of said first barrier wall and the upper edge of said second barrier wall are partially exposed;
a plurality of third elongated barrier walls disposed on said front plate forming a lattice structure in conjunction with said first barrier walls; and

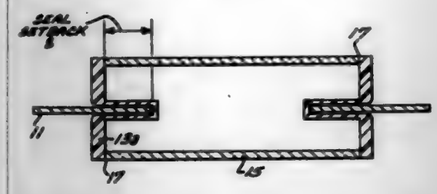
a plurality of stripe-like auxiliary anodes each disposed on a lower edge of one of said plurality of first elongated barrier walls such that an auxiliary discharge space is formed between one of said plurality of cathodes, an auxiliary anode and one of said second elongated barrier walls.

5,384,515

SHROUDED PIN ELECTRODE STRUCTURE FOR RF EXCITED GAS DISCHARGE LIGHT SOURCES

David A. Hesd, Beaverton, Oreg.; Robert D. Washburn, Malibu, and Robert F. McClanahan, Valencia, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 2, 1992, Ser. No. 970,741
Int. Cl.[6] H01J *65/04*
U.S. Cl. 313—607 7 Claims



1. An RF excited gas discharge light source comprising:
a cylindrical gas containment tube having first and second ends;
a discharge gas contained within the cylindrical gas containment tube;
first and second pin shaped electrodes respectively located at said first and second ends, said first and second electrodes being colinear and each extending into the volume of said cylindrical gas containment tube so as to be surrounded by said discharge gas along a respective length thereof; and
means for physically isolating said first and second pin shaped electrodes from said discharge gas such that said discharge gas does not contact said first and second pin shaped electrodes.

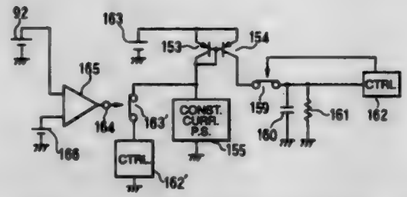
5,384,516

INFORMATION PROCESSING APPARATUS INCLUDING A CONTROL CIRCUIT FOR CONTROLLING A LIQUID CRYSTAL DISPLAY ILLUMINATION BASED ON WHETHER ILLUMINATIO POWER IS BEING SUPPLIED FROM AN AC POWER SOURCE OR FROM A BATTERY

Kenji Kawabata, Ome; Soichiro Ogawa, Mizuho; Susumu Iijima, Ome; Kunio Seki, Hinode; Hirotaka Mochizuki, Fujioka; Makoto Goto, Takasaki; Ryuichi Ikeda, Yokohama; Motohiro Sugino, Fujisawa, and Kenichi Onda, Hitachi, all of Japan, assignors to Hitachi, Ltd.; Hitachi Microcomputer System, Ltd. and Hitachi Video & Information System, Inc., all of Japan

Filed Nov. 2, 1992, Ser. No. 970,396
Claims priority, application Japan, Nov. 6, 1991, 3-289751
Int. Cl.[6] H05R *41/42*
U.S. Cl. 315—160 19 Claims

1. An information processing apparatus employing a liquid crystal display, comprising:
a fluorescent lamp for backlighting a liquid crystal display screen;
a lighting circuit for supplying ac lighting power to the fluorescent lamp;
first power supply means for supplying input power to the lighting circuit from a commercial ac power source;
second power supply means for supplying input power to the lighting circuit from a dc battery when the lighting circuit is not being supplied with the input power from the first power supply means;
detection means for detecting whether the input power of the lighting circuit is being supplied from the first power supply means or from the second power supply means; and



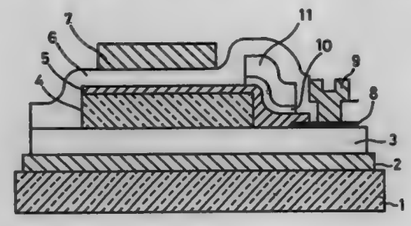
control means for controlling the level of the lighting power supplied to the fluorescent lamp in response to a detection signal outputted by the detection means, the level of the lighting power being larger when the input power of the lighting circuit is being supplied from the first power supply means than when the input power of the lighting circuit is being supplied from the second power supply means.

5,384,517

ELECTROLUMINESCENT ELEMENT INCLUDING A THIN-FILM TRANSISTOR FOR CHARGE CONTROL

Yasuhiro Uno, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 897,792
Claims priority, application Japan, Jun. 14, 1991, 3-169120
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.3 10 Claims



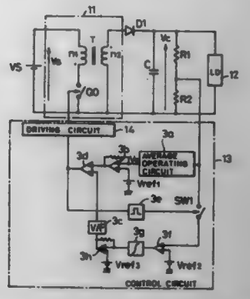
1. An electroluminescent element comprising:
a first electrode;
a second electrode;
a luminescent layer located between said first electrode and said second electrode and emitting light by application of an AC voltage to said first electrode and said second electrode;
a first dielectric layer located between said first electrode and said luminescent layer;
a second dielectric layer located between said second electrode and said luminescent layer;
a charge control layer located between said luminescent layer and at least one of said first and second dielectric layers, and controlling the stored charge in accordance with a control voltage; and
a charge control means connected to said charge control layer for controlling charge stored in said charge control layer, said charge control means comprising:
a switching element having an input terminal, an output terminal and a control terminal, and said charge control layer is connected to said output terminal of said switching element.

5,384,518

POWER SOURCE DEVICE

Shojiro Kido; Toshiaki Nakamura; Takashi Kambara; Yoshitaka Taga, and Haruo Nagase, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 9, 1994, Ser. No. 257,141
Claims priority, application Japan, Jun. 10, 1993, 5-139659; Dec. 22, 1993, 5-325321
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—225 20 Claims



1. A power source device for supplying a power to a load, comprising;
a DC voltage source;
a voltage converting means connected to said DC voltage source, said voltage converting means including a high frequency switching means for controlling said supplied power, and rendering said supplied power larger at least upon starting said load than that during a stable operation of said load;
a capacitance element connected to an output side of said voltage converting means; and
a load circuit including said load and connected in parallel to said capacitance element, said load circuit having a load impedance made smaller upon said starting of said load than that during said stable operation of said load;
wherein a control means is further provided for controlling said high frequency switching means with a control constant made substantially constant at least immediately after said starting of the load and during said stable operation of the load, and turning the high frequency switching means OFF when said capacitance element is of a voltage below a predetermined value.

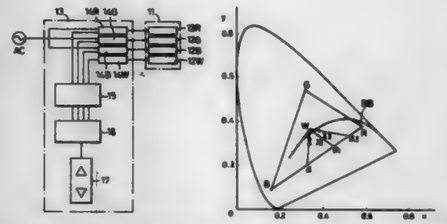
5,384,519

COLOR MIXING METHOD FOR VARIABLE COLOR LIGHTING AND VARIABLE COLOR LUMINAIRE FOR USE WITH THE METHOD

Shigeo Gotoh, Yao, Japan, assignor to Matsushita Electric Works, Ltd., Japan

Filed Dec. 1, 1993, Ser. No. 160,377
Claims priority, application Japan, Dec. 9, 1992, 4-329685
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—324 14 Claims

1. A color mixing method for variable color lighting, wherein first to third light sources of mutually different emission colors are prepared, another light source of another emission color the chromaticity coordinates of which are disposed within a figure drawn on a chromaticity diagram by connecting respective chromaticity coordinates of emission colors of a plurality of light sources including said first to third light sources is prepared, a temporary light source is imaginarily set by mixing said emission color of one of said plurality of light sources including the first to third light sources with said another emission color of said another light source, a mixing ratio of the emission colors of at least two remaining light sources in said plurality of light sources including the first to third light sources and of said temporary light source is calculated, and a further mixing ratio of required emission colors of



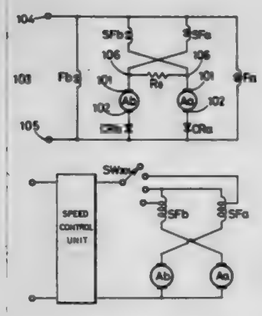
the respective light sources for obtaining a mixed color light which draws a desired locus on said chromaticity diagram is obtained on the basis of said mixing ratio calculated.

5,384,520

BALANCED DRIVE MOTORS WITH CROSS-COUPLED EXCITATION

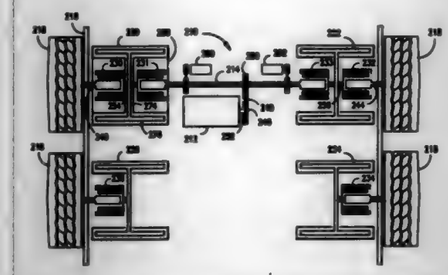
Tai-Her Yang, 5-1 Taipin Street, Si-Hu Town, Dzan-Hwa, Taiwan, Prov. of China

Filed Dec. 29, 1992, Ser. No. 998,402
Int. Cl.[6] H02N *4/02*; H02P *5/06*
U.S. Cl. 318—79 27 Claims



1. In balanced-drive dual motors with cross-coupled excitation comprising:
a first motor including a first armature rotatably actuated by a first field winding, the first armature having a first and a second terminal;
a second motor including a second armature rotatably actuated by a second field winding, the second armature having a first and a second terminal; and
an input source, said input source having a first and a second terminal;
said first field winding being electrically connected between the first terminal of said input source and the first terminal of said second armature, respectively, and said second field winding being electrically connected between the first terminal of said input source and the first terminal of said first armature, respectively,
an improvement including a first and a second diode, wherein the first diode is connected between the second terminal of the first armature and the second terminal of the input source, respectively, and wherein the second diode is connected between the second terminal of the second armature and the second terminal of the input source, respectively.

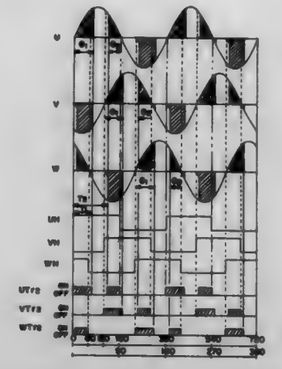
5,384,521
POWER CAPACITOR POWERTRAIN
Carlos J. Coe, C/O BDM, 4001 N. Fairfax Dr., Suite 750, Arlington, Va. 22203
Filed Sep. 25, 1992, Ser. No. 950,561
Int. Cl.[6] H02K *7/02*
U.S. Cl. 318—161 14 Claims



1. A vehicular drive system for use in a vehicle, comprising:
flywheel means adapted to rotate;
electric control means for providing electrical signals to control said drive system;
driving means;
drive shaft means connected to said driving means;
main shaft connecting means comprising an electro-magnetic coupling having a rotor and a stator wherein said stator is connected through an output shaft to said flywheel means and said rotor is connected to said drive shaft means, said electro-magnetic coupling controlled by said electric control means to transfer torque when engaged with said drive shaft means to said flywheel means without a mechanical interface with said driving means;
power receiving means for driving said vehicle; and
power receiving connecting means for connecting said flywheel means to said power receiving means in order to store energy in said flywheel means for said vehicle, said power receiving connecting means comprising an electromagnetic coupling which is controlled by said electric control means to transfer torque to and from said flywheel means without a mechanical interface with said power receiving means.

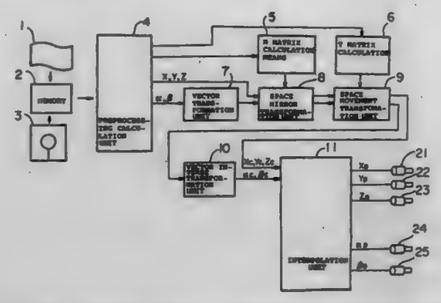
5,384,522
BRAKING CONTROL SYSTEM FOR AN ELECTRIC VEHICLE
Masayuki Toriyama; Kenji Tanaki; Satoshi Honda; Shoji Motodate; Yoshihiro Nakazawa; Takaaki Fujii, and Shigemi Sasaki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 9, 1992, Ser. No. 866,339
Claims priority, application Japan, Apr. 9, 1991, 3-103324; Apr. 11, 1991, 3-105098; Oct. 21, 1991, 3-299562
Int. Cl.[6] H02P *3/00*
U.S. Cl. 318—371 35 Claims

1. A regenerative braking control system for an electric vehicle having an electric motor with coils and a battery, said control system comprising:
braking period setting means for setting a braking period, said braking period starting and ending within a half of a period of an AC voltage generated in said coils of the electric motor when a speed of said electric vehicle is decreasing;
regenerative means for directing an induced current corresponding to energy accumulated in the coils at the end of said braking period to the battery; and



braking means for braking the electric vehicle by consuming energy generated during said braking period.

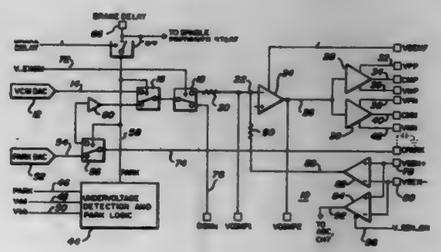
5,384,523
THREE-DIMENSIONAL LASER COORDINATE TRANSFORMATION SYSTEM
Teruo Masuda, Minamitsuru, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
Continuation of Ser. No. 862,532, filed as PCT/JP91/01414, Oct. 16, 1991, published as WO92/08172, May 14, 1992, abandoned.
This application Apr. 14, 1994, Ser. No. 227,483
Claims priority, application Japan, Nov. 1, 1990, 3-296377
Int. Cl.[6] G05B *19/39*
U.S. Cl. 318—568.19 6 Claims



1. A three-dimensional laser coordinate transformation system for a three-dimensional laser machining apparatus by which coordinates of a machining program are transformed to drive servo motors, comprising:
preprocessing calculation means for decoding the machining program and outputting a command value having coordinates;
matrix calculation means for calculating a coordinate transformation matrix for transforming the coordinates of the command value;
coordinate transformation means for transforming the coordinates of the command value into a transformed command value using the coordinate transformation matrix;
interpolation means for outputting an interpolation pulse by interpolating the transformed command value output by said coordinate transformation means; and

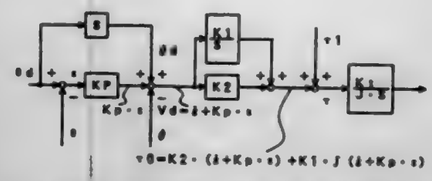
driving means for driving the servo motors in response to the interpolation pulse.

5,384,524
VOICE COIL MOTOR CONTROL CIRCUIT AND METHOD FOR SERVO SYSTEM CONTROL IN A COMPUTER MASS STORAGE DEVICE
Paul M. Romano, Boulder, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.
Filed Sep. 2, 1993, Ser. No. 115,237
Int. Cl.[6] G05B *19/18*
U.S. Cl. 318—569 29 Claims



1. A voice coil motor control circuit for a servo control system of a computer mass storage device disk drive, said servo control system including a data processor and a voice coil motor digital-to-analog converter responsive thereto for supplying a predetermined current level to a voice coil motor power stage for bidirectionally controlling a data transducer and actuator arm assembly coupled to said voice coil motor with respect to a rotating storage medium, said voice coil motor control circuit further including an undervoltage detection circuit for providing a park control signal indicative of a supply voltage to said voice coil motor control circuit falling below a predetermined level thereof and said servo control system providing positioner information to said data processor with respect to a current position and relative velocity of said data transducer and actuator arm assembly with respect to a parking position thereof on said storage medium, the improvement in combination, comprising:
an additional digital-to-analog converter responsive to said data processor for producing an output signal proportional to an electrical energy necessary to move said data transducer and actuator arm assembly from said current position thereof to said parking position on said storage medium wherein said output signal changes in value as said current position and said relative velocity of said data transducer and actuator arm assembly changes; and
a signal storage system for storing said output signal proportional to the electrical energy necessary to move said data transducer and actuator arm assembly from said current position thereof to said parking position produced by said additional digital-to-analog converter and supplying said output signal level to said voice coil motor power stage in response to said park control signal.

5,384,525
METHOD OF CONTROLLING A SERVOMOTOR
Tetsuaki Kato, Oshino, Japan, assignor to Fanuc Ltd., Yamanashi, Japan
PCT No. PCT/JP92/00622, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO92/21078, PCT Pub. Date Nov. 26, 1992
PCT Filed May 14, 1992, Ser. No. 961,902
Claims priority, application Japan, May 17, 1991, 3-140656
Int. Cl.[6] G05D *3/12*
U.S. Cl. 318—610 3 Claims



1. A method of controlling a servomotor in a sliding mode, comprising the steps of:
obtaining a torque command (τ0) for carrying out a proportional control for a position loop and a proportional-plus-integral control for a speed loop;
setting a phase surface of the sliding mode to be in proportion to the torque command (τ0) obtained by a position loop processing according to the proportional control and a speed loop processing according to the proportional-plus-integral control;
providing individual gains for a switching input (τ1) which are set based on the following relationship:

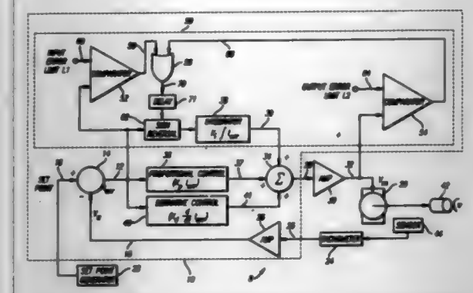
$$Kp<(K2/Jmax)-(K1/K2)$$

where Kp is a position gain of the position loop, K1 is an integral gain of the speed loop, K2 is a proportional gain of the speed loop, and Jmax is a maximum inertia of a controlled system, so that the derivative of a Liapunov function is always negative, and is determined in accordance with signs of respective values of the torque command (τ0), a position deviation (ε), an integral (I) of the position deviation and a speed deviation, acceleration (θd) of a move command, and speed feedback (θ), which are obtained by the position loop process according to the proportional control and the speed loop process according to the proportional-plus-integral control;
adding the switching input (τ1) to the torque command (τ0) to obtain a corrected torque command (τ); and
driving the servomotor in accordance with the corrected torque command (τ).

5,384,526
PI OR PID CONTROL LOOP WITH SELF-LIMITING INTEGRATOR
George J. Bennett, Murrieta, Calif., assignor to WangDAT, Inc., Irvine, Calif.
Filed Jul. 13, 1993, Ser. No. 90,846
Int. Cl.[6] G05B *11/42*
U.S. Cl. 318—610 37 Claims

1. A control system, comprising:
an integrator for producing a representation of a sum of an error value over time;
control loop means responsive to the representation of the sum of the error value over time for producing a control output value to modify the error value;

limit detection means for determining when one or more error limit values in the control loop is realized; and



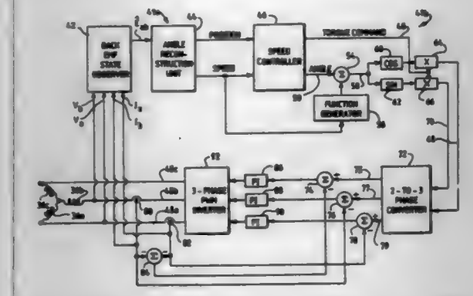
means responsive to the limit detection means for reversing the sign of the error value input to the integrator when one or more error limit values is realized.

5,384,527

ROTOR POSITION DETECTOR WITH BACK EMF VOLTAGE ESTIMATION

Gregory I. Rozman; Vijay K. Maddali, both of Rockford, and Albert L. Markunas, Roscoe, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 12, 1993, Ser. No. 61,364
Int. Cl.[6] H02K *29/06*
U.S. Cl. 322—10 **36 Claims**



1. A detector for detecting rotor position of a brushless generator having a motive power shaft and a main generator portion having first and second main generator portion armature phase windings capable of receiving AC power add developing a back EMF voltage during operation in a starting mode, comprising:

means coupled to the first and second main generator portion armature phase windings and capable of responding to the AC power for producing a back EMF estimate signal representing an estimate of the back EMF voltage, said producing means including;

first means responsive to currents developed in said first and second main generator portion armature phase windings for developing a current magnitude signal;

second means responsive to voltages developed at the first and second main generator portion armature phase windings for developing a line-to-line voltage signal; and

means responsive to the current magnitude signal and the line-to-line voltage signal for deriving the back EMF estimate signal; and

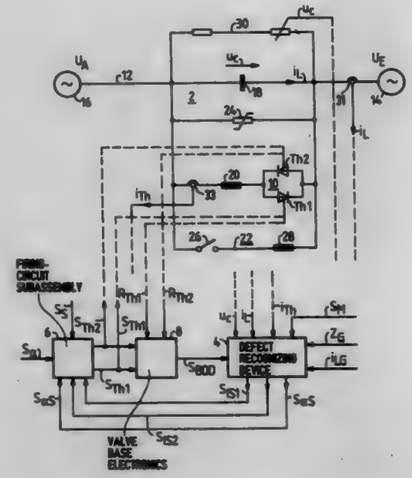
means for converting the back EMF estimate signal into an indication of angular position of the motive power shaft.

5,384,528

METHOD AND APPARATUS FOR RECOGNIZING DEFECTS IN A TRIGGERING SYSTEM OF A CONTROLLED SERIES COMPENSATOR

Karl-Friedrich Leowald, Uttenreuth-Weiher, and Stephan Weiss, Bad Mergentheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 18, 1993, Ser. No. 63,385
Claims priority, application European Pat. Off., May 20, 1992, 92108542.9
Int. Cl.[6] G05F *1/70, 1/44*
U.S. Cl. 323—209 **11 Claims**



1. A method for recognizing defects in a triggering system of a controlled series compensator, the method comprising steps of:

a) calculating a currently effective impedance of the controlled series compensator in response to a measured capacitor voltage and a measured conduction current;

b) determining an impedance differential in dependence upon a setpoint impedance selected from the operating mode of the controlled series compensator, whereby the impedance differential value is observed for an appropriate time span and/or is compared to an impedance limiting value;

c) generating a first firing-pulse blocking signal, as soon as the impedance differential has existed for an appropriate time span and/or is greater than the specifiable impedance limiting value, and the measured conduction current is less than a specifiable limiting value;

d) generating a firing-angle signal as soon as the impedance differential has existed for an appropriate time span and/or is greater than the specifiable impedance limiting value, and the measured conduction current is greater than a specifiable limiting value, whereby the value of the firing-angle signal is dependent upon the conduction current to such an extent that a protective firing of a current-converter valve of the controlled series compensator can take place; and

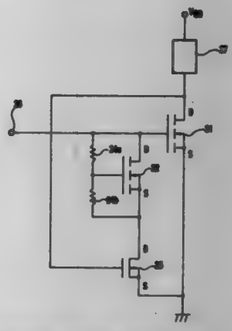
e) generating a second firing-pulse blocking signal as soon as the impedance differential has existed for an appropriate time span and/or is greater than the specifiable impedance limiting value, and a protective-firing signal is not generated, and the firing-angle signal has existed for an appropriate time span.

5,384,529

CURRENT LIMITING CIRCUIT AND METHOD OF MANUFACTURING SAME

Masabu Nakago, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 188,319
Claims priority, application Japan, Feb. 1, 1993, 5-014377
Int. Cl.[6] G05F *3/04, 3/08*
U.S. Cl. 323—312 **2 Claims**



1. A current limiting circuit comprising:

an output first N-channel vertical MOS transistor having a gate to which is supplied an input signal, a drain to which is supplied a power supply potential through a load, and a source connected to ground;

an N-channel MOS transistor having a gate connected to the drain of said first N-channel vertical MOS transistor and a source connected to ground;

first and second resistors connected in series between the gate of said first N-channel vertical MOS transistor and a drain of said N-channel MOS transistor; and

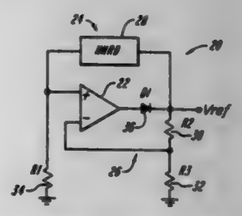
a second N-channel vertical MOS transistor having the same characteristics as those of said first N-channel vertical MOS transistor, said second N-channel vertical MOS transistor having a drain connected to the gate of said first N-channel vertical MOS transistor, a source connected to the drain of said N-channel MOS transistor, and a gate to which is supplied a voltage divided by said first and second resistors.

5,384,530

BOOTSTRAP VOLTAGE REFERENCE CIRCUIT UTILIZING AN N-TYPE NEGATIVE RESISTANCE DEVICE

Randall J. Pfleuger, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 6, 1992, Ser. No. 926,571
Int. Cl.[6] G05F *1/575, 3/16*
U.S. Cl. 323—313 **40 Claims**



1. A bootstrap voltage reference circuit comprising:

an amplifying comparator device having first and second inputs and an output, said amplifying comparator device operable for generating a predetermined reference voltage as the difference between a first signal applied to said first input and a second signal applied to said second input approaches zero;

a first feedback network coupled between said output and said first input of said amplifying comparator device, said first feedback network including a non-linear device which operates as a current source at an operating point in the region of a local maximum in its current-voltage characteristic curve, said non-linear device comprising an n-type negative resistance device, said first feedback network generating said first signal applied to said first input; and

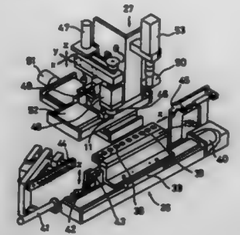
a second feedback network coupled between said output and said second input of said amplifying comparator device, said second feedback network generating said second signal applied to said second input.

5,384,531

APPARATUS FOR INSPECTING CHARACTERISTICS OF SEMICONDUCTOR CHIPS

Mitsuru Yamazaki; Masakazu Yashiro, and Toshiya Ijichi, all of Itami, Japan, assignors to Mitsubishi Electrical Engineering Co. Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,838
Claims priority, application Japan, Sep. 5, 1991, 3-225784
Int. Cl.[6] G01R *1/06*
U.S. Cl. 324—765 **3 Claims**



1. An apparatus for inspecting characteristics of semiconductor chips comprising:

a testing tray having a plurality of stepped positioning through-holes arranged in a row extending in a direction, each positioning hole having a shoulder for supporting a semiconductor chip;

slider means for moving said testing tray parallel to the direction of the row of positioning holes to locate each positioning hole in a predetermined inspecting position sequentially;

first transfer means for transferring semiconductor chips from a supporting means, holding the semiconductor chips before an inspection, to said testing tray by means of a vacuum nozzle;

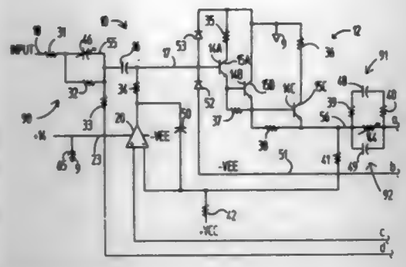
upper contacting means having probe pins corresponding to respective inspection points on a surface of a semiconductor chip for positioning said probe pins at the corresponding inspection points of a semiconductor chip located in the inspecting position;

lower contacting means having probe pins disposed below said testing tray for contacting a semiconductor chip located in the inspecting position from underneath;

a tester unit for inspecting electrical characteristics of a semicondutor chip, said tester unit being connected to said probe pins of said upper contacting means and of said lower contacting means; and

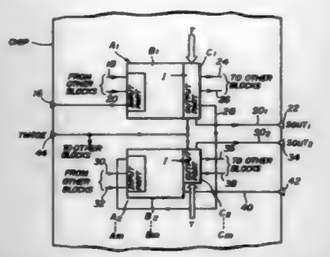
second transfer means for discharging inspected semiconductor chips from said testing tray by means of a vacuum nozzle.

5,384,532
BIPOLAR TEST PROBE
Thomas F. Uhling, Monument, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jul. 1, 1992, Ser. No. 907,268
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—754 **18 Claims**



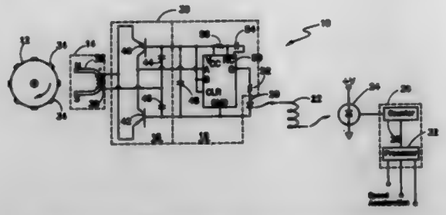
1. An electronic test probe comprising:
a probe input and a probe output; and
an AC impedance buffer electrically connected between said probe input and said probe output, said AC impedance buffer comprising a series of three or more emitter follower configured bipolar transistors, each having a collector, a base, and an emitter, wherein the base of a first bipolar transistor forms an input to the AC impedance buffer, a base of a second bipolar transistor is coupled to an emitter of the first bipolar transistor, and the base of a third bipolar transistor is coupled to an emitter of the second bipolar transistor and the emitter of the third bipolar transistor forms an output of the AC impedance buffer;
AC coupling means for AC coupling and DC isolating said AC impedance buffer from said probe input; and
biasing means for negatively biasing each of said bipolar transistors.

5,384,533
TESTING METHOD, TESTING CIRCUIT AND SEMICONDUCTOR INTEGRATED CIRCUIT HAVING TESTING CIRCUIT
Hideo Tokuda, and Tetsu Tanizawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 845,354, Mar. 5, 1992, abandoned, which is a continuation of Ser. No. 525,059, May 18, 1990, abandoned. This application May 11, 1993, Ser. No. 59,415
Claims priority, application Japan, May 19, 1989, 1-127401
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—158.1 **19 Claims**



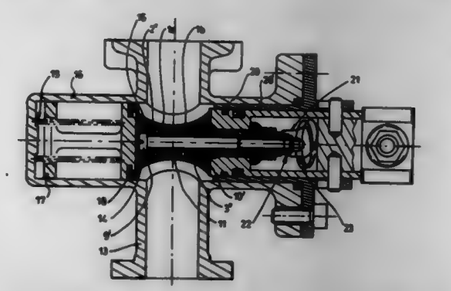
1. A testing method of testing functions of a semiconductor integrated circuit which has a plurality of blocks each having a main block circuit part and an output part, the plurality of blocks including a first block and a second block, the output part of the first block being electrically connected to the main block circuit part of the second block, said testing method comprising the steps of:
supplying a control signal to the output part of each of the first and second blocks in a normal mode so that the output part of the first block outputs first output data of the main block circuit part of the first block to the main block circuit part of the second block and so that the output part of the second block outputs second output data of the main block circuit part of the second block;
supplying the control signal and first test data to the output part of the first block in a test mode so that the main block circuit part of the first block outputs first test output data and so that the output part of the first block outputs the first test data to the main block circuit part of the second block;
supplying the control signal and second test data to the output part of the second block in the test mode so that the main block circuit part of the second block outputs second test output data and so that the output part of the second block outputs the second test data to the main block circuit part of another block;
supplying, in the test mode, first test output data from the main block circuit part of the first block to the output part of the first block and second test output data from the main block circuit part of the second block to the output part of the second block;
comparing the first test output data and the first test data in the output part of the first block in the test mode and outputting a first failure detection signal which is indicative of a failure in the first block when the compared first output data and first test data do not match in the first block; and
comparing the second test output data and the second test data in the output part of the second block in the test mode and outputting a second failure detection signal which is indicative of a failure in the second block when the compared second output data and second test data do not match in the second block.

5,384,534
SELF-POWERED ELECTRO-OPTIC ROTATIONAL POSITION SENSOR WITH MAGNETIC PICKUP
Paul E. Bjork, Forest Lake, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 21, 1992, Ser. No. 964,228
Int. Cl.[6] G01P *3/44, 3/487, 3/488*; H04B *10/08*
U.S. Cl. 324—160 **5 Claims**



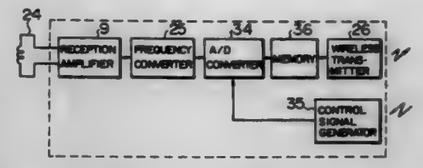
1. A self-powered variable reluctance sensor system comprising:
a coil of wire, having first and second terminals, wherein the coil is proximate to a rotatable material a rotation of the rotatable material causing a magnetic flux to cut through the coil and generate in the coil voltage signals at the first and second terminals;
a first transistor having a first terminal connected to the first terminal of said coil, and having second and third terminals;
a second transistor having a first terminal connected to the first terminal of said coil, having a second terminal connected to the second terminal of said first transistor, and having a third terminal;
a first capacitor having a first terminal connected to the third terminal of said first transistor and having a second terminal connected to the second terminal of said coil;
a second capacitor having a first terminal connected to the third terminal of said second transistor and having a second terminal connected to the second terminal of said coil;
a third capacitor having a first terminal connected to the third terminal of said first transistor and having a second terminal connected to the third terminal of said second transistor;
a retriggerable monostable multivibrator having a first input connected to the second terminal of said first transistor, having a second input terminal, a clear terminal and a voltage terminal connected to the third terminal of said first transistor, having a reference terminal connected to the third terminal of said second transistor, having an external resistor terminal, having an external capacitor terminal and having an output terminal;
a first resistor having a first terminal connected to the external resistor terminal of said multivibrator and having a second terminal connected to the voltage terminal of said multivibrator; and
a fourth capacitor having a first terminal connected to the external capacitor terminal of said multivibrator and having a second terminal connected to the external resistor terminal of said multivibrator.

5,384,535
ELECTRIC MAGNETIC DETECTOR OF MAGNETIC PARTICLES IN A STREAM OF FLUID
Jean-Pierre Mayeur, Villepreux, France, assignor to Le Bozec Aeronautique, Nanterre, France
Filed Jan. 26, 1993, Ser. No. 9,142
Claims priority, application France, Jan. 27, 1992, 92 00812
Int. Cl.[6] G01N *27/74, 15/06, 27/02*; F16N *29/04*
U.S. Cl. 324—204 **6 Claims**



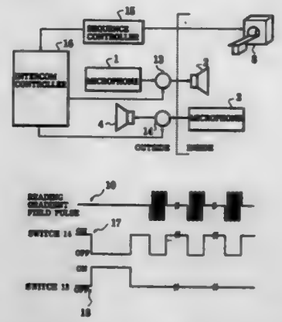
1. In an electrical magnetic detector adapted to be disposed in a passageway for a fluid to detect the presence of magnetic particles in said fluid, a magnet means comprising a cylindrical member having an axis and two polar masses of weakly magnetic material disposed along said axis surrounding opposite ends of the cylindrical member and spaced apart from each other by an air gap in which migration of said particles is concentrated, said two polar masses having external peripheral surfaces that converge toward each other and toward said axis; the improvement in which said cylindrical member is constituted by two annular magnets of the same length separated by a ring of magnetic material and having on ends of said magnets opposite said ring of magnetic material polar masses of the same magnetic material as said ring and having the same thickness as each other.

5,384,536
NUCLEAR MAGNETIC RESONANACE INSPECTION APPARATUS AND ITS METHOD
Yoshiki Murakami, Tokyo; Tetsuhiko Takahashi, Soka, and Etsuji Yamamoto, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 18, 1993, Ser. No. 33,543
Claims priority, application Japan, Mar. 19, 1992, 4-063069
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—309 **31 Claims**



1. A nuclear magnetic resonance inspection apparatus comprising:
an irradiation coil for irradiating a radio frequency magnetic field to an object to be inspected;
a detection coil disposed in the vicinity of said object, for detecting a nuclear magnetic resonance signal from said object;
analog-to-digital conversion means for sampling the nuclear magnetic resonance signal and converting a sampled signal to a digital signal; and
transmission means for transmitting wirelessly said digital signal to a signal processor in which the digital data is executed.

5,384,537
NUCLEAR MAGNETIC RESONANCE IMAGING SYSTEM WITH NOISE REDUCED INTERCOM
Yukinobu Ito, Tochigiken, and Eiji Moriya, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawaken, Japan
Filed Apr. 28, 1993, Ser. No. 54,522
Claims priority, application Japan, May 7, 1992, 4-114406
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—318 **5 Claims**



1. A nuclear magnetic resonance imaging system, comprising:
nuclear magnetic resonance imaging means for carrying out a nuclear magnetic resonance imaging, located inside an isolated examination room;
sequence controller means for specifying a pulse sequence to be executed by the nuclear magnetic resonance imaging means; and
intercom means including:

microphone means, located inside the examination room, for picking up sounds generated inside the examination room;

loudspeaker means, located outside the examination room and adapted to be connected with the microphone means, for outputting the sounds picked up by the microphone means to the exterior of the examination room; and

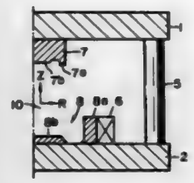
intercom controller means, connected with the sequence controller means, for disconnecting the microphone means and the loudspeaker means whenever an application of a reading gradient field pulse takes place in the pulse sequence specified by the sequence controller means.

5,384,538

MAGNETIC FIELD GENERATION DEVICE FOR USE IN SUPERCONDUCTIVE TYPE MRI

Kimiharu Ohta, Amagasaki, and Masahiro Yuki, Osaka, both of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Jul. 30, 1993, Ser. No. 99,599
Claims priority, application Japan, Feb. 5, 1993, 5-041834
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—319 **5 Claims**



1. A magnetic field generation device superconductive type MRI comprising:

a magnetic circuit in which a pair of magnet pole pieces are opposed to each other with a predetermined gap defined therebetween and are connected by way of yoke means, and in which a superconductive coil is disposed circumferentially only to one of the paired magnetic pole pieces, wherein the one magnetic pole piece having the circumferentially disposed superconductive coil is annular and is provided with a surface confronting a gap formed between the paired magnet pole pieces and a flange which extends outwardly to an outer peripheral portion of the gap-confronting surface, the flange having an outer diameter greater than that of another magnet pole piece, and a disk-like protrusion is disposed at a central portion of the gap-confronting surface of the annular magnet pole piece.

5,384,539

PROCESS FOR MONITORING INDUCTIVE LOADS FOR FAULTS ON THE CONTROL LINE USING SAMPLING TECHNIQUES

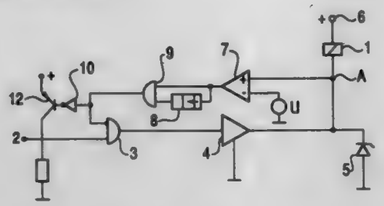
Matthias Mörbe, Ilsfeld-Helfenberg, and Robert Kornhaas, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 923,923, filed as PCT/EP91/00223, Feb. 6, 1991, published as WO91/15777, Oct. 17, 1991, abandoned.
This application Jan. 19, 1994, Ser. No. 183,264
Claims priority, application Germany, Mar. 30, 1990, 4010198
Int. Cl.[6] G01R *31/08*

1. A process for monitoring an inductive load for faults, wherein after the end of a drive signal transmitted to the inductive load via a control line, a check is made to determine whether the cut-off peak signal typically associated with a fault-free inductive load occurs, the method comprising the steps of:

applying the drive signal to the control line for driving the inductive load,

generating a verification signal on the control line which depends on the inductive load and the presence of a cut-off peak signal;



sampling the verification signal on the control line at a first predetermined point in time after the end of the drive signal to determine whether the verification signal is present; and

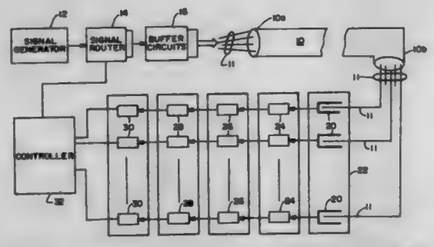
sampling the verification signal on the control line at a second predetermined period of time after the end of the drive signal to determine whether the verification signal is not present.

5,384,540

WIRE PRESENCE AND IDENTIFICATION SYSTEM

Hugo V. Dessel, Putte, Belgium, assignor to Molex Incorporated, Lisle, Ill.

Filed Nov. 9, 1992, Ser. No. 973,797
Claims priority, application European Pat. Off., Nov. 12, 1991, 91119244
Int. Cl.[6] G01R *19/00, 31/02*
U.S. Cl. 324—539 **10 Claims**



1. A system for detecting the presence of and/or identifying wires at first end of a cable, the system comprising a signal generator for selectively applying an electrical signal to one or more wires at the second end of the cable, at least one electrode for detecting the electrical signal at the first end of the cable and electronic circuitry connected to at least one electrode for evaluating the signal, wherein

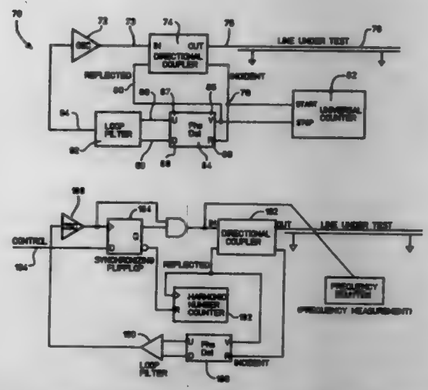
the signal generator is an ac generator for delivering an ac signal and at least one electrode comprises a conductive tube of a predetermined length for inserting a wire at the first end of the cable, the wire being electrically insulated from the electrode, the ac signal being capacitively coupled to the electrode.

5,384,541

PRECISION TIMED DELAY MEASUREMENT USING PHASELOCKED CW TECHNIQUE

David C. Chu, Woodside, and Alistair D. Black, Los Gatos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 5, 1993, Ser. No. 26,933
Int. Cl.[6] G01S *13/08*
U.S. Cl. 324—617 **12 Claims**



1. A method of measuring a delay in a delay circuit by making a continuous frequency measurement, which comprises:

producing and applying an incident signal having a variable frequency to the delay circuit;

detecting a phase difference between the incident and delayed signals that has traveled through the delay circuit;

converting said phase difference, to the nearest cycle, into a feedback signal;

integrating and filtering said feedback signal;

varying the variable frequency of the incident signal in response to said filtered feedback signal in such direction as to reduce said phase difference, thereby establishing a phase lock loop;

measuring the average frequency of the incident or delayed signal when said loop is stabilized; and

determining the number of periods between the incident and delayed signals in the delay circuit defining a harmonic number, said circuit time delay being equal to said harmonic number multiplied by the period of said variable frequency source corresponding to said measured average frequency.

5,384,542

DEVICE FOR ESTIMATING, AT HIGH TEMPERATURE, THE ELECTROMAGNETIC PROPERTIES OF A MATERIAL

Pierre V. A. Lahitte, Salaunes; Jean-Yves Bratieres, Merignac; Michel Grenot, Saint Medard en Jalles, and Brigitte Prache, Bordeaux, all of France, assignors to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Continuation of Ser. No. 862,294, Apr. 2, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 164,615
Claims priority, application France, Apr. 19, 1991, 91 04851
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—642 **15 Claims**

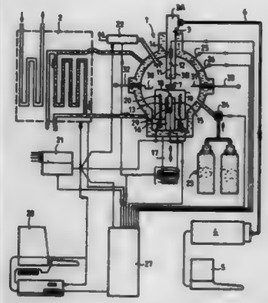
1. A device for estimating, at high temperature, the electromagnetic properties of a material, comprising:

an oven (1, 19, 20);

an electromagnetic measurement apparatus (3), disposed at least in part in said oven and comprising, within said oven, a housing (9) for a specimen piece (34) of uniform thickness made of said material, said specimen piece (34) being such that, when it is disposed in said housing (9), its outer periphery matches the inner surface of said electromagnetic measurement apparatus;

means (4, 5, 6) for applying an incident very high frequency electromagnetic wave to said electromagnetic measurement apparatus (3); and

means (4, 5, 6) for collecting the electromagnetic wave transmitted by said specimen piece (34);



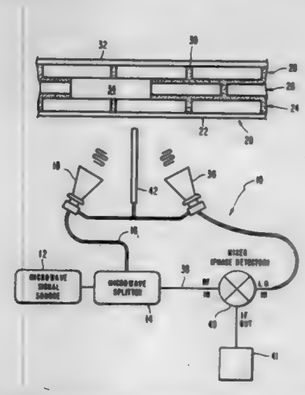
wherein said electromagnetic measurement apparatus is a metallic hollow tubular vertically disposed waveguide (3) and said housing (9) is provided at the open lower end (3B) of said waveguide (3), and wherein the thermal expansion of the metal of said waveguide (3) is greater than that of said material of said specimen piece (34).

5,384,543

PORTABLE MICROWAVE INSTRUMENT FOR NON-DESTRUCTIVE EVALUATION OF STRUCTURAL CHARACTERISTICS

Don W. Bible, Clinton; Richard I. Crutcher, Knoxville; Carl W. Sohns, Oak Ridge, and Stephen R. Maddox, London, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Nov. 9, 1992, Ser. No. 972,776
Int. Cl.[6] G01R *27/00*
U.S. Cl. 324—644 **16 Claims**



1. A portable microwave instrument for evaluating characteristics of a structural member comprising:

a source of microwave energy;

a transmitter coupled to the source of microwave energy for transmitting a microwave signal at an angle of incidence into structural member;

a receiver positioned on the same side of the structural member as the transmitter and being disposed to receive a

plurality of reflected microwave signals, each being a partial reflection of the transmitted microwave signal at each boundary between any two constituent materials having different dielectric constants, said reflected signals forming a summation microwave signal received by the receiver; and

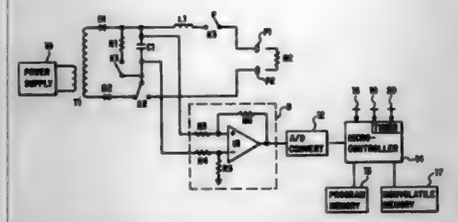
means for determining a phase angle difference between the transmitted microwave signal and the received summation microwave signal, said difference varying in accordance with differences in size, shape and locations of the constituent materials within the structural member.

5,384,544

METHOD AND APPARATUS FOR CALIBRATING THE ENERGY OUTPUT OF A DEFIBRILLATOR

Ben Flugstad, McMinnville; Judith Cyrus, Newberg, and Daniel J. Powers, McMinnville, all of Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Mar. 2, 1993, Ser. No. 25,295
Int. Cl.[6] G01R *27/26, 35/00*; A61N *1/39*
U.S. Cl. 324—678 **8 Claims**



1. A method of calibrating the energy output of a defibfillator having a self healing storage capacitor; a safety resistor connected in parallel with said self healing storage capacitor, and a microcontroller operatively coupled to said self healing storage capacitor, said method comprising the microcontroller executing steps of:

receiving a calibration request;

charging said self healing storage capacitor to a charging voltage greater than a starting voltage;

discharging said self healing storage capacitor through said safety resistor;

continuously measuring the voltage across said self healing storage capacitor as it discharges through said safety resistor;

detecting, responsive to said measuring step, that the voltage across said self healing storage capacitor is less than or equal to said starting voltage;

starting, responsive to said detecting step, a timer in said microcontroller;

concluding, responsive to said measuring step, that said voltage across said self healing storage capacitor is leis than or equal to an ending voltage;

stopping, responsive to said concluding step, said timer in said microcontroller;

determining an elapsed time between a starting time of said timer in said starting step and an ending time of said timer in said stopping step;

calculating a capacitance value of said self healing storage capacitor based on the starting voltage, the ending voltage, and the elapsed time; and

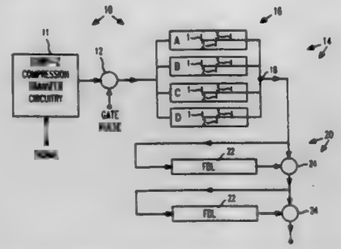
storing said capacitance value of said self healing storage capacitor in a memory connected to said microcontroller for calibrating the energy output of said defibrillator.

5,384,545

SEQUENTIAL CIRCUITRY FOR RECREATING CW COMPONENTS FROM CHIRP-Z PULSES

William J. Skudera, Jr., Oceanport, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 17, 1992, Ser. No. 977,354
Int. Cl.[6] H03K *5/159*; G01R *23/175*
U.S. Cl. 327—284 **3 Claims**



1. In a signal analyzer wherein a Chirp-Z forward transform is utilized to compress the individual CW components of the signal into segregated pulses of equal duration, with the pulse of each such component appearing once during each scan of a sweeping local oscillator, the improvement comprising:

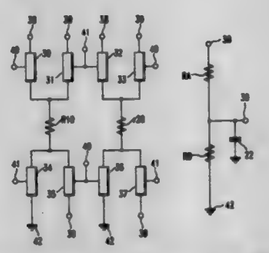
sequential circuitry for recreating a selected CW component by repeatedly replicating a forward Chirp-Z transform pulse relating thereto throughout a period of time as necessitated by the intended analysis, with the forward Chirp-Z transform pulse for each CW component selected being gated through a switch to a tapped delay line having the taps thereof separated in time by one-half the Chirp-Z pulse width and one pulse replication is taken from each tap.

5,384,546

TIME DOMAIN COMPONENT MULTIPLEXOR

John E. Gersbach, Burlington, Vt., assignor to International Business Machine Corp., Armonk, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,600
Int. Cl.[6] H03K *17/56*
U.S. Cl. 327—411 **18 Claims**



1. In a circuit having an output and a plurality of components:

at least first and second ones of said components being coupled together in a first configuration in said circuit;

input signal source means for producing first and second signals; and

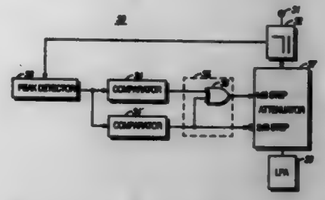
switching means, coupled to each of said components and receiving said first and second signals from said signal means, for switching said first and second components from said first configuration into a second configuration different from said first configuration, thereby reducing dependency of the circuit output on electrical and physical variations in said components.

5,384,547

APPARATUS AND METHOD FOR ATTENUATING A MULTICARRIER INPUT SIGNAL OF A LINEAR DEVICE

Charles N. Lynk, Jr., Bedford, and Mark Van Horn, Arlington, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1993, Ser. No. 100,906
Int. Cl.[6] H03G *3/20*
U.S. Cl. 330—136 **2 Claims**



1. A method for attenuating a multicarrier input signal of a linear device, said method comprising the steps of:

measuring a peak power of said multicarrier input signal;

comparing said peak power to a plurality of thresholds; and

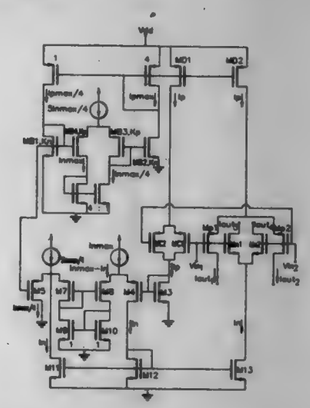
attenuating said input signal by an amount relating to a number of said plurality of thresholds exceeded if said peak power exceeds one or more of said plurality of thresholds.

5,384,548

CONSTANT TRANSCONDUCTANCE BIAS CIRCUIT AND METHOD

Satoshi Sakurai, and Mohammed Ismail, both of Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Aug. 25, 1993, Ser. No. 111,708
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—253 **22 Claims**



1. An integrated circuit comprising:

a differential stage having a first differential pair of Field Effect Transistors (FETs) of a first conductivity type with a first bias current flowing therethrough and a second pair of differential FETs of a second conductivity type, electrically connected in parallel with the first pair of FETs, with a second bias current flowing therethrough; and

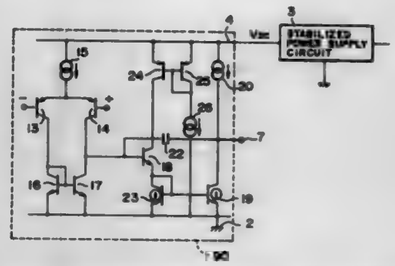
constant transconductance bias means, electrically connected to said differential stage, for monitoring one of the first and second bias currents and dynamically controlling the other of the first and second bias currents to maintain constant transconductance of said differential stage.

5,384,549

AMPLIFIER INCORPORATING CURRENT-LIMITING PROTECTION OF OUTPUT TRANSISTOR

Toru Araki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,365
Claims priority, application Japan, Dec. 1, 1992, 4-322042
Int. Cl.[6] H03F *3/04*; H02H *7/20*
U.S. Cl. 330—298 **5 Claims**



1. An amplifier circuit using a stabilized power supply circuit as a power source, said amplifier circuit comprising an operational amplifier, said operational amplifier having:

an output section including a first transistor having an emitter, a base, and a collector and connected in a common-emitter circuit configuration, an output terminal connected to the collector of the first transistor and through which an output from the amplifier circuit is obtained;

an output drive section for driving the first transistor connected in the common-emitter circuit configuration in said output section;

a current limiter connected to at least one of said output section and said output drive section, said current limiter limiting current flow so that a collector current of the first transistor connected in the common-emitter configuration in said output section does not exceed a maximum current, said current limiter section including a second transistor having the same polarity as the first transistor, the second transistor having a collector and a base connected to each other and connected to the base of the first transistor, the second transistor having an emitter connected to the emitter of the first transistor; and

an input section having an output connected to said output drive section wherein said output drive section includes a third transistor connected in an emitter-follower configuration and having an emitter connected to the collector and the base of the second transistor, having a collector connected to said current limiter section, and having a base connected to the output from the input section so that, when the output from the amplifier circuit is short-circuited to a power supply line, current flow is limited so that the collector current of the first transistor connected in the common-emitter configuration does not exceed the maximum current, and an output from the stabilized power supply circuit is stably maintained at a predetermined voltage.

5,384,550

LOOP TRANSIENT RESPONSE ESTIMATOR FOR IMPROVED ACQUISITION PERFORMANCE

Steven J. Hensely, and Robert H. Pool, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.

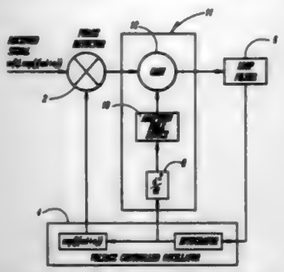
Filed Sep. 18, 1992, Ser. No. 947,230
Int. Cl.[6] H03L *7/08, 7/107*
U.S. Cl. 331—17 **38 Claims**

1. Means for improving a locking loop's acquisition performance, comprising:

a locking loop comprising a device having a first input for an

electrical input signal, a second input for an electrical reference signal, a detector to detect a difference between the input signal and the reference signal, and an output for an electrical error signal representing the difference generated by the device, said error signal being electrically communicated back to the second input as the reference signal, an oscillator which receives the error signal and generates the reference signal;

an aiding loop electrically coupled to and incorporated with said locking loop, the aiding loop including a sensor for sensing a characteristic of the error signal during the



transient period related to closeness to lock and producing a closeness to lock'signal correlated thereto, a control device which receives the closeness to lock signal and generates a control signal, and a device which receives the control signal, for altering a loop parameter; and

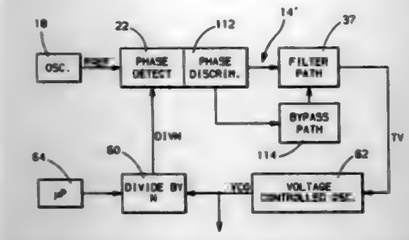
means for adjusting said loop parameter of said aiding and locking loop based on the closeness to lock signal, the control signal varying the loop parameter to accelerate acquisition of lock during the transient period but varying the loop parameter to optimize signal to noise ratio when in close proximity to and at lock.

5,384,551

FAST LOCKING PHASE LOCKED LOOP FREQUENCY SYNTHESIZER

Richard A. Kennedy; Richard A. Summe, both of Kokomo, Ind., and John R. Pacourek, Oak Creek, Wis., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Feb. 25, 1993, Ser. No. 23,795
Int. Cl.[6] H03L *7/089, 7/093, 7/107, 7/18*
U.S. Cl. 331—17 **3 Claims**



1. A phase lock loop frequency synthesizer circuit for generating a tuned frequency output signal, the synthesizer circuit comprising:

reference oscillator means for generating a reference signal having a reference frequency;

voltage controlled oscillator means for generating the tuned frequency output signal, wherein the tuned frequency output signal has a frequency determined by a tuning voltage applied to an input of the voltage controlled oscillator means;

a divide by N counter for receiving the tuned frequency output signal and for generating a counter output signal having a frequency equal to that of 1/N times the received tuned frequency output signal, where N is a selectable integer determined by a counter input signal;

phase detector means responsive to the counter output signal and the reference signal for generating phase detector output signals representative of a difference in phase between the counter output signal and the reference signal;

first circuit means responsive to the phase detector output signals for charging and discharging a first capacitor to develop a first capacitor voltage thereacross which is proportional to the difference in phase between the counter output signal and the reference signal when the phase difference is less than a non-zero predetermined phase value;

loop filter means coupled to the first capacitor for filtering the first capacitor voltage to produce the tuning voltage for the voltage controlled oscillator means at a filter output, the loop filter means including a second capacitor coupled to the filter output, the second capacitor defining a limiting rate at which the tuning voltage can be changed in response to a change in the first capacitor voltage; and

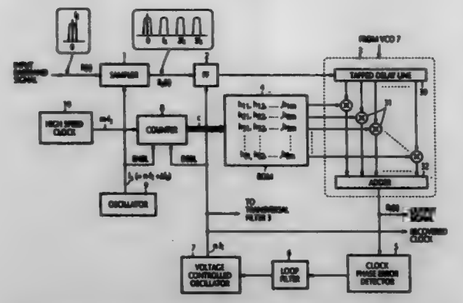
second circuit means responsive to the phase detector output signals for charging and discharging the second capacitor based upon the difference in phase between the counter output signal and the reference signal, when the phase difference exceeds the non-zero predetermined phase value, to change the tuning voltage in response to changes in the phase difference at a rate greater than the limiting rate.

5,384,552

CLOCK RECOVERY CIRCUIT FOR EXTRACTING CLOCK INFORMATION FROM A RECEIVED BASEBAND SIGNAL

Motoya Iwasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 157,698
Claims priority, application Japan, Nov. 25, 1992, 4-314469
Int. Cl.[6] H03L *7/00*
U.S. Cl. 331—25 **4 Claims**



1. A clock recovery circuit, comprising:

an asynchronous oscillator for generating first clock pulses at a frequency n times the frequency of a baseband signal, where n is an integer greater than unity;

sampler means for sampling said baseband signal in response to said first clock pulses and producing first samples;

a voltage-controlled oscillator for producing second clock pulses at a controlled frequency;

latch means for holding said first samples and delivering the held first samples in response to said second clock pulses as second samples;

time difference detector means for detecting a time difference between said first clock pulses and said second clock pulses;

means for producing a set of tap-gain values in response to said time difference;

a transversal filter for successively delaying said second samples, weighting the successively delayed second samples with said tap-gain values respectively, and producing an output signal representative of a sum of the weighted second samples; and

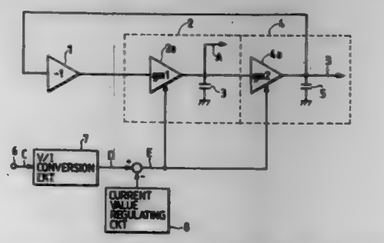
clock phase error detector means for detecting a phase error of the output signal of said transversal filter with respect to the clock timing of the received baseband signal and controlling said voltage-controlled oscillator according to the detected clock phase error.

5,384,553

VOLTAGE CONTROL OSCILLATION CIRCUIT

Isoshi Takeda, and Shigeyoshi Hayashi, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 27, 1993, Ser. No. 97,877
Int. Cl.[6] H03B *5/24;* **H03L** *1/02*
U.S. Cl. 331—111 **6 Claims**



1. A voltage control oscillation circuit in the oscillating frequency of an output signal is controlled according to control voltage, said circuit comprising:

a first charge-discharge circuit including a first transistor circuit which receives a reverse voltage signal as a first input voltage for converting said first input voltage into a first charge-discharge current according to a first conversion ratio, and a first capacitor which is charged and discharged by said first charge-discharge current for generating a first charge-discharge voltage signal;

a second charge-discharge circuit including a second transistor circuit which receives said first charge-discharge voltage signal as a second input voltage for converting said second input voltage into a second charge-discharge current according to a second conversion ratio, and a second capacitor which is charged and discharged by said second charge-discharge current for generating a second charge-discharge voltage signal;

a reverse circuit for reversing said second charge-discharge voltage signal to generate said reverse voltage signal;

a voltage-to-current conversion circuit for converting said control voltage into a first control current;

a current value regulating circuit for generating a regulating current; and

means for generating a second control current from said regulating current and said first control current, to output said second control current to said first and second transistor circuits, respectively,

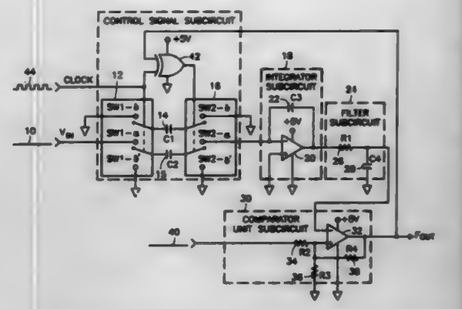
wherein one of said reverse voltage signal and said first and second charge-discharge voltage signals is output as said output signal, and the operation current of said first and second transistor circuits is controlled according to said second control current so as to vary said first and second conversion ratios to control the oscillating frequency of said output signal.

5,384,554

VOLTAGE CONTROLLED OSCILLATOR CIRCUIT EMPLOYING INTEGRATED CIRCUIT COMPONENT RATIOS

Brian Abernethy, Phoenix, Ariz., assignor to CalComp Inc., Anaheim, Calif.

Filed Dec. 8, 1993, Ser. No. 163,964
Int. Cl.[6] H03K *3/03*
U.S. Cl. 331—153 **9 Claims**



1. An integrated voltage controlled oscillator circuit comprising:

(a) inputs for a clock signal and control signal, respectively;

(b) a control signal means connected to the clock signal and control signal inputs for outputting a signal having one of (i) a negative voltage, and (ii) a positive voltage;

(c) an integrator means connected to the output of the control signal means for one of (i) increasing, and (ii) decreasing a voltage of an output signal output from the integrator means, said increasing dependent on whether the voltage of the output of the control signal means is negative and said decreasing being dependent on whether the voltage of the output of the control signal means is positive; and,

(d) a comparator unit means connected to the output of the integrator means for outputting a signal having a first voltage whenever the voltage of the signal output by the integrator means has increased to a first pre-determined level, and a second voltage whenever the voltage of the signal output by the integrator means has decreased to a second pre-determined level, said comparator unit means output signal being fed back to the control signal means and employed to cause the voltage of the signal output by the control signal means to be positive if the output of the comparator unit means is at the first voltage and to be negative if the output of the comparator unit means is at the second voltage; and wherein,

e) the signal output by the integrator and comparator unit means is further dependent on the ratio of circuit components included within the integrated voltage controlled oscillator circuit.

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COMBINED RF AND DIGITAL/DC SIGNALLING INTERCONNECT LAMINATE

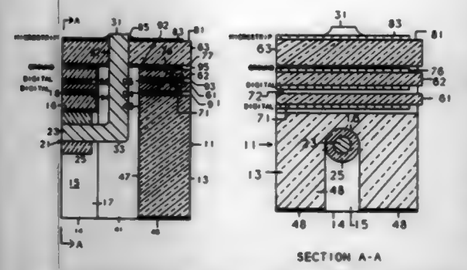
Steven E. Wilson, Melbourne, and Walter M. Whybrew, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jan. 26, 1993, Ser. No. 9,496
Int. Cl.[6] H01P *5/00*
U.S. Cl. 333—1 **19 Claims**

1. An interconnect structure which provides RF and auxiliary signalling capabilities comprising:

a first dielectric layer having a first surface and a channel formed therein, said channel extending through said first dielectric layer parallel to said first surface and having a

conductive surface, a dielectric-coated conductor being inserted into said channel so as to extend parallel to said first surface and form an RF transmission line;



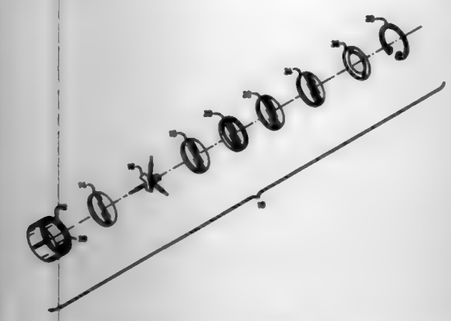
a second dielectric layer having a conductive layer formed on a first surface thereof and being mounted in a laminate assembly with said first surface of said first dielectric layer, said conductive layer conducting auxiliary signals as an adjunct to said RF transmission line.

5,384,556

MICROWAVE CIRCULATOR APPARATUS AND METHOD

Mark E. Coles, Marlboro, and James P. Kingston, Natick, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 30, 1993, Ser. No. 129,709
Int. Cl.[6] H01P *1/387*
U.S. Cl. 333—1.1 10 Claims



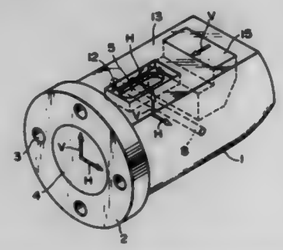
1. A microwave circulator comprising:
a housing means for supporting a plurality of elements of said circulator;
first disk means disposed within said housing means for providing gyromagnetic action;
center conductor means disposed on said first disk means, said center conductor means having a plurality of tabs, each of said tabs extending outside said housing means for providing ports for circuit connections;
second disk means disposed on said center conductor means for providing said gyromagnetic action;
a ground plane disposed on said second disk means, the circumference of said ground plane contacting the sides of said housing means;
a magnet disposed on said ground plane;
cover means disposed on top of said magnet for providing magnetic shielding;
spring means disposed on said cover means for providing a compression force to said plurality of elements of said circulator; and
retainer means disposed on said spring means and positioned within a groove of said housing means for compressing said spring means.

5,384,557

POLARIZATION SEPARATOR AND WAVEGUIDE-MICROSTRIP LINE MODE TRANSFORMER FOR MICROWAVE APPARATUS

Yoshikazu Yoshida, Tokyo; Kenichi Kawasaki, Kanagawa; Shozo Horiuwa, Chiba; Hiroyuki Mita, Kanagawa, and Keiji Fukuzawa, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 150,622
Claims priority, application Japan, Nov. 10, 1992, 4-323732; Nov. 13, 1992, 4-327549; Mar. 11, 1993, 5-076403
Int. Cl.[6] H01P *1/16*
U.S. Cl. 333—21 A 5 Claims



1. A polarization separator for a microwave apparatus comprising:
a substantially tubular member having a circular waveguide formed therein for receiving input orthogonal polarization electromagnetic waves, a first rectangular hole formed in a side wall thereof, a second rectangular hole formed in a same plane in the same side wall thereof, and a rectangular waveguide formed therein and extending between said circular waveguide and said second rectangular hole;
a reflecting pole located in said circular waveguide and having an axis extending perpendicularly to a direction in which the input orthogonal polarization electromagnetic waves propagate and also to a direction of a line along which said first rectangular hole and the center of said circular waveguide lie;
dimensions of height and width of said rectangular waveguide are determined such that said rectangular waveguide has a cutoff frequency higher than that of a first one of the input orthogonal polarization electromagnetic waves but lower than that of a second one of the input orthogonal polarization electromagnetic waves; and
a reflecting face for changing the direction of propagation of the second electromagnetic wave in said rectangular waveguide approximately by 90 degrees in said rectangular waveguide is formed in said rectangular waveguide.

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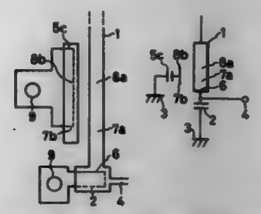
RADIO-FREQUENCY INTEGRATED CIRCUIT DEVICE HAVING ADJUSTABLE MATCHING CIRCUIT

Kenichi Maruhashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1994, Ser. No. 251,425
Claims priority, application Japan, May 31, 1993, 5-129186
Int. Cl.[6] H01P *5/00*
U.S. Cl. 333—33 7 Claims

1. A radio-frequency integrated circuit device having a matching circuit constituted by a transmission line on a substrate, said matching circuit comprising:
a short-circuit stub to which a bias voltage is applied, said short-circuit stub being short-circuited to ground through a capacitor; and

an adjusting capacitor which is disposed adjacent to said short-circuit stub, a first electrode of which is grounded



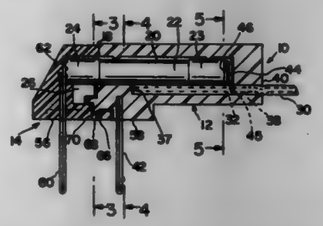
and a second electrode of which is connected to said short-circuit stub by a bonding-wire.

5,384,559

FUSE PLUG WITH REPLACEMENT FUSE STORAGE

Amos Shamir, Riverdale, N.Y., assignor to Paramount Die & Machine Products, Inc., Brooklyn, N.Y.

Filed Jan. 21, 1994, Ser. No. 183,832
Int. Cl.[6] H01H *85/02*
U.S. Cl. 337—197 14 Claims



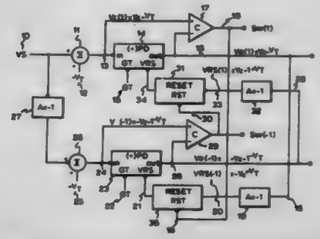
1. An improved combination plug and fuse holder adapted for receiving a multi-conductor cord and comprising;
a first insulated housing member having a passage for receiving the electric cord and a pocket extending substantially parallel to the passage and adapted to receive a first fuse,
contact means for electrically coupling one conductor of said cord to one side of said first fuse,
first prong means supported in said first insulated housing member for electrical coupling to the other conductor of the cord,
a second insulated housing member including means for permitting the separation apart of the first and second housing members and for further interlocking these members,
and a second prong means supported in said second insulated housing member extending in parallel with said first prong means but only in the interlocked position of said housing members,
said second prong means for electrical coupling to the other side of said first fuse,
said first insulated housing member comprising a base member and a body member, and means for relatively hinging said base and body members with said pocket and said passage defined therebetween,
means for hinging said second housing member from said base member at one end thereof,
said hinging means between said base member and said body member, and said hinging means between said base member and said second housing member being disposed, respectively, along different sides of said base member,
said second insulated housing member supporting only said second prong means of said first and second prong means and said body member supporting only said first prong means of said first and second prong means,
said second insulated housing member and said body member having one of two alternate positions relative to said base member including an interlocked position in which said first and second prong means extend in parallel and an open position in which said second insulated housing member and said body member are hinged away from said base member displacing said second prong means out of parallel with said first prong means and permitting access to said first fuse to enable removal thereof;
the improvement comprising a means within said first insulated housing member adapted to receive a second fuse in electrical isolation from said first fuse, said first prong means and said cord and whereby said second fuse is removable therefrom and interchangable with said first fuse only when said first and second insulated housing members are in the separated position.

5,384,560

MAXIMUM LIKELIHOOD SEQUENCE METRIC CALCULATOR

Richard G. Yamasaki, Torrance, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.

Continuation of Ser. No. 694,428, May 1, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 184,786
Int. Cl.[6] H03K *5/153*; G05B *1/00*
U.S. Cl. 340—146.2 8 Claims



8. A method of decoding a stream of received data having two states with intersymbol interference from a communication channel or recording device, the method comprising the steps of:
computing a metric for each sample pulse received;
comparing the most recent sampled positive or negative amplitude to previous stored sampled amplitude of same positive or negative amplitude;
resetting an amplitude stored for the opposite polarity every time the latest peak of a plurality of consecutive peaks has a greater amplitude;
generating flag signals during resetting operation to indicate a transition in state, said flag signals are stored and later corrected, if needed, to attain a most likely correct bit sequence corresponding to the decoded stream of data.

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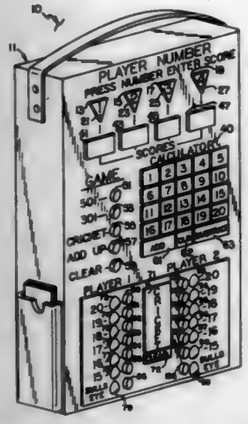
BRISTLE DART ELECTRONIC SCOREBOARD

Robert J. Smith, 1225 Cheltenham, 1A, Glen Elyn, Ill. 60137

Filed Jan. 25, 1993, Ser. No. 8,498
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—323 R 1 Claim

1. A electronic scoreboard for the game of darts and cricket, said scoreboard comprising:
a power supply having means for shutting off said power supply after a predetermined amount of time;
a calculator;
a plurality of numeric accumulators electrically communicable with said calculator for storing numeric values input into said calculator;
a plurality of numeric displays electrically coupled to said numeric accumulators for indicating a numeric value stored within each of said numeric accumulators;
a plurality of player selection switches in electrical commu-

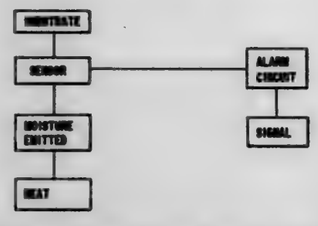
nication with both said calculator and said accumulators for selectively placing an individual one of said accumulators in electrical communication with said calculator;
a plurality of lamps in electrical communication with said plurality of player selection switches, each of said lamps being responsive to an actuation of an individual one of said player selection switches so as to illuminate upon a first actuation thereof;
a plurality of game selection switches in electrical communication with ssid calculator for inputing a preset number into said accumulators;
a clear switch in electrical communication with said calculator for resetting at least one of said accumulators to a value of zero;
a plurality of button switches;



a cricket button switch in electrical communication with said button switches for selectively coupling said button switches to said accumulators;
a plurality of light emitting diodes, with each of said light emitting diodes having at least three operating states, each of said light emitting diodes being in electrical communication with both said accumulators and an individual associated one of said button switches such that said diode is energized to a first state upon a first actuation of said associated button switch, said diode is energized to a second state upon a second actuation of said associated button switch, and said diode is energized to a third state upon a third actuation of said associated button switch, wherein said first state comprises displaying a forward slash (/), said second state comprises displaying a reverse slash ( ), and said third state comprises displaying a combination of both said first and second states (X).

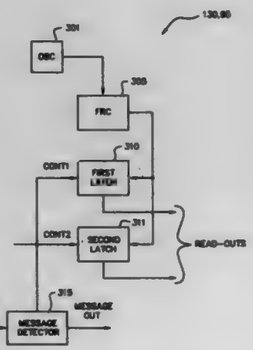
5,384,562
EARLY WARNING HEAT SENSOR SYSTEM
Arnold Greenfield, 840 NE. 199th St., North Miami Beach, Fla. 33179
Filed Feb. 16, 1993, Ser. No. 17,785
Int. Cl.[6] G08B *17/06*
U.S. Cl. 340—584 **6 Claims**

1. In a fire alarm system having an alarm circuit with at least one pair of sensor leads and a rated trigger resistance between the sensor leads below which the alarm is activated, a heat-sensitive alarm trigger, comprising:
two electrode means defining a space therebetween;
means for electrically connecting said two electrode means to said alarm circuit;
hydrated material disposed in said space between said two electrode means;
said hydrated material having a resistance below a rated trigger resistance of the alarm circuit when heated to above a given threshold trigger temperature;



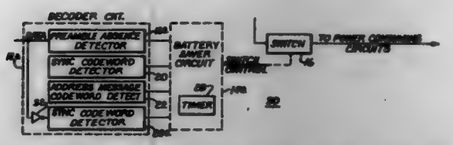
said two electrode means being elongated strips of one of metal foil and film.

5,384,563
METHOD AND APPARATUS FOR TIME SYNCHRONIZATION OF BUS TYPE LOCAL AREA NETWORKS INCLUDING HIERARCHICAL NETWORKS
W. Russell Massey, Levittown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 22, 1993, Ser. No. 19,730
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.21 **5 Claims**



1. A method for synchronizing the time of a second network to a first network, each network having an independent timing subsystem for maintaining its own real time, the method comprising the steps of:
for the first network
a) sending a first message to the second network, the first message being uniquely identified as a sync message;
b) obtaining a first relative time within the first network of when the first message is transmitted;
c) when the first network recognizes that the first message was sent, obtaining a second relative time to send a second message to the second network containing a real time of the first network that the first message was sent;
for the second network
d) obtaining a third relative time within the second network of when the first message is received; and
e) associating the real time of the first network contained in the second message to the third relative time, thereby synchronizing the time of the second network to the time of the first network and eliminating any skew of time associated with transmission protocols of the first and second network.

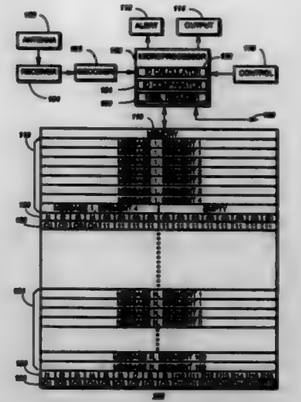
5,384,564
BATTERY SAVING ARRANGEMENT FOR SELECTIVELY ADDRESSABLE, PORTABLE RECEIVERS
Keith H. Wycoff, 1205 N. Tyler St., Lexington, Nebr. 68850, and William H. Dittmer, Lexington, Nebr., assignors to Keith H. Wycoff, Lexington, Nebr.
Filed Jan. 23, 1992, Ser. No. 824,592
Int. Cl.[6] H04B *1/16*
U.S. Cl. 340—825.44 **38 Claims**



1. In a selectively addressable receiver having signal processing circuits for receiving an interrogation signal including a preamble signal having a predetermined code followed by at least one codeword, the combination comprising power saving circuit means for periodically applying a supply voltage to said signal processing circuits of the receiver, and preamble absence detecting means including first signal detecting circuit means responsive to a received signal to produce a first output signal whenever said received signal fails to have the predetermined code of said preamble signal, second signal detecting circuit means responsive to said received signal to produce a second output signal whenever said received signal fails to have the predetermined code of said preamble signal, signal combining circuit means responsive to said first and second output signals to provide a preamble absence detection signal indicating that the received signal fails to include the predetermined code of said preamble signal, said power saving circuit means responding to said preamble absence detection signal to terminate the supply voltage to said signal processing circuits of the receiver for a predetermined interval of time, said first signal detecting means including first comparing means for comparing said received signal with a first simulated preamble signal, and said second signal detecting means including second comparing means for comparing said received signal with a second simulated preamble signal, said preamble signal of said interrogation signal and said simulated preamble signals being coded to represent a plurality of binary bits occurring in a predetermined sequence, wherein said first and second simulated preamble signals have a 180° phase relationship to one another.

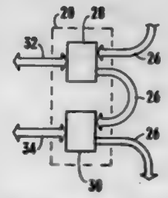
5,384,565
METHOD AND APPARATUS FOR IDENTIFYING DUPLICATE DATA MESSAGES IN A COMMUNICATION SYSTEM
Gregory L. Cannon, Coconut Creek, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 3, 1992, Ser. No. 923,637
Int. Cl.[6] H04Q *7/00*
U.S. Cl. 340—825.44 **20 Claims**

1. A method of determining whether first and second data messages are duplicates of one another in a communication system comprising a transmitter for sending the first and second data messages and a receiver for receiving the first and second data messages, wherein the method does not require transmission of a message identification header from the transmitter to the receiver, the method comprising the steps of:
(a) calculating from the first and second data messages a corresponding pair of first and second message identifiers comprising a plurality of bits generated from at least one corresponding pair of first and second message characteristic values, the at least one corresponding pair of first and second message characteristic values calculated from at least one portion of the first data message and a corresponding at least one portion of the second data message; and
(b) comparing the pair of first and second message identifiers calculated in step (a) to determine whether the first and



second message identifiers are substantially equivalent to each other, substantially equivalent identifiers being indicative that the first and second data messages are duplicates of one another.

5,384,566
LOAD SHARING SYSTEM FOR COMPUTER NETWORK PROTOCOLS
Dann P. McCreary; Philip J. Duclos, both of Escondido, and Daniel P. Drogichen, Leucadia, all of Calif., assignors to Integrated Networks Corporation, Bern, Switzerland
Filed Oct. 15, 1991, Ser. No. 776,573
Int. Cl.[6] H04Q *3/00*
U.S. Cl. 340—825.05 **12 Claims**



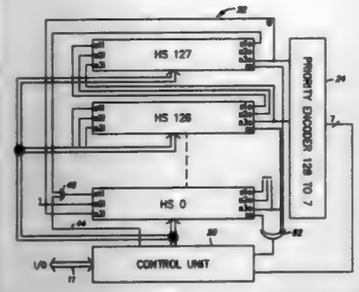
1. A system for establishing data communication between a ring-topology network and a host network attached to the ring-topology network which comprises:
a plurality of contiguous stations, each said station separately connected in data communications with said ring;
means for separating said data into frames of data;
means for setting each said station into either a positive receive state wherein said station will copy said frame, or a negative receive state wherein said station will not copy said frame;
means for selectively copying said frames at each said station in repetitive cycles in accordance with a predetermined sequence;
means for coordinating said predetermined sequence at each station for collectively receiving all said frames addressed to said host network through said plurality of stations; and
a modulo counter included in each said station, said counter being operable to count one unit in response to the receipt of one said frame at said station, said counter is set to

countdown from a number which is one less than the number of said contiguous stations.

5,384,567
COMBINATION PARALLEL/SERIAL EXECUTION OF SEQUENTIAL ALGORITHM FOR DATA COMPRESSION/DECOMPRESSION

Martin A. Hassner, Palo Alto, Calif.; Ehud D. Karnin, Koraqit, Israel; Uwe Schwiegelshohn, Mohegan Lake, N.Y., and Tetsuya Tamura, Yamato, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 8, 1993, Ser. No. 89,211
Int. Cl.[6] H03M 7/30
U.S. Cl. 341—51 **9 Claims**



1. An apparatus for executing a sequential data compression algorithm, comprising:

an array of i identical horizontal slice units, each of which stores j symbols to define j separate blocks in which the symbols in each slice unit are separated by exactly i symbols, i and j being positive integers larger than 1;

i comparators to compare symbols in a string of i incoming symbols in parallel with i noncontiguous symbols, one from each block, previously stored in said slice units to identify matching sequences of symbols; and

means, including controller means, for (i) executing the sequential algorithm to condition the comparators to scan symbols in parallel but in each of said blocks sequentially, and (ii) cause matching sequences and nonmatching sequences of symbols to be stored in said array.

5,384,568
DATA COMPRESSION

Dennis N. Grinberg, Pittsburgh, Pa.; Sivaramakrishnan Rajagopalan, Brookline, Mass.; Ramaratnam Venkatesan, Morristown, and Victor K.-W. Wei, Warren, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 2, 1993, Ser. No. 161,102
Int. Cl.[6] H03M 7/42
U.S. Cl. 341—51 **25 Claims**

11. A method for compressing an incoming data stream to produce an outgoing compacted data stream, the method comprising the steps of

(a) parsing the incoming data stream to generate a corresponding stream of tokens,

(b) sequentially determining if each token from said stream of tokens is stored in a primary memory and, if so, invoking step (f); otherwise, continuing with step (c),

(c) transmitting identification data indicative of a new token and transmitting a representation for said new token as a corresponding outgoing data segment in the compacted data stream,

(d) inserting said new token at the top of the primary memory,

(e) returning to step (b),

(f) determining the primary memory address of the said each token in the primary memory,

(g) determining if the primary memory address is in a secondary memory and, if so, invoking step (1); otherwise, continuing with step (h),

(h) transmitting as an outgoing segment in the compacted data stream a data block corresponding to the primary memory address,

(i) inserting the primary memory address at the top of the secondary memory,

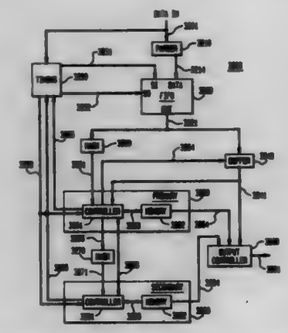
(j) moving said each token to the top of the primary memory,

(k) returning to step (b),

(l) determining the secondary memory location of the primary memory address,

(m) moving said each token to the top of the primary memory,

(n) determining if the secondary memory location is in a tertiary memory and, if so, invoking step (s); otherwise, continuing with step (o),



(o) transmitting as an outgoing segment in the compacted data stream a data block corresponding to the secondary memory location,

(p) inserting the secondary memory location at the top of the tertiary memory,

(q) moving the secondary memory location to the top of the secondary memory, and

(r) returning to step (b),

(s) determining the tertiary memory position of the secondary memory location,

(t) transmitting as an outgoing segment in the compacted data stream a data block corresponding to the tertiary memory position,

(u) moving the tertiary memory position to the top of the tertiary memory,

(v) moving the secondary memory location to the top of the secondary memory, and

(w) returning to step (b).

5,384,569
INTERPOLATION TYPE FLASH ANALOG-TO-DIGITAL CONVERTER

Yoshihiro Komatsu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

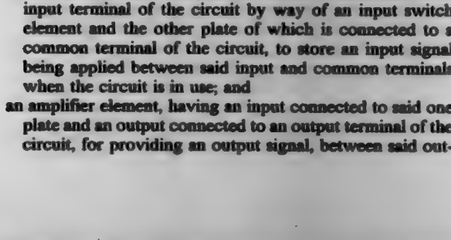
Filed Jun. 28, 1993, Ser. No. 83,970
Claims priority, application Japan, Jun. 30, 1992, 4-195995
Int. Cl.[6] H03M 1/36
U.S. Cl. 341—159 **5 Claims**

1. An analog signal comparison circuit comprising:

a first differential input stage for inputting a first reference value to one side of input terminal and for inputting an input analog signal to the other side of input terminal, and outputting the first inversion output current and non-inversion output current depending upon said input analog signal;

a second differential input stage for inputting a second reference value to one side of input terminal and for inputting said analog signal to the other side of input terminal, and for outputting the second inversion output current and non-inversion output current depending upon said input analog signal;

a current dividing means for dividing said first and second inversion output currents and the first and second non-inversion output currents to a plurality of currents and for outputting as the first and second shunt inversion output currents and the first and second dividual non-inversion output currents; and

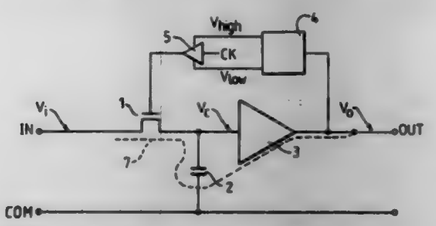


a current composing means for forming a plurality of composite inversion output currents upon adding said first and second inversion output currents respectively, and simultaneously forming multiple composite non-inversion output currents upon adding said first and second non-inversion output currents respectively, and outputting comparison outputs corresponding to said first reference value of said input analog signal and comparison outputs corresponding to virtual reference values which divided said first and second reference values equally depending upon said composite inversion output currents and composite non-inversion output currents.

5,384,570
VOLTAGE STORAGE CIRCUITS

Ian J. Dedic, Northolt, United Kingdom, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 3, 1993, Ser. No. 115,986
Claims priority, application United Kingdom, Sep. 8, 1992, 9218987
Int. Cl.[6] H03M 1/12
U.S. Cl. 341—172 **45 Claims**



1. A voltage storage circuit comprising:

a storage capacitor, one plate of which is connected to an input terminal of the circuit by way of an input switch element and the other plate of which is connected to a common terminal of the circuit, to store an input signal being applied between said input and common terminals when the circuit is in use; and

an amplifier element, having an input connected to said one plate and an output connected to an output terminal of the circuit, for providing an output signal, between said output and common terminals, dependent upon the voltage stored in said storage capacitor, which amplifier element includes an electronic input device having a controllable current path provided between respective first and second current-path electrodes of the electronic input device and also having a control electrode to which a potential is applied to control the magnitude of current in said controllable current path, said control electrode being connected to said one plate, and said first and second current-path electrodes being connected with a potential tracking device such that both the first current-path electrode potential and the second current-path electrode potential track the control electrode potential, whilst current flows in said controllable current path, so that the respective potentials of the first and second current-path electrodes are kept substantially fixed in relation to the potential of said one plate.

5,384,571
METHOD OF FORMING RELIEF SURFACES

William M. Myers; Keith A. Ramsey, both of Columbus, and Paul G. Andrus, Powell, all of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation-in-part of Ser. No. 885,084, May 18, 1992, Pat. No. 5,225,933. This application Jan. 11, 1993, Ser. No. 2,580
Int. Cl.[6] H01Q 17/00
U.S. Cl. 342—4 **8 Claims**

1. A method of making a preselected surface structure comprising:

a. providing a photoresist material;

b. providing a cone-shaped or pyramidal beam of light capable of penetrating and photochemically reacting the photoresist material to make it removable;

c. penetrating said photoresist material with said beam;

d. moving said beam relative to said photoresist to effect said photochemical reaction in the photoresist which renders a portion of said resist removable and a portion fixed in the shape of said surface; and

e. removing the removable portion of the photoresist.

5,384,572
TESTING OF AIRBORNE WINDSHEAR RADARS

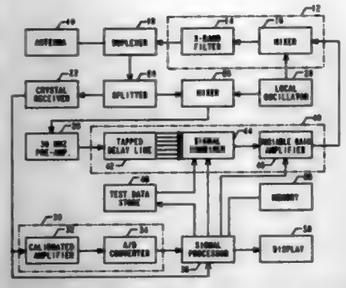
John F. Michaels, East Patchogue, and William L. Rubin, Whitestone, both of N.Y., assignors to Republic Electronics Co., Hauppauge, N.Y.

Continuation of Ser. No. 76,252, Jun. 11, 1993. This application Aug. 25, 1993, Ser. No. 111,847
Int. Cl.[6] G01S 7/40
U.S. Cl. 342—169 **15 Claims**

1. A portable test system, providing simulated radar returns for testing a radar system radiating radar pulse signals in a scanned antenna beam pattern, comprising:

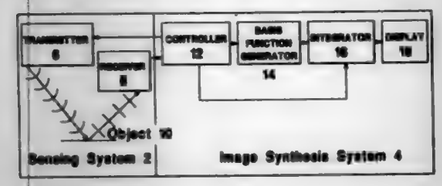
a test antenna suitable for positioning at a predetermined distance from said radar system for illumination by radar pulse signals of varying amplitude via said scanned antenna beam pattern;

transmitter means for radiating simulated radar returns via said test antenna;
receiver means, coupled to said test antenna, for processing received radar pulse signals of varying amplitude;
modulator means, coupled to said test antenna, for providing simulated radar return signals to said transmitter in timed response to said received radar pulse signals;
test data means, coupled to said modulator means, for storing test data to be included in said simulated radar return signals;



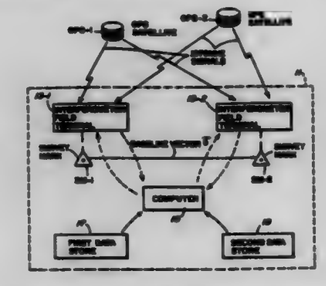
memory means for storing radar data representative of selected characteristics of said radar pulse signals and scanned antenna beam pattern; and
signal processing means, coupled to said receiver means and responsive to said radar data stored in said memory means, for controlling amplitude of said simulated radar return signals in inverse relation to said varying amplitude of said received radar pulse signals and for selectively controlling inclusion of test data in said simulated radar return signals; whereby, said simulated radar returns are time and inverse amplitude coordinated with said received radar pulse signals of varying amplitude.

5,384,573
IMAGE SYNTHESIS USING TIME SEQUENTIAL HOLOGRAPHY
Terry M. Turpin, Columbia, Md., assignor to Essex Corporation, Columbia, Md.
Continuation of Ser. No. 811,903, Dec. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 604,255, Oct. 29, 1990, Pat. No. 5,079,555. This application Mar. 17, 1993, Ser. No. 32,696
Int. Cl.[6] G01S *13/89*; A61B *5/055*; G06E *3/00*; G06F *15/62*
U.S. Cl. 342—179 **157 Claims**



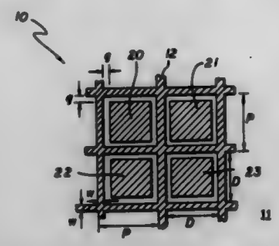
50. A system for generating an image of an object, the object being defined by a plurality of basis functions, each of the plurality of basis functions comprising a plurality of measurable parameters, the system comprising:
image synthesis means for generating a reconstructed image of the object using measured parameters of the basis functions,
the image synthesis means comprising:
means for interfering wavelike energy to thereby recreate the basis functions,
means for detecting the recreated basis functions, and
means for summing the recreated basis functions over time.

5,384,574
SYSTEM FOR DETERMINING POSITION FROM SUPPRESSED CARRIER RADIO WAVES
Charles C. Counselman, III, Belmont, Mass., assignor to Western Atlas International, Inc., Houston, Tex.
Continuation of Ser. No. 643,771, Jan. 22, 1991, Pat. No. 5,194,871, which is a continuation of Ser. No. 382,291, Jul. 20, 1989, Pat. No. 5,014,066, which is a continuation of Ser. No. 895,148, Aug. 11, 1986, Pat. No. 4,870,422, which is a continuation of Ser. No. 353,331, Mar. 1, 1982, Pat. No. 4,667,203. This application Mar. 13, 1993, Ser. No. 31,649
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[6] G01S *5/08*; H04B *7/185*
U.S. Cl. 342—357 **32 Claims**



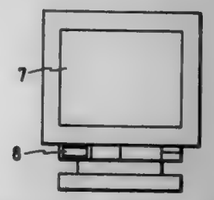
1. In a method of determining position by measuring phases of suppressed carrier-waves implicit in radio signals received from earth-orbiting satellites, an improvement comprising:
(a) receiving said signals from a plurality of said satellites simultaneously by means of an omnidirectional antenna;
(b) separating said received signals into first and second portions representing different radio-frequency bands; and
(c) correlating said first portion with said second portion to obtain data representing the phases of said carrier-waves for a plurality of said satellites simultaneously.

5,384,575
BANDPASS FREQUENCY SELECTIVE SURFACE
Te-Kao Wu, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 26, 1988, Ser. No. 249,039
Int. Cl.[6] H01Q *15/02*
U.S. Cl. 343—909 **2 Claims**



1. An improved frequency selective surface comprising:
a square grid composed of a first plurality of lines of material having a first conductivity perpendicularly intersecting a second plurality of lines of material having said first conductivity so as to provide a plurality of square spaces therebetween, each of said plurality of lines having a spacing D, the distance from the beginning of a line of said first plurality of lines to the beginning of an adjacent line of said first plurality of lines and the distance from the beginning of a line of said second plurality of lines to the beginning of an adjacent line of said second plurality of lines being equal to P and the width of said lines of said first plurality of lines and the width of said lines of said second plurality of lines being equal to W;
a plurality of squares of material having said first conductivity wherein each square of said plurality of squares is disposed within an associated square space of said plurality of square spaces and the distance between each edge of each square of said plurality of squares and the adjacent line of said first plurality of lines or the adjacent line of said second plurality of lines is g; such that P is equal to 0.24 inches, g is equal to 0.022 inches, D is equal to 0.228 inches and W is equal to 0.012 inches and
a surface of material having a second conductivity, said square grid and said plurality of squares being disposed on at least a portion of said surface.

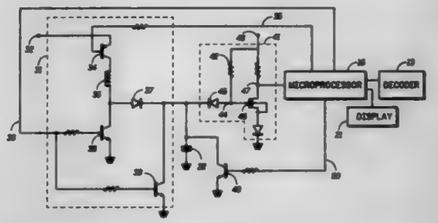
5,384,576
CRT DISPLAY DEVICE
Tsukasa Tashiro; Shigeo Hayashi, both of Nagano; Toshiyuki Miyazaki, and Norihito Sogo, both of Tokyo, all of Japan, assignors to Totoku Electric Co., Ltd. and Kaga Electronics Co. Ltd., both of Tokyo, Japan
Continuation of Ser. No. 757,070, Sep. 9, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 108,006
Claims priority, application Japan, Aug. 18, 1990, 2-248152
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—3 **19 Claims**



1. A CRT display device on which an input signal is adapted to be processed to form an image signal, and an image is adapted to be displayed on a CRT according to the image signal thus formed, said CRT display device comprising:
input signal state detecting means for detecting a state of an input signal;
message displaying means, provided separate and distinct from said CRT, for displaying a distinct message when no image is displayed on the CRT, indicating why no image is displayed on the CRT; and
display control means for displaying on said message displaying means said message so that a user can determine why no image has been displayed on the CRT and correct problems so that an image will appear on the CRT.

5,384,577
COMBINATION DISPLAY BACKLIGHT AND LIGHT SENSOR
Kevin T. McLaughlin, Lake Worth, and John J. Parkes, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 21, 1992, Ser. No. 886,214
Int. Cl.[6] G09G *3/34*
U.S. Cl. 345—102 **4 Claims**

1. A display, comprising:
display means for displaying information; and
an electroluminescent panel located contiguous to the display means for sensing ambient light and lighting the display means when the ambient light is below a threshold, wherein the electroluminescent panel comprises first and second electrodes and a phosphorus dielectric insulation material located between the first and second electrodes;
current means coupled to the electroluminescent panel for providing a charge thereto;
a resistor coupled between a first supply voltage and the electroluminescent panel; and
a microprocessor coupled to a first node between the electroluminescent panel and the resistor for sensing a voltage indicating the level of ambient light on the electroluminescent panel and coupled to the current means for enabling the charging of the electroluminescent panel in response



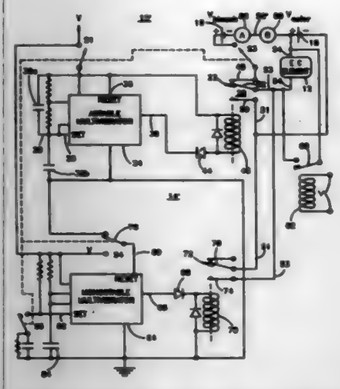
to the voltage being below a predetermined level, wherein the current means comprises an inductor having a first terminal coupled to the first node, and a second terminal, a first transistor having current carrying electrodes coupled between a supply voltage terminal and the second terminal of the inductor, and a control electrode coupled to the microprocessor, a second transistor having current carrying electrodes coupled between the first node and a second supply voltage terminal, and a control electrode coupled to the microprocessor, a third transistor having current carrying electrodes coupled between the first node and the second supply voltage terminal, and a control electrode coupled to the microprocessor.

5,384,578
ELECTROCHROMIC DEVICE CAPABLE OF PROLONGED COLORATION
Niall R. Lynam; Ian A. McCabe, both of Holland, and Kenneth L. Schierbeek, Zeeland, all of Mich., assignors to Donnelly Corporation, Holland, Mich.
Continuation of Ser. No. 625,946, Dec. 11, 1990, Pat. No. 5,220,317. This application Jun. 14, 1993, Ser. No. 77,245
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[6] G09F *9/32*; G02F *1/01*
U.S. Cl. 345—105 **39 Claims**

1. A variable electrochromic light transmission system comprising:
an electrochromic element having a continuously variable transmission characteristic;
said element being responsive to a momentary application of a signal by coloring to a partial light transmission level and being responsive to removal of said signal by maintaining a transmission level that is within a given percentage from said partial transmission level;
said partial light transmission level selectable from a continuum of light transmission levels in a range from a highest light transmission level to a lowest light transmission level;
input means for selecting a light transmission level of said electrochromic element;
circuit means responsive to said input means for intermittently applying a drive signal to said electrochromic element in successive pulses separated by holding periods;

said drive signal having a level corresponding to the selected light transmission level; and

said circuit means being responsive to at least one of the magnitude and the rate of change of magnitude of said



input means to provide momentary overshoot of said drive signal level upon a change in said input means that increases said drive signal level and momentary undershoot of said drive signal upon a change in said input means that decreases said drive signal level.

5,384,579

INFORMATION DISPLAY APPARATUS AND METHOD OF SCROLLING DISPLAYED DATA

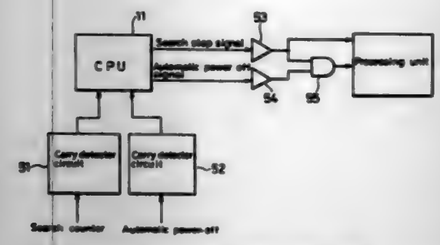
Masataka Nakasuji; Toshiaki Fujiwara; Chieji Katoh, and Shigeru Shindoh, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 406,097, Sep. 12, 1989, abandoned. This application Nov. 12, 1991, Ser. No. 794,327

Claims priority, application Japan, Sep. 26, 1988, 63-240482; Sep. 26, 1988, 63-240483; Sep. 26, 1988, 63-240484

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—123 **28 Claims**



1. An information display apparatus comprising:

an input unit for entering a variety of data and for designating a variety of processings;

a display unit for displaying input data and processing results, said display unit comprising a screen and a cursor disposed on said screen, said display unit being divided into a plurality of display areas;

a processing unit having (i) a scrolling function for scrolling data displayed on said display unit in an individual direction for every displayed data or for every displayed data of each of a plurality of groups according to designation made at said input unit, (ii) a continuous search function for continuously searching, in a predetermined order, data concerned with entered data serving as a clue, (iii) an automatic power-off function for automatically turning the power of said apparatus to OFF if said apparatus remains non-operated for a predetermined period of time, and (iv) processing means for displaying symbols on said display areas, said symbols indicating data records displayed are a part of data to be displayed and a scrolling direction of data records for each display area; and

search stop means adapted to automatically stop a continuous search under way when a predetermined plurality of continuous search functions are completed, thereby to make effective said automatic power-off function;

said automatic power-off function further responding to said automatic stop of said search stop means.

5,384,580

APPARATUS WITH TWO DIMENSIONAL SCREEN ON WHICH THREE DIMENSIONAL OBJECTS ARE DISPLAYED AS A SINGLE IMAGE

Hiroshi Kadota, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

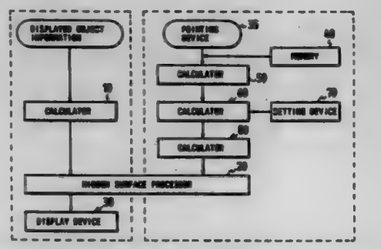
Continuation of Ser. No. 575,769, Aug. 31, 1990, Pat. No. 5,177,474. This application Nov. 3, 1992, Ser. No. 971,039

Claims priority, application Japan, Sep. 13, 1989, 1-237799

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[6] G09G *1/06*

U.S. Cl. 345—145 **13 Claims**



1. A three-dimensional display apparatus comprising:

means for calculating projection coordinates of principal vertexes of a displayed object with respect to a projection plane from a viewing point;

means for evaluating whether surfaces of the object which are determined by the principal vertexes are visible or invisible from the viewing point;

means for indicating a result of the evaluating by said evaluating means;

a memory storing information of a position of a predetermined virtual operation plane;

a pointing device movable on an actual operation plane;

means connected to the memory and the pointing device for calculating a correspondence point on the virtual operation plane which corresponds to a position of the pointing device when the pointing device moves on the actual operation plane;

means for calculating a half line which starts from the correspondence point and which intersects the virtual operation plane at a predetermined angle;

means for setting said predetermined angle;

means for calculating the position of an intersection point between the half line and the displayed object;

means for calculating projection coordinates of at least part of the half line with respect to the projection plane; and

means for indicating the calculated projection coordinates of at least part of the half line and the calculated point of the intersection.

5,384,581

IMAGE PROCESSING APPARATUS

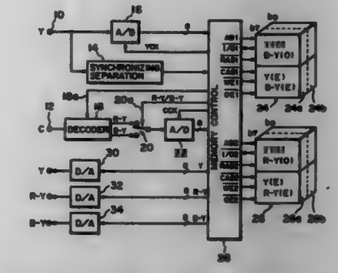
Ikumasa Ikeda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 653,241, Feb. 11, 1991, abandoned. This application May 25, 1993, Ser. No. 65,689

Claims priority, application Japan, Feb. 15, 1990, 2-34805

Int. Cl.[6] G09G *5/04*; H04N *9/64*

U.S. Cl. 345—186 **20 Claims**



1. An image processing apparatus comprising:

a plurality of memory blocks; and

control means for making said plurality of memory blocks store first data and second data, an access cycle time of the second data being longer than an access cycle time of the first data,

wherein said control means accesses a memory block for the second data in a period during which another memory block is accessed for the first data, and sets a row address of the memory block accessed for the first data during a quiescent period of access of the second data, the quiescent period being caused by a difference in the access cycle times of the first and second data.

5,384,582

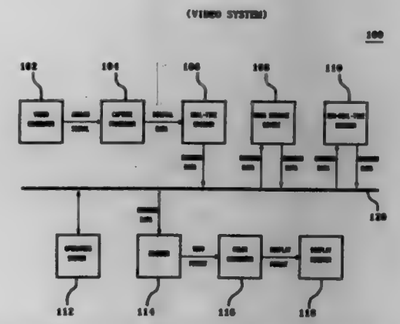
CONVERSION OF IMAGE DATA FROM SUBSAMPLED FORMAT TO CLUT FORMAT

Michael Keith, Beaverton, and Brian Nickerson, Aloha, both of Oreg., assignors to Intel Corporation, Hillsboro, Oreg.

Filed Jun. 16, 1993, Ser. No. 78,935

Int. Cl.[6] G09G *5/06*

U.S. Cl. 345—199 **50 Claims**



10. An apparatus for generating an image, comprising:

(a) means for receiving subsampled three-component image data corresponding to said image;

(b) means for processing a first component and a second component of said subsampled three-component image data to generate a dither index to a dither lookup table, wherein said dither lookup table contains first-and-second-component dither data corresponding to dithered first-component and second-component data;

(c) means for dithering data corresponding to a third component of said subsampled three-component image data;

(d) means for accessing said first-and-second-component dither data in accordance with said dither lookup table and said dither index; and

(e) means for generating CLUT index data corresponding to said image in accordance with said first-and-second-component dither data of means (d) and said dithered third-component data of means (c), wherein said image is generated in accordance with said CLUT index data.

5,384,583

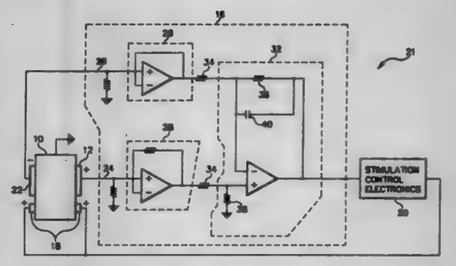
INK JET STIMULATION MONITORING

James A. Katerberg, Kettering, and Mark C. Bowers, Vandalia, both of Ohio, assignors to Scitex Digital Printing, Inc., Dayton, Ohio

Filed May 12, 1993, Ser. No. 61,148

Int. Cl.[6] B41J *2/025*

U.S. Cl. 347—19 **18 Claims**



1. An ink jet printing device having a drop generator for producing continuous streams of ink drops from at least one orifice and further having stimulation control electronics for maintaining desired stimulation conditions in response to a feedback from the drop generator, the device comprising:

a. first and second feedback elements for measuring stimulation amplitude in the drop generator;

b. feedback output signals generated by the first and second feedback elements in response to the stimulation amplitude in the drop generator; and

c. amplifier means having an input provided by the feedback output signals generated by the first and second feedback elements, the amplifier means for providing an amplifier output signal to the stimulation control electronics.

5,384,584

THERMAL TRANSFER RECORDING METHOD AND APPARATUS WITH OPPOSITELY CONVEYED INK SHEET AND RECORDING MEDIUM CONTROLLED TO MAINTAIN A SUBSTANTIALLY CONSTANT CONVEYANCE RATIO

Takehiro Yoshida, Tokyo; Hisao Terajima, Yokohama; Satoshi Wada, Kawasaki; Takeshi Ono, Yokohama; Makoto Kobayashi, Tama; Yasushi Ishida, Tokyo; Akihiro Tomoda, Yokohama; Minoru Yokoyama, Yokohama, and Takashi Awai, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 409,880, Sep. 20, 1989, abandoned. This application Dec. 31, 1992, Ser. No. 999,547

Claims priority, application Japan, Sep. 22, 1988, 63-236368; Oct. 4, 1988, 63-248980; Oct. 28, 1988, 63-270879; Nov. 4, 1988, 63-277488

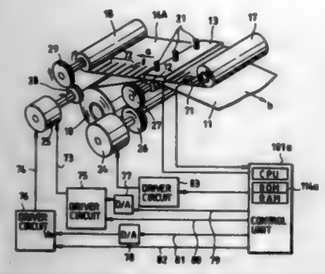
Int. Cl.[6] B41J *2/325, 33/22, 33/36*

U.S. Cl. 346—76 PH **52 Claims**

1. A recording apparatus for transferring an ink contained in an ink sheet moved in a first direction onto a recording medium

moved in a second direction, said first direction being opposite to said second direction at a position where said ink is transferred to the recording medium to record an image on the recording medium, comprising:

a roller for taking up the ink sheet;



driving means for driving said roller to take up the ink sheet, a diameter of said ink sheet wound on said take-up roller increasing as additional said ink sheet is wound thereon; and

controlling means for controlling a drive amount of said driving means wherein a conveyance ratio of the ink sheet to the recording medium is kept substantially constant.

5,384,585

THERMAL STENCILING DEVICE

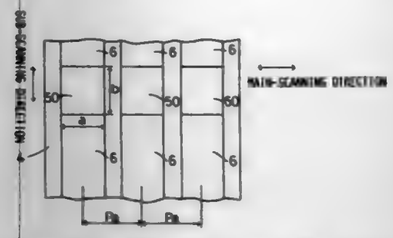
Takashi Okamura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 22, 1993, Ser. No. 50,611

Claims priority, application Japan, May 27, 1992, 4-160304

Int. Cl.[6] B41J *2/335*; B41C *1/055, 1/14*

U.S. Cl. 346—76 PH **4 Claims**



1. A thermal stenciling device comprising a thermal head constructed of a plurality of heat generating elements arranged in line in a main-scanning direction, the heat generating elements being adapted to be pressed against a thermoplastic resin film bonded to a porous carrier constituting a heat-sensitive stencil paper and be relatively moved in a sub-scanning direction perpendicular to the main-scanning direction to form a plurality of dot perforations through the thermoplastic resin film of the heat-sensitive stencil paper by heat of the heat generating elements; wherein each of the heat generating elements of the thermal head has a size to be decided by the following four formulas:

$A/\alpha:B/b=1:\alpha(\alpha=0.6$ to $1.0)$;

$A/a=\beta(\beta=0.8$ to $1.2)$;

$A+C=Pa$; and

$B+C=Pb$;

where,

A: length of each perforation in the main-scanning direction;

a: length of each heat generating element in the main-scanning direction;

B: length of each perforation in the sub-scanning direction;

b: length of each heat generating element in the sub-scanning direction;

α: ratio of perforation rate in the sub-scanning direction to perforation rate in the main-scanning direction;

β: the perforation rate in the main-scanning direction;

C: length of a gap as an imperforated portion between the adjacent dot perforations in the main-scanning direction and the sub-scanning direction;

Pa: dot pitch in the main-scanning direction; and

Pb: dot pitch in the sub-scanning direction.

5,384,586

INK JET RECORDING APPARATUS OPERABLE IN TWO POSITIONS

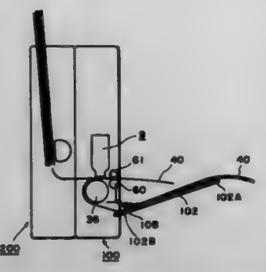
Hirofumi Hirano, Yokohama; Toshihiko Bekki, Kawasaki; Makoto Kashimura, Tokyo; Takehiko Kiyohara, Zama; Tetsuhiro Nitta, Yokohama, and Tetsuo Kimura, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 583,305, Sep. 17, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 987,057

Claims priority, application Japan, Sep. 18, 1989, 1-241071; Sep. 18, 1989, 1-241072; Sep. 18, 1989, 1-241073; Sep. 18, 1989, 1-241074; Sep. 18, 1989, 1-241075

Int. Cl.[6] G01D *15/18*

U.S. Cl. 346—134 **10 Claims**



1. A recording apparatus wherein ink is deposited on recording materials, said apparatus comprising:

a recorder for effecting recording on the recording materials;

first and second feeder for feeding the recording materials to said recorder;

a discharger for discharging the recording materials from said recorder, said discharger being disposed on a first side of said apparatus, wherein said first feeder is disposed adjacent said discharger at the first side of said apparatus, and said second feeder is disposed at a position opposite from said first feeder at a second side of said apparatus which is opposite from the first side, and wherein said apparatus can be placed horizontally or vertically in use, and wherein when said apparatus is placed horizontally, said first feeder is usable, and the recording materials are conveyed in a generally U-shaped path from said first feeder to said discharger, and when said apparatus is placed vertically, said second feeder is usable, and the recording materials are conveyed in a generally rectilinear path from said second feeder to said discharger and wherein said second feeder includes an automatic sheet feeder for continuously feeding the recording materials.

5,384,587

MULTI-DROP INK-JET RECORDING METHOD WITH COMPENSATION FOR IMAGE DENSITY NON-UNIFORMITIES

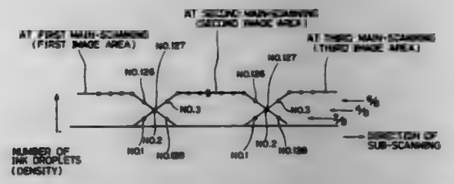
Shiaji Takagi, Kawasaki; Hideki Tanaka, Yokohama; Tatsuo Kimura, Kawasaki, and Jun Ashiwa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 893,070

Claims priority, application Japan, Jun. 7, 1991, 3-136575

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—41 **16 Claims**



1. An ink-jet recording method, in which a plurality of ink droplets for each pixel are overlapped and landed on a recording medium to form each pixel by a recording head with a plurality of ink discharging portions arranged thereon in a discharging portion arrangement and a tone wedge of an image data is represented by controlling an area of said each pixel on a basis of a number of the plurality of ink droplets, said method comprising the steps of:

recording one image area by main-scanning of said recording head and said recording medium relative thereto in a direction other than a direction of said ink discharging portion arrangement;

sub-scanning said recording head and said recording medium relative thereto in a direction perpendicular to the direction of said main-scanning; and

recording a following image area by main-scanning said recording head and said recording medium relative thereto,

wherein said sub-scanning is performed in a manner that part of said one image area overlaps part of said following image area, and a number of ink droplets discharged from at least two ink discharging portions of said plurality of ink discharging portions, which relates to recording of pixels included in an overlapping portion of said one and following image areas, is modified when said one and following image areas are recorded, so that the tone wedge of a recording image of said pixels included in said overlapping portion is represented by a total number of ink droplets being discharged when said one and following image areas are recorded and said number of ink droplets discharged from said at least two discharging portions for recording said overlapping portion, is gradually decreased toward a discharging portion disposed in an edge portion of said recording head when said one image area is recorded, and is gradually increased from a discharging portion disposed in an edge portion of said recording head when said following image area is recorded, so that said total number of discharged ink droplets is obtained.

5,384,588

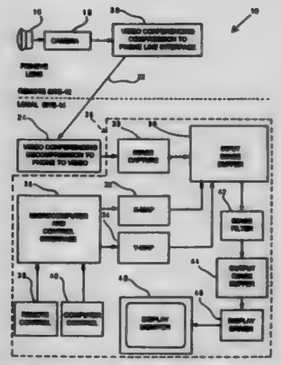
SYSTEM FOR OMNIDIRECTIONAL IMAGE VIEWING AT A REMOTE LOCATION WITHOUT THE TRANSMISSION OF CONTROL SIGNALS TO SELECT VIEWING PARAMETERS

H. Lee Martin, Knoxville, and Daniel P. Kuban, Oak Ridge, both of Tenn., assignors to TeleRobotics International, Inc., Knoxville, Tenn.

Continuation-in-part of Ser. No. 14,508, Feb. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 699,366, May 13, 1991, Pat. No. 5,185,667. This application Jan. 31, 1994, Ser. No. 189,585

Int. Cl.[6] H04N *5/30*

U.S. Cl. 348—15 **17 Claims**



1. A system for providing perspective corrected views of a distorted wide angle image at a location removed from the site of the creation of the distorted wide angle image without transmitting control signals to the site of the creation of the distorted image, the system comprising:

a camera-imaging system at a first site for receiving optical images and for producing output signals corresponding to the optical images;

a wide angle lens at the first site associated with the camera imaging system for producing the optical images throughout the field of view of the lens for optical conveyance to the camera imaging system, the optical images being distorted by the wide angle lens;

a transmitter at the first site to receive the output signals of the camera imaging system to transmit the output signals from the first site to at least one second site;

a receiver at the second site to receive signals transmitted by the transmitter;

image capture circuitry at the second site for receiving and digitizing signals from the receiver corresponding to output signals of the camera imaging system;

input image memory circuitry at the second site for receiving digital signals from the image capture circuitry;

image transform processor at the second site for processing the digitized signals in the input image memory circuitry according to selected viewing angles and degree of magnification, and for producing output transform calculations signals according to a combination of the digitized signals, the selected viewing angles and degree of magnification;

output image memory circuitry at the second site for receiving the output signals from the image transform processor;

input means at the second site for selecting the viewing angles and degree of magnification;

microprocessor means at the second site for receiving the selected viewing angles and degree of magnification from the input means and for converting the selected viewing angles and degree of magnification for input to the image transform processor to control the processing of the transform processor; and

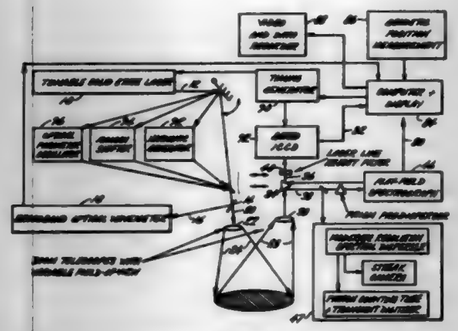
output means at the second site connected to the output image memory circuitry to display the perspective corrected view according to the selected viewing angles and degree of magnification.

5,384,589

SPECTRALLY DISPERSIVE IMAGING LIDAR SYSTEM

Bobby L. Ulich; Duane Smith, both of Tucson, Ariz., and R. Norris Keeler, McLean, Va., assignors to Kaman Aerospace Corporation, Bloomfield, Conn.

Division of Ser. No. 690,767, Apr. 24, 1991, Pat. No. 5,257,085. This application Jan. 25, 1993, Ser. No. 83,015
Int. Cl.[6] H04N *5/57, 5/58, 7/22*
U.S. Cl. 348—31 **2 Claims**



1. A method for remotely and non-destructively probing the spectrally, temporally and distance-dependent optical properties of fluid flow field dynamics in a volume enveloped by a backscattering medium which is at least partially transmitting to light using a single, integrated optical sensor having multiple modes of operation including an imaging mode and a temporal luminescence decay measurement mode, including the steps of:

selecting a mode of operation for the optical sensor to operate in an imaging mode or a temporal luminescence decay measurement mode with said imaging mode including steps (a)–(e) and said temporal luminescence decay measurement mode including steps (f)–(i);

releasing a fluorescing tracer into a backscattering medium;

(a) selectively generating at a first wavelength short pulses light using laser transmitter means;

(b) projecting said short pulses of light toward the backscattering medium and at the tracer enveloped by the medium to thereby excite the tracer;

(c) receiving said pulses of light backscattered from said excited tracer at a second wavelength and after a time delay corresponding to the round-trip propagation time of said light pulses to and from the excited tracer using receiver means;

(d) converting said received pulses of light to a video image of said excited tracer defining an excited tracer image, said excited tracer image having an image intensity pattern associated therewith; and

(e) scanning the wavelength of the laser transmitter means to identify the wavelength-dependent differences in said image intensity pattern to thereby improve said video image of said excited tracer image;

(f) selectively generating at a first wavelength short pulses of light using laser transmitter means;

(g) projecting said short pulses of light toward the backscattering medium and at the tracer enveloped by the medium to thereby excite the tracer;

(h) detecting said pulses of light backscattered from said excited tracer at a second wavelength and after using a selected time delay using gated detector means; and

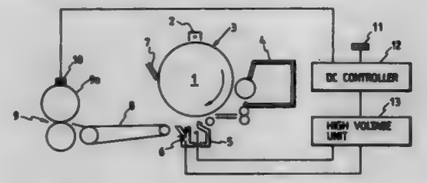
(i) sweeping the selected time delay of said gated detector means for measuring the temporal luminescence decay of said excited tracer.

5,384,590

IMAGE FORMING APPARATUS HAVING FUNCTION FOR AUTOMATICALLY SETTING TRANSFER AND SEPARATION CONDITION

Osamu Sugino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1993, Ser. No. 66,558
Claims priority, application Japan, May 28, 1992, 4-164332
Int. Cl.[6] G01D *15/06*; G03G *15/044*
U.S. Cl. 346—153.1 **5 Claims**



1. An image forming apparatus having a function for automatically setting a transfer and separation condition, comprising:

an electrophotographic photosensitive member;

a developing device for forming a toner image on said photosensitive member;

transfer means for applying an electric field to a transfer sheet to transfer the toner image onto the transfer sheet by an electrostatic force;

separation means for removing the electrostatic force generated in the transfer sheet by the electric field applied to the transfer sheet during a transferring operation;

time detection means for detecting a time period elapsed after a power source of the image forming apparatus is turned OFF;

judgement means for judging whether the detected result of said time detection means exceeds a predetermined time; and

setting means for setting conditions of said transfer means and/or said separation means, said setting means selecting the conditions of said transfer means and/or said separation means to predetermined conditions when the judged result of said judgement means is out of a predetermined time period, and adopting a previous transfer and separation condition when the judged result is in the predetermined time period.

5,384,591

ELECTROPHOTOGRAPHIC RECORDING DEVICE

Yukio Tsuda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 2, 1992, Ser. No. 907,568
Claims priority, application Japan, Jul. 3, 1991, 3-163089
Int. Cl.[6] G01D *15/06, 15/14*
U.S. Cl. 346—154 **11 Claims**

1. An electrophotographic recording device comprising:

means for outputting image data corresponding to an image to be printed;

a photoconductive member having a photoconductive surface and being moved at a constant speed;

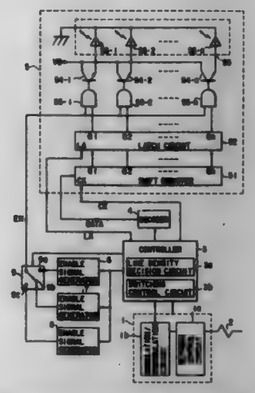
charger means for charging the photoconductive surface of said photoconductive member;

a recording head facing the photoconductive surface of said photoconductive member and including a plurality of light emitting elements arranged in a line for selectively emitting light in accordance with the image data, said recording head exposing said photoconductive surface charged by said charger means to form an electrostatic image corresponding to the image data on said photoconductive surface as said photoconductive member moves relative to said recording head;

developing means for developing the electrostatic image formed on said photoconductive surface into a developer image;

transfer means for transferring the developer image onto a recording medium;

fixing means for fixing the developer image transferred onto the recording medium;



line density detecting means for detecting a line density of the image from the image data; and

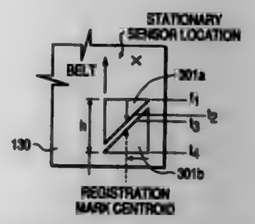
emission time setting means for determining an emission time for the light emitting elements of said recording head based on the line density detected by said line density detecting means, said emission time setting means determining a first emission time, when a first line density is detected, and determining a second emission time that is shorter than said first emission time, when a second line density is detected that is higher than said first line density.

5,384,592

METHOD AND APPARATUS FOR TANDEM COLOR REGISTRATION CONTROL

Lam F. Woag, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 16, 1992, Ser. No. 976,847
Int. Cl.[6] G01D *15/06*
U.S. Cl. 346—157 **48 Claims**



33. An image forming apparatus comprising:

image transfer means for transferring a plurality of images which are positioned within an image zone on said image transfer means;

first image forming means for forming a first registration indicia on said image transfer means within the image zone;

second image forming means for forming a second registration indicia on said image transfer means within the image zone;

registration indicia sensing means for sensing positioning of the first and second registration indicia;

misregistration determining means for determining misregistration of said second image forming means based upon the positioning of the second registration indicia relative to the first registration indicia; and

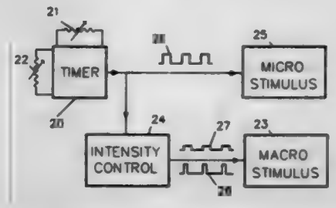
correcting means for correcting the misregistration of said second image forming means as determined by said misregistration determining means.

5,384,593

METHOD AND APPARATUS FOR REFLEX BLINK REACTION CONDITIONING

Harold A. Gell, Jr., 13720 Lockdale Rd., Silver Spring, Md. 20906-2117, and Constantine Harsiamopoulos, 709 English Rd., Rochester, N.Y. 14616

Continuation-in-part of Ser. No. 102,224, Aug. 5, 1993, Pat. No. 5,333,009. This application May 12, 1994, Ser. No. 241,634
Int. Cl.[6] A61H *1/02*
U.S. Cl. 348—61 **79 Claims**



1. A method for reducing the eye irritation in video terminal users, including the steps of:

periodically stimulating the involuntary reflex blinking response of a person observing the display of a video terminal monitor with a conditioning stimulus;

said conditioning stimulus selected from the group comprising visual, audible, sub-audible, olfactory or tactile stimuli which cause the involuntary reflex blinking of said person; and

providing said user with cue stimuli synchronously with said steps of stimulating said involuntary reflex blinking response, said cue stimuli selected from the group comprising visual, audible, sub-audible, olfactory, or tactile stimuli generated at a level of intensity which will not cause the involuntary reflex blinking of said person when said person is in a preconditioned state.

5,384,594

SMART TRACKING SYSTEM

Jonathan D. Sieber, 20 Clubhouse La., Wayland, Mass. 01778; Joseph S. Sieber, 31 Granville Rd., Cambridge, Mass. 02138, and William K. Stewart, 86 Pine St., Woburn, Mass. 01801

Continuation of Ser. No. 825,833, Jan. 27, 1992, Pat. No. 5,231,483, which is a continuation of Ser. No. 577,779, Sep. 5, 1990, abandoned. This application Jul. 9, 1993, Ser. No. 89,760
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[6] H04N *5/225*; G01S *15/00*
U.S. Cl. 348—169 **25 Claims**

1. A system permitting a device to point at and track the movements of a moving subject, comprising:

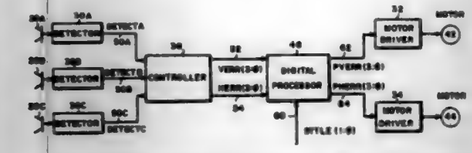
a. a signal source generating signals which can be tracked;

b. a control device receiving signals from the source and generating relative orientation data therefrom in the form of control signals, said orientation data varying as continuous functions with changes in the relative angular position of the subject;

c. memory storing plural sets of data values, each of said data

value sets representing selected values for processing said control signals in anticipation of future relative motion of the subject based on past motion of the subject;

d. a selector selecting one of said sets of data values;



e. a processor processing said control signals in accordance with the one of said sets of data values selected by said selector to produce processed control signals; and

f. a drive unit moving the device about at least one axis in response to said processed control signals to maintain the device pointed at the subject.

5,384,595

MOTION DETECTOR AND IMAGE STABILIZING SYSTEM

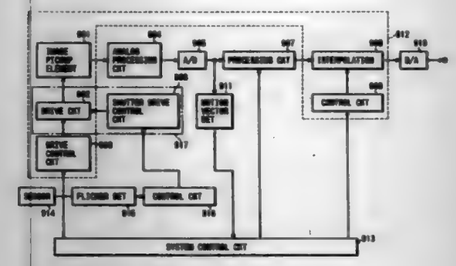
Takashi Sakaguchi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 685,796, Apr. 16, 1991, Pat. No. 5,204,741. This application Dec. 9, 1992, Ser. No. 987,874

Claims priority, application Japan, Apr. 19, 1990, 2-103453

Int. Cl.[6] H04N *5/228*

U.S. Cl. 348—208 **20 Claims**



1. A motion detector comprising:

a sensor for sensing flickers;

a flicker detection circuit for detecting flickers in response to an output signal from the sensor;

a flicker compensating circuit for removing flicker components from a video signal from an image pickup means in response to an output signal from the flicker detection circuit; and

a motion vector detecting circuit for detecting a motion vector in response to an output signal from the flicker compensating circuit.

5,384,596

CCD IMAGING SYSTEM WITH TWO EXTENDED HORIZONTAL REGISTERS

Atsushi Kobayashi; Makoto Ono; Masatoshi Sase, and Yasushi Sato, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 39,522, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 742,004, Aug. 8, 1991, abandoned. This application May 5, 1994, Ser. No. 238,966

Claims priority, application Japan, Aug. 9, 1990, 2-213484; Aug. 9, 1990, 2-213485

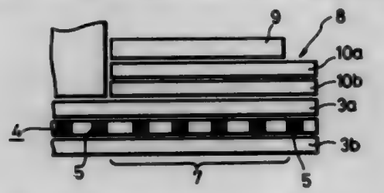
Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—241 **4 Claims**

1. A solid state imager in which a solid state image pickup element is provided with two horizontal registers, two output units with one output unit connected to the output of one of the two horizontal registers and the output of the other output unit connected to the output of the other horizontal register, and an external circuit formed of two circuit systems for processing the signals from said two output units, comprising:

pilot signal generating means provided within said solid state image pickup element for generating plurality bit signals having the same amplitude level which are supplied to said two output units as pilot signals;

a gain correcting circuit for comparing the levels of said pilot signals which have passed through said two circuit systems and for controlling the gains of at least one of said two circuit systems so as to remove a level difference between said two circuit systems which is comprised of first and second correlated double sampling circuits, first and second amplifiers, first and second sample and hold circuits and a comparing circuit; and said first correlated



double sampling circuit, said first amplifier, and said first sample and hold circuit connected in series between the output of said first horizontal register and said comparing circuit, and said second double sampling circuit, said second amplifier, and said second sample and hold circuit connected in series between the output of said second horizontal register and said comparing circuit and the output of said comparing circuit connected to at least one of said first and second amplifiers to control its gain;

said two horizontal registers each having a transfer side for receiving signals from said solid state image pickup element and said two horizontal registers each having an extended portion, said pilot signal generating means being located adjacent the transfer side of said extended portions of said horizontal registers and supplying the pilot signals at the same amplitude level in the form of a plurality of dummy bits through said transfer sides to each of said horizontal registers.

5,384,597

IMAGE PICKUP TUBE UTILIZING THIRD ELECTRODE AND ITS OPERATING METHOD

Kenji Sameshima, Hachioji; Tatsuo Makishima, Tokyo; Tadaaki Hirai, Koganei; Yukio Takasaki, Mobara; Mineo Kubota, Kawasaki; Kenkichi Tanioka, Tokyo, and Keiichi Shidara, Tama, all of Japan, assignors to Hitachi, Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed May 16, 1991, Ser. No. 701,508

Claims priority, application Japan, May 23, 1990, 2-131300

Int. Cl.[6] H04N *3/30*

U.S. Cl. 348—325 **20 Claims**

1. An image pickup device comprising:

an image pickup tube including

an image pickup tube target section including at least a photo-conductive film and a target electrode,

a mesh electrode located in opposition to said target section,

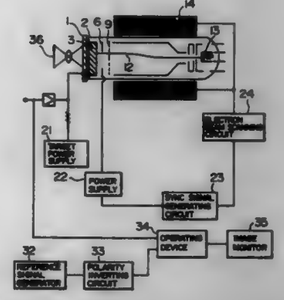
scanning beam emitting means including a cathode electrode for emitting electrons and means for scanning the electron beam, said scanning beam emitting means being opposed to the mesh electrode and located on the side opposite to the target section with respect to the mesh electrode, and

a control electrode insulated from the target section, for controlling

the surface potential of the non-scanned region of the target section while the image pickup tube operates;

a first voltage applying means for applying a voltage to said target electrode;

a second voltage applying means for applying a voltage to said control electrode;



circuit means for scanning the electron beam; and

sync signal generating means for supplying a synchronization signal necessary to scan the electron beam to said circuit means and supplying a timing pulse to said second voltage applying means.

5,384,598

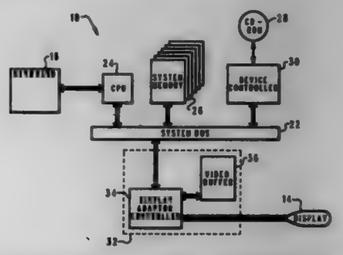
SYSTEM AND METHOD FOR FRAME DIFFERENCING VIDEO COMPRESSION AND DECOMPRESSION WITH FRAME RATE SCALABILITY

Arturo A. Rodriguez, Belmont, Calif.; Charles T. Rutherfoord, Delray Beach, Fla.; Steven M. Hancock; Robert F. Kantner, Jr., both of Boca Raton, Fla., and Mark A. Pietras, Boynton Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1992, Ser. No. 963,791

Int. Cl.[6] H04N *7/130, 7/01*

U.S. Cl. 348—384 **25 Claims**



1. A method of compressing original video data expressed in a plurality of digitally coded frames to enable decompression and playback of resulting compressed video data at one of a plurality of frame rates while maintaining temporal fidelity of the frames displayed, the method comprising the steps of:

selecting a plurality of rate streams for the resulting compressed video data, including a highest rate stream including all of the frames of the original video data and a lowest rate stream including a subset of regularly spaced frames of the original video data;

spatially compressing one of the frames from the original video data as a base frame for all of the rate streams and placing the resulting compressed base frame in the resulting compressed video data;

retrieving subsequent frames from the original video data in sequence;

applying temporal compression to each of the subsequent frames retrieved from the original video data based on comparison to the base frame for each of the rate streams to which each of the subsequent frames belongs to generate a resulting difference frame; and

responsive to generation of the resulting difference frame, placing the resulting difference frame in the resulting compressed video data.

5,384,599

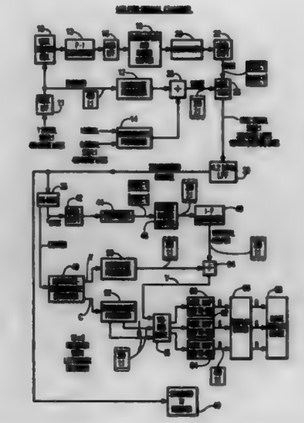
TELEVISION IMAGE FORMAT CONVERSION SYSTEM INCLUDING NOISE REDUCTION APPARATUS

Scott D. Cassavant, East Windsor, and Stuart S. Perlman, Princeton, both of N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 21, 1992, Ser. No. 839,651

Int. Cl.[6] H04N *7/01, 7/04, 11/20*

U.S. Cl. 348—473 **15 Claims**



1. In a system for receiving a television signal including a first signal component representing an image to be displayed, and a second signal component containing auxiliary information to help construct said image with a desired display scanning format, said receiving system including

an image signal processing path responsive to said television signal for processing said first component;

an auxiliary signal processing path for processing said second component;

means for combining output signals from said main and auxiliary paths for providing an output image signal; wherein said auxiliary path includes

means for amplitude expanding said second component in accordance with a predetermined expansion characteristic; and

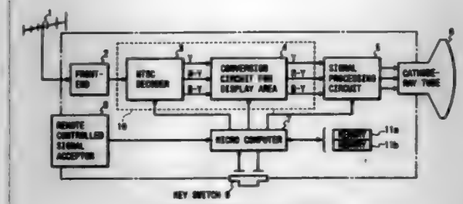
means for modifying the operation of said auxiliary path as a function of the noise content of said television signal said noise content being distinct from said auxiliary information.

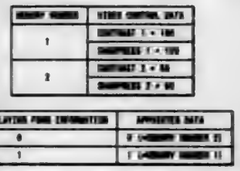
5,384,600

SYSTEM AND METHOD FOR CONVERTING VIDEO SIGNALS FOR DISPLAY ON TELEVISION RECEIVER SCREENS OF DIFFERING ASPECT RATIOS

Kazuhiro Kaizuki, Odawara; Masako Kamimura, Fujisawa; Takaaki Matono, and Sadao Kubota, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1994, Ser. No. 179,036
Claims priority, application Japan, Jan. 11, 1993, 5-002633
Int. Cl.[6] H04N 5/262
U.S. Cl. 348—556 7 Claims





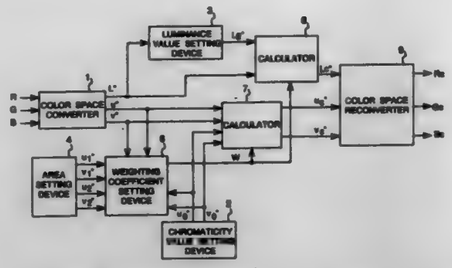
1. A television receiver including a display screen having a first aspect ratio, which comprises:
front end tuning means responsive to first control signals for selecting video signals having a second aspect ratio;
decoder means responsive to second control signals for decoding first information signals received from said front end tuning means;
conversion circuit means responsive to third control signals for adjusting display dimensions of second information signals received from said decoder means in at least horizontal and vertical directions;
signal processing circuit means responsive to fourth control signals for adjusting contrast and sharpness characteristics of third information signals received from said conversion circuit means;
first memory storage means for storing video control data groups including contrast and sharpness data for at least one image display form;
second memory storage means for storing group identification data for selecting a video control data group stored in said first memory storage means;
image method selection means for supplying a selection signal to indicate one of plural image enhancement methods for maintaining video image quality; and
control means in electrical communication with said first memory storage means and said second memory storage means, and responsive to said selection signal for generating said first control signals, said second control signals, said third control signals to identify to said conversion circuit means said one of said plural image enhancement methods, and said fourth control signals to issue video characteristic control signals to said signal processing circuit means.

5,384,601

COLOR ADJUSTMENT APPARATUS FOR AUTOMATICALLY CHANGING COLORS

Haruo Yamashita, and Takashi Yumiba, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 24, 1993, Ser. No. 111,108
Claims priority, application Japan, Aug. 25, 1992, 4-225611
Int. Cl.[6] H04N 9/64
U.S. Cl. 348—577 8 Claims



1. A color adjustment apparatus which receives an input luminance signal and an input chromaticity signal comprising:
chromaticity value setting means for setting a preselected reference chromaticity value;
area setting means for setting an area on a chromaticity plane that includes said preselected reference chromaticity value;
weighting coefficient setting means for setting a weighting coefficient that is zero outside said area as set by said area setting means and gradually increases to one as a distance between said preselected reference chromaticity value and said input chromaticity signal becomes small; and
first calculation means for internally dividing said input chromaticity signal and said preselected reference chromaticity value based on said weighting coefficient and for producing a color-adjusted chromaticity signal.

5,384,602

DEVICE FOR THE FILTERING OF A VIDEO SIGNAL

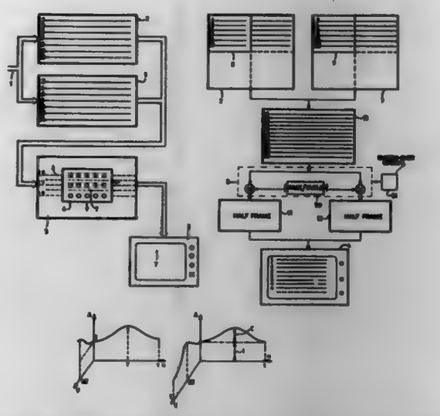
Jean Bonnaert, Ablis; Philippe Bodelet, Arpajon, and Thierry Tomietto, Chatillon, all of France, assignors to GE Medical Systems S.A., Buc, France

Filed Jun. 9, 1993, Ser. No. 74,438
Claims priority, application France, Jun. 10, 1992, 92 07004
Int. Cl.[6] H04N 5/208
U.S. Cl. 348—628 20 Claims

1. A device for the filtering of a video signal delivered in an interleaved form by successive half frames made of video horizontal line signals, wherein said device comprises, in a circuit for the transmission of said video signal, a filter having a high-pass transfer function on a vertical dimension of an image signal resulting from a displaying of said video signal, in order to obtain a filtering operation equivalent to a filtering operation performed by a band-pass filter operating in progressive mode and thus achieving a contour correction, said high-pass transfer function providing for a transfer coefficient with a value 1 for frequencies lower than a frequency f and providing for a transfer coefficient with a value C+1 for frequencies at least as high a frequency as said frequency f, where C is an over-oscillation value.

6. A device for the magnification of a part of an image contained in a video signal, said video signal being delivered in an interleaved form by successive half frames, said device comprising:
a combination circuit for a combination and a transmission, in progressive mode, of interleaved lines of said video signal corresponding to a reduced height of the image to be represented in a magnified state,

a filter in series with said combination circuit for interpolating values of lines of said signal and for transmitting a progressive signal,
and a switch-over circuit which drives said filter in order to transmit the progressive signal twice, once in which said



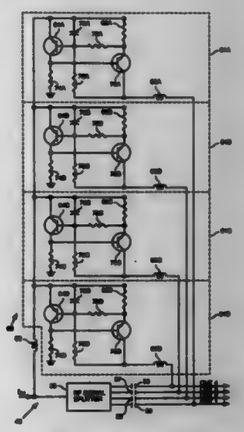
filter fulfills an interpolating role for an even-parity half frame and once in which said filter fulfills an interpolating role for an odd-parity half frame, said driving of said filter comprising transposing lines of filtering coefficients of said filter at each change of half frame to be sent for displaying.

5,384,603

VIDEO SIGNAL SPLITTER WITH DC SHORT CIRCUIT PROTECTION

Philip R. Strauss, Fullerton, and John B. Crosby, Yorba Linda, both of Calif., assignors to Multiplex Technology, Inc., Brea, Calif.

Filed Sep. 28, 1993, Ser. No. 127,359
Int. Cl.[6] H04N 5/63, 7/10
U.S. Cl. 348—730 4 Claims



1. A system for supplying DC power, low frequency control signals and RF video signals to a plurality of video system components, comprising:
means for guiding the DC power, low frequency control signals and RF video signals;
means for separating the DC power and the control signals from the RF video signals;
means for routing the DC power and the control signals to each of the video system components along a plurality of control signal paths separate from the video signals; and
current limiting means for limiting the amount of electrical current that may be conducted by each of the plurality of control signal paths to provide low frequency short circuit protection in the plurality of control signal paths.

5,384,604

COLLAPSIBLE GLASSES

Tien-Tzu Chang, No. 1, Alley 99, Lane 274, S. Chung-Chen Road, Yung-Kang, Tainan Shien, Taiwan, Prov. of China

Filed Jul. 28, 1994, Ser. No. 281,998
Int. Cl.[6] G02C 5/08
U.S. Cl. 351—63 3 Claims



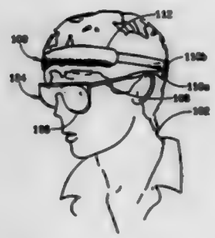
1. A pair of collapsible interesting glasses comprising two lens frames, a cowhead-shaped bridge pivotally connected between the two lens frames by means of screws, two butterfly-shaped connecters respectively pivotally connecting a lens frame with a round front half temple by means of screws, and two rear half temples respectively pivotally connected with two front half temples by means of screws, said pivotal connections enabling this pair of glasses be worn by various size of faces of wearers and be collapsed into various interesting forms.

5,384,605

EYEGLASS RETAINER WITH SWEATBAND

David S. Escobosa, 2507 Katherine St., El Cajon, Calif. 92020

Continuation of Ser. No. 664,942, Mar. 5, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,313
Int. Cl.[6] G02C 5/14
U.S. Cl. 351—123 15 Claims



11. An eyeglass retainer, for a wearer of eyeglasses, having an integrated sweatband, comprising:
a single linear strap having a central sweatband portion made of a first, flexible material joined at each end to a tubular retainer for a temple piece, said retainer made of a second, flexible material which is different from the first material,

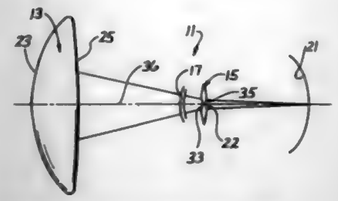
wherein the single linear strap is dimensioned to encircle a wearer's head when the tubular retainers are operatively engaged with the temple pieces and the central sweatband portion is positioned on the wearer's forehead so that retention of the eyeglasses on the face of the wearer results from each of the tubular retainers respectively pulling on each end of the central sweatband portion.

5,384,606

DIFFRACTIVE/REFRACTIVE SPECTACLE AND INTRAOCULAR LENS SYSTEM FOR AGE-RELATED MACULAR DEGENERATION

Donald G. Koch, Burbank; Albert C. Ting, Laguna Niguel, and Jim-Son Chou, Irvine, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Jun. 22, 1992, Ser. No. 901,932
Int. Cl.[6] G02C *7/02, 7/08;* A61F *2/16*
U.S. Cl. 351—158 **23 Claims**



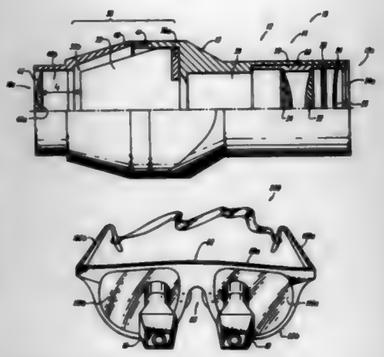
1. An ophthalmic lens system comprising:
an intraocular lens adapted for implantation in an eye and having a negative intraocular lens portion;
a positive lens system adapted to be outside the eye and direct light toward the negative intraocular lens portion of the intraocular lens;
each of the intraocular lens portion and the positive lens system having a plurality of lens surfaces; and
at least one of said lens surfaces including a diffractive portion for at least partially correcting for chromatic aberrations.

5,384,607

TELESCOPIC SPECTACLES

Frederick Morris, Shrewsbury, Mass., and Bernard Clark, Arlington, Vt., assignors to Luxtec Corporation, Worcester, Mass.

Filed Jul. 31, 1992, Ser. No. 923,081
Int. Cl.[6] G02C *1/00*
U.S. Cl. 351—158 **22 Claims**



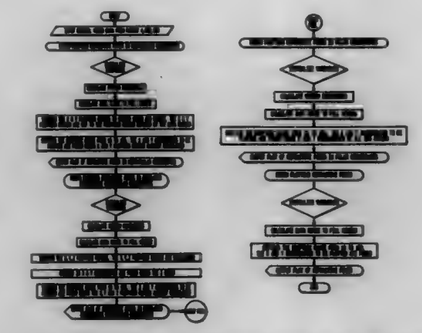
1. Telescopic surgical spectacles comprising:
a frame;
right and left eye prescription lenses set in said frame, each said lens having a bore there through; and
right and left eye telescopes having focal planes for a common view point in the range of 8 inches to 30 inches, each said telescope disposed in the bore of each said lens;
the bore in each said lens being located at a customized point in each said lens such the bore center lies on a line from a respective eye to the common view point;
each said telescope being fixed in each bore with a central optical axis of each said telescope aligned and coextensive with the line from each eye of a user to the common viewpoint.

5,384,608

METHOD FOR DISPLAYING CORNEAL TOPOGRAPHY

Martin Gersten, New York, N.Y., assignor to Computed Anatomy Inc., New York, N.Y.

Continuation of Ser. No. 778,317, Oct. 10, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,103
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—212 **4 Claims**



1. A method for displaying color coded traces of corneal topography in which the topographic elevations of a plurality of points on the corneal surface are obtained by processing the data obtained from radially scanning a two-dimensional image of said surface to obtain the topographic elevations of a plurality of points along each of a plurality of substantially circular paths taken over said image, CHARACTERIZED IN THAT said data are further processed
(a) to present the elevation versus polar position exhibited at points along each of said circular paths in color coded traces on a respective pair of rectangular coordinate axes, and
(b) to diagonally displace the origin of each respective pair of rectangular coordinate axes from each other to portray in said color code the elevation versus polar position of said points on said surface in displacement perspective form.

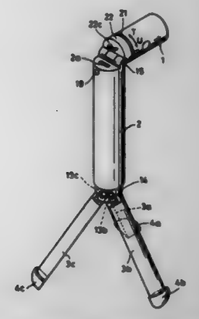
5,384,609

INTEGRATED CAMERA-TRIPOD SYSTEM

Yukio Ogawa, Yokohama; Hiroyuki Fukushima, Hoya, and Rikako Mizuno, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 814,056, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 517,188, May 1, 1990, abandoned. This application Apr. 16, 1993, Ser. No. 46,520
Claims priority, application Japan, May 2, 1989, 1-112240; Jul. 21, 1989, 1-86020[U]
Int. Cl.[6] G03B *29/00*
U.S. Cl. 354—81 **29 Claims**

1. An integrated camera-tripod system, comprising:
a camera body assembly in which a camera is disposed; and
a tripod body assembly in which a tripod is disposed, said tripod body assembly being detachably coupled to said camera body assembly;
wherein said camera body assembly and said tripod body assembly are relatively movable, and wherein an exterior surface of said camera body assembly is in an angular relation with an exterior surface of said tripod body assembly when said system in an open state, and the exterior surfaces of said camera body assembly and said tripod body assembly form an elongated, contiguous exterior surface when said system in a closed state.

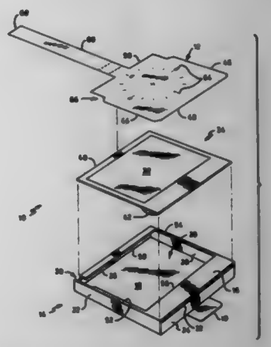


5,384,610

WRAP AROUND TEMPLATE FOR FILM CASSETTE

Samuel Brown, Framingham; Michael J. Phelan, Braintree, and Nicholas M. Werthessen, Holliston, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 29, 1993, Ser. No. 38,848
Int. Cl.[6] G03B *17/24*
U.S. Cl. 354—108 **5 Claims**



5. In combination a film cassette having at least one film unit therein and a template:
said cassette having an exposure aperture in a forward wall;
said template being mounted in said aperture intermediate said film unit and said forward wall, said template having indicia imprinted thereon for recording on said film unit wherein the indicia on said template comprises a geometric pattern which is recorded on said film unit when the film unit is exposed, whereby a physical structure photographed a plurality of times by a camera from a particular location and with a particular template but at different times provides graphic evidence of changes in physical size of an object photographed by a comparison of successive photographs; and
said template being a generally planar transparent sheet, a side of said sheet including an elongated strip projecting transversely from said sheet and around said cassette in frictional engagement therewith for anchoring said template in a stationary position relative to said cassette wherein said transparent sheet is generally rectangular and has a width and a length with said elongated strip being longer than the width or length of said sheet, said exposure aperture is generally rectangular and said exposure aperture has a width and a length which are less than the width and length of said transparent sheet and includes a slot terminating both in (1) the side of said transparent sheet side having the elongated strip and (2) an adjacent side wherein edges of said transparent sheet which do not have the elongated strip attached are mounted inside said cassette sandwiched between a forward wall of said cassette bordering said exposure aperture and said film units, said elongated strip projecting outwardly through said exposure aperture, and around an end wall of said cassette.

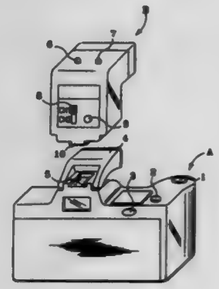
5,384,611

CAMERA SYSTEM CAPABLE OF WIRELESS FLASH PHOTOGRAPHING

Kenji Tsuji, Kashiwara; Akihiko Fujino, Sakai; Tsutomu Ichikawa, Hashimoto; Reiji Seki, Osaka, and Hiroyuki Okada, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1992, Ser. No. 885,644
Claims priority, application Japan, May 20, 1991, 3-145570; May 20, 1991, 3-145571; May 20, 1991, 3-145572; May 20, 1991, 3-145573; May 20, 1991, 3-145574; May 20, 1991, 3-145575; May 20, 1991, 3-145576; May 20, 1991, 3-145577; May 20, 1991, 3-145578
Int. Cl.[6] G03B *15/03*
U.S. Cl. 354—131 **21 Claims**

1. A camera system capable of wireless flash photographing, comprising:
an external flash unit including transmit means for transmitting discriminating data to a camera;
a camera, which is associated with the external flash unit, including receiving means for receiving the discriminating data transmitted from the external flash unit;
storing means provided in said camera for storing the received discriminating data; and
controlling means provided in said camera for controlling said external flash unit in accordance with the stored data in said storing means in a condition where said external flash unit is detached from said camera.

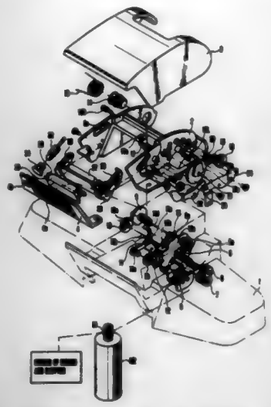


5,384,612

CAMERA HAVING A POP UP FLASH UNIT DRIVEN BY ONE DIRECTION OF A MOTOR

Shoji Kaihara, and Hidehiko Fukahori, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,641
Claims priority, application Japan, Nov. 29, 1990, 2-332682; Nov. 29, 1990, 2-332683; Nov. 29, 1990, 2-332685
Int. Cl.[6] G03B *15/05*
U.S. Cl. 354—149.1 **10 Claims**



1. A camera including a flash unit movable between a retracted position and a projected position and provided with an illumination-angle varying mechanism, said camera comprising:

(a) an engagement mechanism for holding the flash unit in the retracted position by engagement;

(b) a drive mechanism for driving the flash unit in a direction of the projected position when the engagement of said engagement mechanism is released;

(c) a motor serving as a drive source; and

(d) a transmission system for transmitting an output rotation of said motor to each of (i) the illumination-angle-varying mechanism, and (ii) said engagement mechanism, wherein said transmission system is driven by a rotation of said motor in a first direction (a) to release the engagement of said engagement mechanism so that said drive mechanism drives the flash unit toward the projected position independent of said transmission system, and (b) to drive the illumination-angle varying mechanism to vary a flash illumination angle, and wherein said transmission system is driven by a rotation of said motor in a second direction to perform a camera operation other than a flash unit operation.

5,384,613

SINGLE-USE CAMERA WITH WEAKENED AREA TO ACCESS FILM CASSETTE

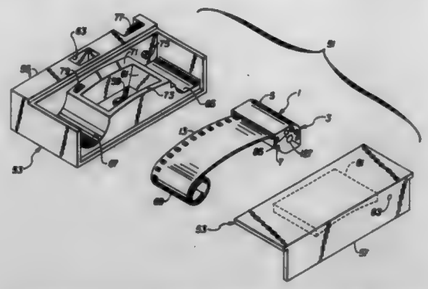
Robert P. Cloutier, Spencerport, and Gerald J. Angell, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 14, 1994, Ser. No. 182,905
Int. Cl.[6] G03B *17/26*
U.S. Cl. 354—275 **5 Claims**

1. A single-use camera comprising a light-tight film casing and a film cassette located inside said casing, is characterized in that:

said film cassette has an active light lock with an end portion engageable to rotate said light lock open to permit film movement out of and into the cassette interior and closed to prevent ambient light from entering the cassette interior;

said casing has a weakened area covering said end portion of the light lock which can be entirely pierced to make a perforation in the casing to permit access to the end portion to engage it for rotating said light lock closed and, simultaneously, to destroy the casing to prevent it from being reused.

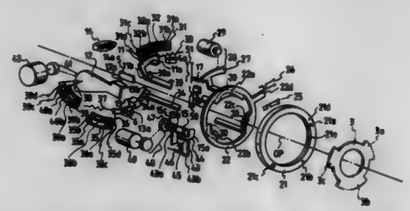


5,384,614

LENS INSTALLING/REMOVING DEVICE

Masanori Hasuda, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 978,407, Nov. 18, 1992, abandoned. This application Jul. 6, 1993, Ser. No. 86,366
Claims priority, application Japan, Nov. 29, 1991, 3-340114
Int. Cl.[6] G03B *17/12*
U.S. Cl. 354—286 **22 Claims**



1. A lens installing/removing apparatus for installing and removing a photographing lens including at least impingement surfaces and bayonet pawls or threads to and from a camera body, said apparatus comprising:

a fixed mount unit, having an impingement surface which impinges on said impingement surface of said photographing lens, for placing said photographing lens in a predetermined position in the optical axis direction with respect to said camera body;

a movable mount unit, so supported inwardly of said fixed mount unit as to be rotatable about the optical axis and having bayonet pawls or threads which engage with said bayonet pawls or said threads, for taking an installing position to install said photographing lens in said camera body and a removing position to remove said photographing lens from said camera body; and

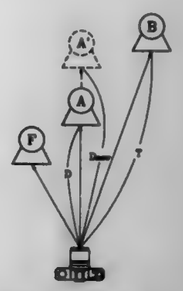
a drive unit which is located in said apparatus to drive said movable mount unit rotationally.

5,384,615

AMBIENT DEPTH-OF-FIELD SIMULATION EXPOSURING METHOD

Min-Lang Hsieh, and Shyh-Chin Laih, both of Hsinchu, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Jun. 8, 1993, Ser. No. 74,047
Int. Cl.[6] G03B *3/00, 13/18*
U.S. Cl. 354—409 **6 Claims**



1. A method to view sharpness of background or foreground objects in a viewfinder of an autofocusing camera without having to change aperture, said method comprising the steps of:

selecting an appropriate relationship between a simulated depth and a plurality of input parameters including aperture value, focal length, and measured depth;

measuring depths of a main object and a background or foreground object using said autofocusing camera;

selecting a pre-determined focal length;

selecting a first pre-determined aperture at which a picture will be taken;

selecting a second aperture at which an object will be viewed from said viewfinder;

calculating a simulated depth of background or foreground using said relationship and input parameters including said measured depths, and said first and second selected apertures; and

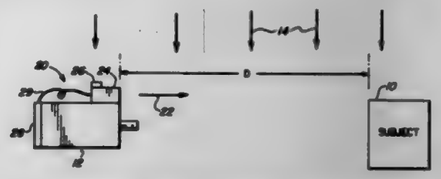
using said autofocusing camera to display a simulated background or foreground image in said viewfinder at said calculated simulated depth.

5,384,616

PHOTOGRAPHIC LIGHTING SYSTEM USING INCIDENT LIGHT METER

Anton F. Wilson, Hanover, N.H., and William V. Koskubo, Stratford, Conn., assignors to Anton/Bauer, Inc.

Filed Apr. 14, 1993, Ser. No. 48,140
Int. Cl.[6] H01D *1/18*
U.S. Cl. 354—414 **15 Claims**



1. A photographic lighting apparatus for use with a camera, comprising:

sensing means for generating an incident light signal representative of an incident light intensity on a subject to be photographed;

electric light means for directing fill light toward said subject;

means for generating a distance input representative of a distance between said electric light means and said subject;

means for generating a sensitivity input representative of a sensitivity of said camera to light;

means for attenuating light output from said electric light means while preserving a color temperature of said light output;

control means for controlling the fill light provided by said electric light means and activating said means for attenuating light output from said electric light means

in response to said incident light signal so that said fill light is controlled in accordance with a predetermined function such that said fill light is increased in intensity as the level of incident light intensity increases and

in response to said distance input so that said fill light intensity at the subject is substantially independent of the distance between said light means and said subject and

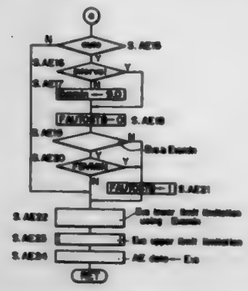
in response to said sensitivity input so that said fill light provided by said electric light means is compensated for the sensitivity of said camera to light.

5,384,617

EXPOSURE CONTROL SYSTEM OF A CAMERA HAVING AN INTERVAL MODE

Takeo Kobayashi; Takao Nishida; Yasushi Tabata; Norio Numako, and Katsutoshi Nagai, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 771,536, Oct. 7, 1991, which is a continuation of Ser. No. 673,844, Mar. 20, 1991, abandoned, which is a continuation of Ser. No. 478,691, Feb. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 374,346, Jun. 30, 1989, abandoned. This application Jun. 22, 1993, Ser. No. 82,012
Claims priority, application Japan, Jun. 30, 1988, 63-87118; Jun. 30, 1988, 63-87119; Jun. 30, 1988, 63-87120; Jun. 30, 1988, 63-163895; Jun. 30, 1988, 63-163896; Jun. 30, 1988, 63-163897; Jun. 30, 1988, 63-163898; Jun. 30, 1988, 63-163899; Feb. 10, 1989, 1-31315; Feb. 10, 1989, 1-31318
Int. Cl.[6] G03B *15/05, 7/16, 17/40*
U.S. Cl. 354—419 **5 Claims**



1. An exposure control system for a camera having a plurality of photographing modes, including an interval mode and a normal mode, said system comprising:

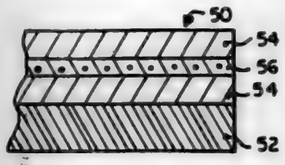
means for selecting one of said plurality of photographing modes;

means for setting a threshold value of an exposure value;

means for causing strobe emission as a function of said exposure value in relation to said threshold value; and

means for changing a setting of said threshold value in response to selection of a photographing mode by said selecting means, so that said threshold value in said interval mode is lower than that in said normal mode.

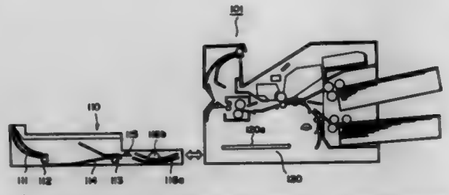
5,384,618
STORAGE APPARATUS COMPRISING A PLURALITY OF LAYERS
Richard Schurman, Kirkland; Robert E. Pearson, Spokane; Steve Raiter; John Schurman, both of Kirkland, and Rick Clark, Woodinville, all of Wash., assignors to Tom Secrest, Chehalis, Wash.
Division of Ser. No. 667,603, Mar. 4, 1991, Pat. No. 5,239,338.
This application May 20, 1993, Ser. No. 42,736
Int. Cl.[6] G03B *27/32, 27/52*
U.S. Cl. 355—32 **44 Claims**



1. A storage means for digital information and comprising:
A. said storage means comprising two layers of material identified as a first layer and a second layer;
B. said first layer and said second layer being close to each other in an integral unit;
C. said first layer comprising a substrate and a first chemical capable of being changed from a first metachromatic binary state to a second metachromatic binary state by first electromagnetic waves;
D. said second layer comprising a substrate and a second chemical capable of being changed from a first metachromatic binary state to a second metachromatic binary state by second electromagnetic waves;
E. said first chemical and said second chemicals being different chemicals
F. said first chemical being reponsive to said first electromagnetic waves but not responsive to said second electromagnetic waves;
G. said second chemical being responsive to said second electromagnetic waves but not responsive to said first electromagnetic waves;
H. said first electromagnetic waves being of a different wave length than said second electromagnetic waves; and
I. said first metachromatic state indicating one of two binary states, **0** and **1**, and the second metachromatic state indicating the other one of said binary states **0** and **1**.

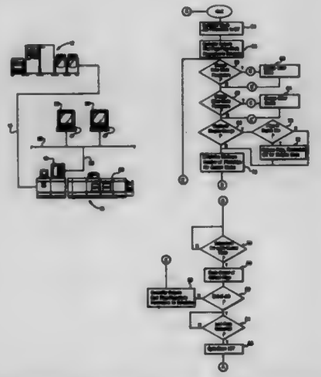
5,384,619
IMAGE FORMING APPARATUS HAVING RE-FEEDING UNIT
Takao Yokomizo, Machida; Hiroo Kobayashi, Tokyo; Tadashi Yagi, Machida; Hiroshi Yukimachi; Takahiro Azeda, both of Kawasaki; Yoshiro Tsuchiya; Toshifumi Moritani, both of Yokohama; Masahito Ohtsuka, Kawasaki; Tsuyoshi Waragai, Tokyo, and Hiroaki Miyake, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 32,553, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 575,872, Aug. 31, 1990, abandoned. This application Apr. 4, 1994, Ser. No. 222,369
Claims priority, application Japan, Aug. 31, 1989, 1-226910
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—200 **15 Claims**

1. An image forming apparatus comprising:
supply means for supplying a sheet;
a supply path for directing the sheet to an image forming section;
a sheet ejecting path, disposed at an opposite side of said supply path in the horizontal direction with respect to said image forming section, for ejecting the sheet on which an image is formed at said image forming section toward an ejecting section;
a space formed in a lower part of a body of said image forming apparatus, wherein said space is located internally within said body along said supply path and said sheet ejecting path;
a branch path branching from said sheet ejecting path and adapted to direct the sheet toward said space;
an introduction path for directing the sheet from said space to said supply path; and
a sheet re-feeding unit of a cassette type contained within



said space and removable from said space, said unit being contained in said space to effect copy or multi copy and including a sheet re-feeding path wholly contained within said space and having an entrance facing said branch path and an exit facing said introduction path, wherein, after said sheet re-feeding unit has been removed from said body, a sheet cassette in which the sheets are stacked and from which the sheets are fed to said image forming section is removable mounted alternatively.

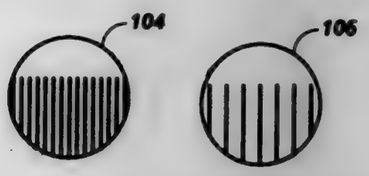
5,384,620
SCHEDULING PAGE PARAMETER VARIATIONS FOR DISCRETE JOB ELEMENTS
Fritz F. Ebner, Rochester; Ronald C. Macera, Palmyra; Shelly D. Saleneki, Walworth; Janine M. Gates, Rochester; Sue Mikolanis, Ontario; James D. Richar, Penfield, and M. Kerrigan Hawes, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 937,323, Aug. 31, 1992, abandoned.
This application Feb. 22, 1994, Ser. No. 200,376
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—202 **23 Claims**



1. In a machine having a controller for providing images having optional page mode parameters, the method of providing a set of images with a discrete element of the set of images processed using selected page mode parameters independent of the page mode parameters of other elements of the set of images, including the steps of:
(a) identifying a plurality of page mode parameters of a current element of the set of images;

(b) responding to the plurality of page mode parameters of the current element to provide the current element of the set of images in a current page mode;
(c) identifying a plurality of page mode parameters of a next element of the set of image;
(d) updating the plurality of page mode parameters of the next element that are different from the plurality of page mode parameters of the current element to provide the next element of the set of images in a next page mode, the controller altering an operation of the machine after completing the processing of the current element by modifying only the page mode parameters that are different and disregarding the next page mode parameters that match the current page mode parameters; and
(e) repeating steps (c) and (d) for each succeeding element of the set of images.

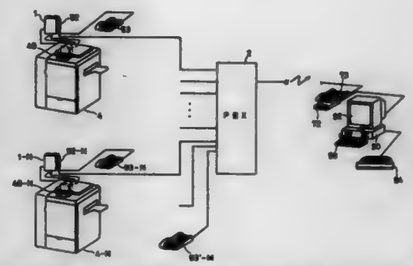
5,384,621
DOCUMENT DETECTION APPARATUS
Gilbert J. Hatch, Rochester, and Michael A. Parisi, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 4, 1994, Ser. No. 177,348
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—204 **14 Claims**



1. An apparatus for detecting the location of a sheet, comprising:
a platen for supporting the sheet and providing a backing for scanning the sheet, said platen including a first optically detectable pattern having a first predetermined frequency, and a second optically detectable pattern superimposed thereon, having a second predetermined frequency, with the first predetermined frequency being harmonically unrelated to said second predetermined frequency;
a sensor, in communication with said platen, for providing data indicative of the sheet, the first optically detectable pattern and the second optically detectable pattern;
means for producing relative movement between said sheet and said sensor; and
a processor, in communication with said sensor, for discriminating the first optically detectable pattern and second optically detectable patterns on said platen backing surface from said sheet according to the data from said sensor so as to determine the location of the sheet on said platen.

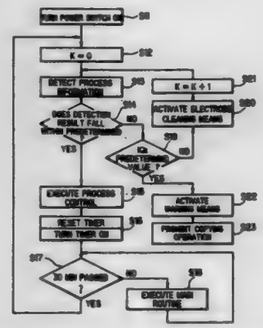
5,384,622
SYSTEM OF CONTROLLING A PLURALITY OF COPYING MACHINES INTERCONNNECTED THROUGH A PRIVATE BRANCH EXCHANGE
Sumiaki Hirata, Aichi, and Kazunobu Mackawa, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Nov. 17, 1992, Ser. No. 977,610
Claims priority, application Japan, Nov. 18, 1991, 3-329548; Nov. 19, 1991, 3-329916
Int. Cl.[6] G03G *21/00*; H04M *11/00*
U.S. Cl. 355—206 **14 Claims**

1. A copying machine control system for controlling a plurality of copying machines, comprising:
a plurality of data terminals respectively associated with each of the plurality of copying machines for collecting data on the copying machines;
a PBX connected to said plurality of data terminals for allowing internal communication to take place between said plurality of data terminals;
a centralized control unit connected to said PBX through an external communication line;



abnormality detection means provided in at least one of said plurality of data terminals for detecting an abnormality in another data terminal by the internal communication through said PBX; and
abnormality transmission means provided in at least one of said plurality of data terminals for executing an external communication with said centralized control unit through said PBX when said abnormality detection means detects an abnormality in another data terminal.

5,384,623
PROCESS CONTROL STABILIZING SYSTEM INCLUDING A CLEANING DEVICE FOR THE CORONA WIRES
Kunio Ohashi, Nara; Hiroshi Kinashi, Tsuzuki, and Mitsuru Tokuyama, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 22, 1993, Ser. No. 7,769
Claims priority, application Japan, Jan. 23, 1992, 4-009890
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—207 **4 Claims**



1. A stabilizing system for use in an image forming apparatus in which a visual image is formed by the steps of electrifying the surface of a photoconductive member by discharging electricity from a discharging electrode of a charger, exposing the photocoductive member to light corresponding to a pattern image to form an electrostatic latent image, and developing the latent image with toner, said system which comprises at least one or both of potential detecting means for detecting the surface potential of the photoconductive member and density detecting means for detecting the optical density of a toner image and providing a detection result and allows a process

control means to control the electrophotographic process on the basis of the detection result to thereby obtain an optimum image, characterized in that

said charger is provided with an electrode cleaning means for cleaning the discharging electrode; and

said process control means controls and activates the electrode cleaning means to clean the discharging electrode of the charger if the detection result provided from the potential detecting means and/or the density detecting means falls out of a predetermined range, performs again the detection to obtain the present detection result from the potential detecting means and/or the density detecting means, and repeats its operation until the present detection result from the potential detecting means and/or the density detecting means falls within the predetermined range.

5,384,624

IMAGE FORMING APPARATUS WITH AUTOMATIC CONTROL FOR DRAWING CASSETTE THEREFROM

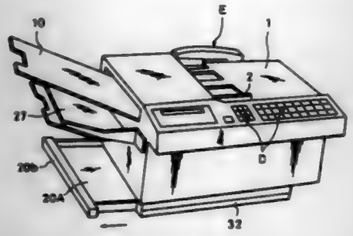
Norio Kajiwara, Ichikawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 862,186, Apr. 2, 1992, abandoned. This application Feb. 23, 1994, Ser. No. 200,315

Claims priority, application Japan, Apr. 4, 1991, 3-097929; Apr. 4, 1991, 3-097930; Apr. 15, 1991, 3-108282

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—207 **33 Claims**



1. An image forming apparatus, comprising:

sheet mounting means for accommodating sheets;

moving means for automatically moving said sheet mounting means between a feed position within a main body of said image forming apparatus for feeding a sheet and a drawn position wherein said sheet mounting means is drawn from the main body of said image forming apparatus;

image forming means for forming an image on the sheet;

discharge means for discharging the sheet on which an image is formed by said image forming means;

conveying means for feeding and conveying a sheet from said sheet mounting means at the feed position to said discharge means;

jam detection means for detecting that the sheet being conveyed by said conveying means has jammed; and

sheet detection means for detecting a stoppage of the sheet being conveyed before the sheet is completely fed from said sheet mounting means; and

control means for controlling said moving means to automatically move said sheet mounting means from the feed position to the drawn position when said jam detection means has detected that the sheet has jammed and said sheet detection means does not detect stoppage of the sheet, and for inhibiting movement of said sheet mounting means when said sheet detection means has detected stoppage of the sheet.

5,384,625

IMAGE FORMING METHOD

Hideki Anayama, Yokohama; Toshiyuki Yoshihara, Kawasaki; Hideyuki Ainoya, and Hidetoshi Hirano, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 171,409

Claims priority, application Japan, Dec. 28, 1992, 4-358742

Int. Cl.[6] G03G *5/06, 5/04*

U.S. Cl. 355—211 **4 Claims**

1. An image forming method carried out by a process comprising the steps of;

electrostatically charging a cylindrical electrophotographic photosensitive member to impart electric charges thereto; said electrophotographic photosensitive member comprising a conductive support and a photosensitive layer provided thereon, wherein said photosensitive layer contains oxytitanium phthalocyanine as a charge-generating material and a charge-transporting material, and the charge-generating material and the charge-transporting material have a work function (W_F^{CG}) and a work function (W_F^{CT}), respectively, that satisfy the expression:

$$-0.2 < W_F^{CG} - W_F^{CT} \leq 0 \ (eV);$$

subjecting the electrophotographic photosensitive member to image exposure to form thereon an electrostatic latent image;

developing the electrostatic latent image to form a visible image; and

transferring the visible image to a transfer member;

said steps of electrostatic charging, image exposure, developing and transfer being carried out while said electrophotographic photosensitive member rotates once, and the time taken for said electrophotographic photosensitive member to rotate once being 1.5 seconds or less.

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CHARGING MEMBER, PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

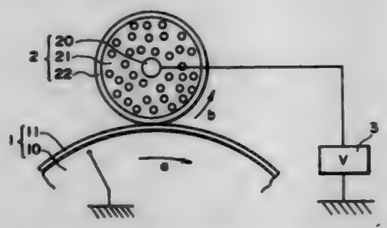
Harumi Kagoh, Kawasaki; Junji Araya, Yokohama; Hideyuki Yano, Yokohama, and Tadashi Furuya, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1993, Ser. No. 116,704

Claims priority, application Japan, Sep. 7, 1992, 4-264293

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **9 Claims**



1. A charging member for charging a member to be charged while being in contact therewith, comprising:

a conductive base for being supplied with a voltage;

a surface layer contactable to the member to be charged;

a sponge layer between said conductive base and said surface layer;

a 100% modulus M_{100} (kg/cm^2) of said surface layer and a thickness d (cm) of the surface layer satisfied:

$$M_{100} \times d \leq 1.5 (kg/cm).$$

5,384,627

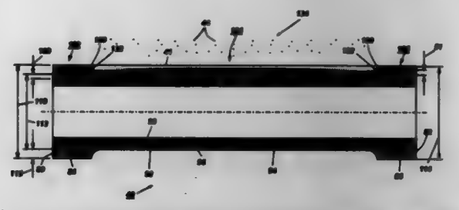
DEVELOPING UNIT HAVING CERAMIC DONOR ROLL

Thomas J. Behe; Heiko Rommelmann, both of Webster; Daniel R. Gilmore, III, Fairport, and Gerald T. Lloy, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 21, 1994, Ser. No. 215,449

Int. Cl.[6] G03G *15/08*

U.S. Cl. 355—247 **10 Claims**



7. A developer unit adapted to develop a latent image with toner particles, comprising:

a housing defining a chamber for storing a supply of toner particles therein;

a donor roll including an electrically non-conductive circumferential surface having a conductivity less than 10^{-8} (ohm-cm)$^{-1}$, said donor roll being spaced from the latent image to form a development zone; and

an electrode member, positioned in the development zone and spaced from said donor roll, said electrode member being electrically biased to detach toner particles from said donor roll to form a toner powder cloud in the development zone with toner particles from the toner cloud developing the latent image.

5,384,628

DEVELOPING DEVICE FOR IMAGE FORMING EQUIPMENT

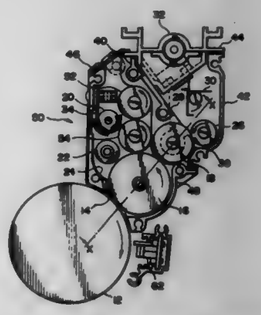
Nobuo Takami, Tokyo; Kazuyuki Segihara, Fujisawa; Takayuki Maruta, Tokyo; Kazuo Nojima, Chiba; Noboru Sawayama, Tokyo; Kaoru Yoshimatsu, Kawasaki; Katsuji Watabe, Fujimi, and Takuji Yoneda, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 8, 1993, Ser. No. 131,967

Claims priority, application Japan, Oct. 10, 1992, 4-298114; Nov. 7, 1992, 4-322512; Jan. 11, 1993, 5-002705; Jan. 11, 1993, 5-002706; Jan. 21, 1993, 5-008368

Int. Cl.[6] G03G *15/06*

U.S. Cl. 355—259 **33 Claims**



1. A developing device for supplying a developer made up of a toner and a carrier to an image carrier for thereby developing a latent image electrostatically formed on said image carrier, said device comprising:

a developer carrier for supplying the developer deposited thereon to said image carrier;

a toner supplying means for supplying toner to the developer deposited on said developer carrier in contact with said developer, said toner defined by a formation of toner on the developer carrier which has not been exposed to the image carrier;

a transporting means for scooping up an excess of the developer from said developer carrier over an entire longitudinal length of the developer carrier before the toner is exposed to the image carrier and transporting said excess developer in a predetermined direction; and

an agitating means for agitating the developer scooped up and transported upward by said transporting means.

5,384,629

DEVELOPER CARTRIDGE AND IMAGE FORMING APPARATUS USING THE SAME

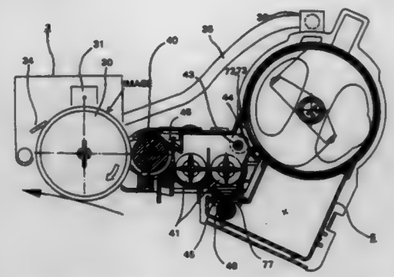
Mamoru Watanabe, Kawasaki, and Michihiro Fujii, Hyogo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 23, 1993, Ser. No. 80,241

Claims priority, application Japan, Jun. 30, 1992, 4-173133

Int. Cl.[6] G03G *15/06*

U.S. Cl. 355—260 **32 Claims**



1. A developer cartridge detachably attached to a developing unit for exchanging developers said cartridge comprising:

a cylindrical body whose rotational axis extends in a direction perpendicular to a developer carrying direction of said developing unit;

a first developer storage room, provided at said cylindrical body, for storing an unused developer;

an opening formed in said first developer storage room;

a case having a cylinder for rotatably retaining said cylindrical body, said cylinder having an injection port provided in association with said opening of said first developer storage room;

a second developer storage room, provided at a lower portion of said cylinder of said case, for storing a used developer from said developing unit; and

setting means selectively movable to a first position indicating an unused state of said developer cartridge and a second position indicating a used state of said developer cartridge to detect if said developer cartridge is unused or used.

5,384,630

PRESSURE ROLLER DRIVER FOR SHEET FORWARDING APPARATUS

Yasuo Nakamura; Yoshio Kogure; Hideo Ichikawa; Takuji Miyazawa, and Takahiko Ryuzaki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1993, Ser. No. 125,214

Claims priority, application Japan, Sep. 24, 1992, 4-279357

Int. Cl.[6] G03G *15/14*

U.S. Cl. 355—277 **2 Claims**

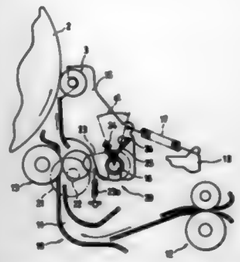
1. A sheet forwarding apparatus for supporting a transfer

sheet on a transfer drum in an electrophotographic copying machine, onto which a toner image on a photoreceptor drum is transferred, said apparatus comprising:

a pressure roller for pressing said sheet onto said transfer drum while forwarding the sheet;

an arm member supporting said pressure roller and pivotably mounted on a first shaft so that pivotal movement thereof on said first shaft causes said pressure roller to contact and to move away from said transfer drum;

a first spring member mounted on said first shaft for exerting pressure on said arm member and causing said arm member to pivot and cause said pressure roller to contact said transfer drum;



a cam follower mounted on said first shaft and arranged integrally with said first spring member;

a rotatable cam member supported on a second shaft for oscillating said cam follower when said cam member is rotated;

a second spring member connected to said arm member for urging said arm member to pivot and move said pressure roller away from said transfer drum;

wherein the oscillation of said cam follower causes the pressure exerted on said arm member by said first spring to be reduced so that said second spring causes said pressure roller to move away from said transfer drum.

5,384,631

AUTOMATIC DOCUMENT FEEDING APPARATUS

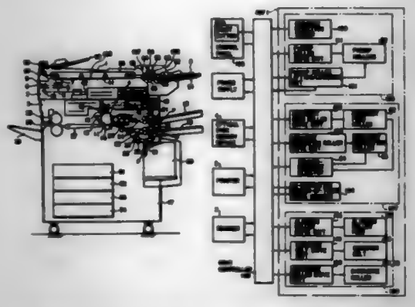
Tokumi Matsuzami, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 24, 1993, Ser. No. 156,816

Claims priority, application Japan, Nov. 26, 1992, 4-316922; Nov. 17, 1993, 5-288258

Int. Cl.[6] G03G *21/00*; B65H *7/08, 7/14*

U.S. Cl. 355—308 **3 Claims**



1. An apparatus for feeding a document to an image reading section of an image forming apparatus, comprising:

a document table for stacking a plurality of documents;

feeding means for separating one by one the documents stacked on said document table and for feeding the documents one by one to the image reading section from said document table;

means for detecting if the feeding means has simultaneously fed more than one document;

first control means for controlling said feeding means to reversely feed the documents to said document table over a predetermined distance when said detecting means detects that two or more documents have been simultaneously fed by said feeding means;

second control means for controlling said feeding means to separate the documents, fed to said document table by said first control means and feed the documents one by one to the image reading section again;

means for counting the number of operations of said second control means; and

third control means for stopping said first control means and said second control means when said counting means counts to a predetermined number.

5,384,632

DIGITAL COPIER ENABLING SETTING OF A PLURALITY OF COPYING CONDITIONS IN A SINGLE SETTING OPERATION BEFORE COPYING IS INITIATED

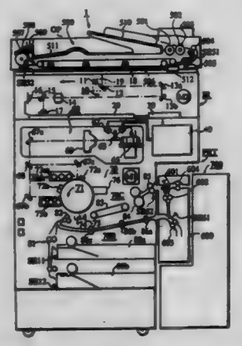
Akio Nakajima, Toyokawa, and Hideo Muramatsu, Shinshiro, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1993, Ser. No. 128,466

Claims priority, application Japan, Sep. 30, 1992, 4-262519; Sep. 30, 1992, 4-262520

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—313 **8 Claims**



8. A digital copier being provided with a memory function, comprising:

copying mode setting means for setting a first copying mode and a second copying mode different from said first copying mode before copying operations are initiated;

copying mode storing means for storing the first and second copying modes being set;

image forming means for forming images in accordance with the first and second copying mode being set;

directing means for directing to start copying operations when said digital copier is not operated; and

copying control means for controlling copying operations so that the copying operations in accordance with the first copying mode being stored are performed according to a directive directed by said directing means and that the copying operations in accordance with the second copying mode being stored are performed continually and automatically after the copying operations in accordance with the first copying mode are completed.

5,384,633

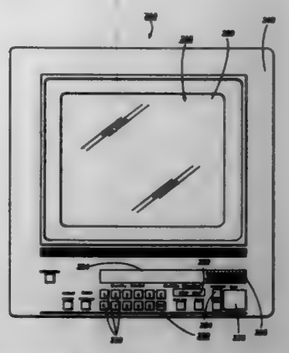
COPY WAITING MACHINE INTERRUPT SLOT MODE

Brent A. Boyd, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 24, 1993, Ser. No. 36,576

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—314 **8 Claims**



1. In an electronic image processing apparatus having a plurality of image processing resources for reproducing Images including a controller with a user interface for directing the operation of the image processing resources, the user interface including a machine Interrupt feature and a copy wait feature, both the machine interrupt feature and the copy wait feature being capable of suspending a job in process, saving status of the job in process, completing a second job, and resuming the job in process from the point of suspension, an automatic document handler for cycling a set of documents to be copied, a document slot for receiving individual documents to be copied, a method of rapid machine interrupt of a job in process independent of the machine interrupt feature, the job in process having documents in the automatic document handler, comprising the steps of:

inserting a document in the document slot,

activating the copy wait feature, the controller automatically determining if the job in process will be completed in a time period greater than a given time period,

detecting the document present at the document slot

selecting the number of copies desired, and

enabling a machine start button whereby copies of the document in the document slot are produced without the need to recycle the documents in the automatic document handler.

5,384,634

SHEET POST-PROCESSING APPARATUS HAVING TRAYS FOR RECEIVING SETS OF SHEETS

Yoshifumi Takehara; Kimiaki Hayakawa, and Noriyoshi Ueda, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 852,997, Mar. 17, 1992, abandoned. This application Aug. 1, 1994, Ser. No. 284,050

Claims priority, application Japan, Mar. 18, 1991, 3-052431; Mar. 18, 1991, 3-052432; Mar. 19, 1991, 3-080818

Int. Cl.[6] G03G *15/00*; B65H *31/00, 39/11*

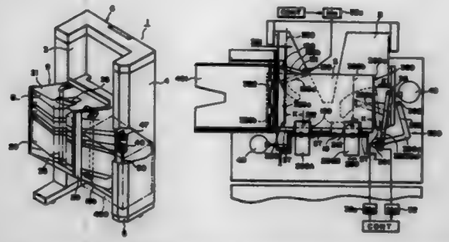
U.S. Cl. 355—323 **39 Claims**

1. A sheet post-processing apparatus comprising:

sheet receiving means, movable in a substantially vertical direction, for stacking sheets, wherein said sheet receiving means includes a plurality of bin trays arranged with spaces between adjacent ones in the substantially vertical direction;

aligning means for aligning sheets on said sheet receiving means;

sheet conveying means for conveying a set of aligned sheets in a direction crossing with a sheet receiving direction of said receiving means, said sheet conveying means pushing out a set of sheets from the tray; and



a receiving tray for receiving the set of sheets from said conveying means, said receiving tray being movable substantially vertically in response to an amount of the sets of sheets received thereby.

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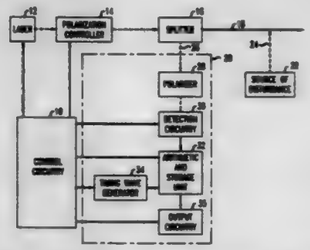
REMOTE SENSING IN OPTICAL FIBER NETWORKS BY SYNCHRONOUSLY DETECTING BACKSCATTERED OPTICAL SIGNAL

Leonard G. Cohen, Berkeley Heights; Adolph H. Moesle, Jr., Murray Hill, both of N.J., and Ashish M. Vengsarker, Allentown, Pa., assignors to AT&T Corp., Murray Hill, N.J.

Filed Aug. 10, 1993, Ser. No. 104,837

Int. Cl.[6] G01N *21/84, 21/21*

U.S. Cl. 356—73.1 **14 Claims**



1. Apparatus for sensing the occurrence of a disturbance in the vicinity of a localized portion of an optical fiber, said apparatus comprising

means for applying multiple spaced-apart consistently polarized optical pulses to the input end of said fiber, and

means for synchronously detecting optical signals of a particular polarization that are backscattered from said localized portion to said input end,

wherein said synchronous detection is carried out at a frequency that is equal to the frequency of said disturbance.

5,384,636

EXTERNAL SCATTER REMOVAL SYSTEM

Graham J. Martin, Woodland Hills; Leo K. Lam, Calabasas, and Thomas J. Hutchings, West Hills, all of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Dec. 12, 1990, Ser. No. 629,108

Int. Cl.[6] G01B *9/02*; H01S *3/083*

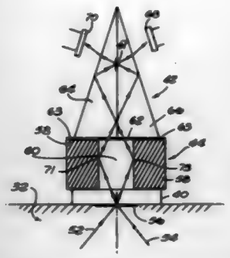
U.S. Cl. 356—350 **13 Claims**

1. An external retroscatter removal system for a ring laser gyroscopes, comprising:

a semi-transparent output mirror of said ring laser gyroscope affixed to a frame of said gyroscope, said mirror allowing electromagnetic waves to pass therethrough;

means for controlling the direction and polarization of said

electromagnetic waves which propagate through said output mirror of said ring resonator cavity of said ring laser gyroscope, including a Faraday optoisolator positioned at an output side of said semi-transparent output mirror of said ring laser gyroscope;



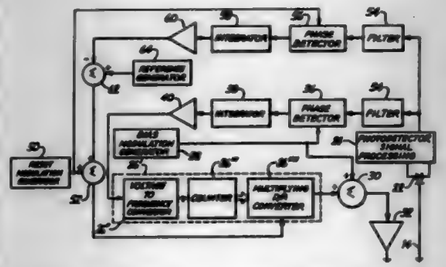
whereby, external scatter is controlled and restricted from propagating back into said ring resonator cavity of said ring laser gyroscope.

5,384,637

FIBER OPTIC GYROSCOPE MODULATION AMPLITUDE CONTROL

Glen A. Sanders, Scottsdale, and Lee K. Strandjord, Glendale, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 12, 1991, Ser. No. 684,721
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—350 **40 Claims**



1. An amplitude reset controller for a first phase modulator in a rotation sensor capable of sensing rotation about an axis of a coiled optical fiber forming a closed optical path in conjunction with at least a first coil coupler which is connected therewith such that electromagnetic waves can be coupled between said coiled optical fiber and a first external optical fiber, said rotation sensing based on having opposing electromagnetic waves propagating through said coiled optical fiber in opposing directions so as to result in each said opposing coiled optical fiber electromagnetic wave impinging at least in part on a corresponding one of first and second photodetectors with at least one of said opposing coiled optical fiber electromagnetic waves propagating in one of said opposing directions being subject to having phasing thereof varied by selected signals supplied to a first input of said first phase modulator, said first photodetector providing an output signal in response to such impingement thereon of a corresponding said opposing coiled optical fiber electromagnetic wave which is representative of that wave, said amplitude reset controller comprising:

a first controlled frequency adjustment signal generator means having a modulation input and having an output electrically connected to said first phase modulator first input, said first controlled frequency adjustment signal generator means being capable of providing an output signal at said output thereof having a basic waveform portion repeated at a selected first shift operation frequency and consisting of a relatively long duration of substantially monotonically changing magnitude in one magnitude direction followed by a much shorter duration of substantially monotonically changing magnitude in an opposite magnitude direction, and being further capable of adjusting values of amplitudes of said repeated basic waveform portions in accord with selected signals provided at said modulation input thereof;

a first controlled amplitude adjustment signal generator means having a control input and having an output electrically connected to said first controlled frequency adjustment signal generator means modulation input, said first controlled amplitude adjustment signal generator means being capable of providing an output signal at said output thereof containing a substantial signal component at a selected first modulating frequency having a magnitude which varies in accord with selected signals provided on said control input thereof; and

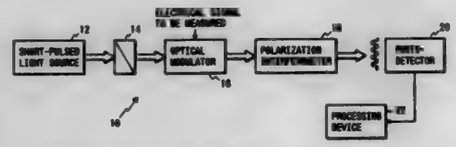
a first amplitude adjustment phase detection means having both a detection input, electrically connected to said first photodetector to receive said first photodetector output signal, and a demodulation input, electrically connected to said first controlled amplitude adjustment signal generator means output, and having an output electrically connected to said first controlled amplitude adjustment signal generating means control input, said first amplitude adjustment phase detection means being capable of using signals supplied at said demodulation input thereof, having a substantial demodulation signal component therein at a selected demodulation frequency, to cause signals to appear at said output thereof representing amplitudes of components of signals occurring at said detection input thereof based on said demodulation frequency.

5,384,638

SAMPLING-TYPE OPTICAL VOLTAGE DETECTOR UTILIZING MOVEMENT OF INTERFERENCE FRINGE

Hironori Takahashi; Tsuneyuki Urakami, and Shinichiro Aoshima, all of Shizuoka, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Mar. 26, 1992, Ser. No. 858,279
Claims priority, application Japan, Mar. 26, 1991, 3-086244
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—351 **15 Claims**



1. A voltage detector comprising:

means for emitting a plurality of polarized light pulses;

modulating means, responsive to a signal to be measured, for changing a polarization state of the polarized light pulses in accordance with a voltage value of the signal to be measured;

means for setting a respective phase relationship between each of the plurality of polarized light pulses and the signal to be measured, and for generating a phase signal to indicate the phase relationship;

means, coupled to the modulating means, for generating an interference fringe;

means, responsive to the phase signal, for determining a waveform of the signal to be measured by detecting respective displacements of the interference fringe corresponding to each one of the plurality of light pulses; and

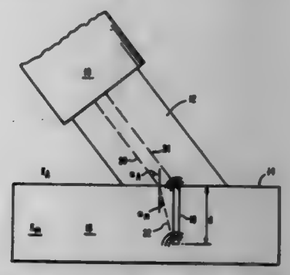
means for calculating the voltage value of the signal to be measured from the waveform of the signal to be measured.

5,384,639

DEPTH MEASUREMENT OF HIGH ASPECT RATIO STRUCTURES

Hemantha K. Wickramasinghe, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 882,386, May 13, 1992, abandoned. This application May 17, 1993, Ser. No. 63,109
Int. Cl.[6] G01B *11/22*
U.S. Cl. 356—355 **52 Claims**



1. A method of optically measuring the depth of a trench structure in a workpiece comprising the steps of:

scanning a surface of a workpiece containing a trench structure with an energy beam, said structure having a top and a bottom and being of a predetermined width, said energy beam having a wavelength at which the workpiece is transparent and which wavelength is greater than said predetermined width, said beam being incident at said surface at angles α_A with respect to said surface;

detecting backscatter signals reflected from the top and from the bottom of said structure; and

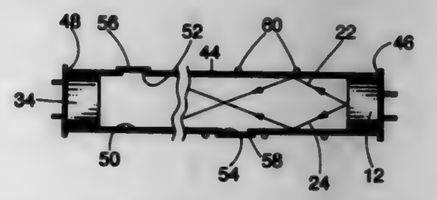
determining at which angles α_A maxima backscatter signals are detected, whereby the depth of said structure is commensurate with the angles α_A at which said maxima backscatter signals are detected.

5,384,640

GAS SAMPLE CHAMBER FOR USE WITH A SOURCE OF COHERENT RADIATION

Jacob Y. Wong, Santa Barbara, Calif., assignor to Gastech International Corporation, Goleta, Calif.

Filed Jan. 19, 1993, Ser. No. 5,739
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[6] G01N *21/31, 21/35*
U.S. Cl. 356—437 **15 Claims**



1. A gas sample chamber for use with a source of coherent radiation, comprising in combination:

an elongated hollow tube having a first end and a second end and having an inside surface that is specularly reflective, and including means for permitting the gas sample to enter and leave the space within said elongated hollow tube;

a semiconductor laser located at the first end of said elongated hollow tube and oriented to project radiation toward the second end;

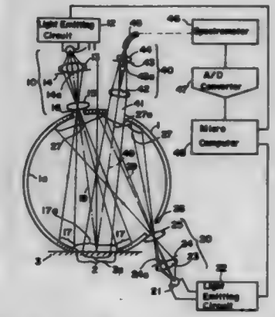
a detector located at the second end of said elongated hollow tube and occupying substantially the entire cross section of said elongated hollow tube.

5,384,641

COLOR MEASURING INSTRUMENT WITH MULTIPLE INPUTS OF LIGHT

Kenji Imura, Toyohashi, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Jul. 28, 1993, Ser. No. 98,630
Claims priority, application Japan, Jul. 29, 1992, 4-202568
Int. Cl.[6] G01N *21/47*
U.S. Cl. 356—446 **15 Claims**



1. A device for measuring optical properties of samples, the device comprising:

an integrating sphere having an aperture where the sample is placed and multiple apertures to take in the light from light sources;

multiple light sources placed at said multiple apertures, to illuminate the inside of said integrating sphere;

a light receiving means to receive light from the sample placed at the sample placement aperture;

control means to cause said multiple light sources to emit light in sequence;

multiple storing means to save the output of said light receiving means at each emission of light;

a means to generate weighting coefficients which convert a sum of luminous intensities of said multiple light sources into an ideal luminous intensity at the sample placement aperture; and

a means to calculate optical properties of the sample based on the output saved in said multiple storing means and the weighting coefficients generated by said generating means.

5,384,642

TRACKING AND PICTURE QUALITY IN A VTR

Sun-seon Sim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 22, 1992, Ser. No. 824,221
Claims priority, application Rep. of Korea, Feb. 2, 1991, 91-1809; Feb. 13, 1991, 91-2392
Int. Cl.[6] H04N *5/76*
U.S. Cl. 358—336 **23 Claims**

1. A circuit for automatically compensating tracking and picture quality in a video tape recorder, said circuit comprising:

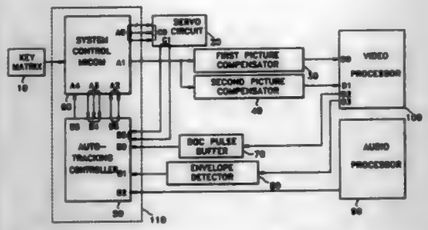
a microcomputer for controlling the video tape recorder by performing a program in response to a key input, for receiving a head switching pulse, a control pulse, a video envelope signal, an audio envelope signal, and a drop-out compensating pulse, and for generating tracking data controlling tracking and a picture quality compensating control signal controlling picture quality;

a servo circuit for performing a servo function under the control of said microcomputer to execute tracking in accordance with said tracking data, and for supplying said head switching pulse and said control pulse to said microcomputer;

a video processor for processing video signals during recording and playback, and for providing said drop-out compensating pulse;

an audio processor for processing audio signals during the recording and playback, and for providing a maximum value of said audio envelope signal to said microcomputer;

a first picture compensator for supplying a gain signal to said video processor controlling a frequency characteristic gain of said video signals in accordance with said picture



quality compensating control signal of said microcomputer;

a second picture compensator for operating in response to said picture quality compensating control signal of said microcomputer, for controlling attenuation of specific bandwidth noise of said video signals by controlling said video processor;

an envelope detector for detecting said video envelope signal from said video signals processed by said video processor, and for providing said video envelope signal to said microcomputer; and

a drop-out compensating pulse buffer for buffering said drop-out compensating pulse provided by said video processor to said microcomputer.

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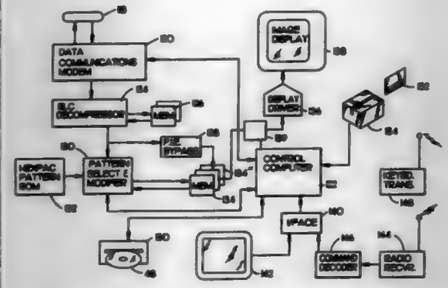
IMAGE TRANSMISSION SYSTEM WITH PATTERNED DATA COMPRESSION

Jorge J. Inga, and Thomas V. Saliga, both of Tampa, Fla., assignors to Automate Medical Access Corporation, Tampa, Fla.

Division of Ser. No. 915,298, Jul. 20, 1992, Pat. No. 5,321,520. This application Mar. 4, 1994, Ser. No. 206,525

Int. Cl.[6] H04N *1/41*

U.S. Cl. 358—403 **22 Claims**



20. A method of acquiring, storing, retrieving and displaying an image comprising the steps of

a) acquiring a said image having a first resolution, and translating said image to a predetermined digital format,

b) storing said digitized image in a computer memory at a first location,

c) requesting, from a user-operated terminal having a first resolution limit and located at a second location, a said digitized image,

d) creating from said digitized image, at said first location a patterned and compressed representation thereof by means of a hexagonal pattern classification algorithm comprising the steps of

d1) generating a plurality of regions collectively representative of said image, each said region comprising a plurality of two dimensional, non-overlapping, symmetrically disposed super pixels,

d2) comparing each said region with a plurality of fictitious patterns, each said pattern having a dark region, a light region and a predetermined point of origin,

d3) selecting that one of said plurality of fictitious patterns that most closely correlates with said each said region,

e) transmitting from said first location to said terminal a first portion of said stored patterned representation,

f) reconstructing, at said terminal, by means of a second algorithm, from said first portion of said patterned representation, a first displayable representation of said diagnostic image, said first displayable representation having a second resolution less than said first resolution, and

g) displaying said displayable representation at said terminal.

5,384,644

IMAGE PROCESSING METHOD AND APPARATUS FOR ENCODING VARIABLE-LENGTH DATA

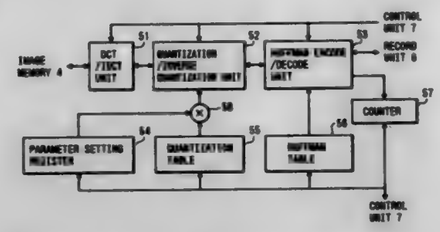
Taku Yamagami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 753,660, Aug. 30, 1991, Pat. No. 5,216,518. This application Feb. 23, 1993, Ser. No. 21,103

Claims priority, application Japan, Sep. 4, 1990, 2-234985; Sep. 4, 1990, 2-234986; Nov. 5, 1990, 2-297073

Int. Cl.[6] H04N *5/76*

U.S. Cl. 358—426 **42 Claims**



1. An image processing apparatus comprising:

input means for inputting image data;

first control means for controlling the inputting condition of said input means;

coding means for coding image data input by said input means; and

second control means for controlling coding performed by said coding means in accordance with the inputting condition of said input means controlled by said control means,

wherein said coding means includes quantizing means, and wherein a parameter of coding comprises a parameter of quantizing.

5,384,645

IMAGE ROTATING APPARATUS

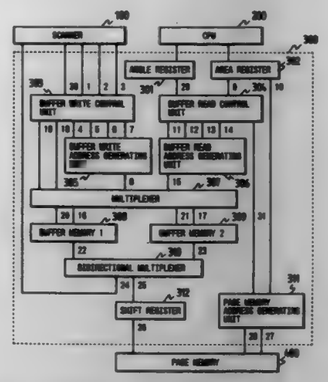
Ken Hasegawa, and Takanori Masui, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,886

Claims priority, application Japan, Oct. 15, 1991, 3-265959; Jul. 27, 1992, 4-199810

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—444 **20 Claims**



1. An image rotating apparatus comprising:

control means for setting an image rotational angle and image area size;

means for rotating image data, sequentially fed, by the image rotational angle set by said control means; and

a page memory for storing the image data rotated by said image rotating means;

said image data rotating means comprising:

storage means for temporarily storing the sequentially fed image data;

image data read means for reading the image data stored in said storage means from a first designated address in accordance with the image rotational angle set by said control means; and

image data write means for writing the image data read by said image data read means to a second designated address in said page memory in accordance with the rotational angle,

wherein said storage means comprises first and second buffer memories, the sequentially fed image data being alternately written to said first and second buffer memories every predetermined number of lines and wherein said image data reading means reads image data alternately from said first and second buffer memories every predetermined number of lines.

5,384,646

MARKING ENGINE FOR GREY LEVEL PRINTING HAVING A HIGH PRODUCTIVITY IMAGE DATA PROCESSING MODE

Russell L. Godshalk, Hilton; Raymond E. Maslinski, Rochester; Frank L. Muster, Rochester; Lawrence B. Telle, Rochester, and Thomas J. Wetzel, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1992, Ser. No. 982,546

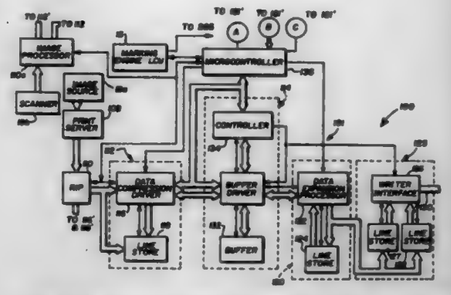
Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—448 **24 Claims**

6. An apparatus for processing image data, said apparatus comprising:

first means operative in a high quality mode for generating multibit digital signals each of N digital bits representing a grey level of each pixel of a first image to be recorded, wherein N is an integer greater than one; and N parallel processing means each for separately compressing, buffering and expanding a different one of said N digital bits; and

second means operative in a high capacity mode for generating pixels of a second image to be recorded wherein each pixel is represented only by a single digital bit and directing all pixels of said second image for processing in only one of said N parallel processing means.



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IMAGE PROCESSING APPARATUS COMPRISING MEANS FOR JUDGING IMAGE AREA OF PSEUDO HALF-TONE IMAGE

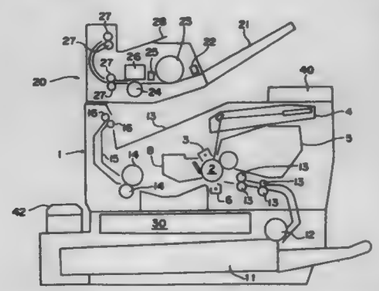
Shigenobu Fukushima, Yokohama, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1992, Ser. No. 894,743

Claims priority, application Japan, Jun. 10, 1991, 3-137616; Jun. 10, 1991, 3-137617; Jun. 10, 1991, 3-137618; Jun. 10, 1991, 3-137619; Jun. 10, 1991, 3-137620

Int. Cl.[6] H04N *1/00, 1/40*

U.S. Cl. 358—456 **11 Claims**



1. An image processing apparatus for processing inputted binary image data including a pseudo half-tone area in which data are binarized by a pseudo half-tone binarizing method and a non-half-tone area in which data are binarized using a predetermined threshold value, comprising:

image area judgment means for performing an image area judgment process for judging whether each pixel of said inputted binary image data is included in said pseudo half-tone area or said non-half-tone area, based on said binary image data located in a predetermined first area including a plurality of pixels which include a specified pixel and a plurality of pixels located in the periphery of said specified pixel and which are selected among said inputted binary image data;

first judgment means for judging what is the kind of minor pixels in said first area based on said binary image data located in said first area;

second judgment means for judging whether or not at least

one of the minor pixels judged by said first judgment means is included in a predetermined second area which is located within said first area and which is smaller than said first area; and

control means for invalidating result data of said image area judgment process with respect to said specified pixel when said second judgment means judges that none of the minor pixels is included in said second area.

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APPARATUS AND METHOD FOR DESCREENING

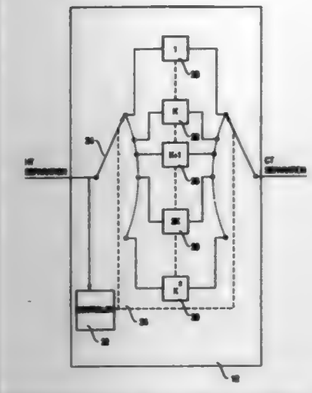
Daniel Seidner, Herzliya, and Dan Eylon, Tel Aviv, both of Israel, assignors to Scitex Corporation Ltd., Herzliya, Israel

Division of Ser. No. 750,515, Aug. 27, 1991. This application Jan. 6, 1994, Ser. No. 178,115

Claims priority, application Israel, Apr. 30, 1991, 98004

Int. Cl.[6] H04N *1/46*

U.S. Cl. 358—534 **34 Claims**



1. Apparatus for descreening and for performing correction of misregistration between at least two half-tone image separations in order to produce at least two continuous tone image separations comprising:

means for sensing said misregistration;

filter means for removing screen information from said half-tone image comprising a plurality of different filters each providing interpolation and screen removal functions; and

a controller for selecting, per pixel of each of said continuous tone image separations and in accordance with said sensed misregistration, one of said filters for operation on a neighborhood of said pixel.

5,384,649

LIQUID CRYSTAL SPATIAL LIGHT MODULATOR WITH ELECTRICALLY ISOLATED REFLECTING FILMS CONNECTED TO ELECTRICALLY ISOLATED PIXEL PORTIONS OF PHOTO CONDUCTOR

Akio Takimoto, Neyagawa; Yukio Tanaka, Kadoma; Junko Asayama, Saita; Koji Akiyama, Neyagawa; Yasunori Kurahoni, Saita, and Hisahito Ogawa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 21, 1992, Ser. No. 994,127

Claims priority, application Japan, Dec. 26, 1991, 3-344521; May 19, 1992, 4-125846; May 28, 1992, 4-136580; May 28, 1992, 4-136581

Int. Cl.[6] G02F *1/1335, 1/135*

U.S. Cl. 359—67 **27 Claims**

21. A spatial light modulator, comprising:

a first electrode;

a second electrode opposed to the first electrode;

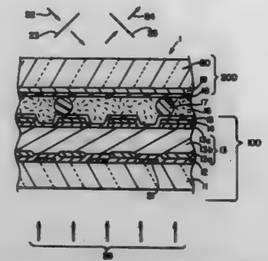
a photoconductive layer electrically connected to the first electrode and including a plurality of pixel portions and an inter-pixel portion between the pixel portions, the pixel portions being electrically isolated from one another by the inter-pixel portion;

a plurality of reflecting films electrically connected to the pixel portions of the photoconductive layer respectively, the reflecting films being electrically isolated from one another; and

a liquid crystal layer interposed between the reflecting films and the second electrode.

wherein the pixel portions each have a diode structure and a rectifying function between the reflecting film connected thereto and the first electrode,

wherein the pixel portions of the photoconductive layer



each include a p-type semiconductor layer, an i-type semiconductor layer provided on the p-type semiconductor layer, and an n-type semiconductor layer provided on the i-type semiconductor layer, to be provided with the rectifying function, and

wherein the inter-pixel portion includes an i-type semiconductor layer for substantially preventing electrical carriers generated in each pixel portion of the photoconductive layer from being diffused into the other pixel portions; and

further comprising an output light blocking film provided on the inter-pixel portion of the photoconductive layer for preventing reading light from being incident on the inter-pixel portion and an insulating layer for covering the output light blocking film and for electrically isolating the output light blocking film from the reflecting films.

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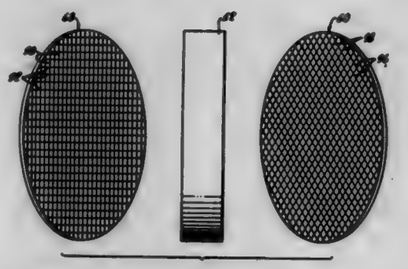
LIGHT VALVE WITH TWISTED PERPENDICULAR LIQUID CRYSTAL WITH A NEGATIVE DIELECTRIC ANISOTROPY

Robert D. TeKolste, San Diego, and Rodney D. Sterling, Carlsbad, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 6, 1992, Ser. No. 863,659

Int. Cl.[6] G02F *1/1337, 1/1335, 1/13*

U.S. Cl. 359—77 **21 Claims**



7. A liquid crystal device comprising:

a liquid crystal cell including:

a first alignment layer having alignment grooves therein extending in a first direction,

a second alignment layer having alignment grooves therein extending in a second direction transverse to said first direction,

said alignment layers defining a containment volume between them,

a liquid crystal mixture with a negative dielectric anisotropy in said containment volume having tilted perpendicular alignment liquid crystal molecules that are twisted about axes normal to the alignment layers in a direction extending from said first alignment layer to said second alignment layer, and

a polarizer mounted adjacent said cell for transmitting light of a single polarization state to the cells and for transmitting light of a single polarization reflected from the-cell, said polarizer being rotatably oriented relative to said cell about an axis perpendicular to said alignment layers by an amount that provides a decreased response time of a light beam passed form said cell to the polarizer.

5,384,651

OPTICAL TRANSMISSION SYSTEM

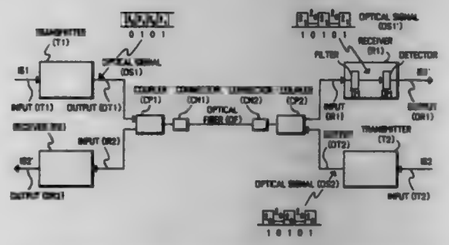
Ingrid Z. B. Van de Voorde, Dilbeek; Denis J. G. Mestdagh, Brussels; Gert Van der Plas, Merchtem; Christiaan H. J. Sierens, Koutich, and Willem J. A. Verbiest, Sint Gillis Waas, all of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Continuation of Ser. No. 992,606, Dec. 18, 1992. This application Mar. 21, 1994, Ser. No. 216,245

Claims priority, application European Pat. Off., Dec. 23, 1991, 91203369

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—152 **9 Claims**



1. Transmission system including a first transmitter (T1) transmitting a first optical digital signal (OS1) and a second transmitter (T2) simultaneously transmitting a second optical digital signal (OS2) to a first (R1) and a second (R2) receiver respectively via a common optical transmission link (OF), said second signal (OS2) being intensity modulated and said second receiver (R2) being able to detect intensity modulated signals only, wherein said first optical signal (OS1) has a constant intensity and a modulated signal characteristic other than its intensity and wherein said first receiver (R1) includes a band-pass filtering circuit which is able to attenuate the intensity of said first signal for one value of said modulated characteristic together with said second signal.

5,384,652

INFRARED COMMUNICATION REPEATER ARCHITECTURE

Richard C. Allen, Los Gatos; Gary M. Cisneros; Stanley L. Fickes, both of San Jose; Gary N. Hughes, Portola Valley; Walter S. Johnson, San Jose; James L. Konsevich, San Jose; John Piccone, San Jose, and Bernard E. Stewart, Fremont, all of Calif., assignors to Photonics Corporation, San Jose, Calif.

Continuation of Ser. No. 659,501, Feb. 22, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 970

Int. Cl.[6] H04B *10/00, 10/02*

U.S. Cl. 359—172 **5 Claims**



4. A diffuse infrared communication system for use in a room of indeterminate size for communicating between a plurality of nodes, each node capable of configuring itself to communicate with other nodes through a repeater when at lease one repeater is present in the room or configuring itself to communicate directly with other nodes when no repeater is present in the room, and each repeater capable of communicating with both nodes and repeaters.

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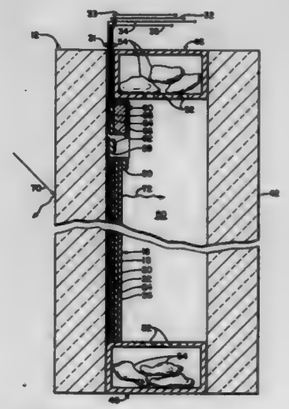
STAND-ALONE PHOTOVOLTAIC (PV) POWERED ELECTROCHROMIC WINDOW

David K. Benson, Golden; Richard S. Crandall; Satyendra K. Deb, both of Boulder, and Jack L. Stone, Lakewood, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Nov. 6, 1992, Ser. No. 972,242

Int. Cl.[6] G02F *1/153*

U.S. Cl. 359—270 **17 Claims**



1. Window apparatus comprising:

a sheet of transparent material having a surface, a first portion of which surface has electrochromic opacity varying means for varying effective radiation transmittance of said first portion of said sheet in response to an electric field, and a second portion of which surface has photovoltaic electric field producing means deposited on said surface that absorbs incident light to produce an electric field; and

circuit means connected to said photovoltaic electric field

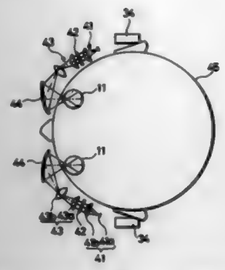
producing means deposited on said second portion of said surface of said sheet and to said electrochromic opacity varying means in such manner that an electric field produced by said photovoltaic means in response to light incident on said second surface portion of said sheet is applied to said electrochromic opacity varying means on said first portion of said surface to vary the effective light transmittance of said first portion of said surface of said sheet in response to said light incident on said second portion of said surface of said sheet.

5,384,654

IMAGE OBSERVATION DEVICE

Yoichi Iba, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 10, 1993, Ser. No. 58,266
Int. Cl.[6] G02B *23/00, 17/00*
U.S. Cl. 359—364 **17 Claims**



17. An image observation device comprising:
two-dimensional image display means for displaying a two-dimensional image;
a relay optical system forming in space a real image of an image displayed on said two-dimensional image display means;
an eyepiece optical system forming a magnified virtual image of said real image and bending an optical axis extended thereto from said relay optical system, said eyepiece optical system including an aspherical reflecting mirror having a focal length of 15–40 mm and a concave surface directed toward an eye of a user; and
supporting means for supporting said eyepiece optical system directly before said eye of said user.

5,384,655

STEREOSCOPIC VIEWING DEVICE

Katharyne M. Sullivan, Rush, and John R. McCart, Rochester, both of N.Y., assignors to X M Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 988,206, Dec. 9, 1992. This application May 27, 1993, Ser. No. 68,117
Int. Cl.[6] G02B *27/24*
U.S. Cl. 359—472 **13 Claims**



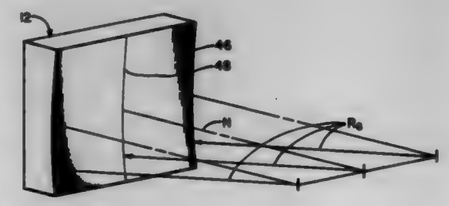
1. A stereoscope for viewing a stereoscopic view created from first and second stereoscopically complementary images which are positioned substantially back-to-back relative to one another and in planes which are substantially parallel to the line of sight Of the observer such that said images face substantially orthogonal to the line of sight of the observer, said stereoscope comprising:
(a) a first image conducting means including a left eye viewing port positioned substantially orthogonal to said first image and at least two reflecting means for reflecting said first image to said left eye viewing port for visual perception of said first image by the left eye of an observer,
(b) a second image conducting means including a right eye viewing port positioned substantially orthogonal to said second: image and at least two reflecting means for reflecting said second image to said right eye viewing port for visual perception of said second image by the right eye of an observer, and
(c) a means for optically insulating said first and second image conducting means with respect to one another to restrict optical transfer of said first and second images between said first and second image conducting means.

5,384,656

ASTIGMATISM CORRECTED GRATINGS FOR PLANE GRATING AND SPHERICAL MIRROR SPECTROGRAPHS

John P. Schwenker, Boulder, Colo., assignor to Hyperfine, Inc., Boulder, Colo.

Continuation of Ser. No. 778,302, Oct. 16, 1991, abandoned. This application May 18, 1993, Ser. No. 64,353
Int. Cl.[6] G02B *5/18, 27/44*; G01J *3/28, 3/40*
U.S. Cl. 359—569 **6 Claims**



1. Astigmatism-corrected spectrographic apparatus comprising:
collimating means for collimating a beam of light passing through an entrance aperture;
focusing means for collecting and focusing diffracted light through an exit aperture; and
diffraction means having a curved surface with a plurality of diffraction rulings inscribed thereon and also having a plane of dispersion, said diffraction means being positioned with respect to said collimating means so that said collimating means directs the collimated beam of light onto the curved surface of said diffraction means, said diffraction means also being positioned with respect to said focusing means so that said focusing means collects and focuses the diffracted light from said diffraction means to a tangential focus and a sagittal focus which are substantially coincident, wherein the curved surface of said diffraction means has a vertical radius of curvature that is substantially parallel to the direction of the diffraction rulings, said vertical radius of curvature having the effect of moving the sagittal focus to about the tangential focus and being defined by the equation:

$$R_v = R_{Rang}\cos\left(\frac{\alpha+\beta}{2}\right)$$

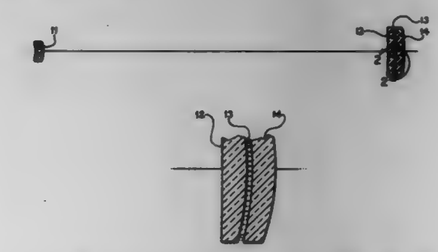
where:
R_v=said vertical radius of curvature;
R_{Rang}=is a harmonic mean of a calculated input correction radius for an input leg and a calculated output correction radius for an output leg, the calculated input correction radius being given by the sum of the distance from said collimating means to a virtual focus of the entrance aperture through said collimating means in a plane orthogonal to the plane of dispersion of said diffraction means and the distance between said diffraction means and said collimating means, and the calculated output correction radius being given by the sum of the distance from said focusing means to a virtual focus of the exit aperture through said focusing means in a plane orthogonal to the plane of dispersion of said diffraction means and the distance between said diffraction means and said focusing means;
α=the angle of incidence of the collimated light beam with respect to said diffraction means; and
β=the angle of diffraction.

5,384,657

LASER BEAM EXPANDERS WITH GLASS AND LIQUID LENS ELEMENTS

Paul N. Robb, Santa Clara, Calif., assignor to Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 11,511, Feb. 1, 1993. This application Mar. 15, 1993, Ser. No. 31,414
Int. Cl.[6] G02B *1/06*
U.S. Cl. 359—665 **4 Claims**



1. An afocal lens system having substantially diffraction-limited performance in the visible and near infrared regions of the electromagnetic spectrum, said lens system comprising a plurality of lens elements made of optical glass, and a lens element made of a liquid optical material: said glass lens elements and said liquid lens element being positioned with respect to each other alone an optic axis so that said liquid lens element is disposed between two glass lens elements, said liquid optical material further defined as Cargille 4793790 liquid, said plurality of lens elements further defined as comprising four lens elements, said lens elements being configured and positioned with respect to each other along said optic axis according to a design form specified as follows:

Surface No.	Radius (mm)	Thickness (mm)	N_d	V_d	Material
1	−8.9456	3.0000	1.805182	25.432	SF6
2	−14.4450	140.9780			Air
3	−182.8981	3.0000	1.620901	60.308	SK51
4	−50.0658	0.5000	1.640346	13.534	642134
5	−47.5086	3.0000	1.805182	25.432	SF6
6	−65.8340	10.0000			Air

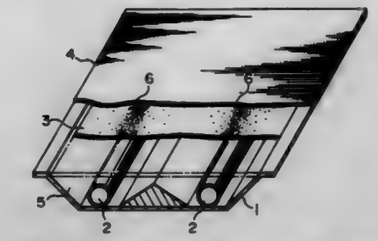
where the surfaces of the lens elements are numbered consecutively from left to right along the optic axis, and where N_d is the index of refraction at the wavelength of the sodium d spectral line and V_d is the Abbe number at the same wavelength.

5,384,658

PLASTIC OPTICAL MEMBER AND LIGHT-QUANTITY-CONTROLLING MEMBER EACH HAVING A LIGHT-DIFFUSING LAYER ON ITS SURFACE

Genji Ohtake, Yokohama; Hisao Morohashi, Kawasaki, and Souichi Hasegawa, Yokohama, all of Japan, assignors to Ohno Research & Development Laboratories Co. Ltd., Yokohama, Japan

PCT No. PCT/JP91/01177, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO92/04400, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 3, 1991, Ser. No. 849,398
Claims priority, application Japan, Sep. 4, 1990, 2-233978; Oct. 30, 1990, 2-292991
Int. Cl.[6] G02B *13/20, 5/02*; A61G *13/00*
U.S. Cl. 359—707 **8 Claims**



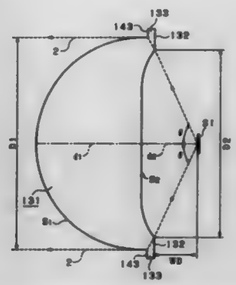
1. A plastic optical member comprising a plastic material having a light-diffusing layer comprising micro-joints on at least a part of a surface of said plastic material
said micro-joints having a structure comprising very small cracks and spaces integrated closely at high density at the surface of the plastic material, said cracks and spaces having an average spacing of 0.01 to 50 μm and the light-diffusing layer of micro-joints having an average thickness of 1 to 30 μm, and providing a very high light diffuse reflectance.

5,384,659

CONDENSER LENS, POLARIZING ELEMENT, LIGHT SOURCE APPARATUS, AND PROJECTION DISPLAY APPARATUS

Shinsuke Shikama; Hiroshi Kida, and Akira Daijogo, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 47,504
Claims priority, application Japan, Apr. 20, 1992, 4-099653; May 6, 1992, 4-113475; Oct. 26, 1992, 4-287671; Nov. 24, 1992, 4-313261
Int. Cl.[6] G02B *13/18*
U.S. Cl. 359—719 **8 Claims**



1. A condenser lens consisting of a bi-aspherical single lens

having a first surface of convex form facing the larger conjugate side and a second surface facing the smaller conjugate side and whose outermost circular zone is formed concave, said condenser lens satisfying the following conditions:

$0.42<r1/nf<0.45$ $18<|r2/nf|-0.39<K1<-0.25$

$0.11<\Delta 2/f<0.14$

where

f: focal length of the whole lens system

n: refractive index of the lens

r1: radius of center curvature of the first surface

r2: radius of center curvature of the second surface

K1: conic constant of the first surface

Δ2: axial difference between the aspherical face of the outermost circular zone within the effective diameter of the second surface and a reference spherical face having the radius of center curvature of r2, wherein the direction in which the outermost circular zone of the second surface is carving toward the smaller conjugate side is taken as positive.

5,384,660

FOLDABLE OUTSIDE REARVIEW MIRROR

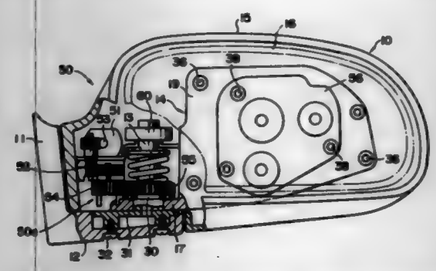
Katsuyoshi Oishi, Shizuoka, Japan, assignor to Eiji Murakami, Shizuoka, Japan

Filed Jul. 26, 1991, Ser. No. 736,080

Claims priority, application Japan, Jun. 17, 1991, 3-053564[U]

Int. Cl.[6] G02B *7/18*; B60R *1/06*

U.S. Cl. 359—841 **3 Claims**



1. A foldable outside rearview mirror assembly, comprising a mirror body; a base having an extending portion; a shaft arranged on said extending portion of said base and having a root portion; a frame rotatably supported on said root portion of said shaft, said frame having an end plate which is rotatably and slidably contacting a surface of said extending portion of said base and receiving said root portion of said shaft; an actuating device for folding said mirror body and including a motor and a speed reduction gear provided in said mirror body, a clutch gear mounted to said shaft which rotatably supports said mirror body, a speed reduction gear train having an end gear engaging with said clutch gear, said base having an upper surface which forms a rotatable sliding surface contacting a lower surface of said frame; a spring device attached to said shaft and energizing said clutch gear to a side of said base, said shaft being provided with a positioning plate inserted in a clearance between said clutch gear and said frame, said positioning plate having convex portions on both surfaces, and said clutch gear and said end plate respectively being provided with concave portions on respective surfaces so that when said gear and said positioning plate are opposite to one another they receive said convex portions.

5,384,661

ARTICULATED DEVICE FOR SPACE VEHICLES, ESPECIALLY FOR TEMPORARILY SEALING THE APERTURE OF SPACE OPTICAL INSTRUMENTS

Freddy Geyer, Tanneron, and Dominique Giraud, Le Cannet, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

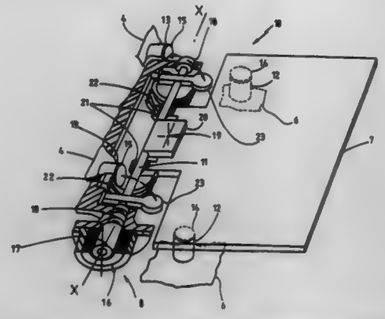
PCT No. PCT/FR91/00494, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992, PCT Pub. No. WO91/19645, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 20, 1991, Ser. No. 835,967

Claims priority, application France, Jun. 21, 1990, 9007784; Nov. 27, 1990, 9014814

Int. Cl.[6] G02B *5/00, 26/02, 23/00*

U.S. Cl. 359—894 **17 Claims**



1. An articulated device for use in a space vehicle comprising:

a support member;

a movable member pivotably attached to said support member to rotate about an axis, said movable member being rotatable between a first and second position;

means mounted to said support member for pivoting said movable member about said axis;

means for frangibly securing said movable member to said pivoting means, said frangibly securing means having a secured mode where said movable member is temporarily connected to said pivoting means and a fracture mode where said movable member is disconnected from said pivoting means; and

means engaged with said movable member and said pivoting means for biasing said movable member to rotate relative to said pivoting means so as to urge said movable member toward one of said first and second positions when said frangibly securing means enters said fracture mode;

whereby said movable member is rotated by said pivoting means while said frangible securing means remains in said secured mode, and wherein said fracture mode of said frangible securing means causes said movable member to rotate to said one of said first and second positions.

5,384,662

PRECISION OPTICAL SLIT FOR HIGH HEAT LOAD OR ULTRA HIGH VACUUM

Nord C. Andresen, Hayward; Richard S. DiGennaro, Albany, and Thomas L. Swain, Richmond, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 12, 1993, Ser. No. 90,585

Int. Cl.[6] G01J *3/04*

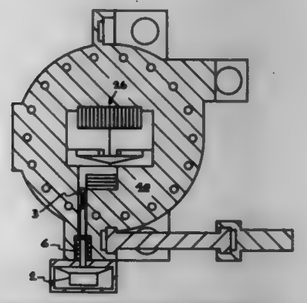
U.S. Cl. 359—894 **23 Claims**

1. A high-precision, adjustable, optical slit comprising,

a) a. plurality of integrally related metal alloy sections and bars connected to one another by narrow metal alloy bridges that form flexural pivots at specified locations, said pivots forming a single arc when flexed said sections and pivots formed from a single metal alloy body and together forming a flexure assembly;

b) two of said metal alloy sections being opposed to each other with spaced apart parallel edges forming an optical slit therebetween which dimensions vary as the flexure assembly is flexed;

c) a feed-through extending between the exterior of the metal alloy body and the flexure assembly;



d) an actuator mounted in said feed-through;

e) an actuator linkage interposed between the actuator and the flexure assembly;

f) means for actuating said actuator whereby movement of the actuator against the actuator linkage results in flexure of the flexure assembly causing the opposed parallel edges forming the optical slit to move apart or closer together essentially without loosing their parallel orientation.

5,384,663

ROTATABLE CRYSTAL POSITIONING APPARATUS

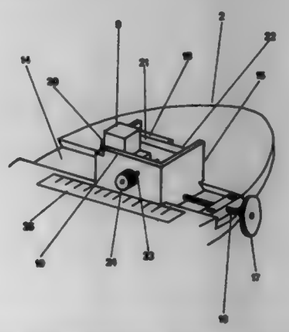
Mark H. Garrett, Michelbach-le-bas, France, and Daniel Rytz, Bottmingen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Oct. 28, 1992, Ser. No. 967,608

Claims priority, application United Kingdom, Oct. 30, 1991, 9123072

Int. Cl.[6] G02B *7/182*; H05G *1/02*

U.S. Cl. 359—896 **9 Claims**



1. A crystal holder apparatus adapted for mounting a crystal having at least one generally planar face which apparatus comprises:

a horizontal rotatable turntable rotatable about an axis of rotation;

a crystal holding means which includes:

a linear track mounted upon the horizontal rotatable turntable such that one side of the track is approximately coincident with the axis of rotation, and

a crystal mounting block adapted to removably hold the crystal such that the at least one generally planar face thereof is coincident with the axis of rotation and the crystal mounting block is slidably mounted upon the linear track such that when the crystal mounting block is moved along the linear track the at least one generally planar face of the crystal remains coincident with the axis of rotation of the horizontal rotatable turntable.

5,384,664

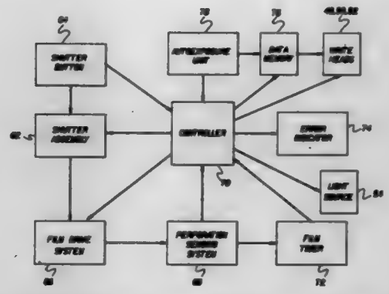
COMBINED RECORDING OF MAGNETIC DATA AND OPTICAL GUIDE TRACK ON PHOTOGRAPHIC FILM

Steven F. Koehler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,769

Int. Cl.[6] G11B *31/00*

U.S. Cl. 360—3 **19 Claims**



1. A method of writing data into a magnetic recording material of a photographic filmstrip in predetermined location relative to latent images exposed onto photographic emulsion on the photographic filmstrip, the method comprising the steps of:

advancing the photographic filmstrip from one latent image frame to the next;

writing the data into the magnetic recording material, in at least one data track that extends along the length of the filmstrip, during the step of advancing the filmstrip; and

optically producing a latent image guide track in the photographic emulsion of the photographic filmstrip that extends along the length of the filmstrip, in a predetermined location relative to the data track, during the step of advancing the photographic filmstrip.

5,384,665

DATA DIVIDING APPARATUS

Ikuo Ohkuma; Makoto Kumano; Sadayuki Inoue; Ken Ouishi, and Junko Ishimoto, all of Nagaokakyo, Japan, assignors to Mitsubushi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 20,325

Claims priority, application Japan, Feb. 21, 1992, 4-035003; Feb. 25, 1992, 4-037600; May 12, 1992, 4-118738

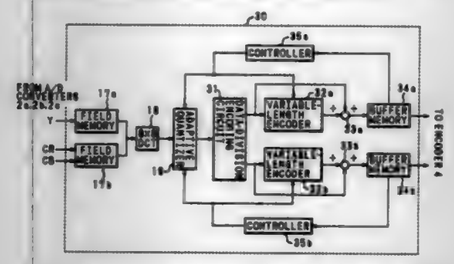
Int. Cl.[6] G11B *5/02, 5/00, 5/09*

U.S. Cl. 360—22 **68 Claims**

7. An encoder, comprising:

converting means for dividing input digital data D into n output codes X_0, X_1, . . . , X_{n-1} (where n is an integer not less than 2) so that said input digital data D is divided into a plurality of groups, each group containing not

more than t pieces of different input digital data (where t is an integer) so that each piece of digital data in said plurality of groups is uniquely represented by a combination of output codes X_0 having m_0 different values, output codes X_1 having m_1 different values, . . . , and output codes X_{n-1} having m_{n-1} different values (where m_0, m_1, . . . , m_{n-1} are integers and $m_0 \times m_1 \times \ldots \times m_{n-1} \geqq n$), and a combinaiton of said output codes X_0, X_1, . . . , X_{n-1} represents digital data in one of said plurality of groups does not represent digital data in another of said plurality of groups; and



data generating means for synthesizing said output codes X_0, X_1, . . . , X_{n-1} into at least two data channels.

5,384,666

DIGITAL PICTURE SIGNAL RECORDING APPARATUS IN WHICH A FIELD INTERVAL IS RECORDED IN A PLURALITY OF TRACKS EXHIBITING A TRACK PITCH NO GREATER THAN 5.5 μM BY A ROTARY DRUM HAVING A DIAMETER NO GREATER THAN 25MM AND A ROTARY SPEED NO LESS THAN 150 RPS

Keiji Kanota, Kanagawa; Hajime Inoue, Tokyo; Akihiro Uetake, Tokyo; Moriyuki Kawaguchi, Tokyo; Yukio Kubota, Kanagawa, and Kazunobu Chiba, Miyagi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

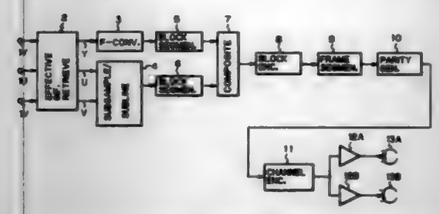
PCT No. PCT/JP91/00755, § 371 Date Oct. 29, 1991, § 102(e) Date Oct. 29, 1991, PCT Pub. No. WO92/09073, PCT Pub. Date May 29, 1992

PCT Filed Jun. 5, 1991, Ser. No. 768,871

Claims priority, application Japan, Nov. 14, 1990, 2-307508

Int. Cl.[6] G11B *5/09*; H04N *5/78*

U.S. Cl. 360—32 **5 Claims**



1. A magnetic recording apparatus for a digital picture signal comprising a block segmenting circuit for segmenting fields of an input digital picture signal into data blocks each formed of a plurality of picture elements, an encoding circuit for compressing and encoding the data blocks of said block segmenting circuit, a channel encoding circuit for channel encoding the compressed and encoded data blocks from said encoding circuit to produce output data for recording on a magnetic tape, a magnetic head assembly mounted on a rotary drum for recording the output data of one field in a plurality of recording tracks on said magnetic tape, said recording tracks exhibiting a track pitch of no greater than 5.5 μm, said rotary drum having a diameter no greater than 25 mm and a rotary speed no less than 150 rps.

5,384,667

VIDEO PROCESSING SYSTEM

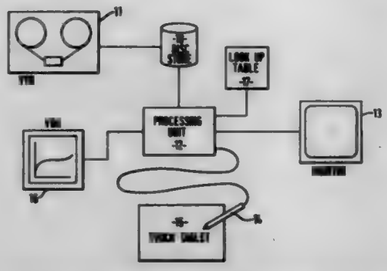
Timothy Beckwith, Reading, England, assignor to Quantel Limited, Newbury, England

Continuation of Ser. No. 518,793, May 4, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,507

Claims priority, application United Kingdom, May 5, 1989, 8910380

Int. Cl.[6] H04N *5/78*; G11B *27/02*; G06F *15/00*

U.S. Cl. 360—33.1 **33 Claims**



1. A video processing apparatus for producing from an input video sequence comprising a multiplicity of video images which together depict a moving scene, an output video sequence comprising a multiplicity of video images which together depict the moving scene at a different speed, with images of the output sequence having respective positions which correspond with positions in the input sequence and each image being defined by digital data representing a multiplicity of pixels which together form the scene in each image, the apparatus comprising:

a video source for providing digital data defining each image in the input sequence;

a look up table comprising a multiplicity of table locations each identified by a unique address representing a respective position in the output sequence of images, the look up table containing at each said location position data identifying a position in the input sequence of images, said position in said output sequence of images represented by said addresses having a predetermined relationship with corresponding positions in the input sequence of images represented by the position data at said addresses;

a processor operable for each image in the output sequence to identify from said position data in said look up table one or more images in the input sequence that contribute to the output image and to calculate from said position data contribution data defining the contribution made to the output image by said one or more identified input images, the processor obtaining the data for said one or more images from the video source and weighting the obtained data in accordance with the contribution data to produce digital data defining the output image.

5,384,668

DATA RECORDING SYSTEM HAVING UNIQUE END-OF-RECORDING AND START-OF-RECORDING FORMAT INDICATORS

Lionel C. Shih, and Tracy G. Wood, both of San Jose, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Feb. 28, 1992, Ser. No. 843,585

Int. Cl.[6] G11B *5/09, 20/10*

U.S. Cl. 360—39 **32 Claims**

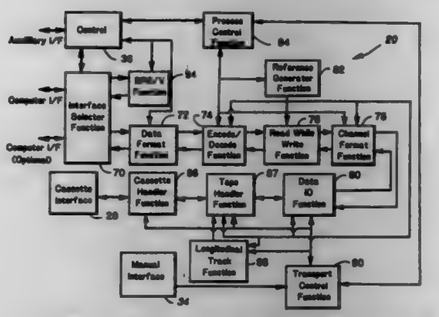
1. A system adapted to selectively record and reproduce digital information data from a host source on a magnetic tape, said system comprising:

helical means adapted to selectively record and reproduce information data and system format data in physical blocks of predetermined size on a helical recording area of said tape, with each physical block being recorded on a set

of tracks, with each set comprising a first portion and a second portion of tracks, said helical means recording data along the tape and being disabled from recording in response to a disabling signal being received;

servo means adapted to selectively record and reproduce servo information on a servo control track that extends in the longitudinal direction of said tape, said servo means being adapted to control the movement of said tape and moving said tape at a predetermined speed in a forward direction during recording by said helical means;

processing means for generating said system format data during recording and for providing said information data and said system format data to said helical means for recording thereby on said tape, said processing means



generating a subarea matrix of said system format data for recording on predetermined helical tracks, said system format data including data which can identify any of said physical blocks as a physical block of a first type;

said processing means being adapted to receive instruction data commanding said system to record a physical block of information data as a physical block of said first type, and in response to receiving said commanding data, said processing means disabling said helical means from recording during a first portion of said set of tracks and permitting recording of the remainder of said set of tracks, said processing means including system format data which identifies said physical block as a physical block of said first type in predetermined tracks in said second portion.

5,384,669

COMBINING SMALL RECORDS INTO A SINGLE RECORD BLOCK FOR RECORDING ON A RECORD MEDIA

Edwin C. Dunn; Scott M. Fry; Scott A. Jackson; Neil H. MacLean, Jr., all of Tucson, Ariz.; Richard P. Reynolds, Salem, Oreg., and Richard A. Ripberger, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 372,744, Jun. 28, 1989, Pat. No. 5,200,864. This application Nov. 18, 1992, Ser. No. 978,071

Int. Cl.[6] G11B *5/09, 5/02, 15/12*; G06F *12/00*

U.S. Cl. 360—48 **19 Claims**

1. In a data processing system having a peripheral controller and a data recording device for having a storage medium and wherein a plurality of possible data, formats are to be used in record data on the storage medium:

the improvement including in combination:

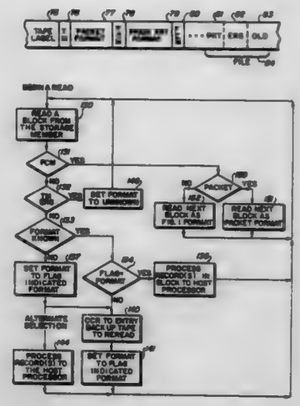
format means in the peripheral controller for establishing a mode of operation in the data processing system for each of the data formats to be used in the data recording device for operation with a storage medium;

detection means for establishing a mode of operation in the data processing system for indicating that the data format of the storage medium is unidentified;

format mark means in the format means establishing record-

able format-indicating demarcation marks to be recorded on the storage medium;

read means in the peripheral controller and in the data recording device for sensing data signals recorded on the storage medium and being responsive to sensing any of said demarcation marks, actuating the format means for setting the mode of operation to the format indicated by



said demarcation mark, during sensing operations using said indicated data format; and

write means in the controller and data recording device for recording data on the storage medium, said write means having means for switching from one of said data formats to another of said data formats for recording one of said demarcation marks on the storage medium to signify a change in recorded data format.

5,384,670

DIGITAL DATA APPARATUS FOR PROVIDING SPATIAL MULTIPLEXING AND DEMULTIPLEXING OF COMPRESSED DATA TO BE RECORDED AND REPRODUCED

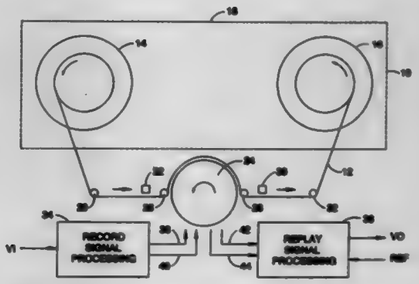
Clive H. Gillard, Basingstoke, and James H. Wilkinson, Tadley, both of United Kingdom, assignors to Sony United Kingdom Limited, Staines

Filed May 3, 1993, Ser. No. 55,256

Claims priority, application United Kingdom, Jul. 6, 1992, 9214330

Int. Cl.[6] G11B *5/09, 15/14*; H04N *5/76*

U.S. Cl. 360—48 **54 Claims**



49. Digital data processing apparatus comprising:

record processing apparatus for processing data to be recorded on a recording medium by a recorder comprising n×m heads organised as m groups where each group

comprises n record heads connected in common to a head channel for said group, said record processing apparatus comprising:

means for receiving data to be recorded;

means for spatially demultiplexing a field of data samples comprising a plurality of lines of data samples into i×n×m data processing channels;

means for processing said demultiplexed field of data samples in said data processing channels; and

means for providing at least one predetermined allocation of said data processing channels to said m×n heads,

wherein said spatial demultiplexing means logically divides said field of data samples into blocks of n×n×m data samples dimensioned n data samples by n×m lines and assigns corresponding data samples within each block to a respective one of said i×n×m channels; and/or

replay processing apparatus for a digital player comprising a n×m replay heads for replaying information processed by said record processing apparatus and recorded on a recording medium in a spatially demultiplexed manner, said replay heads being connected to form m groups each of n heads, said replay processing apparatus comprising:

head multiplexing means for multiplexing said recorded data into i×n×m data processing channels;

means for processing said data in respective data processing channels; and

means for subsequently recombining said processed data to form output data,

wherein said means for subsequently recombining said processed data comprises spatial multiplexing means for generating a field of data samples having a plurality of lines of data samples, said spatial multiplexing means logically dividing said field of data samples into a plurality of blocks of n×n×m data samples dimensioned n data samples by n×m lines and selecting corresponding data samples within each block from a respective one of the i×n×m channels.

5,384,671

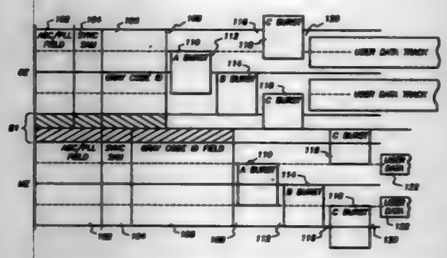
PRML SAMPLED DATA CHANNEL SYNCHRONOUS SERVO DETECTOR

Kevin D. Fisher, Palo Alto, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Dec. 23, 1993, Ser. No. 174,895

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—51 **23 Claims**



1. A method for synchronously decoding head positioning servo information recorded within embedded servo sectors of a hard disk drive including a rotating data storage disk, a data transducer head positionable at concentric data tracks formed on a storage surface of the disk by a head position servo loop, and a synchronous digital data channel connected to the data transducer head for providing plural synchronous digital data samples of each analog magnetic flux transition read from a data storage surface, each embedded servo sector having head positioning servo information including a preamble pattern, a servo address mark, and an interleaved Gray coded track identification field for providing coarse head positioning information, comprising the steps of:

detecting arrival of each embedded servo sector at the data transducer head,

synchronizing a timing loop to the preamble pattern to provide a sample clock,

controlling timing and phase of an analog to digital conversion means with the sample clock for sampling magnetic flux transitions read from the embedded servo sector being read to provide synchronous digital data samples,

passing the synchronous digital data samples through a digital finite impulse response filter to provide conditioned digital data samples,

decoding within a synchronous interleave maximum likelihood decoder the conditioned digital data samples into coded data groups,

decoding the coded data groups with a post coder into a stream of binary servo data,

detecting the servo address mark within the stream of binary servo data with a synchronous servo address mark detector to provide a servo sector clocking signal,

resetting a timing means with the servo sector clocking signal, for marking in time the location of the interleaved Gray coded track identification field, and

decoding the interleaved Gray coded track identification field within the stream of binary servo data with an interleave Gray code decoder to provide the coarse head positioning information to the head position servo loop for positioning the head.

5,384,672

RECORDING OR REPRODUCING APPARATUS

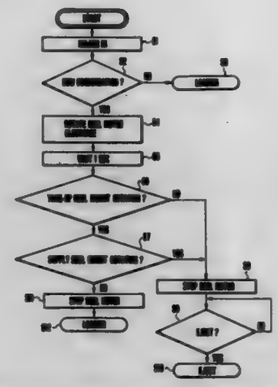
Junji Kobayashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 848,405

Claims priority, application Japan, Mar. 12, 1991, 3-046565

Int. Cl.[6] G11B *15/18*

U.S. Cl. 360—71 **19 Claims**



13. An apparatus arranged to draw out a tape wound around a pair of reels accommodated in a cassette, bring the tape into abutment with a rotary drum, and to effect one of recording information on the tape and reproducing the information from the tape, comprising:

(a) a first chassis for rotatably supporting the rotary drum;

(b) a second chassis relatively movable with respect to said first chassis;

(c) a cassette holder disposed on said second chassis for movement between a first position where the cassette can be inserted or ejected and a second position where the tape can be drawn out from the cassette;

(d) a pair of reel mounts disposed on said second chassis so that when said cassette holder is located in the second position, said pair of reel mounts respectively enable rotational force to be transmitted to a pair of reels in the cassette inserted in said cassette holder;

(e) rotational driving means for transmitting rotational driving force to either one of said pair of reel mounts;

(f) detecting means for detecting a rotation of said reel mount to which the rotational driving force is transmitted;

(g) decision means for determining that the cassette is not inserted in said apparatus, if said reel mount to which the rotational driving force is transmitted is rotating at a rotational speed greater than a predetermined rotational speed;

(h) a dew-condensation detecting sensor for detecting dew condensation in said apparatus; and

(i) a control device for causing said second chassis to move in a direction in which the rotary drum and said pair of reel mounts move toward each other, when said dew-condensation detecting sensor detects dew condensation in said apparatus and said decision means detects that the cassette is not inserted in said apparatus.

5,384,673

MAGNETIC-TAPE STORAGE APPARATUS

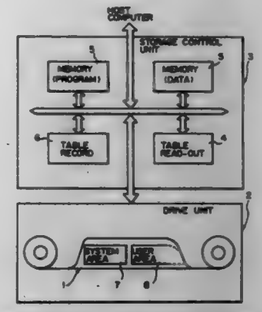
Junichi Yoshioka, Kawasaki; Daijiro Okihara, Tokyo; Chiaki Yamauchi, Yokohama; Takashi Watanabe, Tokyo; Toshiya Nakajima, Ebetsu; Madoka Ichikawa, Yokohama; Jun Takayama, Tokyo; Akihiro Ieeno, Yokohama; Takeshi Ninomiya, and Shinji Hamada, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 851,413

Claims priority, application Japan, Mar. 15, 1991, 3-050929; Mar. 15, 1991, 3-050930; Mar. 15, 1991, 3-050931; Mar. 15, 1991, 3-050932; Mar. 15, 1991, 3-050933; Mar. 15, 1991, 3-050934; Apr. 24, 1991, 3-092531

Int. Cl.[6] G11B *15/18*

U.S. Cl. 360—72.2 **16 Claims**



1. A magnetic tape storage apparatus including a drive unit for writing/reading information on and from a magnetic tape using a rotary head (RH) by the helical scan method and a storage control unit for controlling the drive unit, comprising;

a system area formed at a portion of the magnetic tape other than a user area where user data is recorded, said system area capable of being used only by the storage control unit;

table read-out means for reading out at least one of a plurality of management information tables relating to the magnetic tape, written in the system area, into a memory device in the storage control unit when the magnetic tape is loaded into the drive unit;

table record means, while the storage control unit refers to data of the management information tables, for performing a write/read operation on the user area on the magnetic tape, for simultaneously renewing the data of the management information tables in the memory device, and finally, when the magnetic tape is unloaded from the drive unit, for writing the management information tables in the memory device, having the renewed data, into the system area of the magnetic tape, said table record means further preparing and writing in the system area of the magnetic tape, at least one of the management information tables indicating a correspondence of logical numbers of data blocks and tape marks on the magnetic tape, physical numbers showing the physical positions of the data blocks and tape marks on the magnetic tape, and flag information showing if the data blocks are the tape marks,

said tape read-out means further reading the management information table indicating the correspondence recorded on the magnetic tape into the storage control unit; and

high speed positioning means for positioning to one of the datablocks or tape marks, referred to as a target data block or tape mark, corresponding to any one of the logical numbers by referring to the correspondence management information table read into the storage control unit by the table read-out means, and by obtaining by referring to the correspondence management information table, one of the physical numbers of the target data block or tape mark on the magnetic tape from said logical numbers, tape marks, or flag information, and thereby positioning at a high speed to the target data block or tape mark.

5,384,674

IMAGE RECORDING/REPRODUCING APPARATUS WHICH DISPLAYS IMAGES TO BE SEARCHED

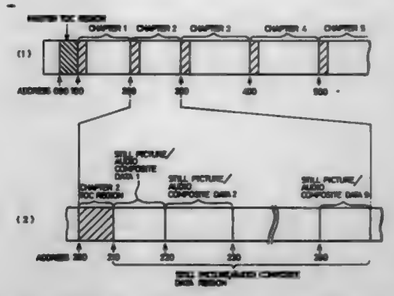
Syuzou Nishida; Yukihiko Haikawa; Hidenori Minoda, and Ichiro Nakata, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 5, 1992, Ser. No. 831,495

Claims priority, application Japan, Feb. 8, 1991, 3-017516

Int. Cl.[6] H04N *5/76*

U.S. Cl. 360—72.2 **18 Claims**



1. An image recording/reproducing apparatus comprising:

a recording medium including a plurality each having an identification code, of image regions for recording image data and a plurality of search regions provided corresponding to said image regions;

image inputting means for sequentially inputting image data;

first recording means for recording said input image data respectively into each of said image regions;

converting means for reproducing and converting each of said recorded image data into corresponding converted image data;

second recording means for recording in said search regions each of said converted image data, together with each identification code of an image region in which each of the corresponding image data is recorded;

first reproducing means for reproducing said converted image data and said identification codes stored in said search regions;

designating means for designating one of said reproduced converted image data; and

second reproducing means, coupled to said designating

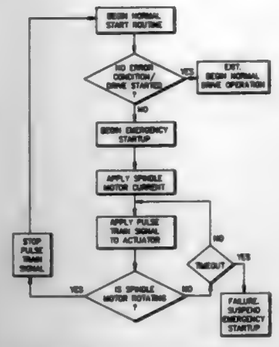
means, for reproducing corresponding image data of said designated converted image data from said image regions in accordance with said reproduced identification codes.

5,384,675

DISK DRIVE WITH CONTROLLED ACTUATOR OSCILLATION FOR RELEASE OF HEAD CARRIERS

Linden J. Crawforth, San Jose; John S. Foster, Morgan Hill, and Jaquelin K. Spong, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1993, Ser. No. 118,537
Int. Cl.[6] G11B *21/02*
U.S. Cl. 360—75 **28 Claims**



1. A data recording disk drive comprising:
at least one data disk;
a motor spindle connected to the disk for rotating the disk;
a transducer for writing data to or reading data from the disk;
a carrier supporting the transducer;
a voice coil motor actuator connected to the carrier for moving the carrier generally radially across the disk so the transducer may access different regions of data on the disk;
means coupled to the coil of the voice coil motor actuator for applying a train of alternating positive and negative current pulses to the coil of the voice coil motor to oscillate the carrier radially in and out, the positive current pulses having a pulse duration or an amplitude different from the pulse duration or amplitude, respectively, of the negative current pulses to simultaneously move the oscillating carrier in a net radial direction across the disk when the disk is not rotating at its operating speed; and
means for supporting the spindle motor and voice coil motor actuator.

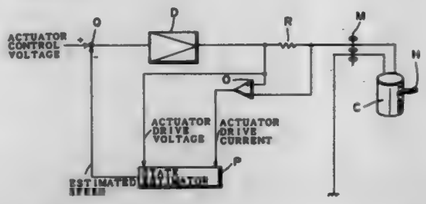
5,384,676

MAGNETIC HEAD POSITION CONTROLLER IN A MAGNETIC RECORDING AND REPRODUCING APPARATUS

Eiji Yokoyama, and Masato Nagasawa, both of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,459
Claims priority, application Japan, Apr. 19, 1991, 3-088573; Jul. 11, 1991, 3-171064; Sep. 2, 1991, 3-221895; Feb. 14, 1992, 4-028326
Int. Cl.[6] G11B *5/588*
U.S. Cl. 360—77.13 **47 Claims**

5. A magnetic head position controller for a magnetic recording and reproducing apparatus having a solenoid-driven actuator to move a magnetic head in a tracking direction, the magnetic head position controller comprising:
a state estimator which electrically simulates modeled characteristics of the solenoid-driven actuator for estimating a moving speed of the solenoid-driven actuator from a drive voltage and a drive current supplied to the solenoid-driven actuator and for outputting an estimated speed signal; and



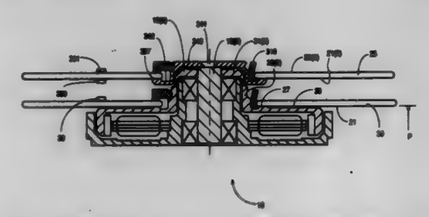
a damping control loop for feeding back the estimated speed signal output by said state estimator to the drive voltage to control damping of the solenoid-driven actuator.

5,384,677

ARCHITECTURE FOR LOW-PROFILE DISK DRIVE DEVICE

James H. Morehouse, Jamestown; David M. Furay, Boulder; Robert A. Alt, and Bruce D. Emo, both of Longmont, all of Colo., assignors to Integral Peripherals, Inc., Boulder, Colo.

Continuation of Ser. No. 24,900, Mar. 2, 1993, abandoned, which is a continuation of Ser. No. 765,352, Sep. 25, 1991, abandoned. This application Jun. 6, 1994, Ser. No. 254,466
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—99.12 **9 Claims**



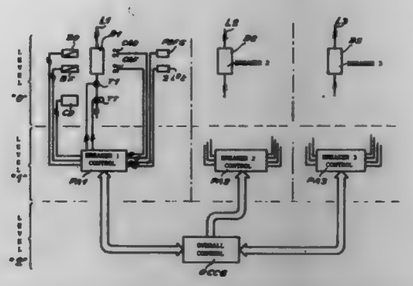
1. An architecture for a low profile rigid disk drive device having a single information bearing disk comprising:
a housing;
a spindle motor disposed in said housing, said spindle motor having a rotor, said rotor including:
a rotor shaft,
a cap connected to one end of the rotor shaft,
a cylindrical portion having a first end connected to the cap, the cylindrical portion being coaxial with the rotor shaft, and
a disk-shaped portion connected to a second end of the cylindrical portion, the disk-shaped portion having an outer diameter and having an upper surface, said information bearing disk fixedly connected to said rotor such that a first surface of said information bearing disk substantially abuts said upper surface of said disk-shaped portion;
a clamp connected to the cylindrical portion, said clamp having an outer diameter smaller than said outer diameter of the disk shaped portion of the rotor, said clamp connecting said information bearing disk to said upper surface;
an actuator disposed in said housing adjacent said information bearing disk; and
a read/write head disposed on said actuator adjacent a second surface of said information bearing disk;
wherein said actuator is movable to position said read/write head such that said read/write head reads information from or writes information to a portion of said second surface of said information bearing disk located between said outer diameter of the disk-shaped portion of the rotor and said outer diameter of the clamp.

5,384,678

CONTROL AND SELF-MONITORING SYSTEM, IN PARTICULAR FOR A MULTIPOLE ELECTRICAL APPARATUS SUCH AS A HIGH TENSION CIRCUIT BREAKER

Gérard Ebersohl, La Mulatiere, and Edmond Thuries, Meyzieu, both of France, assignors to Gec Alsthom T & D SA, Paris, France

Filed Jun. 8, 1993, Ser. No. 73,045
Claims priority, application France, Jun. 9, 1992, 92 06920
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—62 **8 Claims**



1. A control and self-monitoring system for a multipole electrical apparatus such as a three-phase circuit breaker forming a portion of a station for transporting, interconnecting, or distributing electricity under the direction of an operator, and comprising three poles each having a closing coil and an opening coil connected to a voltage source, each pole including an opened auxiliary contact and a closed auxiliary contact, the circuit breaker being controlled by protection devices, wherein each of the poles is provided with a microprocessor receiving, in particular, information from the opened and closed auxiliary contacts, the microprocessor controlling two static relays respectively in series with the opening coil circuit and with the closing coil circuit, the microprocessor of the there poles being subscribers to a local network comprising a serial bus under the control of a management member, the bus being connected to a processor station receiving the signals collected by the microprocessors and the signals emitted by the protection devices or by the operator, said signals being periodically updated in application of a program provided to said management member, said processor member using said bus to collect the data provided by each of said microprocessors and issuing orders for authorizing or prohibiting opening which are transmitted over said bus to said microprocessors, said microprocessors controlling the change of state of said static switches to perform circuit breaker opening or closing orders.

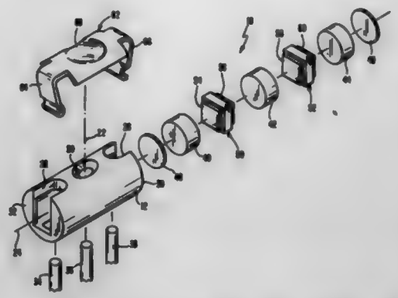
5,384,679

SOLID STATE SURGE PROTECTORS

Thomas J. Smith, Bay Shore, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Filed Nov. 17, 1993, Ser. No. 153,092
Int. Cl.[6] H02H *3/22*
U.S. Cl. 361—119 **9 Claims**

8. A solid state surge protector with back-up fail short protection for use on telephone communication systems comprises, in combination:
A. an insulated, elongated hollow housing member, said housing member being provided with;
a) a plurality of through apertures,
B. a plurality of components being disposed within said hollow housing member, said plurality of components including;
a) a pair of thermally sensitive fusible devices, three conducting means, a pair of solid state overvoltage protection devices, each having two terminals, said components being arranged in a serial path from one end of said housing to the other end of said housing with one of said thermally sensitive fusible devices being disposed at each end of said housing, one of said conducting means extending inwardly towards the center of said housing followed by one of said pair of solid state overvoltage protection devices, terminating in the third of said three conducting means,
C. elongated clip means having;
a) a centrally disposed inwardly extending dimple,



adapted to be received into one centrally disposed through aperture of said housing and
b) a pair of arms disposed at the distal ends of said clip means, said arms of said clip means being adapted to be received by elongated channels provided at the ends of said housing member providing an inward pressure against said first and said second thermally sensitive fusible means; and
D. first, second and third terminal lead members, said first and third terminal lead members being affixed on said first and third conducting means extending outwardly from said housing through apertures proximate the distal ends of said housing, said second terminal lead member being affixed on said second conducting means extending outwardly from a centrally disposed through aperture of said housing member.

5,384,680

PERPENDICULAR ANISOTROPY IN THIN FILM DEVICES

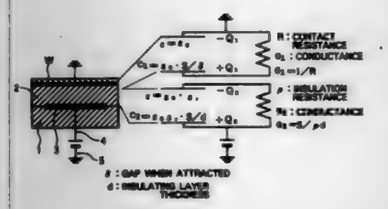
Michael Mallary, Berlin, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 227,813, Aug. 3, 1988, abandoned. This application Feb. 16, 1993, Ser. No. 17,998
Int. Cl.[6] H02H *1/00*
U.S. Cl. 360—126 **26 Claims**

1. A method for conducting signal flux by rotation in a magnetic structure that is generally disposed in a plane, comprising the steps of
providing the magnetic structure with a relatively narrow end region extending along a longitudinal axis in the plane of the structure to a relatively wider base region,
providing said end region and said base region of said structure with a magnetic rest state orientation,
arranging said magnetic rest state orientation in said end region and said base region transverse to said plane to provide a plurality of paths each of which is generally disposed in said plane for conducting said signal flux by rotation of said magnetic rest state orientation, and
applying said signal flux to said end region transversely to

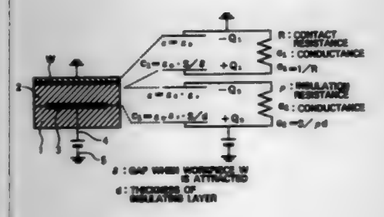
said magnetic rest state orientation to cause said end region to conduct said flux by rotation in a first one of said paths along said longitudinal axis to said base region and to cause said base region to conduct said flux by rotation in at least a second one of said paths that is disposed transversely to said longitudinal axis, so that said signal flux spreads away from said longitudinal axis as said signal flux conducts in said base region.

5,384,681
ELECTROSTATIC CHUCK
Tetsuo Kitabayashi, and Toshiya Watanabe, both of Kanagawa, Japan, assignors to Toto Ltd., Fukuoka, Japan
Filed Mar. 1, 1993, Ser. No. 24,626
Int. Cl.[6] H02N *13/00*
U.S. Cl. 361—234 **18 Claims**



1. An electrostatic chuck comprising a substrate and formed thereon an internal electrode and an insulating layer, wherein said insulating layer comprises a solid-solution comprised of alumina and a transition metal oxide having the structure of a corundum.

5,384,682
ELECTROSTATIC CHUCK
Toshiya Watanabe, and Tetsuo Kitabayashi, both of Kanagawa, Japan, assignors to Toto Ltd., Fukuoka, Japan
Filed Mar. 22, 1993, Ser. No. 34,076
Int. Cl.[6] H02N *13/00*
U.S. Cl. 361—234 **13 Claims**

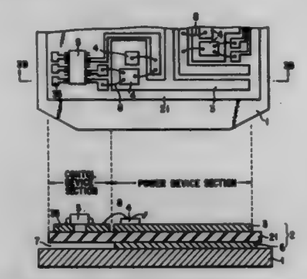


1. An electrostatic chuck comprising a substrate, an insulating layer disposed on said substrate for attracting a workpiece thereto, and an electrode interposed between said substrate and said insulating layer, said insulating layer having a volume resistivity $\rho(\Omega m)$, a dielectric constant ϵ_r at a normal temperature of usage of the electrostatic chuck, and a thickness d (m), and being spaced from the workpiece which is attracted thereto by a gap having a distance $\delta(m)$, said volume resistivity ρ, said dielectric constant ϵ_r, said thickness d, and said distance δ satisfying the following relationship:

$$1.731\times10^{-11}\rho\{\epsilon_r+d/\delta\}<60$$

so that a residual electrostatic force of the electrostatic chuck on a workpiece will be rapidly reduced at said normal temperature of usage.

5,384,683
INTELLIGENT POWER DEVICE MODULE
Tetsujiro Tsunoda, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 5, 1992, Ser. No. 972,310
Claims priority, application Japan, Nov. 7, 1991, 3-318550
Int. Cl.[6] H01G *4/02, 4/06*
U.S. Cl. 361—313 **19 Claims**

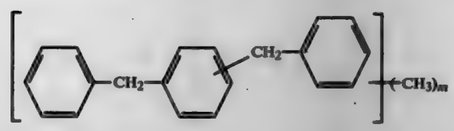


1. A semiconductor device module comprising:
an electrically conductive base having a main surface;
an electrically insulative substrate provided on said main surface of said base;
electric wiring patterns formed on said substrate;
a power device electrically connected to said electric wiring patterns;
a control device electrically connected to said electric wiring patterns, for controlling said power device; and
capacitance-reducing means for reducing a capactiance between said control device and said base;
wherein said control device and base constitute a first coupling capacitor having a first dielectric layer which has a first dielectric constant and a second capacitor having a second dielectric layer which has a second dielectric constant, and said capacitance-reducing means includes said first dielectric constant being less than said second dielectric constant to reduce the capacitance between said control device and said base.

5,384,684
METALLIZED PLASTIC FILM CAPACITOR
Kunio Sugisawa, Yokohama; Hiroyuki Hoshino, Kawasaki, and Shozo Hayashi, Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan
Filed Aug. 6, 1993, Ser. No. 98,309
Claims priority, application Japan, Dec. 10, 1991, 3-349857
Int. Cl.[6] H01G *4/08, 4/22*; H01B *3/48*
U.S. Cl. 361—323 **6 Claims**

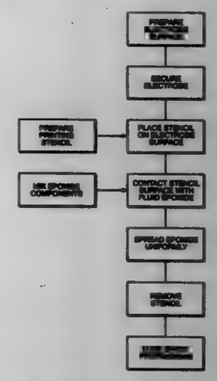
1. A capacitor comprising a metallized plastic film impregnated with an electrically insulating oil composition, said composition comprising 5% to 80% by weight, based on the total weight of the composition, of a natural fatty acid triglyceride containing less than 10% by weight of a fatty acid ester having

three hydroxyl radicals and the remainder of the composition being an aromatic hydrocarbon, liquid at −30° C., having the structural formula



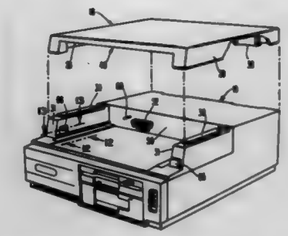
where m is an integer of 0 to 2.

5,384,685
SCREEN PRINTING OF MICROPROTRUSIONS FOR USE AS A SPACE SEPARATOR IN AN ELECTRICAL STORAGE DEVICE
Robert Tong, Sunnyvale; James M. Poplett, Cupertino; Mark L. Goodwin, Santa Cruz, all of Calif.; Ronald L. Anderson, Lino Lakes, and James P. Nelson, Shoreview, both of Minn., assignors to Pinnacle Research Institute, Inc., Los Gatos, Calif.
Continuation-in-part of Ser. No. 947,294, Sep. 18, 1992. This application Sep. 18, 1992, Ser. No. 947,414
Int. Cl.[6] H01G *9/02*; B05D *5/12*
U.S. Cl. 361—503 **20 Claims**



1. A method of producing an array of substantially uniform electrically insulating microprotrusions on an electrode surface as a separator of electrodes of an electrical charge storage device, which method comprises:
(a) obtaining an electrically insulating material which is essentially inert to electrolyte conditions which material has thixotropic properties at ambient temperature and pressure;
(b) obtaining an electrode material comprising a thin flat electrically conducting metal sheet the center of which is coated on one or both flat surfaces with electrically conducting porous carbon or a porous metal oxide creating a coated flat electrode and securing the coated flat electrode in a holder;
(c) placing a stencil having openings over the coated flat electrode;
(d) contacting the top exterior stencil surface with the thixotropic material of step(a) so that portions of the material extrude through the stencil and contact the exterior surface of the coated electrode thus creating multiple discrete microprotrusions when a squeegee is brought across the top exterior stencil surface to cause contact of the bottom of the stencil with the coated electrode surface and the stencil is removed;
(e) removing the coated electrode produced in step (d) from the holder; and
(f) curing the applied multiple discrete microprotrusions whereby the microprotrusions essentially retain their shape and dimensions.

5,384,686
EXPANSION BASE AND SYSTEM FOR PORTABLE COMPUTERS WITH MONITOR SUPPORT
Teodros Mesfin; Jon Kolas, both of Houston, and John E. Youens, Spring, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Continuation-in-part of Ser. No. 597,769, Oct. 15, 1990, Pat. No. D. 335,490. This application Oct. 10, 1991, Ser. No. 774,203
Int. Cl.[6] H05K *7/10*; G06F *1/16*; H01R *13/629*
U.S. Cl. 361—686 **13 Claims**



1. An expansion system for a portable computer, wherein said computer comprises a generally parallelopiped outer cabinet structure, a tilt-up display lid, and computer electronics in said cabinet structure to enable producing a display upon said display lid, said expansion system comprising in combination therewith:
an expansion base cabinet for receiving said portable computer on an upper surface thereof and containing auxiliary electrical apparatus for connection to said computer electronics; and
a monitor-support structure supported on said base cabinet, for supporting a computer monitor on the top thereof in a position above said portable computer;
wherein said monitor-support structure extends upwardly from said base cabinet and horizontally across and above the position of said portable computer.

13. An expansion system for a portable computer, comprising an expansion base and an expansion base connector mounted on said base and facing forwardly thereof, and a portable computer having a portable computer connector mounted thereon and facing said expansion base connector to mate therewith, said system also comprising:
manually actuatable means for separating said portable computer connector and said expansion base connector to disconnect them when they have been mated, said manually controllable means comprising a pusher element mounted on said expansion base and operable to push against said portable computer to provide said separating, and a manually operable actuator connected to and remote from said pusher element and actuatable to move said pusher element;
wherein said actuator is coupled to said pusher element by a linkage system comprising a first arm and a second arm, one end of said first arm being pivotably connected to one end of said second arm, the other end of said first arm being coupled to said actuator for reciprocating motion in response to manual operation of said actuator, the other end of said second arm being pivotably coupled to said pusher element, and pivot means pivotably mounting said second arm to said expansion base cabinet at a position along said second arm such that the length of said second arm between said pivot means and said one end of said first arm is substantially greater than the length of said second arm between said pivot means and said other end of said second arm;

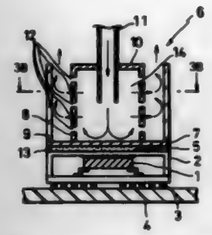
wherein said first arm lies generally along one side of said expansion cabinet, and said second arm lies transversely of said base cabinet immediately behind the rear of said portable computer when installed on said expansion base cabinet.

5,384,687

COOLING STRUCTURE FOR ELECTRONIC CIRCUIT PACKAGE

Toshifumi Sano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,238
Claims priority, application Japan, Sep. 30, 1992, 4-262076
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—689 12 Claims



1. A cooling structure for use for cooling an electronic circuit package, comprising:
- a bottom heat radiation plate means on which an electronic circuit package is mounted;
- a nozzle for jetting coolant therethrough toward said bottom heat radiation plate means;
- a first vertical heat radiation plate means mounted on said bottom heat radiation plate means and disposed so as to surround said nozzle;
- an opening formed in said first vertical heat radiation plate means for again jetting coolant jetted from said nozzle; and
- a second vertical heat radiation plate means mounted on said bottom heat radiation plate means and disposed so as to surround said first vertical heat radiation plate means at least in an opposing relationship to said opening.

5,384,688

THREE-DIMENSIONAL CIRCUITS FOR DIGITIZER AND PEN-BASED COMPUTER SYSTEM PEN CURSORS

Lynn H. Rockwell, Mesa, Ariz., assignor to CalComp Inc., Anaheim, Calif.

Filed Mar. 8, 1993, Ser. No. 27,642
Int. Cl.[6] H05K *1/14*
U.S. Cl. 361—736 17 Claims



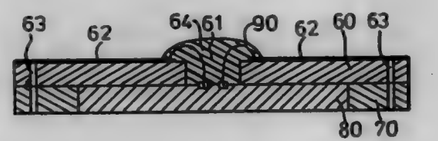
1. A pen cursor structure for a positional digitizing device comprising:
- (a) an inner structure of an electrically insulating material having a plurality of areas for receiving and carrying electrical components, said inner structure having a plurality of electrical contacts disposed within said areas and a plurality of electrical traces interconnecting said plurality of electrical contacts;
- (b) at least a pair of said plurality of electrical contacts comprising a pair of switch contacts disposed in one of said plurality of areas;
- (c) a hollow cylindrical pen-shaped outer covering concentrically disposed over said inner structure; and,
- (d) depressible button contact means carried by said outer covering over said pair of switch contacts for shorting said pair of switch contacts when said button contact means is depressed by a user.

5,384,689

INTEGRATED CIRCUIT CHIP INCLUDING SUPERIMPOSED UPPER AND LOWER PRINTED CIRCUIT BOARDS

Ming-Tung Shen, No. 60, Lane 328, Li-Shan St., Nei-Hu Dist., Taipei City, Taiwan Prov. of China

Filed Dec. 20, 1993, Ser. No. 170,473
Int. Cl.[6] H05K *1/18*
U.S. Cl. 361—761 3 Claims



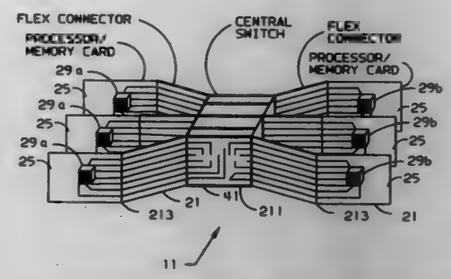
1. An integrated circuit chip comprising:
- a printed circuit board unit having a top surface, a plurality of conductive strips provided on said top surface, and a die-receiving cavity formed thereon, said cavity being accessible via said top surface;
- a die having an upper surface and a plurality of solder pads formed on said upper surface, said die being received in said die-receiving cavity of said printed circuit board unit such that said solder pads are exposed at said top surface of said printed circuit board unit; and
- a plurality of conductive wires interconnecting said solder pads of said die and said conductive strips of said printed circuit board unit wherein said printed circuit board unit includes superimposed upper and lower printed circuit boards, said upper printed circuit board having a top surface which serves as said top surface of said printed circuit board unit, and a bottom surface, said lower printed circuit board having a hole formed therethrough and being mounted to said upper printed circuit board, said lower printed circuit board further having an inner peripheral wall which confines said hole and a bottom surface, said bottom surface of said upper printed circuit board and said inner peripheral wall of said lower printed circuit board cooperatively defining said die-receiving cavity, said die having a lower surface which is substantially flush with said bottom surface of said lower printed circuit board, said upper printed circuit board further having a bore formed therethrough to access said cavity and expose said pads on said upper surface of said die, said conductive wires having first ends connected electrically to said strips and second ends which extend into said cavity via said bore and which are connected electrically to said pads of said die.

5,384,690

FLEX LAMINATE PACKAGE FOR A PARALLEL PROCESSOR

Charles R. Davis; Thomas P. Duffy, both of Endicott; Steven L. Hanakovic, Vestal; Howard L. Heck, Endicott; John T. Kolias, Vestal; John S. Kresge, Binghamton, all of N.Y.; David N. Light, Friendsville, Pa., and Ajit K. Trivedi, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 27, 1993, Ser. No. 97,544
Int. Cl.[6] H01R *23/68*
U.S. Cl. 361—789 11 Claims



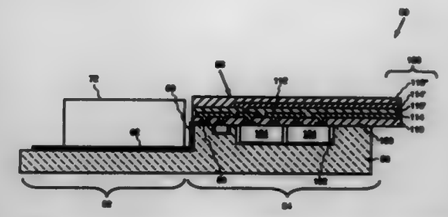
1. A parallel processor having a plurality of processor integrated circuit chips, a plurality of memory integrated circuit chips, and signal interconnection circuitization means therebetween, said parallel processor comprising:
- a. a first processor integrated circuit printed circuit board having a first processor integrated circuit chip mounted thereon;
- b. a second processor integrated circuit printed circuit board having a second processor integrated circuit chip mounted thereon;
- c. a first memory integrated circuit printed circuit board having a first memory integrated circuit chip mounted thereon;
- d. a second memory integrated circuit printed circuit board having a second memory integrated circuit chip mounted thereon;
- e. a plurality of circuitized perfluorocarbon polymer flexible strips, said circuitized perfluorocarbon polymer flexible strips comprising at least one power plane, and least one signal plane, at least one layer of perfluorocarbon polymer dielectric therebetween, and external layers of perfluorocarbon polymer dielectric thereon, at least one of said perfluorocarbon polymer flexible strips further comprising:
  - (1). a signal interconnection circuitization portion, having X-Y planar circuitization and vias and through holes for Z-axis circuitization,
  - (2). a terminal portion having means for joining a printed circuit board thereto, and
  - (3). a flexible, circuitized portion between said signal interconnection circuitization portion and said terminal portion; and
- f. a signal interconnection circuitization body portion having X-axis, Y-axis, and Z-axis signal interconnection between processor integrated circuit chips and memory integrated circuit chips and comprising a polymeric adhesive laminate of said circuitized flexible strips at their signal interconnection circuitization portions, whereby said circuitized flexible strips are laminated in physical and electrical connection at their signal interconnection circuitization portions and spaced apart at their terminal portions.

5,384,691

HIGH DENSITY INTERCONNECT MULTI-CHIP MODULES INCLUDING EMBEDDED DISTRIBUTED POWER SUPPLY ELEMENTS

Constantine A. Neugebauer, deceased, late of Schenectady, N.Y. by Martha M. Neugebauer, executrix ; Charles S. Korman, Schenectady, N.Y.; David A. Bates, Fayetteville, N.Y.; William H. Bicknell, Ballston Lake, N.Y., and Wolfgang Daum, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 8, 1993, Ser. No. 2,374
Int. Cl.[6] H05K *7/02*
U.S. Cl. 361—794 7 Claims



1. A high density interconnect multi-chip module comprising:
- a substrate including at least one cavity for receiving components;
- a plurality of integrated circuit chips disposed in a cavity within said substrate such that major surfaces of said chips are substantially coplanar with portions of said substrate surrounding said cavity, each of said chips having an input for power;
- a power supply disposed in a cavity within said substrate, said power supply having a power supply input and at least one power supply output, and including components for converting an input voltage and an input current to a relatively lower output voltage and a relatively higher output current;
- a multilayer interconnect structure including interleaved layers of dielectric material and conductive material disposed over said integrated circuit chips and establishing connections to said power supply components;
- means for supplying voltage and current to said power supply input from an external source; and
- low-impedance conductors connecting said power supply output to said chip power inputs.

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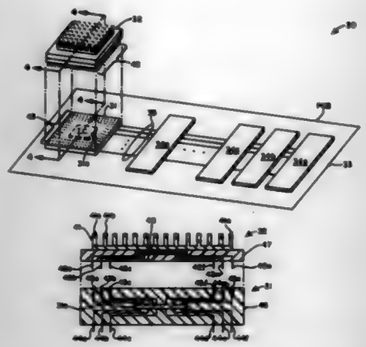
SOCKET WITH IN-SOCKET EMBEDDED INTEGRATED CIRCUIT

Kosar A. Jaff, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 16, 1993, Ser. No. 168,459
Int. Cl.[6] H05K *7/02*
U.S. Cl. 361—807 24 Claims

1. A socket for mounting an external integrated circuit on a printed circuit board, comprising:
- (A) a base having a bottom for mounting the socket on the printed circuit board and a top for receiving the external integrated circuit;
- (B) a plurality of connectors located on the top of the base for coupling to the external integrated circuit when the external integrated circuit resides on the top of the base;
- (C) an in-socket embedded integrated circuit embedded inside the base for providing a predetermined electronic

function, wherein when the external integrated circuit resides on the top of the base the embedded integrated



circuit and the external integrated circuit together occupy minimal space on the printed circuit board.

5,384,693

TAIL LIGHT FOR A BICYCLE

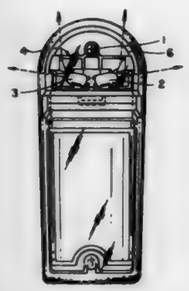
Edwin Schwaller, Kuttingen, and Walter Zürcher, Aarau, both of Switzerland, assignors to Vereinigte Drahtwerke A.G., Biel, Switzerland

Filed Apr. 6, 1993, Ser. No. 43,504

Claims priority, application Switzerland, Apr. 14, 1992, 1231/92

Int. Cl.[6] B62J *6/04*; F21V *7/04*

U.S. Cl. 362—72 **12 Claims**



1. A tail light for mounting on a bicycle, said bicycle having a longitudinal axis having a forward and a backward direction, said tail light comprising a tail light assembly within a common housing, said tail light assembly comprising at least a first light emitting diode emitting substantially all light in a limited solid angle cone along an axis of the diode, said diode being mounted to orient said diode along said longitudinal axis to emit light in said backward direction and at least a second light emitting diode being mounted off-axis, wherein part of the light from said second light emitting diode is deflected by at least one reflecting surface, and wherein said second light emitting diode and said reflecting surface are arranged to emit a first part of the light from said second light emitting diode laterally and a second part of the light from said second light emitting diode upwardly.

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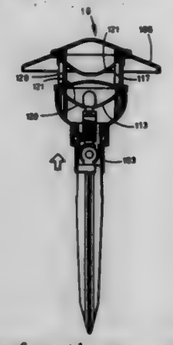
MULTI-PURPOSE LAMP

Jerry S. C. Yang, 8F-8, No. 20, Ta Lung Road, Taichung, Taiwan, Prov. of China

Filed Nov. 18, 1992, Ser. No. 978,325

Int. Cl.[6] F21V *7/00*

U.S. Cl. 362—296 **8 Claims**



1. A pagoda lamp for outdoor use, comprising a pole for insertion into the ground, a support mounted on the pole, a bulb within the support and substantially enclosed therein, a lens mounted on the support above the bulb, a shade mounted on the support and spaced therefrom above the lens, and a pair of spaced-apart parabolic reflectors substantiality parallel to each other and including a first concave reflector mounted within the support and disposed below the bulb, and further including a second convex reflector mounted on the shade and disposed between the lens and the shade.

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Patent Not Issued For This Number

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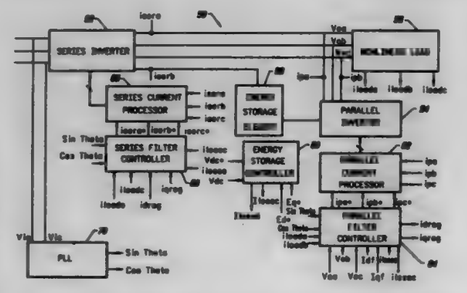
ACTIVE POWER LINE CONDITIONER WITH FUNDAMENTAL NEGATIVE SEQUENCE COMPENSATION

Steven A. Moran, and Michael B. Brennen, both of Pittsburgh, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 30, 1992, Ser. No. 969,932

Int. Cl.[6] H02M *1/12, 5/40*; G05F *1/70*

U.S. Cl. 363—40 **17 Claims**



1. A method of operating an active power line conditioner, said active power line conditioner being of the type which includes a series inverter coupled to a load, said series inverter including a series inverter controller receiving a voltage signal with a negative sequence fundamental voltage component, said method comprising the steps of:

identifying said negative sequence fundamental voltage component through a synchronous transformation of said voltage signal;

inverting said negative sequence fundamental voltage component to produce a series filter reference signal; and

applying said series filter reference signal to said series inverter to cancel said negative sequence fundamental voltage.

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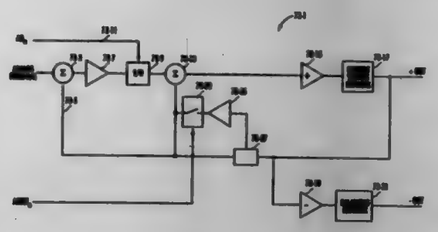
NETWORKED FACILITIES MANAGEMENT SYSTEM WITH BALANCED DIFFERENTIAL ANALOG CONTROL OUTPUTS

Gregory A. Pascucci, Waukesha, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Division of Ser. No. 476,031, Jan. 30, 1990, abandoned. This application Dec. 30, 1993, Ser. No. 175,770

Int. Cl.[6] G06F *15/46*

U.S. Cl. 364—139 **22 Claims**



1. Apparatus for generating first and second balanced differential analog control signals comprising:

a) means for summing an analog input signal and an output from a feedback network connected between one of said control signals and said summing means;

b) a buffer circuit having an input connected to an output of said summing means and an output connected to a current sensing network input, said current sensing network having an output being said first control signal;

c) means connected to said current sensing network output for generating a balanced signal having a same amplitude and an oppositely polarized sense from said first control signal, said balanced signal being said second control signal; and

d) means in said feedback network, and activated by an external signal, for switching said feedback network output between a voltage derived from a voltage output of said first control signal and a voltage derived from a current output of said first control signal.

5,384,698

STRUCTURED MULTIPLE-INPUT MULTIPLE-OUTPUT RATE-OPTIMAL CONTROLLER

Jan Jelinek, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 31, 1992, Ser. No. 938,071

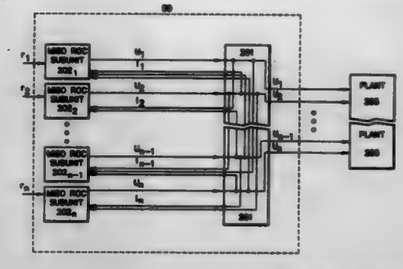
Int. Cl.[6] G06F *15/46*; G05B *13/04*

U.S. Cl. 364—149 **20 Claims**

1. A computer system operable as a predictive controller unit for controlling a plant and connected to said plant either through direct electronic or optical link or via human machine interface comprising:

at least two subcontrollers for generating and outputting control signals, each said subcontroller having at least three inputs, namely a reference input for receiving a reference signal, an error signal input for receiving error signals from the controlled plant, and an interference input for receiving interference signals U_K; and,

an interconnection means for receiving said control signals from said at least two subcontrollers having an input for receiving a control signal output from said subcontrollers and having an interference output for sending said subcontroller output signals to said subcontrollers as interference signals, and having a control output for sending control signals to the plant under control.



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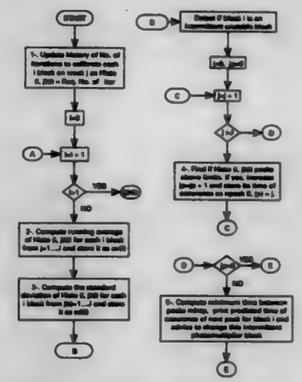
PREVENTIVE MAINTENANCE SYSTEM FOR THE PHOTOMULTIPLIER DETECTOR BLOCKS OF PET SCANNERS

Alejandro V. Levy, Center Moriches, and Donald Warner, Shirley, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Filed Aug. 24, 1992, Ser. No. 934,714

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—413.13 **27 Claims**



1. A computer implemented method for the preventive maintenance of photomultiplier detector blocks of a PET scanner, to determine if a detector block is intermittently unstable, the method comprising the steps of:

(a) calibrating a photomultiplier detector block i of a PET scanner by iteratively adjusting a gain by which photomultipliers in said photomultiplier detector block i amplify a detected signal, and storing a record of a number of iterative adjustments that are necessary at time t_0 to calibrate the photomultiplier detector block i, wherein said record is designated as Histo(i),j(t));

(b) repeating step (a) for a time t_1 and for a time T, where $T>t_1>t_0$;

(c) computing an average of the number of iterative adjustments necessary to calibrate said detector block for said time t_0 through said time T, wherein said average through said time T is stored as av(i);

(d) computing a standard deviation of the number of iterative adjustments necessary to calibrate said detector block

for said time t_0 through said time T, wherein said standard deviation through said time T is stored as sd(i);

(e) determining whether said photomultiplier detector block i is an intermittent unstable block with a peak at said time T, by computing at said time T if: Histo(i,j(T))>av-(i)+2sd(i),

wherein if it is determined that said detector block is an intermittent unstable block with a peak at said time T, said method further comprising:

(1) storing said number of iterative adjustments required for said detector block i at said time T as npeak(i,jp)=T, wherein jp denotes the number of intermittent peaks detected for said photomultiplier detector block i from time $t=t_0$ through t=T;

(2) calculating a minimum time designated mintp, between peaks of said intermittent unstable block from said times t_0 to said time T; and

(3) providing an output signal to advise that photomultiplier detector block i is an intermittently unstable block and should be changed or serviced prior to a time=T-+mintp when a new peak is likely to occur.

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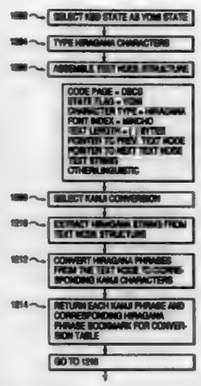
METHOD AND SYSTEM FOR STORING MULTIPLE, MODIFIABLE YOMI AND KANJI STRINGS IN A STRUCTURED DOCUMENT

Chan S. Lim, Potomac; Kevin M. McBride, Bethesda, both of Md., and Takaki Wakejima, Kanagawa, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,017

Int. Cl.[6] G06F *15/38*

U.S. Cl. 364—419.1 **4 Claims**



1. A computer implemented method on a computer system which includes a CPU means, input means, output means, memory means, and display means for flexibly managing a structured document which includes Yomi phrases and Kanji phrases, comprising the steps of:

selecting a keyboard state of said input means as a Yomi state;

typing Yomi characters;

assembling in said memory a text node structure which includes a pointer to a previous text node, a pointer to a next text node, and a text string which includes Yomi phrases;

selecting via said input means a Kanji conversion process;

extracting said Yomi string from said text node structure in said memory means;

converting in said CPU said Yomi string phrases from said text node structure in said memory means into corresponding Kanji phrases;

returning to said memory said Kanji phrases and said corresponding Yomi phrases and a bookmark value from said conversion process, said bookmark value giving the position in a conversion table in said memory means from which said returned Kanji phrase was obtained.

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LANGUAGE TRANSLATION SYSTEM

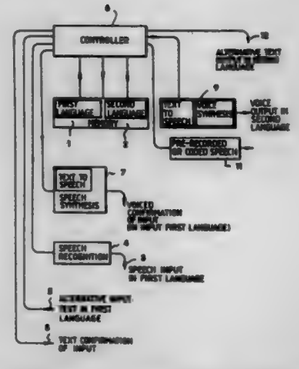
Frederick W. Stentiford, Woodbridge, and Martin G. Steer, Ipswich, both of England, assignors to British Telecommunications public limited company, London, England

Continuation of Ser. No. 201,120, Jun. 2, 1988, abandoned. This application Jun. 7, 1991, Ser. No. 711,703

Claims priority, application United Kingdom, Oct. 3, 1986, 8623839; May 1, 1987, 8710376

Int. Cl.[6] G06F *15/38*; G01L *5/00*

U.S. Cl. 364—419.03 **23 Claims**



1. A system for translating phrases from a first language into a second language, comprising:

input means for accepting an input phrase in the first language;

a store holding a collection of phrases in the second language;

characterization means connected to said input means for determining which phrase of the collection corresponds to the input phrase, and to control the output of that phrase; and

output means responsive to the characterization means for outputting the determined phrase in the second language;

wherein the characterization means comprises means for recognizing in the input phrase the presence of at least one keyword or keyword parts of a predetermined set of keywords or keyword parts, the number of members in the set of keywords being smaller than the number of phrases in the collection, and to select, in dependence on those recognized keywords or keyword parts, a stored phrase from the collection.

5,384,702

METHOD FOR SELF-CORRECTION OF GRAMMAR IN MACHINE TRANSLATION

Julius T. Tou, 2046 NW. 14th Ave., Gainesville, Fla. 32605

Filed Sep. 19, 1993, Ser. No. 122,253

Int. Cl.[6] G06F *15/38*

U.S. Cl. 364—419.08 **40 Claims**

1. A method performed by a computer means for changing a grammatically incorrect sentence that has been pre-translated from a source language into a grammatically correct sentence in a target language, comprising the steps of:

storing a plurality of unique grammar markers in a first database and associating each unique grammar marker with a unique grammar rule;

storing a plurality of unique grammar marker patterns in a second database and associating each unique grammar marker pattern with a unique self-correction rule;

inputting a pre-translated sentence that may have grammatical errors therein into a raw translation buffer;

pre-identifying grammar markers in said pre-translated sentence, each grammar marker being associated with a word which may have grammatical variations in said target language but not in said source language;

scanning said pre-translated sentence to identify a grammar marker or a plurality of grammar markers, if any, and a grammar marker pattern or a plurality of grammar maker patterns, if any, in said pre-translated sentence;

providing a key match buffer for temporary storage of data;

inputting any identified grammar marker into said key match buffer;

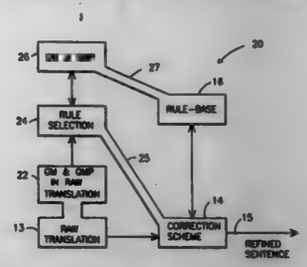
providing a pattern match buffer for temporary storage of data;

inputting any identified grammar marker pattern into said pattern match buffer,

providing a correction scheme means in said computer means for retrieving appropriate grammar rules and self-correction rules from said first and second databases, respectively, and for making appropriate corrections to generate a substantially grammatically correct sentence;

interconnecting a first plurality of logic gates between said correction scheme means and said first database and between said correction scheme means and said key match buffer;

comparing the grammar markers in the key match buffer with the grammar markers in the first database and opening said first plurality of logic gates when a match of grammar rules is made;



inputting grammar rules fetched from said first database into said correction scheme means when said first plurality of logic gates is enabled;

interconnecting a second plurality of logic gates between said correction scheme means and said second database and between said correction scheme means and said pattern match buffer;

comparing the grammar marker patterns in the pattern match buffer with the grammar marker patterns in the second database and opening said second plurality of logic gates when a match of self-correction rules is made;

inputting self-correction rules fetched from said second database into said correction scheme means when said second plurality of logic gates is enabled; and

correcting said pre-translated sentence having grammatical errors therein by applying in said correction scheme means said fetched grammar rules and said fetched self-correction rules to said pre-translated sentence to produce a sentence substantially free of grammatical errors;

said fetched grammar rules and said fetched self-correction rules being appropriate rules to correct the pre-translated sentence because each grammar rule in said first database is associated with a unique grammar marker stored with it in said first database and because each self-correction rule in said second database is associated with a unique grammar marker pattern stored with it in said second database so that any grammar marker in said key match buffer will match only a counterpart grammar marker in said first database and therefore cause delivery of the grammar rule associated with said counterpart grammar marker in said first database to the correction scheme means, and so that any grammar marker in said pattern match buffer will match only a counterpart grammar marker pattern in said second database and therefore cause delivery of the self-correction rule associated with said counterpart grammar marker pattern in said second database to the correction scheme means;

whereby ungrammatical expressions in the pre-translated sentence are corrected in the absence of human intervention.

5,384,703

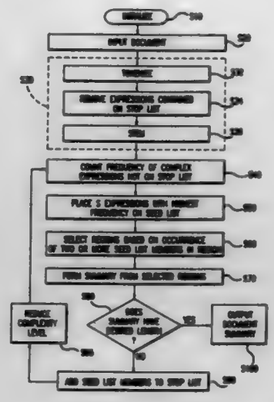
METHOD AND APPARATUS FOR SUMMARIZING DOCUMENTS ACCORDING TO THEME

M. Margaret Withgott, Los Altos Hills, and Douglass R. Cutting, Menlo Park, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1993, Ser. No. 85,385

Int. Cl.[6] G06F *7/38, 7/6*

U.S. Cl. 364—419.19 **55 Claims**



1. An automated, computer implemented method of electronically processing a document stored in a memory of a computer, said document containing text represented by characters, said method comprising the steps of:

a) using the computer, automatically determining a frequency of occurrence of expressions in the document not contained in a stop list and having at least a first predetermined level of complexity, said stop list stored in the memory of said computer;

b) using the computer, automatically forming a seed list comprised of a second predetermined number of the most frequently occurring expressions determined in step (a), said seed list stored in said memory of said computer;

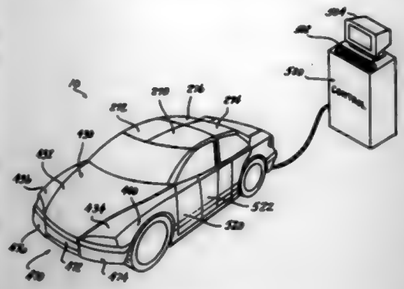
c) using said computer, automatically forming a summary of the document comprised of regions in the document containing at least two members of said seed list, said summary stored in said memory of said computer; and

d) using said computer, automatically repeating steps (a)–(c) on said summary until a length of said summary is no greater than a predetermined length, each time steps (a)–(c) are repeated, adding the members of said seed list to said stop list and reducing said first predetermined level of complexity.

5,384,704
PROGRAMMABLE VEHICLE MODEL

Kent D. Snyder, Mt. Clemens; Gerald J. Zyski, Jr., Hazel Park; Kim A. Zeile, Clarkston, and James F. Runstrom, Drayton Plains, all of Mich., assignors to Prefix Corporation, Rochester Hills, Mich., a part interest

Filed Apr. 17, 1992, Ser. No. 870,590
Int. Cl.[6] G06F *15/46*; B60J *7/057*
U.S. Cl. 364—424.01 39 Claims

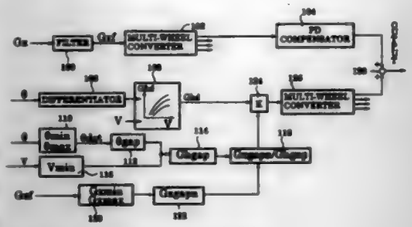


1. A vehicle model comprising:
a platform;
panel support means mounted on the platform;
a plurality of vehicle body panels mounted on the panel support means in vehicle body positions simulating a vehicle;
at least certain of the vehicle body panels formed of first and second panel sections mounted in overlapping, telescopingly adjustable positional relationship;
drive means, coacting with the at least certain first and second panel sections, for adjustably positioning the first and second panel sections with respect to each other at an adjustably selectable position to vary at least one of a height, width and length of the vehicle body panel formed of the first and second panel sections; and
control means having a central processing unit executing a control program stored in a memory;
the control means controlling the operation of the drive means to control telescoping displacement of the first and second panel sections of each vehicle body panel.

5,384,705
ACTIVE SUSPENSION WITH ROLL CONTROL BY REDUCIBLY MODIFIED ESTIMATED TRANSVERSE ACCELERATION

Shoji Inagaki, Susono, and Shinichi Tagawa, Anjou, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of Japan

Filed Dec. 11, 1991, Ser. No. 804,754
Claims priority, application Japan, Jan. 14, 1991, 3-014739
Int. Cl.[6] B60G *17/01*
U.S. Cl. 364—424.05 5 Claims

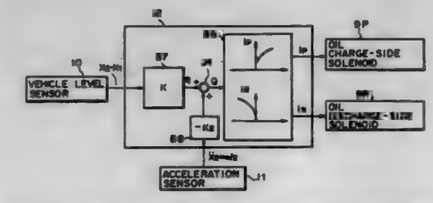


1. An active suspension, comprising:
actuators provided to correspond to each vehicle wheel so as to change vehicle height at a corresponding position,
transverse acceleration detection means for detecting actual transverse acceleration of a vehicle body;
vehicle speed detection means for detecting vehicle speed;
steering angle detection means for detecting steering angle; and
control means for controlling each said actuator in accordance with a control amount based upon the actual transverse acceleration and an estimated transverse acceleration deduced from the steering angle and the vehicle speed, wherein said control means temporarily reduces a contribution to said control amount based upon the actual transverse acceleration when a ratio derived from the estimated transverse acceleration and the actual transverse acceleration increases beyond a predetermined value.

5,384,706
SUSPENSION SYSTEM FOR VEHICLE

Masaaki Uchiyama; Kenichi Nakamura, both of Kanagawa; Takashi Nezu, Tokyo, and Hidekatsu Ozaki, Kanagawa, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 801,665, Dec. 2, 1991, abandoned. This application Oct. 20, 1993, Ser. No. 138,387
Claims priority, application Japan, Feb. 20, 1991, 3-026551; Nov. 30, 1991, 2-334089
Int. Cl.[6] B60G *17/00*
U.S. Cl. 364—424.05 3 Claims

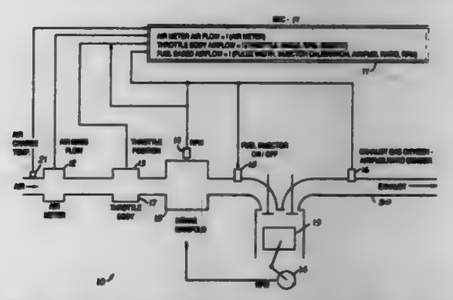


1. A suspension system of a vehicle, said system comprising:
a hydraulic cylinder connected to a body and an axle of the vehicle so as to extend and retract as the distance between the body and the axle of the vehicle changes, said hydraulic cylinder having preestablished full extension and retraction strokes, and a neutral position, and said hydraulic cylinder including a cylinder in which a working chamber is defined, the volume of said working chamber varying during the extension and retraction of the hydraulic cylinder;
an accumulator containing a gas, said accumulator communicating with said working chamber;
a pressurized oil supply;
a control valve operatively hydraulically interposed between said pressurized oil supply and said hydraulic cylinder so as to control the flow of oil into and from said working chamber;
a vehicle level sensor which detects changes in said distance between the body and the axle of the vehicle and issues a respective signal representative of each of said changes; and
a control unit, operatively connected to said vehicle level sensor and said control valve, which receives each said signal issued by the vehicle level sensor, and issues a control signal to said control valve that operates said control valve to cause a force to be generated that restores said hydraulic cylinder to said neutral position, which said control unit can generate a first control signal by executing an operation in which the signal issued by the vehicle level sensor is multiplied by a first vehicle level control amplification factor at the time said signal issued by the vehicle level sensor is indicative of the hydraulic cylinder being located anywhere between said neutral position and the full extension or the full retraction stroke thereof, respectively, and which said control unit can generate a second control signal by executing an operation in which the signal issued by the vehicle level sensor is multiplied by a second vehicle level control amplification factor at the time said signal issued by the vehicle level sensor is indicative of the hydraulic cylinder being at a location between said position short of the full extension or the full retraction stroke there and the associated full extension or retraction stroke,which said control unit selectively generates said first and said second control signals and issues the control signal so generated to said control valve as said control signal that operates the control valve, said first and said second vehicle level control amplification factors being different wherein the force generated to restore the hydraulic cylinder to said neutral position is larger when said second control signal is generated than when said first control signal is generated, which said control unit generates said second control signal only when the hydraulic cylinder is progressing from said position just short of the full extension or full retraction stroke thereof towards the associated full extension or full retraction stroke, respectively, and which said control unit generates said first control signal when the hydraulic cylinder is progressing from the full extension stroke or the full retraction stroke thereof towards said position just short of the full extension or full retraction stroke, respectively.

5,384,707
DIAGNOSTIC AIRFLOW MEASUREMENT

James M. Kerns, Grosse Ile; Michael J. Callen, Dearborn, and Michael S. Sweppy, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 623,471, Dec. 7, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 83,205
Int. Cl.[6] F02D *41/18*, *41/22*
U.S. Cl. 364—431.11 14 Claims

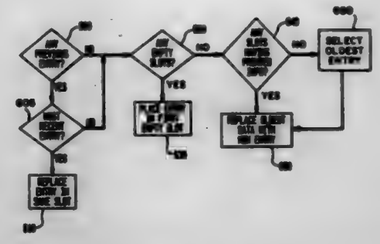


1. A diagnostic method for an internal combustion engine, including the steps of:
determining airflow using three independent airflow determinations at substantially the same time, each of the three independent airflow determinations being made at a different point in the airflow path into the engine and each of the three independent airflow determinations using a different determination technique.
comparing the three airflow determinations to each other; and
establishing an error has been detected if one airflow determination differs significantly from at least one other airflow determination.

5,384,708
MAIL PROCESSING SYSTEM HAVING A METER ACTIVITY LOG

Jacqueline Collins, Bridgeport; Terrence M. Doeberl, West Redding; Linda V. Gravell, Guilford, and Kevin D. Hunter, Stratford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 26, 1992, Ser. No. 967,305
Int. Cl.[6] G07B *17/00*
U.S. Cl. 364—464.02 13 Claims

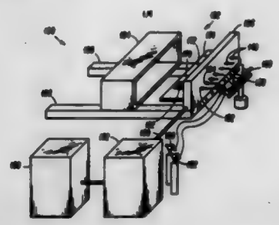


8. A method for logging meter activity in a mail processing machine adapted to receive a plurality of postage meters, said method comprising the steps of installing a meter in the mail processing machine, uniquely identifying said installed meter in storing accounting information relating to said meter upon installation thereof, determining and storing accounting information relating to the uniquely-identified meter activity and thereafter storing uniquely-identified meter information relative to the meter activity upon the occurrence of each of a plurality of selected events checking whether a selected event of a same type as a current event has previously occurred and thereafter replacing the information if the current event is the same type of event.

5,384,709
MINIATURE FLUORESCENT LAMP PROCESSING APPARATUS

Thomas A. Seder, Cedar Rapids; William S. Ebeltoft, Marion, and W. David Meyer, Cedar Rapids, all of Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Feb. 23, 1993, Ser. No. 21,425
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—468 5 Claims



1. A system for manufacturing miniature fluorescent lamps comprising:
a pair of parallel rails having a first end and a second end,
an end plate fixed at the first end of said rails, said end plate having an oven side and a manifold side;
a five sided rectangular box having a backside, a topside, a bottomside, a first end, a second end and an open side,
said box translatably disposed on said rails so that said open side is disposed between said backside and said end plate and so that said end plate covers said open side when said box is translated adjacent said end plate a first tip off

exhaust oven and a first tip off inlet oven disposed on said manifold side of said end plate;

a first lamp station disposed about said end plate having a first exhaust port and a first inlet port extending through said end plate, said first lamp station having a first temperature probe disposed on said oven side of said end plate;

a second lamp station having a second exhaust port and a second inlet port extended through said end plate, and a second temperature probe disposed on said oven side of said end plate, a second tip off exhaust oven and a second tip off inlet oven disposed on said manifold side of said end plate;

an inlet manifold disposed on said manifold side of said end plate;

an exhaust manifold disposed on said manifold side of said end plate;

a first inlet tube coupling said first inlet port and said inlet manifold having a first inlet electrically controlled valve disposed therein;

a first exhaust tube coupling said first exhaust port and said exhaust manifold having an electronically controlled valve disposed therein;

a second exhaust tube coupling said second exhaust port and said exhaust manifold, said tube having second exhaust electronically controlled valve disposed therein;

a second inlet tube coupling said second inlet port and said inlet manifold said second inlet tube having a second inlet electronically controlled valve disposed therein; and,

a computer processor coupled with said electronically controlled valves and said first temperature probe and said second temperature probe for electronically monitoring and manipulating the temperature and pressure within the oven.

5,384,710

CIRCUIT LEVEL NETLIST GENERATION

Nim C. Lam, Sunnyvale, and Amrit K. Lalchandani, Mountain View, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 493,057, Mar. 13, 1990, abandoned. This application Dec. 22, 1993, Ser. No. 173,808

Int. Cl.[6] G06F *15/60*

U.S. Cl. 364—489 **11 Claims**

MICROFICHE APPENDIX INCLUDED

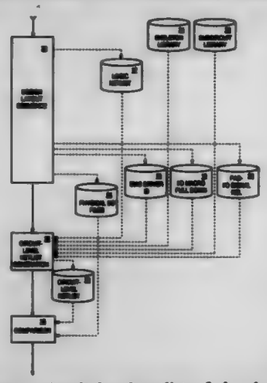
(483 Microfiche, 6 Pages)

1. A computer-performed method for generating a circuit level netlist from a logic design of an application specific integrated circuit, comprising the steps of:

collecting files defined by reoccurring combinations of components present in a set of macrocells into a first set of files, the macrocells of the macrocell set corresponding to logic elements available for use in the design;

deriving a second set of files corresponding to the macrocells of the macrocell set, wherein the component combinations are represented in high level symbology;

deriving a logic netlist that identifies macrocell instances in the design and defines the connectivity therebetween; and



constructing a circuit level netlist of the design from the logic netlist, the first set of files, and the second set of files.

5,384,711

METHOD OF AND APPARATUS FOR INSPECTING PATTERN ON PRINTED BOARD

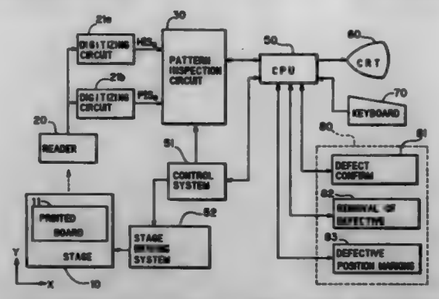
Takao Kanai; Hitoshi Atsuta; Yoshinori Sezaki, and Ichirou Maadai, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Nov. 12, 1991, Ser. No. 791,063

Claims priority, application Japan, Nov. 27, 1990, 2-327165

Int. Cl.[6] G06K *9/62*; G06F *15/62*

U.S. Cl. 364—489 **10 Claims**



1. A method of inspecting a wiring pattern formed on a printed board, comprising the steps of:

(a) obtaining an image of said wiring pattern;

(b) applying an image operator to said image to obtain a first data array, wherein said image operator has a plurality of operator arms each of which is formed of a plurality of pixel trains, and said first data array has a first plurality of data arms each of which is formed of a plurality of trains of data values, said step of applying an image operator including the steps of:

(b-1) defining said image operator so that said plurality of pixel trains form a close bundle of parallel pixel trains;

(b-2) serially selecting each pixel on said image; and

(b-3) applying said image operator to said image while adjusting a center of said image operator to said each pixel of said image; and

(c) converting said first data array into a second data array having a second plurality of data arms each of which is formed of a single train of data values, said converting step including the step of applying a logical operation on said plurality of trains of data values to obtain said single train of data values by:

(c-1) determining a first type of logical operation and a second type of logical operation;

(c-2) obtaining a data value of said image data at a center of said first data array which corresponds to said center of said image operator;

(c-3) selecting one of said first and second types of logical operation as a function of said data value at said center of said first data array; and

(c-4) applying said one of said first and second types of logical operation to said plurality of trains of data values to obtain said single train of data values; and

(d) inspecting said wiring pattern as a function of said second data array.

5,384,712

ENERGY MONITORING SYSTEM FOR A PLURALITY OF LOCAL STATIONS WITH SNAPSHOT POLLING FROM A CENTRAL STATION

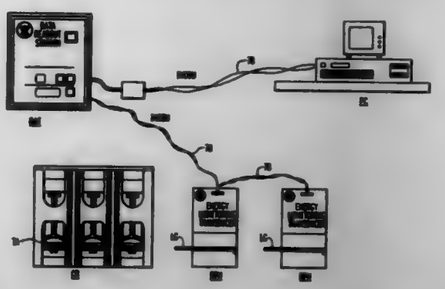
David M. Oravetz, Gibsonia; Robert T. Elms; Joseph C. Engel, both of Monroeville Boro; Frank Klaucher, Pittsburgh, and Thomas J. Kenny, Plum Borough, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 15, 1991, Ser. No. 746,019

The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.

Int. Cl.[6] G01R *21/00, 22/00*

U.S. Cl. 364—550 **13 Claims**



1. An energy monitoring system for determining individual electric power consumption used at a plurality of load stations each connected separately to a common main AC line system through individual circuit breakers and behind a collective electrical meter, comprising:

a personal computer (PC) centrally located;

each load station including:

first analog means for sensing electrical voltages from said main AC line system to derive analog voltage signals;

second analog means for sensing electrical currents from said main AC line system to derive analog current signals;

analog-to-digital means for converting said voltage and current signals into digital voltage and current signals, respectively;

means for combining said digital voltage and current signals to generate a signal characteristic of an integrated representation of the energy consumed therewith;

bidirectional digital communication means being provided between said PC computer and said plurality of load stations for establishing a digital data highway therebetween; and

said bidirectional communication means being used at regular successive time intervals by said PC computer: to initially and simultaneously address and command each load station to store the instantaneous value of the totalized energy consumed; and to subsequently address and poll all stations individually and in turn with an individual command to transmit to the PC computer said stored value; the PC computer establishing during a present time interval following a preceding time interval, and for each load station, the difference between successive such received instantaneous values of energy; and the demand for the present time interval;

whereby the energy consumed and the demand at any load station are ascertained with said PC computer on each of said time intervals and individual billing in relation to the meter is effected regularly therefrom.

5,384,713

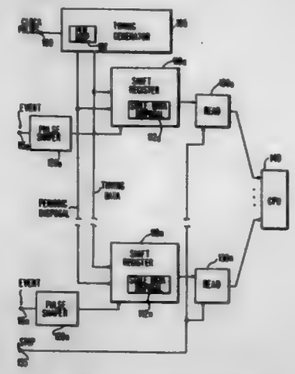
APPARATUS AND METHOD FOR ACQUIRING AND DETECTING STALE DATA

Stuart A. Kleinfelder, 19 Drury La., Berkeley, Calif. 94705

Filed Oct. 23, 1991, Ser. No. 781,765

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—550 **21 Claims**



1. Apparatus for data acquisition, comprising:

input means for supplying input signals representing occurrences of events;

timing data generating means for generating cyclical timing data counts comprised of (n+m) bits, wherein n and m are integers;

latching means responsive to each occurrence of an input signal for latching the timing data count when the input signal occurs and for storing said timing data count as a time character with an associated validity flag;

stale data processing means responsive to a timing data count and at least one of the m bits of a stored time character for testing if said stored time character was produced during a previous cycle of said timing data counts;

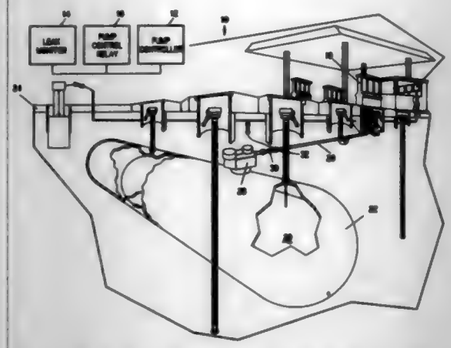
flag setting means for setting the validity flag associated with each stored time character produced during a previous cycle of said timing data counts, thereby identifying a stale stored time character; and

reading means for reading out those stored time characters from said storing means which are not identified as stale stored time characters and including means for establishing a read out time, and comparison means responsive to a timing data count and to a stored time character then being read out at a read out time for setting the validity flag associated with said read out time character if said read out time character was captured during a timing data count cycle previous to the timing data count cycle at said read out time to thereby identify a stale read out time character.

5,384,714
PUMP CONTROLLER PROGRAM

Roy E. Kidd, Clayton, Ind., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 12, 1993, Ser. No. 30,946
Int. Cl.[6] G01M 3/26
U.S. Cl. 364—550 18 Claims



1. A method of operating a pump controller to pressurize a liquid product line for thermal stabilization during a leak detection test, comprising the steps of:
(a) determining if a pump is operating by reading an input of a microprocessor in the pump controller;
(b) distinguishing whether the pump is being operated from an external source or the pump controller;
(c) beginning a leak detection test after the pump shuts "off" if the pump has been operated by the external source;
(d) delaying pump operation by the pump controller to permit a more uniform temperature throughout the liquid product line while a leak detection test is being conducted;
(e) operating the pump for a period of time sufficient to repressurize the liquid product line while a leak detection test is being conducted;
(f) counting the number of cycles the pump has been operated by the pump controller while a leak detection test is being conducted; and,
(g) halting pump operation by the pump controller when a predetermined number of cycles have been completed, and the leak detection test has been completed.

5,384,715
SYSTEM IDENTIFICATION AND ANALYSIS OF SUBSURFACE RADAR SIGNALS

Robert L. Lytton, Bryan, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Aug. 27, 1993, Ser. No. 113,435
Int. Cl.[6] G01V 3/08, 3/12; G06F 15/20
U.S. Cl. 364—550 6 Claims

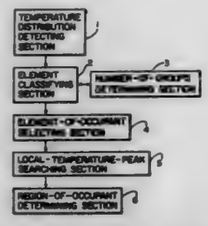


1. A method of determining the respective volumetric proportions, in a target layer of a multilayer system, of one or more of a solid portion of the target layer, a fluid portion of the target layer, and a gaseous portion of the target layer, comprising the steps of:
(a) directing an energy pulse into the target layer of the system;
(b) receiving a combined reflection signal from the system;
(c) generating a measurement vector signal in which is encoded a characteristic of the combined reflection signal;
(d) generating an estimate vector signal in which is encoded respective estimated volumetric proportions of said one or more of the target layer's solid, fluid, and gas portions;
(e) generating an error value signal representing a differential between the measurement vector signal and the estimate vector signal;
(f) testing whether a characteristic of the error value signal is greater than a predetermined criterion and (1) if so, then
(A) adjusting the estimate vector signal to encode adjusted respective estimated volumetric proportions, and
(B) repeating steps e and f;
else, (2) generating a layer-content signal in which is encoded the respective estimated volumetric proportions encoded in said estimate vector signal.

5,384,716
OCCUPANT CONDITION DETERMINING APPARATUS

Shoichi Araki, Osaka; Hiroyoshi Nomura, Shijonawate; Noboru Wakami, Hirakata, and Takeshi Imanaka, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 22, 1993, Ser. No. 125,423
Claims priority, application Japan, Sep. 24, 1992, 4-254302; Jul. 15, 1993, 5-175233
Int. Cl.[6] G01K 17/20
U.S. Cl. 364—557 17 Claims

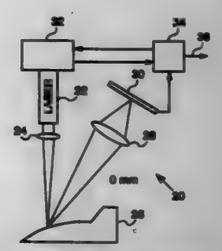


1. An apparatus for determining existential conditions of objects on a certain detecting region, said apparatus comprising:
temperature distribution detecting means for obtaining a thermal image including a plurality of elements each representing temperature data by detecting the temperature distribution on said detecting region;
element classifying means for classifying said plurality of elements in said thermal image into at least two groups, all elements belonging to one of said groups being in a certain temperature range, said temperature range of said one group being distinct from a temperature range of another one of said groups;
group selecting means for selecting at least one group of a relatively higher temperature range in said thermal image from said at least two groups;
element selecting means for selecting, among elements included in said at least one group selected by said group selecting means, elements representing temperature data indicative of local temperature peaks in said thermal image; and
output means for outputting the number of said elements selected by said element selecting means as the number of objects on said detecting region.

5,384,717
NON-CONTACT METHOD OF OBTAINING DIMENSIONAL INFORMATION ABOUT AN OBJECT

Samuel E. Ebenstein, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 23, 1992, Ser. No. 980,419
Int. Cl.[6] G06K 9/46
U.S. Cl. 364—560 8 Claims

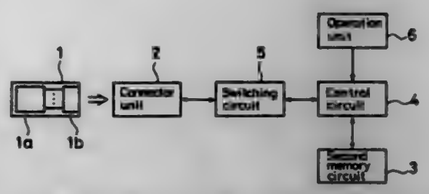


1. A method for obtaining dimensional information about an object at a vision station, the method comprising the steps of:
generating reference data relating to a surface of the object to be scanned, the surface including at least one reference feature of the object, the at least one reference feature having a boundary;
scanning a beam of controlled light at the surface of the object located at the vision station based on the reference data to generate reflected light signals;
imaging the reflected light signals to a measuring area of a photodetector means to produce corresponding electrical signals;
computing scan data based on the electrical signals, the scan data providing height values of the surface of the object;
determining at least a portion of the boundary of the at least one reference feature based on the height values of the scan data to obtain boundary data; and
computing dimensional information associated with the at least one reference feature of the object based on the boundary data wherein the at least one reference feature has a curved area defined by a radius and a center and wherein the dimensional information includes a value for the radius and coordinants of the center and wherein the step of computing the dimensional information includes the steps of estimating the coordinants of the center and the radius from the boundary data and correcting the estimated radius to obtain the value of the radius.

5,384,718
SET PARAMETER MEMORY MEANS AND TIME RECORDER

Katsumi Oishi, and Masahisa Takano, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,600
Claims priority, application Japan, Apr. 11, 1991, 3-079139
Int. Cl.[6] G06F 15/20
U.S. Cl. 364—569 12 Claims



5. A time recorder for use with portable setting parameter memory means having first memory circuit means for storing first setting parameters for time supervision and first data representative of the type of time recorder corresponding to said first setting parameters to be used, terminal unit means for transmission and reception of said first setting parameters and a terminal, said time recorder comprising:
connector unit means for detachably connecting said time recorder to said terminal of said portable setting parameter memory means;
second memory circuit means for storing second setting parameters and second data representative of the type of a time recorder which includes said second memory circuit means;
operation means for:
selectively designating transmission and reception of said first and second setting parameters, and
changing said second setting parameters stored in said second memory circuit means independently of said portable setting parameter memory means; and
control circuit means for comparing said first data and said second data and for selectively controlling transfer of said first and setting parameters such that, when transmission or reception of said first or second setting parameters is designated by said operation means, said control circuit means allows transfer of said first setting parameters from said portable setting parameter memory means to said second memory circuit means, and said second setting parameters from said second memory circuit means to said portable setting parameter memory means, when said first data and said second data coincide, and upon completion of the transmission or reception of said first or second setting parameters, said control circuit means inhibits the transfer of said first or second setting parameters between said portable setting parameter memory means and said second memory circuit means, said control circuit means being connected to said connector unit means, said operation means and said second memory circuit means.

5,384,719
IMAGE GENERATOR FOR SIMULATING THE ILLUMINATION EFFECTS OF A VEHICLE-MOUNTED LIGHT SOURCE ON AN IMAGE DISPLAYED ON A SCREEN

Stephen J. Baker, Horley; Karl J. Wood, Crawley; Graham J. Olive, and Jeffrey N. Smith, both of Burgess Hill, all of United Kingdom, assignors to Rediffusion Simulation Limited, Sussex, United Kingdom

PCT No. PCT/GB91/00884, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO91/19280, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 3, 1991, Ser. No. 960,402
Claims priority, application United Kingdom, Jun. 1, 1990, 9012273
Int. Cl.[6] G06F 15/60
U.S. Cl. 364—578 18 Claims



1. A method for displaying an image simulating the illumination effects of a vehicle-mounted light source in an image displayed on a screen, the image being intended to represent the appearance of a model structure which is defined in a digital signal database in world space coordinates from an eyepoint position in world space, the model structure being defined in terms of a plurality of structural features each having predetermined structural attributes, and the simulated vehicle-mounted light source being defined in terms of an origin and a direction in eyepoint space, said method comprising the steps of:

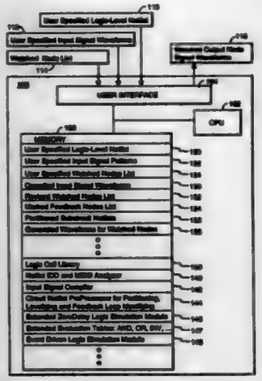
a. determining, for each structural feature potentially contributing to the displayed image, the angular position of a point on that structural feature relative to the light source as the angle between the light source direction and a line drawn to that point from the light source,
b. determining an illumination intensity for that point by reference to said angle,
c. reducing the illumination intensity as a function of the distance from the eyepoint to said point to provide a resultant intensity, and
d. modulating the displayed attributes of the structural feature at said point in a displayed image on said screen as a function of said resultant intensity.

5,384,720

LOGIC CIRCUIT SIMULATOR AND LOGIC SIMULATION METHOD HAVING REDUCED NUMBER OF SIMULATION EVENTS

Tsu-Wei Ku, San Jose; Wei-Kong Chia, Sunnyvale, and Dong-Ru Shieh, Cupertino, all of Calif., assignors to Hitachi Micro Systems Inc., San Jose, Calif.

Filed Jun. 10, 1993, Ser. No. 74,927
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—578 12 Claims



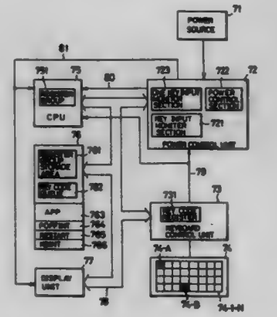
1. A method of simulating the operation of an electronic logic circuit having a multiplicity of logic gates, said method comprising the steps of:
(A) receiving and storing in a computer memory a netlist denoting said logic circuit's components and nodes interconnecting said components; each said component of said logic circuit having at least one input port and at least one output port, said nodes including circuit input nodes and circuit output nodes for said logic circuit;
(B) receiving cell delay data representing signal delays associated with said components in said logic circuit; said delay data for each component representing signal delays from each input port to each output port of said component;
(C) receiving and storing in said computer memory input signal waveforms for input signals applied to said circuit input nodes;
(D) parsing said input signal waveforms into a sequence of variable length time periods in accordance with predefined criteria;
(E) identifying a set of said logic circuit's nodes as watched nodes;
(F) for each said time period, initially simulating operation of said logic circuit without determining when signal transitions on said circuit's nodes occur, said initial simulation step including assigning each signal on each node in said logic circuit an extended boolean value selected from the set consisting of stable signal values (0, 1, x and z), and non-stable signal values, said non-stable signal values including signal values (t0, t1, tx, tz) having a single transition during said time period, and a multiple transition signal value (mt) indicating more than one transition during said time period; said initial simulation stem including evaluating outputs of said logic circuit's components using predefined extended boolean truth tables wherein for each of at least a plurality of said predefined extended boolean truth tables, said each predefined extended logic table specifies at least stable output, having one of said stable signal values, corresponding to a set of input signals that include at least one input signal having one of said non-stable signal values and at least one input signal having one of said stable signal values; and
(G) for each said time period, backtracking through said logic circuit for each respective watched node assigned a non-stable value so as to identify nodes that control said respective watched node and that were assigned non-stable signal values, and then performing event driven simulation of said logic circuit for signal transition events on said identified nodes;
said steps F and G generating simulated waveforms representing signal values on said watched nodes over a defined period of time.

5,384,721

INFORMATION PROCESSING SYSTEM WITH A POWER CONTROL UNIT

Takuma Joto, Shiki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1993, Ser. No. 49,271
Claims priority, application Japan, Apr. 27, 1992, 4-107880
Int. Cl.[6] G06F *1/00*
U.S. Cl. 364—707 8 Claims



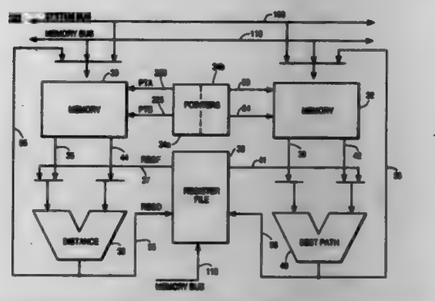
1. An information processing system having a run mode at which said system is powered and a standby mode at which part of said system is powered, comprising:
an input means for inputting information including a keyboard with a plurality of keys;
a first detecting means for detecting a depression of one of said keys for a certain interval of time at said run mode;
a second detecting means for detecting a continuous depression of one of said keys for a predetermined interval of time;
a run mode transfer means for transferring said standby mode to said run mode by a depression of any one of said keys; and
a standby mode transferring means for transferring said run mode to said standby mode, including
a first transferring means for transferring said run mode to said standby mode by a depression of a predetermined one of said keys,
a second transferring means for transferring said run mode to said standby mode in a case where said first detecting means detects no depression of one of said keys for said certain interval of time at said run mode, and
a third transferring means for transferring said run mode to said standby mode in a case where said second detecting means detects said continuous depression of one of said keys for said predetermined interval of time at said run mode.

5,384,722

APPARATUS AND METHOD FOR DETERMINING THE MANHATTAN DISTANCE BETWEEN TWO POINTS

Carol Dulong, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 10, 1993, Ser. No. 28,823
Int. Cl.[6] G06F *7/38*
U.S. Cl. 364—715.01 12 Claims



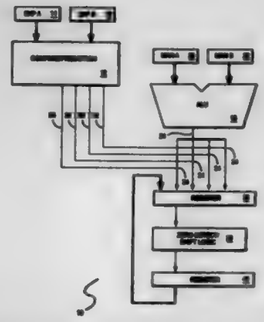
1. An apparatus for performing pattern recognition comprising:
a memory storage area to store operands for execution;
a first arithmetic logic pipeline coupled to the memory storage area for performing distance calculations between points of an unknown pattern and a reference pattern; and
a second arithmetic logic pipeline coupled to the memory storage area for performing best path calculations between said points of said unknown pattern and said reference pattern, said second arithmetic logic pipeline executing in parallel with said first arithmetic logic pipeline;
a first pointer pipeline associated with the first arithmetic pipeline for preparing pointer values for accessing memory to supply operand to the first arithmetic logic pipeline;
a second pointer pipeline associated with the second arithmetic pipeline for preparing pointer values for accessing memory to supply operands to the second arithmetic logic pipeline wherein the first pointer pipeline and the second pointer pipeline operate in parallel with said first arithmetic pipeline and said second arithmetic pipeline; and
wherein first arithmetic logic pipeline includes means for executing instructions to calculate distance between a first point in the unknown pattern and a second point in the reference pattern, the means for executing including:
means for providing a first operand specified within a first instruction during a first instruction cycle and a third operand specified within a second instruction during a second instruction cycle immediately following the first instruction cycle;
means for providing a second operand specified within said first instruction during a first instruction cycle and a fourth operand specified within the second arithmetic instruction during the second instruction cycle;
first means coupled to receive the first operand and the second operand in the first instruction cycle for subtracting the first operand from the second operand to generate a first result during the first instruction cycle, wherein the first means is also coupled to receive the third operand and the fourth operand in the second instruction cycle for subtracting the third operand from the fourth operand to generate a third result during the second instruction cycle;
second means coupled to receive the first operand and the second operand in the first instruction cycle for subtracting the second operand from the first operand to generate a second result during the first instruction cycle, wherein the second means is also coupled to receive the third operand and the fourth operand in the second instruction cycle for subtracting the fourth operand from the third operand to generate a fourth result during the second instruction cycle; and
a multiplexer coupled to receive the first result and the second result during the first instruction cycle to select the positive of either the first result or the second result during the first instruction cycle, such that the absolute value of the difference between the first operand and the second operand is produced in the first instruction cycle, and wherein the multiplexer is also coupled to receive the third result and the fourth result during the second instruction cycle to select the positive of either the third result or the fourth result during the second instruction cycle, such that the absolute value of the difference between the third operand and the fourth operand is produced in the second instruction cycle,
wherein the first pointer pipeline and the second pointer pipeline prepare pointer values during the first instruction cycle to allow the third operand and the fourth operand to be available at the second instruction cycle to the means for executing, wherein the first arithmetic pipeline calculates distance between the first point in the unknown pattern and the second point in the reference pattern in consecutive cycles.

5,384,723

METHOD AND APPARATUS FOR FLOATING POINT NORMALIZATION

Faraydon O. Karim, Round Rock, and Christopher H. Olson, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 786,136, Oct. 31, 1991, abandoned.
This application Feb. 28, 1994, Ser. No. 205,123
Int. Cl.[6] G06F *7/38*
U.S. Cl. 364—748 14 Claims



1. A method for normalizing floating point arithmetic results of arithmetic operations performed on floating point numbers A and B, said A and B each having at least an exponential portion and a mantissa portion, comprising the steps of:
comparing the relative magnitude of said exponential portion of A with said exponential portion of B, substantially simultaneously with performing an arithmetic operation on said mantissa portion of A and said mantissa portion of B, the mantissa portions being pre-aligned, to generate at least one normalization prediction control signal; and
normalizing a result of said arithmetic operation in propor-

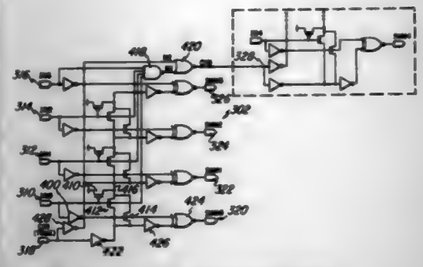
tion to a difference in the relative magnitudes as specified by said at least one prediction control signal.

5,384,724

ELECTRONIC CIRCUIT AND METHOD FOR HALF ADDER LOGIC

Shyam S. Jagial, Secunderabad, India, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 5, 1991, Ser. No. 755,199
Int. Cl.[6] G06F *7/50, 7/00*
U.S. Cl. 364—770 **12 Claims**



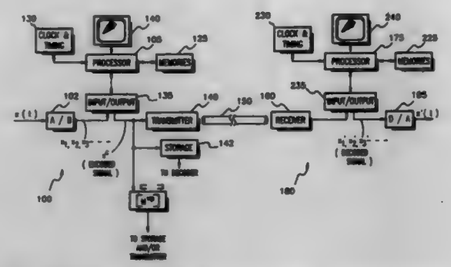
1. An N bit incrementer circuit comprising:
a set of N input terminals, each input terminal receiving a corresponding bit signal of an N bit number to be incremented;
a carry input terminal for receiving a carry input signal to a least significant bit of said N bit number to be incremented;
a set of N output terminals, each output terminal generating a corresponding incremented bit of said N bit number to be incremented;
a carry output terminal for generating a carry output signal from a most significant bit of each N bit number to be incremented;
a set of N-1 half adder circuits, one half adder circuit for each bit of said N bit number to be incremented except for said most significant bit, each half adder circuit connected to a corresponding input terminal for receiving a corresponding bit input signal and receiving a ripple carry signal, a least significant half adder circuit connected to said carry input terminal for receiving a ripple carry signal, each other half adder circuit connected to a prior half adder circuit for receiving a ripple carry signal from said prior half adder circuit, each half adder circuit including
a sum circuit connected to a corresponding output terminal for forming an arithmetic sum on said corresponding output terminal from said corresponding bit signal and said received ripple carry signal,
a ripple carry circuit connected to said corresponding input terminal for forming a ripple carry signal for supply to a next half adder circuit from said corresponding bit input signal and said received ripple carry signal;
a most significant bit half adder circuit connected to a most significant bit input terminal for receiving a most significant bit input signal and receiving a ripple carry signal from a prior half adder circuit, said most significant half adder circuit including a sum circuit connected to a corresponding output terminal for forming an arithmetic sum on said corresponding output terminal from said corresponding bit signal and said received ripple carry signal, said most significant bit half adder circuit having no ripple carry circuit;
a carry look-ahead circuit including
an inverter having an input connected to said carry input terminal and an output
a NAND gate having N inputs, each input connected to a corresponding input terminal, and an output
a NOR gate having a first input connected to said output of said inverter and a second input connected to said output of said NAND gate and an output connected to said carry output terminal.

5,384,725

METHOD AND APPARATUS FOR ENCODING AND DECODING USING WAVELET-PACKETS

Ronald Coifman, North Haven, Conn.; Yves Meyer, 49 Boulevard Saint Marcel, Paris, France 75013 , and Mladen V. Wickerhauser, New Haven, Conn., assignors to Yale University, New Haven, Conn. and Yves Meyer

Filed May 18, 1990, Ser. No. 525,973
Int. Cl.[6] G06G *7/00*; G06F *15/31, 7/38*
U.S. Cl. 364—807 **2 Claims**



1. Apparatus for encoding and decoding an input audio or video signal, comprising:
means for converting the signal to digital form;
a memory;
means for applying combinations of dilations and translations of a wavelet to the digitized input signal to obtain processed values, and for storing said processed values in said memory;
means for computing the information costs of the stored processed values;
means for selecting, as encoded signals, an orthogonal group of stored processed values, the selection being dependent on the computed information costs;
means for transmitting the encoded signals;
means for receiving the transmitted encoded signals; and
means for decoding the received encoded signals to obtain an output signal.

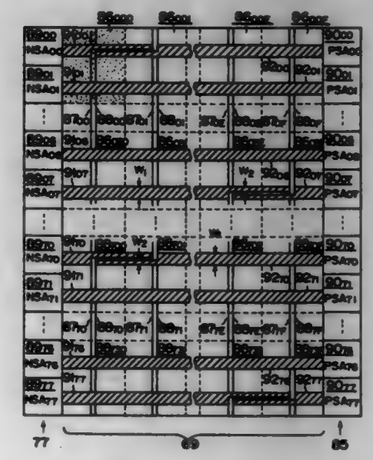
5,384,726

SEMICONDUCTOR MEMORY DEVICE HAVING A CAPABILITY FOR CONTROLLED ACTIVATION OF SENSE AMPLIFIERS

Hiroyoshi Tomita; Makoto Yanagisawa, and Yukinori Kodama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 8, 1994, Ser. No. 193,535
Claims priority, application Japan, Mar. 18, 1993, 5-059109; Mar. 18, 1993, 5-059110
Int. Cl.[6] G11C *5/06*
U.S. Cl. 365—63 **7 Claims**

1. A semiconductor memory device, comprising:
a memory cell array provided on a semiconductor chip and including a plurality of memory cells aligned in rows and columns, each of said memory cells storing therein information, said memory cell array being defined by a boundary including first and second, mutually opposing edges each extending in a column direction;
a plurality of sense amplifier columns provided on said memory cell array, each of said plurality of sense amplifier columns including a plurality of sense amplifiers aligned in said column direction;
a plurality of drive line pairs provided on said memory cell array in correspondence to said plurality of sense amplifier columns, each of said drive line pairs including first and second drive lines extending in said column direction, each of said drive line pairs supplying an electric power to a plurality of sense amplifiers included in a corresponding sense amplifier column;
a first driver circuit provided on said semiconductor chip at a location outside said memory cell array for producing a first drive current;
a second driver circuit provided on said semiconductor chip at a location outside said memory cell array for producing a second drive current;
a first trunk pattern extending from said first driver for carrying said first drive current, said first trunk pattern extending in a row direction over said memory cell array from said first edge toward said second edge across a plurality of sense amplifier columns and connected to first drive lines in said plurality of drive line pairs corresponding to said plurality of sense amplifier columns that said first trunk pattern has crossed;
a second trunk pattern extending from said second driver for carrying said second drive current, said second trunk



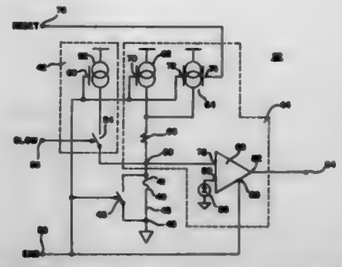
pattern extending in a row direction over said memory cell array from said second edge toward said first edge across a plurality of sense amplifier columns and connected to second drive lines in said plurality of drive line pairs corresponding to said plurality of sense amplifier columns that said second trunk pattern has crossed;
said first trunk pattern having a width that decreases from said first edge of said memory cell array toward said second edge, such that said first trunk has a first width at said first edge and a second, smaller width at a free end of said first trunk pattern;
said second trunk pattern having a width that decreases from second first edge of said memory cell array toward said first edge, such that said second trunk has a width substantially equal to said first width at said second edge and a smaller width substantially equal to said second width at a free end of said second trunk pattern;
said first and second trunk patterns being so disposed that said first and second trunk patterns extend over said memory cell array in correspondence to a hypothetical strip-like area extending from said first edge to said second edge of said memory cell array with a constant width substantially equal to said first width.

5,384,727

FUSE TRIMMING IN PLASTIC PACKAGE DEVICES

Miki Moyal; Thomas Brennan, and Gene Vance, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 8, 1993, Ser. No. 149,191
Int. Cl.[6] G11C *17/16*
U.S. Cl. 365—96 **24 Claims**



1. An apparatus for use with an electrical circuit, said circuit including a plurality of circuit elements, said plurality of circuit elements being arranged for switchable electrical coupling of at least one respective circuit element of said plurality of circuit elements within said circuit; said at least one respective circuit element being responsive to a code to electrically include said at least one respective circuit element within said circuit when said code has a first value and to electrically exclude said at least one respective circuit element from said circuit when said code has a second value; the apparatus comprising:
an electrically interruptible circuit element; said interruptible circuit element establishing a potential at a locus within the apparatus; said potential being at a first potential level when said interruptible circuit element is in an interrupted state, said potential being at a second potential level when said interruptible circuit element is in a noninterrupted state;
a level reading unit operatively connected with said interruptible circuit element; said level reading unit generating said code at one of said first value and said second value when said potential is at said first potential level, said level reading unit generating said code at the other of said first value and said second value when said potential is at said second potential level;
a state altering unit operatively connected with said interruptible circuit element; said state altering unit being configured to change said interruptible circuit element from said noninterrupted state to said interrupted state in response to a first control signal; and
a control circuit operatively connected with said state altering unit; said control circuit generating said first control signal.

5,384,728

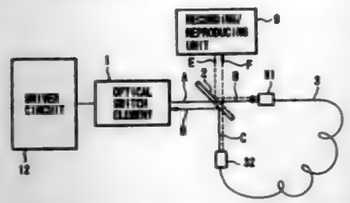
OPTICAL INFORMATION STORAGE APPARATUS USING OPTICAL FIBER

Yutaka Yamanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,996
Claims priority, application Japan, May 29, 1992, 4-138134
Int. Cl.[6] G11C *19/30, 13/04*
U.S. Cl. 365—114 **12 Claims**

1. An optical information storage apparatus comprising:
an optical switch element for receiving an optical input and emitting an optical output only when the optical input is equal to or greater than a predetermined level; and
an optical fiber having a first end face and a second end face, the optical fiber constituting a first optical path for receiving the optical output emitted from said optical switch

element through at least one of said first and second end faces, guiding the optical output, and emitting an output

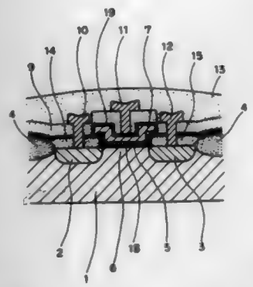


beam, constituting the optical input, onto said optical switch element.

5,384,729
SEMICONDUCTOR STORAGE DEVICE HAVING FERROELECTRIC FILM

Katsumi Sameshima, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 26, 1992, Ser. No. 966,495
Claims priority, application Japan, Oct. 28, 1991, 3-281624; Oct. 28, 1991, 3-281625; Oct. 28, 1991, 3-281626; Oct. 29, 1991, 3-282887; Oct. 29, 1991, 3-282888
Int. Cl.[6] G11C *11/22*
U.S. Cl. 365—145 **6 Claims**

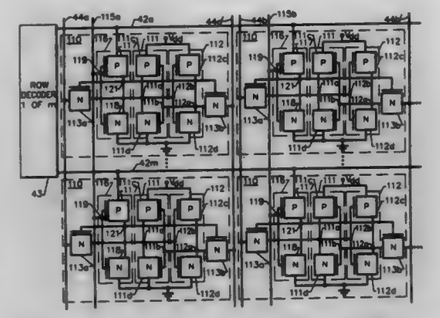


1. A semiconductor storage device of which each cell comprising:
a semiconductor substrate;
a source region;
a drain region;
a channel region;
a ferroelectric film;
a gate electrode,
the source region and the drain region being formed in the semiconductor substrate, a region of the substrate between the source region and the drain region serving as the channel region, the ferroelectric film being one of directly formed on the channel region and being formed on the channel region with a gate insulating film interposed between the ferroelectric film and the channel region, and the gate electrode being formed on the ferroelectric film; and
a film of low dielectric constant formed on the source region and the drain region, the film of low dielectric constant and the ferroelectric film are flush with each other, and an edge of the gate electrode is extended and positioned on the film of low dielectric constant.

5,384,730
COINCIDENT ACTIVATION OF PASS TRANSISTORS IN A RANDOM ACCESS MEMORY

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 940,299, Sep. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 742,649, Aug. 7, 1991, Pat. No. 5,305,269, which is a continuation-in-part of Ser. No. 708,459, May 31, 1991, Pat. No. 5,304,874. This application Mar. 23, 1994, Ser. No. 216,776
Int. Cl.[6] G11C *11/00*
U.S. Cl. 365—156 **48 Claims**

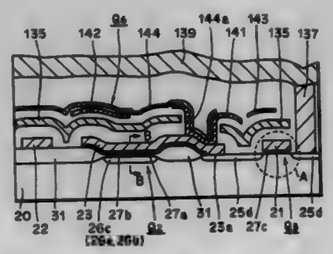


1. A Random Access Memory (RAM) comprising:
an array of memory cells arranged in rows and columns, each of said memory cells storing therein a binary digit, each of said memory cells including a pair of pass transistors for providing external access to said memory cell, each of said pass transistors including a controlling electrode; and
coincident pass transistor activation means, for activating the controlling electrodes of the pair of pass transistors in a memory cell only upon simultaneous selection of both the associated row and the associated column of the memory cell, and for preventing activation of the controlling electrodes in the pair of pass transistors in a memory cell otherwise.

5,384,731
SRAM MEMORY STRUCTURE AND MANUFACTURING METHOD THEREOF

Hirotada Kuriyama; Yukio Maki, and Yoshio Kohno, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1994, Ser. No. 194,367
Claims priority, application Japan, Feb. 10, 1993, 5-023033; Dec. 8, 1993, 5-307838
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—182 **16 Claims**

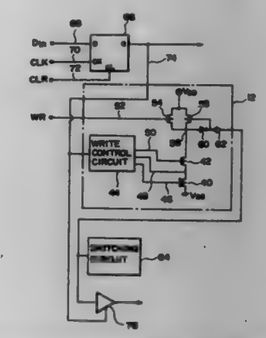


16. A semiconductor memory device, including a static memory cell having a pair of driver transistors of first type conductivity and a pair of load transistors of second type conductivity constituting a flipflop circuit, and a pair of access transistors, comprising:
a semiconductor substrate having a main surface;
a first field effect transistor forming each of said driver transistors formed on the main surface of said semiconductor substrate; and
a second field effect transistor forming each of said access transistors formed on the main surface of said semiconductor substrate, wherein
said first field effect transistor includes
a first gate insulating film formed on the main surface of said semiconductor substrate and having a first thickness and first dielectric constant, and
a first gate electrode formed on said first gate insulating film,
said second field effect transistor includes
a second gate insulating film formed on the main surface of said semiconductor substrate and having a second thickness and second dielectric constant, and
a second gate electrode formed on said second gate insulating film, and
the ratio of the first dielectric constant to the first thickness is greater than the ratio of the second dielectric constant to the second thickness.

5,384,732
SEMICONDUCTOR DEVICE COMPRISING A FUNCTION CHANGE OVER SWITCHING CIRCUIT HAVING A NON-VOLATILE STORAGE DEVICE

Tatsuo Nishimaki, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 82,090
Claims priority, application Japan, Jul. 3, 1992, 4-176368; Jun. 21, 1993, 5-149484
Int. Cl.[6] H03K *19/177*
U.S. Cl. 365—185 **10 Claims**

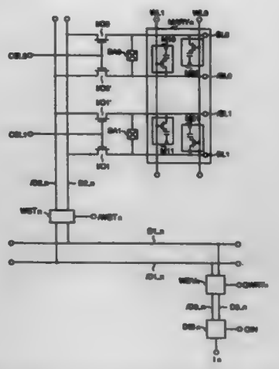


1. A semiconductor device comprising a nonvolatile storage device which is writable electrically, and a switching circuit which is controlled on the basis of data stored in said nonvolatile storage device to perform wiring switching, wherein said nonvolatile storage device includes a nonvolatile element writable electrically, a stored data output circuit for reading data written in said nonvolatile element in order to check said data, a write control circuit for writing data in said nonvolatile element, and a data holding circuit for reading data written in said nonvolatile element and for holding said data.

5,384,733
SEMICONDUCTOR MEMORY DEVICE

Atsushi Sueoka, and Hiroyuki Koinuma, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 9, 1993, Ser. No. 73,509
Claims priority, application Japan, Jul. 23, 1992, 4-197207
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.01 **5 Claims**



1. A semiconductor memory device having a plurality of bits comprising:
an input buffer for receiving an external data and providing a first output signal;
a first and second data line;
a first write circuit for inputting a first control signal, an operation signal and the first output signal from the input buffer, the first write circuit outputting a second output signal on the first data line; and
a second write circuit for inputting a second control signal and the second output signal from the first data line, the second write circuit outputting a third output signal on the second data line, the operation signal being a non-common signal for all bits, and the second control signal being a common signal for at least two bits; wherein
during a data writing operation and for bits where the operation signal is in an non-enable state, the first write circuit transfers data from the input buffer to the first data line when the first control signal becomes enabled, and the second write circuit transfers data from the first data line to the second data line when the second control signal becomes enabled; and
for bits where the operation signal is in an enabling state, the first write circuit sets the first data line to a fixed data state independent of data outputted from the input buffer when the first control signal becomes enabled, and in response to the fixed state of the first data line, the second write circuit goes into a predetermined output state.

5,384,734
MULTIPORT MEMORY DEVICE AND AN OPERATION METHOD THEREOF

Kumiko Tsujihashi; Yoshiki Tsujihashi, and Hirofumi Shinohara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 956,137
Claims priority, application Japan, Mar. 17, 1992, 4-060673
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.04 **9 Claims**

1. A multiport memory device, comprising:
at least a first port and a second port;
a plurality of memory cells for storing data;

a plurality of access means for accessing any of said plurality of memory cells independently, said plurality of access means enabling simultaneous access for writing and reading data to and from any of said plurality of memory cells via said first and second ports;

inhibit means providing a signal to said plurality of the access means for inhibiting simultaneous access to the same memory cell by at least two access means in accordance with a predetermined inhibit condition; and

a plurality of word line groups connected to said plurality of memory cells and at least one bit line group connected to said plurality of memory cells, wherein

said inhibit means comprises

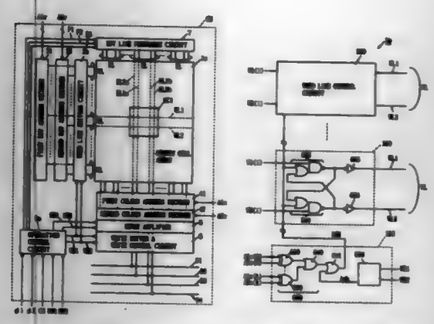
signal generating means for generating an inhibit state setting signal in accordance with said predetermined inhibit conditions, and

control means responsive to said inhibit state setting means for inhibiting, when accesses to the same memory cell by at least two access means are in contention, simultaneous accesses to the same memory cell;

said plurality of access means include a plurality of word line selecting means;

each of said plurality of word line groups includes

a plurality of word lines corresponding to said plurality of word line selecting means;



each of said at least one bit line group includes a plurality of bit lines corresponding to said plurality of word lines;

each of said plurality of word line selecting means selects one of corresponding word lines within said plurality of word line groups in response to an address signal;

said signal generating means generates said inhibit state setting signal in response to a plurality of read/write control signals provided corresponding to said plurality of access means;

said control means includes driving means responsive to said inhibit state setting signal for driving, when at least two word line selecting means select word lines in the same word line group, a word line selected by one of said at least two word line selecting means;

each of said plurality of memory cells comprises

holding means for hold data, and

a plurality of transfer gate means respectively connected between said holding means and a plurality of bit lines in a corresponding bit line group, and respectively controlled by potentials of a plurality of word lines in a corresponding word line group; and

said driving means drives a word line selected by word line selecting means which initiated a selecting operation the earliest in response to said inhibit state setting signal, when at least two word line selecting means select word lines in the same word line group.

5,384,735

DATA OUTPUT BUFFER OF A SEMICONDUCTOR MEMORY DEVICE

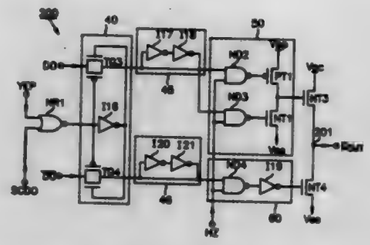
Churoo Park, and Yun-Ho Choi, both of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 4, 1993, Ser. No. 130,131

Claims priority, application Rep. of Korea, Oct. 2, 1992, 1992/18132

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **8 Claims**



1. A semiconductor memory device data output circuit using an externally supplied clock of a constant period comprising:

a delay circuit which outputs different first and second delayed signals from said clock having first and second delay time periods;

a selecting circuit for receiving said first and second delayed signals generated from said delay circuit and selecting one of said first and second delayed signals according to a predetermined control signal; and

a data output buffer for outputting data in response to said selected delayed signal from said selecting circuit and a latency information signal.

5,384,736

DATA OUTPUT CIRCUIT OF A SEMICONDUCTOR MEMORY DEVICE

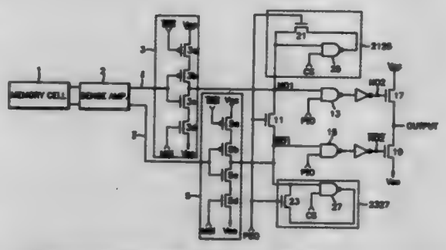
Chul-Min Jung, Seoul, and Young-Ho Suh, Kyungki, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Nov. 1, 1993, Ser. No. 143,895

Claims priority, application Rep. of Korea, Oct. 30, 1992, 1992-20208

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **15 Claims**



1. A data output circuit of a semiconductor memory device including first data output means, and second data output means for receiving the output of said first data output means and an equalizing signal, comprising:

threshold voltage controlling means disposed between said first data output means and said second data output means, for matching the output level of said first data output means with the logic threshold voltage of said second data output means, wherein said threshold voltage controlling means comprises:

a MOS transistor;

a logic gate having substantially the same channel and the same logic threshold voltage as that of said second data output means;

an input of said second data output means and an input of said logic gate being coupled in common to an output of said first data output means; and,

the channel of said MOS transistor being connected between the output of said first data output means and the output of said logic gate.

5,384,737

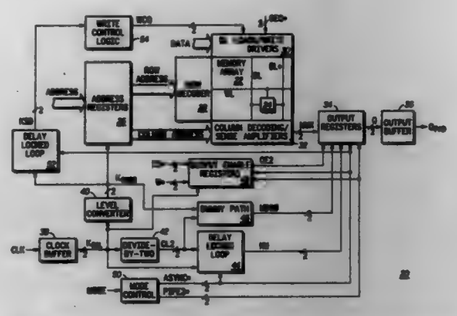
PIPELINED MEMORY HAVING SYNCHRONOUS AND ASYNCHRONOUS OPERATING MODES

Lawrence F. Childs; Kenneth W. Jones; Stephen T. Flannagan, and Ray Chang, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 8, 1994, Ser. No. 207,509

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.05 **20 Claims**



15. A pipelined static random access memory having synchronous and asynchronous operating modes, comprising:

a plurality of memory cells, each memory cell of the plurality of memory cells coupled to a bit line pair and to a word line;

a column decoding circuit, coupled to the plurality of memory cells, for providing a data signal corresponding to data stored in a selected memory cell during a read cycle of the memory;

an output register, having an input terminal coupled to the column decoding circuit, and an output terminal, the output register for receiving the data signal from the column decoding circuit, the output register responsive to a first clock signal;

a plurality of series connected output enable registers, coupled to the output register, for delaying the data signal for three clock cycles of the first clock signal during operation of the pipelined integrated circuit in a three-stage pipelining mode, for delaying the output data for two clock cycles of the first clock signal during operation of the pipelined integrated circuit memory in a two-stage pipelining mode, and for delaying the output data for one clock cycle of the first clock signal during operation of the pipelined integrated circuit memory in the asynchronous operating mode; and

a switch having an input terminal for receiving the data signal from the column decoding circuit, a control terminal for receiving the output enable signal, and an output terminal coupled to the input terminal of the output register.

5,384,738

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

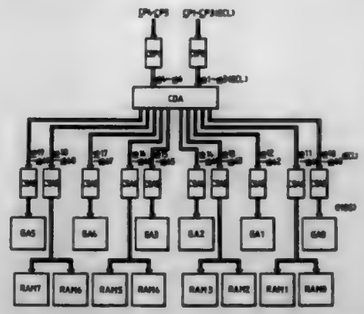
Shuuichi Miyaoka; Kazuhisa Miyamoto, both of Ohme; Masanori Odaka, Kodaira; Hideo Sawamoto, Hadano; Michiaki Nakayama, Ohme; Mitsuya Kusanoki, Ohme; Masato Ikeda, Ohme; Takashi Ogata, Ohme; Kouji Kobayashi, Ohme; Masao Kato, Hadano, and Tsutomu Sumimoto, Hadano, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer System, Ltd., Tokyo, Japan

Continuation of Ser. No. 589,515, Sep. 28, 1990, Pat. No. 5,291,445. This application Feb. 1, 1994, Ser. No. 189,636

Claims priority, application Japan, Sep. 29, 1989, 1-251894; Oct. 23, 1989, 1-275159; Dec. 4, 1989, 1-314665; Dec. 19, 1989, 1-329192; Jan. 26, 1990, 2-14946; Jan. 29, 1990, 2-18388; Mar. 30, 1990, 2-87222

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.08 **37 Claims**



9. A semiconductor integrated circuit device formed on a semiconductor substrate comprising:

a clock distribution circuit coupled to receive first internal clock signals and for outputting second internal clock signals, said first internal clock signals and said second internal clock signals being of an ECL level;

a first clock switching amplifier coupled to receive said second internal clock signals and for outputting first distribution signals, said first distribution signals being of a MOS level;

a second clock switching amplifier coupled to receive said second internal clock signals and outputting second distribution signals, said second distribution signals being said MOS level;

a first memory for storing data therein, wherein said first memory is coupled to receive said first distribution signals; and

a second memory for storing data therein, wherein said second memory is coupled to receive said second distribution signals.

5,384,739

SUMMING CIRCUIT WITH BIASED INPUTS AND AN UNBIASED OUTPUT

Brent Keeth, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Jun. 10, 1993, Ser. No. 76,073

Int. Cl.[6] G05F *3/16*

U.S. Cl. 365—189.09 **19 Claims**

1. An integrated circuit comprising a first circuit for providing a first signal and a second circuit coupled to the first circuit and responsive to the first signal, the first circuit comprising:

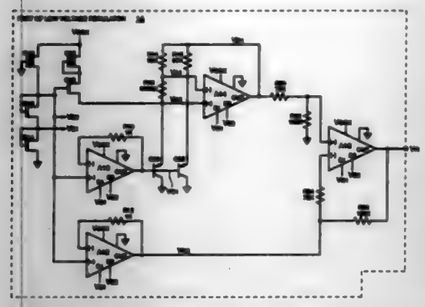
a. a summing circuit responsive to a plurality of input signals for providing a sum signal corresponding to the sum of the input signals;

b. a first source, providing a first reference signal;

c. means, coupled to the first source and to the summing

circuit, for selectively combining the first reference signal with at least one input signal;

d. a second source, providing a second reference signal, coupled to the summing circuit for combining the second



reference signal with each input signal of the plurality; and

e. means, coupled to the summing circuit and to the second source, for subtracting the second reference signal from the sum signal to provide the first signal.

5,384,740

REFERENCE VOLTAGE GENERATOR

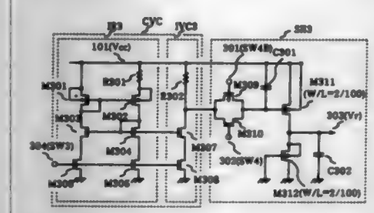
Jun Etoh, Hachioji; Yoshinobu Nakagome, Hamura; Hitoshi Tanaka, Ome; Koji Kawamoto, Tottori, and Masakazu Aoki, Tokorozawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi ULSI Engineering, both of Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,724

Claims priority, application Japan, Dec. 24, 1992, 4-343808

Int. Cl.[6] G11C *7/00*; G05F *3/20*

U.S. Cl. 365—189.09 **13 Claims**



1. A reference voltage generator comprising:

a constant voltage generator coupled between a first operation potential and a second operation potential; and

a voltage sampling means for sampling an output voltage of said constant voltage generator;

wherein said constant voltage generator includes:

first and second MOS transistors; and

a first switching means coupled between said first operation potential and said second operation potential so as to be connected in series to respective source-drain paths of said first and second MOS transistors;

wherein said constant voltage generator serves to output, at a first output terminal, a first voltage proportional to a difference between threshold voltages of said first and second MOS transistors;

wherein said voltage sampling means includes:

a second switching means having one end coupled with said first output terminal of said constant voltage generator; and

a first capacitor connected to the other end of said second switching means to thereby store said first voltage of said constant voltage generator; and

wherein after said first capacitor of said voltage sampling means is charged with said first voltage of said constant voltage generator, said second switching means of said voltage sampling means is turned off and then said first switching means of said constant voltage generator is turned off to thereby reduce a current consumed by said constant voltage generator.

5,384,741

SEMICONDUCTOR MEMORY DEVICE ADAPTED FOR PREVENTING A TEST MODE OPERATION FROM UNDESIRABLY OCCURRING

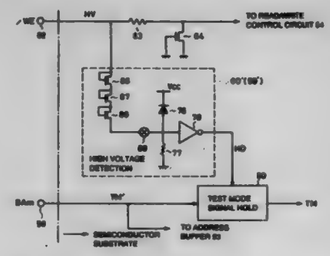
Yoshiyuki Haraguchi, and Yutaka Arita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 51,405, Apr. 23, 1993, Pat. No. 5,305,267. This application Jan. 27, 1994, Ser. No. 186,955

Claims priority, application Japan, Jun. 25, 1992, 4-166475

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **12 Claims**



1. A semiconductor memory device, comprising:

a first terminal for receiving a high voltage which is externally applied and exceeds a power supply potential;

a second terminal for receiving an externally applied test mode signal;

high voltage detecting means for detecting that a high voltage signal has been applied through said first terminal;

test mode signal holding means responsive to said high voltage detecting means for holding the test mode signal applied through said second terminal;

test circuit means responsive to the test mode signal held in said test mode signal holding means for performing a test in said semiconductor memory device;

disabling means for disabling a detecting operation by said high voltage detecting means when the test should not be carried out by said test circuit means.

5,384,742

NON-VOLATILE SEMICONDUCTOR MEMORY

Tadashi Miyakawa, and Masamichi Asano, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCT/JP91/01272, § 371 Date Mar. 25, 1993, § 102(e) Date Mar. 25, 1993, PCT Pub. No. WO92/05560, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 25, 1991, Ser. No. 30,343

Claims priority, application Japan, Sep. 25, 1990, 2-254750

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—218 **23 Claims**

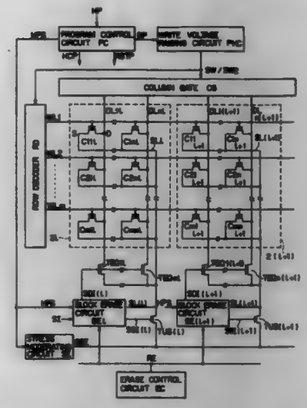
1. A non-volatile semiconductor memory, comprising:

a memory cell array having a plurality of non-volatile memory cells disposed in a matrix form, each of said memory cells having a corresponding one of a plurality of control gates, floating gates, sources and drains, the control gates of the memory cells on a same row being connected to a same word line, the drains of the memory cells on a same column being connected to a same data line, said memory cell array being divided into a plurality of blocks, each

having said memory cells disposed in the matrix form, the sources of the memory cells within each of the same blocks being connected to a common erase line;

a row decoder connected to said plurality of word lines for activating a desired one of said plurality of word lines;

a column gate connected to said plurality of data lines for activating a desired one of said plurality of data lines; and



a plurality of block erase means, each having a plurality of output terminals, one of said plurality of output terminals from each of said block erase means being connected to said common erase line of a corresponding one of said blocks, said block erase means applying a moderating voltage to a predetermined one of said blocks not selected for a data write during a data write mode, and said moderating voltage moderating the stress between said control gates and one of said sources and drains.

5,384,743

STRUCTURE AND METHOD FOR FLASH EPROM MEMORY ERASABLE BY SECTORS

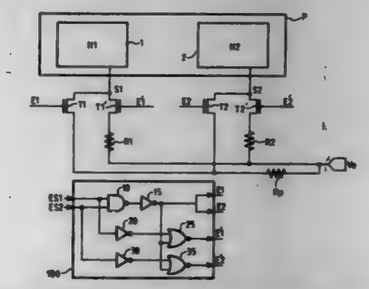
Olivier Roux, Provence, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Filed Mar. 8, 1993, Ser. No. 27,110

Claims priority, application France, Mar. 6, 1992, 92-02700

Int. Cl.[6] G11C *16/06*

U.S. Cl. 365—218 **19 Claims**



16. A flash EPROM memory, having a memory map divided into sectors having sources comprising resistive elements to apply an erasing voltage to said sources of sectors selected to be erased, wherein said memory comprises routing means enabling the assigning of a predetermined resistive element to several sectors selected simultaneously to be erased, so as to apply the erasing voltage to said resistive element.

5,384,744

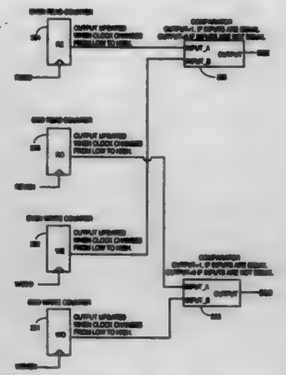
LOOK AHEAD FLAG FOR FIFO

Tsu-Wei F. Lee, Monte Sereno, Calif., assignor to Paradigm Technology, Inc., Santa Clara, Calif.

Filed Nov. 23, 1992, Ser. No. 981,158

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—221 **8 Claims**



1. An apparatus for providing a flag signal indicating a status of a FIFO buffer to a device communicating data through the FIFO buffer, the apparatus comprising:

a look ahead signal generator having a plurality of output leads, the look ahead signal generator generating a plurality of possible flag signals one on each of the plurality of output leads, each of the possible flag signals corresponding to a possible state of the FIFO buffer and indicating the status of the FIFO buffer if the FIFO buffer is in the corresponding state; and

a signal selector having a plurality of input leads and an output lead, the output lead carrying the flag signal provided to the device communicating data through the FIFO buffer the plurality of input leads of the signal selector being electrically coupled to the plurality of output leads of the look ahead signal generator, the signal selector setting the flag signal on the output lead of the signal selector by selecting one of the possible flag signals generated by the look ahead signal generator.

5,384,745

SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICK

Yasuhiro Konishi; Takayuki Miyamoto; Takeshi Kajimoto, and Hiroshi Iwamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 46,333

Claims priority, application Japan, Apr. 27, 1992, 4-107424; Jun. 15, 1992, 4-155026

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.03 **22 Claims**

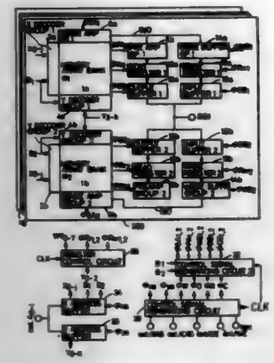
1. A synchronous semiconductor memory device taking in control signals and external signals including address signals having bank addresses and input data in synchronization with a clock signal in a form of a series of pulses, comprising:

a memory cell array including a plurality of memory cells, said memory cell array including a plurality of banks activated for memory cell selection independent from each other in accordance with the bank addresses included in the address signals, and one of the bank addresses designating one of the banks;

a plurality of write data register means provided corresponding to each of said plurality of banks for storing write data to the corresponding bank; and

a plurality of read register means provided corresponding to

each of said plurality of banks for storing data read from the corresponding bank,



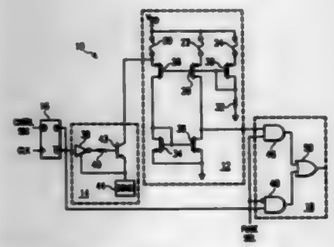
wherein a data read or write operation is performed only for the one of the banks designated by the one of the bank addresses.

5,384,746

CIRCUIT AND METHOD FOR STORING AND RETRIEVING DATA

William H. Giolma, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 28, 1994, Ser. No. 188,177
Int. Cl.[6] G11C *11/00, 17/00*
U.S. Cl. 365—225.7 20 Claims



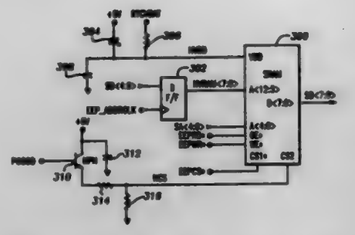
1. A circuit for storing and retrieving data, comprising:
a data fuse for storing a data value represented by a state of the data fuse;
a test fuse for comparing with said data fuse;
a first current mirror coupled to said data and test fuses and operable to establish a current in each of said data and test fuses;
a second current mirror comprising first and second transistors coupled to said first current mirror for comparing said data fuse with said test fuse, wherein current from said data fuse is provided to said first transistor for establishing a current in said second transistor, an output of said second current mirror operable to receive current from said test fuse, said transistors sized in a predetermined ratio such that said output of said second current mirror provides a first predetermined voltage value if said data fuse is in a first predetermined state and said output provides a second predetermined voltage value if said data fuse is in a second predetermined state.

5,384,747

CIRCUIT FOR PLACING A MEMORY DEVICE INTO LOW POWER MODE

Steven J. Clohset, Cypress, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jan. 7, 1994, Ser. No. 178,496
Int. Cl.[6] G11C *5/14*; H03K *17/24*
U.S. Cl. 365—226 12 Claims



1. A circuit for placing a memory device having a power supply voltage input and a select input for use in a computer system into a low power state when the computer system is shut off, the computer system having a power supply that provides a first voltage and a second voltage, the first voltage being higher then the second voltage, wherein the first voltage is deasserted when the computer system is shut off but the second voltage remains active, and wherein the select input being asserted high allows the memory device to enter into active mode and the select input being deasserted low causes the memory device to enter into low-power standby mode, the circuit comprising:
means connected to the memory device power supply voltage input and to the first and second voltages for connecting the power supply voltage input to the first voltage if the computer system is on and for connecting the power supply voltage input to the second voltage if the computer system is off;
means connected to the memory device power supply voltage input and said voltage connection means for gradually decreasing the voltage at the memory device power supply voltage input from the first voltage to the second voltage when the computer system is shut off; and
means connected to the select input of the memory device for deasserting the voltage at the select input low before the voltage at the memory device power supply voltage input is decreased to the second voltage when the computer system is shut off.

5,384,748

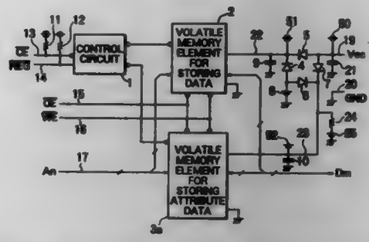
MEMORY CARD WITH TWO SRAM ARRAYS WITH DIFFERENT DATA HOLDING VOLTAGES AND POWER BACK-UP

Yoshikado Sanemitsu, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1993, Ser. No. 130,876
Claims priority, application Japan, Oct. 7, 1992, 4-268953
Int. Cl.[6] G11C *11/412, 11/417*
U.S. Cl. 365—229 10 Claims

1. A memory card comprising:
first volatile memory means for storing data and having a minimum data holding voltage;
second volatile memory means for storing at least attribute data concerning attributes of said memory card, said second volatile memory means including memory cells having a minimum data holding voltage lower than the minimum data holding voltage of said first volatile memory means;
signal transmission means for transmitting data signals, address signals, and control signals between said first and second volatile memory means and an external device;

control means connected to said signal transmission means for selectively setting said first and second volatile memory means in an operable state in response to a signal from the external device;
an internal power source line for supplying power from the external device to said first and second volatile memory means; and



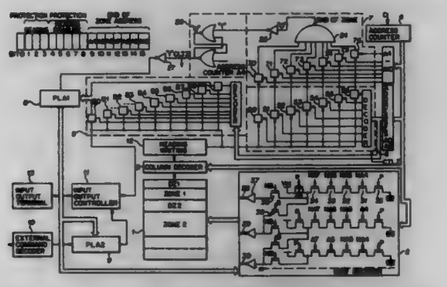
a primary cell connected to said internal power source line for supplying a data holding voltage to said first and second volatile memory means to back up said first and second memory means when no power is supplied from said external device.

5,384,749

CIRCUIT FOR THE MANAGEMENT OF MEMORY WORDS

Mathieu Lisart, and Laurent Sourgen, both of Aix en Provence, France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Jul. 23, 1993, Ser. No. 96,687
Claims priority, application France, Jul. 24, 1992, 92 09195
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—230.01 20 Claims



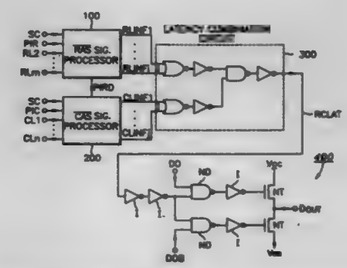
8. A memory system, comprising:
a memory that is partitioned into a plurality of contiguous zones, each zone including a plurality of memory words having consecutive addresses, the memory further including a plurality of zone descriptors, each zone descriptor corresponding to a respective zone and including a first group of bits indicating an authorized mode of operation for the zone and a second group of bits indicating the end word address of the zone;
a decision circuit that determines whether a mode of operation for an accessed memory word, such as reading, writing and erasing, is authorized;
an address counter that generates consecutive memory address signals;
a row decoder, coupled to the address counter, that decodes the address signals and provides access to the memory words;
first and second storage circuits, responsive to the memory, to store each zone descriptor read from the memory, the first storage circuit storing the first group of zone descriptor bits indicating the mode of management for the memory zone corresponding to the zone descriptor, the second storage circuit storing the second group of zone descriptor bits indicating the end address of the corresponding memory zone;
means for coupling the first storage circuit to the decision circuit so that when the decision circuit is loaded, it is updated with the mode of management stored in the first storage circuit; and
a comparator to compare a current address generated by the address counter with the address stored in the second storage circuit and to assert an update signal that updates the decision circuit when the two addresses match, whereby the decision circuit is updated with the mode of management for the next memory zone when the end of a previous zone is detected.

5,384,750

DATA OUTPUT BUFFER OF A SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE

Ho-cheol Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 4, 1993, Ser. No. 130,130
Claims priority, application Rep. of Korea, Oct. 2, 1992, 18133/92
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 12 Claims

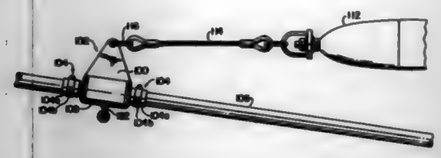


1. A synchronous semiconductor memory device comprising:
memory means for storing data;
data output buffer means for outputting data stored in the memory means in response to a data output buffer control signal; and
latent signal processing means responsive to a clock signal, an address strobe signal and a combination signal for generating said data output buffer control signal to control the outputting of data from said data output buffer,
wherein the data output buffer control signal generated by said latent signal processing means is in sync with said clock signal, and is active for at least a first period when said address strobe signal is active as well as for at least a second period during a memory precharge period when said address strobe signal is inactive, said data output buffer outputting data stored in said memory means during both said first and second periods.

5,384,751
ATTACHMENT DEVICE FOR TETHERED TRANSDUCER

Darren J. Blier, Westerly, R.I., and Eric J. Jensen, New London, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1994, Ser. No. 269,316
Int. Cl.[6] G01V *1/38*
U.S. Cl. 367—15 **6 Claims**

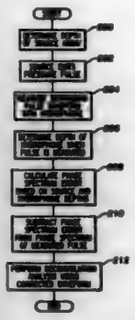


1. A device for tethering a transducer to a cable, said device comprising:
- stop collars adapted to be secured to the cable at spaced locations, said collars defining a segment of the cable therebetween;
- a standoff having flag portions with lower parts connected to one another, said flag portions normally spaced apart so as to receive said cable segment between said stop collars, said standoff flag portions including upper parts;
- said standoff also having cable engaging segments adjacent said connected lower parts for mating with the cable segment between said collars and for loosely receiving the cable, said cable engaging segments having a length substantially equal to or slightly less than the spacing provided between said cable clamping collars on said cable; and
- a fastening means disposed on said flag portion upper parts for securing said transducer to said standoff.

5,384,752
METHOD FOR CORRECTING A SEISMIC SOURCE PULSE WAVEFORM

Richard E. Dures, Spring, and Kenneth D. Andersen, Kingwood, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Apr. 6, 1993, Ser. No. 43,267
Int. Cl.[6] G01V *1/28, 1/36*
U.S. Cl. 367—38 **16 Claims**



1. A method of seismically exploring a geological formation beneath a body of water, comprising the steps of:
- emitting a pulse from a source into the body of water towards the geological formation to produce reflected pulses from within the geological formation;
- determining a source depth position of said source relative to an upper surface of said body of water;
- measuring a waveform of said source pulse at a measuring position in the body of water;
- recording waveforms of pulses reflected from the geological formation;
- adjusting said measured source pulse waveform to compensate for phase errors therein, wherein said step of adjusting includes the steps of:
  - determining a phase spectrum error based upon said source depth position and the distance between said source pulse waveform measuring position and said source depth position by performing the steps of:
- determining a distance between said measuring position in the body of water and said upper surface of the body of water; and
- determining a phase spectrum error for said measured source pulse waveform according to the equation:

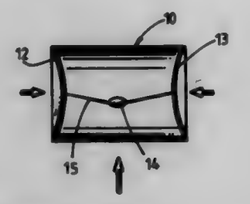
$$A_{PSE}(0,0,f) = \arccos\left[\frac{\left(\frac{d}{R}\right)\cos\left(\frac{2\pi fd}{v}\right)}{\sqrt{\left(\frac{d}{R}\right)^2\cos^2\left(\frac{2\pi fd}{v}\right)+\sin^2\left(\frac{2\pi fd}{v}\right)}}\right]\cdot \operatorname{sgn}\left[\sin\left(\frac{2\pi fd}{v}\right)\right]-\arcsin\left(\operatorname{sgn}\left[\sin\left(\frac{2\pi fd}{v}\right)\right]\right)$$

where A_{PSE} (0,0,f) is said phase error, d is said source depth position, R is said distance between said measuring position in the body of water and said surface of the body of water, and f is the frequency and v the velocity of the downgoing acoustic pulse; and
- subtracting the determined phase spectrum error from said source pulse waveform measured at the measuring position; [and]
- convolving the adjusted measured source pulse waveform with the recorded waveforms reflected from the geological formation; and
- forming a corrected display of the waveforms from the geological formations.

5,384,753
SELF-ORIENTING SEISMIC DETECTOR

Joe I. Sanders, Sugar Land, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Dec. 3, 1993, Ser. No. 162,484
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—163 **16 Claims**



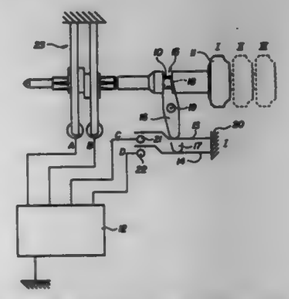
1. A seismic detector comprising:
- (a) a housing having two ends and being open at either end;
- (b) a pair of diaphragms, each said diaphragm being positioned to substantially cover one open end of said cylinder, each said diaphragm further being operable to generate a signal in response to mechanical stress placed upon said diaphragm;

- (c) at least one filament, said filament being connected to one of said diaphragms so as to impart mechanical stress upon portions of said diaphragms; and
- (d) a mass attached to said filament, said mass being internally suspended within said housing between said diaphragms so as to be moveable relative to said housing, the motion between the mass and housing creating differential stress upon portions of said diaphragms.

5,384,754
PERPETUAL CALENDAR WATCH WITH ANALOG TIME DISPLAY

Rene Besson, Geneva, Switzerland, assignor to Montres Rolex S.A., Geneva, Switzerland

Continuation of Ser. No. 668,675, Mar. 7, 1991, abandoned, which is a continuation of Ser. No. 340,473, Apr. 19, 1989, abandoned. This application Feb. 1, 1993, Ser. No. 11,827
Claims priority, application Switzerland, Apr. 19, 1988, 01442/88
Int. Cl.[6] G04B *19/24, 27/02;* G04C *9/00*
U.S. Cl. 368—28 **8 Claims**

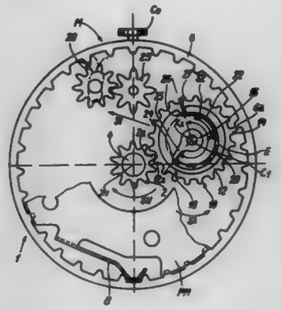


1. A timepiece for displaying a time of day, said timepiece having a perpetual calendar, comprising:
- an electronic control circuit synchronized by a quartz crystal;
- a first hand for indicating an hour;
- a second hand for indicating a minute;
- a drive motor for rotating said first hand and said second hand about an axis in response to a signal from said electronic control circuit;
- means for perpetually displaying a date indicated by said perpetual calendar; and
- a time-setting rod that is subjectable to a plurality of axial and rotational manipulations that correspond to a predetermined access code for programming said perpetual calendar, said axial and rotational manipulations of said time-setting rod producing various signals that are inputted to said electronic control circuit, said electronic control circuit including means for recognizing said access code so as to permit passage into a mode for programming said perpetual calendar, said electronic control circuit further being provided with means for distinguishing a first case in which said access code has been properly entered and a programming of said perpetual calendar has been correctly performed, from a second case in which at least one of said access code or said programming of said perpetual calendar has been improperly performed, wherein predetermined axial and rotational manipulations of said time-setting rod set a first function of said timepiece when said electronic control circuit distinguishes said first case, while said predetermined axial and rotational manipulations of said time-setting rod set a second function of said timepiece when said electronic control circuit distinguishes said second case.

5,384,755
TIMEPIECE OF THE MECHANICAL OR ELECTROMECHANICAL TYPE INCLUDING A DRIVE WHEEL CONTROLLING AT LEAST ONE DISPLAY SYSTEM SUCH AS A DATE DISPLAY

Laszlo Feresczy, Basel, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Dec. 15, 1992, Ser. No. 991,351
Claims priority, application Switzerland, Dec. 20, 1991, 03807/91-9
Int. Cl.[6] G04B *19/24*
U.S. Cl. 368—35 **10 Claims**



1. A timepiece of the type comprising:
- a horometric movement including a motor pinion or intermediate wheel centered on the movement around a central axis;
- an indexed crown gear with interior teeth associated with a first display system, and with a jumper spring,
- a driving wheel set including a drive wheel having an outer toothing controlled by the motor pinion and transmitting a motor couple received from said motor pinion to said crown gear through a salient tooth, such wheel set additionally including a hub which is mounted to rotate freely relative to the movement and which supports said wheel, characterized in that said drive wheel is mounted on the hub through a first elastic arm anchored on the hub and on the drive wheel respectively by a first and by a second anchor point, which provides a floating elastic mounting of the drive wheel and its outer toothing with respect to the crown gear, the motor pinion and said hub.

5,384,756
COMBINED IDENTIFICATION DEVICE AND TIMEPIECE

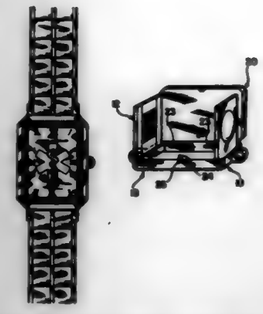
Raymond K. Pelosi, 1318 40th St., Brooklyn, N.Y. 11218

Continuation-in-part of Ser. No. 895,651, Jun. 9, 1992. This application Oct. 4, 1993, Ser. No. 130,749
Int. Cl.[6] G04B *45/00*
U.S. Cl. 368—281 **9 Claims**

1. A combined timepiece and personal identification device, comprising:
- a housing having a bottom wall, front and back walls, opposite end walls, and an openable top cover;
- said cover comprising a timepiece with a mechanism and indicia for indicating time;
- personal identification means in said housing carrying medical or other personal information related to the person wearing the device, said cover being normally closed on said housing, hiding the means carrying personal identification;
- releasable latch means operable to open the cover and expose said personal identification means to gain access to the information thereon;
- said personal identification means comprising a first foldable panel mounted about a hinge means in the housing for

movement between a stored position in the housing, lying generally parallel to the bottom wall, to an exposed position outside the housing and extending generally perpendicular to the bottom wall, said first panel carrying a piece of microfilm or other suitable miniaturized indicia containing said personal identification and/or medical information related to an individual wearing the device; and

a second foldable panel mounted about a hinge means in the



housing for movement between a stored position in the housing, lying generally parallel to the housing bottom wall and in stacked relationship to the first panel, to an exposed position extending generally perpendicular to the housing bottom wall and parallel to the first panel, said second panel carrying a lens having a focal length essentially equal to the distance between the two panels when they are in their exposed positions generally parallel to one another.

5,384,757

MAGNETO-OPTICAL DISC RECORDING AND/OR REPRODUCING APPARATUS

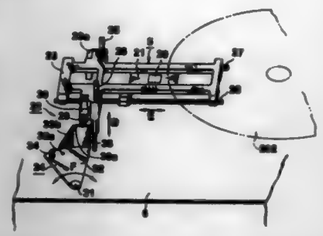
Kiyoshi Ohsori, Kanagawa, and Yoshitaka Aoki, Tokyo, both of Japan, assignors to Sony Corporation, Japan

Filed Oct. 17, 1991, Ser. No. 778,401

Claims priority, application Japan, Oct. 22, 1990, 2-281828

Int. Cl.[6] G11B *13/04*

U.S. Cl. 369—13 **4 Claims**



1. A magneto-optical disc recording and/or reproducing apparatus comprising:

a disc cartridge loading portion on which a disc cartridge housing an magneto-optical disc is loaded;

a disc rotary drive means for rotating the magneto-optical disc;

an optical pickup which is moved in a radial direction of the magneto-optical disc for recording and/or reproducing informational signals on and from the magneto-optical disc;

magnetic field generating means which is disposed in a position opposite to the optical pickup with respect to the magneto-optical disc and is moved in a radial direction of the magneto-optical disc in synchronization with the movement of the optical pickup in a radial direction of the magneto-optical disc for recording informational signals on the magneto-optical disc together with the optical pickup;

lifting means for moving the magnetic field generating means perpendicularly toward and away from the surface of the magneto-optical disc;

loading means mechanically connected to the lifting means for loading the disc cartridge upon the cartridge loading portion and for loading the magneto-optic disc housed in the disc cartridge upon the disc rotary drive means, wherein the loading means causes the lifting means to move the magnetic field generating means from a position remote from the magneto-optical disc to a position closely adjacent to the magneto-optical disc in association with the loading operation of the disc cartridge upon the cartridge loading portion by the loading means.

5,384,758

REPRODUCTION-ONLY MAGNETO-OPTICAL DISK WITH SELECTIVELY EXCHANGE COUPLED LAYERS, AND REPRODUCTION METHOD AND REPRODUCTION APPARATUS THEREFOR

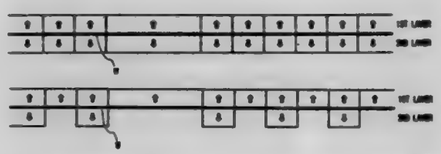
Hiroyuki Matsumoto, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 983,696

Claims priority, application Japan, Dec. 2, 1991, 3-317763; May 28, 1992, 4-136670

Int. Cl.[6] G11B *11/10, 13/04*

U.S. Cl. 369—13 **23 Claims**



1. A reproduction-only magneto-optical disk having first and second magnetic layers stacked on a substrate, comprising:

first micro areas α_0 where an exchange coupling force acts between said first and second magnetic layers; and

second micro areas α_1 where no exchange coupling force acts between said first and second magnetic layers,

wherein at least one of said two kinds of micro areas serve as information units, and information is expressed by the presence/absence or length of the information units, and wherein said first and second magnetic layers are exchange-coupled to each other at a temperature not more than Curie Temperatures of the two layers, and directions of magnetization of the two magnetic layers can be aligned at room temperature in a state wherein an interface magnetic wall is formed between said first and second magnetic layers in each of said first micro areas.

5,384,759

METHOD OF READING DATA OFF A ROTATING RECORDING MEDIUM

Dieter Baas, Kehl-Auenheim, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Aug. 9, 1993, Ser. No. 103,143

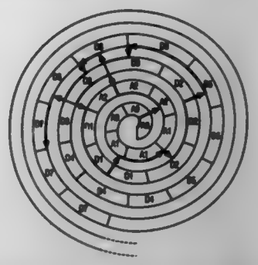
Claims priority, application Germany, Feb. 9, 1991, 4104041

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **7 Claims**

1. A method of reading recorded-data on a spiral data track of a rotating recording medium which is scanned by a radially moveable scanning device, said scanning device following said spiral data track and appearing to shift from one track to another, and in which directory data are divided into a plurality of directory data blocks and stored on said spiral data track,

each of said data blocks representing a different characteristic of said recorded-data and at least n+1 identical blocks for each characteristic are sequentially arranged on said spiral data track, where n is a whole number greater than or equal to 1, comprising the steps of:



reading said directory data by moving said scanning device from one data block to another, the motion between data blocks occurring either along the same track, inwardly from one track to another, or outwardly from one track to another, whereby the scanning of all n+1 blocks for every characteristic is not necessary.

5,384,760

DISK CHANGER PLAYER WITH STOCKER BETWEEN LOADING/UNLOADING POSITION AND REPRODUCING UNIT

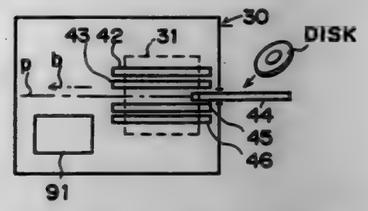
Junzo Kumakura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,524

Claims priority, application Japan, Mar. 31, 1992, 4-106003; Mar. 31, 1992, 4-106004

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—38 **9 Claims**



1. A changer player for reproducing selected recording mediums, each recording medium being carried by a separate tray of a plurality of trays contained within a housing which is provided with an opening for inserting and ejecting selected trays, said changer comprising:

a reproducing unit for reproducing signals recorded on the recording mediums;

a stocker for storing said plurality of the trays in a stack such that a selected tray from said plurality of trays is located between said opening and said reproducing unit;

first moving means for moving said stocker along a stacking direction of said stocker to selectively align the selected tray with the opening or the reproducing unit; and

second moving means for moving the selected tray either into and out of the opening, to load and eject the selected tray, or into and out of the reproducing unit;

wherein said first moving means comprises:

a cam member having an engaging cam portion which engages with a projecting supporting shaft projected from said stocker; and

a first driving means for driving said cam member;

wherein the driving of said cam member causes said stocker to move along the direction of said stack; and

wherein said second moving means comprises:

an engaging bearing;

an engagement piece provided on each of said trays such that the engagement piece of the selected tray is engaged with the engagement bearing;

a guide shaft being inserted into said engaging bearing so as to guide said engaging bearing;

a second driving means for moving said engaging bearing along said guide shaft; and

wherein said movement of said engaging bearing will effect movement of the selected tray.

5,384,761

OPTICAL DISC PLAYER HAVING A DISK OFFSET DETECTION AND PROTECTION

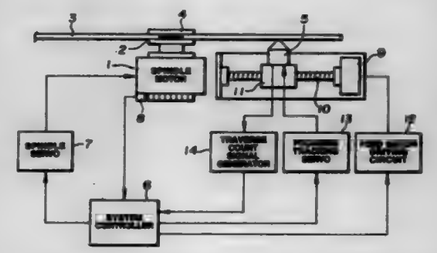
Minoru Hashimoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 4, 1991, Ser. No. 787,589

Claims priority, application Japan, Nov. 16, 1990, 2-308514

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.26 **5 Claims**



1. An optical disk player for stopping the driving of an optical disc when it is incorrectly loaded comprising

disk driving means on which an optical disk is detachably loaded;

traverse detecting means for detecting that a recording track on said optical disk loaded on said disk driving means is traversed by an optical pickup and producing a corresponding detection output;

traverse counting means for counting the number of recording tracks traversed by said optical pickup on the basis of the detection output by said traverse detection means and producing a corresponding count value output;

angle detection means for detecting that said optical disk has been rotated a predetermined angle by said disk driving means and producing a corresponding angle detection output; and

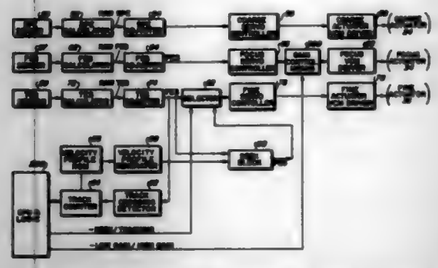
stop control means connected to the disk driving means and supplied with the count value output from said traverse counting means and the angle detection output from said angle detection means, for detecting when the count value output by said traverse counting means during rotation by a predetermined angle of said optical disk by said disk driving means reaches a predetermined number of tracks corresponding to a predetermined allowable offset of a position of the optical disk on the disk driving means and stopping the driving of said optical disk by the disk driving means when said count value output reaches said predetermined number of tracks.

5,384,762

FOCUSING SERVO IN AN OPTICAL DISK DRIVE

Naoyuki Kagami, Fujisawa; Hiroaki Kubo, Atsugi, and Kaichi Okada, Yokohama, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 34,192, Mar. 19, 1993, abandoned, which is a continuation of Ser. No. 757,759, Sep. 11, 1991, abandoned. This application Feb. 4, 1994, Ser. No. 191,738
Claims priority, application Japan, Sep. 27, 1990, 2-255467
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—44.28 6 Claims



1. An optical disk drive for recovering data recorded on tracks on an optical disk, the optical disk drive comprising:

a laser capable of emitting an optical beam projecting onto the optical disk;

means coupled to the laser for controlling a projected position of the optical beam to follow a track on the optical disk and to seek across tracks of the optical disk;

means for monitoring a seek velocity of the optical beam;

means for counting the number of tracks remaining to be crossed during a seek across tracks of an optical disk; and

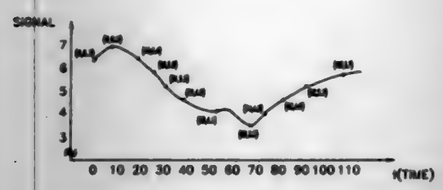
focusing means coupled to the laser for controlling the projection of the optical beam to be in a focus condition on a recording surface of the optical disk, the focusing means including a focus servo and means for adjusting a gain of the focus servo loop in response to a reduction in a seek velocity of the optical beam detected by said velocity monitoring means only when an end portion of the seek across tracks of the optical disk is detected by said counting means.

5,384,763

SIGNAL COMPRESSION RECORDING AND REPRODUCING METHOD

Kwan-sung Kim, Anyang, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 3, 1992, Ser. No. 940,370
Claims priority, application Rep. of Korea, Feb. 28, 1992, 92-3254
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—124 7 Claims



1. A signal compression recording method for changing a signal into a physical quantity corresponding to an amplitude of said signal and then recording said signal onto a recording medium, comprising the steps of:

obtaining upper and lower deviation limits according to attributes of a waveform representing said signal;

detecting an amplitude of said signal at a reference time, and a continuous period defined from the reference time to a deviation time at which an amplitude variation quantity deviates from the upper and lower deviation limits;

repeatedly detecting the amplitude of the signal of a current reference time and the continuous period by repeating said detecting step making the deviation time as a new reference time; and

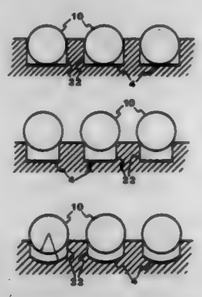
recording the amplitude of the signal and continuous period of the signal at the reference time obtained from said detecting step and said repeatedly detecting step.

5,384,764

DATA STORAGE MEDIUM AND METHOD FOR RECORDING AND READING OF DATA

Per-Erik Nordal, Nesbru, Norway, assignor to Dyno Particles A.S., Lillestrøm, Norway

PCT No. PCT/NO91/00006, § 371 Date Sep. 9, 1992, § 102(e) Date Sep. 9, 1992, PCT Pub. No. WO91/11804, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 17, 1991, Ser. No. 930,383
Claims priority, application Norway, Jan. 31, 1990, 900443
Int. Cl.[6] G11B 7/013
U.S. Cl. 369—275.1 31 Claims



1. An optical data storage medium for the storage of data in a number of elementary cells in the form of groups of localized areas, said medium comprising:

a light absorbing burn-film having the capability of having optical properties thereof changed under the influence of strong localized illumination by light, to thereby enable recording of data on said medium;

optical structures, positioned in close proximity to said burn-film and constituting an integral part of said medium, for regulating refractive or reflective influence of illumination toward said burn-film;

each said optical structure having a configuration enabling light from illumination of said medium from different directions to strike said burn-film in a respective said group of said localized areas;

each said optical structure having maximum dimensions, in all directions parallel to said burn film, less than 100 μm; and

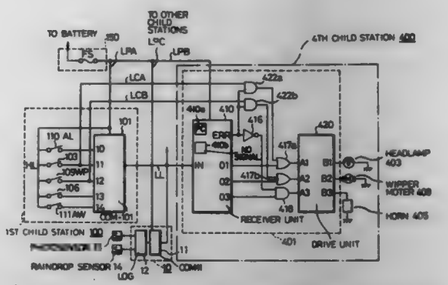
each said group and each said area having the capability of receiving data lacking inherent correlation to data in neighboring groups or areas, and each said group and each said area being capable of being read and interpreted individually.

5,384,765

AUTOMOBILE MULTIPLEX DATA COMMUNICATION SYSTEM INCLUDING FAIL-SAFE FUNCTION FOR LAN COMMUNICATION NETWORK

Atsushi Sakagami, Yokohama; Shizuhisa Watanabe; Kazumasa Sugiura, both of Katsuta, and Shigeru Obo, Hitachi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 23, 1993, Ser. No. 37,116
Claims priority, application Japan, Mar. 23, 1992, 4-065177
Int. Cl.[6] G08B 21/00; B60Q 1/00; H04J 3/14
U.S. Cl. 370—13 7 Claims



1. An automobile multiplex data communications system for controlling operation of a plurality of terminal units, comprising:

a plurality of operation units corresponding to said plurality of terminal units for operating said terminal units;

transmission means for transmitting operation data about said operation units;

drive means, connected to said transmission means, for driving a relevant one of said terminal units based on said operation data;

detecting means for detecting an extraordinary state concerning transmission/reception operations of said operation data to produce an extraordinary-state detection signal; and

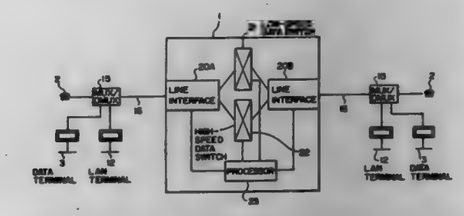
control means for independently controlling the operation of said relevant one of said terminal units by logically ANDing said extraordinary-state detection signal and each of operation outputs provided from said operation units, for controlling operation of said terminal units.

5,384,766

LAN MANAGEMENT SYSTEM IN ELECTRONIC SWITCHING APPARATUS

Kouji Yamato, and Kazuhiko Ito, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 21, 1993, Ser. No. 125,028
Claims priority, application Japan, Sep. 21, 1992, 4-251075
Int. Cl.[6] H04J 3/14; H04Q 11/04
U.S. Cl. 370—13 8 Claims



1. A switching apparatus to which a plurality of low-speed terminals and a plurality of high-speed terminals are connected via a plurality of transmission lines each for transmitting a signal in which low-speed data from a low-speed terminal and high-speed data from a high-speed terminal are multiplexed, and which is suitable for constructing a switching network among said low-speed terminals and a local area network among said high-speed terminals, comprising:

a plurality of line interface sections, each connected to one of said transmission lines, for demultiplexing the multiplexed signal fed via the transmission line connected thereto into low-speed data and high-speed data, and for multiplexing low-speed data and high-speed data for transmission down the transmission line connected thereto;

a low-speed data switch, connected to said line interface sections, for performing switching of said low-speed data;

a high-speed data switch, connected to said line interface sections, for performing switching of said high-speed data;

storage means for storing the association between the low-speed terminal and high-speed terminal connected to each of said transmission lines; and

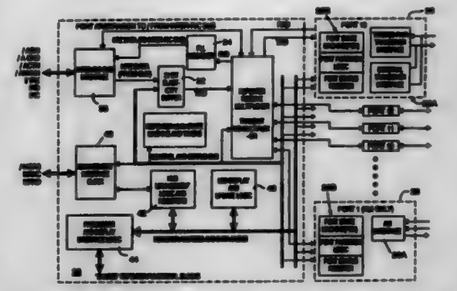
monitoring control means, connected to said low-speed data switch, said high-speed data switch, and said storage means, for monitoring and controlling the traffic of low-speed data among said low-speed terminals, and for monitoring and controlling the traffic of high-speed data among said high-speed terminals in association with the corresponding low-speed terminals on the basis of the association stored in said storage means.

5,384,767

SEGMENT TESTER FOR A REPEATER INTERFACE CONTROLLER

Charles A. Moorwood, Sunnyvale; Charan J. Singh, Fairfield; Dennis E. Holland, Morgan Hill; Daniel J. Cimino, Mountain View; Howard Q. Vo, San Jose; Vickie M. Yeung, San Francisco, all of Calif.; David Crosbie, Erskine, Scotland, and Haresh K. Shah, Pleasanton, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 643,208, Jan. 18, 1991. This application Jun. 15, 1992, Ser. No. 898,514
Int. Cl.[6] H04L 1/14
U.S. Cl. 370—13.1 4 Claims



1. A repeater interface controller for connecting a plurality of segments of a local area network, the repeater interface controller comprising:

(a) a central node that includes:

(i) central receiver means for receiving data packets,

(ii) repeater means responsive to receipt of the data packets by the central receiver means for repeating each of the data packets to form repeated data packets, and

(iii) central transmitter means for transmitting the repeated data packets; and

(b) plurality of port nodes connected to the central node, each port node being connectable to a corresponding one of the plurality of segments, each port node including:

(i) first port receiver means for receiving data packets

from said corresponding segment of the local area network,

(ii) first port transmitter means for transmitting the data packets received by the first port receiver means to the central node,

(iii) priority means for identifying the port node that first received the data packets as a source port node such that other of the plurality of port nodes cannot transmit data packets received from their corresponding segments to the central node while said port node is identified as the source port node,

(iv) second port receiver means for receiving the repeated data packets from the central node,

(v) second port transmitter means for transmitting the repeated data packets received by the second port receiver means to said corresponding segment when said port node is not identified as the source port node, and for transmitting the repeated data packets received by the second port receiver means to said corresponding segment when said port node is identified as the source port node and when an externally-generated test signal is present, and

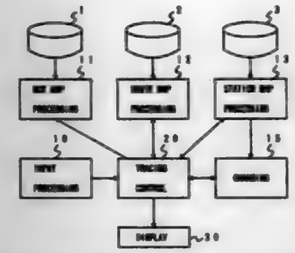
(vi) collision detection means for identifying when the first port receiver means is receiving data packets at the same time that the second port transmitter means is transmitting data packets.

5,384,768

TRACING SYSTEM FOR TRACING TRANSMISSION ROUTE IN TRANSMISSION NETWORK

Yasuo Fujii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 30, 1993, Ser. No. 159,505
Claims priority, application Japan, Nov. 30, 1992, 4-320594
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—14 3 Claims



1. A tracing system for tracing and displaying a transmission route between multiplexers in a transmission network in which a plurality of stations are connected by lines, each station accommodating one or a plurality of multiplexers, said tracing system comprising:

a first database provided with information indicating states in which multiplexers in each station in said transmission network are connected to each other;

a second database provided with information indicating attributes of transmission routes between stations connected to each other by a line;

a third database provided with information indicating transmission routes acoommodated in each of said stations;

input means for inputting information regarding a multiplexer positioned at a tracing start point of tracing;

route map processing means for tracing, based on the information provided in said second database, a transmission route from a starting station to a terminating station;

MUX map processing means for tracing, based on the information provided in said first data base, a connecting path in which multiplexers are connected in said terminating station of the transmission route traced by said route map processing means;

station map processing means for tracing a transmission route corresponding to a back-to-back connecting formation based on the information provided in said third database when the connecting path traced by said MUX map processing means includes the back-to-back connecting formation;

changing means for changing the information indicating the tracing start point based on a position of a multiplexer connected to an end of the transmission route which corresponds to the back-to-back connecting formation and is traced by said station map processing means;

tracing control means for switching between said route map processing means, said MUX map processing means, said station map processing means and said changing means so that the transmission route is traced from the multiplexer at the tracing start point identified by the information input by said input means to a multiplexer opposite to the multiplexer at the starting point; and

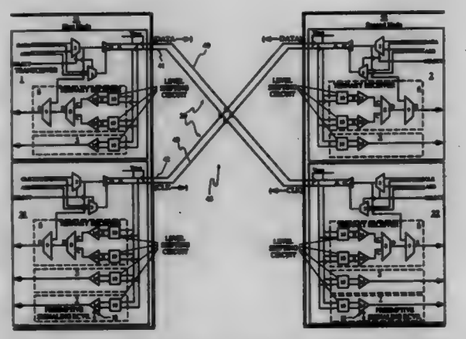
display means for displaying the transmission route and the connecting path traced by said route map processing means, said MUX map processing means and said station map processing means all of which are switched by said tracing control means.

5,384,769

METHOD AND APPARATUS FOR A BUS TRANSCEIVER INCORPORATING A HIGH SPEED BINARY DATA TRANSFER MODE WITH A TERNARY CONTROL TRANSFER MODE HAVING A FULL DUPLEX, DOMINANT LOGIC TRANSMISSION SCHEME

Florin Oprescu, Sunnyvale, and Roger Van Brunt, San Francisco, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 19, 1993, Ser. No. 34,562
The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.
Int. Cl.[6] H04B *1/56*
U.S. Cl. 370—24 27 Claims



15. In a bus architecture having at least a first communications node and a second communications node coupled together via a bus having at least one transmission channel, each node having at least a first transceiver for enabling full duplex transmission of control signals and half duplex transmission of data signals between the nodes, the first transceiver of the first node comprising:

a driver coupled to the bus for driving on the bus current amplitudes corresponding to signal states of said control signals during an arbitration transfer phase, the signal states comprising at least a first signal state, a second signal state and a third signal state;

a first binary receiver coupled to the bus for receiving data signals driven on the bus by the first transceiver of the second node during a data transfer phase, the data signals comprising a plurality of the first and second signal states; and

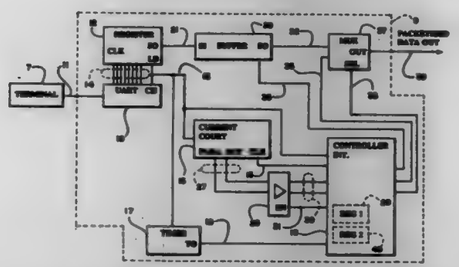
a ternary receiver coupled to the bus for receiving control signals driven on the bus by the first transceiver of the second node, the control signals comprising a plurality of the first, second and third signal states, the ternary receiver having two binary receivers for detecting resultant current amplitudes created on the bus during simultaneous driving of control signals by the nodes during said arbitration transfer phase and having a, logic circuit coupled to said bus for combining the resultant current amplitudes on the bus with the signal states driven by the first transceiver of the first node to output reconstructed control signals representing the control signals driven on the bus by the first transceiver of the second node.

5,384,770

PACKET ASSEMBLER

Richard C. Mays, Atlanta; Karen G. Hazzah, Roswell, and Martin H. Sauser, Jr., Atlanta, all of Ga., assignors to Hayes Microcomputer Products, Inc., Norcross, Ga.

Filed May 8, 1992, Ser. No. 880,218
Int. Cl.[6] H04J *3/24;* H04L *12/54*
U.S. Cl. 370—43 14 Claims



1. A packet assembler, for reducing latency delay when receiving serial data and transmitting packetized data comprising:

a first input providing said serial data to said packet assembler;

means for packetizing said serial data received on said first input;

a timer for detecting each time no serial data is received on said first input for a predetermined amount of time, and thereupon generating time-out signals, said time-out signals being provided to said means for packetizing;

means for detecting a latency indicator that precedes at least one of said time-out signals; and

means for generating a latency indicator signal upon detection of another occurrence of said latency indicator, said latency indicator signal being provided to said means for packetizing for causing said packet assembler to assemble a packet of data in response to said latency indicator signal.

5,384,771

MULTIMEDIA CALL CONFIGURATION SYSTEM

Alessandro L. Isidoro, Howell, and Howard S. Teal, Tinton Falls, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

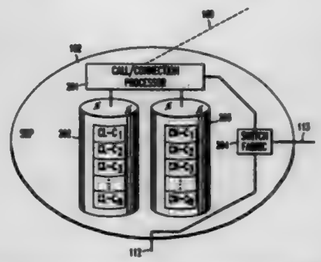
Filed Aug. 27, 1993, Ser. No. 112,276
Int. Cl.[6] H04J *3/16;* H04L *12/18*
U.S. Cl. 370—58.2 12 Claims

1. A method for effecting a broadband/multimedia call among a group of desired participants within an intelligent switched telecommunication network, comprising the steps of:

generating a high-level call control message in response to a call topology request;

executing one or more call configuration processes in response to said call topology request, thereby determining if said desired participants can accommodate the requested broadband/multimedia call;

generating a high-level connection control message, if as a result of the execution of said call configuration processes



it is determined that said desired participants can accommodate the requested broadband/multimedia call; and

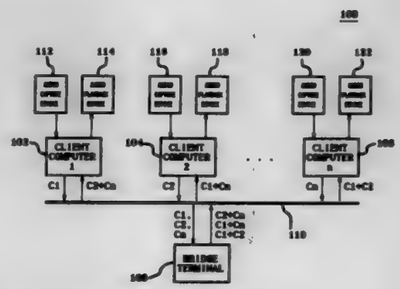
executing one or more connection configuration processes in response to said call topology request and said high-level call control message and high-level connection control message, thereby effecting interconnections within said intelligent switched telecommunication network which will support the requested broadband/multimedia call.

5,384,772

METHOD AND APPARATUS FOR AUDIO FLOW CONTROL DURING TELECONFERENCING

R. Al Marshall, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 1, 1993, Ser. No. 115,345
Int. Cl.[6] H04L *12/18*
U.S. Cl. 370—60 34 Claims



1. A teleconferencing system, comprising:

(a) a plurality of client terminals; and

(b) a bridge terminal, wherein each of said client terminals transmits audio data to said bridge terminal and said bridge terminal mixes said audio data from said client terminals and transmits mixed audio data to said client terminals, wherein said bridge terminal mixes audio data selectively, whereby each client terminal receives mixed audio data corresponding to each other client terminal.

5,384,773

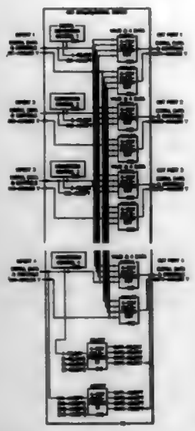
MULTI-MEDIA ANALOG/DIGITAL/OPTICAL SWITCHING APPARATUS

Howard T. Olnowich; John D. Jabusch, both of Endwell; Robert F. Lusch, Vestal, and Michael A. Maniguet, Owego, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation-in-part of Ser. No. 677,543, Mar. 29, 1991, abandoned, Ser. No. 799,497, Nov. 27, 1991, abandoned, and Ser. No. 799,602, Nov. 27, 1991. This application Sep. 17, 1992, Ser. No. 947,196

Int. Cl.[6] H04Q *11/04*; H04J *3/02*

U.S. Cl. 370—60.1 **18 Claims**



1. A multi-media switching apparatus comprising:

a plurality of input and output ports for transmitting digital and analog data;

a digital connection control circuit for each input port;

a digital multiplexer control circuit for each output port for connecting any digital inputs to said input ports to any of said output ports;

an analog multiplexer control circuit for each output port for connecting any analog inputs to said input ports to any of said output ports;

a multiplexer control circuit for each of said input ports for reporting a data rejection indication from any of said output ports to any of said input ports, and for reporting a positive feedback indication of receiving a successful data transmission from any of said output ports to any of said input ports.

5,384,774

ASYNCHRONOUS TRANSFER MODE (ATM) PAYLOAD SYNCHRONIZER

Gary D. Martin, North Andover, Mass., and Hiromi Ueda, Yokohama, Japan, assignors to AT&T Corp., Murray Hill, N.J.

Filed Jan. 11, 1993, Ser. No. 2,576

Int. Cl.[6] H04L *7/00*

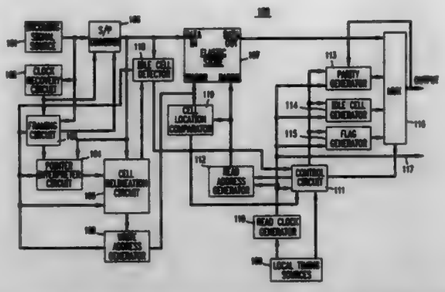
U.S. Cl. 370—82 **7 Claims**

1. An asynchronous transfer mode (ATM) payload synchronizer to be supplied with a synchronous digital signal, for example, a SDH, SONET or the like digital signal, having a predetermined synchronous clock rate and transporting ATM cells, comprising:

means having a data input and a data output for storing bytes of incoming ATM cells being supplied to said data input and bytes of the stored ATM cells being read out of the data output, each of said incoming ATM cells having a first predetermined fixed number of bytes;

means for increasing the number of bytes of the ATM cells being read out of said means for storing to form first internal ATM cells, each of said first internal ATM cells having a second predetermined fixed number of bytes larger than the first predetermined fixed number of bytes in the incoming ATM cells;

means for generating additional internal ATM cells, each of said additional internal ATM cells having said second predetermined fixed number of bytes; and



means for combining said additional internal ATM cells with said first internal ATM cells so that a clock rate equal to the synchronous clock rate of the incoming synchronous digital signal may be used as a read clock for a data stream including said first internal ATM cells and said additional internal ATM cells being supplied as an output from said means for combining.

5,384,775

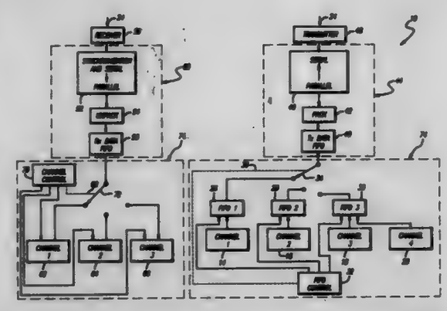
APPARATUS FOR, AND METHOD OF, PACKING AND UNPACKING INFORMATION IN TRANSMISSION LINES

Thomas C. Sheppard, Simi Valley, Calif., assignor to Micom Communications Corp., Simi Valley, Calif.

Continuation of Ser. No. 645,211, Jan. 24, 1991, Pat. No. 5,291,487. This application Dec. 8, 1993, Ser. No. 164,057

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—84 **13 Claims**



9. In combination for providing for the transmission of symbols,

a plurality of channels a first one of which provides symbols at a first periodicity, a second one of which provides symbols at a second periodicity different from the first periodicity and a third one of which provides aperiodic symbols, each of the first and second ones of the channels in the plurality providing an enable symbol indicating the start and the periodicity of the symbols in such channel,

periodic allocation control means for passing the enable symbol for each of the first and second channels in the plurality,

first means responsive to the enable symbols from the periodic allocation control means for producing a sequence of the symbols in the first and second channels in the plurality with a higher priority to the symbols in the first channel than to the symbols in the second channel, and

second means responsive to the symbols from the first means and to the aperiodic symbols in the third channel in the plurality for producing a sequence of such symbols with a higher priority to the symbols from the first means than to the symbols from the third channel in the plurality.

5,384,776

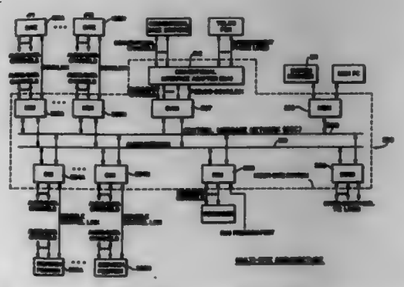
AUDIO ROUTING WITHIN TRUNKED RADIO FREQUENCY MULTISITE SWITCH

Philip Gulliford; Wim Imron, both of Forest, and James L. Teel, Goode, all of Va., assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Feb. 22, 1991, Ser. No. 658,636

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—85.1 **45 Claims**



31. In a radio frequency communications system having plural audio source/destination sites of various types including multiple RF transceiving sites for establishing radio contact with mobile and/or portable radio transceivers and having a distributed control multi-site digital information switching network, a distributed control audio information routing system for communicating digitized audio signals between said sites, said routing system comprising:

at least one digitized-audio signal bus;

a global message bus network for circulating call activity information throughout said multi-site digital information switching network;

a controller module means associated with one of said multiple RF transceiving sites for autonomously selecting particular digitized audio signals carried on said audio bus based at least in part on call activity information circulated on said global message network; and

at least one audio module means connected to said audio bus and responsive to said associated controller module for receiving and providing said particular digitized audio signals to an associated one of said multiple RF transceiving sites.

5,384,777

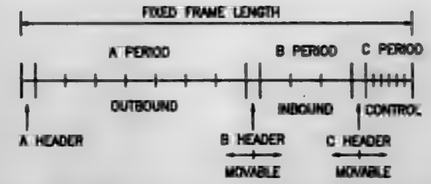
ADAPTIVE MEDIUM ACCESS CONTROL SCHEME FOR WIRELESS LAN

Hamid Ahmadi, Somers; David F. Bantz, Chappaqua, both of N.Y.; Frederic J. Bauchot, LaTourraque Saint-Jeannet, France; Arvind Krishna, Briarcliff Manor, N.Y.; Richard O. La Maire, Yorktown Heights, N.Y., and Kadathur S. Natarajan, Millwood, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1993, Ser. No. 49,052

Int. Cl.[6] H04J *3/26*; H04L *5/22*

U.S. Cl. 370—85.2 **50 Claims**



1. In a digital data radio communication system, the combination comprising:

a plurality of remote stations, each of which includes a transceiver;

a base station having a transceiver for radio communications with the transceivers of each of said plurality of remote stations, said base station including:

means for defining a plurality of frames during which messages and data are transmitted, each of said plurality of frames being divided into three intervals, the first interval for transmission from said base station to said plurality of remote stations, the second interval for contention free transmission from said plurality of remote stations to said base station, and the third interval for contention access by said plurality of said remote stations for transmission to said base station; and

means for including control indicia in a transmission from said base station to a given remote station that is indicative of the probability of said given remote station gaining access during said third interval.

5,384,778

COMMUNICATION CONTROL APPARATUS

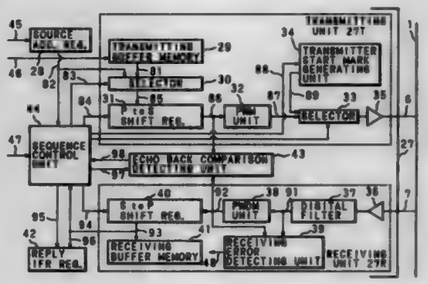
Yasushi Okamoto, and Akiya Arimoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1993, Ser. No. 130,254

Claims priority, application Japan, Oct. 20, 1992, 4-281663

Int. Cl.[6] H04J *3/12*; H04L *1/16*

U.S. Cl. 370—85.3 **5 Claims**



1. A communication control apparatus, which is included

respectively in a plurality of communication terminals connected to a common data line so as to transmit data from one terminal functioning in a transmitting mode to any other terminal functioning in a receiving mode, and which transmits and receives communication data by a set of data bytes constituting a packet frame on said common data line, including a series of transmitting data bytes sent to said common data line from the communication terminal functioning in the transmitting mode, and which transmits a reply data byte on said common data line from a communication terminal functioning in a receiving mode acknowledging the transmitting data bytes in a reply section, and which, when functioning in a receiving mode, detects collisions of the reply data byte sent to said common data line by itself on the common data line in the reply section, and stops sending out the reply data byte when collision is detected, comprising:

means for sending said reply data byte only when a packet frame is received normally on said common data line when in a transmitting mode or only when not received normally, when functioning in a receiving mode;

means for storing the reply data byte sent from terminals in the receiving mode, when functioning in a transmitting mode; and

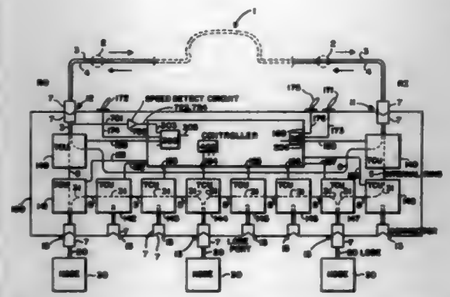
means for detecting whether or not the reply data byte has been sent, when functioning in the transmitting mode.

5,384,779

STATE MACHINES FOR CONFIGURATION OF A COMMUNICATIONS NETWORK

Michael W. Patrick, Assonet, and James A. Daly, Chelsea, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 14, 1993, Ser. No. 48,169
Int. Cl.[6] H04J *3/00*
U.S. Cl. 370—85.12 **15 Claims**



1. An apparatus for controlling configuration of a communications network, the communications network having nodes for transmitting and receiving communications signals and a signaling medium for transporting the communications signals, the signaling medium including lobe circuits for connecting to the nodes and a trunk circuit having trunk segments for connecting to the lobe circuits, the communications signals including data signals, comprising:

an internal trunk circuit having an input end and an output end;

a plurality of ports including a lobe port for connecting to a lobe circuit, an input port for connecting said input end of said internal trunk circuit to an input trunk segment of said trunk segments, and an output port for connecting said output end of said internal trunk circuit to an output trunk segment of said trunk segments;

a plurality of means for sensing the communications signals, there being one of said plurality of means for sensing connected to a corresponding one of said plurality of ports; and

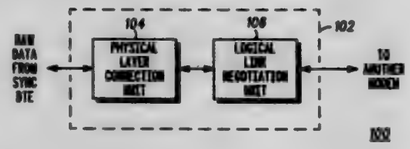
a controller connected to said plurality of means for sensing, said controller including a plurality of state machines, one state machine corresponding to each of said plurality of ports, there being a lobe state machine, an input port state machine, and an output port state machine, each state machine including a set of transition rules, and each state machine including means, in response to said set of transition rules and the communications signals, for enabling the connection of a corresponding one of said plurality of ports to said internal trunk circuit, and each state machine including means, in response to said set of transition rules and the communications signals, for disabling the connection of a corresponding one of said plurality of ports to said internal trunk circuit.

5,384,780

HIGH SPEED MODEM, METHOD AND SYSTEM FOR ACHIEVING SYNCHRONOUS DATA COMPRESSION

Martin G. Lomp, Wrentham; Frank Fulling, Attleboro; Wayne M. DeMello, Newton, and William A. Neagle, Stoughton, all of Mass., assignors to Codex Corporation, Mansfield, Mass.

Filed May 14, 1993, Ser. No. 62,916
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—94.1 **33 Claims**



1. A high speed modem for providing efficient synchronous data compression, comprising:

A) physical layer connection means, operably coupled to transmit/receive data to/from synchronous data terminal equipment (DTE), for compressing/decompressing the transmitted/received data according to a preselected compressed data scheme and for minimizing delay for received data, and

B) logical link negotiation means, operably coupled to the physical layer connection means, for probing and determining data compression parameters (DCPs) and selecting codewords for compressing synchronous data, inserting-/removing the DCPs and codeword combinations into/-from the compressed data to provide encoded/decoded compressed/decompressed data, and transmitting/receiving the data over a communication medium to/from the other modem.

5,384,781

AUTOMATIC SKEW CALIBRATION FOR MULTI-CHANNEL SIGNAL SOURCES

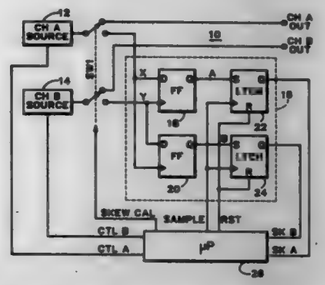
Frederick Y. Kawabata, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Feb. 11, 1991, Ser. No. 652,968
Int. Cl.[6] G06K *5/04*; G11B *5/00*; G06F *11/00*
U.S. Cl. 371—1 **9 Claims**

1. An apparatus for automatic skew calibration of a multi-channel signal source comprising:

means for generating a skew signal indicative of which one of two input signals from the multi-channel signal source is a leading signal;

means in response to the skew signal for varying a delay for the leading signal to incrementally change a timing relationship between the leading signal and the other signal of the two input signals;



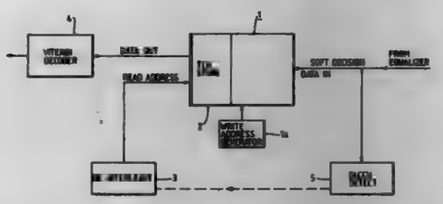
means for determining from changes in the skew signal in response to the varying of the delay a calibrated value for the delay so that the two input signals are aligned in time.

5,384,782

DIGITAL RADIO RECEIVER WITH DECODING OF CONFIDENCE LEVEL INFORMATION SUBSTITUTED FOR INTERLEAVED DATA

Andrew Elms, Reading, England, assignor to Technophone Limited, Camberly, United Kingdom

Filed Sep. 28, 1992, Ser. No. 952,923
Claims priority, application United Kingdom, Oct. 4, 1991, 9121140
Int. Cl.[6] H03M *13/00, 13/22*; H04B *7/26*; H04Q *7/04*
U.S. Cl. 371—2.1 **18 Claims**



10. A receiver for receiving data encoded to permit forward error correction wherein selected elements of a set of original data elements relating to a first message are substituted by data elements relating to a second message, the receiver comprising:

means for extracting from the received data the substitute elements in order to reconstitute the second message,

means for modifying the received data by replacing said substitute data elements with further data elements comprising respective components indicative of the level of confidence associated therewith relative to the original data elements, and

means for decoding the modified data including means responsive to said confidence level components to estimate the most likely set of original data elements.

5,384,783

NETWORK SYSTEM AND LINE SWITCHING METHOD USED THEREIN

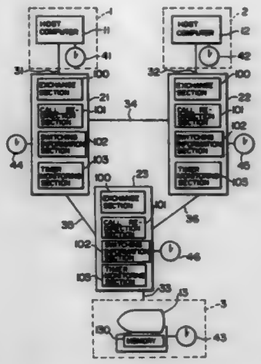
Shigeki Setomi, Tokyo, and Naoki Ono, Kawasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 793,102
Claims priority, application Japan, Nov. 20, 1990, 2-315613
Int. Cl.[6] G06F *11/20*
U.S. Cl. 371—9.1 **25 Claims**

1. A network system in which a plurality of computers and a terminal device are connected to one another through a node

by telecommunication lines, and one computer is designated by an address from said terminal device to receive data communication from said terminal device through said node, said node comprising:

means for detecting a stop or fault of said one computer, or a stop or fault of the telecommunication line connecting said one computer and said node to each other, in response to call for said one computer from said terminal device;



means for switching said one computer from being designated to receive the data to another computer for receiving the data, in response to the detection of the stop or fault; and

means for informing said terminal device that the switching to said another computer has been performed,

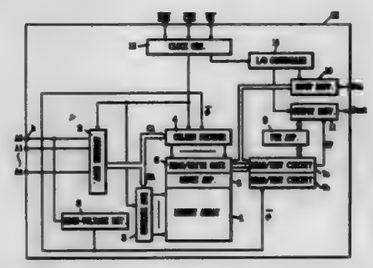
said terminal device including means for changing the address of the designated computer from an address of said one computer to an address of said another computer, in response to the information of switching.

5,384,784

SEMICONDUCTOR MEMORY DEVICE COMPRISING A TEST CIRCUIT AND A METHOD OF OPERATION THEREOF

Shigeru Mori; Makoto Sawa; Hiroshi Miyamoto; Yoshikazu Morooka; Shigeru Kikuda, and Mitsuya Kinoshita, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,040
Claims priority, application Japan, Aug. 29, 1990, 2-229086; Sep. 29, 1990, 2-261212; Aug. 12, 1991, 3-202006
Int. Cl.[6] G06F *15/20*
U.S. Cl. 371—21.1 **19 Claims**

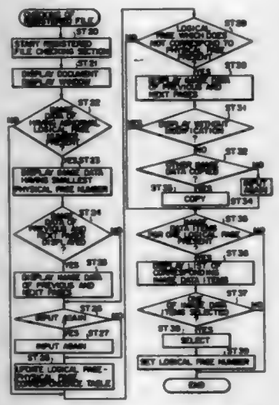


1. A semiconductor memory device comprising:

a memory array including a plurality of memory cells arranged in a plurality of rows and columns, said plurality of

columns of said memory cell array divided into a plurality of groups in an interleaved manner;
selecting means for simultaneously selecting all columns in each group in a selected row during testing operation,
reading means for reading data stored in the memory cells of the selected rows and columns;
a plurality of test means corresponding respectively to said plurality of groups;
each of said plurality of test means simultaneously comparing data read out from said selecting columns belonging to the corresponding group with a predetermined expected data value; and
indicating means for providing a result of said plurality of test means, wherein
said selecting means comprises means for selecting a single one of said plurality of columns in each group during a normal non-tested operation,
each of said plurality of test means comprises
a plurality of first amplifying means corresponding respectively to said plurality of columns,
second amplifying means, and
expected data input means for storing an expected data value,
the first amplifying means corresponding to the column selected by said selecting means and said second amplifying means form a current mirror type amplifier during normal reading operation, and
each of the first amplifying means corresponding to the columns selected by said selecting means compares data read out from the corresponding column with the expected data value during a testing operation.

5,384,785
ELECTRONIC IMAGE INFORMATION SCANNING AND FILING APPARATUS
Nobukiss Yoda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 25, 1991, Ser. No. 796,840
Claims priority, application Japan, Nov. 30, 1990, 2-340394
Int. Cl.[6] G06F *3/14, 7/02*
U.S. Cl. 371—30 **3 Claims**



1. A data processing apparatus comprising:
means for successively inputting image data items that correspond to a plurality of pages, each of the image data items including page information, the page information representing a sequence in which the pages are properly ordered;
first storing means for storing the inputted image data items;
means for reading the page information from the inputted image data items;
second storing means for storing the page information read by the reading means, and for associating the stored page information with data input numbers which represent an order in which the image data items were input by the inputting means;
means for causing the inputting means to continue to input the image data items, even when the stored page information and the data input number do not match;
means for retrieving from the first storing means each image data item for which the page information and the data input number do not match;
means for displaying the image data item retrieved by the retrieving means so as to allow an operator to check a correspondence between the page information and the data input number for each retrieved image data item; and
means for modifying the retrieved image data item displayed on the displaying means so that the page information and the data input number for each retrieved image data item matches, and for causing the modified image data item to be stored in the first storing means.

5,384,786
FAST AND EFFICIENT CIRCUIT FOR IDENTIFYING ERRORS INTRODUCED IN REED-SOLOMON CODEWORDS
Trent Dudley, Littleton; Neal Glover, Broomfield, and Larry King, Boulder, all of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.
Filed Apr. 2, 1991, Ser. No. 679,570
Int. Cl.[6] G06F *11/10*; H03M *13/00*
U.S. Cl. 371—37.1 **4 Claims**



1. A circuit for producing a series of electronic values of frequency-domain syndromes of a Reed-Solomon or related code of distance d, the frequency-domain syndromes being denoted S_{m+i} for i from 0 to d−2 wherein m is an offset of a code generator polynomial, from a set of electronic values of time-domain remainder coefficients R_j for j from 0 to d−2 comprising:
means of t (d odd) or t+1 (d even) stages for electronically determining values of said frequency domain syndromes in two steps, including a step processing electronic values of said time-domain remainder coefficients R_j for j from 0 to t−1, where t= and producing electronic values of their contributions A_{m+i} to said frequency-domain syndromes S_{m+i} according to

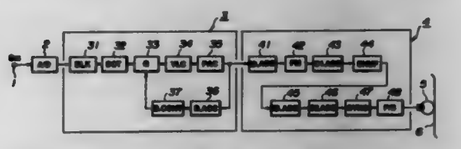
$$A_{m+i} = \sum_{j=0}^{t-1} [R_j * \alpha^{m^*j}] * \alpha^{j^*i}$$

and a step processing electronic values of said time-domain remainder coefficients R_j for j from t to d−2 and producing electronic values of their contributions B_{m+i} to said syndromes S_{m+i} according to

$$B_{m+i} = \alpha^{m^*i} * \sum_{j=0}^{d-2-t} [R_{j+t} * \alpha^{m^*(j+t)}] * \alpha^{j^*i}$$

said syndromes S_{m+i} being formed as sums of respective electronic values of said contributions A_{m+i} and B_{m+i} for i from 0 to d−2.

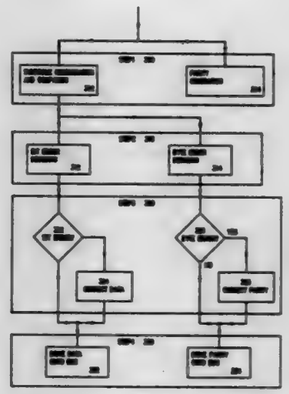
5,384,787
PICTURE DATA RECORDING APPARATUS AND PICTURE DATA REPRODUCING APPARATUS
Tadaaki Yoshinaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 9, 1993, Ser. No. 73,556
Claims priority, application Japan, Jun. 17, 1992, 4-181519
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.4 **7 Claims**



1. A picture data recording apparatus for converting a picture signal to picture data comprising a video interval of successive data blocks, the data blocks of said video interval having a quantity of picture data substantially equal to a predetermined target quantity but which may be less than or may exceed said predetermined target quantity, said apparatus comprising:
coding means for coding said successive data blocks to produce corresponding coded data blocks so that said video interval of data blocks has a quantity of picture data approximately equal to said predetermined target quantity;
error correcting code adding means for adding known data to said video interval having a quantity of picture data in said coded data blocks which is less than or equal to said predetermined target quantity, and for adding error correcting data to said video interval having a quantity of picture data in said coded data blocks which exceeds said predetermined target quantity to carry out a parity calculation; and
recording means for recording, onto said recording medium, each video interval of coded data blocks including said error correcting data but not including excess picture data in the video interval of data blocks that has a quantity of picture data that exceeds said predetermined target quantity.

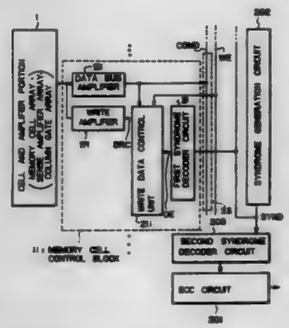
5,384,788
APPARATUS AND METHOD FOR OPTIMAL ERROR CORRECTING CODE TO PARITY CONVERSION
Terry J. Parks, Round Rock, and Darius D. Gaskins, Austin, both of Tex., assignors to Dell USA, L.P., Austin, Tex.
Filed Oct. 26, 1992, Ser. No. 966,235
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.7 **9 Claims**

1. A computer system having a system bus electrically connected to a memory system and having data error detection and correction between said memory system and said system bus, said computer system comprising:
(a) a data portion and a parity portion within said system bus, said parity portion representing the parity of said data portion of said system bus;
(b) digital words within said memory system, said digital words comprising a data portion and an ECC syndrome portion, wherein said syndrome portion represents the syndrome of said data portion of said digital words;
(c) an ECC checker/corrector with an input coupled to said memory system to receive said digital words from said memory system, and an output coupled to said data portion of said system bus, for checking and correcting said data portion of said digital words before they are transmitted to said system bus, and for generating at least one error output indicative of whether an error has been corrected; and



(d) a parity generator, having an input coupled to said data portion of said digital words, for generating a parity data output; and
(e) a parity correction circuit, having an input coupled to said parity data output, and an output coupled to said parity portion of said system bus, said parity correction circuit correcting said parity data output when said error output of said ECC checker/corrector indicates a corrected error.

5,384,789
SEMICONDUCTOR MEMORY DEVICE HAVING ECC CIRCUIT FOR DECREASING THE NUMBER OF COMMON BUS LINES TO REALIZE LARGE SCALE INTEGRATION AND LOW POWER CONSUMPTION
Hiroyoshi Tomita, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 3, 1993, Ser. No. 12,644
Claims priority, application Japan, Feb. 4, 1992, 4-018784
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—40.1 **3 Claims**



1. A semiconductor memory device connected to a data bus to receive data therefrom or send data thereto, comprising:

a cell and amplifier portion having a memory cell array, a sense amplifier array, and a column gate array, for storing data;

a syndrome generation circuit for generating a syndrome of data received from the data bus;

an error checking and correction circuit, for correcting an error of said data received from the data bus;

a plurality of memory control blocks connected to said syndrome generation circuit, each having a data bus amplifier for reading data from said memory cell array, a write amplifier for writing data into said memory cell array, a first syndrome decoder circuit for decoding said generated syndrome from said syndrome generation circuit and generating a signal for requesting an inversion of the read-out data, and a write data control unit connected to receive output signal from said first syndrome decoder circuit, and the output of the data bus amplifier, said write data control circuit generating a data inversion control signal when a write enable signal supplied thereto; said write amplifier being connected to receive said data inversion control signal, and being responsive to said control signal to invert and write data into said memory cell array in response to said output signal from said first syndrome decoder circuit; and

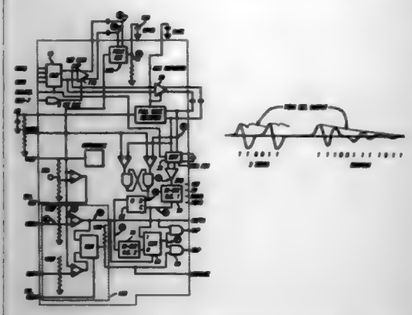
a second syndrome decoder circuit for decoding said generated syndrome from said syndrome generation circuit, and said error checking and correction circuit corrects said data received from the data bus in response to an output signal of said second syndrome decoder circuit.

5,384,790

MAGNETIC RECORDING SYSTEM WITH PULSE QUALIFICATION AND ERROR CORRECTION CIRCUITRY

Ronald E. Tollum, Simi Valley, Calif., assignor to Wangtek, Inc., Simi Valley, Calif.

Continuation of Ser. No. 797,739, Nov. 22, 1991, abandoned. This application Oct. 22, 1993, Ser. No. 141,463
Int. Cl.[6] G11B *5/09*; H03M *13/00*
U.S. Cl. 371—40.1 11 Claims



1. In a circuit for reading bit data encoded by a run length limited code, an apparatus for detecting and correcting errors, including a first and second erroneous data groups, in a data stream, said data stream may have high and low resolution data pulses, said apparatus comprising:

means for providing a hysteresis threshold voltage setting;

means for detecting periods of dropout and periods other than said periods of dropouts in said data stream;

amplitude qualifying circuit means, coupled to the data stream, for qualifying said data pulses, said amplitude qualifying circuit means qualifies said data pulses based upon said hysteresis voltage threshold setting during said periods other than said periods of dropout detected by said detection means and qualifies said data pulses based upon a setting less than the hysteresis voltage threshold setting during said periods of dropout detected by said detection means; and

means for detecting and correcting errors, said errors including said first and second erroneous data groups, in the data pulses qualified by said amplitude qualifying circuit means, comprising:

means for recognizing said first and second erroneous data groups in data pulses qualified by said amplitude qualifying circuit, and

means, coupled to said recognizing means, for correcting the first erroneous data group when said data stream comprises low resolution data pulses and for correcting the second erroneous data group when said data stream comprises high resolution data pulses.

8. An apparatus for reading bit data, comprising

a) means for analyzing a voltage read signal to produce a bit data stream, said analyzing means being coupled to the voltage read signal and including:

i) means for detecting peaks in the voltage read signal and producing output signals responsive thereto;

ii) qualifying means, including means for comparing the peaks in the voltage read signal with a predetermined threshold signal, for preventing the detecting and producing means from producing corresponding one of said output signals when a peak is below said threshold signal;

iii) means, including means for detecting dropouts in the voltage read signal, for disabling the prevention means during a dropout in the voltage read signal; and

iv) data output means, coupled to the detecting and producing means, for outputting said data stream based upon said output signal;

b) indicating means, responsive to the data output means, for recognizing and indicating an erroneous data group the data stream;

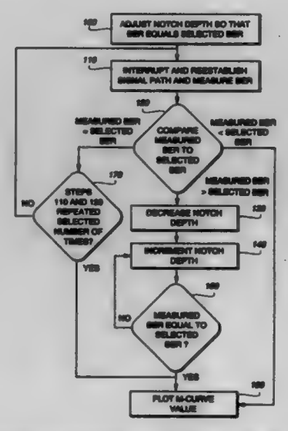
c) adjusting means, responsive to the indicating means, for adjusting a read parameter setting in response to the erroneous data group being indicated by the indicating means.

5,384,791

MEASURING WORST CASE SUSCEPTIBILITY OF DIGITAL MICROWAVE RADIOS TO MULTIPATH FADING

Matthew Klein, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 2, 1992, Ser. No. 844,801
Int. Cl.[6] H04B *17/00*
U.S. Cl. 371—5.1 19 Claims



9. In a digital microwave radio system having at least two lock states and including a transmitter data input and IF output and a receiver data output and IF input, an apparatus for determining worst case digital microwave radio lock state, comprising:

a multipath fading simulator for establishing a signal path corresponding to a first lock state, said multipath fading simulator including:

a control for adjusting signal notch depth at a given signal frequency until a selected initial bit error rate occurs in the first lock state;

an operable coupling for breaking the signal path and for reestablishing the signal path corresponding to the first lock state or a signal path corresponding to a second lock state;

a counter for measuring the bit error rate upon reestablishment of the signal path; and

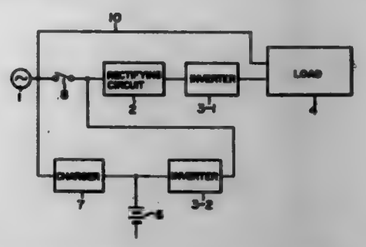
a register for comparing the initial bit error rate with the measured bit error rate for determining the occurrence of the second lock state and the worst case lock state as corresponding to the greater of the initial and measured bit error rates.

5,384,792

UNINTERRUPTIBLE POWER SUPPLY

Katsuya Hirachi, Takatsuki, Japan, assignor to Yuasa Battery Co., Ltd., Osaka, Japan

Continuation of Ser. No. 169,549, Dec. 20, 1993, abandoned, which is a continuation of Ser. No. 881,210, May 11, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 276,485
Claims priority, application Japan, May 14, 1991, 3-139689
Int. Cl.[6] G06F *11/00*; H03M *13/00*
U.S. Cl. 371—66 4 Claims



1. An uninterruptible power supply for providing power to a load from an AC power source, comprising:

a circuit for rectifying the power from said AC source to generate DC power output having an AC ripple component and operating at a higher frequency than said AC power source;

a switch connecting and disconnecting said AC power source and the rectifying circuit;

a first inverter circuit connected between the DC power output of the rectifying circuit and the load to provide an AC power output thereto, and said AC power output having the same frequency as the AC ripple component of said dc power output of the rectifying circuit;

a battery for providing back-up power to the power supply;

means for charging said battery and connected to said AC power source; and

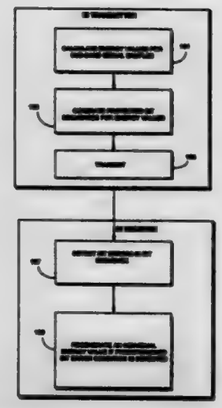
a second inverter connected to said battery and providing an AC output having the same frequency as said AC power source and connected to the rectifying circuit with said switch disconnecting said AC power source and the rectifying circuit, whereby AC power is supplied continuously to the load.

5,384,793

FADING AND RANDOM PATTERN ERROR PROTECTION METHOD FOR DYNAMIC BIT ALLOCATION SUB-BAND CODING

Richard L. Zinser, Schenectady, N.Y., assignor to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Jan. 28, 1992, Ser. No. 826,944
Int. Cl.[6] H04L *1/08*
U.S. Cl. 371—69.1 10 Claims



1. A method for error detection and correction of a signal communicated from a transmitter to a receiver using sub-band coding, said method comprising the steps of:

a. calculating individual energy values for input sub-band signal samples in the transmitter;

b. generating protected bit sequences for individual energy values in the transmitter;

c. transmitting from the transmitter and receiving at the receiver the protected bit sequences;

d. detecting bit errors in each received protected bit sequence at the receiver; and

e. regenerating an individual energy value when a predetermined error condition is detected in the received protected bit sequence associated with the individual energy value.

5,384,794

UNDULATOR WHERE THE WAVELENGTH OF THE RADIATION LIGHT IS CHANGED BY VARYING THE FREQUENCY OF THE ELECTROMAGNETIC WAVE TRAVELLING IN THE WAVEGUIDE

Masao Takanaka, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,548
Claims priority, application Japan, May 22, 1992, 4-130593
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—2 14 Claims

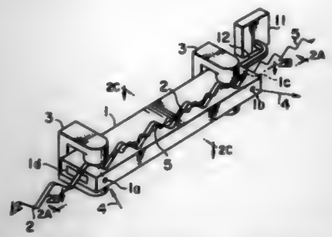
1. An undulator comprising:

a waveguide,

one of an electron beam and a position beam passing through the waveguide,

means for generating an electromagnetic wave as a traveling wave inside the waveguide, radiation light produced by

the interaction of the electromagnetic wave and one of said electron beam and position beam,

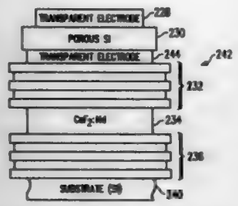


means for varying a wavelength of the radiation light by varying a frequency of the electromagnetic wave travelling in the waveguide.

5,384,795
LIGHT EMISSION FROM RARE-EARTH ELEMENT-DOPED CaF_2 THIN FILMS BY ELECTROLUMINESCENCE

Chih-Chen Cho, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 945,991, Sep. 15, 1992. This application Sep. 30, 1992, Ser. No. 954,197
The portion of the term of this patent subsequent to Nov. 29, 2011, has been disclaimed.
Int. Cl.[6] H01S *3/30*
U.S. Cl. 372—7 **16 Claims**



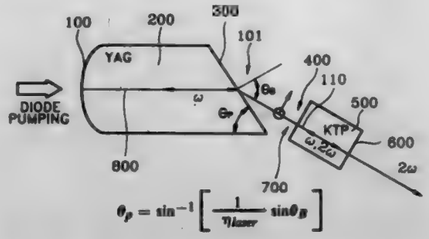
1. An apparatus for inducing light emission from electroluminescent stimulation comprising:
a silicon substrate;
a sputtered CaF_2 thin film disposed over said silicon substrate, said CaF_2 thin film doped with a rare-earth dopant; and
a source of electroluminescence in proximity to said CaF_2 thin film whereby said electroluminescent source provides radiation sufficient to pump said dopant in said CaF_2 thin film thereby inducing light emission.

5,384,796
SECOND HARMONIC GENERATING METHOD AND APPARATUS THEREOF

Seong-gil Jee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 6, 1993, Ser. No. 132,314
Claims priority, application Rep. of Korea, Nov. 25, 1992, 92-22329
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—22 **6 Claims**

1. A second harmonic generating method comprising:
arranging a dynamic laser rod having an optical axis with an inclined face forming an angle θ_B with respect to the optical axis of the dynamic laser rod so that wherein θ_B is the Brewster angle and η_{laser} is the refractive index of the dynamic laser rod and an opposite face through which laser pumping light is received; and



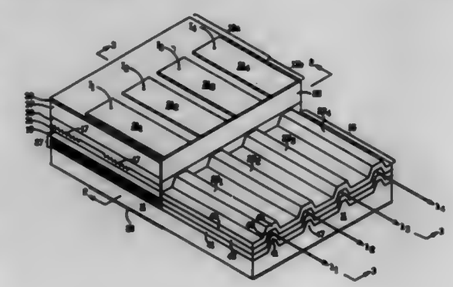
$$\theta_p = \sin^{-1}\left[\frac{1}{\eta_{laser}}\sin\theta_B\right]$$

arranging an optical axis of a non-linear birefringent crystalline element to form the Brewster angle with a normal to the inclined face of the dynamic laser rod whereby light from the dynamic laser rod incident on the non-linear birefringent crystalline element is polarized perpendicular to the optical axis of the non-linear birefringent crystalline element, the non-linear birefringent crystalline element having two opposed faces perpendicular to the optical axis of the non-linear birefringent crystalline element, an anti-reflective coating layer for a basic frequency of laser light generated in the dynamic laser rod on the face of the non-linear birefringent crystalline element facing the dynamic laser rod and a reflective coating highly reflecting the basic frequency laser light and a coating layer that is highly transmissive of a second harmonic of the basic frequency laser light on the face of the dynamic laser rod opposite the inclined face.

5,384,797
MONOLITHIC MULTI-WAVELENGTH LASER DIODE ARRAY

David F. Welch; Robert G. Waarts, both of Palo Alto; Jo S. Major, San Jose; Ross D. Bringans, Cupertino; David K. Fork, Palo Alto; G. A. Neville Connell, Cupertino, and Robert L. Thornton, East Palo Alto, all of Calif., assignors to SDL, Inc., San Jose, Calif. and Xerox Corporation, Stamford, Conn., part interest to each

Filed Sep. 21, 1992, Ser. No. 949,452
Int. Cl.[6] H01S *3/082, 3/1055, 3/109*
U.S. Cl. 372—23 **57 Claims**

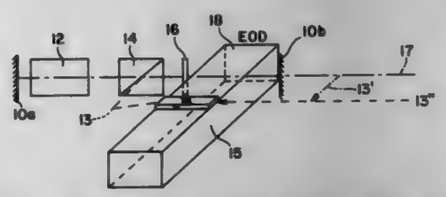


1. A light emitting device comprising,
a substrate,
a plurality of contiguous semiconductor layers disposed on said substrate, said layers forming a diode heterostructure optical gain medium with a composite active region of at least two adjacent lower bandgap layers together sandwiched between higher bandgap barrier layers defined in at least a portion of said heterostructure gain medium, said at least two adjacent lower bandgap layers of said composite active region having been formed from adjacent quantum well layers that were subsequently at least partially intermixed in at least one of their atomic species to a selected degree in at least one area of said composite active region, the degree of intermixing between said quantum well layers in said at least one area of said composite active region determining, in at least one of the resultant adjacent lower bandgap layers formed by the intermixing, a wavelength band for generation of light-twaves propagating in that area, and
means for pumping each area of said active region.

5,384,798
PHOTOCONDUTIVELY CONTROLLED ELECTRO-OPTIC LASER MODULATION

Oved S. F. Zucker, Del Mar; Iain A. McIntyre, Vista; Paul J. Solone, Cardiff-by-the-Sea, and David Giorgi, Encinitas, all of Calif., assignors to Energy Compression Research Corp., San Diego, Calif.

Filed Dec. 3, 1992, Ser. No. 985,144
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—26 **198 Claims**



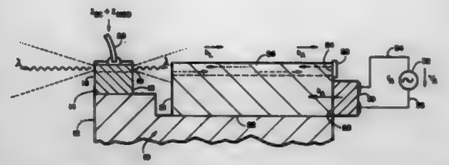
1. An optical-to-optical modulator having an optical input control signal for controlling the modulation of an optical output, comprising:
a source of optical energy;
means for modulating said optical energy to generate a modulated optical output;
means for generating and transmitting to said modulating means an electromagnetic waveform, said generating and transmitting means comprising a transmission line having a dielectric and a conductive layer on said dielectric and at least one light activated switch, said at least one switch being controlled by an optical input control signal for selectively varying the electromagnetic waveform to thereby modulate said optical output; and
wherein said modulating means comprises an electro-optic material, at least partially formed from a portion of said dielectric, and wherein said at least one switch is formed between adjacent segments of said conductive layer and positioned where said electro-optic material forms said dielectric.

5,384,799
FREQUENCY STABILIZED LASER WITH ELECTRONIC TUNABLE EXTERNAL CAVITY

Johann M. Osterwalder, Escinitas, Calif., assignor to Martin Marietta Corporation, San Diego, Calif.

Filed Sep. 9, 1993, Ser. No. 118,906
Int. Cl.[6] H01S *3/13*
U.S. Cl. 372—32 **18 Claims**

1. A light source for producing light having a narrow linewidth and which is frequency stabilized comprising:
a laser providing a first light output;
bias current input means coupled to the laser;
external cavity means closely coupled to the laser;
a transducer coupled to said cavity means to introduce a variable acoustic wave into said cavity to electronically tune a laser locking frequency and to lock the frequency

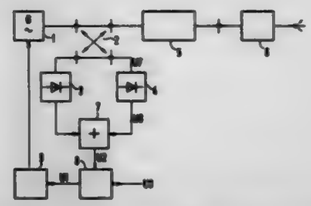


of said light output to a predetermined value having a narrow linewidth.

5,384,800
FEEDBACK CONTROL FOR A HIGH-FREQUENCY GENERATOR HAVING A PULSE-REPETITION FREQUENCY MODE, PARTICULARLY FOR EXCITING A LASER

Hermann Hochgräber, Seefeld, and Bernhard Hemmer, Schwaltz, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 1, 1993, Ser. No. 69,635
Claims priority, application Germany, Jun. 1, 1992, 4218017
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—38 **18 Claims**



1. A feedback control system for controlling a continuous high-frequency generator having a pulse-repetition frequency mode, said feedback control system comprising:
a) an output regulator, being provided with a signal representative of an actual value of power output from the high-frequency generator as an input during a pulse duration, and being provided with a signal proportional to a required setpoint value as an input during a pulse interval, and providing an output signal which controls the high-frequency generator;
b) a simulation system for simulating the high-frequency generator, said simulation system providing an output signal for input into the output regulator as an actual value during pulse intervals; and
c) a storage device, which accepts as its input, the output signal of the output regulator and in which the output signal from the output regulator is stored at the end of the pulse duration wherein, said simulation system is modulated during the pulse interval between the signal stored in said storage device and the output-regulator output signal.

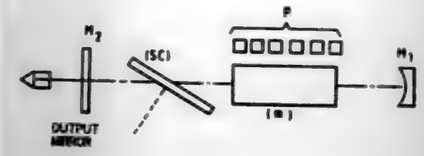
5,384,801
POWER LASERS WITH SEMICONDUCTOR FILTER

Jean-Paul Pocholle, La Norville; Jean-Marc Breteau, Verrieres; Michel Papuchon, Palaiseau, and Claude Puech, Ballainvilliers, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Sep. 23, 1992, Ser. No. 949,125
Claims priority, application France, Sep. 24, 1991, 91 11740
Int. Cl.[6] H01S *3/18*
U.S. Cl. 372—43 **9 Claims**

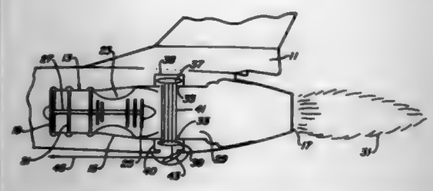
1. A laser including a cavity in which there is placed a doped

active material which emits radiating transitions at at least two frequencies f_1 and f_2, wherein there is inserted, in the cavity in a path of a beam, a layer of semiconductor material having a



gap width between a valence band and a conduction band such that hf_2 is smaller than the gap width and hf_1 is greater than this width, h being the Planck constant, the laser thus emitting at the frequency f_2.

5,384,802
LASER APPARATUS
Boyd B. Buchman, Lewisville, Tex., assignor to Lockheed Corporation, Fort Worth, Tex.
Filed Oct. 20, 1992, Ser. No. 965,004
Int. Cl.[6] H01S *3/09*
U.S. Cl. 372—89 **31 Claims**



1. An apparatus for producing a laser beam, comprising in combination:

source means for compressing a gas, mixing the compressed gas with a fuel to create a combustible mixture, igniting the mixture and discharging the mixture to produce a hot gaseous stream flowing outward from the source means along a longitudinal axis of the source means at a pressure greater than atmospheric;

a fully reflective mirror;

a partially reflective mirror;

mounting means for mounting the mirrors spaced apart from and facing each other to define a reflection path which passes through the gaseous stream at a point where the pressure of the gaseous stream is at a pressure greater than atmospheric; and

the temperature of the gaseous stream being sufficient to cause electrons associated with atoms contained in molecules located in the reflection path to reach an excited state to emit photons, each of which when striking another atom in an excited state within the reflection path and of a type that emits photons of the same wavelength, creates a second photon, the photons travelling back and forth between the mirrors to create a laser beam, a portion of which passes through the partially reflective mirror.

5,384,803
LASER WAVE MIXING AND HARMONIC GENERATION OF LASER BEAMS
Shui T. Lai, 1223 Orchard Glen Cir., Encinitas, Calif. 92024
Filed Feb. 22, 1993, Ser. No. 20,756
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—100 **9 Claims**

1. Apparatus for changing the spacing between two laser beams of different frequencies which comprise:

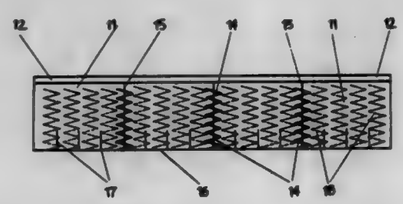
a first optical wedge having a first receiving surface and a second exiting surface for receiving a first laser beam and a second laser beam and producing a selected angular relationship between said first and second laser beams exiting said first wedge; and

a second optical wedge having a first receiving surface and a second exiting surface, said second wedge being selectively spacedly adjustable relative to said first optical wedge for receiving said beams on said first surface and producing beams exiting from said second surface with selected relative parallel positions,



said second surface of said first optical wedge and said first surface of said second optical wedge being substantially parallel.

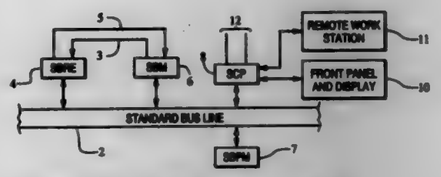
5,384,804
HEAT SHIELDING CLADDING
Hartmut Riedel, Stemwede, and Adolf Schultz, Glinde, both of Germany, assignors to Oscar Gossler KG (GmbH & Co.), Heinbek, Germany
PCT No. PCT/EP92/00886, § 371 Date Dec. 24, 1992, § 102(e) Date Dec. 24, 1992, PCT Pub. No. WO92/19926, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 22, 1992, Ser. No. 962,800
Claims priority, application Germany, Apr. 24, 1991, 9105022[U]; Sep. 11, 1991, 9111248[U]
Int. Cl.[6] F27D *1/00*
U.S. Cl. 373—137 **13 Claims**



1. In a heat shielding cladding for wall means of high temperature apparatus, including butted together parallelepipedal modules that are secured to said wall means and each comprise a plurality of held together and compacted fiber mat webs that are prestressed in a direction parallel to said wall means, the improvement wherein:

adjacent ones of said modules are held together in a permanently flexible bond, on sides thereof that extend parallel to said direction, by at least one filamentary, temperature-resistant binding means that is guided without kinking between adjacent ones of said modules, and extends from a surface of said heat shielding cladding that is remote from said wall means, to said wall means.

5,384,805
RF COMMUNICATION SYSTEMS IN OPEN ARCHITECTURE BUS LINES
Steve K. Hawkins, Plano, and Bruce R. Whitney, Terrell, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.
Filed Oct. 9, 1992, Ser. No. 959,258
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—7 **20 Claims**



1. An RF communication system comprising:

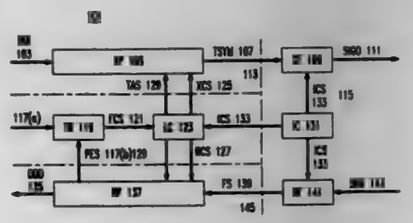
an open architecture bus line;

a system control processor removably interfaced with the open architecture bus line for generating programming commands to select a frequency range, modulation scheme and data rate for the RF communication system;

a receiver exciter removably interfaced with the open architecture bus line for receiving and transmitting RF signals, said receiver exciter further including means for programming the receiver exciter for operating at a selected one of a plurality of frequency ranges; and

a modem removably interfaced with the open architecture bus line for modulating/demodulating and for encoding/decoding RF signals, said modem including means for programming the modem to operate at a selected one of a plurality of modulation schemes and at a selected one of a plurality of data rates.

5,384,806
MODEM WITH TIME-INVARIANT ECHO PATH
Oscar E. Agazzi, Florham Park, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 23, 1991, Ser. No. 763,800
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—8 **17 Claims**



1. Receiving means in a modem comprising:

means for producing a dependent clock signal which is synchronized with timing information derived from a sequence of signals originating externally to the modem,

receive filter means for receiving a sequence of input signals from a receiving medium and outputting a corresponding sequence of input symbols; and

receive translation means coupled to the receive filter and timed by the dependent clock signal for producing a corresponding sequence of digits from the sequence of input symbols;

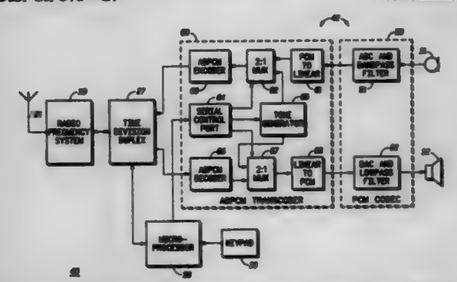
the receiving means being characterized by:

means for producing an independent clock signal which is independent of the timing information for timing operation of the receive filter means;

means in the means for producing a dependent clock signal for producing a timing adjustment signal indicating that the dependent clock signal's rate is being adjusted; and

means in the receive translation means for compensating for the adjustment in response to the timing adjustment signal.

5,384,807
ADPCM TRANSCODER WITH INTEGRAL TONE GENERATION AND METHOD THEREFOR
David Yatim; Luis A. Bonet; Jose G. Corleto, all of Austin, Tex., and Michael D. Floyd, Plainfield, Ind., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 2, 1992, Ser. No. 908,198
Int. Cl.[6] H04B *14/06*
U.S. Cl. 375—27 **39 Claims**



1. An adaptive differential pulse code modulation (ADPCM) transcoder with integral tone generation comprising:

a tone generator for providing a linear tone signal having at least one tone frequency associated therewith in response to a first control signal received at a control input terminal thereof;

a pulse code modulation-(PCM-) to-linear converter having an input terminal for receiving a PCM input signal, and an output terminal;

a first multiplexer having a first input terminal coupled to said output terminal of said PCM-to-linear converter, a second input terminal for receiving said linear tone signal, a control input terminal for receiving a second control signal, and an output terminal;

an ADPCM encoder having an input terminal coupled to said output terminal of said first multiplexer, and an output terminal for providing an ADPCM output signal;

an ADPCM decoder having an input terminal for receiving an ADPCM input signal, and an output terminal;

a second multiplexer having a first input terminal coupled to said output terminal of said ADPCM decoder, a second input terminal for receiving said linear tone signal, a control input terminal for receiving a third control signal, and an output terminal; and a linear-to-PCM converter having an output terminal; and

a linear-to-PCM converter having an input terminal coupled to said output terminal of said second multiplexer, and an output terminal for providing a PCM output signal.

5,384,808
METHOD AND APPARATUS FOR TRANSMITTING NRZ DATA SIGNALS ACROSS AN ISOLATION BARRIER DISPOSED IN AN INTERFACE BETWEEN ADJACENT DEVICES ON A BUS
Roger Van Brunt, San Francisco, and Floria Oprescu, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Dec. 31, 1992, Ser. No. 999,155
Int. Cl.[6] H04B *3/00*; H04L *25/00*
U.S. Cl. 375—36 **7 Claims**

1. A method for transmitting an NRZ data signal across an

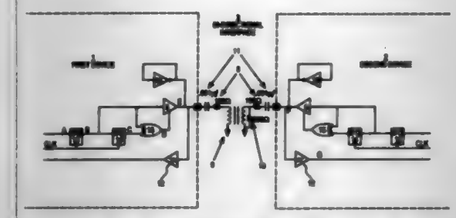
interface between two devices interconnected via a bus, the method comprising the steps of:

differentiating the data signal with a signal differentiator responsive to a clock signal to produce a differentiated signal;

supplying the data signal as a first input to a driver comprising a tri-state gate;

supplying the differentiated signal as a second input to the tri-state gate to enable the tri-state gate when the differentiated signal is high;

applying a bias voltage to an output of the tri-state gate to derive as output from the tri-state gate a transmission signal for transmission across the interface;



transmitting the transmission signal across the interface between the two devices; and

supplying the transmission signal as input to an electronic component having as output a reconstituted data signal comprising

(1) a high data signal when the input to the electronic component reaches a value substantially above the voltage bias, and

(2) a low data signal when the input to the electronic component reaches a value substantially below the voltage bias.

5,384,809

ERROR CONTROL CODING ARRANGEMENT FOR DIGITAL COMMUNICATIONS SYSTEM

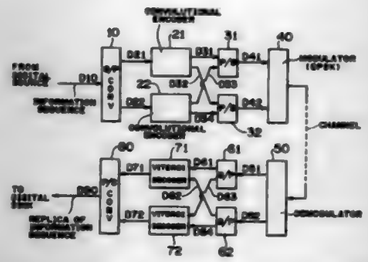
Toshiharu Yagi, Tokyo; Shuzo Kato, and Shuji Kubota, both of Kanagawa, all of Japan, assignors to Nippon Telegraph and Telephone Corporation and NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 709,498, Jun. 3, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 184,341

Claims priority, application Japan, Jun. 1, 1990, 2-144874

Int. Cl.[6] H04L *27/00*

U.S. Cl. 375—39 **3 Claims**



1. A data transmission system having an encoding section and a decoding section,

said encoding section comprising:

a first serial-parallel converter for converting an information bit sequence applied thereto into N bit sequences (N is a positive integer more than 2);

N convolutional encoders arranged to respectively receive said N bit sequences, each of said N convolutional encoders generating first and second bit sequences;

first and second parallel-serial converters, said first parallel-serial converter arranged to convert the first bit sequence of each of said N convolutional encoders into a third bit sequence while said second parallel-serial converter is arranged to convert the second bit sequence of each of said N convolutional encoders into a fourth bit sequence;

a QAM modulator coupled to receive the third bit sequence as an in-phase component input and receive the fourth bit sequence as a quadrature component input, said QAM modulator generating a modulated signal;

said decoding section comprising:

a QAM demodulator coupled to receive said modulated signal, said QAM demodulator generating a fifth bit sequence and a sixth bit sequence which respectively correspond to said third bit sequence and said fourth bit sequence;

second and third serial-parallel converters, said second serial-parallel converter arranged to convert said fifth bit sequence into N seventh bit sequences while said third serial-parallel converter is arranged to convert said sixth bit sequence into N eighth bit sequences;

N Viterbi decoders, each of said N Viterbi decoders being arranged to receive one of said N seventh bit sequences and one of said N eighth bit sequences, each of the N Viterbi decoders outputting a single bit sequence; and

a third parallel-serial converter for converting the single bit sequence applied from each of said N Viterbi decoders into a bit sequence;

whereby said system operates normally in the absence of an error and, whereby in the event of the error, said N seventh bit and N eighth bit sequences applied to each of said N Viterbi decoders take the form of a bit arrangement with which the N Viterbi decoders will no longer operate normally and an alarm signal will be issued.

5,384,810

MODULO DECODER

Daniel Amrany, Wayside, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 5, 1992, Ser. No. 831,715

Int. Cl.[6] H03D *1/00*; H04L *27/06*

U.S. Cl. 375—94 **9 Claims**



8. Apparatus for receiving a signal, comprising

means for receiving the signal to provide a received sequence of signal points,

means for decoding the received sequence of signal points to select for each one of the received sequence of signal points a subset from a constellation comprising a plurality of subsets, each subset comprising a plurality of symbols, and

means for performing no more than one slicing operation on each one of the received sequence of signal points in response to the respective selected subset to select a symbol from said constellation.

5,384,811

METHOD FOR THE TRANSMISSION OF A SIGNAL

Gerhard Dickopp, Krefeld-Bockum; Thomas Vaupel, Essen, and Detlef Krahé, Kempen, all of Germany, assignors to Telefunken, Hanover, Germany

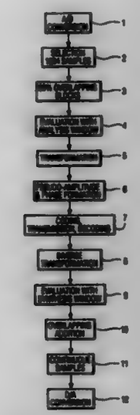
PCT No. PCT/EP90/01683, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/05412, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 8, 1990, Ser. No. 853,751

Claims priority, application Germany, Oct. 6, 1989, 3933339

Int. Cl.[6] H04B *1/66, 14/04*

U.S. Cl. 375—122 **5 Claims**



1. A signal transmission method in which an analog signal is converted into a digital signal, transmitted in digital form and reconverted into an analog signal and whereby said digital signal is partitioned by means of overlapping time windows in temporally successive blocks which are each converted into a signal sequence representing a short-time spectrum, said method comprising the steps of

a) windowing said digital signal and forming temporal blocks of block length TB with overlapping regions of relative size N-1/N where N=[2 to the power of n] 2^n for whole numbers of n, whereby overlapping blocks are selected each having a fixed number of samples;

b) transforming said samples of each block by subjecting individual ones of said blocks offset by TB/2*N in the time domain to a sine or cosine transformation respectively to produce transform output values;

c) sampling said transform output values at different positions, causing aliasing, said sampling comprising sampling said transform output values from N consecutive values according to a sampling scheme: C1: 0, N, 2N, 3N . . . , or a subsampling scheme C2: N/2, 3N/2 [/ whereby four combinations with respect to transformation and sub-scanning forms result:] resulting in four combinations of transformation and sampling forms K1–K4 as follows

K1: cosine transformation+selection scheme C1

K2: cosine transformation+selection scheme C2

K3: sine transformation+selection scheme C1

K4: sine transformation+selection scheme C2;

d) arranging sampled transform output values so that said aliasing arises at predetermined positions, by applying one of said combinations K1 . . . K4 in any arbitrary permutation on each of overlapping blocks, whereby four groups of values with entries for overlapping regions of blocks results, said groups of values being differentiated by their preceding signs;

e) said arranging including selecting a combination from K1 . . . K4 so that after inverse transformaiton at a receiver and summation of the components in the signal segments of the blocks involved in the overlap, all signals not originating from the same segment of the original signal are compensated whereby said aliasing is cancelled in a receiver;

f) coding, transmission and decoding said sampled/sub-sampled transform output values of individual blocks after said arranging;

g) subjecting decoded individual blocks to inverse sine or cosine transformation, producing inverse transform values;

h) arranging said inverse transform values so that non-aliased components corresponding to original input blocks are located in respective original positions, said arranging of said inverse transform values including segmentation of continuous-time inverse transform signal values into successive signal segments Ni for i=1, 2, 3 . . . , which, depending on the combination K1 . . . K4 used, contain components Ni . . . and temporally reflected alias components Si . . . ; and

i) summing said signal segment components Ni . . . and said temporally reflected alias components Si . . . in the signal segments Ni of overlapping blocks.

5,384,812

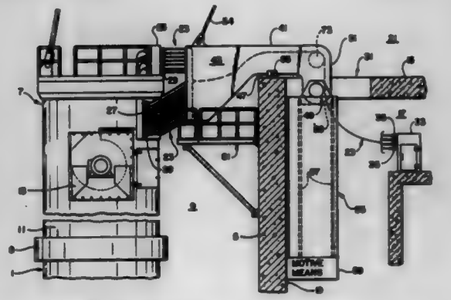
INTEGRATED HEAD PACKAGE CABLE CARRIER FOR A NUCLEAR POWER PLANT

Robert E. Meuschke, Monroeville, and Daniel M. Trombola, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 16, 1994, Ser. No. 213,891

Int. Cl.[6] G21C *19/00*

U.S. Cl. 376—260 **19 Claims**



14. A cabling arrangement for a reactor vessel located in a containment characterized by a wall having a near side surrounding the reactor vessel and defining a cavity, an operating deck outside the cavity, a sub-space below the deck and on a far side of the wall spaced from the near side, and an operating area above the deck, the arrangement comprising:

a movable cable carrier supporting a plurality of cables extending through the carrier, each of the cables connectable at a first end to a head package on the reactor vessel and each having a second end located in the sub-space, the carrier movable with the cables between a first position outside the sub-space spaced from and proximate the head package, oriented about horizontally and straddling a top of the wall, and a second position in the sub-space oriented about vertically proximate the far side of the wall, the carrier including:

a connector plate at a near end of the carrier overhanging the cavity and proximate the head package in the first position, comprising a plurality of channels through which each of the cables pass in spaced relation;

retraction means for retracting each of the cables such that a connector at the first end of each of the cables is retracted toward the connector plate when each of the cables is disconnected from the head package;

support means for providing support to at least some of

the plurality of cables between the connector plate and a far end of the carrier and the second end of the carrier; and

spacer means for preventing crossing of at least some of the cables between the connector plate and the far end of the carrier; and

positioning means for moving the carrier between the first position and the second position, including:

a pivot arrangement near the far end of the carrier for pivoting the carrier between the first position and a substantially vertically oriented intermediate position; and

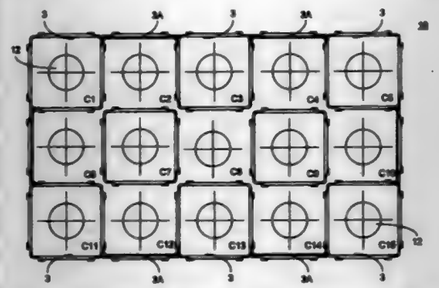
guide means for guiding the carrier along a predetermined path between the intermediate position and the second position, including a track fixed in an about vertical orientation proximate the far side of the wall and engaging the pivot arrangement.

5,384,813

HIGHLY DAMPED STORAGE RACK FOR NUCLEAR FUEL ASSEMBLIES

Joseph M. Loftis, Pittsburgh, and William J. Wachter, Wexford, both of Pa., assignors to Ionics, Inc., Watertown, Mass.

Filed Mar. 5, 1993, Ser. No. 27,088
Int. Cl.[6] G21C *19/40*
U.S. Cl. 376—272 **42 Claims**



28. A rack matrix assembly for supporting therein a plurality of elongated nuclear fuel assemblies:

A. a plurality of compartments, each of said compartments including:

i. an elongated tubular housing extending along a housing axis and having a polygonal cross-section transverse to said housing axis, said housing having at least three lateral sidewalls, at least one of said sidewalls having a substantially planar exterior surface extending substantially parallel to said housing axis, and said housing having at least one end member extending transverse to and affixed to said housing axis at one end of said housing, said sidewalls and said end member defining a volume interior to said housing for receiving a nuclear fuel rod,

ii. one or more elongated damping elements, each of said damping elements being associated with one of said sidewalls having said substantially planar surface, and each of said damping elements having at least one substantially planar lateral surface extending in the direction of elongation of said damping element, and

iii. one or more clamp assemblies including means for biasing each of said damping elements against its associated sidewall with said planar surface of said damping element being adjacent to said planar surface of said sidewall, each said biasing means having at least one fixed portion and free end extending from said fixed portion said fixed portion being securely fastened to said at least one exterior surface, and said free end overlying said damping slab adjacent said peripheral edge and preloading said damping against said exterior surface, and

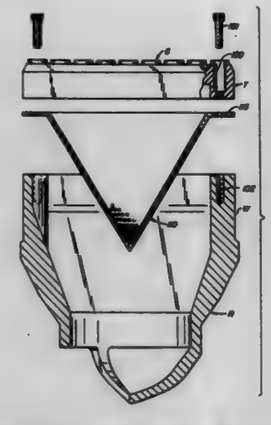
B. matrix means for establishing the relative position of said compartments whereby each said housing is fixedly positioned with respect to each other with said housing axes mutually parallel.

5,384,814

LOWER TIE PLATE STRAINERS FOR BOILING WATER REACTORS

Bruce Matzner, San Jose, Calif.; Eric B. Johansson, Wrightsville Beach, N.C.; Richard A. Wolters, Jr., San Jose, Calif.; Thomas G. Dunlap, San Jose, Calif.; Robert B. Elkins, San Jose, Calif.; Harold B. King, Wrightsville Beach, and Paul W. Sick, Wilmington, both of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 12, 1993, Ser. No. 44,687
Int. Cl.[6] G21C *1/04*
U.S. Cl. 376—352 **25 Claims**



1. In a boiling water reactor fuel bundle, a debris catching grid construction for placement within a flow volume defined by a lower hollow tie plate assembly having an inlet nozzle at a lower end thereof and an upper fuel rod supporting grid at an upper end thereof, said fuel rod supporting grid providing a mechanical support connection for supporting the weight of individual fuel rods of the fuel bundle, with said flow volume defined between said inlet nozzle and said upper end rod supporting grid, the debris catching grid comprising:

a three dimensional, non-planar perforated plate construction having side-by-side holes;

said perforated plate forming a three dimensional construction having a total cross sectional area exceeding the planar cross sectional area of said flow volume of said lower tie plate assembly between said inlet nozzle and said rod supporting grid; and,

means mounting said three dimensional perforated plate construction within said flow volume of said lower tie plate, such that said side-by-side holes are spaced below said upper fuel rod supporting grid, and such that a substantial portion of coolant flowing through said flow volume is caused to change direction between the inlet nozzle and the upper fuel rod supporting grid.

5,384,815

HYDRAULIC RESISTANCE STRIP FOR A LIGHT WATER REACTOR

John F. Patterson, and George C. Cooke, both of Richland, Wash., assignors to Siemens Power Corporation, Richland, Wash.

Continuation-in-part of Ser. No. 850,532, Mar. 13, 1992. This application Dec. 17, 1992, Ser. No. 995,640
Int. Cl.[6] G21C *3/322*
U.S. Cl. 376—444 **9 Claims**



3. A nuclear reactor fuel assembly comprising:

(a) a part length fuel rod;

(b) a plurality of elongated fuel rods;

(c) means for disposisng the fuel rods and the part length fuel rod in spaced substantially parallel relation to form:

(1) longitudinally extending flow subchannels between the fuel rods and the part length fuel rod and having a predetermined cross-sectional flow area for conducting moderator coolant; and

(2) a large longitudinally extending flow subchannel above the part length fuel rod and between the fuel rods adjacent to the part length fuel rod, the large longitudinally extending flow subchannel having a predetermined cross-sectional flow area comprising the cross-sectional flow areas of the longitudinally extending flow subchannels between the fuel rods and the part length fuel rod and the cross-sectional area of the part length fuel rod for conducting moderator coolant therebetween;

(d) means for increasing the hydraulic resistance of the large longitudinally extending flow subchannel above the part length fuel rod without substantially decreasing the cross-sectional flow area of the large longitudinally extending flow subchannel; the means for increasing the hydraulic resistance including:

(i) a hydraulic resistance strip positioned in the large longitudinally extending flow subchannel and substantially parallel to the fuel rods, the strip having an elongated continuous body defining at least one outer wall, the body being disposed axially within the large longitudinally extending flow channel above the part length fuel rod, the strip further having a cross-sectional area substantially less than the cross-sectional area of the part length fuel rod to maintain most of the increase in cross-sectional flow area of the large longitudinally extending flow subchannel, the strip having a surface area to achieve a desired distribution of hydraulic resistance along the axial height of the fuel assembly within the large longitudinally extending flow subchannel to limit cross-flows from and between adjacent subchannels; and

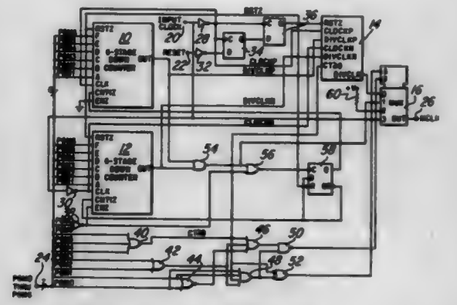
(e) connecting means for connecting the hydraulic resistance strip to the part length fuel rod.

5,384,816

FREQUENCY DIVIDER CIRCUIT

Daniel G. Prysby, Elk Grove, and Matthew J. DiMarco, Chicago, both of Ill., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 13, 1993, Ser. No. 135,840
Int. Cl.[6] H03K *21/00*
U.S. Cl. 377—48 **8 Claims**



1. A frequency divider circuit comprising:

first input means for receiving an input clock signal;

second input means for receiving data signals corresponding to a divisor value, said divisor value being either an integer or an integer plus one-half;

first counter means responsive to said data signals and to the positive-going transitions of said input clock signal for generating a first counter signal;

second counter means responsive to said data signals and to the negative-going transitions of said input clock signal for generating a second counter signal;

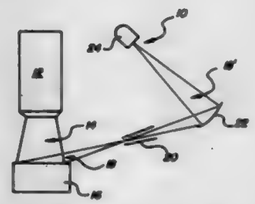
means for combining said first and second counter signals to thereby provide an output signal having frequency equal to the frequency of said input clock signal divided by said divisor value.

5,384,817

X-RAY OPTICAL ELEMENT AND METHOD FOR ITS MANUFACTURE

David J. Crowther, Farmington Hills, and George Gutman, Birmingham, both of Mich., assignors to Ovonic Synthetic Materials Company, Troy, Mich.

Filed Jul. 12, 1993, Ser. No. 89,832
Int. Cl.[6] G21K *1/06*
U.S. Cl. 378—84 **11 Claims**



1. An x-ray reflective structure comprising a plurality of superposed layer pairs, a first member of each pair comprising a layer of boron nitride and a second member of each pair comprising a layer of a material selected from the group consisting of: nickel, chromium, vanadium, iron, manganese, cobalt and combinations thereof;

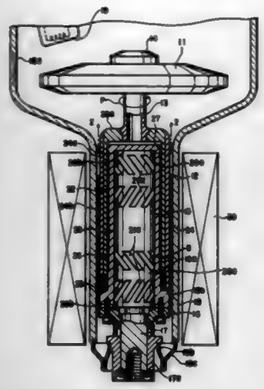
said x-ray reflective structure having a d-spacing which is in the range of 10–200 angstroms.

5,384,818

X-RAY TUBE OF THE ROTARY ANODE TYPE

Katsuhiro Ono, Utsunomiya; Hidero Anno, Ootawara; Takayuki Kitami; Hiroyuki Sugiura, both of Tochigi, and Makoto Tanaka, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 8, 1993, Ser. No. 44,174
Claims priority, application Japan, Apr. 8, 1992, 4-114276; Nov. 6, 1992, 4-296242
Int. Cl.[6] H01J *35/10*
U.S. Cl. 378—132 10 Claims



1. An X-ray tube of the rotary anode type comprising
an anode target;
a rotary structure to which the anode target is fixed,
a stationary structure for rotatably supporting said rotary structure;
slide bearings formed between the rotary and the stationary structures and including spiral grooves; and
a liquid metal lubricant applied to the slide bearings;
wherein said rotary structure includes a first rotating member to which the anode target is mechanically connected, said first rotating member being made of one of those materials which have a heat conductivity smaller than 0.1(cal/cm.sec.°C.) at a temperature range of 0° to 500° C.

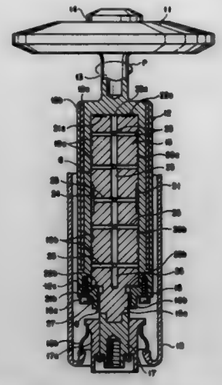
5,384,819

X-RAY TUBE OF THE ROTARY ANODE TYPE

Katsuhiro Ono, Utsunomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 8, 1993, Ser. No. 44,175
Claims priority, application Japan, Apr. 8, 1992, 4-114263
Int. Cl.[6] H01J *35/10*
U.S. Cl. 378—132 10 Claims

5. The X-ray tube of the rotary anode type comprising:
an anode target;
a rotary structure to which said anode target is fixed, said rotary structure having a center axis and a rotary bearing surface region;
a stationary structure for rotatably supporting said rotary structure, said stationary structure having a stationary bearing surface region opposed to said rotary bearing surface region;
slide bearing sections of a hydro-dynamic pressure type, said slide bearing sections including spiral grooves formed on at least one of said rotary and stationary bearing surface regions and a gearing gap between said rotary and stationary structures, said spiral grooves being arranged as a herringbone pattern around said center axis, each pair of said grooves having different lengths and extending from a center area to both side areas in said one of said rotary and stationary bearing surface regions;
a metal lubricant applied to said slide bearing sections which is in a liquid state when said X-ray tube is stably operated; and
means for receiving said lubricant, said receiving means including a chamber formed in one of said stationary and



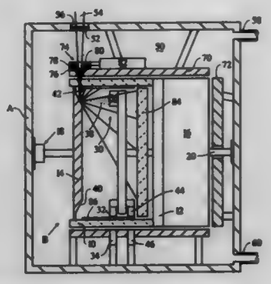
rotary structures and at least one lubricant passage formed in said one of said stationary and rotary structures, said receiving means having one end opened in said chamber and another end opened in one of said rotary and stationary bearing surface regions.

5,384,820

JOURNAL BEARING AND RADIATION SHIELD FOR ROTATING HOUSING AND ANODE/STATIONARY CATHODE X-RAY TUBES

James E. Burke, Villa Park, Ill., assignor to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 988,403, Dec. 9, 1992, Pat. No. 5,274,690, which is a continuation-in-part of Ser. No. 817,294, Jan. 6, 1992, Pat. No. 5,241,577, Ser. No. 817,295, Jan. 6, 1992, Pat. No. 5,200,985, Ser. No. 817,296, Jan. 6, 1992, abandoned, and Ser. No. 862,805, Apr. 3, 1992, Pat. No. 5,268,955. This application Jul. 16, 1993, Ser. No. 93,055
Int. Cl.[6] H01J *35/04*
U.S. Cl. 378—135 25 Claims



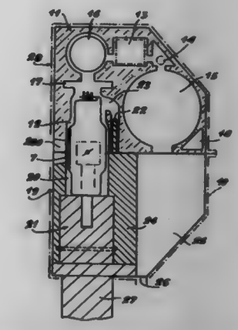
1. An x-ray tube assembly comprising:
a housing having a coolant fluid holding reservoir therein and an x-ray permeable window;
an x-ray tube disposed in the coolant fluid reservoir, the x-ray tube including a vacuum envelope having a cylindrical wall portion, the vacuum envelope being mounted within the housing for rotation about a central axis of the cylindrical wall portion;
a cylindrical sleeve disposed around the cylindrical vacuum envelope wall portion defining a thin gap therebetween for receiving the coolant fluid, such that the cylindrical wall portion, cylindrical sleeve, and coolant fluid define a journal bearing.

5,384,821

RADIOGENIC UNIT

Hans Jedlitschka, Chatillon, and Vincent Delacroix, Versailles, both of France, assignors to GE Medical Systems, Buc, France

Filed Jan. 13, 1994, Ser. No. 180,612
Claims priority, application France, Jan. 15, 1993, 93 00356
Int. Cl.[6] H05G *1/10*
U.S. Cl. 378—199 13 Claims



1. A radiogenic unit comprising an X-ray tube with a high-voltage supply circuit in a single-pole mode, wherein said unit comprises first and second parts which are imperviously sealed against fluids and X-rays and which are hermetically secured to each other;
wherein said first part is made of an electrically insulating material and includes
a first open cavity in which a first part of the x-ray tube containing a cathode operated at a high negative potential is housed;
housing cavities for elements of the high-voltage supply circuit;
a housing cavity for a heating transformer of the cathode; and
channels for circulating coolant fluid for the tube;
wherein said second part is made of metal with high thermal conductivity and includes an open cavity, in which a second part of the X-ray tube is housed, wherein the second part of the X-ray tube contains an anode and is detachably enclosed in a cylinder.

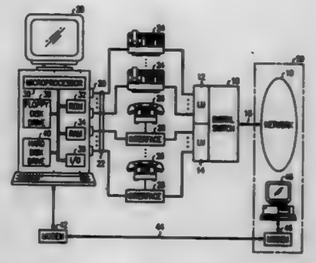
5,384,822

COMPUTER CONTROLLED TEST FACILITY FOR A TELECOMMUNICATION SWITCH

Ben G. Brown, Springville, Utah; John A. Krallmann, Warrenville, Ill.; Christopher D. Liesen, Naperville, Ill., and Mark J. Purdome, Hoffman Estates, Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 30, 1992, Ser. No. 906,956
Int. Cl.[6] H04M *1/24, 3/08*
U.S. Cl. 379—10 20 Claims

1. An apparatus for testing a telecommunications switch in a telecommunications system that includes telephone devices connected to the switch and the apparatus, each telephone device including means for detecting signals sent from the switch, means for sending reply messages to the apparatus corresponding to the signals detected by the detecting means, means for receiving command messages from said apparatus, and means for generating signals sent to the switch corresponding to the command messages, the apparatus comprising:
means operating under the control of a program for directly sending said command messages over a first communication channel to a selected one of said telephone devices, said generating means reponding to said command messages by generating corresponding signals sent to the switch via a second communication channel;
means, operating under the control of a program and responsive to said means for sending reply messages, for directly receiving said reply messages over said first communication channel from said selected one of said telephone devices, said reply messages representing the status of parameters associated with said selected one based on signals sent via the second communication channel by the switch;



means operating under the control of a program for identifying a received reply message that is responsive to a predetermined one of a previously sent command message;
means operating under the control of a program for determining if the actual status of parameters represented by said identified reply message matches an anticipated status of said parameters corresponding to said one of the command messages, a match of the actual and anticipated status of said parameters indicates an anticipated, successful reaction by said selected one of the telephone devices to said one command message and hence indicates successful switch operation.

5,384,823

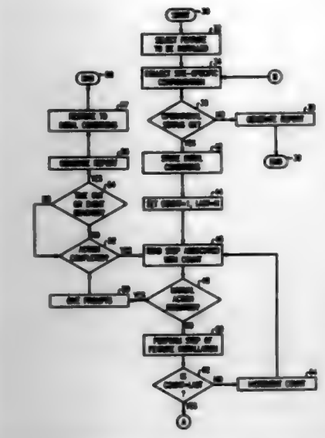
TELECOMMUNICATIONS SWITCH WITH INTEGRAL FEATURE INSTALLATION CAPABILITY

Edwin F. Breaski, Batavia; Dhaval C. Patel, Naperville, and Richard M. Rovnyak, Sr., Schaumburg, all of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Feb. 25, 1993, Ser. No. 23,236
Int. Cl.[6] H04M *1/24, 3/08*; H04J *1/16*
U.S. Cl. 379—10 12 Claims

1. In a telecommunications switch including means for establishing communication paths between pairs of subscriber channels, and means for providing operating system (O.S.) control of the switch based on software instructions, an improvement in installing a new switch feature comprising:
said O.S. control means including means operating under the control of software instructions associated with said new switch feature for executing a series of actions to integrate said new switch feature with said O.S. control means;
said O.S. control means including means operating under the control of software instructions for testing the operability of said new switch feature with said telecommunications switch following said series of actions, the integration and testing of said new switch feature implemented by the O.S. control means on which the feature is installed,
said executing means comprising means operating under the control of software instructions for determining if switch

elements required to support said new switch feature are present and operational prior to the testing by said testing



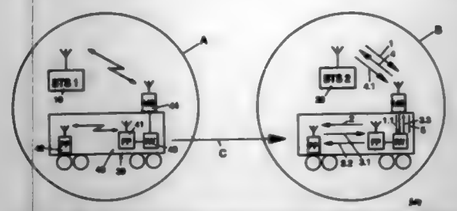
means and inhibiting the execution of said testing if said required elements are not present and operational.

5,384,824

METHOD FOR CARRYING OUT A LOCATION UPDATING FROM A MOBILE CELLULAR RADIOPHONE SYSTEM TO ANOTHER CELLULAR RADIOPHONE SYSTEM

Antero Alvesalo, Helsinki, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI92/00205, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993, PCT Pub. No. WO93/01689, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 1, 1992, Ser. No. 963,528
Claims priority, application Finland, Jul. 2, 1991, 913217
Int. Cl.[6] H04M *11/00*; H04Q *7/00*
U.S. Cl. 379—59 9 Claims



1. A method for carrying out a location-updating procedure from a mobile cellular radiophone system that includes at least one base station effectively associated with at least one mobile terminal located in a same area of said mobile cellular radiophone system as said base station, to another cellular radiophone system that includes a plurality of base stations, each having a respective location area, at least one of which base stations of said other cellular radiophone system is effectively associated with a respective mobile station which is effectively collocated with a respective said base station of said mobile cellular radiophone system for travel therewith from location area to location area of said other cellular radiophone system, said method comprising:

(a) transmitting location area identity signals by said base stations of said other cellular radiophone system for reception by said mobile station of said other cellular radiophone system, for thereby determining change of location of said mobile radiophone system from one said location area to another said location area of said other cellular radiophone system;

(b) upon reception by said mobile station of signals, resulting from conducting step (a), indicative of change in location of said mobile radiophone system from one said location area to another said location area, sending signals signalling said change, by said mobile station of said other cellular radio system, to said mobile cellular radiophone system;

(c) transmitting via a radio path from said mobile cellular radiophone system, as a result of reception thereby of signals from said mobile station in step (b) to at least one said mobile terminal of said mobile cellular radiophone system for initiating a mobile cellular radiophone system internal update procedure;

(d) conducting said mobile cellular radiophone system internal update procedure, in which said one mobile terminal of said mobile cellular radiophone system transmits to said mobile cellular radiophone system for reception thereby, signals indicative of presence of said one mobile terminal; and

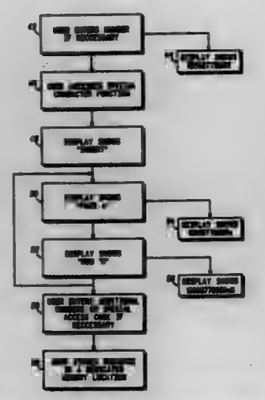
(e) transmitting signals indicative of presence of said one mobile terminal as a result of conducting steps (d), by said mobile cellular radiophone system to said mobile station of said other cellular radiophone system and by said mobile station to the base station of said other cellular radiophone system corresponding to the location area into which said mobile cellular radiophone system has moved and sending a confirmation signal back to said mobile station by said corresponding base station, for thereby permitting calls made to said one mobile terminal via said other cellular radiophone system to be received by said one mobile terminal, despite change in location area of said mobile cellular radiophone system.

5,384,825

METHOD FOR MEMORY DIALING FOR CELLULAR TELEPHONES

Pamela A. Dillard, Lake Zurich; Alisa C. Chan, Libertyville, and Robert K. Krolopp, Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1993, Ser. No. 86,413
Int. Cl.[6] H04M *11/00*, *1/64*
U.S. Cl. 379—59 20 Claims



1. A method for memory dialing for cellular telephones comprising the steps of:

accessing one of a plurality of a dedicated memory locations having stored therein a recall sequence including an ordered linking of at least one predetermined number to be automatically dialed by said cellular telephone and at least one variable number to be inserted by a user;

replacing said at least one variable number in said recall sequence with a number to complete a dialing sequence in response to a prompt from said cellular telephone;

transmitting a portion of said recall sequence as data on an access channel to establish a connection to a telephone network;

establishing a voice channel between said cellular telephone and said telephone network to transmit and receive audio signals; and

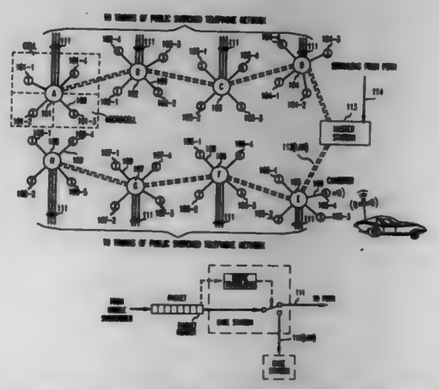
transmitting data signals representing the remaining portion of said recall sequence on said voice channel.

5,384,826

DISTRIBUTED PACKETIZED SWITCHING CELLULAR RADIO TELEPHONE COMMUNICATION SYSTEM WITH HANDOFF

Noach Amitay, Tinton Falls, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 787,714, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 591,321, Oct. 1, 1990, abandoned. This application Jul. 28, 1993, Ser. No. 98,759
Int. Cl.[6] H04M *11/00*; G08B *5/00*; H04J *3/24*, *3/12*
U.S. Cl. 379—60 2 Claims



1. A packetized cellular communications system, comprising:

a plurality of base stations, each respective base station being directly connected to a public switched telephone network by means of at least one transmission line defining a plurality of communications channels between the respective base station and the public switched telephone network and;

a means independent of the public switched telephone network for interconnecting the plurality of base stations;

each respective base station, comprising:

a means for receiving communications packets from a cellular subscriber in the respective base station, the packets comprising a present base station identification representing a current location of a cellular subscriber, an original base station identification representing where a call to which the communications packets are associated was initiated, and a line assignment representing one of the communications channels between a base station and the public switched telephone network; and

a means for selectively directing the communications packets received by the respective base station to one of:

(a) the public switched telephone network by means of one of the communications channels between the respective base station and the public switched telephone network; and

(b) the public switched telephone network through the interconnecting means, an original base station, different from the respective base station, where a call associated with the communications packets was initiated, and one of the communications channels between the original base station and the public switched telephone network,

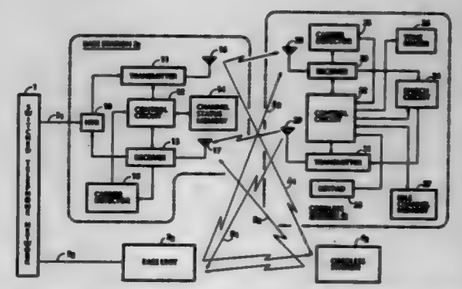
in response to the present base station identification, the original base station identification, and the line assignment.

5,384,827

CORDLESS TELEPHONE SYSTEM CAPABLE OF QUICKLY ESTABLISHING CONNECTION DURING CALL SETUP PHASE

Hironi Orikasa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 24, 1991, Ser. No. 690,417
Claims priority, application Japan, Apr. 24, 1990, 2-108351
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—61 8 Claims



1. A cordless telephone system having a control channel and a plurality of speech channels, comprising:

a base station coupled to a switched telephone network, and a cordless station, said base station including means for scanning said speech channels during a standby mode and detecting idle channels from the scanned channels, means responsive to a call request from the cordless station or an incoming call from the network for transmitting a channel identification signal to the cordless station over said control channel identifying the detected idle channels as possible candidate channels, and means for selecting a first one of the candidate channels and waiting for receipt of an end-of-switching signal from the cordless station, and for selecting a second one of the candidate channels if the end-of-switching signal is not received within a prescribed period of time following the selection of the first candidate channel; and

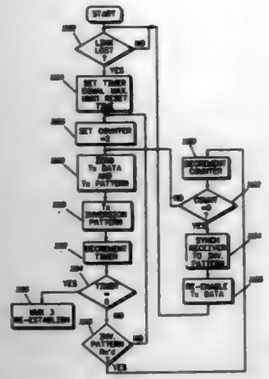
said cordless station including means for receiving said channel identification signal over said control channel, and means for selecting and testing said first candidate channel identified by the received channel identification signal for availability at the site of the cordless station and transmitting said end-of-switching signal over the selected first candidate channel if same is determined as being idle, and for selecting first candidate channel if same is determined as being idle, and for selecting and testing said second candidate channel for availability at said site if the selected first candidate channel is determined as being busy and for transmitting said end-of-switching signal over the selected second candidate channel if same is determined as being idle.

5,384,828

METHOD AND APPARATUS FOR SYNCHRONIZATION IN A WIRELESS TELEPHONE SYSTEM

David L. Brown, Miami, Fla.; Motjaba Aghealian, Fort Worth, Tex., and Paul D. Marko, Ft. Lauderdale, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 18, 1993, Ser. No. 136,846
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—61 16 Claims



14. A method for resynchronizing a first cordless telephone device operating in a cordless telephone system having first and second cordless telephone devices, the method comprising the steps of:

at the first cordless telephone device:

determining that synchronization with the second cordless telephone device has been lost;

setting a maximum resynchronization timer and a synchronization pattern counter upon determining that synchronization with the second cordless telephone device has been lost;

transmitting a synchronization pattern to the second cordless telephone device;

determining if the maximum resynchronization timer has reached a predetermined value;

receiving a synchronization pattern transmitted from the second cordless telephone device;

adjusting the synchronization pattern counter upon receiving the synchronization pattern; and

synchronizing the first cordless telephone device to the second cordless telephone device if the synchronization pattern counter has reached a predetermined value.

5,384,829

DIGITAL COMPUTER PLATFORM FOR SUPPORTING TELEPHONE NETWORK APPLICATIONS

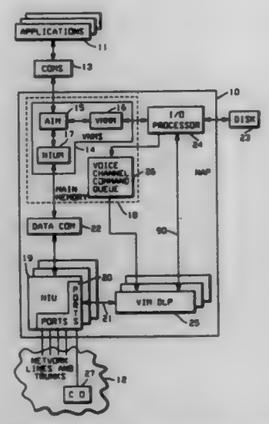
David W. Hellerman, Jr., West Chester; Tommy L. Bennett, Douglasville; Frederick C. Kruesi, Exton, and Robert A. Latimer, Plymouth Meeting, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 521,210, May 7, 1990, Pat. No. 5,133,004. This application Apr. 17, 1992, Ser. No. 870,621
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[6] H04M *1/64, 3/50*
U.S. Cl. 379—67 13 Claims

1. A telephone network application platform for interfacing between a telephone network and at least one telephone application program, said platform comprising:

digital computer means programmed to be operative to perform telephone network functionality in response to commands issued by said telephone application program, said telephone network functionality residing in said computer means independent of said telephone application program and actuatable in response to said commands, said commands including a SEND VOICE MESSAGE command and a RECEIVE VOICE MESSAGE command, said telephone network functionality including sending a voice message to said network and receiving a voice message from said network in response to said SEND VOICE MESSAGE command and said RECEIVE VOICE MESSAGE command, respectively,

application interface means coupled between said telephone application program and said computer means and responsive to said commands from said telephone application program for actuating said telephone network functionality in response to and in accordance with said commands,



said application interface means including means for providing responses to said telephone application program in response to said commands received therefrom, respectively,

said application interface means being responsive to said SEND VOICE MESSAGE command and said RECEIVE VOICE MESSAGE command from said telephone application program for activating said telephone network functionality by causing a voice message to be sent to said network and causing a voice message to be received from said network in response to said SEND VOICE MESSAGE command and said RECEIVE VOICE MESSAGE command, respectively, and

network interface means coupled between said network and said computer means for conveying said voice messages therebetween.

5,384,830

APPARATUS WITH SELECTIVE FORWARDING OF FACSIMILE AND VOICE COMMUNICATIONS

Hisashi Ide, Higashikiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 9, 1992, Ser. No. 897,446
Claims priority, application Japan, Jun. 12, 1991, 3-140396
Int. Cl.[6] H04M *1/64, 11/00*
U.S. Cl. 379—67 6 Claims

3. A facsimile apparatus comprising:

an image signal memory for storing image signals;

an automatic telephone answering means for storing voice signals;

a list creation means for creating:

a list of stored image signals;

a list of stored voice signals;

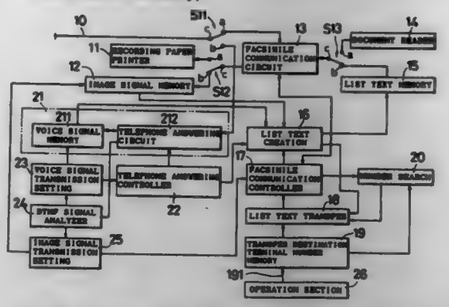
a transfer destination terminal number memory for storing:

at least one transfer destination terminal number to which the list of the stored image signals is to be transferred;

at least one transfer destination terminal number to which the list of stored voice signals is to be transferred; and

a list transfer means for transmitting:

the list of stored image signals to a terminal having its terminal number stored in the transfer destination terminal number memory;



the list of stored voice signals to a terminal having its terminal number stored in the transfer destination terminal number memory;

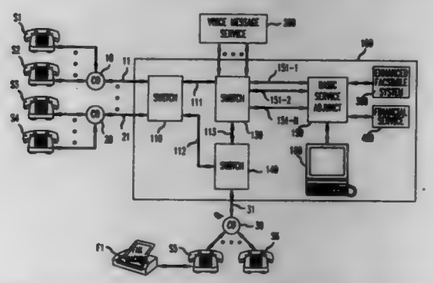
wherein the list transfer means transmits both the list of stored image signals and the list of stored voice signals to a same transfer destination terminal.

5,384,831

SYSTEM FOR PROVIDING PERSONALIZED TELEPHONE CALLING FEATURES

Carroll W. Creswell, Basking Ridge; Steven G. Lanning, Gillette; Carol J. Papazian, Bridgewater, and James M. Rulon, Randolph, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation-in-part of Ser. No. 754,109, Sep. 3, 1991, Pat. No. 5,222,125. This application Jun. 26, 1992, Ser. No. 905,265
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[6] H04M *1/64, 3/42*
U.S. Cl. 379—67 68 Claims



1. A method for providing a personal telecommunications service, said method comprising the steps of

storing for each of a plurality of subscriber telephone numbers a plurality of caller identifiers each associated with a specification defining a respective first call treatment,

answering a first telephone call directed to a particular one of said subscriber telephone numbers,

receiving a caller identifier during said call after it has been answered, and

processing said call using the call treatment associated with the received caller identifier stored for said particular subscriber telephone number.

5,384,832

METHOD AND APPARATUS FOR A TELEPHONE MESSAGE ANNOUNCING DEVICE

Fred C. Zimmerman, Deephaven, and Verne L. Severson, Chaska, both of Minn., assignors to CommStar, Inc., Eden Prairie, Minn.

Filed Nov. 9, 1992, Ser. No. 973,405
Int. Cl.[6] H04M *9/00*
U.S. Cl. 379—67 3 Claims



1. A local telephone message announcing device for signaling a telephone user as to the presence of one of more recorded messages that are stored by a remote telephone voice messaging system for a telephone number associated with a telephone line to which said message announcing device is connected, said message announcing device comprising:

detecting means for identifying one or more predetermined signals on said telephone line, at least one of said predetermined telephone line signals generated by said remote telephone voice messaging system and indicating the presence of a recorded message stored by said remote telephone voice messaging system, said detecting means including hook means for indicating an off hook signal for said local telephone, tone means for indicating a message waiting signal from said remote telephone voice messaging system, and ring means for indicating a ring signal for said local telephone;

control means operably coupled to said detecting means and to said telephone line for automatically initiating the detection of said predetermined telephone line signals generated by said remote telephone voice messaging system in response to a first preselected time interval after said ring means has indicated a ring signal, and also initiates the detection of said predetermined signal after a second preselected time interval after said first preselected time interval; and

notification means operably coupled to said control means for alerting said telephone user as to the presence of said recorded messages that are stored by said remote telephone voice messaging system in response to the identification of said predetermined telephone line signal.

5,384,833

VOICE-OPERATED SERVICE

Ian R. Cameron, Ipswich, England, assignor to British Telecommunications public limited company, London, England

Continuation of Ser. No. 613,586, filed as PCT/GB89/00445, Apr. 26, 1989, abandoned. This application May 5, 1994, Ser. No. 238,414
This application May 5, 1994, Ser. No. 238,414
Claims priority, application United Kingdom, Apr. 27, 1988, 8809898
Int. Cl.[6] H04M *1/65*
U.S. Cl. 379—67 18 Claims

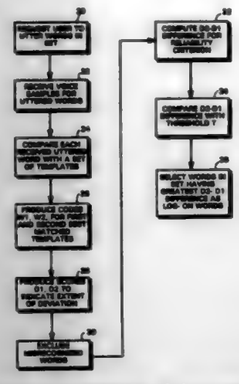
1. A method of allocating to a user of a voice operated service a user identifier comprising a plurality of words from a set of words, comprising:

(i) requesting the user to utter the words of the set;

(ii) comparing each uttered word with a set of speech recognition templates which correspond to the words of the set to obtain a measure of similarity for each uttered word with respect to each template of the set of speech recognition templates;

(iii) determining which of the words of the set meet a criterion related to a degree to which

(a) the measure of similarity of an uttered word to a template of said set of templates corresponding to a requested word exceeds



(b) the measure of similarity of the uttered word to another one of other templates of said set of templates with which the uttered word has the most similarity; and

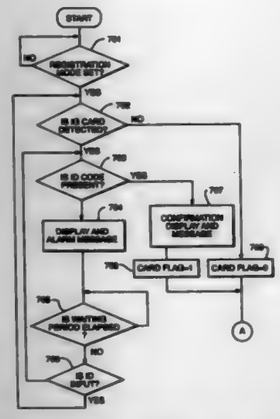
(iv) selecting a sequence of words using only words of the set which meet the criterion.

5,384,834

TELEPHONE APPARATUS USING A DETACHABLE MEMORY DEVICE

Hiroshi Sato, and Makoto Hoshino, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 21, 1990, Ser. No. 526,401
Claims priority, application Japan, May 19, 1989, 1-126165
Int. Cl.[6] H04R *25/00*
U.S. Cl. 379—88 **6 Claims**



1. A telecommunication apparatus used with a detachable memory device which is capable of storing personal information, the personal information being available for the apparatus when the detachable memory device is connected to the apparatus, comprising:

detecting means for detecting whether identification information is stored in the detachable memory device when the detachable memory device is connected to the apparatus;

indicating means, responsive to an absence of identification information, for providing an indication to a user of the apparatus; and

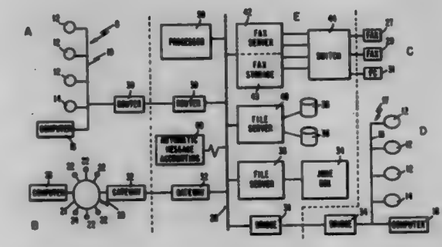
storing means, responsive to the user's operation, for storing an identification information in said detachable memory device.

5,384,835

PUBLIC TELEPHONE NETWORK INCLUDING A DISTRIBUTED IMAGING SYSTEM

Barbara L. Wheeler, Springfield; Earnest L. Heatwole, Jr., Fairfax, both of Va.; Maureen T. McGinley, Philadelphia, Pa.; Richard M. Seikaly, Falls Church, and Bernard J. Craig, Nokesville, both of Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 698,212, May 10, 1991, Pat. No. 5,200,993. This application Jan. 12, 1993, Ser. No. 2,393
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—96 **20 Claims**



1. A distributed image processing system, comprising:

(a) a plurality of remote user terminal stations for inputting and processing image processing commands from a plurality of respective users, each of said remote user terminal stations including

(i) local processor means responsive to said image processing commands for supplying data retrieval commands and image manipulation commands, and

(ii) image information input/output means for receiving and transmitting image data;

(b) central processor means including

(i) data storage means responsive to said data retrieval commands for supplying said image information, and

(ii) communications processor means responsive to originating terminal identification information for supplying and manipulating said image information from said data storage means based on stored image manipulation commands corresponding to said originating terminal identification information and sending said image information to said image information input means; and

(c) connectivity means for transmitting said image manipulation commands and said data retrieval commands from said plurality of remote user terminal stations to said central processor means and for transmitting image information from said central processor means to said plurality of remote user terminal stations, said connectivity means including

(i) a public telephone network (PTN) for connecting said plurality of remote user terminal stations to said central processor means, and

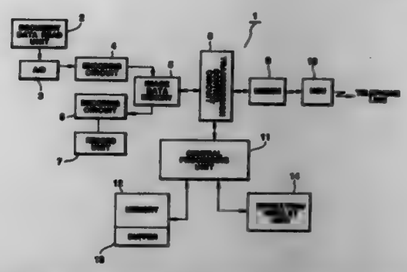
(ii) originating terminal identification means for automatically supplying said originating terminal identification information identifying each of said plurality of remote user terminal stations on said public telephone network to said communications processor means.

5,384,836

FACSIMILE APPARATUS AUTOMATICALLY REGISTRABLE OF IDENTIFICATION NAME

Kazutaka Otsuka, Hachioji, Japan, assignor to Casio Electronics Manufacturing Co., Ltd. and Casio Computer Co., Ltd., both of Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 841,050
Claims priority, application Japan, Mar. 19, 1991, 3-054429
Int. Cl.[6] H04M *3/00, 11/00*
U.S. Cl. 379—100 **6 Claims**



1. A facsimile apparatus for receiving identification data, for identifying a particular destination terminal, at time of transmitting document data to the destination terminal via a telephone line, comprising:

memory means for storing, as a data pair, a facsimile number input by manual dialing, and corresponding identification data returned from the destination terminal;

control means for controlling said memory means to automatically store, as the data pair, the facsimile number input by manual dialing, and the corresponding identification data returned from the destination terminal in response to said manual dialing;

display means for displaying the identification data stored in the memory means;

selection means for selecting one of the identification data displayed on the display means;

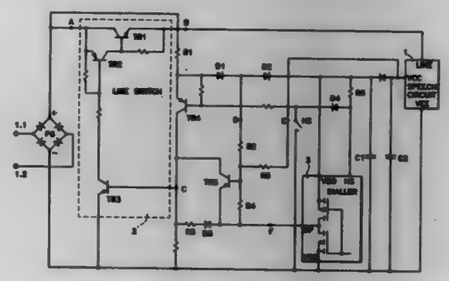
line connecting means for reading out a facsimile number stored in the memory means and corresponding to the selected identification data, and connecting the facsimile apparatus to a telephone line corresponding to the read-out facsimile number.

5,384,837

LINE SWITCH CONTROL CIRCUIT ARRANGEMENT FOR TELEPHONE SUBSET

Ronald C. S. Fox, Randwick, Australia, assignor to Alcatel Australia Limited, Sydney, Australia

Filed Sep. 4, 1992, Ser. No. 981,856
Claims priority, application Australia, Sep. 4, 1991, PK8166
Int. Cl.[6] H04M *1/00, 19/00*
U.S. Cl. 379—165 **8 Claims**



1. In a telephone subset comprising a first and second line terminal means for respectively connecting to conductors of an exchange line; a speech circuit means connected between the line terminal means; a line switch means whose switching element is formed by a conductive path of a first controllable semiconductor switch means having a control element coupled to a line switch control terminal means, said switching element being serially connected in the said subset's loop current circuit; and a dialler circuit means having power supply terminal means, a hook-switch terminal means coupled to hook-switch contact means of a hook-switch, and a signal output terminal means, a method for controlling said first controllable semiconductor switch means comprising the steps of:

deriving current from the exchange line with a current bleed circuit means to maintain a first predetermined voltage across said power supply terminals when said hook-switch is in the on-hook mode to partially energize said dialler circuit means;

detecting an off-hook condition of said hook-switch with a second controllable semiconductor switch means which is rendered conducting thereby;

directing current from said exchange line into said line switch control terminal means via said second controllable semiconductor switch means to allow sufficient current to flow through the said conductive path of said first controllable semiconductor switch means to charge a first storage capacitor means to a second predetermined voltage for fully energizing said dialler circuit means, whereupon said first controllable semiconductor switch means is saturated and more current flows through said conductive path of the first controllable semiconductor switch means whereby said first storage capacitor means is charged to a third predetermined voltage;

rendering a third controllable semiconductor switch means conducting upon detection of said third predetermined voltage together with detection of a break signal condition on said signal output terminal means of said dialler circuit means, thereby diverting current from said exchange line into said signal output terminal means and rendering said first controllable semiconductor switch means non-conducting thereby breaking the said subset's loop current circuit; and

using a second storage capacitor means to maintain a voltage equivalent to said first predetermined voltage across said power supply terminals for a predetermined minimum period when said line terminal means are subsequently disconnected from said conductors of the exchange line.

5,384,838

SYSTEM FOR COMMUNICATING THROUGH PARTITIONS

Ronald J. Hoffman, 33165 Cannon Rd., Solon, Ohio 44139

Filed May 19, 1992, Ser. No. 885,175
Int. Cl.[6] H04M *1/00, 1/60*
U.S. Cl. 379—167 **13 Claims**

1. An electronic intercommunication system for transmitting signal through a door or other partition comprising:

first piezo transducer means mountable on one side of the door/partition and a second piezo transducer member mountable on one side of the of the door/partition, each single piezo transducer member mountable on the other side a microphone or a speaker;

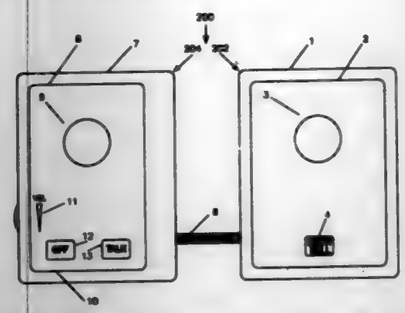
a matrix of electronic analog switching means operatively connected to said first and second single piezo transducer members;

bridge amplifier means having input means and output means;

said electronic analog switching means operatively connecting said first single piezo transducer member to the input means of said bridge amplifier means and said second single piezo transducer member to the output means of said bridge amplifier means, the bridge amplifier means enabling said second Single piezo transducer member to be driven by a peak-to-peak voltage greater than the

system voltage while only impressing the system voltage through the electronic analog switching means; and

TALK switching means operatively connected to said electronic analog switching means for reversing the connection of said electronic analog switching means to said first and said second single piezo transducer members;



wherein actuation of the TALK switching means changes the condition of said electronic analog switching means to operatively reverse the connection of said first and said second single piezo transducer members to the bridge amplifier means.

5,384,839

TRUNK APPARATUS FOR LOOP DIALING TRUNK LINE

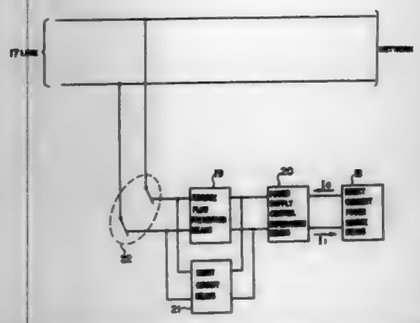
Sanaki Hiwatashi, Hatano, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 584,207, Sep. 18, 1990, abandoned. This application Mar. 14, 1994, Ser. No. 212,303

Claims priority, application Japan, Sep. 19, 1989, 1-240594

Int. Cl.[6] H04M *7/00*

U.S. Cl. 379—219 **10 Claims**



1. A common mode noise removing apparatus connected to connection lines between switching networks, for a loop dial relay, said common mode noise removing apparatus comprising:

direct current power source means for applying a predetermined direct current voltage to said lines to which said direct current power source means is connected in receiving and receiving supervision modes,

reverse flow preventing means set between said direct current power source means and said lines, for preventing a reverse flow of current,

power supply control supervision means for supervising a power supply condition of a loop current that flows in a loop formed by said direct current power source means and said lines in a receiving mode, and

short-circuit means for short-circuiting said reverse flow preventing means in a mode in which no dial pulse is received from said lines and in which said power supply control supervision means detects said loop current.

5,384,840

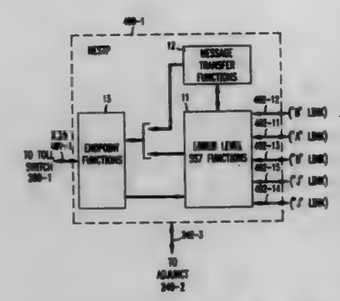
TELECOMMUNICATIONS SYSTEM SS7 SIGNALING INTERFACE WITH SIGNAL TRANSFER CAPABILITY

Jo Ann Blatchford, Middletown; Pamela L. DeFazio, Eatontown, and Joel K. Young, Middletown, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 9, 1992, Ser. No. 958,839

Int. Cl.[6] H04M *7/00*

U.S. Cl. 379—229 **7 Claims**



1. A method for use in an SS7 signaling interface within a telecommunications network, said SS7 signaling interface having a host element associated therewith, said method comprising the steps of

receiving, over an incoming link from a particular originating element within said network, incoming SS7 messages addressed to different elements within said network,

applying, to said associated host element, the SS7 application data contained in each received incoming message for which said associated host element is the addressed element, said applying using a protocol which is exclusive of the SS7 message transfer part, and

applying, to selected SS7 signaling links connected to said interface, outgoing SS7 messages which contain SS7 application data contained in ones of the received incoming SS7 messages for which the addressed element is other than said associated host element.

5,384,841

AUTOMATIC CALL DISTRIBUTION NETWORK WITH CALL OVERLOAD SYSTEM AND METHOD

David J. Adams, Warrenville; Wayne L. Harbuziuk, and Christopher G. Calp, both of Wheaton, all of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 27, 1993, Ser. No. 144,170

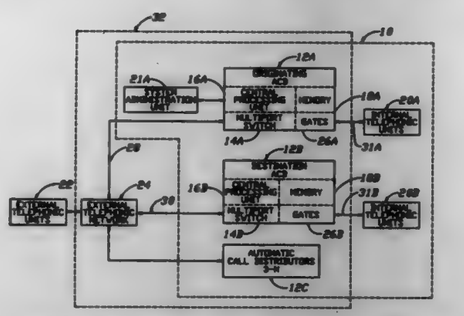
Int. Cl.[6] H04M *3/54*

U.S. Cl. 379—266 **18 Claims**

1. In an automatic call distribution network having means for transferring a call received at a originated ACD to a destination ACD through an external telephonic network, the improvement being a call overflow system, comprising:

means at the originating ACD to compile data relating to an overflow call to be transmitted through the external telephonic network to the destination ACD including at least one of the types of information of (a) identification of a selected gate of the destination ACD to which the call is to be routed in addition to the destination ACD telephone number (b) identification of the originating ACD (c) a time information relating to a time the overflow call was in a queue at the originating ACD (d) an ANI number representation of a telephone number of the call received at the originating ACD and (e) a priority level of the overflow call; and

means at the originating ACD for sending the compiled data in a SETUP message with the overflow call in an ISDN



network to the destination ACD to route the overflow call at the destination ACD.

5,384,842

PROGRAMMABLE TELEPHONE

Ian A. Tapping, Backwell, and Stephen H. Colclough, Brentry, both of England, assignors to Chestivale Electronics Limited, England

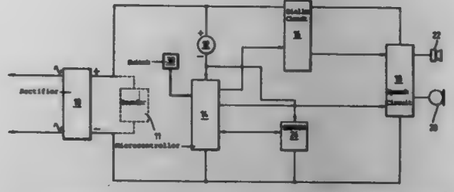
PCT No. PCT/GB91/00201, § 371 Date Dec. 5, 1991, § 102(e) Date Dec. 5, 1991, PCT Pub. No. WO91/12682, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 8, 1991, Ser. No. 777,402

Claims priority, application United Kingdom, Feb. 8, 1990, 9002850; Feb. 8, 1990, 9002867

Int. Cl.[6] H04M *1/60*

U.S. Cl. 379—387 **3 Claims**



1. A telephone comprising a receiver; a transmitter including a microphone; a speech circuit: a microcontroller for controlling the operation of the telephone; means for storing a selected gain for said receiver; and switch means selectively actuable by a user for increasing the gain of the receiver to said selected gain and simultaneously automatically cutting off the microphone.

5,384,843

HANDS-FREE TELEPHONE SET

Hiroyuki Masuda; Kazutoshi Hosokawa; Kensaku Fujii, and Juro Ohga, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 15, 1993, Ser. No. 122,787

Claims priority, application Japan, Sep. 18, 1992, 4-250275

Int. Cl.[6] H04M *9/08*

U.S. Cl. 379—391 **14 Claims**

1. A hands-free telephone set including a bidirectional microphone (10), a transmitting signal analog digital converter (21), an acoustic echo canceler (60), a transmitting signal digital analog converter (31), a received signal analog digital converter (22), a received signal amplifier (81), a received signal digital analog converter (32) and a loudspeaker (40), said hands-free telephone set comprising:

transmitting signal level automatic control means (100) for controlling a level of a transmitting digital signal produced from the transmitting signal analog digital converter (21) and passed through the acoustic echo canceler (60) so that the acoustic echo canceler (60) linearly suppresses acoustic echo produced due to an acoustic coupling between the loudspeaker (40) and the bidirectional microphone (10).

5,384,844

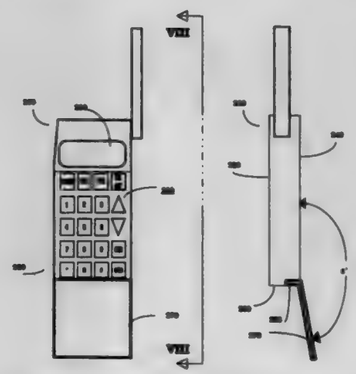
PIVOTABLE HOUSING FOR HAND-HELD TRANSCEIVER

Nils R. Rydbeck, Cary, N.C., assignor to Ericsson GE Mobile Communications, Inc., Lynchburg, Va.

Filed Jul. 30, 1993, Ser. No. 99,536

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—433 **7 Claims**



1. A portable radiotelephone comprising:

a. a keypad positioned on a first side of said radiotelephone;

b. a speaker positioned on a second side of said radiotelephone, said second side being opposite to said first side;

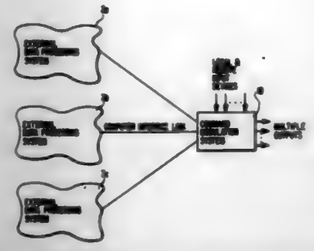
c. a flip cover hinged to said radiotelephone, said flip cover having a closed position that at least partially covers said keypad and an open position angled at less than approximately 180 degrees to said second side of the radiotelephone.

5,384,845

COMMAND MODULATION SYSTEM HAVING COMMAND GENERATOR UNIT FOR COMMANDING A PLURALITY OF DIFFERENT TYPES OF CONTROLLED UNITS

Andrew J. Lopatin, Boyds, Md.; Antoine R. Nasman, Washington, D.C., and Jean-Pierre G. Bourgoa, Herndon, Va., assignors to International Telecommunications Satellite Organization, Washington, D.C.

Filed Apr. 14, 1993, Ser. No. 45,777
Int. Cl.[6] H04K *1/02*
U.S. Cl. 380—9 **15 Claims**



1. A command modulation system for generating modulated commands to a plurality of controlled systems, said command modulation system comprising:

at least one input device for providing command input data;

at least one command generation means for generating command information for said controlled systems in accordance with said command input data; and

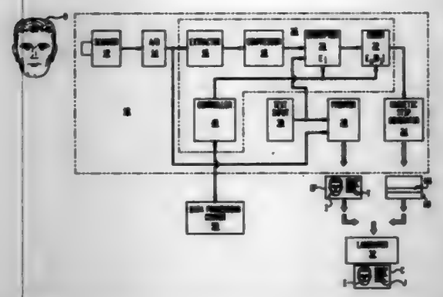
a plurality of command modulation channels for generating modulated command signals in accordance with said command input data for simultaneous transmission of said command information to respective ones of said controlled systems.

5,384,846

SYSTEM AND APPARATUS FOR CONTROLLED PRODUCTION OF A SECURE IDENTIFICATION CARD

William Berson, Westport, and James R. Marcus, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 26, 1993, Ser. No. 53,937
Int. Cl.[6] H04K *1/00*
U.S. Cl. 380—23 **6 Claims**



1. Apparatus for producing an identification card, comprising:

a) means for scanning an object or other entity to produce a first signal representative of an image of said object or other entity;

b) means for printing said image on a first portion of said identification card;

c) means for encrypting a second signal comprising a representation of at least a portion of said image, said second signal being derived at least in part from said first signal;

d) means for incorporating a coded representation of said encrypted second signal into a second portion of said identification card; and

e) means for controlling said apparatus, said controlling means further comprising;

e1) rechargeable means for limiting the number of identification cards which can be produced until said rechargeable means is recharged; and

e2) means for communicating with a remote data processing center to enable recharging of said rechargeable means; wherein

f) said second signal is encrypted using an encryption key, E_i, for a public key encryption system; and wherein a decryption key, D_i, is encrypted with a second encryption key, E_p, for said public key encryption system to form an encrypted decryption key, $E_s[D_i]$; and wherein said encrypted decryption key, $E_s[D_i]$ is appended to said second signal prior to incorporation into said second portion;

g) said rechargeable means further comprises a descending register for storing said number of identification cards which may be produced by said apparatus before said rechargeable means is recharged, said descending register being decremented as said identification cards are produced;

h) said apparatus further comprises an ascending register which is incremented by an equal amount each time the descending register is decremented;

i) said rechargeable means is recharged by incrementing said descending register, whereby the sum of said ascending register and said descending register is a control sum representative of the total amount by which said rechargeable means has been charged since said apparatus was initialized;

j) said control means stores a communication key and said remote data processing center stores an identical communications key, and wherein said control means further comprises:

j1) means for encrypting a message; said message including data derived from the current state of said control means and a serial number for said apparatus;

j2) means for controlling said communications means to send said message to said remote data processing center and to receive a reply message, said reply message including a recharge amount and being encrypted with said communications key; and

j3) means for decrypting said reply message and incrementing said descending register by said recharge amount; and,

k) said reply message further includes a new encrypted decryption key $E_s[D/]$, said control means replacing said key $E_s[D_i]$ with said new key, $E_s[D/]$, for identification cards produced subsequent to recharge of said rechargeable means.

5,384,847

METHOD AND APPARATUS FOR PROTECTING CORDLESS TELEPHONE ACCOUNT AUTHENTICATION INFORMATION

Alan F. Hendrickson, Austin, Tex., and Bruno Damien, Voisins le Bretonneux, France, assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 1, 1993, Ser. No. 130,636
Int. Cl.[6] H04K *1/00*
U.S. Cl. 380—23 **23 Claims**

1. An apparatus for use in a telecommunication system, said telecommunication system including a local unit and a remote unit, the apparatus generating an encrypted confirmation in said local unit responsive to an inquiry received from said remote unit; the apparatus comprising:

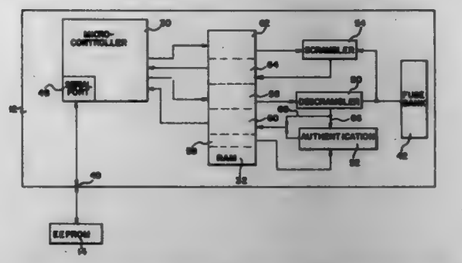
receiving means for receiving said inquiry;

memory means for storing a scrambled encryption key;

descrambling means operatively coupled with said memory means for receiving said scrambled encryption key from said memory means and for descrambling said scrambled encryption key responsive to a first predetermined digital code to produce a descrambled encryption key;

code means operatively coupled with said descrambling means for establishing said first predetermined digital code;

encryption means for generating an encrypted confirmation in response to said inquiry, said encrypted confirmation



being encrypted using said descrambled encryption key, said encryption means being operatively coupled with said receiving means for receiving said inquiry and said encryption means being operatively coupled with said descrambling means for receiving said descrambled encryption key; and

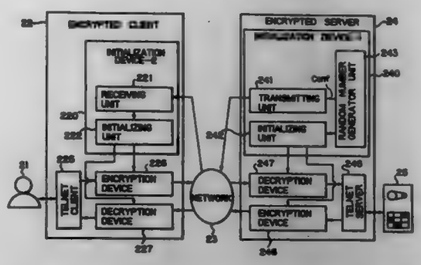
transmitting means operatively coupled with said encryption means for receiving said encrypted confirmation from said encryption means and transmitting said encrypted confirmation.

5,384,848

ENCRYPTED VIRTUAL TERMINAL EQUIPMENT HAVING INITIALIZATION DEVICE FOR PREVENTING REPLY ATTACK

Hiroaki Kikuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1993, Ser. No. 113,909
Claims priority, application Japan, Mar. 11, 1993, 5-050550
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—48 **8 Claims**



1. An apparatus which encrypts data transferred through a network during a session between a client terminal and a server, wherein a channel establishment command is issued to start the session, the apparatus comprising:

a client terminal which issues the channel establishment command and comprises:

a first encryption device, connected to the network, which is initialized at the start of the session and encrypts data to be transferred from the client terminal to the network during the session, and

a first decryption device, connected to the network, which is initialized at the start of the session, receives encrypted data from the network during the session and decrypts the received encrypted data; and

a server which is responsive to the channel establishment command issued by the client terminal so that the server communicates with the client terminal through the network during the session, the server comprising:

a second encryption device, connected to the network, which is initialized at the start of the session and encrypts data to be transferred from the server to the network during the session,

a second decryption device, connected to the network, which is initialized at the start of the session, receives encrypted data from the network during the session and decrypts the received encrypted data, and

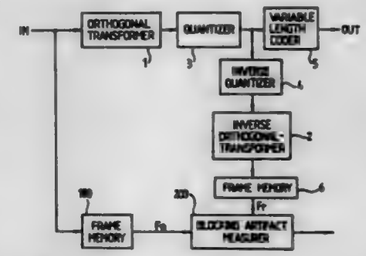
a random data generator which generates random data in response to the issuance of the channel establishment command by the client terminal, the random data being used to initialize the first and second encryption devices and the first and second decryption devices.

5,384,849

APPARATUS AND METHOD FOR ENCODING/DECODING DATA INCLUDING THE SUPPRESSION OF BLOCKING ARTIFACTS

Je-chang Jeong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-Do, Rep. of Korea

Filed May 18, 1993, Ser. No. 62,599
Claims priority, application Rep. of Korea, May 18, 1992, 92-8362
Int. Cl.[6] H04N *1/415*; H03M *7/30*
U.S. Cl. 380—49 **22 Claims**



1. A method for suppressing blocking artifacts in an encoder comprising the steps of: dividing original frame data into a size of predetermined blocks; compressing the data through a data transformation and a quantization process on a per unit block basis; decompressing and restoring the compressed data on a per unit frame basis; delaying the original frame data for a predetermined period of time; measuring a degree of blocking artifact by comparing the restored frame data with the delayed original frame data; and generating a post-processing parameter which represents the degree of blocking artifact.

5,384,850

SECURITY APPARATUS AND SYSTEM FOR RETAIL ENVIRONMENTS

William S. Johnson, Jamestown; Edward A. Payne; Donald A. Boschker, and Benita W. Phipps, all of Greensboro, N.C., assignors to Gilbarco, Greensboro, N.C.

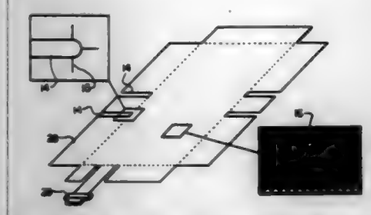
Division of Ser. No. 663,725, Feb. 28, 1991, Pat. No. 5,228,084.
This application Nov. 23, 1992, Ser. No. 980,503
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—52 **20 Claims**

1. A security module for storing sensitive data in electronic form in a memory comprising

an enclosure for an electronic circuit including said memory

and data input leads to supply the sensitive data to the memory and to allow selective outputting of data from memory,

a barrier within said enclosure and enclosing said memory



and electrically connected with said memory such that a penetration of said barrier electrically induces said memory to lose the data stored therein, said barrier being scored to induce the breaking of said electrical connection upon a manipulation of said barrier.

5,384,851

METHOD AND APPARATUS FOR CONTROLLING SOUND LOCALIZATION

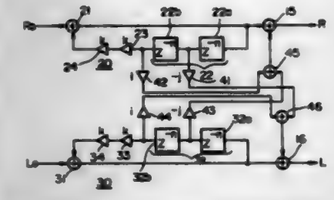
Junichi Fujimori, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Continuation of Ser. No. 773,031, Oct. 8, 1991, abandoned. This application Apr. 11, 1994, Ser. No. 226,261

Claims priority, application Japan, Oct. 11, 1990, 2-272727

Int. Cl.[6] H04S *1/00*

U.S. Cl. 381—17 **9 Claims**



1. A method for controlling sound of the sound image which is perceived by a listener, comprising the steps of:

receiving input audio signals of right channel Ri and left channel Li,

performing a matrix operation on the input audio signals as described below,

the matrix operation being;

$$\begin{bmatrix} Ro \\ Lo \end{bmatrix} = \frac{1}{1 - k^2 z^{-2T}} \begin{bmatrix} 1 & -k \cdot z^{-T} \\ -k \cdot z^{-T} & 1 \end{bmatrix} \begin{bmatrix} Ri \\ Li \end{bmatrix}$$

wherein T is a difference between sound propagation times through cross-talk paths and main paths, said cross-talk paths being two paths crossing each other between said loudspeakers and ears of a listener, said main path being two noncrossing paths between said loudspeakers and said ears,

k is a ratio between attenuation for transmitting a sound through said main path and said cross-talk path;

z^{-T} is a delay operator for delaying signals by time T,

respectively supplying the output audio signals of the right channel Ro and the left channel Lo which are resulted by the matrix operation to the right and left loudspeakers placed in front of the listener.

5,384,852

HEARING AID HAVING A PROGRAMMABLE AUDIO INPUT

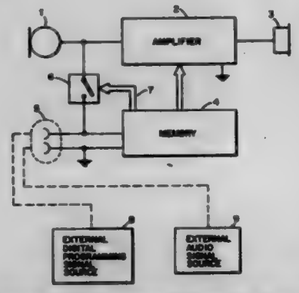
Beat Schäres, Iffwil, Switzerland, assignor to Ascom Audiosys AG, Switzerland

Continuation of Ser. No. 595,416, Oct. 11, 1990, abandoned. This application Aug. 10, 1993, Ser. No. 104,402

Claims priority, application Switzerland, Nov. 29, 1989, 4275/89

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68 **3 Claims**



1. In a digitally programmable hearing aid including a microphone for receiving external sounds and including a reproduction loudspeaker for reproducing the received external sounds, an audio amplifier having an input coupled with the microphone for receiving and amplifying sound signals from the microphone and having an output coupled with the reproduction loudspeaker, and a digitally programmable memory coupled with the audio amplifier for adjusting the operation of the audio amplifier and the sounds reproduced by the reproduction loudspeaker, the improvement comprising:

a unitary, bipolar input socket coupled with the digitally programmed memory for receiving digital programming signals from an external digital programming signal source and for receiving audio signals from an external audio signal source, wherein the digital programming signals are operable to adjust operation of the hearing aid for a particular user;

a first connecting line extending from at least one pole of the unitary input socket to the audio amplifier input for conducting to the audio amplifier input signals applied to the unitary input socket;

a unitary electronic switch positioned in the first connecting line between the at least one pole of the input socket and the audio amplifier input and operatively coupled with the digitally programmable memory to respond to switch position control signals provided by the digitally programmable memory to selectively operate the electronic switch between a closed position to permit the passage of signals from the input socket to the audio amplifier input through the electronic switch and an open position to prevent the passage of signals from the input socket to the audio amplifier input through the electronic switch;

a second connecting line extending between the electronic switch and the digitally programmable memory for transmitting switch position control signals from the memory to the switch;

wherein the digitally programmable memory is responsive to a first external data signal applied to the unitary input socket to provide a first switch control signal from the digitally programmable memory to the unitary electronic switch to open the switch so that an external digital programming signal applied to the unitary input socket is not received at the input of the audio amplifier and is not reproduced by the reproduction loudspeaker; and

wherein the digitally programmable memory is responsive to a second external data signal applied to the unitary input socket to provide a second switch control signal from the digitally programmable memory to the unitary electronic switch to close the switch so that an external audio signal applied to the unitary input socket is received at the input of the audio amplifier and is reproduced by the reproduction loudspeaker.

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ACTIVE NOISE REDUCTION APPARATUS

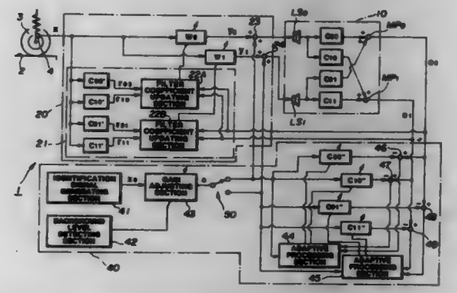
Akio Kinoshita, Fujisawa; Kazuhiro Doi; Kenichiro Muraoka, both of Yokohama, and Isutomu Hamabe, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 18, 1993, Ser. No. 33,748

Claims priority, application Japan, Mar. 19, 1992, 4-064013

Int. Cl.[6] H03B *29/00*

U.S. Cl. 381—71 **42 Claims**



1. An apparatus for active reduction of noises transmitted from at least one noise source into a closed space for at least one human occupant, comprising:

control sound sources for producing control sounds in the closed space;

residual noise detecting means for detecting residual noises at predetermined positions in the closed space;

noise generator condition detecting means for detecting a noise generating condition of the at least one noise source to generate a reference signal;

signal processing means for filtering the reference signal corresponding to acoustic transfer characteristics between the control sound sources and the residual noise detecting means;

active control means for driving the control sound sources according to an output filtered signal of said signal processing means to reduce the noises in the closed space based upon the reference signal and the residual noises;

background noise level detecting means for detecting a background noise level in the closed space;

identification sound generating means for producing an identification sound having a spectral distribution corresponding to a spectral distribution of the noise transmitted into the closed space from the at least one noise source, and for varying a sound pressure level of the identification sound according to the detected background noise level so that the identification sound cannot be heard by an occupant of the closed space due to a masking phenomenon and for enabling a rapid identification operation using the identification sound;

means for deriving acoustic transfer characteristics between the control sound sources and the residual noise detecting means based upon the identification operation using the identification sound; and

updating means for updating coefficients of a filter of said signal processing means based upon said derived acoustic transfer characteristics.

5,384,854

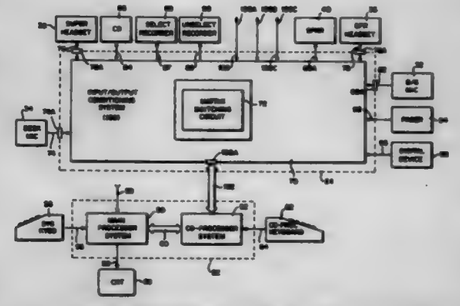
CO-PROCESSOR CONTROLLED SWITCHING APPARATUS AND METHOD FOR DISPATCHING CONSOLE

Stephen R. Downs, Forest; James L. Teel, Jr., Goode, and Charles C. Herndon, Forest, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Feb. 14, 1992, Ser. No. 835,690

Int. Cl.[6] H04B *3/00*

U.S. Cl. 381—81 **10 Claims**



1. An audio communications interface device coupled to a dispatch console in a radio frequency (RF) communications system, said interface device couplable via audio lines to output audio paths in said RF communications system and to a telephone network, said interface device comprising:

a plurality of dissimilar audio input or output devices coupled to a plurality of switches in the audio communications interface device, said dissimilar audio input or output devices including a microphone, speaker and headset, said audio input or output devices switchably couplable to the output audio paths in both the RF communication system and telephone network:

said switches establish settable relationships between said plurality of audio input or output devices and said output audio paths, one of the switches being a selector switch which is connected to receive input audio from a plurality of audio input or output devices and to couple a selected one of the connected audio I/O devices to a selector switch select output path, another of the switches being an output switch which is connected to receive an RF audio transmission on the selector switch select output path and to apply the received RF transmission as an outgoing audio transmission to an audio I/O device:

main processor means for receiving external control commands which specify a desired settable relationship between selected devices of said audio input or output devices and selectively to individual audio paths and for issuing main processor commands indicative the desired settable relationship:

a device activation input signal path connected to said selected devices for carrying a device activation input signal indicative of a state of activation of an audio communications device:

co-processor means for controlling the switches in accordance with either the main processor commands or the device activation input signals whereby desired settable relationships are automatically established between the selected audio input or output devices and selectively to individual output audio paths, the co-processor means being connected to the main processor means to receive tile main processor commands and to the device activation input signal, and

a summing switch connected to receive an RF audio transmission on the selector switch select output path and to receive audio RF and telephone transmissions on a plurality of other paths, and for summing the received transmis-

sions to provide a selected summed audio transmission on a selected sum output path.

5,384,855

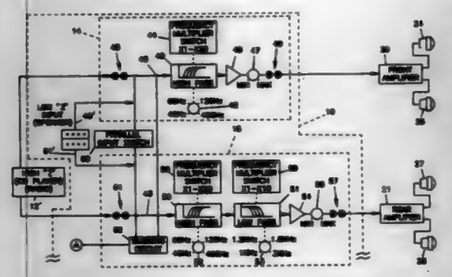
AUDIO SYSTEM FOR VEHICULAR APPLICATION

David Kwing, Pasadena, Calif., assignor to Concept Enterprises, Inc., Vernon, Calif.

Continuation of Ser. No. 812,055, Dec. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 460,635, Jan. 3, 1990, Pat. No. 5,111,508, which is a continuation-in-part of Ser. No. 314,509, Feb. 21, 1989, Pat. No. 4,905,284. This application Sep. 23, 1993, Ser. No. 126,099

Int. Cl.[6] H03G 5/00

U.S. Cl. 381—100 9 Claims



1. An electronic modular audio system for use in multiple amplifier configurations, coupled to an audio signal source comprising:

(a) first, second, third and fourth signal submodules, the first, second, and third submodules having externally accessible inputs and an outputs, the fourth submodule having an input internally coupled to the input of the first and second signal submodules and an externally accessible output, the first submodule including adjustable high pass crossover means, the second submodule including adjustable band pass crossover means, the third submodule including adjustable low pass crossover means, and the fourth submodule including a first parallel path having selectable high pass crossover means and a second parallel path having an adjustable output level control, each crossover means in all submodules being independently adjustable of each other and wherein the first and second submodules include crossover frequency multiplier switch means for multiplying the respective crossover means to a substantially higher frequency;

(b) parallel switch means for selectively coupling inputs of the first and second submodules in parallel;

(c) front and rear summing means having input means coupled to the first and second submodule inputs and having an output coupled to an input of the third and fourth submodules; and

(d) mixed input/output switch means having a first position for coupling the front and rear summing means as an input port to the third submodule input and a second position for coupling the front and rear summing means as an output port to a mixed input port/output port means for providing module chaining capabilities to other modules.

5,384,856

ACOUSTIC SYSTEM

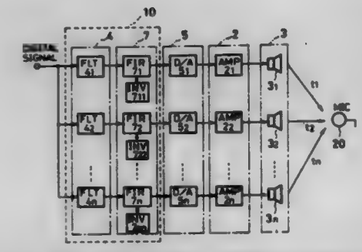
Nobora Kyouno; Yoshiharu Oouga, and Nobora Yashima, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1991, Ser. No. 693,454

Claims priority, application Japan, Jan. 21, 1991, 3-004842; Jan. 23, 1991, 3-001564[U]; Jan. 30, 1991, 3-002603[U]

Int. Cl.[6] H03G 5/00

U.S. Cl. 381—103 27 Claims



1. An acoustic system having a plurality of channels, each channel corresponding to a frequency band and each having a digital signal processing circuit section, an exclusive power amplifier, said exclusive power amplifier receiving a processed signal from said digital signal processing circuit section and outputting an amplified signal, and a speaker unit, said speaker unit receiving said amplified signal, said acoustic system including a microphone for receiving output signals from said speaker units,

each digital signal processing circuit section comprising:

an A/D converter for receiving an input signal and outputting a digital signal,

a digital band dividing circuit, receiving said digital signal and outputting a divided signal,

a digital inverse filter for receiving said divided signal and outputting a flattened signal,

a digital delay time compensating circuit, receiving said flattened signal and outputting a delayed signal, and

a D/A converter for receiving said delayed signal and outputting said processed signal,

each digital band dividing circuit having a first filter factor and means for performing real time convolution operations of said digital signal and said first filter factor, the first filter factor providing a frequency band dividing characteristic, so as to produce said divided signal,

each digital inverse filter having a second filter factor and means for performing real time convolution operations of said divided signal and the second filter factor, the second filter factor providing an inverse characteristic of an output sound pressure characteristics of the speaker unit, so as to produce said flattened signal, and

wherein each said digital delay time compensating circuit causes a delay time such that said microphone simultaneously receives output signals from each speaker unit, each output signal originating from said input signal.

5,384,857

SNAP-IN ATTACHMENT FOR EAR DEFENDER CUP

Henrik Nordin, Forsheda, and Sigvard Nilsson, Gnosjo, both of Sweden, assignors to Peltor Aktiebolag, Varnamo, Sweden

Filed Oct. 26, 1993, Ser. No. 143,290

Claims priority, application Sweden, Oct. 29, 1992, 9203209-3

Int. Cl.[6] H04R 25/00; F16B 7/10; B25G 3/00

U.S. Cl. 381—183 20 Claims

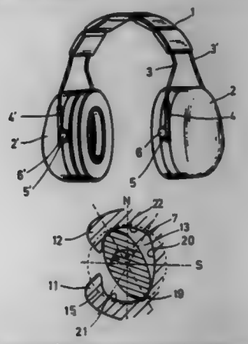
1. In a detachable snap-in attachment for a headband or other support means for an ear defender cup which, when in place, is pivotable in relation to the headband,

said snap-in attachment comprising:

at least one sliding pin arranged on each of first and second opposite lateral sides of the ear defender cup in line with each other and perpendicular to the respective side;

jaw elements at each end of the headband, each jaw element including a pair of jaws defining a gap, said jaw elements being arranged parallel to each other and symmetrically in relation to the sliding pins;

stop flanges at the ends of each said pin so that, when in place in a recess defined by a respective one of said jaw elements, each sliding pin is held pivotably between the two jaws;



the improvement wherein each of said sliding pins includes an axis of rotation and a journal section of non-circular cross-section taken in a plane perpendicular to said axis of rotation, with said cross-section having double mirror-image symmetry, and wherein to effect attachment of the ear defender cup to the headband or other support means the sliding pins can be inserted into the gap between the jaws only in the direction of the longitudinal axis of the journal section.

5,384,858

Patent Not Issued For This Number

5,384,859

METHOD FOR QUALITY CONTROL OF PRINTED SHEETS

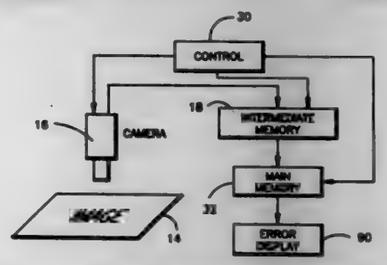
Claus A. Bolza-Schunemann, and Johannes G. Schaede, both of Wurzburg, Germany, assignors to Koenig & Bauer, Aktiengesellschaft, Wurzburg, Germany

Filed Aug. 10, 1992, Ser. No. 926,699

Claims priority, application Germany, Aug. 12, 1991, 4126582; Dec. 20, 1991, 4142481

Int. Cl.[6] G06K 9/36

U.S. Cl. 382—1 18 Claims



1. A procedure for judging the quality of printed images printed on a printing carrier, by means of an opto-electronic exposure device and a reference information storing device for memorizing image information in high contrast image elements of a printed image, characterized in that a printed image is divided into a multitude of image elements of a size to be chosen, and that to each of these individual image elements is coordinated an individual, reference grey value within an envelope of image locations, and an individual, allowable reference ink density value variation to provide an allowable grey value tolerance in each image element.

5,384,860

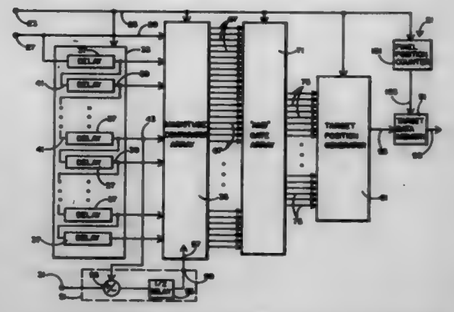
REAL TIME CONNECTIVITY ALGORITHM SYSTEM

Robert C. Gardenal, Jr., Irvine; Kurt J. Otto, Laguna Beach, and Gregory A. Roberts, Costa Mesa, all of Calif., assignors to Loral Aerospace Corp., New York, N.Y.

Filed Aug. 20, 1992, Ser. No. 932,649

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—1 14 Claims



1. A real time connectivity algorithm system declaring that a subject pixel in a raster-scanned digitized image is part of a potential target where every pixel on a closed path enclosing the subject pixel differs in intensity from the intensity of the subject pixel by a predetermined intensity level, the system comprising:

timing signal, threshold signal, and digitized video signal inputs;

sequential delay line array means coupled to said timing signal and digitized video signal inputs, for producing a plurality of sequentially delayed digitized video signals representative of the spatial relationship of the pixels in the digitized image;

contrast circuit means coupled to said threshold signal input and to a central one of said plurality of sequentially delayed digitized video signals for producing a delayed subject pixel contrast signal;

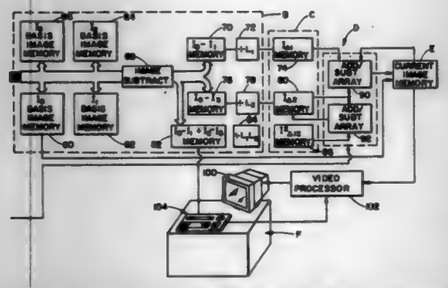
magnitude comparator array means coupled to said timing signal input, to said contrast circuit means, to said digitized video signal input, and to said sequential delay line array means for simultaneously producing a plurality of resultant signals each representative of a comparison of said video signals with said subject pixel contrast signal for a different closed path;

path checking circuit means coupled to said timing signal input and to said comparator array means for simultaneously identifying all of said closed paths around said subject pixel wherein every pixel on said closed path differs in intensity from an enclosed subject pixel by a predetermined intensity level;

target position generator means coupled to said timing signal input and to said path checking circuit means for producing a target position signal associated with only those path signals identified by said path checking circuit means; and

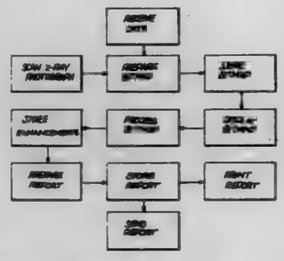
target data memory means coupled to said target position generator means for producing a connectivity output signal representative of the position of said pixel of interest when a target position signal has been produced.

5,384,861
MULTI-PARAMETER IMAGE DISPLAY WITH REAL TIME INTERPOLATION
Rodney A. Mattson, Mentor; Todd J. Krochta, Copley, and Dominic J. Heuscher, Aurora, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio
Filed Jun. 24, 1991, Ser. No. 719,827
Int. Cl.[5] G06F 15/00
U.S. Cl. 382—6 13 Claims



11. An apparatus for selectively adjusting a relative weighting of combined images, the apparatus comprising:
an image pixel subtraction means for subtracting each pixel value of a first image from a corresponding pixel value of a second image to form a pixel value difference;
a pixel division means connected with the image pixel subtraction means for dividing each pixel value difference by a preselected plural number of available interpolation steps between the first and second images to generate pixel values of a differential image;
a differential image memory means connected with the pixel division means for storing the pixel values of the differential image;
a current image memory means for storing pixel values of a current image derived from the first and second images;
a monitor means connected with the current image memory means for converting pixel values from the current image memory means into a human-readable image;
an image processor means connected with the differential image memory means and the current image memory means for selectively adding and subtracting pixel values of the differential image with corresponding pixel values of the current image for selectively adjusting weighting the current image, hence the human-readable image, between the first and second image;
an operator control means connected with the image processor means for providing operator control of the image processor means and for providing an indication of the weighting of the current image between the first and second images, the operator control means (i) controlling the image processor means to add the differential image pixel values to the current image pixel values such that the human-readable image is more heavily weighted toward the second image and changing the indication to reflect a heavier weighting of the second image and (ii) controlling the image processor means to subtract the differential image pixel values from the current image pixel values such that the human-readable image is more heavily weighted toward the first image and changing the indication to reflect a heavier weighting of the first image.

5,384,862
RADIOGRAPHIC IMAGE EVALUATION APPARATUS AND METHOD
Scott J. Echerer, Cayce, and Stephen R. McNeill, Columbia, both of S.C., assignors to Cimpiter Corporation, Cayce, S.C.
Continuation-in-part of Ser. No. 891,406, May 29, 1992, Pat. No. 5,272,760. This application Apr. 13, 1993, Ser. No. 47,261
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—6 16 Claims

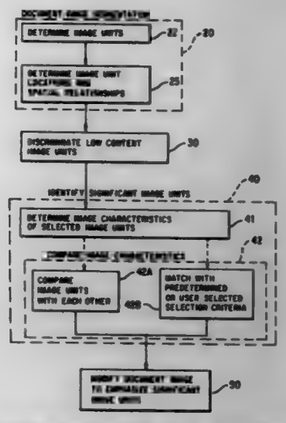


1. A method for evaluating an X-ray radiograph, said method comprising the steps of:
representing said X-ray radiograph in the form of a series of binary-coded values;
converting said series of binary-coded values to a CRT-displayable image;
storing said image to form an enhanced image in a first memory location;
making enhancements to said image so that said features are more discernible;
storing said enhancements in a second memory location separate from said first memory location; and
displaying said enhanced image on a CRT.

5,384,863
METHODS AND APPARATUS FOR AUTOMATIC MODIFICATION OF SEMANTICALLY SIGNIFICANT PORTIONS OF A DOCUMENT WITHOUT DOCUMENT IMAGE DECODING
Daniel P. Huttenlocher, Ithaca, N.Y.; Ronald M. Kaplan, Palo Alto; M. Margaret Withgott, Los Altos, both of Calif.; Todd A. Cass, Cambridge, Mass.; Per-Kristian Halvorsen, Los Altos, Calif.; Dan S. Bloomberg, Palo Alto, Calif., and Ramana B. Rao, San Francisco, Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 19, 1991, Ser. No. 795,174
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—9 18 Claims

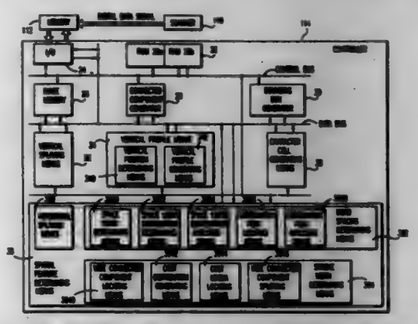
1. A method for electronically processing an undecoded electronic document image, comprising the steps of:
automatically segmenting the document image into image units having information content without decoding the document image, each of the image units comprising one of an undecoded word and an undecoded group of words;
identifying significant ones of said image units in accordance with selected morphological image characteristics without decoding the document image; and

modifying said document image to emphasize the identified significant image units such that the significant image units



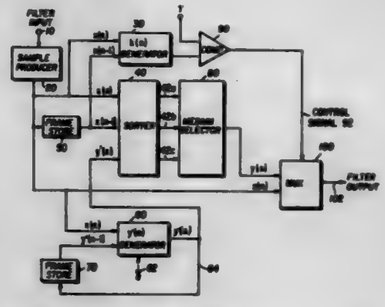
are visually distinguishable from non-significant image units remaining in the document image.

5,384,864
METHOD AND APPARATUS FOR AUTOMATIC DETERMINATION OF TEXT LINE, WORD AND CHARACTER CELL SPATIAL FEATURES
A. Lawrence Spitz, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn. and Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 47,514
Int. Cl.[5] G06K 9/34
U.S. Cl. 382—9 34 Claims



1. An automatic text feature determining system for determining a text feature of an unsplayed text portion of an image of a document, the unsplayed text portion having at least two text lines separated by a first distance, comprising:
input means for inputting a digital data signal representative of the unsplayed text portion, the digital data signal comprising a plurality of signal portions, each signal portion corresponding to one of a plurality of pixels of the image;
connected component generating means for generating a plurality of connected components from the plurality of signal portions;
bounding box generating means for generating a plurality of bounding boxes, each bounding box surrounding a corresponding one of the plurality of connected components; and
line spatial feature determining means for determining spatial features of each line of text of the unsplayed text portion, each line of text comprising at least one of the plurality of connected components, the line spatial feature determining means comprising:
vertical splaying means for vertically splaying the unsplayed text into a vertically splayed text portion, wherein the vertically splayed text portion has the at least two text lines separated by a second distance, the second distance being greater than the first distance, and
vertical profile means for generating a vertical profile of the vertically splayed text portion.

5,384,865
ADAPTIVE, HYBRID MEDIAN FILTER FOR TEMPORAL NOISE SUPPRESSION
Jennifer C. Loveridge, North Harrow, England, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 1, 1992, Ser. No. 891,088
Int. Cl.[6] G06K 9/40
U.S. Cl. 382—54 4 Claims



1. Median filter apparatus, comprising:
a source of input signals obtained from successive frames of a motion image;
means for recursive-filtering said input signals;
means for generating a control signal from an interframe difference between input signals from successive frames;
means responsive to said input signals for producing successive sets of samples representing said input signals, each set including at least a current sample from a current frame, a spatially-corresponding sample from a preceding frame, and a recursive sample derived from said recursive-filtering means;
means for median-filtering said successive sets of samples to produce a median sample; and means responsive to said control signal for selecting either said median sample or said current sample as the output of the median filter.

5,384,866
THINNING METHOD OF AN IMAGE
Ryohei Kumagai, Tokyo, Japan, assignor to Ezel, Inc., Tokyo, Japan
Filed Apr. 2, 1993, Ser. No. 42,001
Claims priority, application Japan, Apr. 2, 1992, 4-109295
Int. Cl.[6] G06K 9/44
U.S. Cl. 382—55 1 Claim

1. A method of thinning a configuration in an image, which method comprises the steps of:
successively examining pixels along successive scan lines, wherein an initial value for each pixel in said image is that value which said pixel had at the start of execution of said thinning method, wherein a background pixel value is the value which pixels have that are in said image but not on the boundary of said configuration, wherein an index pixel value is a value assigned to a pixel and which is different from any said initial value, wherein the current scan line is a scan line which contains said pixel being examined, wherein the previous scan line is a scan line that is scanned

immediately previous to said current scan line, wherein the following scan line is a scan line that is scanned immediately following said current scan line; and

changing the value of said pixel being examined according to the following when the initial value of at least two of the pixels adjacent to the pixel being examined were said background pixel value and when the pixel being examined has a number of connectedness equal to one:

a) when said pixel being examined has said index pixel value, the value of said pixel being examined is changed to said background pixel value;

b) when said pixel being examined has neither said index pixel value nor said background pixel value, the value of said pixel being examined is changed as follows:

i) the value of said pixel being examined is changed to said index pixel value when the condition occurs such that both (1) the initial value of a pixel immediately preceding said pixel being examined in said current scan line was said background pixel value or said index pixel value, and (2) the initial value of a pixel on said previous scan line which pixel has a position corresponding to said pixel being examined was said background pixel value or said index pixel value;

ii) if the condition specified in step (i) is not met, then the value of said pixel being examined is not changed when the condition occurs such that both (1) a pixel on said previous scan line which pixel has a position corresponding to said pixel being examined has said index pixel value, and (2) a pixel on said following scan line which pixel has a position corresponding to said pixel being examined has said background pixel value;



iii) if the condition specified in step (i) is not met, then the value of said pixel being examined is not changed when the condition occurs such that both (1) a pixel which immediately precedes said pixel being examined in said current scan line has said index pixel value, and (2) a pixel which immediately follows said pixel being examined in said current scan line has said background pixel value;

iv) if the condition specified in step (i) is not met, the value of said pixel being examined is not changed when the condition occurs such that both (1) a pixel on said previous scan line which pixel has a position along said scan line immediately preceding a pixel corresponding to the pixel being examined has said index pixel value; and (2) a pixel on said following scan line which pixel has a position along said scan line immediately following a pixel corresponding to the pixel being examined has said background pixel value;

v) if none of the conditions specified in steps (i), (ii), (iii) or (iv) are met, then the value of said pixel being examined is changed to said index pixel value when the condition occurs such that both (1) a pixel on said previous scan line which pixel has the position corresponding to said pixel being examined has said index pixel value, and (2) the value of a pixel which immediately precedes the pixel being examined in said current scan line and the value of a pixel which immediately follows the pixel being examined in said current scan line are said background pixel value;

vi) if none of the conditions specified in steps (i), (ii), (iii) or (iv) are met, the value of said pixel being examined is changed to said index pixel value when the condition occurs such that both (1) a pixel on said current scan line which immediately precedes the pixel being examined has said index pixel value, and (2) the value of a pixel on said previous scan line which pixel has the position immediately preceding a pixel corresponding to said pixel being examined in said previous scan line and the value of a pixel on said following scan line which pixel has the position immediately preceding a pixel corresponding to said pixel being examined in said following scan line are said background pixel values; and

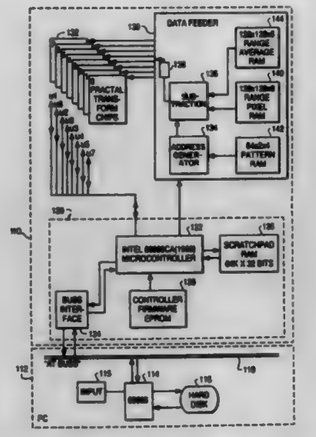
vii) the value of the pixel being examined is changed to said background pixel value when none of the conditions specified in steps (i), (ii), (iii), (iv), (v), or (vi) are met.

5,384,867

FRACTAL TRANSFORM COMPRESSION BOARD

Michael F. Barnsley; Alan D. Sloan; John H. Elton, all of Atlanta; Charles S. Moreman, Lawrenceville, and Guy A. Primiano, Cumming, all of Ga., assignors to Iterated Systems, Inc., Norcross, Ga.

Filed Oct. 23, 1991, Ser. No. 781,587
Int. Cl.[6] G06K 9/00; G06F 15/62
U.S. Cl. 382—56 20 Claims



1. Apparatus for generating signals representing an image in compressed digital form, comprising:

a memory for storing digital signals comprising digital image data representative of the image and for storing transformed data;

a control circuit coupled to the memory for receiving the digital image data, for subdividing the digital image data into a set of domain blocks and a set of range blocks each comprising pixel brightness data, for creating sets of multiple orientation blocks for the domain blocks each comprising pixel brightness data, for determining average brightness values for the domain and range blocks, for receiving transformed data corresponding to the domain blocks, for accumulating the transformed data in the memory, and for supplying the accumulated transformed data as output signals comprising a compressed digital representation of the image;

a data feeder circuit coupled to the control circuit for receiving the range block pixel brightness data and the range block average brightness values, and for creating intermediate range block values from the range block pixel brightness data and the range block average brightness values; and

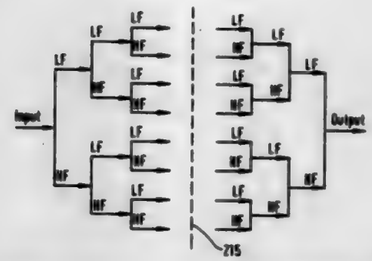
a plurality of fractal transform circuits coupled to the control circuit and the data feeder circuit, for individually receiving at least one set of orientation blocks and the intermediate range block values, for simultaneously determining for each domain block corresponding to the received set of orientation blocks a block pair including a selected orientation block and a selected range block which have the greatest similarity of all possible block pairs, for simultaneously generating transformed data for each domain block, the transformed data representing the selected orientation block and range block for each domain block, and for supplying the transformed data to the control circuit.

5,384,869

IMAGE PROCESSING APPARATUS

James H. Wilkinson, Tadley; Michael J. Ludgate; Jonathan M. Seloff, both of Basingstoke, and Jonathan J. Stone, Reading, all of United Kingdom, assignors to Sony United Kingdom Limited, Staines

Filed Oct. 7, 1992, Ser. No. 957,159
Claims priority, application United Kingdom, Dec. 24, 1991, 9127353
Int. Cl.[6] G06K 9/36
U.S. Cl. 382—56 27 Claims



1. Image processing apparatus for filtering a digital representation of a raster scanned image into a plurality of sub-bands in the two-dimensional spatial frequency domain, said raster scanned image having a resolution in a first direction and a resolution in a second direction, said raster scanned image corresponding to a reconstructed image having a resolution in the first direction and a resolution in the second direction and having aliasing distortion and ringing distortion, the aliasing distortion in said second direction being greater than in said first direction, said resolution of said raster scanned image in said first direction being greater than said resolution of said raster scanned image in said second direction such that a portion of the ringing distortion in said first direction is confined to a smaller region of said reconstructed image than a portion of the ringing distortion of equal magnitude in said second direction of said reconstructed image, said image processing apparatus comprising:

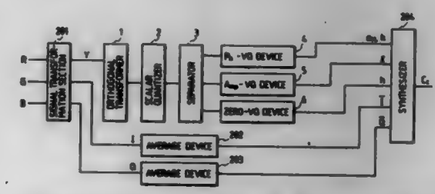
decimation filter means having a first forward filter group comprising a first plurality of multi-tap digital decimation filters, each having a filter length, for filtering in said first direction and a second forward filter group comprising a second plurality of multi-tap digital decimation filters, each having a filter length, for filtering in said second direction, said filter lengths of said first plurality of multi-tap digital decimation filters having a mean which is greater than the mean of said filter lengths of said second plurality of multi-tap digital decimation filters such that the aliasing distortion is reduced in said first direction and the ringing distortion is reduced in said second direction without significantly increasing the aliasing distortion in said second direction.

5,384,868

IMAGE INFORMATION CODING APPARATUS

Mitsuru Maeda, Yokohama, and Tadashi Yoshida, Ichikawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 849,839, Mar. 12, 1992, Pat. No. 5,157,743, which is a continuation of Ser. No. 261,276, Oct. 24, 1988, abandoned. This application May 12, 1992, Ser. No. 881,871
Claims priority, application Japan, Oct. 28, 1987, 62-270232; Dec. 3, 1987, 62-304612; Dec. 3, 1987, 62-304613; Dec. 14, 1987, 62-314093; Dec. 14, 1987, 62-314094; Dec. 14, 1987, 62-314095; Dec. 26, 1987, 62-328430
Int. Cl.[6] G06K 9/36
U.S. Cl. 382—56 16 Claims



1. A color image information coding apparatus comprising:

extracting means for extracting luminance information and chrominance information from input color image information;

first processing means for performing first predetermined processing for the chrominance information, said first processing means including means for reducing the amount of the chrominance information;

second processing means for performing second predetermined processing for the luminance information, said second predetermined processing being different from said first predetermined processing; and

output means for outputting the luminance information and the chrominance information processed by said first and second processing means,

wherein said second processing means includes transforming means for blockwise transformation of the luminance information to generate frequency information, separating means for separating the frequency information into groups of frequency components, and coding means for generating code data based on said groups of frequency components.

5,384,870

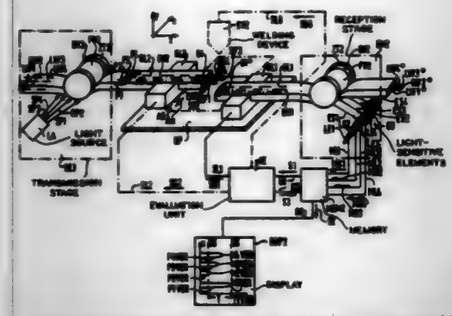
METHOD AND APPARATUS FOR IDENTIFYING THE POSITION OF TWO GROUPS OF LIGHT WAVEGUIDES TO BE ALIGNED

Winfried Lieber, Offenburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 2, 1993, Ser. No. 100,244
Claims priority, application Germany, Aug. 7, 1992, 4226201
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—15 30 Claims

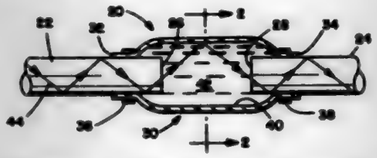
22. An apparatus, for use with light waveguides respectively arranged extending along respective longitudinal axes in a first group and in a second group, to identify the position of the light waveguides and at least one of said groups, said apparatus comprising:

first holder means for holding said first group of waveguides;
second holder means for holding said second group of waveguides relative to said first group;
means for coupling infeed light into at least one waveguide in one of said groups;
means for relatively displacing said first and second holder means for generating a relative displacement of said first and second groups, in at least one displacement event, in a plane extending transversely to said longitudinal axis of one of said groups, with light being coupled during said



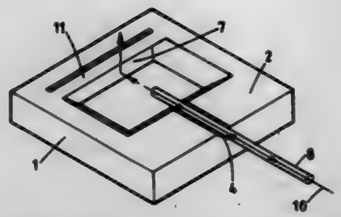
displacement event between said at least one waveguide having infed light in said one of said groups and at least one waveguide associated with the other of said groups;
means for identifying a chronological curve of the intensity distribution of said coupled light;
means for identifying a spatial intensity distribution of said light coupled into said at least one waveguide associated with said other of said groups as a result of said chronological intensity distribution; and
means for retaining said spatial intensity distribution for evaluating the position of said waveguides in said other of said groups.

5,384,871
FIBER OPTIC COUPLINGS AND MEASUREMENT APPARATUS USING FLEXIBLE LIQUID FILLED BLADDER
Gabor Devenyi, West Pensteng, Canada, assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 15, 1993, Ser. No. 152,156
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—19 13 Claims



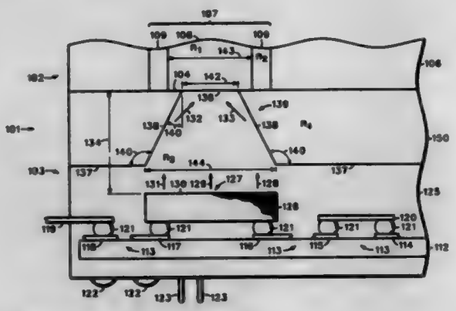
1. An optical coupler for joining first and second opposed fiber optic ends comprising:
a flexible bladder having first and second opposed ends, said first end sealingly attached to said first fiber optic end, said second end sealingly attached to said second fiber optic end, said tubular bladder having an outer peripheral surface and an interior surface defining a cavity extending between said first and second fiber optic ends and having an initial cross sectional area; and
a light transmissive liquid completely filling the cavity of said bladder for transmitting light signals between said first and second fiber optic ends.

5,384,872
OPTICAL DEVICE AND A METHOD OF MANUFACTURE THEREOF
Alan J. Jacobs-Cook; Peter E. M. Frere, and Mark E. C. Bowen, all of Birmingham, England, assignors to Lucas Industries Public Limited Company, United Kingdom
Filed Jan. 27, 1993, Ser. No. 9,879
Claims priority, application United Kingdom, Feb. 14, 1992, 9203128
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—31 16 Claims



1. An optical device, comprising a body of monocrystalline silicon having a body surface aligned in a {110} crystallographic plane, groove surfaces defining a groove formed in said body surface for containing an optical waveguide, said groove having an end portion having a longitudinal axis substantially along a <110>crystallographic axis, and an optical reflector facing said end portion of said groove and having an optically reflective surface in a {100} crystallographic plane.

5,384,873
OPTICAL INTERFACE UNIT AND METHOD OF MAKING
Christopher K. Y. Chun, Gilbert, and Shun-Meen Kuo, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 4, 1993, Ser. No. 131,175
Int. Cl.[6] G02B 6/28
U.S. Cl. 385—31 21 Claims



10. An optical unit comprising:
an optical connector having an optical fiber having a core region, a cladding region, and a cross-sectional surface of the optical fiber, the cross-sectional surface of the optical fiber exposes a portion of a core region and a portion of a cladding region, the core region and the cladding region have refractive indexes of n_1 and n_2, respectively;
an optical interface device including an interconnect substrate having a plurality of electrical traces, a light emitting device with a working portion operably connected to the plurality of electrical traces, a first optical portion with a refractive index of n_3, and a second optical portion with a refractive index of n_4, the first optical portion

defines a first surface, a second surface, a tapering surface that extends therebetween, the first surface located parallel to the working portion of the light emitting device and the second surface located substantially parallel to the light emitting device; and
an angle θ_T defined by the second surface and the tapered surface of the first optical portion, wherein the angle θ_T is determined by the following equation:

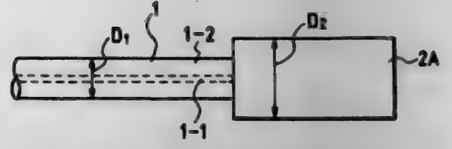
$$\theta_T \leq 180° - \sin^{-1}(n_4/n_3)$$

and wherein the acceptance angle θ_T of the core region of the optical fiber is determined by the following equation:

$$\theta_T \geq 90° + 0.5(\sin^{-1}((n_1/n_3)\sin(90° - \sin^{-1}(n_2/n_1))).$$



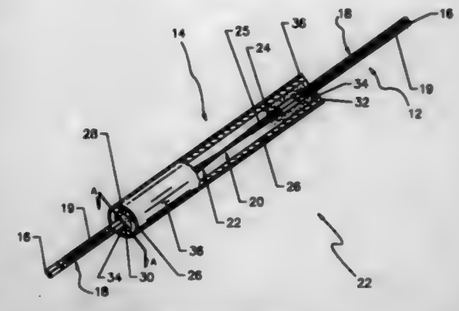
5,384,874
OPTICAL FIBER ROD LENS DEVICE AND METHOD OF MAKING SAME
Shigeru Hirai; Toshiaki Kakii; Shinji Ishikawa, and Hiroo Kanamori, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jan. 23, 1993, Ser. No. 80,120
Claims priority, application Japan, Jan. 24, 1992, 4-166395; Sep. 14, 1992, 4-244795
Int. Cl.[6] G02B 6/26; C03B 23/20
U.S. Cl. 385—34 9 Claims



1. An optical fiber functional device for processing a light beam between optical fibers, comprising:
a first single-mode optical fiber concentrically connected to a first convergence-type rod lens made of a graded-index optical fiber; and
a second single-mode optical fiber concentrically connected to a second convergence-type rod lens made of a graded-index optical fiber, said first convergence-type rod lens being confronted with said second convergence-type rod lens;
wherein the difference between specific refractivities of a center and a periphery of each of said first and second graded-index optical fibers is between 0.5%, inclusive, and 1.5%.

3. A method of manufacturing an optical fiber functional device, comprising the steps of:
connecting concentrically a single-mode optical fiber for processing a light beam, through melting, to a graded-index optical fiber having a diameter between than that of said single-mode optical fiber and two times that of said single-mode optical fiber;
cutting off said graded-index optical fiber to a prescribed length including a finishing allowance;
holding said single-mode optical fiber and said graded-index optical fiber concentrically connected to each other by a ferrule which is made of a transparent glass; and
polishing optically a cut-off end of said graded-index optical fiber held by said ferrule so that said graded-index optical fiber has a prescribed length.

5,384,875
FIBER OPTIC COUPLER PACKAGE AND PACKAGING METHOD
John H. Shannon, Scottsdale; Karl A. Fetting, Glendale, and Robert E. Coté, Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Sep. 23, 1993, Ser. No. 125,894
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—51 15 Claims



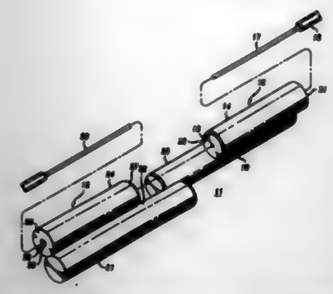
1. A fiber optic coupler, comprising:
at least two optical fibers having a coupled region and at least one lead portion extending therefrom, said optical fibers having a protective jacket thereon, said protective jacket being removed from said coupled region and from a region of said at least one lead portion adjacent said coupled region resulting in a coupled region, at least one jacketless lead portion, and at least one jacketed lead portion;
a protective body having a receiving space therein for receiving said coupled region, said protective body having at least one entrance from which said at least one jacketed lead portion emerges;
a rejacket material surrounding at least partially a length of said at least one jacketless lead portion adjacent said at least one jacketed lead portion resulting in a rejacketed lead portion; and
an adhesive material at least partially about a length of said at least one jacketed lead portion at said entrance and at least partially about said rejacketed lead portion to secure said length of said at least one jacketed lead portion and rejacketed lead portion to said protective body.

5,384,876
QUASI-HERMAPHRODITIC-TYPE OPTICAL FIBER CONNECTION
Ernest E. Bergmann, Fountain Hill, Pa., assignor to AT&T Corp, Murray Hill, N.J.
Filed Jul. 30, 1993, Ser. No. 100,526
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—64 18 Claims

1. An optical fiber connection comprising:
a first cylindrical plug member having a bore extending axially and longitudinally therethrough for receiving a stripped portion of an optical fiber extendable therethrough and fixed relative thereto;
a second cylindrical plug member having a bore extending axially and longitudinally therethrough for receiving a stripped portion of a different optical fiber extendable therethrough and fixed relative thereto;
each of said plug members having a front thee and a rear face;
a first support rod affixed to said first plug member having an axis substantially parallel to the axis of said first plug member and extending beyond the front face thereof;

a second support rod affixed to said second plug member having an axis substantially parallel to the axis of said second plug member and extending beyond the front face thereof;

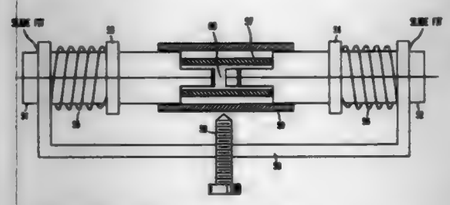
said first and second support rods being in contact with each other along at least a portion of their lengths and forming a substantially V-shaped groove, said first plug member



being located in said groove and supported by said first and second support rods and said second plug member being located in said groove and supported by said first and second support rods in axial alignment with said first plug member with said front faces in abutting relationship; and

means for maintaining said first and second plug members in their abutting relationship.

5,384,877
PASSIVE TEMPERATURE-INSENSITIVE FABRY-PEROT ETALONS
Julian Stone, Rumson, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Jun. 21, 1993, Ser. No. 80,458
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—70 11 Claims



8. A Fabry-Perot etalon comprising:

a fixed length of optical fiber embedded in a rotary capillary tube and an air gap disposed between a pair of partially reflecting surfaces;

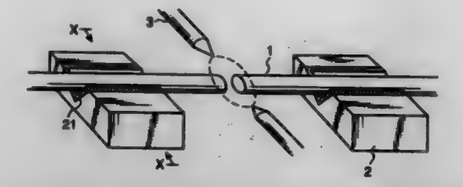
one of said reflecting surfaces being disposed between an end of said fixed length of fiber located away from said air gap, and an end of a second fiber;

the second reflecting surface being disposed across an end of a third fiber located adjacent to said air gap and opposite the other end of said length of fiber;

said second and third fibers being embedded in sections of connector capillary tubes whose diameters abruptly increase from a first value adjacent to said etalon to a second larger value at distances away from said etalon, forming a pair of annular steps;

and an annular spacing sleeve disposed along said etalon between said steps.

5,384,878
METHOD FOR FUSION CONNECTING OPTICAL FIBERS UTILIZING V-GROOVES WITH NONCONDUCTING LAYER
Keiji Osaka, and Toru Yanagi, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Apr. 10, 1992, Ser. No. 866,454
Claims priority, application Japan, Apr. 12, 1991, 3-171584
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—96 3 Claims



1. A method for connecting hermetic optical fibers having a hermetically sealed layer coated on optical fiber glass, which comprises the steps of:

(a) positioning the optical fibers on respective electrically nonconductive V-shaped grooves of a pair of V-shaped grooves,

(b) adjustably aligning cores of the optical fibers and fusing and connecting the optical fibers through an aerial discharge.

5,384,879
CABLE JACKETING
Speros P. Nemphos, Clinton, and Stanley F. Bedell, Andover, both of Mass., assignors to Camelot Technologies, Inc., Leominster, Mass.
Division of Ser. No. 769,396, Oct. 1, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 965,619
Int. Cl.[6] G02B 6/36, 6/00
U.S. Cl. 385—100 2 Claims

1. A cable for use in a wet environment comprising a jacket and one or more inner core components and at least one wrap or partial wrap of a web comprising a backing web, a face web and between said backing and said face a layer of an absorbent water block material consisting of a sulphonated lightly cross linked aromatic polymer selected from the group consisting of:

(i) one, or more polymers selected from the group consisting of:

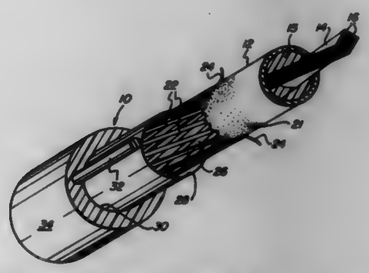
(a) homo polymers of a C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by C_{1-4} alkyl radicals;

(b) copolymers comprising from 10 to 40 weight % of a copolymer comprising 40 to 60 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical or a chlorine atom and from 60 to 40 weight % of one or more C_{3-8} vinyl nitriles which have been grafted onto from 90 to 60 weight % of a homopolymer of one or more C_{4-6} conjugated diolefins; and

(c) copolymers comprising from 40 to 60 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical or a chlorine atom and from 60 to 40 weight % of one or more C_{4-6} conjugated diolefins which copolymers have been crosslinked with a di-C_{1-4} alkyl halo substituted aromatic compound which is unsubstituted or substituted by up to two C_{1-4} alkyl radicals in the presence of a Lewis acid; and

(ii) copolymers comprising from 97 to 99.95 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or are substituted by a C_{1-4} alkyl radical and from 3.0 to 0.05 weight % of one or more C_{10-14} aromatic monomers which contain at least two copolymerizable bonds in particulate form having a particle size such that the particles of will pass through a 40 mesh sieve, a bulk density of not more than 0.8 g/cc, a water absorbency of not less than 150 g of water per gram of polymer determined by the ratio of the weight of polymer swollen with water for at least three minutes to the weight of dry polymer before contact with water, which polymer has a swell rate so that it will swell to twice its volume in both water and a 3% solution of NaCl in less than 30 seconds as determined by placing a sample of polymer in a half inch diameter test tube, the weight of the sample being selected so that in view of the bulk density of the polymer the ratio of the diameter of the test tube to the height of the sample of dry polymer is at least two to one, and introducing at least twice the weight of polymer of liquid and measuring the time for the volume of the polymer to double amount from 0.1 to 10 pounds per square meter.

5,384,880
DIELECTRIC RIBBON OPTICAL FIBER CABLE
David A. Keller, Vaureal cergy, France; Frank Davidson, Granite Falls, N.C.; Kevin Black, Hickory, N.C., and George Webb, Icard, N.C., assignors to Alcatel NA Cable Systems, Inc., Claremont, N.C.
Filed Dec. 3, 1993, Ser. No. 162,573
Int. Cl.[6] G02B 6/44
U.S. Cl. 385—109 11 Claims



1. An optical fiber cable comprised of:

a single, hollow buffer tube with a first water blocking gel-like compound and at least one optical fiber disposed therein;

at least one layer of yarn adhesively bonded to an outer portion of said buffer tube;

a second water blockable gel-like compound impregnating said at least one layer of yarn;

a tape layer applied over said at least one layer of yarn and said second water blockable gel-like compound;

a sealant compound applied over said tape layer;

a plastic jacket which encapsulates said tape layer and bonds to said sealant compound; and

two longitudinally extending strength members adjacent said tape layer and at least partially embedded in said jacket approximately 180 degrees apart.

5,384,881
MULTI-LENS FIBER OPTIC LUMINAIRE
Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024
Filed Jul. 26, 1993, Ser. No. 96,889
Int. Cl.[6] G02B 6/04
U.S. Cl. 385—115 14 Claims

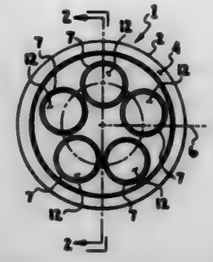
1. A multilens fiber optic luminaire including:

a generally cylindrical tubular macro housing having a proximal end, a distal end and a central axis therethrough;

a plurality of generally tubular micro housings disposed within said macro housing, each said micro housing having a proximal end, a distal end and an optical axis therethrough which is parallel to the axis of the macro housing and angularly spaced about the axis of the macro housing;

an optical element on the respective optical axis at the distal end of each micro housing, each said optical element having a focus;

a plurality of elongated fiber optic light guides having a first end connected to a remote source of illumination and each

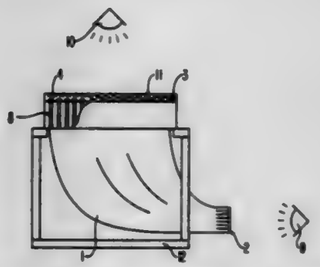


light guide having a second end on a respective optical axis and at approximately the focus of a respective optical element in each respective micro housing;

means on each micro housing for adjustably positioning and securing a respective light guide with its respective micro housing; and

means for supporting said macro housing with respect to a mounting surface.

5,384,882
IMAGE DISPLAY DEVICE AND ITS MANUFACTURING METHOD
Misoru Shimamune, Omihachiman; Takao Ito; Takao Negishi, both of Otsu, and Kounou Takano, Gamou, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Continuation of Ser. No. 856,957, Aug. 10, 1992, abandoned. This application Feb. 2, 1994, Ser. No. 190,578
Int. Cl.[6] G02B 6/06
U.S. Cl. 385—116 16 Claims



1. An image display system comprising an optical fiber bundle comprising optical fibers having a first set of end faces disposed on a surface of the image display system and a second set of end faces connected to an image incident surface,

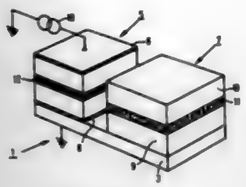
wherein the surface of the image display system comprises a plurality of light scattering microlenses distributed spotwise and bonded to the first set of end faces of the optical fiber bundle and wherein the microlenses comprise a transparent resin granular light scattering material.

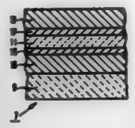
5,384,883

OPTICAL COMPONENT AND OPTOELECTRONIC ELEMENT FOR INCREASING THE FREQUENCY OF ELECTROMAGNETIC RADIATION

Gerardus L. J. A. Rikken, and Antonius H. J. Venhuizen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 12, 1993, Ser. No. 106,155
Claims priority, application European Pat. Off., Aug. 13, 1992, 92202497
Int. Cl.[6] G02F *1/35*
U.S. Cl. 385—122 6 Claims





1. An optical component for increasing the frequency of a fundamental wave of electromagnetic radiation, which component comprises a substrate and a non-linear optical waveguide having a refractive index which is higher than that of the substrate, phase matching occurring between mutually different modes of the fundamental wave and a higher-harmonic wave, wherein the improvement comprises that at least between the substrate and the waveguide there is provided a satellite layer which has a refractive index which is higher than that of the waveguide.

5,384,884

METHOD OF FORMING OPTICAL FIBRE GRATINGS

Raman Kashyap, and Robert J. Campbell, both of Suffolk, England, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB91/01968, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO92/08999, PCT Pub. Date May 29, 1992
PCT Filed Nov. 8, 1991, Ser. No. 50,194
Claims priority, application United Kingdom, Nov. 8, 1990, 9024326
Int. Cl.[6] G02B *6/10*
U.S. Cl. 385—129 3 Claims



1. A method of forming first and second Bragg gratings in an optical fiber waveguide, comprising the steps of:

subjecting an optical fiber waveguide to a first longitudinal stress;

directing optical radiation into the fiber so as to form a spatially periodic intensity pattern therein, whereby to induce a corresponding spatially periodic perturbation of the refractive index of the waveguide, thus writing a first grating with a predetermined Bragg condition into the waveguide while under said first longitudinal stress,

thereafter subjecting the optical fiber waveguide to a second different longitudinal stress;

directing optical radiation into the fiber so as to form said spatially periodic intensity pattern therein and induce said corresponding spatially periodic perturbation of the refractive index of the waveguide, thus writing a second grating with said predetermined Bragg condition into the waveguide while under said second longitudinal stress; and

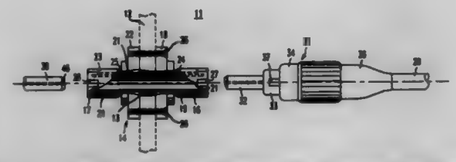
thereafter releasing the stress so that said first and second gratings exhibit different Bragg conditions.

5,384,885

VARIABLE ATTENUATION OPTICAL FIBER COUPLING

Naim F. Diner, Lithia Springs, Ga., assignor to AT&T Corp, Murray Hill, N.J.

Filed Sep. 28, 1993, Ser. No. 144,906
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—140 20 Claims



1. An optical fiber coupling assembly for coupling first and second optical fibers in end to end relationship, said assembly comprising:

a first optical fiber connector having a first ferrule therein containing a first optical fiber wherein an end face of the first fiber is substantially flush with an end face of the first ferrule, said first optical fiber having an axis;

a second optical fiber connector having a second ferrule therein containing a second optical fiber wherein an end face of the second fiber is substantially flush with an end face of the second ferrule, said second optical fiber having an axis;

a coupling member for receiving said first and second connectors with said first and second ferrules in axial alignment; and

calibrated means for varying the insertion loss of the coupling assembly comprising means for rotatably misaligning the end face of said first fiber within the coupling member relative to the end face of said second fiber in any of one or more discrete orientations, for fixedly retaining said first and second fibers in the misaligned position, and for releasing said first and second fibers from being fixedly retained in the mis-aligned position;

whereby said first fiber may be fixedly retained in a first orientation relative to said second fiber and then repositioned to a second orientation.

5,384,886

PROCESS FOR ELECTRONICALLY PRINTING ENVELOPES

John L. Rourke, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1991, Ser. No. 678,913
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—147 21 Claims

1. A method for processing envelopes in an electronic printing system having a printer for making prints on print media such as envelopes from image signals, memory means for storing the image signals for use by said printer in making prints, programming means including an interactive screen for programming said system to produce prints, a source of envelope print media, and envelope print media feeding means for feeding print media in succession to said printer for printing, comprising the steps of:

a) displaying an envelope job ticket on said interactive screen having preselected default envelope programming selections including a preselected default sender address programming selection and a preselected default return address programming selection for programming an envelope printing job;

b) providing a sender address directory in said memory having plural sender address files containing discrete sender addresses for programming selection;

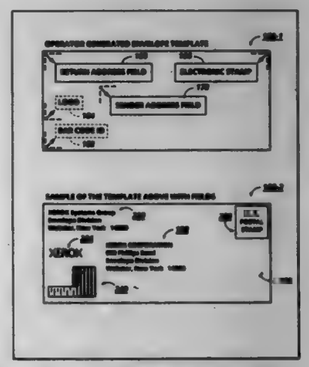
c) providing at least one return address file having plural return addresses for programming selection;

d) accessing said sender address directory in said memory to display on said interactive screen said sender address files;

e) visually identifying said preselected default sender address file on said interactive screen;

f) using said interactive screen, selecting a new sender address file from said sender address files;

g) visually identifying said new sender address file programming selection on said interactive screen in place of said default sender address file programming selection in response to selection of said new sender address file;



h) displaying said envelope job ticket with a preselected default postage stamp programming selection;

i) providing a postage stamp file in said memory having plural postage stamp programming selections, each of said postage stamp programming selections corresponding with a postal rate for an envelope upon which the postage stamp of said postage stamp programming selection is to be printed, said providing step including:

programming a plurality of envelope types to be printed with said electronic printing system, and

developing said postage stamp programming selections with said programmed plurality of envelope types so that each postage stamp programming selection corresponds with one of said programmed plurality of envelope types;

j) accessing said postage stamp file in said memory to display on said interactive screen said postage stamp programming selections; and

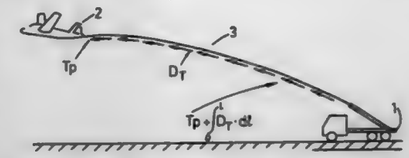
k) selecting one of said postage stamp programming selections, with said interactive screen, from a selected one of said postage stamp programming selections displayed on said interactive screen to replace said preselected default postage stamp programming selection, the selected one of said postage stamp programming selections corresponding with the postal rate of each of the envelopes to be printed.

5,384,887

OPTICAL FIBER CONTROLLED FLYING OBJECT

Nisim Hazan, Kiryat Motzkin, Israel, assignor to State of Israel, Ministry of Defence, Rafael-Armaments Development Authority, Haifa, Israel

Filed Apr. 8, 1994, Ser. No. 224,826
Claims priority, application Israel, Apr. 14, 1993, 105380
Int. Cl.[6] G02B *6/02*
U.S. Cl. 385—147 12 Claims



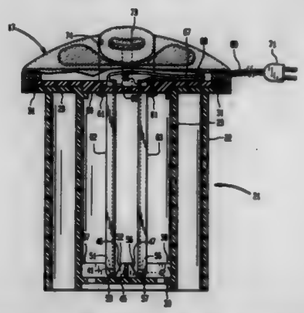
1. An object suitable for moving through a fluid, the said object being provided with a filament canister from which the filament unwinds during movement, one end of the said filament being connected to a launching location, wherein the said filament has, at each location along its length, a tensile strength determined by combining the maximal value of the sum of the drag tensional load and of the standard tensional load acting on the filament at the said location.

5,384,888

VAPORIZER WITH ELECTRODE POSITIONING

Johnson Peng, Taipei, Taiwan, Prov. of China, assignor to Duracraft Corporation, Whitinsville, Mass.

Filed Dec. 13, 1993, Ser. No. 165,206
Int. Cl.[6] F22B *1/30*; H05B *3/60*
U.S. Cl. 392—336 17 Claims



1. A vaporizer of the type having first and second substantially parallel electrodes with upper ends connected to a voltage source and free lower ends projecting into a boiler chamber, the improvement comprising:

a compartment means defining said boiler chamber and enclosing said electrodes; and

locator means disposed in said compartment means and arranged to engage and position said lower ends of said first and second electrodes, said locator means comprising a plurality of guide surfaces inclined with respect to said first and second electrodes and arranged to engage and guide movement of said lower ends thereof into said compartment means.

5,384,889

HEATER FOR HEATING A PLASTIC SLEEVE ABOUT A PORTION OF A WIRE HARNESS

Michael R. Cook, Tocknham, England, assignor to Raychem Limited, United Kingdom

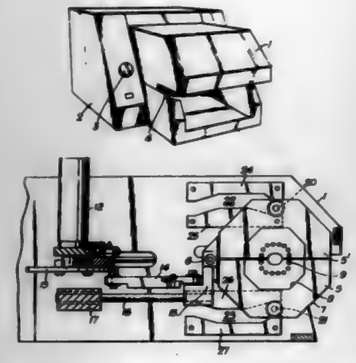
PCT No. PCT/GB92/00638, § 371 Date Sep. 15, 1993, § 102(e) Date Sep. 15, 1993, PCT Pub. No. WO92/18321, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 9, 1992, Ser. No. 119,056

Claims priority, application United Kingdom, Apr. 9, 1991, 9107468

Int. Cl.[6] B29C *63/42*; H01R *4/72*; H05B *3/00*

U.S. Cl. 392—416 **6 Claims**



1. A heating device for recovering a heat-recoverable plastics sleeve about a portion of a wire harness, which comprises a housing having a heating location where a portion of a harness and heat-recoverable sleeve positioned thereon are introduced, a heating unit that is movable between a rearward position in which it is separated from the heating location, and a forward position in which it surrounds the heating location, the heating unit comprising a pair of heating jaws that are caused to open as the heating unit moves toward the heating location and then to close as the heating unit arrives at the heating location, so that a portion of a harness and sleeve are substantially completely enclosed within the heating unit, the jaws being caused to open as the heating unit recedes from the heating location in order to allow a portion of a wire harness and sleeve to be removed.

5,384,890

METHOD AND APPARATUS FOR PROVIDING MULTIPLE CLIENTS SIMULTANEOUS ACCESS TO A SOUND DATA STREAM

Eric C. Anderson, San Jose, Calif., and Hugh B. Svendsen, Atlanta, Ga., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1992, Ser. No. 954,873

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2 **15 Claims**

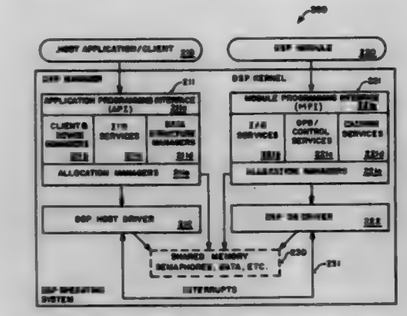
1. A sound patchbay for providing a backbone to install programming data structures for processing a sound data stream comprising at least a first programming data structure, a second programming data structure and a third programming data structure and a plurality of patch points linked together by at least one buffer to form a list, each of said plurality of patch points being positioned in said list relative to said programming data structures for insertion of programming data structures, wherein said plurality of patch points includes at least:

a first patch point for inserting programming data structures to preprocess said data stream, wherein said first patch point is positioned after said first programming data structure in said list;

second patch point for inserting programming data structures to record said data stream after any preprocessing of said data stream, wherein said second patch point is positioned after said first patch point but before said second programming data structure;

a third patch point for inserting programming data structures to play said data stream after any recording of said data stream, wherein said third patch point is positioned after said second structure; and

a fourth patch point for inserting programming data structures to postprocess said data stream after any playing of said data stream, wherein said fourth patch point is positioned after said third patch point but before said third programming data structure,



wherein inserted programming data structures at one of said plurality of patch points access and operate on said data stream yet are transparent to, inserted programming structures at said plurality of patch points other than said one of said plurality of patch points, such that inserted programming data structures at said one of said plurality of patch points affect said data stream simultaneously without affecting accesses of inserted programming structures at said plurality of patch points other than said one of said plurality of patch points.

5,384,891

VECTOR QUANTIZING APPARATUS AND SPEECH ANALYSIS-SYNTHESIS SYSTEM USING THE APPARATUS

Yoshiaki Asakawa, Kawasaki; Katsuya Yamasaki, Fujisawa, and Akira Ichikawa, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

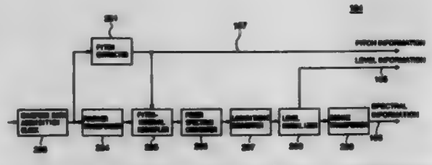
Continuation-in-part of Ser. No. 412,987, Sep. 26, 1989, Pat. No. 5,077,798. This application Oct. 15, 1991, Ser. No. 776,842

Claims priority, application Japan, Oct. 17, 1990, 2-276296; Feb. 20, 1991, 3-025997

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.29 **9 Claims**



1. A speech analysis-synthesis system for synthesizing by using a small amount of information, the system comprising:

a separation means for separating a speech signal into short-time speech data;

a pitch extraction means for applying pitch analysis to said short-time speech data to output a pitch;

a spectral analysis means for applying spectral analysis to said short-time speech data to output a row of logarithmic power spectral data;

a spectral envelope generation means for generating a spectral envelope from said row of logarithmic power spectral data;

a spectral envelope vector conversion means for normalizing logarithmic power values of said spectral envelope to extract a predetermined number of logarithmic power values as spectral envelope vectors;

a vector quantization means for quantizing said spectral envelope vectors by comparison with a plurality of vectors prepared in advance;

a spectral envelope reconstruction means for reconstructing said spectral envelope by interpolation of said quantized spectral envelope vectors;

an impulse response conversion means for converting said reconstructed spectral envelope into an impulse response waveform; and

a waveform synthesis means for synthesizing a speech waveform by superposition at intervals of said pitch while compensating an amplitude of said impulse response waveform.

5,384,892

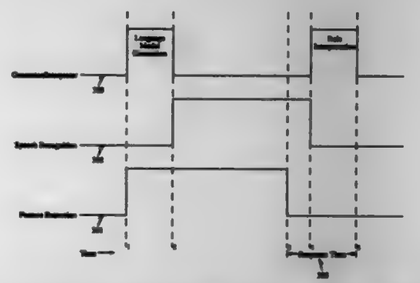
DYNAMIC LANGUAGE MODEL FOR SPEECH RECOGNITION

Robert D. Strong, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 31, 1992, Ser. No. 999,012

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.52 **7 Claims**



1. A method of speech recognition in a speech recognition system comprising the following steps:

a. determining acoustic features in a sound sample;

b. upon commencing said determination of said acoustic features, determining possible combinations of words which may be recognized by said speech recognition system and storing said possible combinations of words as a current language model, said current language model being generated from a plurality of speech rules each comprising a language model and an associated action, each said language model in each of said plurality of speech rules including a plurality of states, words defining transitions between said plurality of states, and terminal states;

c. upon the completion of said generation of said current language model, recognizing words comprising said acoustic features by traversing states in said current language model until reaching said terminal states in said current language model; and

d. subsequent to said step of recognizing words, determining a matched speech rule from said plurality of speech rules used to create said current language model and said words and performing said action associated with said matched speech rule.

5,384,893

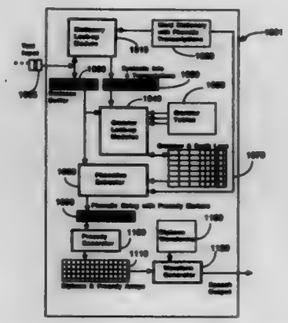
METHOD AND APPARATUS FOR SPEECH SYNTHESIS BASED ON PROSODIC ANALYSIS

Sandra E. Hutchins, Del Mar, Calif., assignor to Emerson & Stern Associates, Inc., San Diego, Calif.

Filed Sep. 23, 1992, Ser. No. 949,208

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.76 **11 Claims**



1. A system for synthesizing a speech signal from strings of words, comprising:

means for entering into the system strings of characters comprising words;

a first memory, wherein predetermined syntax tags are stored in association with entered words and phonetic transcriptions are stored in association with the syntax tags;

parsing means, in communication with the entering means and the first memory, for grouping syntax tags of entered words into phrases according to a first set of predetermined grammatical rules relating the syntax tags to one another and for verifying the conformance of sequences of the phrases to a second set of predetermined grammatical rules relating the phrases to one another, wherein the sequences of the phrases correspond to the entered words;

first means, in communication with the parsing means, for retrieving from the first memory the phonetic transcriptions associated with the syntax tags grouped into phrases conforming to the second set of rules, for translating predetermined strings of entered characters into words, and for generating strings of phonetic transcriptions and prosody markers corresponding to respective strings of entered and translated words;

second means, in communication with the first means, for adding markers for rhythm and stress to the strings of phonetic transcriptions and prosody markers and for converting the strings of phonetic transcriptions and prosody markers into arrays having prosody information on a diphone-by-diphone basis;

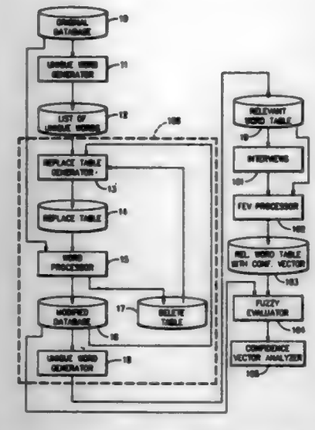
a second memory, wherein predetermined diphone waveforms are stored; and

third means, in communication with the second means and the second memory, for retrieving diphone waveforms corresponding to the entered and translated words from the second memory, for adjusting the retrieved diphone waveforms based on the prosody information in the arrays, and for concatenating the adjusted diphone waveforms to form the speech signal.

5,384,894
FUZZY REASONING DATABASE QUESTION ANSWERING SYSTEM

Stamatis Vassiliadis; Walid Kobrosly, and George Triantafyllos, all of Vestal, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 701,558, May 16, 1991, abandoned.
This application Jan. 11, 1993, Ser. No. 76,372
Int. Cl.[6] G06F *15/40, 7/22, 9/44*
U.S. Cl. 395—61 20 Claims

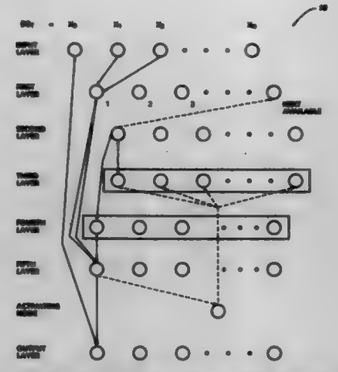


1. A question answering system for evaluating a database having text record entries, comprising:
a computer having processors and a storage system which processes instructions and a data in original database storage means for storing an original database, said computer system having
unique word processing means for generating unique words,
unique word storage means for storing a list of unique words,
a replace table generator for generating a replace table,
replace table storage means for storing the replace table,
a word processor,
modified database storage means for storing a modified database, and delete table storage means for storing a delete table,
a unique word generator for generating relevant words,
relevant word table storage means for storing a relevant word table,
a fuzzy expected value (FEV) processor,
combined storage means for storing a relevant word table with a confidence vector,
a fuzzy evaluator and a confidence vector analyzer,
query means for a user entry of a requested subject of interest,
said query means initiating system operation to retrieve data records for evaluation by said system,
said fuzzy evaluator then automatically evaluating the retrieved data records to determine whether it pertains to the requested subject of interest and passing a judgment to the system user in the form of a confidence value that represents the possibility that the retrieved data records do indeed deal with the requested subject of interest,
wherein the data records have text comments written in a spoken language and
wherein said fuzzy evaluator includes a result analyzer for finding the comments of said database that have confidence values greater than a value set by a user of the system.

5,384,895
SELF-ORGANIZING NEURAL NETWORK FOR CLASSIFYING PATTERN SIGNATURES WITH 'A POSTERIORI' CONDITIONAL CLASS PROBABILITY

George W. Rogers, King George; Jeffrey L. Solka, Fredericksburg; Carey E. Priebe, King George, and Wendy L. Poston, Fredericksburg, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1992, Ser. No. 936,369
Int. Cl.[6] G06K *9/62*
U.S. Cl. 395—23 15 Claims

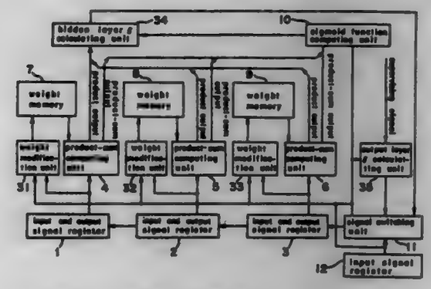


1. A self-organizing neural network for classifying an N-feature pattern signature with a posteriori conditional class probability that the pattern signature belongs to a selecting class from a plurality of classes, comprising:
a first plurality of processing layers for storing each of a first plurality of training vectors as non-overlapping clusters, each of said first plurality of training vectors having N-feature coordinates and a class coordinate, each of said non-overlapping clusters having a center and a radius defined by a vigilance parameter, wherein the center of each of said non-overlapping clusters is a reference vector, wherein the reference vector associated with each of said non-overlapping clusters is successively indexed and is equal to a corresponding one of said first plurality of training vectors,
said first plurality of processing layers updating one cluster from said non-overlapping clusters and storing said first plurality of training vectors when one of a second plurality of training vectors has corresponding N-feature coordinates bounded by the radius of said one cluster, wherein N-feature coordinates of a cluster's reference vector are recursively combined with N-feature coordinates of said one of said second plurality of training vectors having corresponding N-feature coordinates bounded by the radius of said one cluster, wherein a plurality of trained clusters are generated using said first and second plurality of training vectors,
said first plurality of processing layers determining i) a count of training vectors associated with the selected class that are bounded within each of said plurality of trained clusters, and ii) a total count of training vectors bounded within each of said plurality of trained clusters, wherein each of said plurality of trained clusters has a reference vector that defines a fractional probability associated with the selected class based upon a ratio of i) said count of training vectors associated with the selected class to ii) said total count of training vectors bounded by a corresponding one of said plurality of trained clusters; and
means for processing an input vector defining the pattern signature to be classified, the input vector having N-feature coordinates associated with an unknown class, said processing means for selecting one of reference vectors associated with said plurality of training vectors that minimizes differences with the N-feature coordinates of the input vector, wherein a fractional probability of the selected one of the reference vectors is the a posteriori conditional class probability that the input vector belongs to the selected class.

5,384,896
LEARNING MACHINE

Shigeo Sakaue, Takarazuka; Toshiyuki Kohda, Takatsuki; Hiroshi Yamamoto, Katano, and Yasuharu Shimeki, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 800,592, Nov. 27, 1991, abandoned.
This application Oct. 22, 1993, Ser. No. 143,241
Claims priority, application Japan, Nov. 29, 1990, 2-335092; May 17, 1991, 3-112992
Int. Cl.[6] G06G *7/12*
U.S. Cl. 395—24 3 Claims



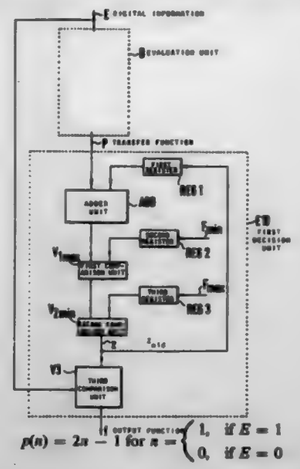
1. A learning machine comprising:
a plurality of input-output signal registers connected in cascade,
a plurality of weight memories for simultaneously outputting a plurality of weights, each of said weights to be multiplied by an output of a respective one of said plurality of input-output registers,
a plurality of product-sum computing units each of which receives at different machine cycles a) an output signal of a respective one of said plurality of input-output signal registers and b) the weight stored in a respective one of said plurality of weight memories, each of said plurality of product-sum computing units for generating a product-sum,
a single sigmoid function computing unit receiving product-sums at different machine cycles from all of Said plurality of product-sum computing units, said sigmoid function computing unit outputting output signals having a saturation characteristic with respect to each product-sum which is outputted by every one of said plurality of product-sum computing units.

5,384,897
ABSTRACTOR

Peter Jaenecke, Straubenhardt, Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Oct. 9, 1992, Ser. No. 958,901
Claims priority, application Germany, Oct. 14, 1991, 4133965
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—27 10 Claims

1. A digital 1-bit wide abstractor for generating an exemplary pattern from a digital input information E, the abstractor comprising an evaluation unit which performs a transfer function p and to whose input the digital input information E is fed, with the transfer function p being given by



$$p(n) = 2n - 1 \text{ for } n = \begin{cases} 1, & \text{if } E = 1 \\ 0, & \text{if } E = 0 \end{cases}$$

with an output of the evaluation unit, a second input to which the digital input information E is fed, and third and fourth inputs to which a first predeterminable set value F_{max} and a second predeterminable set value F_{min}, respectively, are fed, with the first decision unit implementing an activation state z according to an activation function F, where

$$z = F(z_{old}, p(n)) = \begin{cases} F_{min} & \text{for } z_{old} + p(n) < F_{min} \\ F_{max} & \text{for } z_{old} + p(n) > F_{max} \\ z_{old} + p(n) & \text{for others} \end{cases}$$

and F (z_{old}, p(n)) is the new state while z_{old} is the old state of the abstractor, the first decision unit providing at an output thereof an output information according to an output function f where

$$f(z) = \begin{cases} 0 \text{ for } z < 0 \\ E \text{ for } z = 0 \\ 1 \text{ for } z > 0 \end{cases}$$

wherein:
the first decision unit includes an adder unit whose first input is connected with the output of the evaluation unit, whose second input is connected with a first register and whose output is connected with a first input of a first comparison unit;
a second input of the first comparison unit is connected with a second register in which the second set value F_{min} is stored;
the larger of the two values present at the two inputs of the first comparison unit is always output at an output of the first comparison unit and is fed to a first input of a second comparison unit;
a second input of the second comparison unit is connected with a third register in which the first set value F_{max} is stored;
the smaller of the two values present at the inputs of the second comparison unit which constitutes the activation

state z is always output at an output of the second comparison unit;

the output of the second comparison unit is connected with the first register and with a first input of a third comparison unit;

the digital input information E is fed to a second input of the third comparison unit; and

the output information is output at an output of the third comparison unit according to the output function f.

5,384,898

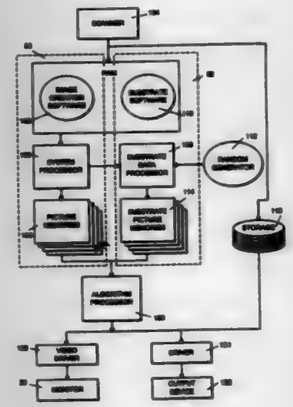
Patent Not Issued For This Number

5,384,899

APPARATUS AND METHOD FOR EMULATING A SUBSTRATE

Gad Amit, Tel Aviv, Israel, assignor to Scitex Corporation Ltd., Herzliya, Israel

Filed Apr. 16, 1991, Ser. No. 685,904
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—100 **90 Claims**
(7 of 18 Drawing(s) in Color)



1. A method for creating an emulation of a substrate, the emulated substrate comprising at least two data layers, the method comprising the steps of:

generating and storing a digital representation of a first data layer of a substrate;

attributing to said first data layer at least one characteristic of a first physical feature of said substrate;

determining at least one characteristic of a second physical feature of said substrate;

modifying the digital representation of said first data layer for producing a digital representation of a second data layer of said emulated substrate, based at least on one determined characteristic; and

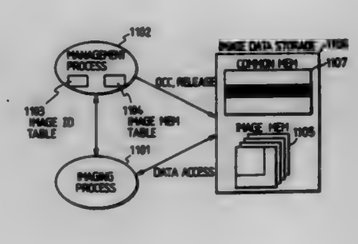
repeating said storing, attributing, determining and modifying, thereby emulating a plurality of data layers of said emulated substrate.

5,384,900

METHOD OF MANAGING AN IMAGE MEMORY BY A PROCESS INDEPENDENT OF AN IMAGE PROCESSING PROCESS

Hiroaki Sato, Sagamihara; Masatoshi Okutomi; Hiroyuki Yamamoto, both of Yokohama; Hideyuki Tamura, Yamato, and Hiroshi Okazaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 683,471, Apr. 9, 1991, abandoned, which is a continuation of Ser. No. 322,118, Mar. 13, 1989, abandoned. This application Sep. 7, 1993, Ser. No. 116,545
Claims priority, application Japan, Mar. 14, 1988, 63-058659; Mar. 14, 1988, 63-059657; Mar. 14, 1988, 63-059658
Int. Cl.[6] G06F *3/00, 12/14*
U.S. Cl. 395—100 **7 Claims**



1. A method of managing an image memory by a process independent of an image processing process, said method comprising the steps of:

accepting a first request for occupying an area with an user identifier from an image processing process;

ascertaining an unoccupied area in the image memory in response to the request accepted in said first accepting step by referring to memory management information including occupation status information and a user identifier for respective areas of the image memory in a management memory;

updating the memory management information according to the ascertained area, such that the occupation status information of the ascertained area indicates occupied and the user identifier corresponds to the accepted user identifier;

thereafter accepting a second request, originating from an image processing process, for releasing an area with information specifying the area and a user identifier;

determining, in response to the request accepted in said second accepting step, whether the specified area is permitted to be released based on the user identifier accepted in said second accepting step by referring to the memory management information; and

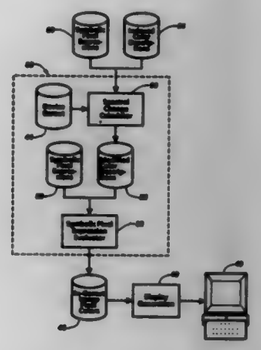
updating the occupation status information for the specified area to indicate unoccupied when the area is determined to be permitted to be released in said determining step.

5,384,901

METHOD OF RENDERING A COLOR IMAGE FOR AN OUTPUT MEDIUM FROM SYMBOLIC IMAGE DATA

Andrew S. Glassner, San Francisco; David H. Marimont, Palo Alto, and Maureen C. Stone, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1992, Ser. No. 965,685
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—131 **15 Claims**



1. A method of producing an output color image having colors included in a device gamut of a color reproduction device; the method comprising:

providing symbolic color image data symbolically representing a plurality of original image colors from an original color image rendered from a scene description having a plurality of object primitives;

providing indexed color description data defining an original color for each of the object primitives in the scene description; the symbolic color image data being indexed by the indexed color description data so that evaluating the symbolic color image data using the indexed color description data produces the plurality of original image colors of the original color image;

providing device gamut color data representing the device gamut of the color reproduction device;

performing spectral change calculations using the symbolic color image data, the indexed color description data, and the device gamut color data to produce modified indexed color description data; the spectral change calculations modifying the indexed color description data until the output color image satisfies an image metric defining a desired relationship among the original color image, the device gamut and the output color image; and

producing the output color image having the colors included in the device gamut of the color reproduction device using the symbolic color image data and the modified indexed color description data.

5,384,902

METHOD FOR GENERATING A FAST INVERSE TABLE

Stephen E. Carlson, Issaquah, Wash., assignor to Aldus Corporation, Seattle, Wash.

Filed Dec. 24, 1991, Ser. No. 813,963
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—131 **12 Claims**

1. A method for generating an inverse table in a computer memory device for associating a large set of source values with a smaller set of destination values, each value in the source set having a binary representation of N components, the method including the steps of:

(a) establishing an inverse table in a computer memory device, said inverse table having a number of inverse table entries addressable by a set of source values, wherein each of said source values is r-bits;

(b) simulating an N-dimensional symmetrical structure in the computer memory device of size q, wherein $q^N=2^r$, said N-dimensional symmetrical structure comprising spaces having space coordinates, each space coordinate corresponding to an inverse table address;

(c) for each destination value of a set of destination values, identifying a star space associated with said destination value, termed star value, based on a relationship between said destination value and said associated star space;



(d) initializing a unit counter N-dimensional symmetrical J;

(e) until each space in said structure is captured: for each star space:

(i) expanding out J spaces from said star space in each of 2N possible directions;

(ii) capturing each uncaptured space encompassed by said expansion; and

(iii) incrementing unit counter J and returning to substep (i); and

(f) for each inverse table address, entering the star value that captured a space associated with said inverse table address, at substep (e)(ii), into said inverse table, whereby each source value is associated with a destination value that is an approximation to said source value based on said relationship.

5,384,903

GRAPHICS PROCESSING METHOD AND APPARATUS

John A. Herrod, Eastleigh, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

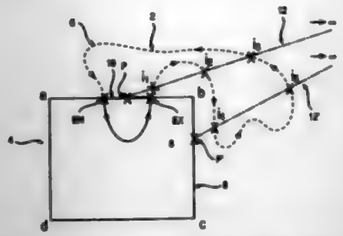
Filed Jul. 2, 1992, Ser. No. 908,133
Claims priority, application European Pat. Off., Jul. 5, 1991, 91306143
Int. Cl.[6] G06F *15/72*
U.S. Cl. 395—134 **15 Claims**

1. A method of clipping a graphics element having an element border to a viewing window having a window border comprising the steps of:

a) detecting an exit point where said element border intersects said window border and exits said viewing window and an entry point where said element border intersects said window border and enters said viewing window;

b) determining a number of times a line extending from a point on said window border crosses said element border outside said viewing window; and

c) plotting a closure line along said window border between said exit point and said entry point and passing through



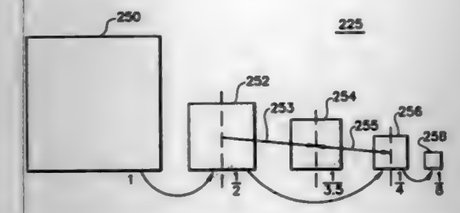
said point if said line crosses said element border an odd number of times and not passing through said point if said line crosses said element border an even number of times.

5,384,904

IMAGE SCALING USING REAL SCALE FACTORS

David L. Sprague, Trenton, N.J., and Michael Keith, Holland, Pa., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 8, 1992, Ser. No. 987,725
Int. Cl.[6] G06F *15/60*
U.S. Cl. 395—139 **19 Claims**



1. A method for scaling an input image, comprising the steps of:

(a) selecting a scale factor X, wherein $2^n<X<2^{n+1}$ and n is an integer;

(b) selecting a scale factor Y, wherein Y is one of 2^n and 2^{n+1};

(c) scaling the input image according to the scale factor Y to generate a first scaled image; and

(d) scaling the first scaled image according to the scale factor X to generate an output image.

5,384,905

METHOD FOR TRACING A LINE IMAGE BY MONITORING THE DISTANCE BETWEEN TWO TRACE BASE POINTS

Yutaka Tanaka, and Naruto Takasaki, both of Yokohama, Japan, assignors to Hitachi Software Engineering Co., Ltd., Kanagawa, Japan

Filed Jul. 1, 1992, Ser. No. 907,036
Claims priority, application Japan, Jul. 2, 1991, 3-161652
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—143 **6 Claims**

1. A method for tracing a line image using an image processor, comprising the steps of:

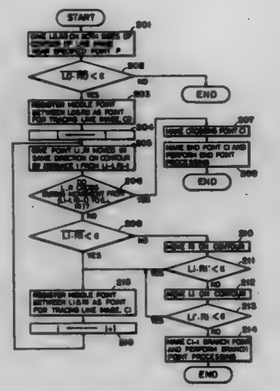
setting first and second points on respective first and second contour edges of a line image as first and second trace base points for the line image;

monitoring a distance relationship between the first and second trace base points as a line width of the line image while tracewise moving the first and second trace base points on the respective contour edges of the line image concurrently in the same direction; and

tracing the line image in accordance with the tracewise moving step so long as the line width determined in the monitoring step is equal to or smaller than a predetermined line width;

wherein the setting step includes the steps of:

selecting a nonimage point;



setting the first trace base point nearby the nonimage point on the first contour edge of the line image; and

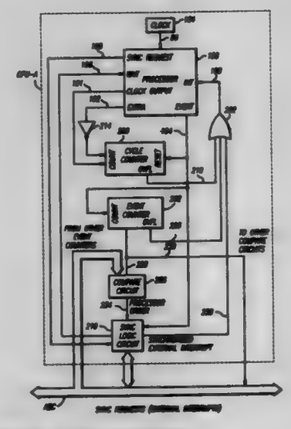
setting the second trace base point on the second contour edge of the line image nearby the nonimage point.

5,384,906

METHOD AND APPARATUS FOR SYNCHRONIZING A PLURALITY OF PROCESSORS

Robert W. Horst, Champaign, Ill., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 737,937, Jul. 29, 1991, abandoned, Continuation of Ser. No. 283,139, Dec. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 118,503, Nov. 9, 1987, abandoned. This application Aug. 23, 1993, Ser. No. 110,328
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[6] G06F *1/00*
U.S. Cl. 395—550 **16 Claims**



1. A computer system comprising:

a) a plurality of Central Processing Units (CPUs) each executing a respective instruction stream, the CPUs being clocked independently of one another, each CPU executing its respective instruction stream at a speed which is variable from the speed that each of such other CPUs executes its respective instruction stream, each CPU having at least one processor executing said CPU's respective instruction stream during execution cycles and providing first processor events, related to processing said respective instruction stream, spaced apart over plural execution cycles;

b) each of the CPUs having a cycle counter to count its respective execution cycles and an event counter to count its respective first processor events and provide an event count corresponding to the counted first processor events, each counted first processor event being defined explicitly by a processor instruction which is associated with the counted first processor event the respective instruction stream of such CPU including the same processor instructions that are executed in the respective instruction stream of each of the other CPUs

each processor providing an indication of a second processor event in response to its respective CPU's cycle counter reaching a selected overflow count, wherein said event counter also counts said second processor events;

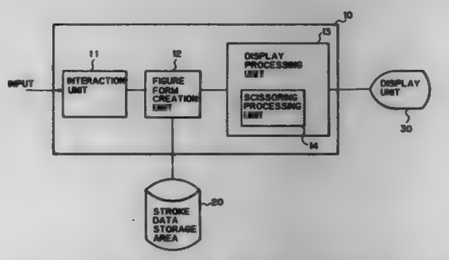
c) wherein each CPU has synchronizing means for halting the execution of the processor instructions in its respective instruction stream upon the respective event counter of such CPU reaching said overflow count, wherein each CPU's synchronizing means is coupled to receive the event count of the respective event counters of each of the other CPUs and compares the respective event counts and wherein the respective synchronization means restart each of the respective CPUs to execute the processor instructions in its respective instruction stream from a point in such instruction stream which corresponds to said overflow count when all of the respective event counters have reached said overflow count.

5,384,907

METHOD FOR CARRYING OUT SCISSORING -PROCESSING OF STROKE LETTERS IN A SCREEN DISPLAY

Masatomo Arimatsu, Tokyo, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 746,336, Aug. 16, 1991, abandoned. This application May 27, 1994, Ser. No. 250,343
Claims priority, application Japan, Aug. 18, 1990, 2-217843
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—150 **1 Claim**



1. A method for carrying out scissoring processing of stroke letters in a window frame identifying a displaying frame in a display screen, the window frame being defined by a frame line, the method comprising the steps of:

defining an area around the stroke letter, said defined area having a height and width, a reference position and inclination angle;

defining a band frame around the frame line based on the length and width, the inclination angle and the reference position of the defined area, to determine a displacement area of the stroke letter such that the band frame has a width surrounding an outside of the frame line and a width surrounding an inside of the frame line so that the band frame is changed in response to a change in the inclination angle of the area;

determining whether the defined area of at least one of the stroke letters is on the outside of the band frame, within the band frame or on the inside of the band frame; and

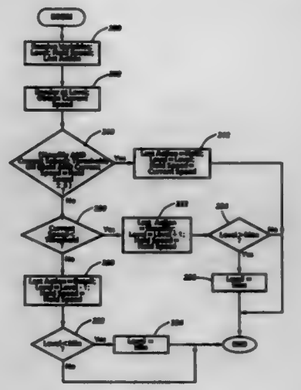
inhibiting the display of the stroke letter if the defined area of the stroke letter is on the outside of the band frame, displaying the stroke letter if the stroke letter is on the inside of the band frame, and carrying out a scissoring process if at least a portion of the stroke letter is within the band frame.

5,384,908

AVOIDING OSCILLATION IN INTERACTIVE ANIMATION

Jock D. Mackinlay, and George G. Robertson, both of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1991, Ser. No. 814,138
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—152 **18 Claims**



14. A machine comprising:

a display;

memory; the memory storing scenes data defining a set of scenes, instruction data indicating instructions, and detail control data for use in controlling image detail to avoid oscillation of detail; the detail control data including detail information indicating detail with which to present an image on the display and maintenance information for use in determining whether to maintain presentation of images with the indicated detail to avoid oscillation of detail; and

a processor connected for accessing the scenes data, the instruction data, and the detail control data in the memory and also connected for controlling the display to present images;

the instruction data comprising:

rendering instruction data indicating rendering instructions that the processor executes; the processor, in executing the rendering instructions, performing operations:

that use the scenes data to produce image defining data defining an image;

that control the display to present the image as defined by the image defining data;

that obtain rendering speed data indicating a speed with which the image defining data is produced; and

that compare the rendering speed with a threshold speed above which display features in an image are perceptible as continuations of display features in a next preceding image; and

detail control instruction data indicating detail control in-

structions that the processor executes; the processor, in executing the detail control instructions, performing operations that access the detail control data:

to obtain detail data indicating detail with which to present an image;

to obtain maintenance data indicating whether to maintain presentation of images with the indicated detail to avoid oscillation of detail; and

to use the rendering speed data to update the detail control data so that the detail information indicates detail with which to present a subsequent image and the maintenance information can be used in determining whether to maintain presentation of images with the detail indicated after the subsequent image to avoid oscillation of detail;

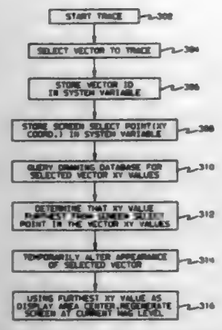
the processor, in executing the rendering instructions and the detail control instructions, presenting a sequence of images in which display features are perceptible as continuing from a first image of the sequence to a last image of the sequence; the sequence of images including a subsequence of two or more images during which the processor maintains presentation of images with the same detail so that oscillation of detail does not occur during the subsequence.

5,384,909

PRECISION AUTOMATIC SCROLLING FOR AN IMAGE DISPLAY SYSTEM

Jerry R. Brown, Gardiner, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,465
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—155 **4 Claims**



1. A graphics processing system, comprising:

a graphics display;

a data processing unit coupled to said graphics display and comprising a graphics processor, said graphics processor comprising means for generating a display vector from definitional data;

pointing device coupled to said data processing unit for selecting a first point on a portion of a drawing visible on a current display frame;

a storage device comprising a storage media having data stored thereon, defining components within said drawing in vector format;

data access means, coupled to said pointing device, for determining a component including said first point and for retrieving a set of said data defining said component from said storage device;

input means, for selecting a function to determine a second point on said drawing, said second point being within an area of said drawing not currently being displayed;

calculation means, coupled to said input means and said data access means, for processing first coordinates indicative of said first point and said set of data defining said component in accordance with said function so as to determine second coordinates of said second point on said component; and,

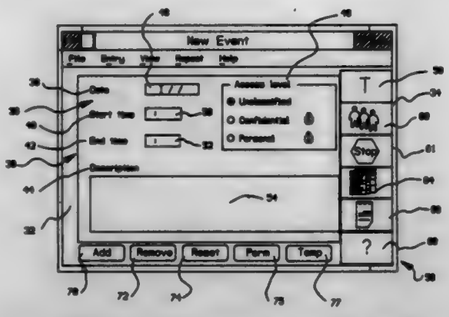
display control means, coupled to said graphics display for causing said graphics display to display a second display frame including an area of said component surrounding said second point.

5,384,910

METHOD AND APPARATUS FOR FACILITATING OPERATOR RECONFIGURATION OF A GRAPHICAL USER INTERFACE IN A DATA PROCESSING SYSTEM

Robert J. Torres, Colleyville, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,032
Int. Cl.[6] G06F *15/403*
U.S. Cl. 395—156 **14 Claims**



1. A method in a data processing system of providing a graphical user interface to facilitate operator interaction with said data processing system, comprising the method steps of:

providing a menu-formatted graphical user interface including a plurality of menu fields whose identity and display positions are determined by an initial display configuration and which are adapted to receive alphanumeric input from a keyboard;

simultaneously providing in said graphical user interface a menu field palette which includes at least one iconographic representation of at least one additional possible menu fields which is adapted to receive alphanumeric input from a keyboard;

monitoring operator input, and performing at least one of the following tasks in response to a predetermined operator input:

(a) including a particular one of said at least one additional possible menu fields from said menu field palette in said menu-formatted graphical user interface in response to operator selection of said at least one iconographic representation of said at least one additional possible menu fields;

(b) removing a particular one of said plurality of menu fields from said menu-formatted graphical user interface;

(c) automatically providing visual representations in said menu field palette of particular menu fields of said plurality of menu fields which are included or removed from said menu-formatted graphical user interface;

utilizing said steps of including and removing to rearrange or alter at least one of (a) menu content in said menu-formatted graphical user interface, and (b) menu item positions in said menu-formatted graphical user interface; and

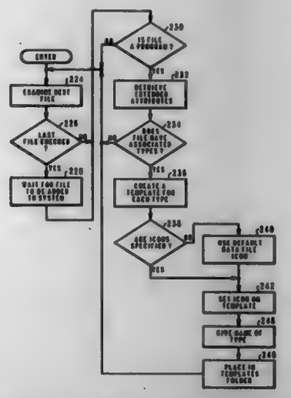
receiving alphanumeric input from a keyboard in particular ones of said plurality of menu fields.

5,384,911

METHOD OF TRANSFERRING PROGRAMS FROM ACTION ORIENTED GUI PARADIGM TO OBJECT ORIENTED GUI PARADIGM

Marc A. Bloomfield, Lighthouse Point, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 996,422, Dec. 23, 1992, abandoned.
This application May 10, 1994, Ser. No. 240,398
Int. Cl.[6] G06F *3/14, 3/153*
U.S. Cl. 395—157 **8 Claims**



1. A method of transferring an action paradigm program written for an action oriented graphic user interface to an object oriented graphic user interface comprising the steps of:

supporting association tables with extended attributes for application programs and other objects through a high performance file system;

recovering data file types cognizable to the action paradigm program from an association table for the action paradigm program;

generating a template for each data file type;

setting an inchoate document icon on each template;

placing each template into an associated templates folder;

for each data file type having an inchoate document icon in the object oriented graphic user interface, selecting applications for a displayable menu of applications usable with the data file type; and

responsive to user selection on an inchoate document icon, creating a data file.

5,384,912

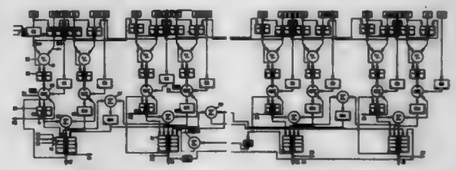
REAL TIME VIDEO IMAGE PROCESSING SYSTEM

Michael A. Ogrinc, San Francisco; Robert A. Card, Palo Alto; Chris R. Burns, Mountain View; Charles P. Clarke, Los Altos; Ronda L. Collier, Scotts Valley; Kevin M. Collins, San Mateo; Stephen E. Crane, Menlo Park; Clifford Hersh, Berkeley; Brian C. Knittel, Palo Alto; Steven T. Mayer, Los Altos Hills; Lawrence Stead, Mountain View; Andrew E. Wade, Los Altos; Robert L. Lay, San Anselmo; Bradley G. Stewart, San Jose; Raymond Pon, Oakland; Robert Leyland, Novato; John F. Schlag, San Rafael, and Sven Jensen, Palo Alto, all of Calif., assignors to New Microtime Inc., Bloomfield, Conn.

Continuation of Ser. No. 116,801, Oct. 30, 1987, abandoned.
This application May 29, 1992, Ser. No. 892,607
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—164 **10 Claims**

1. In a video system that displays a video image by means of a substantially rectangular array of picture elements or pixels, each pixel having an associated pixel value pv that contributes to the video image, with each row in the array containing about the same number of pixels and each column in the array containing about the same number of pixels, where the length of the array is $N \bullet N_1$ pixels and the height of the array is $N \bullet N_2$ pixels and N, N_1 and N_2 are all integers, a method for interpolation of the pixel value of a fictitious pixel whose position lies between and does not coincide with any of the pixels that comprises the video image array, the method comprising the steps of:

choosing an array of N×N pixels from the video image



array, with the boundaries of this chosen array being parallel to the boundaries of the video image array and with the fictitious pixel lying near the center of this chosen array; and

providing a filter including an array of, N2 averaging coefficients (C(m,n)), where m, n=0, 1, . . . , N−1 and the sum

$$\sum_{m=0}^{N-1}\sum_{n=0}^{N-1} C(m,n) = 1$$

and forming a weighted sum of pixel values

$$S = \sum_{m=0}^{N-1}\sum_{n=0}^{N-1} C(m,n)pv(m,n)$$

where the sequence $\{pv(m,n)\}_{m,n=0}^{N-1}$ includes all pixel values in the chosen N×N array of pixels, with each such pixel value in the chosen array appearing as one member pv(m,n) of this sequence;

wherein said step of providing an array of said averaging coefficients and forming a weighted sum of said coefficients comprises the steps of:

dividing said video image array of pixels into a sequence of Fundamental Blocks of, N^2 pixels each, with each pixel belonging to only one such Fundamental Block and with the boundaries of each Fundamental Block being parallel to the boundaries of said video image array;

assigning to each pixel in said video image array the rectangular coordinates (m,n), where m=0,1,2, . . . , $N \bullet N_1 - 1$ and n=0,1,2, . . . , $N \bullet N_2 - 1$, , with the pixel in the upper left corner of said video image array being assigned the coordinates (0,0), and a pixel in said array that lies m consecutive pixels to the right from the left boundary of said video image array and lies n consecutive pixels down from the top boundary of said video image array being assigned the coordinates (m,n);

providing an array of N^2 memories, numbered r=0,1,2, . . . , N^2-1, with each such memory including a designated rectangular array of length N_1 and height N_2 of memory addresses having rectangular coordinates (p,q) beginning with (0,0) in the upper left corner of such array and proceeding in a manner substantially identical to that of the rectangular coordinate system for said video image array;

providing a mapping T(m,n) to store the pixel value pv(m,n) in said video image array with video image array pixel coordinates (m,n) in the memory address

$$(p,q) = \left(\left[\frac{m}{N}\right]_I, \left[\frac{n}{N}\right]_I\right)$$

in the designated rectangular array of memory number $r = m - m_n + N(n - n_N)$, where

$$[w]_N = \left[\frac{W}{N}\right]_I \cdot N_1,$$

for m=0,1,2, . . . , N_1•N−1 and n=0,1,2 . . . , N_2•N−1;

rotating in a first direction by one address unit each of the designated memory arrays number r=S_1+k_1•N (K_1=0, 1, . . . , N−1; s_1=0, 1, . . . , p′−1), where p′=m′−m_N, then rotating in a second direction by one address unit each of the designated memory arrays number 1; s_2=0,1, . . . , n−1), where q′=n′−n_N and where (m′,n′) are the coordinates of the pixel in a corner of said chosen array that is centered on said fictitious pixel position wherein said rotating changes the pixel value stored in each memory;

applying the map T^{-1}(r;p,q) to the contents at coordinates (p,q) of a subset of the designated rectangular arrays of the memories r=0,1,2, . . . , N^2−1 resulting from the immediately preceding rotation step to produce an N×N array of pixel values pv′(m,n) corresponding to said video image array coordinates

$$(m, n) = \left(r - r_N + p, \frac{r_N}{N} + q\right)$$

where m=m′$_N$, m′$_N$+1, . . . , m′$_N$−1 and n=n′$_N$+n′$_N$+1, . . . , n′$_N$N−1;

providing a sequence of N^2 permutations P_t (t=0,1,2, . . . , N^2−1) on a N×N array of entries where permutation number t=k_3•N (k_3=0,1,2, . . . , N−1) is a one-place rotation in the second direction of the rows of the array K_3 times with end-around carry and permutation number t=k_3•N+s (s=1,2, . . . , N−1) is the permutation number r=k_3•N followed by an s-place rotation in the first direction of the columns of the N×N array with end-around carry;

forming the permuted array P_t−1C(m,n)=Q(m,n) of coefficients where t=m′−m′$_N$•(n′−n′$_N$) and {C(m,n)} is said array of averaging coefficients;

forming the sum

$$S = \sum_{m=0}^{N-1} \sum_{n=0}^{N-1} pv'(m_N + m, n_N + n)Q(m, n)$$

as the interpolated pixel value; and displaying in place of a portion of the original video image the interpolated pixel value for a plurality of pixels.

DESIGN PATENTS

GRANTED JAN. 24, 1995

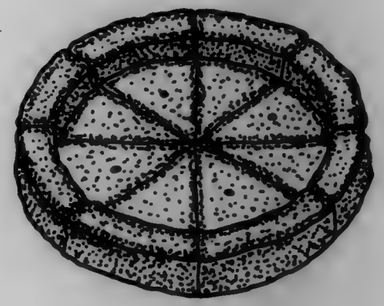
ERRATA

For CLASS	See PATENT NO.
D19–036	D 354,689
D12–092	D 354,778
D25–126	D 354,792

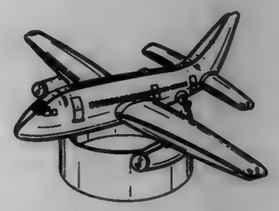
VOL
170
ISS
4
JA
24
19 95
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DESIGNS

354,613
DOG FOOD TREAT
Rita G. Kreger, Chicago, Ill., assignor to Heinz Pet Products Company, Newport, Ky.
Filed Nov. 8, 1989, Ser. No. 433,179
The portion of the term of this patent subsequent to Sep. 24, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D1—124



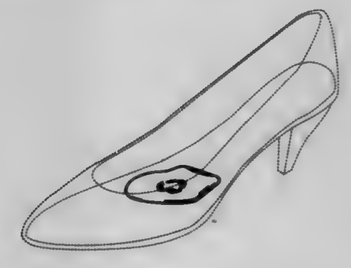
354,614
INFLATABLE CAP
Steve S. Chen, 1245 Fulton Pl., Fremont, Calif. 94539
Filed Dec. 3, 1992, Ser. No. 2,109
Claims priority, application United Kingdom, Jun. 11, 1992, 2023433
Term of patent 14 years
U.S. Cl. D2—869



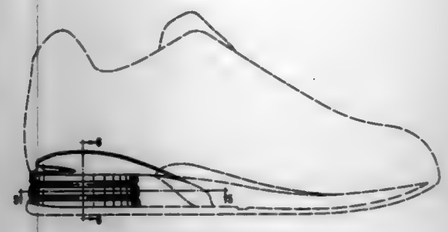
354,615
HALF CHAP LEG COVERING
Pamela A. Parker, 956 Sunset Dr., San Carlos, Calif. 94070
Filed Aug. 13, 1993, Ser. No. 11,754
Term of patent 14 years
U.S. Cl. D2—901



354,616
METATARSAL FOREFOOT SUPPORT
Charles F. Schroer, Jr., Bartlett, Tenn., assignor to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.
Filed Mar. 5, 1993, Ser. No. 5,504
Term of patent 14 years
U.S. Cl. D2—961



354,617
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike Inc., Beaverton, Oreg.
Division of Ser. No. 786,932, Nov. 1, 1991, Pat. No. Des. 350,433. This application Mar. 23, 1994, Ser. No. 20,275
Term of patent 14 years
U.S. Cl. D2—964



354,618
SHOE UPPER
Christopher Kittle, Cohasset, and Carrie A. Coley, Quincy, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 12,128, Aug. 23, 1993, Pat. No. D. 347,107. This application May 23, 1994, Ser. No. 23,312
Term of patent 14 years
U.S. Cl. D2—970



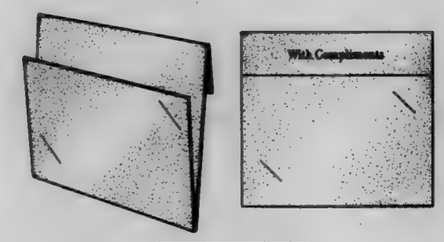
354,619
BOOK PACK FOR SCOUTS
Jason E. G. Soukeras, P.O. Box 9875, Newport Beach, Orange County, Calif. 92658
Filed Oct. 22, 1992, Ser. No. 714
Term of patent 14 years
U.S. Cl. D3—217



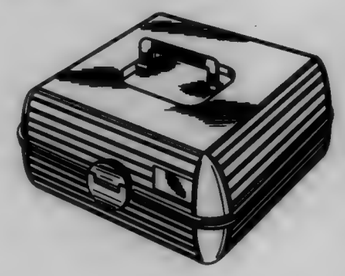
354,620
PAGER HOLSTER
Jeffrey S. King, Boynton Beach; Randall S. Pennington, Palm City, and Gerald M. Oliver, West Palm Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 18, 1993, Ser. No. 15,468
Term of patent 14 years
U.S. Cl. D3—218



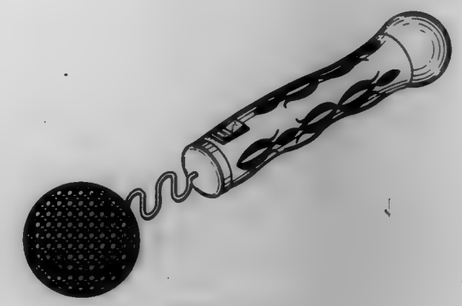
354,621
CARD HOLDER
Bebe B. Holtz, Norcross, Ga., assignor to Stern's Printing and Engraving Co., Atlanta, Ga.
Filed Apr. 6, 1993, Ser. No. 6,750
Term of patent 14 years
U.S. Cl. D3—267



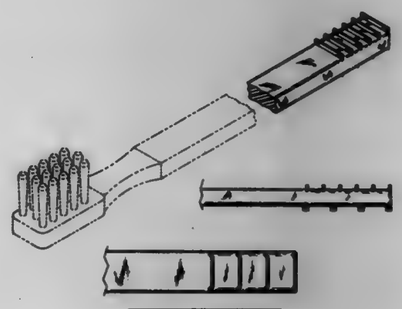
354,622
LARGE COSMETIC CASE
Brian J. Lovell, San Diego, Calif., assignor to Samsonby, Inc., San Diego, Calif.
Filed Mar. 5, 1993, Ser. No. 5,543
Term of patent 14 years
U.S. Cl. D3—281



354,623
AUTOMATIC SCRUBBER
Rhonda Baker, 32621 Central St., Wildomar, Calif. 92595
Filed Apr. 24, 1992, Ser. No. 873,740
Term of patent 14 years
U.S. Cl. D4—100



354,624
TONGUE CLEANER FOR INTEGRALLY MOULDING WITH A TOOTH BRUSH
Subhash Gupta, 32-33 88 St., #106, Jackson Heights, N.Y. 11369
Filed Oct. 15, 1993, Ser. No. 14,216
Term of patent 14 years
U.S. Cl. D4—108



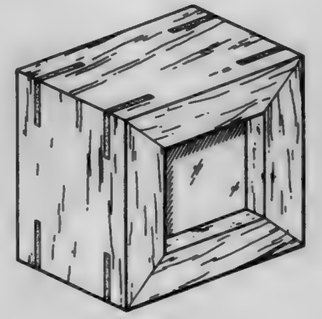
354,625
TOOTHBRUSH
Douglas A. Weissmann, Cayucos, Calif., assignor to Douglas Alan Weissmann, Cayucos, Calif.
Filed Sep. 30, 1993, Ser. No. 13,720
Term of patent 14 years
U.S. Cl. D4—109



354,626
COMBINED BRUSH AND SPONGE APPLICATOR WITH HANDLE
Joseph B. Hurwitz, 10204 Kindly Ct., Gaithersburg, Md. 20879
Filed May 6, 1992, Ser. No. 879,849
Term of patent 14 years
U.S. Cl. D4—116



354,627
PICTURE FRAME
Paul D. Rowan, Toronto, Canada, assignor to Umbra U.S.A. Inc., Buffalo, N.Y.
Filed Nov. 16, 1993, Ser. No. 15,382
Term of patent 14 years
U.S. Cl. D6—300



354,628
COMBINED SEATING UNIT AND TABLE
Chun S. Lee, Buffalo Grove, Ill., assignor to Schnadig Corporation, Chicago, Ill.
Filed Feb. 4, 1993, Ser. No. 4,407
Term of patent 14 years
U.S. Cl. D6—335



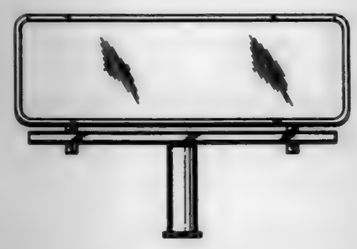
354,629
VEHICLE SEAT
Christopher V. Chapman, Garden Grove, Calif., assignor to Isuzu Motors Limited, Tokyo, Japan
Filed Oct. 13, 1993, Ser. No. 14,121
Term of patent 14 years
U.S. Cl. D6—356



354,631
CHAIR
Paolo Orlandini, and Roberto Lucci, both of Milan, Italy, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 1, 1993, Ser. No. 4,295
The portion of the term of this patent subsequent to Oct. 4, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



354,630
BUS BENCH
Raymond J. Tomczak, 3081 NE. 43 St., Fort Lauderdale, Fla. 33308
Filed Oct. 20, 1993, Ser. No. 14,386
Term of patent 14 years
U.S. Cl. D6—364



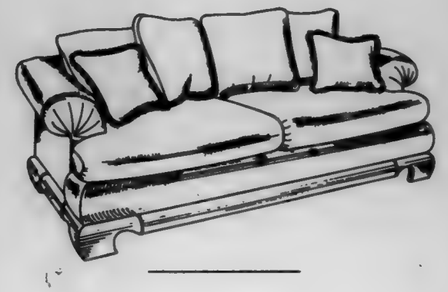
354,632
CHAIR
John Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed Jul. 16, 1993, Ser. No. 10,747
Term of patent 14 years
U.S. Cl. D6—369



354,633
CHAIR
Richard Frisier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jul. 9, 1993, Ser. No. 10,479
Term of patent 14 years
U.S. Cl. D6—369



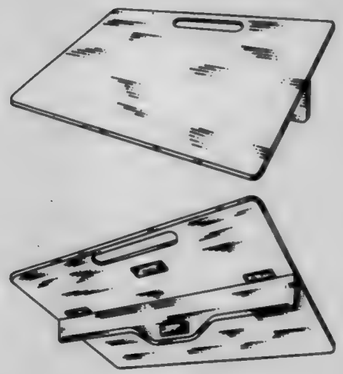
354,635
SOFA
Chan S. Lee, Buffalo Grove, Ill., assignor to Schnadig Corporation, Chicago, Ill.
Filed Feb. 4, 1993, Ser. No. 4,408
Term of patent 14 years
U.S. Cl. D6—381



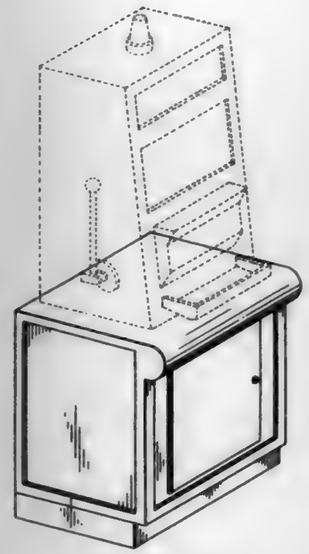
354,634
CHAIR
Robert M. Scheper, and Bruce M. Smith, both of Grand Rapids, Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.
Division of Ser. No. 711,439, Jun. 6, 1991. This application Feb. 4, 1994, Ser. No. 18,412
Term of patent 14 years
U.S. Cl. D6—375



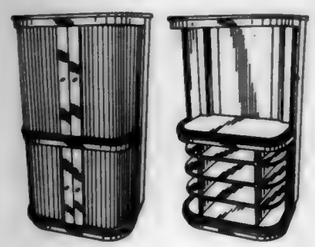
354,636
FOLDABLE LAP DESK
Clinton D. Cable, 9667 Golf Dr., Spring Valley, Calif. 91977
Filed Nov. 15, 1993, Ser. No. 15,330
Term of patent 14 years
U.S. Cl. D6—406



354,637
CABINET BASE FOR A SLOT MACHINE
John J. Jarrett, Newport, Minn., assignor to D-Zin Inc., Osseo, Minn.
Filed Jan. 15, 1993, Ser. No. 3,809
Term of patent 14 years
U.S. Cl. D6—432



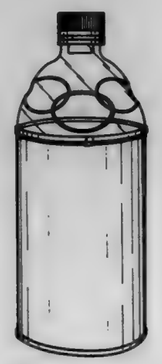
354,638
ENTERTAINMENT CENTER
John M. Todd, 30 Purdon Drive, Downsview, Ontario, Canada M3H 4X1 , and James A. Grieve, 249C Broadway Avenue, Toronto, Ontario, Canada M4P 1V9
Filed Jun. 30, 1992, Ser. No. 906,513
Term of patent 14 years
U.S. Cl. D6—433



354,639
DISPLAY COOLER
David C. F. Stoddard, Atlanta, and Frank H. Stephens, Dunwoody, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Aug. 23, 1993, Ser. No. 12,051
Term of patent 14 years
U.S. Cl. D6—450



354,640
MERCHANDISING DISPLAY COOLER
Paul L. Flum, St. Louis, Mo., assignor to Paul Flum Ideas, Inc., St. Louis, Mo.
Filed Jan. 26, 1993, Ser. No. 4,071
Term of patent 14 years
U.S. Cl. D6—450



354,641
DISPLAY COOLER
David C. F. Stoddard, Atlanta, and Frank H. Stephens, Dunwoody, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Aug. 23, 1993, Ser. No. 12,050
Term of patent 14 years
U.S. Cl. D6—450



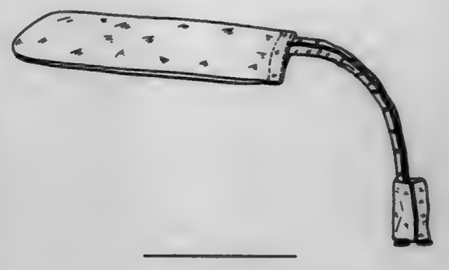
354,642
DISPLAY COOLER
David C. F. Stoddard, Atlanta, and Frank H. Stephens, Dunwoody, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Aug. 23, 1993, Ser. No. 12,052
Term of patent 14 years
U.S. Cl. D6—450



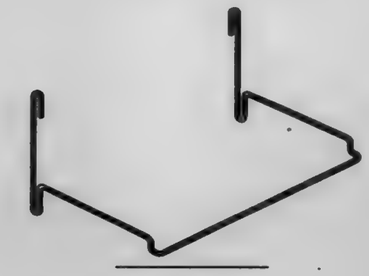
354,643
TABLE
Detlef Hänsel, Lippstadt-Dedinghausen, and Horst Schiermeier, Paderborn, both of Germany, assignors to Gesellka Büromöbelwerk GmbH & Co., Geseke, Germany
Filed Apr. 14, 1993, Ser. No. 7,031
Claims priority, application Germany, Oct. 14, 1992, 9207562
Term of patent 14 years
U.S. Cl. D6—484



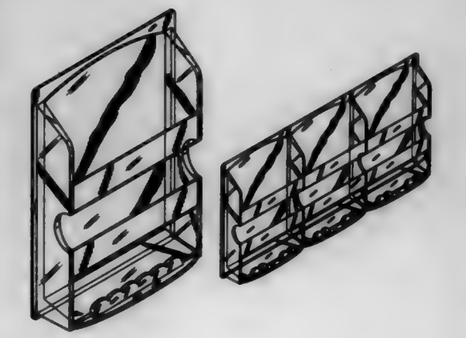
354,644
SUNSHADE
James C. Robinson, 11059 Louise Ave., Granada Hills, Calif. 91344
Filed Oct. 26, 1992, Ser. No. 846
Term of patent 14 years
U.S. Cl. D6—491



354,645
RACK FOR CABINET DOOR MOUNTING OF PLASTIC GROCERY BAGS
Robert L. Green, 7902 E. Bonita, Scottsdale, Ariz. 85253
Filed Jul. 1, 1993, Ser. No. 10,153
Term of patent 14 years
U.S. Cl. D6—566



354,646
BROCHURE RACK
Jeffrey Weinstein, Berkeley, Calif., assignor to Plastic Works Inc., Berkeley, Calif.
Filed May 26, 1993, Ser. No. 8,802
Term of patent 14 years
U.S. Cl. D6—567



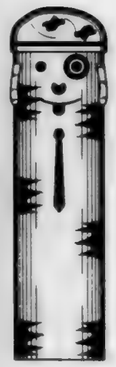
354,647
ARCHED WINDOW COVERING
Anna J. Lopez, 7838 W. Paradise Dr., Peoria, Ariz. 85345
Filed Aug. 23, 1993, Ser. No. 12,103
Term of patent 14 years
U.S. Cl. D6—575



354,648
WINDOW VALANCE
Thelma Wagner, 1040 Guinn Rd., Madison, Ga. 30650
Filed Nov. 20, 1992, Ser. No. 1,694
Term of patent 14 years
U.S. Cl. D6—579



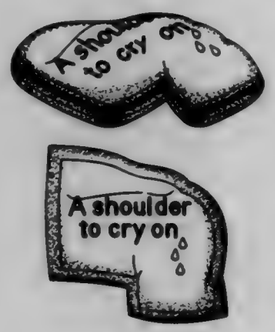
354,649
PILLOW
Billie R. Daniels, Rte. 1 Box 84-D, Tabor City, N.C. 28463
Filed Jun. 7, 1993, Ser. No. 9,144
Term of patent 14 years
U.S. Cl. D6—598



354,650
BEACH TOWEL
James M. Hrebenar, 536 Armistead Pl., Nashville, Tenn. 37215
Filed Dec. 2, 1992, Ser. No. 2,110
Term of patent 14 years
U.S. Cl. D6—599



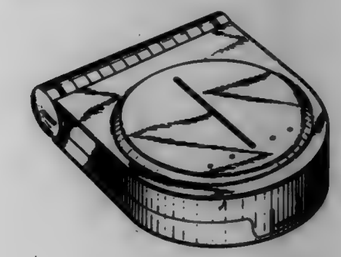
354,651
SHOULDER SHAPED PILLOW
Rita Fitzpatrick, 60 Morrow Ave., Apt. 4GS, Scarsdale, N.Y. 10583
Filed Mar. 18, 1994, Ser. No. 20,112
Term of patent 14 years
U.S. Cl. D6—599



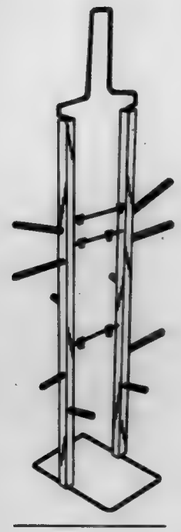
354,652
CASE FOR DISKETTES
Mark A. Sanders, 16 Green Lane, Windsor, Berkshire SL4 3SA, England
Filed Nov. 6, 1992, Ser. No. 1,231
Claims priority, application United Kingdom, May 6, 1992, 2022701
Term of patent 14 years
U.S. Cl. D6—632



354,653
COMPACT DISC CASE
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed Jun. 25, 1993, Ser. No. 10,027
Term of patent 14 years
U.S. Cl. D6—632



354,654
SUPPORT FOR HANGING/DRYING SPORTS EQUIPMENT
Frank Malles, Dollard Des Ormeaux, Canada, assignor to Malonger Inc., Dollar-des-Ormeaux, Canada
Filed Dec. 2, 1993, Ser. No. 15,918
Claims priority, application Canada, Jun. 4, 1993, 406935
Term of patent 14 years
U.S. Cl. D6—552



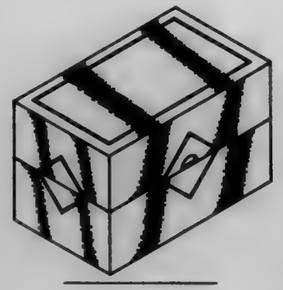
354,655
COVER FOR A FOOD STORAGE CONTAINER
Robert H. C. M. Daenen, Essene, and Pieter K. J. DeCoster, Aalst, both of Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Dec. 22, 1992, Ser. No. 2,846
Term of patent 14 years
U.S. Cl. D7—392.1



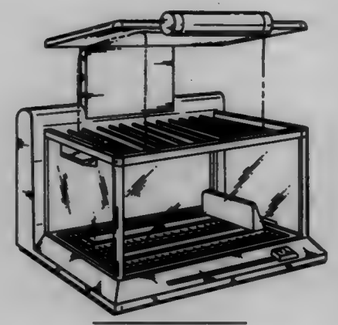
354,656
LUMINESCENT TAP HANDLE
Jon P. Strawbridge, Glendale, Wis., assignor to Everbrite, Inc., Greenfield, Wis.
Filed Apr. 29, 1993, Ser. No. 7,747
Term of patent 14 years
U.S. Cl. D7—398



354,658
CONTAINER FOR CRACKERS
Karen S. Weber, and David J. Weber, both of 7790 Winding Way South, Tipp City, Ohio 45371
Filed Jul. 2, 1993, Ser. No. 10,224
Term of patent 14 years
U.S. Cl. D7—629



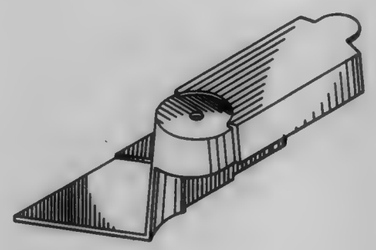
354,659
BREAD SLICER
David A. Dornbush, Prior Lake; Andrew L. Von Duyke, Greenwood, and Neal P. Barnes, Maple Grove, all of Minn., assignors to Alternative Prioneering Systems, Inc., Chaska, Minn.
Filed Nov. 17, 1993, Ser. No. 15,435
Term of patent 14 years
U.S. Cl. D7—673



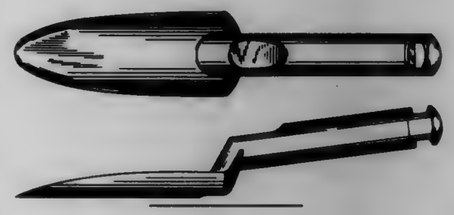
354,657
JUG WITH LID FOR BEVERAGES
Erich Krämer, Hillrosthstrasse 18, D-86247 Michelau, Germany
Filed Jul. 22, 1993, Ser. No. 10,971
Claims priority, application Germany, Jan. 22, 1993, 9300624
Term of patent 14 years
U.S. Cl. D7—511



354,660
LANDSCAPE BORDER
Eugene H. Lilley, 1049 Palmyra Dr., Tega Cay, S.C. 29715
Filed Feb. 14, 1992, Ser. No. 837,436
Term of patent 14 years
U.S. Cl. D8—1



354,661
TRANSPLANTER
Erkki O. Lindén, Billnäs, and Kari S. Rönnholm, Karis, both of Finland, assignors to Fiskars Consumer Oy Ab, Fiskars, Finland
Filed Aug. 3, 1993, Ser. No. 11,382
The portion of the term of this patent subsequent to Aug. 2, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—10



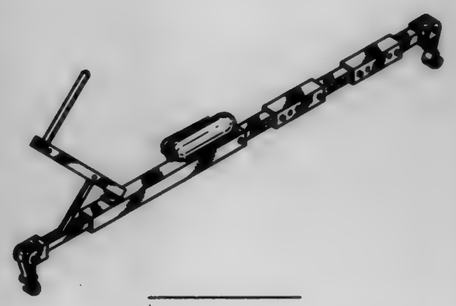
354,662
WIRE NEWSPAPER LIFTER
Eugene E. Breezny, St. Louis, Mo., assignor to Breezy Inc., Clayton, Mo.
Filed Jan. 14, 1993, Ser. No. 9,424
Term of patent 14 years
U.S. Cl. D8—14



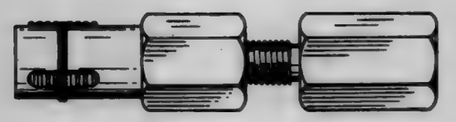
354,663
IMPACT HAND TOOL
Emory J. Clark, Spokane, and Robert J. Warner, Veradale, both of Wash., assignors to Spring Line, Inc., Spokane, Wash.
Filed Apr. 13, 1993, Ser. No. 7,117
Term of patent 14 years
U.S. Cl. D8—47



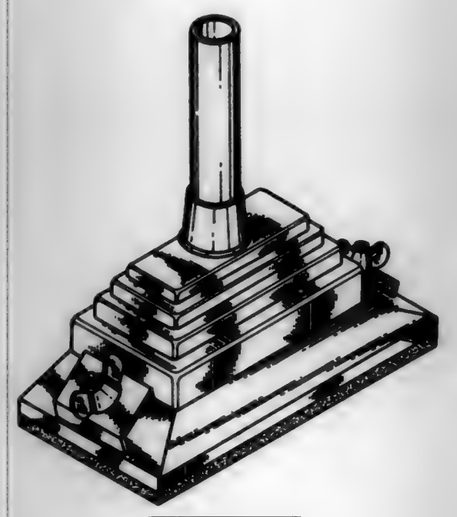
354,664
COMBINED FURNITURE FRAME AND SPRING STRETCHER TOOL
Leonard Harrison, 4278 Hillary Cir., West Palm Beach, Fla. 33406
Filed Sep. 2, 1993, Ser. No. 12,460
Term of patent 14 years
U.S. Cl. D8—51



354,665
HOLLOW SHAFT FULLER
Danny L. Greenland, and Robert S. Adams, both of Bartlesville, Okla., assignors to Adams Manufacturing Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 730,542, Aug. 27, 1991, abandoned. This application Nov. 19, 1993, Ser. No. 15,535
Term of patent 14 years
U.S. Cl. D8—51



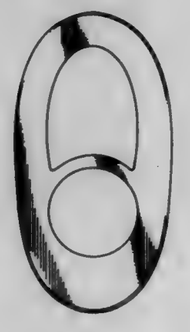
354,666
DUSTLESS DRYWALL SANDER
Mark E. Krisbel, 991 Flanders Ave., Akron, Ohio 44314
Filed Sep. 23, 1993, Ser. No. 13,355
Term of patent 14 years
U.S. Cl. D8—90



354,668
LOCKING BAR FOR STEERING WHEEL
David Ekan, Huddersfield, England, assignor to Metro Products (Accessories & Leisure) Limited, Oxted, England
Filed Nov. 5, 1993, Ser. No. 14,982
Claims priority, application United Kingdom, May 6, 1993, 2030686
Term of patent 14 years
U.S. Cl. D8—331



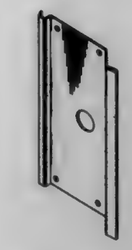
354,669
ESCUTCHEON PLATE
Peter H. Maisy, 5265 Arlene St., San Diego, Calif. 92117
Filed Feb. 23, 1993, Ser. No. 5,087
Term of patent 14 years
U.S. Cl. D8—352



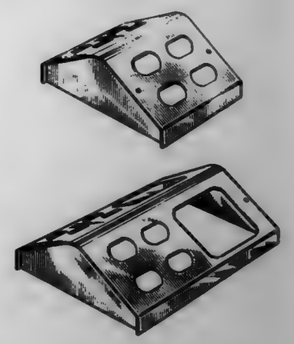
354,667
COMBINED KNIFE HANDLE AND HOLDER
Joseph D. Rundell, 6198 W. Frances Rd., Clio, Mich. 48420
Filed Jul. 20, 1992, Ser. No. 915,535
Term of patent 14 years
U.S. Cl. D8—98



354,670
ANTI-VANDAL TRIM FOR DOOR
Ira J. Simon, and Martin S. Simon, both of Long Beach, Calif., assignors to Triangle Brass Manufacturing Company, Los Angeles, Calif.
Filed Feb. 16, 1993, Ser. No. 4,930
Term of patent 14 years
U.S. Cl. D8—353



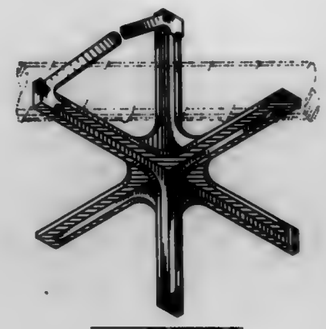
354,671
FLOOR FITTING
John P. Penczak, Washington, W. Va., assignor to Walker Systems, Inc., Parkersburg, W. Va.
Filed Aug. 30, 1991, Ser. No. 753,618
Term of patent 14 years
U.S. Cl. D8—353



354,672
SPACER FOR USE IN CONCRETE CONSTRUCTION
Christopher Van de Peer, Seven Hills, Australia, assignor to Fiberslab Pty Limited, New South Wales, Australia
Filed Mar. 31, 1993, Ser. No. 6,562
Claims priority, application Australia, Oct. 1, 1992, 2785/92
Term of patent 14 years
U.S. Cl. D8—354



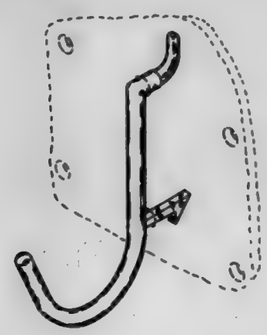
354,673
REBAR SPACER
Norman W. Gavin, 2345 Ridge Rd., N. Haven, Conn. 06511
Filed May 7, 1993, Ser. No. 8,073
Term of patent 14 years
U.S. Cl. D8—354



354,674
MOUNTING BRACKET
Franz W. Jaus, Roedermark, Germany, assignor to JADO Bathroom and Hardware Manufacturing Co., Camarillo, Calif.
Filed May 21, 1993, Ser. No. 8,681
Term of patent 14 years
U.S. Cl. D8—354



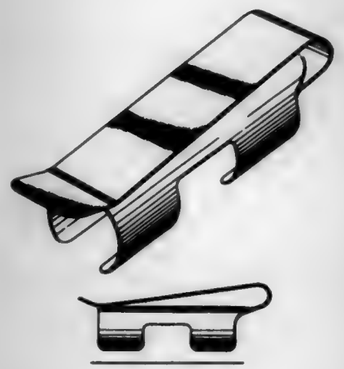
354,675
PEG BOARD HOOK
C. Lamar Bannister, 2905 Garth Rd., Huntsville, Ala. 35801
Filed Jun. 25, 1993, Ser. No. 9,951
Term of patent 14 years
U.S. Cl. D8—367



354,676
SWIVEL HOOK
Hiroaki Izumi, and Hitomi Kawamura, both of Toyama, Japan, assignors to Yoshida Kogyo K.K. Corporation, Tokyo, Japan
Filed Jan. 18, 1994, Ser. No. 17,579
Claims priority, application Japan, Jul. 30, 1993, 5-23435
Term of patent 14 years
U.S. Cl. D8—367



354,677
CLIP FOR A FLASHLIGHT
Larry D. Troyer, 457 Troyer Ct., Wooster, Ohio 44691-3657
Filed Jun. 1, 1993, Ser. No. 8,960
Term of patent 14 years
U.S. Cl. D8—396



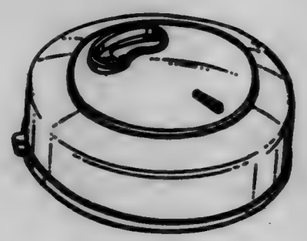
354,678
MULTIPLE COMPARTMENT CONTAINER
Emil J. Dalbo, Atlanta, Ga., assignor to Dal-Craft, Inc., Tucker, Ga.
Filed Jan. 15, 1993, Ser. No. 3,793
Term of patent 14 years
U.S. Cl. D9—341



354,679
BABY BOTTLE PACKAGE
Steven B. Dunn, Beverly Hills, Calif., assignor to Munchkin Bottling, Inc., Van Nuys, Calif.
Filed Apr. 23, 1993, Ser. No. 7,563
Term of patent 14 years
U.S. Cl. D9—415



354,680
CONTAINER WITH A REMOVABLE BOTTOM
Chang-Chang Chen, Castro Valley, Calif., assignor to Vanguest Trading Inc., Oakland, Calif.
Filed Dec. 15, 1993, Ser. No. 16,449
Term of patent 14 years
U.S. Cl. D9—428



354,681
SEAL ENGAGING RING
Paul A. Nolte, Memphis, Tenn., assignor to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.
Filed Dec. 20, 1991, Ser. No. 813,617
Term of patent 14 years
U.S. Cl. D9—434



354,682
SOFT DRINK CAN ATTACHMENT
Edward van Spaendonk, Seattle, Wash., assignor to Sound Inventions, Inc., Lynwood, Wash.
Filed Aug. 15, 1991, Ser. No. 745,360
Term of patent 14 years
U.S. Cl. D9—449



354,683
BEVERAGE CONTAINER
Samuel J. Rupert, Ann Arbor, Mich., assignor to Ecco, Inc., Ann Arbor, Mich.
Filed Nov. 15, 1993, Ser. No. 15,362
Term of patent 14 years
U.S. Cl. D9—520



354,684
BOTTLE WITH CAP
Gregory A. Lathrop, Manchester; Dominic Marazita, Phoenix, both of Md., and Tracie L. C. Wilson, St. Charles, Mo., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Nov. 5, 1992, Ser. No. 1,176
Term of patent 14 years
U.S. Cl. D9—523



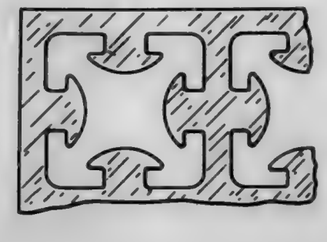
354,685
CONTAINER WITH END GRIP
Seppayan M. Krishnakumar, Nashua, and Wayne N. Collette, Merrimack, both of N.H., assignors to Continental PET Technologies, Inc., Florence, Ky.
Filed Apr. 21, 1993, Ser. No. 7,382
Term of patent 14 years
U.S. Cl. D9—543



354,686
PERFUME BOTTLE
Arturo Ricci, Milan, Italy, assignor to Proteo S.p.A., Milan, Italy
Filed Nov. 23, 1992, Ser. No. 1,740
Claims priority, application Italy, Jun. 8, 1992, MI92 U 000372
Term of patent 14 years
U.S. Cl. D9—544



354,687
STRUCTURED PACKING ELEMENT
Hassan S. Nikaafa, Stow, Ohio, assignor to Norton Chemical Process Products Corp., Worcester, Mass.
Filed Jun. 29, 1992, Ser. No. 905,641
Term of patent 14 years
U.S. Cl. D9—434



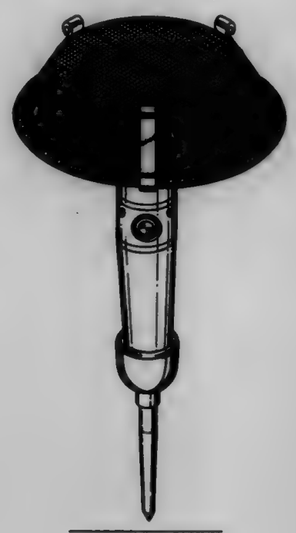
354,688
GOLF CLUB REST AND DIVOT WATCH
Robert M. Barrett, Prospect Heights, and William W. Jackson, Palatine, both of Ill., assignors to Tee Time USA, Inc., Wheeling, Ill.
Filed Oct. 8, 1992, Ser. No. 219
Term of patent 14 years
U.S. Cl. D10—31



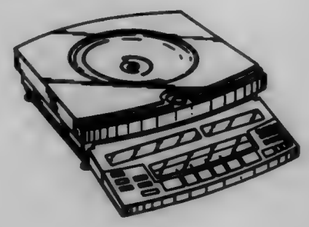
354,689
COMBINED WRITING INSTRUMENT AND WHISTLE
James J. Figard, 2414 Hartmill Ct., Charlotte, N.C. 28226
Continuation-in-part of Ser. No. 948,741, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 789,061, Nov. 7, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 15,255
Term of patent 14 years
U.S. Cl. D19—36



354,690
APPARATUS USEFUL IN TESTING EFFICACY OF INSECT REPELLENTS
Jerry F. Butler, Gainesville, Fla., and Craig B. Warren, Rumson, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.
Continuation-in-part of Ser. No. 982,374, Nov. 24, 1992, Pat. No. 5,281,621, which is a continuation of Ser. No. 789,695, Nov. 8, 1991, abandoned, which is a division of Ser. No. 643,206, Jan. 18, 1991, Pat. No. 5,126,369. This application Nov. 26, 1993, Ser. No. 15,740
Term of patent 14 years
U.S. Cl. D10—46



354,691
BALANCE
Neil J. Goldberg, Half Moon Bay, and Roger W. Stoller, Menlo Park, both of Calif., assignors to Weigh-Tronix, Inc., Fairmont, Minn.
Filed May 19, 1993, Ser. No. 8,514
Term of patent 14 years
U.S. Cl. D10—91



354,692
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,957
Term of patent 14 years
U.S. Cl. D11—126



354,693
BUTTON
Nicole Miller, New York, N.Y., assignor to Kobra International, Ltd., New York, N.Y.
Filed Nov. 12, 1993, Ser. No. 15,205
Term of patent 14 years
U.S. Cl. D11—224



D354,694

Patent Not Issued For This Number

354,695
BUTTON
Nicole Miller, New York, N.Y., assignor to Kobra International, Ltd., New York, N.Y.
Filed Nov. 12, 1993, Ser. No. 15,267
Term of patent 14 years
U.S. Cl. D11—223



354,696
BRACELET
Edmond Avakian, P.O. Box 133, 1211 Geneva 26, Switzerland
Filed Apr. 9, 1993, Ser. No. 6,930
Claims priority, application Switzerland, Oct. 12, 1992, DMA/001917
Term of patent 14 years
U.S. Cl. D11—4



354,697
DIAMOND RING
Bernard J. Andreu, St Clement De Riviere, France, assignor to Diamant Applications S.A., Montpellier Cedex, France
Filed Jul. 7, 1992, Ser. No. 912,626
Claims priority, application France, Jan. 7, 1992, 920046
Term of patent 14 years
U.S. Cl. D11—34



354,698
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,955
Term of patent 14 years
U.S. Cl. D11—126



354,699
JEWELRY PENDANT
Brimont Madeleine, 354, rue Lecourbe, 75015 Paris, France
Filed Dec. 29, 1992, Ser. No. 3,051
Claims priority, application France, Jun. 30, 1992, 92 4125
Term of patent 14 years
U.S. Cl. D11—221



354,700
BRACELET
Freddy Fraimovici, Givatayim; Maury Golan, Herzlia, and Miriam Palmon, Petah Tikva, all of Israel, assignors to Golan Fine Crafts (1977) Ltd., Bnei Brak, Israel
Filed Dec. 2, 1993, Ser. No. 15,914
Term of patent 14 years
U.S. Cl. D11—6



354,701
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,954
Term of patent 14 years
U.S. Cl. D11—126



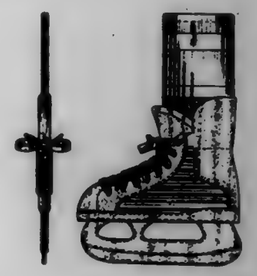
354,702
BUTTON
Nicole Miller, New York, N.Y., assignor to Kobra International, Ltd., New York, N.Y.
Filed Sep. 14, 1993, Ser. No. 12,916
Term of patent 14 years
U.S. Cl. D11—223



354,703
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,962
Term of patent 14 years
U.S. Cl. D11—126



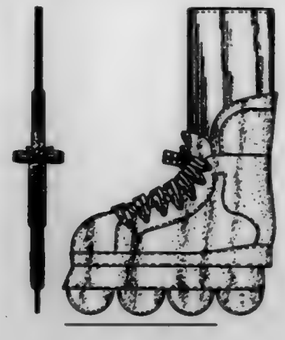
354,704
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,950
Term of patent 14 years
U.S. Cl. D11—126



354,705
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,949
Term of patent 14 years
U.S. Cl. D11—126



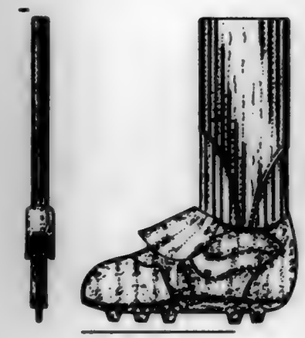
354,706
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,944
Term of patent 14 years
U.S. Cl. D11—126



354,707
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,953
Term of patent 14 years
U.S. Cl. D11—126



354,708
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,951
Term of patent 14 years
U.S. Cl. D11—126



354,709
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,947
Term of patent 14 years
U.S. Cl. D11—126



354,710
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,948
Term of patent 14 years
U.S. Cl. D11—126



354,711
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,945
Term of patent 14 years
U.S. Cl. D11—126



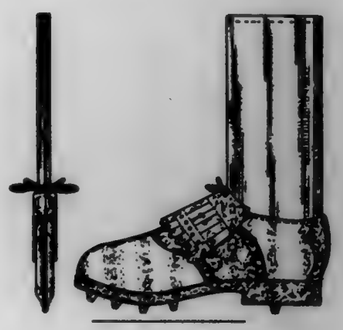
354,712
COMBINED STANDARD AND SUPPORT
Douglas M. Most, 1901 E. Granada, Phoenix, Ariz. 85006
Filed Dec. 14, 1992, Ser. No. 2,518
Term of patent 14 years
U.S. Cl. D11—166



354,713
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,943
Term of patent 14 years
U.S. Cl. D11—126



354,714
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,946
Term of patent 14 years
U.S. Cl. D11—126



354,715
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,940
Term of patent 14 years
U.S. Cl. D11—126



354,716
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,956
Term of patent 14 years
U.S. Cl. D11—126



354,717
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,958
Term of patent 14 years
U.S. Cl. D11—126



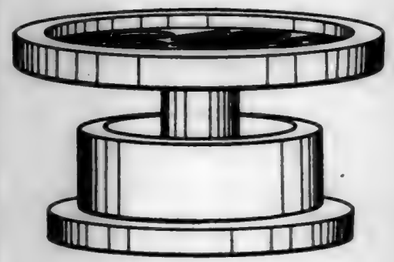
354,718
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,942
Term of patent 14 years
U.S. Cl. D11—126



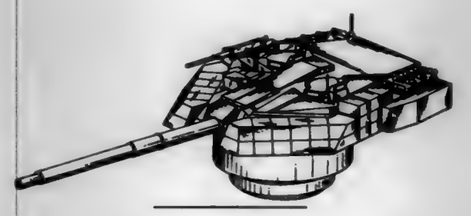
354,719
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,941
Term of patent 14 years
U.S. Cl. D11—126



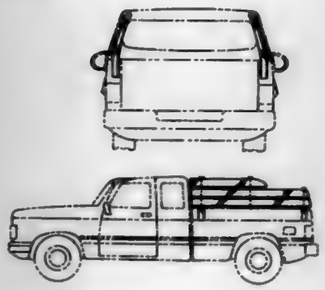
354,720
BUTTON
David R. Estes, 3154 Autumn Shores Dr., St. Louis, Mo. 63044
Filed Sep. 30, 1993, Ser. No. 13,726
Term of patent 14 years
U.S. Cl. D11—222



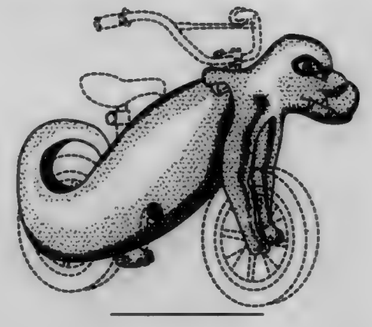
354,721
TANK TURRET
Marc Bertoli, Poissy, and Jean-Noël Patry, Voisins-le-Bretonneux, both of France, assignors to GIAT Industries, Versailles Cedex, France
Filed Apr. 2, 1992, Ser. No. 862,274
Term of patent 14 years
U.S. Cl. D12—12



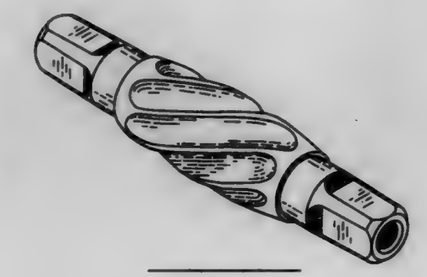
354,722
PAIR OF VEHICLE SIDE PAILS
Roger Molby, 984 Monterey Rd., S. Pasadena, Calif. 91030
Filed Jan. 18, 1993, Ser. No. 9,781
Term of patent 14 years
U.S. Cl. D12—414



354,723
BICYCLE FRAME
Roberta A. Nelson, 523 Donne St., San Lorenzo, Calif. 94580
Filed Jun. 14, 1993, Ser. No. 9,388
Term of patent 14 years
U.S. Cl. D12—108



354,724
HELICAL BICYCLE PEDAL SPINDLE
Bruce T. Boone, 3703 Pinebrook Dr., Acworth, Ga. 30102
Filed Nov. 1, 1993, Ser. No. 14,739
Term of patent 14 years
U.S. Cl. D12—125



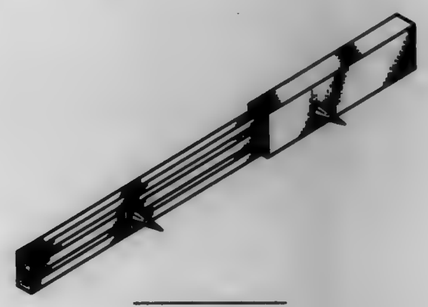
354,725
TIRE
Elissa A. McKlamm, Akron, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Aug. 27, 1993, Ser. No. 12,315
Term of patent 14 years
U.S. Cl. D12—146



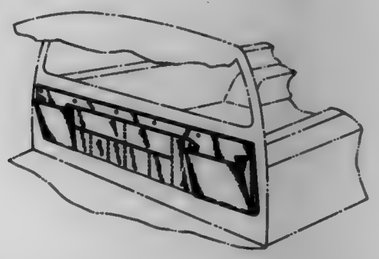
354,726
PAIR OF TRAILER SKIRTING AIR DEFLECTORS
James P. Fitzgerald, Buena Park, Calif., and Joseph M. Fitzgerald, deceased, late of Buena Park, Calif. by Ruthann P. Fitzgerald, executrix, assignors to Fitzgerald Corporation, Buena Park, Calif.
Filed Mar. 17, 1993, Ser. No. 6,019
Term of patent 14 years
U.S. Cl. D12—181



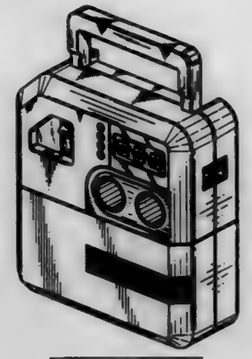
354,727
PERSONALIZED AUTOMOBILE PLATE
Don E. Simmons, 3802 Commonwealth, Garland, Tex. 75043
Filed Dec. 16, 1993, Ser. No. 16,683
Term of patent 14 years
U.S. Cl. D12—400



354,728
ARTICLE CARRIER FOR ATTACHMENT TO A PICKUP TRUCK
Joseph M. Shiak, Valencia, Calif., assignor to Auto-Shade, Inc., Moorpark, Calif.
Filed Jul. 26, 1993, Ser. No. 11,057
Term of patent 14 years
U.S. Cl. D12—422



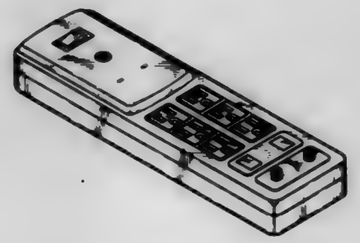
354,729
PORTABLE, RECHARGEABLE BATTERY PACK
Tit Y. Poon, Chaiwan, Hong Kong, assignor to Flying Dragon Development Ltd., Chaiwan, Hong Kong
Filed Nov. 18, 1993, Ser. No. 15,485
Term of patent 14 years
U.S. Cl. D13—106



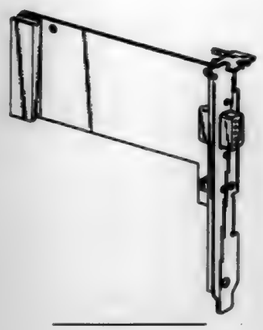
354,730
REMOTELY OPERATED LIGHT BULB OUTPUT CONTROLLER
Herbert Collins, 547 E. 148th St., Harvey, Ill. 60426
Filed Apr. 26, 1993, Ser. No. 7,541
Term of patent 14 years
U.S. Cl. D13—125



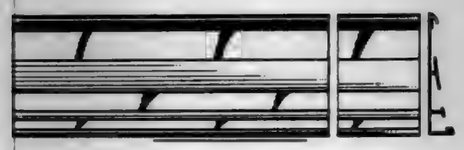
354,731
MULTIPLE ELECTRICAL SOCKET UNIT
James Lee, 5th Fl., No. 10, Alley 10, Lane 321, Hsin Ming Rd., Nei Hu Dist., Taipei, Taiwan, Prov. of China
Filed Dec. 20, 1993, Ser. No. 16,581
Term of patent 14 years
U.S. Cl. D13—142



354,732
FIBER OPTIC INTERCHANGEABLE TRANSCEIVER MODULE
Lloyd N. Oliver, Milpitas, and Benjamin T. Speiser, San Francisco, both of Calif., assignors to 3COM Corporation, Santa Clara, Calif.
Filed May 17, 1993, Ser. No. 8,481
The portion of the term of this patent subsequent to Dec. 27, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—147



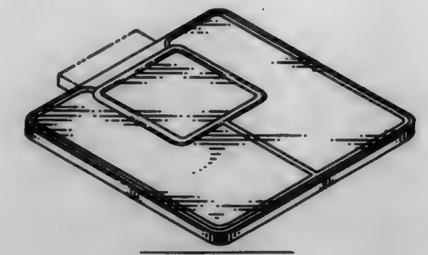
354,733
BASEBOARD MOLDING FOR HOLDING COMPUTER WIRES
Larry G. Ingraham, Plantation, Fla., assignor to Roppe Corporation, Fostoria, Ohio
Filed Jan. 27, 1992, Ser. No. 825,873
Term of patent 14 years
U.S. Cl. D13—155



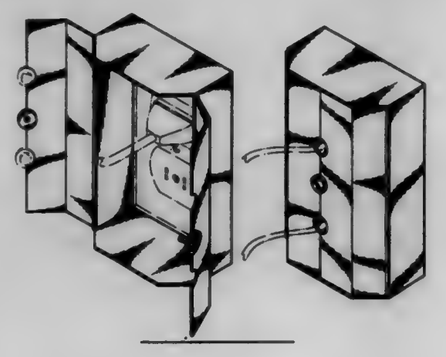
354,734
INLINE CABLE SPLICE HOUSING
Selim Messelhi, Etobicoke, Canada, assignor to Communications Technology Corporation, Dallas, Tex.
Filed Mar. 24, 1993, Ser. No. 6,365
Term of patent 14 years
U.S. Cl. D13—156



354,735
SWITCH HOUSING FOR PROVIDING VARIOUS DIFFERENT FUNCTIONS TO KEYS OF A SINGLE KEY PAD
Seth R. McCloud, c/o Rhino Resources, Inc. #297, 1155 West Georgia, Vancover, Canada V6E3H4
Filed Mar. 16, 1993, Ser. No. 5,982
Term of patent 14 years
U.S. Cl. D13—158



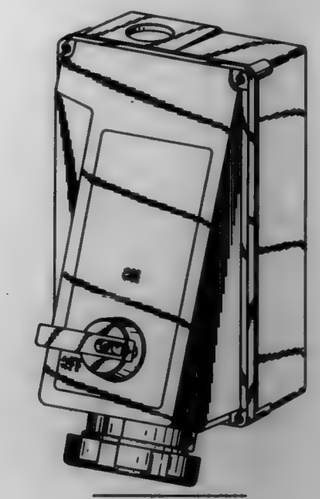
354,736
ELECTRICAL OUTLET PROTECTOR
Gregory S. Hallett, P.O. Box 1508, Presque Isle, Me. 04769; Richard P. Hallett, P.O. Box 232, Mars Hill, Me. 04758, and Todd A. Duncan, Presque Isle Rd. Box 4250, Washburn, Me. 04786
Filed Jul. 30, 1993, Ser. No. 11,250
Term of patent 14 years
U.S. Cl. D13—156



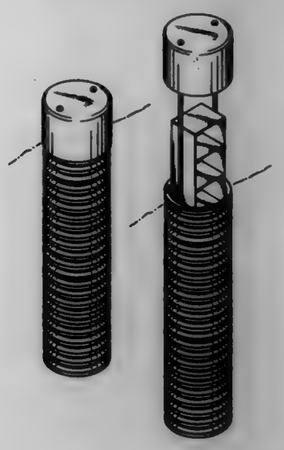
354,737
POWER CONTROL CONSOLE
Philip E. Fladung, Carmel, Ind., assignor to Woods Industries, Inc., Carmel, Ind.
Filed Jan. 16, 1993, Ser. No. 9,607
Term of patent 14 years
U.S. Cl. D13—164



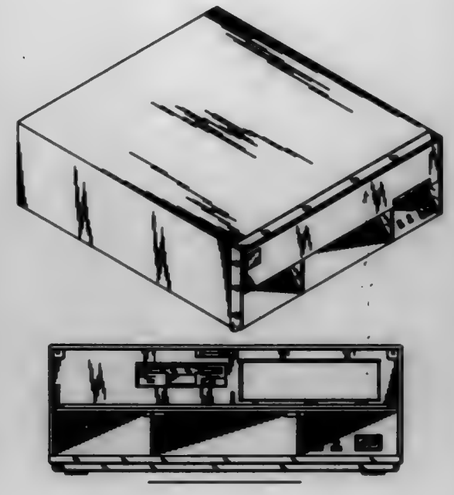
354,738
INTERLOCK SWITCH HOUSING
Jerome E. Zimmermann, and John J. Dennison, both of Southington, Conn., assignors to Hubbell Incorporated, Orange, Conn.
Filed May 20, 1993, Ser. No. 8,620
Term of patent 14 years
U.S. Cl. D13—169



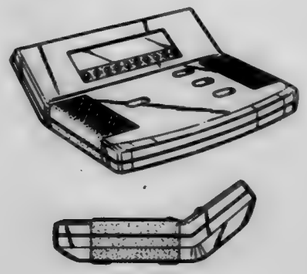
354,739
UNDERGROUND STORAGE UNIT FOR ITEMS SENSITIVE TO ENVIRONMENTAL CONDITIONS
Rodney L. Durham, 4069 Jones La., Bellingham, Wash. 98225, and Alan L. MacLachlan, 6527 NE. 192nd Pl., Seattle, Wash. 98155
Filed Jan. 30, 1993, Ser. No. 10,264
Term of patent 14 years
U.S. Cl. D13—184



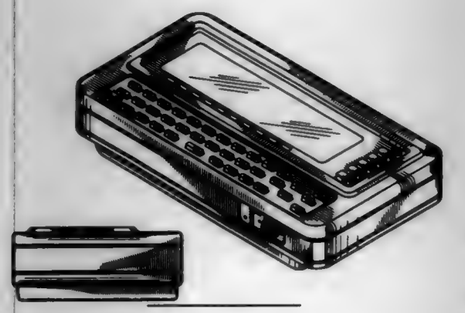
354,740
COMPUTER SYSTEM UNIT
Joseph E. Jasinski, Delray Beach, Fla., and Richard F. Sapper, Milano, Italy, assignors to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 3, 1992, Ser. No. 924,331
Term of patent 14 years
U.S. Cl. D14—100



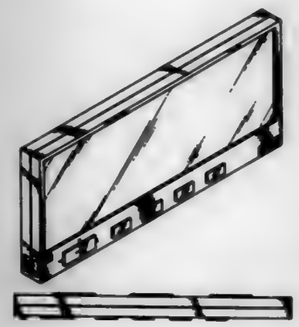
354,741
HEALTH INFORMATION CONSOLE FOR STORING AND RETRIEVING A MEDICAL HISTORY
Claude Hutcheson, San Ramon, Calif., assignor to Nellcor Incorporated, Pleasanton, Calif.
Filed Aug. 19, 1993, Ser. No. 11,979
Term of patent 14 years
U.S. Cl. D14—100



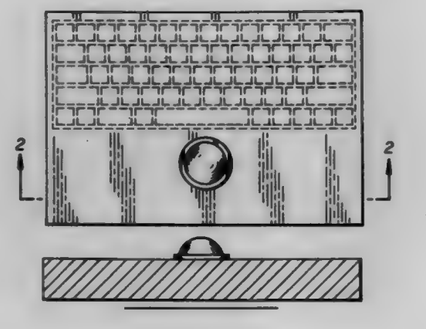
354,742
PORTABLE RADIO DATA TERMINAL
Robert W. Hamilton, Tsawwassen, Canada, assignor to Motorola, Schaumburg, Ill.
Filed Mar. 22, 1993, Ser. No. 6,128
Term of patent 14 years
U.S. Cl. D14—100



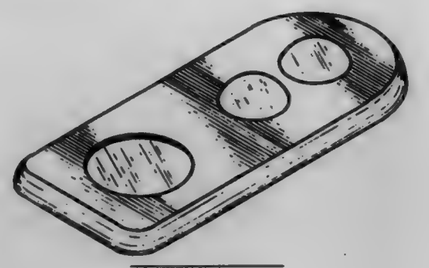
354,743
MICROPROCESSOR CONTROLLED ROAD MAP
Osvaldo B. Vieira, 12 W. Walnut St. #3, Milford, Mass. 01757
Filed Apr. 2, 1993, Ser. No. 6,613
Term of patent 14 years
U.S. Cl. D14—100



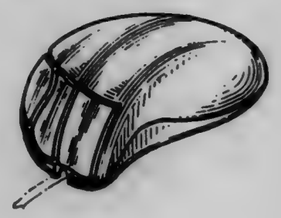
354,744
TOP PORTION OF A LAPTOP COMPUTER
Jonathan Krakower, Cupertino; Robert D. Brunner, San Jose, and Gavin R. Ivester, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Division of Ser. No. 974,359, Nov. 10, 1992, abandoned, which is a continuation of Ser. No. 629,263, Dec. 18, 1990, abandoned, and a continuation of Ser. No. 629,203, Dec. 18, 1990, Pat. No. Des. 332,783. This application Jan. 25, 1993, Ser. No. 4,027
Term of patent 14 years
U.S. Cl. D14—106



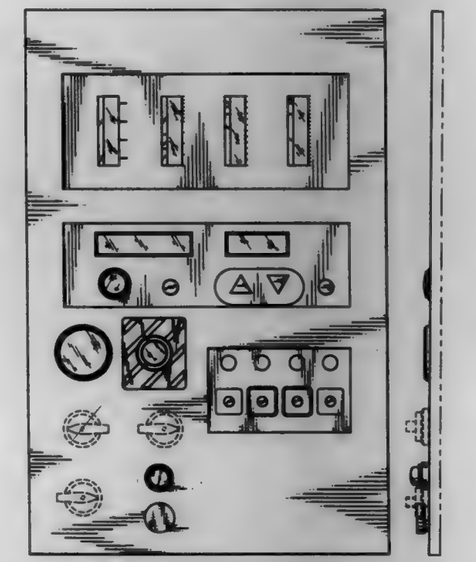
354,745
THUMB PRINT READER
Daniel T. Lyan, 2214 76th Ct., Elmwood Pk., Ill. 60635
Filed May 3, 1993, Ser. No. 7,795
Term of patent 14 years
U.S. Cl. D14—107



354,746
COMPUTER MOUSE
Luigi Colani, St. Paul Cap de Joux/Tarn, France, and Meinrad Schnyder, Meilen, Switzerland, assignors to Xecos AG International, Wadenswil, Switzerland
Filed Mar. 1, 1993, Ser. No. 5,305
Term of patent 14 years
U.S. Cl. D14—114



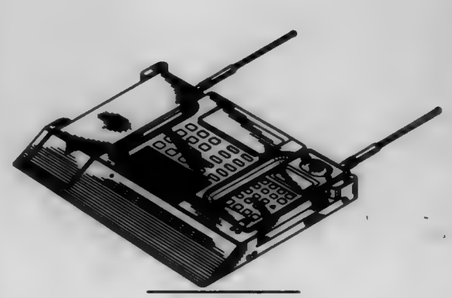
354,747
FRONT CONTROL PANEL FOR A MICROPROCESSOR
Dale R. Herbstritt; Daniel T. Martin, both of Clemmons, and David R. Pritchard, Winston-Salem, all of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jan. 9, 1993, Ser. No. 9,349
Term of patent 14 years
U.S. Cl. D14—115



354,748
TELEPHONE
Nicolai Canetti, 392 Douglas Rd., Chappaqua, N.Y. 10510
Filed Nov. 23, 1993, Ser. No. 15,648
Term of patent 14 years
U.S. Cl. D14—148



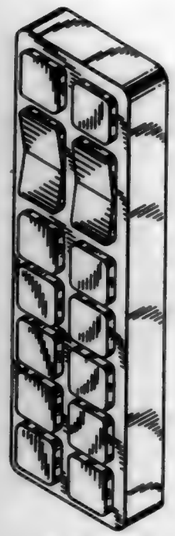
354,749
PERSONAL COMMUNICATIONS SYSTEM BASESTATION
James M. Phillips, Germantown, Tenn., assignor to Telular Corporation, Buffalo Grove, Ill.
Filed Dec. 8, 1993, Ser. No. 16,120
Term of patent 14 years
U.S. Cl. D14—151



354,750
LOUDSPEAKER
David Lewis, Copenhagen, Denmark, assignor to Bang & Olufsen A/S, Struer, Denmark
Filed Oct. 16, 1992, Ser. No. 512
Claims priority, application Denmark, Apr. 29, 1992, MA 0395 1992
Term of patent 14 years
U.S. Cl. D14—216



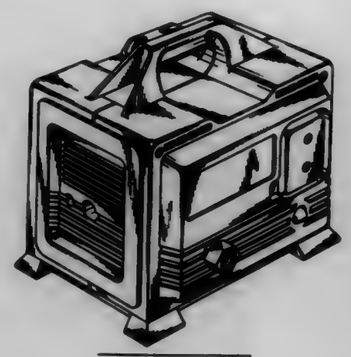
354,751
TV REMOTE CONTROL FOR THE MANUALLY HANDICAPPED
Joseph B. Horak, 131 Heller Way, Upper Montclair, N.J. 07043, and Gideon Strauss, 205 West End Ave., New York, N.Y. 10023
Filed Dec. 31, 1992, Ser. No. 3,171
Term of patent 14 years
U.S. Cl. D14—218



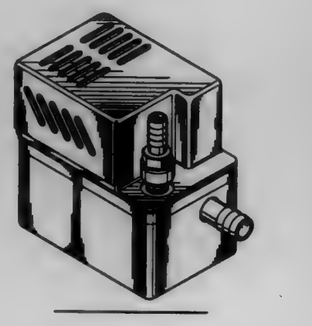
354,752
TELECOMMUNICATIONS SECURITY ADAPTER
Jim J. Johnson, Chandler; Richard G. Shepherd, Scottsdale; David T. Gustafson, Gilbert, all of Ariz., and Albert L. Nagalo, Willmette, Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 27, 1993, Ser. No. 13,555
Term of patent 14 years
U.S. Cl. D14—240



354,753
COMBINED PRESSURE WASHER MOTOR AND PUMP
Elbert D. Turner, III, Charlotte, N.C.; Henry K. Arnette, Fort Mill, S.C.; Jan J. Rolen, Matthews, N.C., and Grayton D. Smith, Fort Mill, S.C., assignors to Textron Inc., Providence, R.I.
Filed Oct. 16, 1992, Ser. No. 516
Term of patent 14 years
U.S. Cl. D15—7



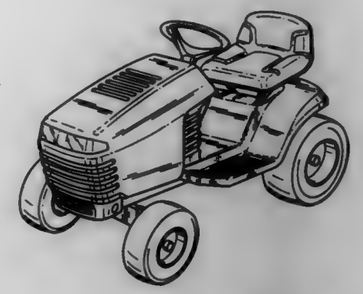
354,754
CONDENSATE PUMP
Steven L. Broughton, Duncanville, Tex., assignor to Beckett Corporation, Dallas, Tex.
Filed Sep. 3, 1993, Ser. No. 12,467
Term of patent 14 years
U.S. Cl. D15—7

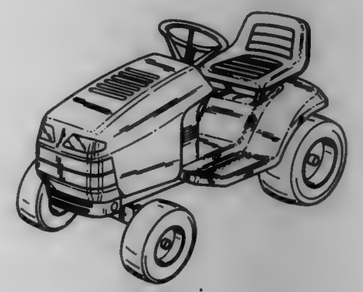


354,755
AIRBORNE PUMP BOAT
Fred Sparling, 122 Waterford Bridge Road, St. John's, Newfoundland, Canada A1E 1C9
Filed Nov. 9, 1992, Ser. No. 1,332
Term of patent 14 years
U.S. Cl. D15—7

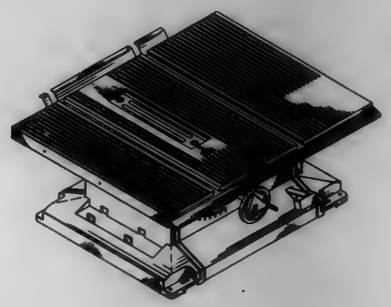


354,756
LAWN AND GARDEN TRACTOR
Darrell W. Hinklin, Excelsior, Minn., assignor to The Toro Company, Minneapolis, Minn.
Filed Apr. 21, 1993, Ser. No. 7,380
Term of patent 14 years
U.S. Cl. D15—15





354,757
BENCH TOP TABLE SAW
Barry D. Wixey, Pittsburgh, Pa., assignor to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Nov. 17, 1993, Ser. No. 15,442
Term of patent 14 years
U.S. Cl. D15—133



354,758
ADJUSTABLE BASE FOR TOOLS
James E. Boelling, 1223 SE. Emma, Des Moines, Iowa 50315
Filed Sep. 17, 1993, Ser. No. 13,092
Term of patent 14 years
U.S. Cl. D15—141



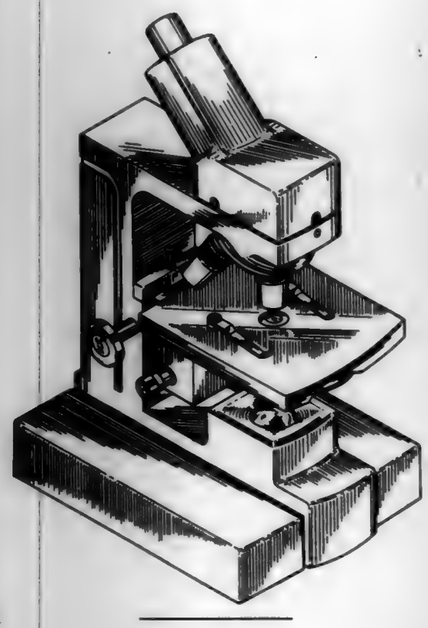
354,759
BOTTLE-SHAPED EYEGLASS RETAINER
Stephen H. Wolff, 35 W. 35th St., New York, N.Y. 10001
Filed Mar. 23, 1993, Ser. No. 6,089
Term of patent 14 years
U.S. Cl. D16—339



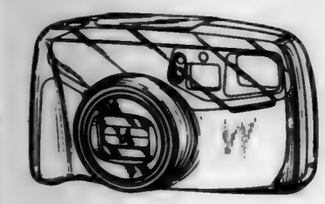
354,760
EYEGLASS RETAINER
Stephen H. Wolff, 35 W. 35th St., New York, N.Y. 10001
Filed Feb. 26, 1993, Ser. No. 5,196
Term of patent 14 years
U.S. Cl. D16—329



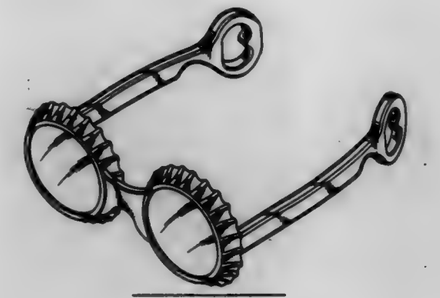
354,761
MICROSCOPE
Takashi Komatsuzaki, and George Hayashi, both of San Jose, Calif., assignors to Swift Instruments, Inc., Boston, Mass.
Filed Jun. 1, 1993, Ser. No. 8,985
Term of patent 14 years
U.S. Cl. D16—131



354,762
35 MM CAMERA
Masahiro Koizumi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 7, 1993, Ser. No. 3,353
Claims priority, application Japan, Jul. 8, 1992, 4-20519; Jul. 8, 1992, 4-20520
Term of patent 14 years
U.S. Cl. D16—209



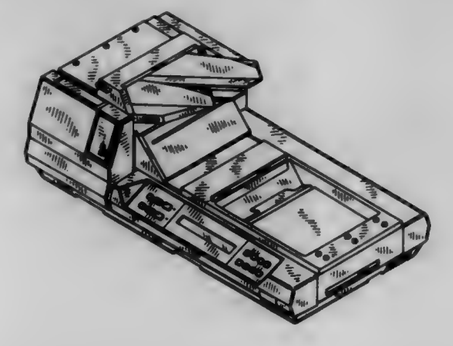
354,763
EYEGLASSES
Wen-Te Wang, No. 246-1, Kang-Kou, Kang-Kou Tsun, An-Ting Hsiang, Tainan Hsien,
Filed Feb. 8, 1994, Ser. No. 18,495
Term of patent 14 years
U.S. Cl. D16—306



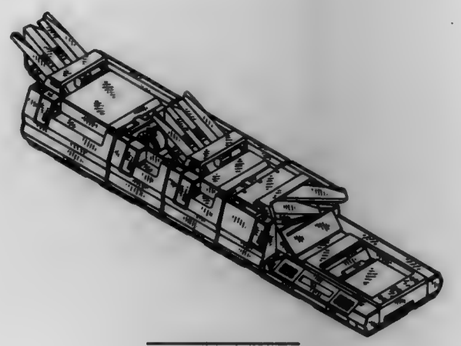
354,764
BUBBLE JET PRINTER
Hiroyuki Tokuda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 9, 1993, Ser. No. 10,521
Claims priority, application Japan, Jan. 12, 1993, 5-426
Term of patent 14 years
U.S. Cl. D18—53



354,765
INSERTER BASE UNIT MODULE
Herbert E. Meister, Jr., Naugatuck, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Aug. 27, 1993, Ser. No. 12,302
Term of patent 14 years
U.S. Cl. D18—99



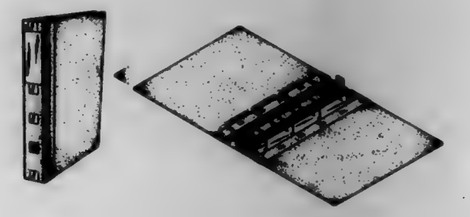
354,766
INSERTER MACHINE
Herbert E. Meister, Jr., Naugatuck, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Aug. 27, 1993, Ser. No. 12,304
Term of patent 14 years
U.S. Cl. D18—99



354,767
BOOK COVER
Frank D. Ruskin, 225 W. 30th St., Los Angeles, Calif. 90037
Filed Aug. 2, 1993, Ser. No. 11,279
Term of patent 14 years
U.S. Cl. D19—26



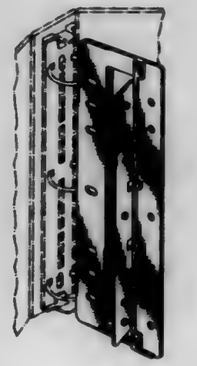
354,768
RING BINDER
Rudolf A. Muller; Gabriele Scholl, and Christian Harbeke, all of Zurich, Switzerland, assignors to Zimmeyer & Lux AG, Zurich, Switzerland
Filed May 28, 1993, Ser. No. 8,856
Claims priority, application Switzerland, Nov. 30, 1992, 120256
Term of patent 14 years
U.S. Cl. D19—27



354,769
EDUCATIONAL ELECTRONIC BOOK
Brian Mahler, Long Beach, and Damon Saddler, Inglewood, both of Calif., assignors to Educational Insights, Inc., Dominguez Hills, Calif.
Filed Jun. 15, 1993, Ser. No. 9,516
Term of patent 14 years
U.S. Cl. D19—60



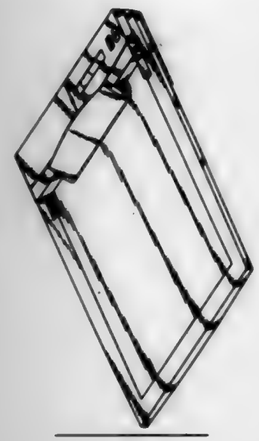
354,770
HOLE PUNCH FOR A RING-BINDER
Mark A. Bedol, P.O. Box 2847, Rancho Cucamonga, Calif. 91729-2847
Filed Feb. 7, 1994, Ser. No. 18,450
Term of patent 14 years
U.S. Cl. D19—72



354,771
PENHOLDER
William C. Massey, 3406 Cherry Hill Ct., Beltsville, Md. 20705
Filed Dec. 11, 1991, Ser. No. 805,831
Term of patent 14 years
U.S. Cl. D19—82



354,772
HANDHELD ELECTRONIC CLIPBOARD
Daniel Flickinger, San Francisco; Lynn C. Beckley, San Jose, and John W. Lai, San Francisco, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 18, 1994, Ser. No. 18,953
Term of patent 14 years
U.S. Cl. D19—88



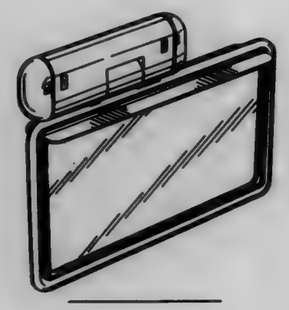
354,773
CANVAS EDGE HOLDER FOR AN ARTIST'S EASEL
Thomas Eaves, P.O. Box 1387, Anahuac, Tex. 77514
Filed May 24, 1991, Ser. No. 705,143
Term of patent 14 years
U.S. Cl. D19—99



354,774
DESK NAME PLATE
Nicholas M. Orros, Coogee, Australia, assignor to Dimaprint (Australia) Pty Ltd, Coogee, Australia
Filed Jun. 19, 1992, Ser. No. 901,564
Term of patent 14 years
U.S. Cl. D20—15



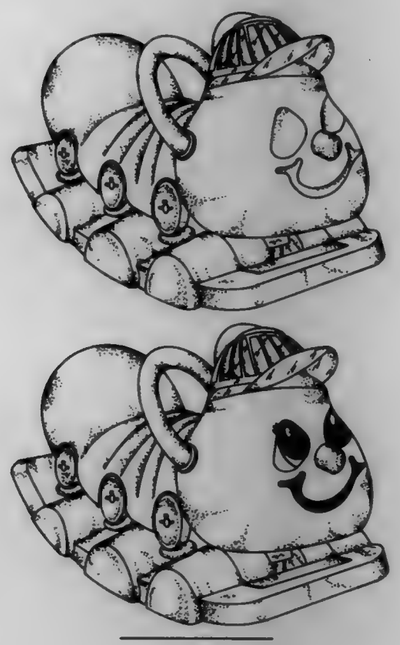
354,775
COMBINED COUPON HOLDER AND ADVERTISING DISPLAY FOR STORE SHELVING
David Dobson, Kitchener, Canada, assignor to Strategium Media Inc., Rexdale, Canada
Filed Apr. 27, 1993, Ser. No. 7,617
Term of patent 14 years
U.S. Cl. D20—42



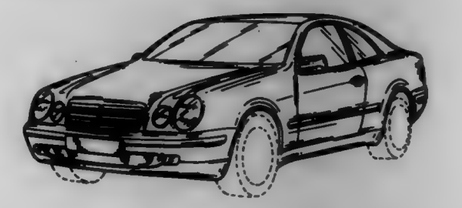
354,776
GOLF GAME PROJECTOR WITH GOLF TEE HANDLE
Nason Richmond, 215 McClellan St., Schenectady, N.Y. 12304
Filed Apr. 28, 1993, Ser. No. 7,643
Term of patent 14 years
U.S. Cl. D21—11



354,777
CATERPILLAR ROCKER
Ernest L. Thornell, Gasconade County, Mo., assignor to Hasbro Pac, Inc., Hermann, Mo.
Filed Jan. 4, 1993, Ser. No. 3,268
Term of patent 14 years
U.S. Cl. D21—68



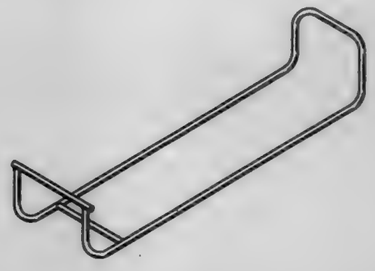
354,778
AUTOMOBILE BODY
Bruno Sacco; Josef Gallitzendörfer, both of Sindelfingen, and Peter Pfeiffer, Böblingen, all of Germany, assignors to Mercedes-Benz Aktiengesellschaft, Germany
Filed Aug. 25, 1993, Ser. No. 12,161
Claims priority, application Germany, Feb. 25, 1993, M 93 01 492.9
Term of patent 14 years
U.S. Cl. D12—92



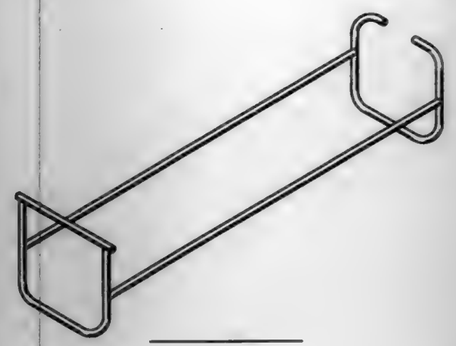
354,779
DOLL
Barbara A. Rabright, 806 W. Race St., and Brandy L. Ridge, 2216 Sch. Ave., both of Pottsville, Pa. 17901
Filed Mar. 15, 1993, Ser. No. 5,989
Term of patent 14 years
U.S. Cl. D21—171



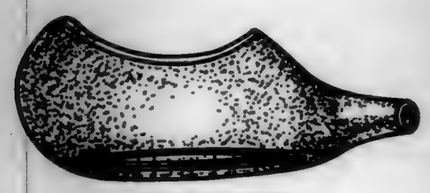
354,780
FRAME FOR A PHYSICAL EXERCISER
Ken Endelman, 7500 14th Ave., Suite 23, Sacramento, Calif. 95820-3539
Filed May 17, 1993, Ser. No. 8,526
Term of patent 14 years
U.S. Cl. D21—191



354,781
FRAME FOR A PHYSICAL EXERCISER
Ken Endelman, 7500 14th Ave., Ste. 23, Sacramento, Calif. 95820-3539
Filed May 17, 1993, Ser. No. 8,400
Term of patent 14 years
U.S. Cl. D21—191



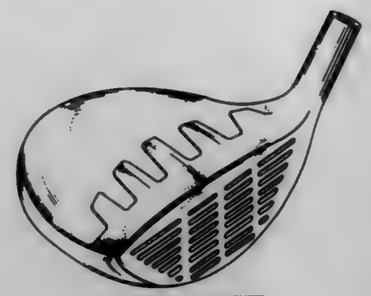
354,782
GOLF CLUB HEAD
Jesse D. Gonzalez, Jr., 11836 Rio Hondo Pkwy., El Monte, Calif. 91732
Filed Feb. 22, 1993, Ser. No. 5,233
Term of patent 14 years
U.S. Cl. D21—214



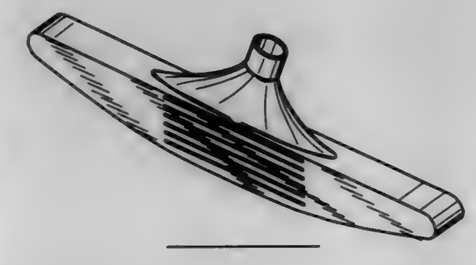
354,783
PIG-SHAPED BALL
Eric Hoehne, Jackson La., Glen Cove, N.Y. 11542
Filed Jul. 26, 1993, Ser. No. 11,087
Term of patent 14 years
U.S. Cl. D21—204



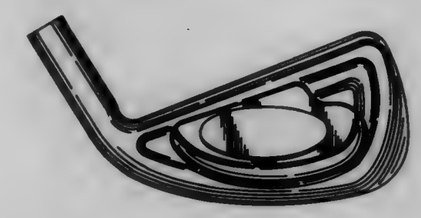
354,784
REINFORCED METAL GOLF CLUB HEAD
D. Clayton Long, and R. Mark Allen, both of Albany, Ga., assignors to MacGregor Golf Co., Albany, Ga.
Filed May 7, 1993, Ser. No. 8,027
Term of patent 14 years
U.S. Cl. D21—214



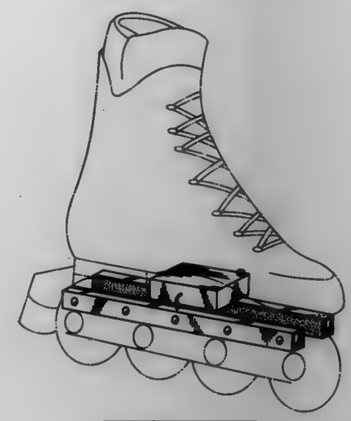
354,785
PUTTER HEAD
Charles J. Lake, North Royalton, Ohio, assignor to Douglas J. Lake, Cleveland, Ohio
Continuation of Ser. No. 558,182, Jul. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 395,426, Aug. 16, 1989, abandoned. This application Mar. 23, 1993, Ser. No. 6,252
Term of patent 14 years
U.S. Cl. D21—219



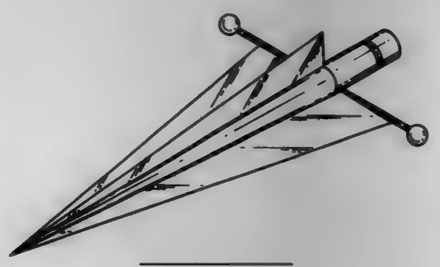
354,786
GOLF CLUB HEAD
George E. Manning; Brian E. Fortini, both of Prospect, Ky., and Vincent R. Reymann, Jr., Hendersonville, Tenn., assignors to Hillerich and Bradsby Co., Inc., Jeffersonville, Ind.
Filed Jan. 21, 1993, Ser. No. 3,870
Term of patent 14 years
U.S. Cl. D21—220



354,787
LIGHTING ATTACHMENTS FOR SKATES
David L. Stiles, 56 Mt. Lebanon Dr., Wheeling, W. Va. 26003
Filed Mar. 24, 1993, Ser. No. 6,291
Term of patent 14 years
U.S. Cl. D21—226



354,788
ARROWHEAD
Billy R. Howser, 3101 25th St., Meridian, Miss. 39301
Filed Mar. 5, 1993, Ser. No. 5,550
Term of patent 14 years
U.S. Cl. D22—115



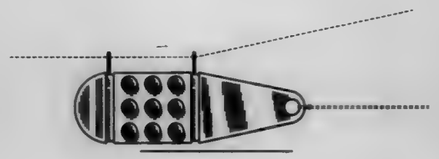
354,789
CHILD PADDLE
Helen C. Meehan, 1847 NW. 60th Ave., Sunrise, Fla. 33313
Filed Feb. 16, 1993, Ser. No. 4,909
Term of patent 14 years
U.S. Cl. D22—117



354,790
FISHING LURE
Ernest E. Findley, Jr., 2703 Ashworth Cir., Snellville, Ga. 30278
Filed Jun. 21, 1993, Ser. No. 9,708
Term of patent 14 years
U.S. Cl. D22—132



354,791
LURE RETRIEVER
William J. Bernardini, Sr., 648 Crossroads Park Dr., Aiken, S.C. 29803
Filed Dec. 28, 1993, Ser. No. 16,791
Term of patent 14 years
U.S. Cl. D22—134



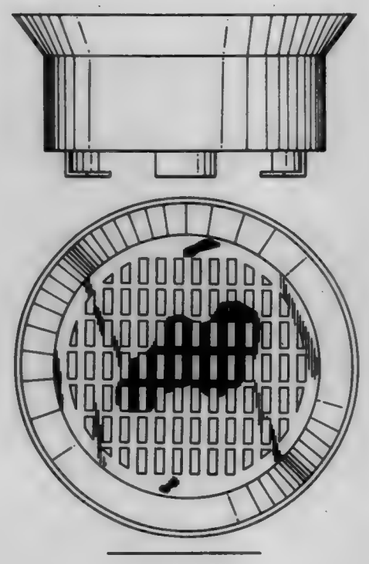
354,792
FENCE POST ANCHOR
Frank Gill, Bloomington, Calif.
Filed Jun. 10, 1993, Ser. No. 9,315
Term of patent 14 years
U.S. Cl. D25—126



354,793
FOUNTAIN ORNAMENT
David J. Fletcher, Burnley, Great Britain, assignor to Lotus Water Garden Products Limited, Burnley, Great Britain
Filed Nov. 17, 1993, Ser. No. 15,437
Claims priority, application United Kingdom, May 21, 1993, 2031216
Term of patent 14 years
U.S. Cl. D23—201



354,795
WATER FILTER
Randy B. Heligman, Minnetonka, Minn., assignor to UltraPure Systems, Inc., Minneapolis, Minn.
Filed Apr. 22, 1993, Ser. No. 7,446
Term of patent 14 years
U.S. Cl. D23—209



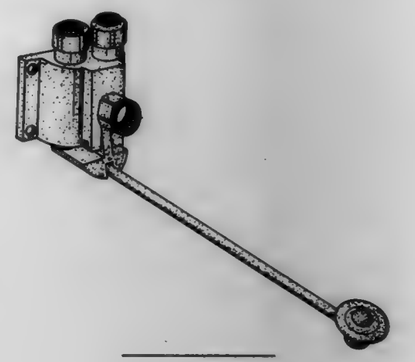
354,794
COMBINED SCRUBBER, BLOWER AND PUMP FOR REMOVING CONTAMINANTS FROM WATER
Raymond M. Walton, Castle Hayne, N.C., assignor to Pollution Equipment Company Inc., Wilmington, N.C.
Filed Jul. 13, 1992, Ser. No. 912,634
Term of patent 14 years
U.S. Cl. D23—207



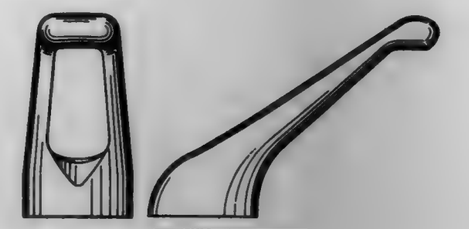
354,796
FILTER
Bobby G. Smith, Sr., 2542 Dungadin Rd., Front Royal, Va. 22630
Filed Sep. 22, 1993, Ser. No. 13,245
Term of patent 14 years
U.S. Cl. D23—209



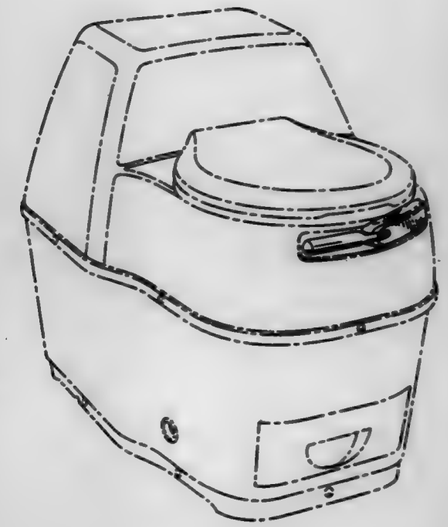
354,797
FOOT ACTUATED FAUCET
Gerard Delable, Saint-Blimont, France, assignor to Delable (S.A.), France
Filed May 4, 1993, Ser. No. 8,222
Term of patent 14 years
U.S. Cl. D23—233



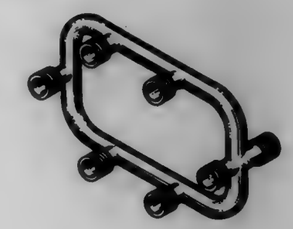
354,798
KITCHEN LOOP HANDLE
Darren M. Mark, Castaic, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 16, 1992, Ser. No. 914,068
Term of patent 14 years
U.S. Cl. D23—252



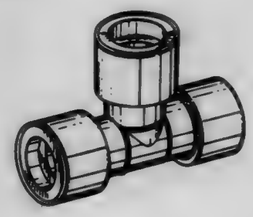
354,800
HANDLE FOR COMPOSTING TOILET
Henric Sundberg, 5035 North Service Rd., Unit C9, Burlington, Ontario, Canada L7L 5V2
Filed Aug. 30, 1993, Ser. No. 12,327
Term of patent 14 years
U.S. Cl. D23—252



354,799
MANIFOLD
Fred Self, 933 Parkside Dr., Richmond, Calif. 94803
Filed Feb. 12, 1993, Ser. No. 4,761
Term of patent 14 years
U.S. Cl. D23—259



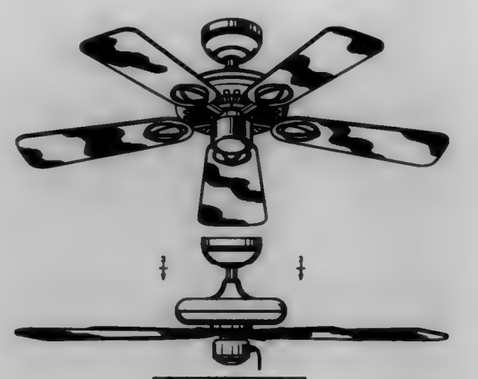
354,801
PIPE COUPLING
Alexander D. Grant, Cropredy, and Ronald A. Ireland, Barrowford, both of United Kingdom, assignors to Hepworth Building Products Limited, Hazlehead, England
Filed Jan. 9, 1992, Ser. No. 818,375
Term of patent 14 years
U.S. Cl. D23—263



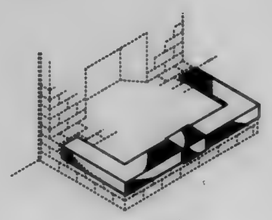
354,802
FOOT OPERATED FLUSHING UNIT
Jeffrey S. Bigelow, 3713 Summerwind Ct., Oklahoma City, Okla. 73179
Filed Feb. 18, 1992, Ser. No. 836,940
Term of patent 14 years
U.S. Cl. D23—309



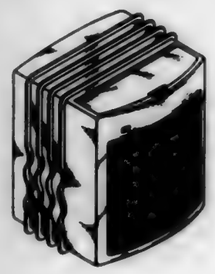
354,804
CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Mar. 30, 1994, Ser. No. 20,672
Term of patent 14 years
U.S. Cl. D23—377



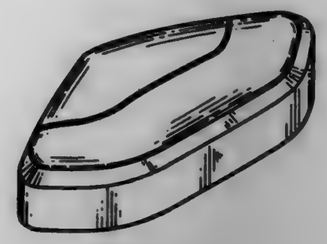
354,805
HEARTH CUSHION
Cynthia L. Bowen, and Walter L. Bowen, both of 2132 Kilkenney Hill Rd., Matthews, N.C. 28105
Filed Oct. 7, 1991, Ser. No. 772,012
Term of patent 14 years
U.S. Cl. D23—403



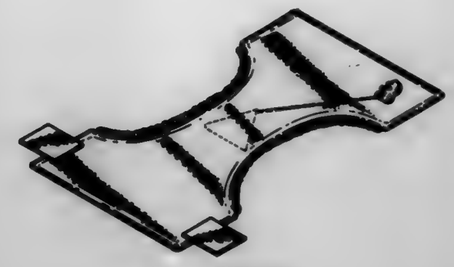
354,803
COMBINED FAN AND HEATER
Ching-Chi Huang, No. 90, Hoshan St., Tainan City, Taiwan, Prov. of China
Filed May 17, 1994, Ser. No. 23,009
Term of patent 14 years
U.S. Cl. D23—328



354,806
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Welwyn Garden City, England, assignor to Smithkline Beecham PLC, United Kingdom
Filed Dec. 3, 1991, Ser. No. 801,834
Claims priority, application United Kingdom, Jan. 4, 1991, 2015109
Term of patent 14 years
U.S. Cl. D24—101



354,809
WETNESS INDICATING BIODEGRADABLE DIAPER
Mark W. Eakey, #1 Locust La., Wallingford, Pa. 19086
Filed Jan. 10, 1993, Ser. No. 9,307
Term of patent 14 years
U.S. Cl. D24—126



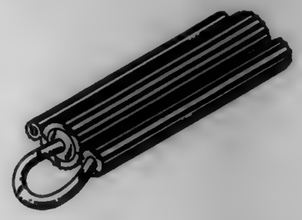
354,807
CAPSULE
Keith A. Bennell, Wiltshire, United Kingdom, assignor to R. P. Scherer Corporation, Troy, Mich.
Filed May 24, 1993, Ser. No. 8,711
Claims priority, application United Kingdom, Nov. 26, 1992, 2027462
Term of patent 14 years
U.S. Cl. D24—104



354,810
SURGICAL PARALLEL DRILL GUIDE
Aniruddha A. Nazre, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.
Filed Aug. 17, 1993, Ser. No. 11,914
Term of patent 14 years
U.S. Cl. D24—140



354,808
END-TIDAL CARBON MONOXIDE MONITOR FILTER
Neil J. Shoshan, Palo Alto; Scott R. Rouw, Union City, and Robert T. Stone, Sunnyvale, all of Calif., assignors to Natus Medical Incorporated, San Carlos, Calif.
Continuation-in-part of Ser. No. 990,425, Dec. 15, 1992. This application Jan. 21, 1993, Ser. No. 3,880
Term of patent 14 years
U.S. Cl. D24—110



354,811
COMBINED PULSIMETER AND CORD
Masao Tsuchi, Osaka, Japan, assignor to Cateye Co., Ltd., Osaka, Japan
Filed Jul. 29, 1992, Ser. No. 921,512
Claims priority, application Japan, Jan. 31, 1992, 4-2668
Term of patent 14 years
U.S. Cl. D24—165



354,812
NASAL DRESSING HOLDER
Marianne Jasen, Amherst, and Suzanne Lewandowski, DePew, both of N.Y., assignors to Dale Medical Products, Inc., Plainville, Mass.
Continuation-in-part of Ser. No. 790,589, Nov. 8, 1991. This application Apr. 14, 1993, Ser. No. 7,211
Term of patent 14 years
U.S. Cl. D24—189



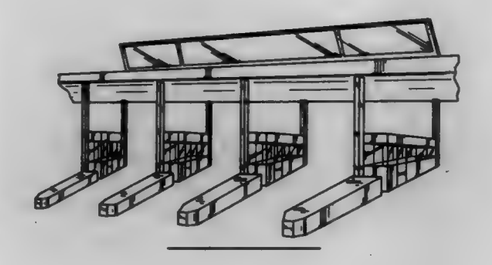
354,813
ADJUSTABLE POSTURE SUPPORT
Charles Pujals, Jr., 119 Fayette St., Bridgeton, N.J. 08302
Filed Aug. 6, 1992, Ser. No. 925,679
Term of patent 14 years
U.S. Cl. D24—190



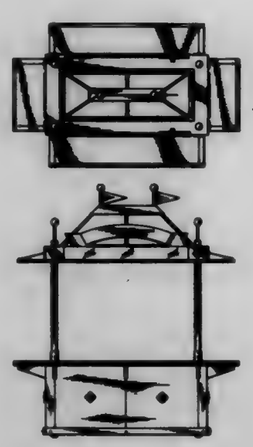
354,814
COMBINED INTRANASAL SPLINT AND PACKING
Donald E. Doyle, 4105 Hospital Rd., Suite 102A, Pascagoula, Miss. 39581
Filed Jun. 28, 1993, Ser. No. 9,970
Term of patent 14 years
U.S. Cl. D24—190



354,815
COMPOSITE HIGHWAY TOLL BOOTH
William D. Hassett, New York, N.Y., assignor to Hassett Management and Marketing Corp., N.Y.
Filed Sep. 10, 1992, Ser. No. 943,200
Term of patent 14 years
U.S. Cl. D25—16



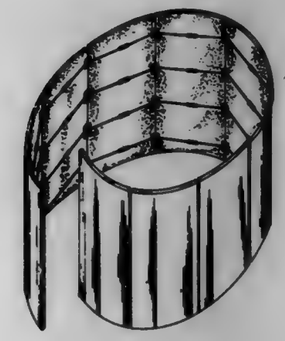
354,816
KIOSK
Tony L. Horton, Dallas, Tex., assignor to T L Horton Design, Inc., Dallas, Tex.
Filed Mar. 16, 1993, Ser. No. 6,032
The portion of the term of this patent subsequent to Sep. 29, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—16



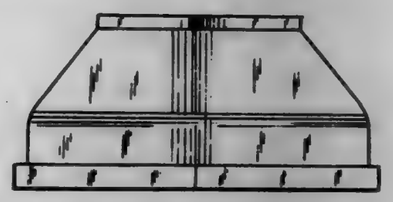
354,817
COMBINED SKYLIGHT AND FLOOR OPENING GUARD
John C. Kovacs, San Antonio, and Fred A. Kunz, Boerne, both of Tex., assignors to Saf-T-Screens, Inc., San Antonio, Tex.
Filed Sep. 27, 1993, Ser. No. 13,492
Term of patent 14 years
U.S. Cl. D25—53



354,818
CONFERENCE ROOM WALL ASSEMBLY
Gary L. Johnson, 603 Summit Ave., St. Paul, Minn. 55102
Filed Apr. 14, 1993, Ser. No. 7,122
Term of patent 14 years
U.S. Cl. D25—58



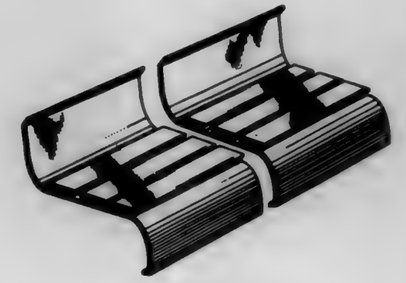
354,819
WALL-TO-CEILING COVING CORNER
John C. Hoaks, P.O. Box 1834, Florence, Oreg. 97439
Filed Mar. 1, 1993, Ser. No. 5,292
Term of patent 14 years
U.S. Cl. D25—102



354,820
SASH ELEMENT
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Aug. 2, 1993, Ser. No. 11,380
Term of patent 14 years
U.S. Cl. D25—124



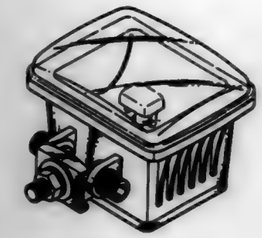
354,821
COMBINED WALL AND FLOOR INTERFACE DRAIN PANEL
Lawrence Janosky, 1 Clayton St., Milford, Conn. 06460
Filed Mar. 30, 1993, Ser. No. 6,453
Term of patent 14 years
U.S. Cl. D25—138



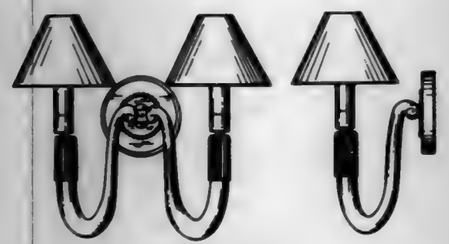
354,822
BICYCLE SIGNAL LIGHT
Albert J. Bledsoe, 10710 Clear Cove, Houston, Tex. 77041
Filed Jun. 10, 1993, Ser. No. 9,312
Term of patent 14 years
U.S. Cl. D26—28



354,823
AUXILIARY AUTOMOBILE LAMP
Wen-Tsung Tsai, No. 58-3, Lane 410, Wen Hsuh Rd., Sec. 2, Bade Chyan, Taipei, Taiwan, Prov. of China
Filed Jan. 26, 1994, Ser. No. 17,933
Term of patent 14 years
U.S. Cl. D26—28



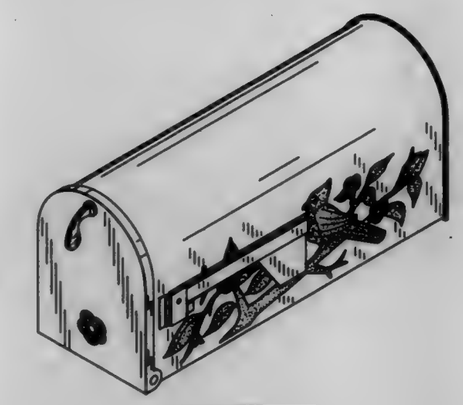
354,824
WALL SCONCE
Sally S. Lewis, 8727 Melrose Ave., Los Angeles, Calif. 90069-5086
Filed Oct. 12, 1993, Ser. No. 14,046
Term of patent 14 years
U.S. Cl. D26—80



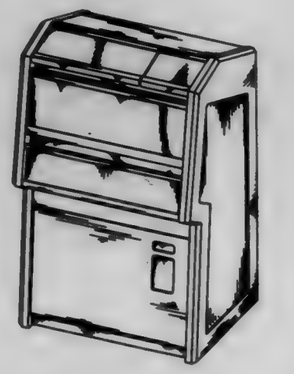
354,825
COMBINED CASKET ESCUTCHEON PLATE AND ARM ASSEMBLY
Daniel J. Parker, Connersville, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.
Filed Mar. 1, 1994, Ser. No. 19,366
Term of patent 14 years
U.S. Cl. D99—8



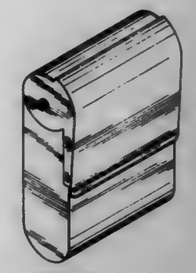
354,826
MAILBOX
Theodore J. Werner, Dix Hills, N.Y., assignor to United States Marketing Corporation, Huntington Station, N.Y.
Filed May 20, 1993, Ser. No. 8,534
Term of patent 14 years
U.S. Cl. D99—29



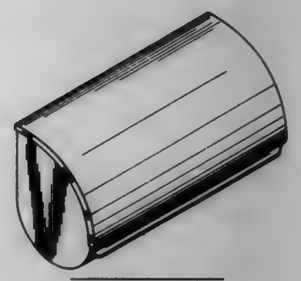
354,827
COMBINES LETTER AND PARCEL RECEPTACLE
Edmund C. Filipek, Streetsboro, Ohio, and Michael E. Meeks, Forest City, N.C., assignors to American Greetings Corporation, Cleveland, Ohio
Filed Nov. 18, 1993, Ser. No. 15,802
Term of patent 14 years
U.S. Cl. D99—29



354,828
MAIL BOX
Tucker Willis, and John T. Coursey, both of Dallas, Tex., assignors to Chainomeles, Inc., Dallas, Tex.
Filed Nov. 4, 1993, Ser. No. 15,051
Term of patent 14 years
U.S. Cl. D99—33



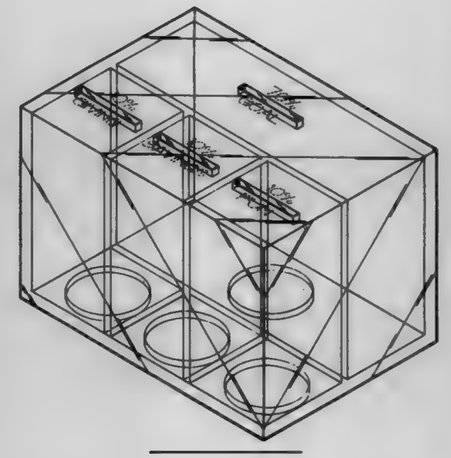
354,829
MAIL BOX
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Filed Nov. 4, 1993, Ser. No. 15,054
Term of patent 14 years
U.S. Cl. D99—33



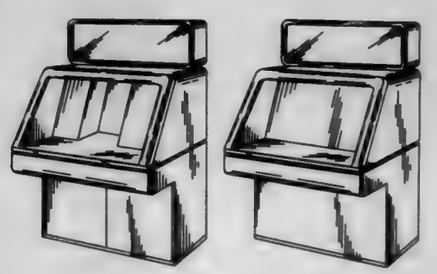
354,830
SAVINGS BANK
Mark Setteducati, New York, N.Y., and Tooru Suzuki, Tokyo, Japan, assignors to Tenyo Co. Ltd., Tokyo, Japan
Filed Jul. 19, 1993, Ser. No. 10,765
Term of patent 14 years
U.S. Cl. D99—34



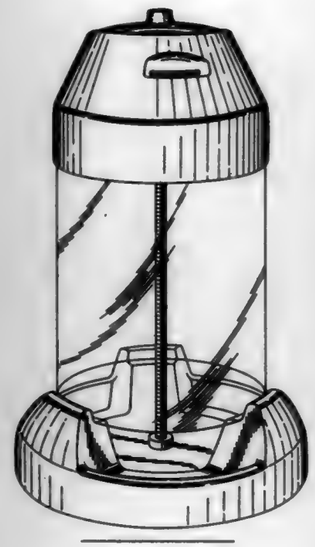
354,831
COMPARTMENTED COIN BANK
Larry E. Anderson, 3610 S. Hampton Dr., Bettendorf, Iowa 52722
Filed Aug. 3, 1993, Ser. No. 11,370
Term of patent 14 years
U.S. Cl. D99—35



354,832
KIOSK
Richard J. D'Agostino, Charlotte, N.C., assignor to Personal Financial Assistant Inc., Charlotte, N.C.
Filed Jan. 27, 1994, Ser. No. 18,026
Term of patent 14 years
U.S. Cl. D99—35



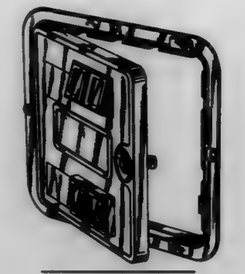
354,833
COMBINED DONATION CONTAINER AND CONFECTIONERY DISPENSER
Mark Forest, Gloucester, Canada, assignor to All-Vend Canada Ltd., Ottawa, Canada
Filed Jun. 23, 1993, Ser. No. 9,867
Claims priority, application Canada, Dec. 24, 1992, 24-12-92-8
Term of patent 14 years
U.S. Cl. D99—36



354,834
COIN BANK
John M. Chesnut, P.O. Box 795, Grantham, N.H. 03753
Filed Nov. 2, 1993, Ser. No. 14,876
Term of patent 14 years
U.S. Cl. D99—38



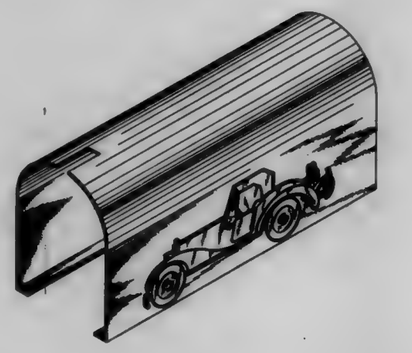
354,835
COIN DOOR
James M. Brendel, Morton Grove, Ill., assignor to Coin Controls Ltd., United Kingdom
Filed Jun. 7, 1993, Ser. No. 9,184
Term of patent 14 years
U.S. Cl. D99—43



354,836
SAFE HANDLE
Gaius P. Crosby, Orem, Utah, assignor to Liberty Safe & Security Products, Inc., Provo, Utah
Filed Nov. 12, 1993, Ser. No. 15,271
Term of patent 14 years
U.S. Cl. D99—43



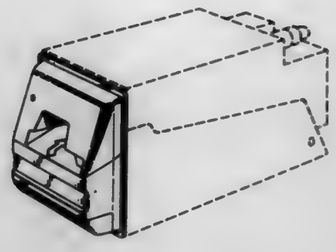
354,837
MAILBOX ARMOR
J. E. Owens, 26751 Deacon Lp., Wesley Chapel, Fla. 33544
Filed Jan. 11, 1993, Ser. No. 3,594
Term of patent 14 years
U.S. Cl. D99—99



354,838
PRAYER VESSEL
Shirley A. Felice, 2851 Uniomorse, Akron, Ohio 44314
Filed Jul. 6, 1993, Ser. No. 10,270
Term of patent 14 years
U.S. Cl. D99—99



354,839
FRONT PLATE FOR A BANKNOTE VALIDATOR
Jean-Claude Baudin, Viry, France, assignor to Mars, Incorporated, McLean, Va.
Filed Nov. 29, 1993, Ser. No. 15,797
Claims priority, application WIPO, Jun. 1, 1993, DM/026300
Term of patent 14 years
U.S. Cl. D99—99



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JANUARY, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Hyman, Jones M.; and , 5,384,240, Cl. 435-5.000.

Arvid Laboratories, Inc.: *See*—
Larson, Ralph I.; Phillips, Richard L.; and Beane, Alan F., 5,383,340, Cl. 62-259.200.

AB Hallde Maskiner: *See*—
Sundquist, Jarl, 5,383,613, Cl. 241-37.500.

ABB Patent GmbH: *See*—
Henkelmann, Dieter, 5,383,763, Cl. 415-159.000.

Abbis Corporation: *See*—
Levitov, Alexander B., 5,383,857, Cl. 604-110.000.

Abbott, Donald C.; and Fritzsche, Robert M., to Texas Instruments Incorporated. Silver spot/palladium plate lead frame finish. 5,384,155, Cl. 427-125.000.

Abe, Akira: *See*—
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Abe, Kiyoshi: *See*—
Ogawa, Masahide; Abe, Kiyoshi; Takahashi, Masao; Washio, Yuuzi; Enomoto, Kazumitsu; and Kitsu, Toshio, 5,384,191, Cl. 428-323.000.

Abe, Tetsuo: *See*—
Abramson, Kenneth D.; and Abe, Tetsuo, 5,383,370, Cl. 73-862.230.

Abernethy, Brian, to CalComp Inc. Voltage controlled oscillator circuit employing integrated circuit component ratios. 5,384,554, Cl. 331-153.000.

Abramson, Kenneth D.; and Abe, Tetsuo, to Sanyo Machine America Corporation. Device for verifying a minimum torque value. 5,383,370, Cl. 73-862.230.

Acry Fab Inc.: *See*—
Gundersen, Jeffrey E., 5,383,571, Cl. 221-223.000.

Adair, Robert L., Jr.: *See*—
Vance, Jack E.; Luce, Gerald J., deceased; Adair, Robert L., Jr.; and Champney, Clark B., 5,383,741, Cl. 403-383.000.

Adams, David J.; Harbuziuk, Wayne L.; and Culp, Christopher G., to Rockwell International Corporation. Automatic call distribution network with call overload system and method. 5,384,841, Cl. 379-266.000.

Adams, Michael E. Foldable hanger. 5,383,584, Cl. 223-94.000.

Adams, Theodore P., to Angeion Corporation. Wireless programmer/-repeater system for an implanted medical device. 5,383,915, Cl. 607-60.000.

ADCS/Air Duct Cleaning Systems, Inc.: *See*—
Curry, Ward E., Jr., 5,383,973, Cl. 134-8.000.

Adderley, Colin I.: *See*—
Banks, Simon A.; Adderley, Colin I.; Fowler, John O.; and Boardman, James E., 5,383,518, Cl. 165-166.000.

Adir et Compagnie: *See*—
Vincent, Michel; Remoud, Georges; Portevin, Bernard; Herve, Yolande; Lepagnol, Jean; and de Nanteuil, Guillaume, 5,384,322, Cl. 514-299.000.

Adler, Alan J.; and MacDonald, Peter S., to Adler, Alan J. Football with improved grip. 5,383,660, Cl. 273-65.0EG.

Adrian J. Paul Company: *See*—
Paul, John; and Paul, Adrian J., 5,384,437, Cl. 177-256.000.
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Hendrickson, Alan F.; and Damien, Bruno, 5,384,847, Cl. 180-23.000.
Ibok, Effiong E.; and Moore, Bradley T., 5,384,272, Cl. 437-43.000.
Moyal, Miki; Brennan, Thomas; and Vance, Gene, 5,384,727, Cl. 365-96.000.

Aerospatiale Societe Nationale Industrielle: *See*—
Geyer, Freddy; and Giraud, Dominique, 5,384,661, Cl. 359-894.000.

Afeyan, Noubar B.; Regnier, Fred E.; and Dean, Robert C., Jr., to PerSeptive Biosystems, Inc. Perfusive chromatography. 5,384,042, Cl. 210-198.200.

Affymax Technologies N.V.: *See*—
Winkler, James L.; Fodor, Stephen P. A.; Buchko, Christopher J.; Rose, Debra A.; and Aldwin, Lois, 5,384,261, Cl. 436-518.000.

AFTCO Mfg. Co., Inc.: *See*—
Stotesbury, Gregory S.; and Fettes, Ian U., 5,383,300, Cl. 43-24.000.

Agari, Norimasa, to Nippon Thompson Co., Ltd. End recessed retainer for use in a linear motion guide unit. 5,384,202, Cl. 428-577.000.

Agazzi, Oscar E., to AT&T Bell Laboratories. Modem with time-invariant echo path. 5,384,806, Cl. 375-8.000.

Aghaalian, Motjaba: *See*—
Brown, David L.; Aghaalian, Motjaba; and Marko, Paul D., 5,384,828, Cl. 379-61.000.

Agro, Marc; Hilt, Gerard; Rust, Sabine; Hornung, Christian; Peters, Henning; and Zweigart, Gerhard, to Gebr. Happich GmbH. Position detent for sun visor for vehicles. 5,383,700, Cl. 296-97.900.

Ahmadi, Hamid; Bantz, David F.; Bauchot, Frederic J.; Krishna, Arvind; La Maire, Richard O.; and Natarajan, Kadathur S., to International Business Machines Corporation. Adaptive medium access control scheme for wireless LAN. 5,384,777, Cl. 370-85.200.

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Sezi, Recai; Borndoerfer, Horst; Leuschner, Rainer; Seibold, Michael; Birkle, Siegfried; and Ahne, Hellmut, 5,384,220, Cl. 430-1.000.

Ahrens, Patricia; and Masse, Patrick J., to Ahrens, Patricia, a part interest. Multi-brush denture cleaning device. 5,383,244, Cl. 15-106.000.

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Sato, Junichi; Seido, Masahiro; Nomoto, Akira; Kamo, Tomoichi; and Aihara, Katsuzo, 5,384,088, Cl. 505-120.000.

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Ainoya, Hideyuki: *See*—
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Van Den Berg, Henricus F. G. M., 5,383,652, Cl. 269-17.000.

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Aiyama, Fumihiko: *See*—
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Akao, Mutsuo; and Inoue, Koji, to Fuji Photo Film Co., Ltd. Container for photographic film, its production and photographic film package. 5,384,173, Cl. 428-35.700.

Akasaki, Yutaka: *See*—
Sato, Katsuhiro; Torikoshi, Kaoru; Tanaka, Hiroyuki; Tambo, Fumiaki; and Akasaki, Yutaka, 5,384,076, Cl. 252-518.000.

Akebond Research and Development Centre Ltd.: *See*—
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Akebono Brake Industry Co., Ltd.: *See*—
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Akhter, Mohammed P.; and Recker, Robert R., to Creighton University Office of Technology Licensing. Apparatus for studying the effects of compressive and tensile bending strains on bones. 5,383,474, Cl. 128-782.000.

Akimoto, Akira: *See*—
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Akisue, Osamu: *See*—
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Akzo Nobel N.V.: *See*—
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Hanna, Paul K.; Piotowski, Andrzej M.; and Kershner, David L., 5,384,393, Cl. 528-392.000.
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Alberte, Randall S.: *See*—
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Aldus Corporation: *See*—
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Aldwin, Lois: *See*—
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Mazzini, Leonardo, 5,383,631, Cl. 244-169.000.

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Koch, Donald G.; Ting, Albert C.; and Chou, Jim-Son, 5,384,606, Cl. 351-158.000.

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Alpha Esterprises, Inc.: *See*—
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Alpha Industries, Inc.: *See*—
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ALS Esterprises, Inc.: *See*—
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Alt, Robert A.: *See*—
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Altera Corporation: *See*—
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Andrea, Todd E.; Alvarez, Edwardo; Cooper, William M.; Hughes, O. Richard; and Whiteside, Wendell G., 5,384,352, Cl. 524-404.000.

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Nagasaka, Chikao; and Amano, Tokuhiro, 5,383,708, Cl. 297-250.100.

Ambu International A/S: *See*—
Kohnke, Ole B., 5,383,786, Cl. 434-265.000.

Amerchol Corporation: *See*—
Polovsky, Stuart B.; Moshel, Harold L.; Pavlichko, Joseph P.; and Friedman, Amnon, 5,384,334, Cl. 514-777.000.

American BioMed, Inc.: *See*—
Summers, David P., 5,383,884, Cl. 606-170.000.

American Cardiac Ablation Co., Inc.: *See*—
Nardella, Paul C., 5,383,876, Cl. 606-49.000.

American Cord & Webbing Co., Inc.: *See*—
Kraus, Mark, 5,383,257, Cl. 24-625.000.
Kraus, Mark J., 5,383,426, Cl. 119-793.000.

American Cyanamid Company: *See*—
Bleacher, Gary W., 5,383,425, Cl. 119-729.000.
Rothstein, David M.; and Guay, Gordon G., 5,384,259, Cl. 435-252.330.

Ametek, Specialty Metal Products Division: *See*—
Scorey, Clive, 5,384,087, Cl. 419-10.000.

Amino GmbH: *See*—
Smolnik, Heinz-Dieter; and Thommel, Jurgen, 5,384,035, Cl. 210-635.000.

Amit, Gad, to Scitex Corporation Ltd. Apparatus and method for emulating a substrate. 5,384,899, Cl. 395-100.000.

Amitay, Noach, to AT&T Bell Laboratories. Distributed packetized switching cellular radio telephone communication system with handoff. 5,384,826, Cl. 379-60.000.

Ampex Corporation: *See*—
Shih, Lionel C.; and Wood, Tracy G., 5,384,668, Cl. 360-39.000.

Amrany, Daniel, to AT&T Bell Laboratories. Modulo decoder. 5,384,810, Cl. 375-94.000.

Amuny, Jim E. Heat exchanger bundle extractor assembly and method. 5,383,271, Cl. 29-840.031.

Analytical Bio-Chemistry Laboratories, Inc.: *See*—
Stalling, David L.; Wood, Thomas S.; Kelly, Kevin P.; Cernohlavek, Leemer G.; Lochhaas, Philip D.; Schrier, Loren C.; and Strumpf, David M., 5,384,023, Cl. 204-186.000.

Anayama, Hideki; Yoshihara, Toshiyuki; Ainoya, Hideyuki; and Hirano, Hidetoshi, to Canon Kabushiki Kaisha. Image forming method. 5,384,625, Cl. 355-211.000.

Andersen, Kenneth D.: *See*—
Duren, Richard E.; and Andersen, Kenneth D., 5,384,752, Cl. 367-38.000.

Anderson, Bradley J., to Edge Specialties, Inc. Skate blade edge resurfacer. 5,383,307, Cl. 451-545.000.

Anderson, Carter; and Sin, Kee V., to Diametrics Medical, Inc. Reference electrode. 5,384,031, Cl. 204-435.000.

Anderson, Charles B.: *See*—
Davies, Robert B.; Anderson, Charles B.; Klingbeil, Lawrence S., Jr.; and Norris, George B., 5,384,273, Cl. 437-41.000.

Anderson, Eric C.; and Svendsen, Hugh B., to Apple Computer, Inc. Method and apparatus for providing multiple clients simultaneous access to a sound data stream. 5,384,890, Cl. 395-2.000.

Anderson, Gordon K.; Kreymer, Naum; and Tatham, Tom E., to Pneumo Abex Corporation. Method and apparatus for supplying preconditioned air to a parked aircraft. 5,383,335, Cl. 62-89.000.

Anderson, Jeffrey T.: *See*—
Carlson, James G.; and Anderson, Jeffrey T., 5,384,362, Cl. 525-77.000.

Anderson, Paul C.: *See*—
Krzyzek, Richard A.; Laursen, Cheryl R. M.; and Anderson, Paul C., 5,384,253, Cl. 435-172.300.

Anderson, Ronald L.: *See*—
Tong, Robert; Poplett, James M.; Goodwin, Mark L.; Anderson, Ronald L.; and Nelson, James P., 5,384,685, Cl. 361-503.000.

Andiff Corporation: *See*—
Beck, Andrew L., 5,383,661, Cl. 273-73.00R.

Ando, Hiroshi, to Mitsubishi Deni Kabushiki Kaisha. Signal transmitting apparatus of elevator. 5,383,535, Cl. 187-247.000.

Ando, Kazuo; and Ikeda, Takafumi, to Pfizer Inc. N-hydroxyurea derivatives which inhibit lipoxygenase. 5,384,320, Cl. 514-231.200.

ANDOS Technik fur die Medizin GmbH: *See*—
Golz, Horst; Griefan, Joachim; and Maurer, Jorg P., 5,384,095, Cl. 422-100.000.

Andreas, Horst: *See*—
Schroter, Horst; and Andreas, Horst, 5,384,015, Cl. 202-251.000.

Andrea, Todd E.; Alvarez, Edwardo; Cooper, William M.; Hughes, O. Richard; and Whiteside, Wendell G., to Hoechst Celanese Corp. Self lubricating polybenzimidazole shaped articles. 5,384,352, Cl. 524-404.000.

Andresen, Nord C.; DiGennaro, Richard S.; and Swain, Thomas L., to University of California, The Regents of the. Precision optical slit for high heat load or ultra high vacuum. 5,384,662, Cl. 359-894.000.

Andrikian, Ronald V. Golf tee. 5,383,668, Cl. 273-201.000.

Andritz Sprout-Bauer, Inc.: *See*—
Dahlqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahner, William F., III; Lang, Alfred; Mauser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.

Andrus, Paul G.: *See*—
Myers, William M.; Ramsey, Keith A.; and Andrus, Paul G., 5,384,571, Cl. 342-4.000.

Anez, Ender: *See*—
Padron, Aaron; Anez, Ender; and Possamai, Raul, 5,384,039, Cl. 208-187.000.

Angeion Corporation: *See*—
Adams, Theodore P., 5,383,915, Cl. 607-60.000.
Kroll, Mark W., 5,383,907, Cl. 607-5.000.

Angel, Robert G., to British Aerospace plc. Gas turbine engines. 5,383,332, Cl. 60-228.000.

Angeli, Gerald J.: *See*—
Cloutier, Robert P.; and Angeli, Gerald J., 5,384,613, Cl. 354-275.000.

Angelo Cremona & Figlio S.p.A.: *See*—
Cremona, Lorenzo, 5,383,504, Cl. 144-215.000.

Angerstein, Jorg: *See*—
Schairer, Werner; Angerstein, Jorg; Giebler, Siegfried; Riedel, Jurgen; and Mistele, Thomas, 5,384,471, Cl. 257-98.000.

Anghelo, Python V.; and Czajka, Raymond J., to Williams Electronics Games, Inc. Player controlled dump ramp for a pinball game. 5,383,663, Cl. 273-118.00R.

Anker-Maschinenbau GmbH: *See*—
Meyer, Harry, 5,384,006, Cl. 156-566.000.

Anno, Hidero: *See*—
Ono, Katsuhiro; Anno, Hidero; Kitami, Takayuki; Sugiura, Hiroyuki; and Tanaka, Makoto, 5,384,818, Cl. 378-132.000.

Ansel, Denis: *See*—
Cardon, Alain; Kerdiles, Yvon; Boliveau, Michel; Ansel, Denis; and Debuigne, Jean, 5,383,892, Cl. 606-198.000.

Antenucci, Robert N.; Barndt, Richard L.; and Mohammed, Kas, to McNeil-PPC, Inc. Liquid concentrate compositions. 5,384,311, Cl. 514-53.000.

Anthony, Geoffrey P. Universal locking connector for human breathing systems. 5,383,691, Cl. 285-325.000.

Anthony Manufacturing Corp.: *See*—
Verbera, Steven; and Sexton, Timothy C., 5,383,600, Cl. 219-205.000.

Anthony, Roger B.; and Neuroth, David H., to Baker Hughes Incorporated. Double armor cable with auxiliary line. 5,384,430, Cl. 174-115.000.

Anton/Bauer, Inc.: *See*—
Wilson, Anton F.; and Koskuba, William V., 5,384,616, Cl. 354-414.000.

Aoki, Kazutugu: *See*—
Shimada, Yutaka; Kato, Hitoshi; Kakizaki, Junichi; Aoki, Kazutugu; Mori, Haruki; and Shiotsuki, Tatsuo, 5,383,984, Cl. 156-345.000.

Aoki, Masakazu: *See*—
Etoh, Jun; Nakagome, Yoshinobu; Tanaka, Hitoshi; Kawamoto, Koji; and Aoki, Masakazu, 5,384,740, Cl. 365-189.090.

Aoki, Masami; and Takato, Hiroshi, to Kabushiki Kaisha Toshiba. Method of manufacturing a semiconductor device isolated by a trench. 5,384,280, Cl. 437-67.000.

Aoki, Seiji; Katou, Ryuichi; and Nakamura, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Ultrasonic diagnostic system. 5,383,461, Cl. 128-660.070.

Aoki, Yoshitaka: *See*—
Ohmori, Kiyoshi; and Aoki, Yoshitaka, 5,384,757, Cl. 369-13.000.

Aoshima, Chikara, to Canon Kabushiki Kaisha. Stepper motor. 5,384,506, Cl. 310-49.00R.

Aoshima, Shinichiro: *See*—
Takahashi, Hironori; Urakami, Tsuneyuki; and Aoshima, Shinichiro, 5,384,638, Cl. 356-351.000.

Apfel, Robert E., to Yale University. Foam metallic glass. 5,384,203, Cl. 428-613.000.

Apple Computer, Inc.: *See*—
Anderson, Eric C.; and Svendsen, Hugh B., 5,384,890, Cl. 395-2.000.
Dalton, John C., 5,384,898, Cl. 395-51.000.
Oprescu, Florin; and Van Brunt, Roger, 5,384,769, Cl. 370-24.000.
Strong, Robert D., 5,384,892, Cl. 395-2.520.
Van Brunt, Roger; and Oprescu, Florin, 5,384,808, Cl. 375-36.000.

Applied Biosystems, Inc.: *See*—
Blasband, Andrew J., 5,384,025, Cl. 204-299.00R.
Moring, Stephen E.; Albin, Michael S.; Kowallis, Reid B.; Lee, Thomas E.; Mead, Dennis E.; Nickel, John H.; Oldham, Mark F.; Reel, Richard T.; Orpin, Timothy S.; and Woods, Janice C., 5,384,024, Cl. 204-299.00R.

Applied Materials, Inc.: *See*—
Armour, David G.; England, Johnathan G.; Bryan, Neil; and Van der Berg, Jakob A., 5,384,465, Cl. 250-492.210.
Mak, Steven; Shieh, Brian; and Rhoades, Charles S., 5,384,009, Cl. 156-662.000.
Sinha, Ashok; and Somekh, Sasson, 5,384,008, Cl. 156-643.000.

Aptix Corporation: *See*—
Osann, Robert, Jr.; Ausman, Jeffery A.; and Halbert, David R., 5,384,433, Cl. 174-250.000.
Switky, Andrew; and Osann, Robert, Jr., 5,383,787, Cl. 439-67.000.

Arai, Masatoshi: *See*—
Inoue, Yoshifumi; and Arai, Masatoshi, 5,384,384, Cl. 528-24.000.

Araki, Shoichi; Nomura, Hiroyoshi; Wakami, Noboru; and Imanaka, Takeshi, to Matsushita Electric Industrial Co., Ltd. Occupant condition determining apparatus. 5,384,716, Cl. 364-557.000.

Araki, Tomio: *See*—
Ito, Noriki; Yasunaga, Tomoyuki; Iizumi, Yuichi; and Araki, Tomio, 5,384,425, Cl. 560-138.000.

Araki, Toru, to Mitsubishi Denki Kabushiki Kaisha. Amplifier incorporating current-limiting protection of output transistor. 5,384,549, Cl. 330-298.000.

Aramaki, Yuji: *See*—
Kobayashi, Isamu; and Aramaki, Yuji, 5,383,963, Cl. 106-36.000.

Aranyi, Ernest: *See*—
Zvenyatsky, Boris; Aranyi, Ernest; and Tovey, H. Jonathan, 5,383,888, Cl. 606-206.000.

Araya, Junji: *See*—
Kugoh, Harumi; Araya, Junji; Yano, Hideyuki; and Furuya, Tadashi, 5,384,626, Cl. 355-219.000.

Arco Chemical Technology, L.P.: *See*—
Zajacek, John G.; Jubin, John C., Jr.; and Crocco, Guy L., 5,384,418, Cl. 549-531.000.

Arentzen, Rene; Jadhav, Prabhakar K.; Kobos, Robert K.; and Smart, Bruce E., to Du Pont de Nemours, E. I., and Company. Immobilization of biomolecules on a fluorocarbon surface modified with a poly(fluoroalkyl) sugar reagent. 5,384,254, Cl. 435-181.000.

Arimatsu, Masatomo, to Fujitsu Limited. Method for carrying out sciessoring -processing of stroke letters in a screen display. 5,384,907, Cl. 395-150.000.

Arimoto, Akiya: *See*—
Okamoto, Yasuhi; and Arimoto, Akiya, 5,384,778, Cl. 370-85.300.

Arita, Yutaka: *See*—
Haraguchi, Yoshiyuki; and Arita, Yutaka, 5,384,741, Cl. 365-201.000.

Ariyama, Kenzo: *See*—
Kurotori, Tsuneo; Mochizuki, Manabu; Ariyama, Kenzo; Kojima, Kenji; Tsuruoka, Ichiro; Echigo, Katsuhiro; and Miyao, Mayumi, 5,384,225, Cl. 430-116.000.

Armini, Anthony J.; and Bunker, Stephen N., to Implant Sciences, Corporation. Method for ion beam treating orthopaedic implant components. 5,383,934, Cl. 623-16.000.

Armour, David G.; England, Johnathan G.; Bryan, Neil; and Van der Berg, Jakob A., to Applied Materials, Inc. Spectrum analyzer in an ion implanter. 5,384,465, Cl. 250-492.210.

Armour Swift-Eckrich: *See*—
Lin, Rudy, 5,384,149, Cl. 426-646.000.

Armstrong, Randolph K.: *See*—
Cox, Timothy J.; and Armstrong, Randolph K., 5,383,912, Cl. 607-32.000.

Arnold, Anthony F.: *See*—
Gegenwarth, Richard E.; and Arnold, Anthony F., 5,384,283, Cl. 437-183.000.

Arnold, Bruce H. Incandescent lamp with an improved filament implementation. 5,384,510, Cl. 313-316.000.

Arnold, Mark W.; and Thurston, Marlin O., to Ohio State University Research Foundation, The; and Neoprobe Corporation. Radiation-based laparoscopic method for determining treatment modality. 5,383,456, Cl. 128-653.100.

Aronowitz, Sheldon: *See*—
Bulucea, Constantin; Derzirlioglu, Esin; and Aronowitz, Sheldon, 5,384,477, Cl. 257-372.000.

Arthur, David J.; Swei, Gwo S.; Horn, Allen F., III; and Kilheany, Brett, to Rogers Corporation. Low volume fraction ceramic filled fluoropolymeric composite material. 5,384,181, Cl. 428-195.000.

Arvidsson, Thomas, to Aktiebolaget Electrolux. Device for a burner preferably for a spirit stove. 5,383,551, Cl. 126-43.000.

Asaba, Tetsuo; and Makino, Kenji, to Canon Kabushiki Kaisha. Chemical vapor deposition method for forming a deposited film with the use of a liquid raw material and apparatus suitable for practicing said method. 5,383,970, Cl. 118-726.000.

Asahi Glass Company Ltd.: *See*—
Tsuji, Hiroshi, 5,383,990, Cl. 156-102.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Kamada, Etsuo, 5,384,130, Cl. 424-461.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kobayashi, Takeo; Nishida, Takao; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, 5,384,617, Cl. 354-419.000.

Asai, Takeo: *See*—
Hasegawa, Kinji; Asai, Takeo; and Murakami, Yoji, 5,384,354, Cl. 524-539.000.

Asai, Takeshi: *See*—
Takano, Hiroshi; and Asai, Takeshi, 5,383,402, Cl. 101-415.100.

Asakawa, Yoshiaki; Yamasaki, Katsuya; and Ichikawa, Akira, to Hitachi, Ltd. Vector quantizing apparatus and speech analysis-synthesis system using the apparatus. 5,384,891, Cl. 395-2.290.

Asano, Masamichi: *See*—
Miyakawa, Tadashi; and Asano, Masamichi, 5,384,742, Cl. 365-218.000.

Asayama, Junko: *See*—
Takimoto, Akio; Tanaka, Yukio; Asayama, Junko; Akiyama, Koji; Kuratomi, Yasunori; and Ogawa, Hisahito, 5,384,649, Cl. 359-67.000.

Ascom Audiosys AG: *See*—
Scharen, Beat, 5,384,852, Cl. 381-68.000.

Ash, Gary S.: *See*—
Phillips, Roger W.; Mayer, Thomas; and Ash, Gary S., 5,383,995, Cl. 156-230.000.

Ash, Robert H., Jr.: *See*—
Taeuber, Ralph, Jr.; Castillo, Sergio A., Jr.; and Ash, Robert H., Jr., 5,383,694, Cl. 285-374.000.

Ashiwa, Jun: *See*—
Takagi, Shinji; Tanaka, Hideki; Kimura, Tatsuo; and Ashiwa, Jun, 5,384,587, Cl. 347-41.000.

Ashjian, Henry, to Mobil Oil Corporation. Lubricant additives. 5,384,055, Cl. 252-51.50A.

Aspec Technology, Inc.: *See*—
Yin, Patrick, 5,384,472, Cl. -204.000.

Associated Universities, Inc.: *See*—
Levy, Alejandro V.; and Warner, Donald, 5,384,699, Cl. 364-413.130.

Asta Medica Aktiengesellschaft: *See*—
Dieter, Hans-Reinhold; Engel, Jurgen; Kutscher, Bernhard; Polymeropoulos, Emanuel; Szelenyi, Stefan; and Nickel, Bernd, 5,384,330, Cl. 514-535.000.

Astle, Joseph C. Drip watering apparatus. 5,383,601, Cl. 239-276.000.

AT&T Bell Laboratories: *See*—
Agazzi, Oscar E., 5,384,806, Cl. 375-8.000.
Amitay, Noach, 5,384,826, Cl. 379-60.000.
Amrany, Daniel, 5,384,810, Cl. 375-94.000.

AT&T Corp.: *See*—
Bergmann, Ernest E., 5,384,876, Cl. 385-64.000.
Blatchford, Jo Ann; DeFazio, Pamela L.; and Young, Joel K., 5,384,840, Cl. 379-229.000.
Brenski, Edwin F.; Patel, Dhaval C.; and Rovnyak, Richard M., Sr., 5,384,823, Cl. 379-10.000.
Britton, Barry K.; Hill, Dwight D.; and Oswald, William A., 5,384,497, Cl. 326-44.000.

Brown, Ben G.; Krallmann, John A.; Liesen, Christopher D.; and Purdome, Mark J., 5,384,822, Cl. 379-10.000.
Cohen, Leonard G.; Moesle, Adolph H., Jr.; and Vengsarker, Ashish M., 5,384,635, Cl. 356-73.100.
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., 5,384,831, Cl. 379-67.000.
Diner, Naim F., 5,384,885, Cl. 385-140.000.
Grady, Alfred J., Jr.; Lal, Sadarshan; Mitchell, Mary J.; Okinaka, Yutaka; Smith, Craig G.; Trop, Harvey S.; and Wang, Chwan-Tsann, 5,384,153, Cl. 427-98.000.
Isidoro, Alessandro L.; and Tsai, Howard S., 5,384,771, Cl. 370-58.300.
Martin, Gary D.; and Ueda, Hiromi, 5,384,774, Cl. 370-82.000.
Stone, Julian, 5,384,877, Cl. 385-70.000.

Atlantic Richfield Company: *See*—
Hailey, Charles D., 5,383,522, Cl. 166-382.000.
Kotlyar, Michael, 5,383,351, Cl. 73-40.000.

Atlas Copco Tools AB: *See*—
Jacobddon, Rolf A., 5,383,762, Cl. 415-121.200.

Atsugi Unisia Corporation: *See*—
Shioyama, Shuichiro; and Saita, Norihiro, 5,383,529, Cl. 180-140.000.

Atsuta, Hitoshi: *See*—
Kanai, Takao; Atsuta, Hitoshi; Sezaki, Yoshinori; and Maedai, Ichirou, 5,384,711, Cl. 364-489.000.

Aubry, Jacques A., to Eurocopter France. Blade-hub linkage device with a laminate attachment. 5,383,767, Cl. 416-134.00A.

Audi A.G.: *See*—
Kreis, Gundolf; Timm, Heinrich; Enning, Norbert; and Spies, Robert, 5,383,987, Cl. 156-60.000.

Auer, Michael L.; Chornenky, Victor I.; Fettig, Peter T.; Gunderson, Richard C.; McBroom, Jeffrey A.; and Sharrow, James S., to SpectraScience, Inc. Guidewire catheter and apparatus for diagnostic imaging. 5,383,467, Cl. 128-664.000.

Ausman, Jeffery A.: *See*—
Ousan, Robert, Jr.; Ausman, Jeffery A.; and Halbert, David R., 5,384,433, Cl. 174-250.000.

Austin, Ronald J. Snore deterring belt. 5,383,475, Cl. 128-848.000.

Australian National University, The: *See*—
Calka, Andrzej; and Ninham, Barry W., 5,383,615, Cl. 241-172.000.

Automate Medical Access Corporation: *See*—
Inga, Jorge J.; and Saliga, Thomas V., 5,384,643, Cl. 358-403.000.

Avery Dennison Corporation: *See*—
Deschenes, Charles L.; Jones, Terence J.; and Cooper, William J., 5,383,260, Cl. 24-711.000.
Tusick, Judith H.; and Johnson, Kent D., 5,383,568, Cl. 220-606.000.

AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof.Dr.Dr.h.c. Hans List: *See*—
Plimon, Anton; Philipp, Harald A.; and Winklhofer, Ernst, 5,384,467, Cl. 250-554.000.

Awai, Takashi: *See*—
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Iahida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Awai, Takashi, 5,384,584, Cl. 346-76.OPH.

Axis S.p.A.: *See*—
Santandrea, Luciano; and Lombardi, Massimo, 5,383,618, Cl. 242-1.10R.

Axis USA, Inc.: *See*—
Cardini, Giuseppe; Lombardi, Massimo; and Tarchi, Mauro, 5,383,619, Cl. 242-7.05B.
Lombardi, Massimo; and Pisani, Gianluigi, 5,383,620, Cl. 242-7.05H.

Axiar, Michael G., to Smith International, Inc. Asymmetrical PDC cutter. 5,383,527, Cl. 175-431.000.

Azeda, Takahiro: *See*—
Yokomizo, Takao; Kobayashi, Hiroo; Yagi, Tadashi; Yakimachi, Hiroshi; Azeda, Takahiro; Tauchiya, Yoshiro; Moritani, Toshifumi; Ohtsuka, Masahito; Warugai, Tsuyoshi; and Miyake, Hiroaki, 5,384,619, Cl. 355-200.000.

B. J. Mackie and Co. (Aust.)Pty. Ltd.: *See*—
Sartori, Maurice, 5,383,380, Cl. 82-70.100.

Baas, Dieter, to Deutsche Thomson-Brandt GmbH. Method of reading data off a rotating recording medium. 5,384,759, Cl. 369-32.000.

Babb, Susan E. Decorative insect trap. 5,383,301, Cl. 43-114.000.

Babcock & Wilcox Company, The: *See*—
Buttram, Jonathan D., 5,383,365, Cl. 73-598.000.

Babu, Manyam: *See*—
Tseng, Shiaw C.; Berisko, Daniel W.; and Babu, Manyam, 5,384,111, Cl. 423-242.100.

Bach, Volker; Etzbach, Karl-Heinz; and Sens, Ruediger, to BASF Aktiengesellschaft. Bichromophoric cyano-containing methine dyes and transfer thereof. 5,384,402, Cl. 544-105.000.

Bachmann, Peter; Leers, Dieter; and Wiechert, Detlef, to U.S. Philips Corporation. Antifriction body having an antifriction layer. 5,384,195, Cl. 428-408.000.

Bacon, Edward R.: *See*—
Singh, Baldev; Bacon, Edward R.; and Illig, Carl R., 5,384,107, Cl. 424-5.000.

Bader, Martina; Hartmann, Patrik; and Schwinn, Gerhard, to Roehm GmbH Chemische Fabrik Patentabteilung. Sulfur-containing poly(-meth)acrylate. 5,384,379, Cl. 526-286.000.

Baiocchi, Richard L.: *See*—
Watson, Randy C.; and Baiocchi, Richard L., 5,383,843, Cl. 602-13.000.

Bair, John J.; Freel, Lee A.; Damon, Gerald D.; and Wooda, Jerry D., to Eaton Corporation. Brake squeal spring clip dampener. 5,383,538, Cl. 188-218.00R.

Bair, John J.; and Woodard, Steven W., to Eaton Corporation. Brake squeal dampener ring. 5,383,539, Cl. 188-218.00R.

Baker, Daniel L.: *See*—
Carlson, Robert H.; and Baker, Daniel L., 5,384,492, Cl. 307-147.000.

Baker, David B. Toilet seat deodorizer apparatus. 5,383,237, Cl. 4-237.000.

Baker, Edward R. Method and apparatus for precooling water supplied to an evaporative cooler with a subterranean heat exchanger. 5,383,337, Cl. 62-121.000.

Baker Hughes Incorporated: *See*—
Anthony, Roger B.; and Neuroth, David H., 5,384,430, Cl. 174-115.000.
Matasovic, Jozef D., 5,384,033, Cl. 210-121.000.

Baker, Raymond; Lotti, Victor J.; and Showell, Graham A., to Merck Sharpe & Dohme Ltd. Substituted pyrazine and its salts, compositions containing them and their use in medicine. 5,384,408, Cl. 544-336.000.

Baker, Stephen J.; Wood, Karl J.; Olive, Graham J.; and Smith, Jeffrey N., to Rediffusion Simulation Limited. Image generator for simulating the illumination effects of a vehicle-mounted light source on an image displayed on a screen. 5,384,719, Cl. 364-578.000.

Balaban, David B.; and Tufano, Anthony, to Leviton Manufacturing Co., Inc. Electrical rocker type switch. 5,384,441, Cl. 200-339.000.

Baleras, Jean-Marc R.; Grossi, Hermano; and Moreau, Didier G., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma" . Gas turbine engine inspection system. 5,383,355, Cl. 73-117.300.

Balsimo, William V., to Minnesota Mining and Manufacturing Company. Separation-science membrane dispenser. 5,383,573, Cl. 211-264.000.

Baltimore Aircoil Company, Inc.: *See*—
McCloskey, William D.; and Brady, Thomas W., 5,383,339, Cl. 62-238.500.

Balzers Aktiengesellschaft: *See*—
Ramm, Jurgen; Beck, Eugen; Frei, Hugo; Zueger, Albert; and Peter, Gunter, 5,384,018, Cl. 204-192.380.

Banks, Simon A.; Adderley, Colin I.; Fowler, John O.; and Boardman, James E., to Rolls-Royce plc; and Rolls-Royce and Associates Limited. Heat exchanger. 5,383,518, Cl. 165-166.000.

Bantz, David F.: *See*—
Ahmadi, Hamid; Bantz, David F.; Bauchot, Frederic J.; Krishna, Arvind; La Maire, Richard O.; and Natarajan, Kadathur S., 5,384,777, Cl. 370-85.200.

Barbe, Christian; and Masurel, Dominique, to L'Air Liquide. Multistage cascade sweep-process for membrane gas separation. 5,383,957, Cl. 96-4.000.

Barker, Peter L.; Barnier, John P.; and Thorsett, Eugene D., to Genentech, Inc. Cyclized peptides and their use as platelet aggregation inhibitors. 5,384,309, Cl. 514-11.000.

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Antenucci, Robert N.; Barndt, Richard L.; and Mohammed, Kas, 5,384,311, Cl. 514-53.000.

Barnes, David W.: *See*—
Rathmell, Claude; Vance, Carroll S.; Barnes, David W.; and Hashemi, Seyed H., 5,383,269, Cl. 29-830.000.

Barnsley, Michael F.; Sloan, Alan D.; Elton, John H.; Moreman, Charles S.; and Primiano, Guy A., to Iterated Systems, Inc. Fractal transform compression board. 5,384,867, Cl. 382-56.000.

Barone, Dana. No-sew fabric wrap tables. 5,383,635, Cl. 248-188.100.

Barrientos, Francesca A.: *See*—
Mandel, Barry P.; Kamprath, David R.; Barrientos, Francesca A.; Van Dongen, Richard A.; DeSanctis, Anthony T.; and Rizzolo, Charles D., 5,383,656, Cl. 271-258.000.

Barry, Shirley K. Therapeutic muff. 5,383,921, Cl. 607-114.000.

Bart, Kurt A.: *See*—
Osenkowski, Joseph M.; Weber, James L.; Wdziekonski, Wojciech; and Bart, Kurt A., 5,383,707, Cl. 297-238.000.

Barten, Michael: *See*—
Ernecke, Christoph M.; Barten, Michael; and Toutaoui, Mustapha, 5,384,439, Cl. 187-316.000.

Barthel, Yves: *See*—
Mank, Larry; Barthel, Yves; Cameron, Charles; and Sarrazin, Patrick, 5,384,040, Cl. 208-251.00R.

Bartholomew, Victor L.: *See*—
McKinnon, Charles N., Jr.; Peterson, Steven F.; Smith, Paul E.; Nakagawa, Takaaki; and Bartholomew, Victor L., 5,383,851, Cl. 604-68.000.

Bartlett, Glynn: *See*—
Franke, Ernest; Nedungadi, Ashok; and Bartlett, Glynn, 5,383,368, Cl. 73-800.000.

Bartmann, Ekkehard: *See*—
Geelhaar, Thomas; Rieger, Bernhard; Reiffenrath, Volker; Bartmann, Ekkehard; and Coates, David, 5,384,065, Cl. 252-299.630.

Barua, Debojit: *See*—
Sooriakumar, Kathirgamasundaram; Barua, Debojit; and Fried, Marcus W., 5,383,597, Cl. 239-5.000.

BASF Aktiengesellschaft: *See*—
Bach, Volker; Etzbach, Karl-Heinz; and Sens, Ruediger, 5,384,402, Cl. 544-105.000.
Brosius, Sibylle; Seiler, Erhard; Schwager, Harald; Kress, Gerhard; and Schlemmer, Lothar, 5,384,369, Cl. 525-193.000.
Etzbach, Karl-Heinz; Beckmann, Stefan; Nuyken, Oskar; Strohriegl, Peter; and Mueller, Harry, 5,384,378, Cl. 526-256.000.

BASF Corporation: *See*—
Budde, Anna M.; Sand, I. Daniel; Dunn, Alan R.; and Kuo, Chung M., 5,384,163, Cl. 427-385.500.
Fishback, Thomas L.; Reichel, Curtis J.; and Dailey, James S., 5,384,338, Cl. 521-131.000.

BASF Lacke & Farben AG: *See*—
Huemke, Klaus; and Hoffmann, Gerhard, 5,384,386, Cl. 528-107.000.

BASF Lacke + Farben Aktiengesellschaft: *See*—
Waschinski, Klaus-Markus; Schmitz, Arno; and Rubartsch, Ute, 5,384,169, Cl. 428-34.100.

Basix Technologies Ltd.: *See*—
Truty, Thomas J.; French, Jule L.; and Newell, Kevin M., 5,384,444, Cl. 219-69.120.

Bassi, Mario: *See*—
Fasola, Giancarlo; and Bassi, Mario, 5,383,428, Cl. 123-179.300.

Bastioli, Catia; Bellotti, Vittorio; Romano, Giancarlo; and Tosin, Maurizio, to Novamont S.p.A. Laminated film with a starchy matrix and low permeability and methods for its production. 5,384,170, Cl. 428-34.100.

Bastyr, Charles A.: *See*—
Munoz, Eugene J.; Estupinan, Miguel; and Bastyr, Charles A., 5,383,844, Cl. 602-20.000.

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Neugebauer, Constantine A., deceased; Korman, Charles S.; Bates, David A.; Bicknell, William H.; and Daum, Wolfgang, 5,384,691, Cl. 361-794.000.

Batey, Jonathan H.: *See*—
Jullien, Joseph P. R.; Batey, Jonathan H.; and Mellor, Robert, 5,384,461, Cl. 250-292.000.

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Battaglia, Joseph A., to Westinghouse Electric Corporation. Deaeration system. 5,383,958, Cl. 96-188.000.

Battelle Memorial Institute: *See*—
Myers, William M.; Ramsey, Keith A.; and Andrus, Paul G., 5,384,571, Cl. 342-4.000.

Battles, Timothy J.; and Hollnagel, Harold E., to KCS Industries Inc. Oil filter crushing apparatus. 5,383,397, Cl. 100-51.000.

Batu, Atilla: *See*—
Bolz, Joachim; Batu, Atilla; and Seeger, Herbert, 5,384,323, Cl. 514-339.000.

Bauchot, Frederic J.: *See*—
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Bauer, Ralph: *See*—
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Bauer, Wolfgang; Nagl, Gert; Steckelberg, Willi; Ritter, Josef; and Mauelshagen, Wilhelm, to Cassella AG. Water-soluble sulphur dyes, their preparation and use. 5,383,961, Cl. 106-22.00R.

Bausch & Lomb Incorporated: *See*—
Bigler, Michael; Hommann, Edgar; and Myerly, Scott, 5,383,242, Cl. 15-22.100.

Baxter, David C.; and Forsyth, Michael J., to Weatherchem Corporation. Sift-resistant dispensing closure. 5,383,582, Cl. 222-548.000.

Baxter International Inc.: *See*—
Miraki, Manouchehr; Walker, Blair; and Higgins, Sheryl W., 5,383,890, Cl. 606-194.000.
Segers, Alain; Faict, Dirk; Duponchelle, Annick; Hartman, Jean-Pierre; and Peluso, Francesco, 5,383,324, Cl. 53-425.000.

Baxter, James T.; Vick, Doug M.; and Gibbs, George S., to New Ideas International. Air freshener apparatus for ceiling fans. 5,383,765, Cl. 416-62.000.

Bayer AG: *See*—
Wotting, Gerhard; Knoch, Martin; and Kramer, Klaus, 5,384,081, Cl. 264-63.000.

Bayer Aktiengesellschaft: *See*—
Alewelt, Wolfgang; Kauth, Hermann; and Kuhling, Steffen, 5,384,389, Cl. 528-168.000.
Klein, Alfons; Kron, Rudolf; Fiege, Helmut; and Paetz, Klaus-Christian, 5,384,059, Cl. 252-73.000.
Trinks, Rainer; Ganster, Otto; and Konigshofen, Heinrich, 5,384,385, Cl. 528-52.000.
Wamprecht, Christian; Meier-Westhues, Hans-Ulrich; Meixner, Jurgen; and Ruf, Gunter, 5,384,358, Cl. 525-28.000.

Bays, Rodney; Boulton, Michael L.; Pascaloff, John H.; Stalcup, Gregory C.; and Vu, Dai N., to Zimmer, Inc. Safety device for a powered surgical instrument. 5,383,875, Cl. 606-1.000.

Beane, Alan F.: *See*—
Larson, Ralph I.; Phillips, Richard L.; and Beane, Alan F., 5,383,340, Cl. 62-259.200.

Beck, Andrew L., to Andiff Corporation. Apparatus to retrieve tennis balls. 5,383,661, Cl. 273-73.00R.

Beck, Erhard: *See*—
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Volz, Peter; Beck, Erhard; Maas, Joachim; Diakel, Peter; and Risch, Stefan, 5,383,718, Cl. 303-113.200.

Beck, Eugen: *See*—
Ramm, Jurgen; Beck, Eugen; Frei, Hugo; Zueger, Albert; and Peter, Gunter, 5,384,018, Cl. 204-192.380.

Beckman Instruments, Inc.: *See*—
Cheng, David W.; and Dong, David Q., 5,383,838, Cl. 494-10.000.

Beckmann, Stefan: *See*—
Etzbach, Karl-Heinz; Beckmann, Stefan; Nuyken, Oskar; Strohriegl, Peter; and Mueller, Harry, 5,384,378, Cl. 526-256.000.

Beckwith, Timothy, to Quantel Limited. Video processing system. 5,384,667, Cl. 360-33.100.

Becton, Dickinson and Company: *See*—
Burns, James A., 5,384,096, Cl. 422-102.000.
Partika, Lawrence, 5,383,466, Cl. 128-662.030.

Bedard, Aimee M.; Lai, Grace H.; Wullschleger, Richard D.; and Kincaid, James G., to Kellogg Company. Psyllium enriched pasta products and method for making same. 5,384,144, Cl. 426-557.000.

Bedell, Stanley F.: *See*—
Nemphos, Speros P.; and Bedell, Stanley F., 5,384,879, Cl. 385-100.000.

Beecham Group p.l.c.: *See*—
Clarkson, Quinten R. M., 5,384,112, Cl. 423-462.000.

Beeckman, Jean W.: *See*—
Neal, Lewis G.; Ma, Warren; Chang, Min-Yan; Zhou, Qian; Pereira, Carmo J.; Plumlee, Karl W.; and Beeckman, Jean W., 5,383,955, Cl. 95-34.000.

Begin, Roger E.: *See*—
Giles, David C.; Begin, Roger E.; Dugger, David R.; and Paskvan, Eric W., 5,384,200, Cl. 428-552.000.

Behe, Thomas J.; Roemmelmann, Heiko; Gilmore, Daniel R., III; and Lioy, Gerald T., to Xerox Corporation. Developing unit having ceramic donor roll. 5,384,627, Cl. 355-247.000.

Behm, Frederique M.: *See*—
Rose, Jed E.; and Behm, Frederique M., 5,383,478, Cl. 131-274.000.

Bekki, Toshihiko: *See*—
Hirano, Hirofumi; Bekki, Toshihiko; Kashimura, Makoto; Kiyohara, Takehiko; Nitta, Tetsuhiro; and Kimura, Tetsuo, 5,384,586, Cl. 346-134.000.

Belcourt, Ronald H., Jr.: *See*—
Carpentiere, Richard P.; Colligan, Francis D.; Belcourt, Ronald H., Jr.; and Giordano, Giuseppe, 5,383,902, Cl. 606-224.000.

Bell Atlantic Network Services, Inc.: *See*—
Wheeler, Barbara L.; Heatwole, Earnest L., Jr.; McGinley, Maureen T.; Seikaly, Richard M.; and Craig, Bernard J., 5,384,835, Cl. 379-94.000.

Bell Communications Research, Inc.: *See*—
Grinberg, Dennis N.; Rajagopalan, Sivaramakrishnan; Venkatesan, Ramarathnam; and Wei, Victor K.-W., 5,384,568, Cl. 341-51.000.

Bell, Ted: *See*—
Robbins, Edward S., III; and Bell, Ted, 5,384,138, Cl. 426-111.000.

Bellac, Alphonse H. Wind-powered electricity generating system including wind energy storage. 5,384,489, Cl. 290-44.000.

Bellotti, Vittorio: *See*—
Bastioli, Catia; Bellotti, Vittorio; Romano, Giancarlo; and Tosin, Maurizio, 5,384,170, Cl. 428-34.100.

Beloff, Marvin; and Pappas, Statis J. Sanding block. 5,383,308, Cl. 451-519.000.

Belt, Roger F.; and Inga, John B., to Litton Systems, Inc. Reversible method of magnetic film annealing. 5,384,156, Cl. 427-127.000.

Benuform GmbH: *See*—
Kiesel, Gerd H.; Blume, Wilfried; and Meyer, Dieter, 5,383,815, Cl. 454-137.000.

Bennett, David E.; and Hopman, Jeffrey G., to Gas Research Institute. Sensor and method for detecting misfires in internal combustion engines. 5,383,350, Cl. 73-35.000.

Bennett, George J., to WangDAT, Inc. PI or PID control loop with self-limiting integrator. 5,384,526, Cl. 318-610.000.

Bennett, Tommy L.: *See*—
Heileman, David W., Jr.; Bennett, Tommy L.; Kruesi, Frederick C.; and Latimer, Robert A., 5,384,829, Cl. 379-67.000.

Benson, David K.; Crandall, Richard S.; Deb, Satyendra K.; and Stone, Jack L., to Midwest Research Institute. Stand-alone photovoltaic (PV) powered electrochromic window. 5,384,653, Cl. 359-270.000.

Berg, Charles J.: *See*—
Roe, Donald C.; Berg, Charles J.; and Lahrman, Frank H., 5,384,179, Cl. 428-192.000.

Berg, N. Edward. Process for fabricating printed circuit boards. 5,384,230, Cl. 430-313.000.

Bergetz, Carl A., to Peerless Industries, Inc. Television support member security mounting assembly. 5,383,641, Cl. 248-425.000.

Bergmann, Ernest E., to AT&T Corp. Quasi-hermaphroditic-type optical fiber connection. 5,384,876, Cl. 385-64.000.

Berisko, Daniel W.: *See*—
Tseng, Shiaw C.; Berisko, Daniel W.; and Babu, Manyam, 5,384,111, Cl. 423-242.100.

Berkley, Inc.: *See*—
Houser, Guy M.; and Sandman, Robert B., Jr., 5,384,085, Cl. 264-313.000.

Berkowitz, Phillip T.: *See*—
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Bernad: *See*—
Weingarten, Zvi, 5,383,646, Cl. 251-61.100.

Bernard Welding Equipment Company: *See*—
Raloff, Valgene E.; Britto, Frank J., Jr.; and Jones, Glen A., 5,384,447, Cl. 219-137.310.

Berndt, Dieter R.; and Smith, Brian P. Method and device for enveloping and disinfecting of sharp instruments. 5,383,862, Cl. 604-187.000.

Berrens, Lubertus, to Laboratorios Leti S.A. Method for the isolation of primary-toxic compounds or allergens from plant material. 5,384,395, Cl. 530-379.000.

Berry, Michael N.; Town, Michael-Harold; Krause, Georg-Burkhard; and Herrmann, Uwe, to Boehringer Mannheim GmbH; and Flinders University of South Australia, The. Determination of ions in fluids by a process involving displacement of indicator ions. 5,384,246, Cl. 435-22.000.

Berry, Michael N.; Town, Michael-Harold; Krause, Georg-Burkhard; and Herrmann, Uwe, to Boehringer Mannheim GmbH; and Flinders University of South Australia, The. Determination of sodium ions in fluids. 5,384,247, Cl. 435-22.000.

Berry, Richard C., to Cooper Industries, Inc. Conduit liner. 5,383,688, Cl. 285-49.000.

Bersia, Robert M. Helical spiral balloon catheter. 5,383,856, Cl. 604-101.000.

Berson, William; and Hubbard, David W., to Pitney Bowes Inc. Thermal printing postage dispensing device having security features and method of using. 5,383,732, Cl. 400-120.010.

Berson, William; and Marcus, James R., to Pitney Bowes Inc. System and apparatus for controlled production of a secure identification card. 5,384,846, Cl. 380-23.000.

Bertani, Alberto, to Elesa S.p.A. Column-type level indicator for tanks and the like, comprising means for its outward application. 5,383,360, Cl. 73-323.000.

Bertholon, Gerard: *See*—
Michalon, Joseph; and Bertholon, Gerard, 5,383,306, Cl. 451-106.000.

Bertini, Millo. Apparatus for enhancing venous circulation and massage. 5,383,842, Cl. 601-151.000.

Bertrand Faure Ltd.: *See*—
Presaji, Gulam, 5,383,710, Cl. 297-378.120.

Bertrand, Pierre; Birangi, Tourang; and Nemer, Joseph C., to Elsag International N.V. Dynamic temperature compensation for a pressure cell. 5,383,367, Cl. 73-708.000.

Bessc, Michael E.; Ihns, Deborah A.; and Olson, Keith E., to Ecolab Inc. Stabilized detersive-system containing water soluble film article. 5,384,364, Cl. 252-90.000.

Besson, Rene, to Montres Rolex S.A. Perpetual calendar watch with analog time display. 5,384,754, Cl. 368-28.000.

Beynon, Kenneth L.: *See*—
Cross, James B.; Beynon, Kenneth L.; and Hampton, Cashman R. S. M., 5,383,951, Cl. 71-61.000.

Bezos, Angel P.: *See*—
Fernandez, Emilio A.; and Bezos, Angel P., 5,383,717, Cl. 303-3.000.

Bianca, Robert R.: *See*—
Lynch, William R.; Smith, Larry D.; Wiant, Matthew J.; Bianca, Robert R.; and Kelley, David, Jr., 5,384,148, Cl. 426-632.000.

Bianchi, Ralph A.; Sarnacki, Walter P.; and Watkins, Robert L., to JBF Scientific Company, Inc. Skimmer having a retractable dynamic inclined plane. 5,384,043, Cl. 210-242.300.

Biber, Klaus, to Carl-Zeiss-Stiftung. Coupling for connecting a surgical microscope to a stand. 5,383,637, Cl. 248-291.000.

Bible, Don W.; Crutcher, Richard I.; Sohns, Carl W.; and Maddox, Stephen R., to Martin Marietta Energy Systems, Inc. Portable microwave instrument for non-destructive evaluation of structural characteristics. 5,384,543, Cl. 324-644.000.

Bicknell, William H.: *See*—
Neugebauer, Constantine A., deceased; Korman, Charles S.; Bates, David A.; Bicknell, William H.; and Daum, Wolfgang, 5,384,691, Cl. 361-794.000.

Bigler, Michael; Hommann, Edgar; and Myerly, Scott, to Bausch & Lomb Incorporated. Electric toothbrush. 5,383,242, Cl. 15-22.100.

Binder, Klaus: *See*—
Jorsch, Rainer; Binder, Klaus; and Furuhama, Shoichi, 5,383,647, Cl. 251-63.600.

Binder, Richard R. W.; Castillon, Daniel J.; and Schneider, Jeffrey J., to Globe-Union Inc. Battery plates having rounded lower corners. 5,384,217, Cl. 429-225.000.

Binder, Werner: *See*—
Poetsch, ike; Binder, Werner; and Geelhaar, Thomas, 5,384,072, Cl. 252-299.630.

Binnen, Georg. Multiple-color tampon printing machine. 5,383,398, Cl. 101-41.000.

Binney & Smith, Inc.: *See*—
Craig, Michael S., 5,383,954, Cl. 106-19.000.

Bioject Inc.: *See*—
McKinnon, Charles N., Jr.; Peterson, Steven F.; Smith, Paul E.; Nakagawa, Takaaki; and Bartholomew, Victor L., 5,383,851, Cl. 604-68.000.

Birangi, Tourang: *See*—
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Birkle, Siegfried: *See*—
Sezi, Recai; Borndoerfer, Horst; Leuschner, Rainer; Sebald, Michael; Birkle, Siegfried; and Ahne, Hellmut, 5,384,220, Cl. 430-8.000.

Bira, Richard. Hurricane shutter reinforcement and method. 5,383,315, Cl. 52-202.000.

Bishop, Julie C.; Chau, Dominic M.; Donald, Dennis S.; Fodor, Ladovic; Pangratz, William R.; Russo, Glenn M.; and Shock, John R., to Du Pont de Nemours, E. I., and Company. Process for rapid access development of silver halide films using pyridinium as development accelerators. 5,384,232, Cl. 430-440.000.

Bissett, Donald L.; Bush, Rodney D.; and Chatterjee, Ranjit, to Procter & Gamble Company, The. Photoprotection compositions comprising a radical scavenging compound and an anti-inflammatory agent. 5,384,115, Cl. 424-59.000.

Bissonnette, Claude. Gas flow control assembly for a gas-saving oxy/fuel cutting torch. 5,383,650, Cl. 266-48.000.

Bjork, Paul E., to Honeywell Inc. Self-powered electro-optic rotational position sensor with magnetic pickup. 5,384,534, Cl. 324-160.000.

Black, Alistair D.: *See*—
Chu, David C.; and Black, Alistair D., 5,384,541, Cl. 324-617.000.

Black Clawson Company, The: *See*—
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Black & Decker Inc.: *See*—
Garuglieri, Andrea; and Folci, Giovanni A., 5,383,382, Cl. 83-471.300.
Garuglieri, Andrea, 5,383,383, Cl. 83-666.000.
Pearce, Phillip W., 5,383,977, Cl. 144-286.00A.

Black, Kevin: *See*—
Keller, David A.; Davidson, Frank; Black, Kevin; and Webb, George, 5,384,880, Cl. 385-109.000.

Blake-Coleman, Barrie, to Public Health Laboratory Service Board. Densitometer. 5,383,349, Cl. 73-32.00A.

Bland, Todd A. Blood collection and testing device. 5,383,885, Cl. 606-182.000.

Blankenau, Paul D.: *See*—
Zipes, Dugles P.; Ulrich, Clare P.; Blankenau, Paul D.; and Terrell, William M., 5,383,922, Cl. 607-122.000.

Blasband, Andrew J., to Applied Biosystems, Inc. Notched spacer for slab-gel electrophoresis. 5,384,025, Cl. 204-299.00R.

Blasen, John E.; and Carroll, Tony G., to Pyrotek, Inc. Aluminum coil annealing tray support pad. 5,383,651, Cl. 266-274.000.

Blatchford, Jo Ann; DeFazio, Pamela L.; and Young, Joel K., to AT&T Corp. Telecommunications system SS7 signaling interface with signal transfer capability. 5,384,840, Cl. 379-229.000.

Blazek, Pavel; and Stark, Gerhard, to STAMA Maschinenfabrik, GmbH. Method and machine for performing a tool change. 5,383,832, Cl. 483-1.000.

Bleacher, Gary W., to American Cyanamid Company. Animal restraint device. 5,383,425, Cl. 119-729.000.

Blier, Darren J.; and Jensen, Eric J., to United States of America, Navy. Attachment device for tethered transducer. 5,384,751, Cl. 367-15.000.

Bliss, Terry L., to Black Clawson Company, The. Apparatus and method for thickening pulp and paper stock. 5,384,014, Cl. 162-317.000.

Block, Charles; and Mintz, Leon, to Joseph Galkin Corporation. Top feed system with toothed belt and clutch. 5,383,418, Cl. 112-304.000.

Bloomberg, Dan S.: *See*—
Huttenlocher, Daniel P.; Kaplan, Ronald M.; Withgott, M. Margaret; Cass, Todd A.; Halvorsen, Per-Kristian; Bloomberg, Dan S.; and Rao, Ramana B., 5,384,863, Cl. 382-9.000.

Bloomfield, Marc A., to International Business Machines Corporation. Method of transferring programs from action oriented GUI paradigm to object oriented GUI paradigm. 5,384,911, Cl. 395-157.000.

Blum, Mel, to Burlington Bio-Medical & Scientific Corp. Attractants and lures for cockroaches and palmettos. 5,384,120, Cl. 424-84.000.

Blum, Michael: *See*—
Mattingly, William R.; Blum, Michael; and Nasser, Christopher, 5,383,272, Cl. 29-876.000.

Blume, Wilfried: *See*—
Kiesel, Gerd H.; Blume, Wilfried; and Meyer, Dieter, 5,383,815, Cl. 454-137.000.

Blumenfeld, Nava: *See*—
Ciechanover, Aaron J.; Blumenfeld, Nava; and Gonen, Hedva, 5,384,255, Cl. 435-193.000.

Blumenstock, Andreas, to Robert Bosch GmbH. Tank venting system for an internal combustion engine. 5,383,438, Cl. 123-520.000.

Board of Regents, The University of Texas System: *See*—
Osborne, C. Kent; and DeGregorio, Michael W., 5,384,260, Cl. 436-64.000.
Perez-Soler, Roman; Hsu, Insook; and Khokhar, Abdul R., 5,384,127, Cl. 424-450.000.

Boardman, James E.: *See*—
Banks, Simon A.; Adderley, Colin I.; Fowler, John O.; and Boardman, James E., 5,383,518, Cl. 165-166.000.

Bober, Reinhard; and Spielmann, Walter, to Glatt Ingenieurtechnik GmbH. Process of producing solid sodium cyanide. 5,383,940, Cl. 25-313.0PB.

Bobrosky, Vincent L.: *See*—
Hampton, Leonard B.; Bobrosky, Vincent L.; Burress, Paul J.; and Spence, Hollis, 5,383,252, Cl. 15-325.000.

BOC Group, Inc., The: *See*—
Yap, Loo T., 5,383,782, Cl. 432-22.000.

BOC Group plc, The: *See*—
Thwaites, Michael J., 5,384,021, Cl. 204-298.210.

Bock, Allyn P., to Caterpillar Inc. Air inlet aftercooler mounting and sealing system. 5,383,439, Cl. 123-563.000.

Bock, Harald; Helfrich, Wolfgang; and Heppke, Gerd, to Hoechst Aktiengesellschaft. Switchable columnar liquid-crystalline systems. 5,384,068, Cl. 252-299.010.

Bock, Peter D.; and O'Rourke, Glenn R., to Cadillac Gage Textron Inc. Anti-roll system for wheeled vehicles. 5,383,680, Cl. 280-714.000.

Bodelet, Philippe: *See*—
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Boehnstedt, Werner: *See*—
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Boehringer Mannheim GmbH: *See*—
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Berry, Michael N.; Town, Michael-Harold; Krause, Georg-Burkhard; and Herrmann, Uwe, 5,384,247, Cl. 435-22.000.

Boesch, Paul, to H. Weidmann AG. Water outlet head for a sanitary fitting. 5,383,604, Cl. 239-447.000.

Bogut, Henry A.: *See*—
Patino, Joseph; Bogut, Henry A.; and Hernandez, Pedro P., 5,384,459, Cl. 250-229.000.

Bohls, Fred O., to Runge Thomas M. External plate valves for controlling blood flow through a shunt of a cardiopulmonary bypass pump. 5,383,839, Cl. 600-16.000.

Bohn, Susan M.: *See*—
Peimer, Clayton; and Bohn, Susan M., 5,383,476, Cl. 128-849.000.

Boike, Randy J., to Teleflex Incorporated. Rotatable isolated end fitting. 5,383,377, Cl. 74-502.000.

Bolanos, Henry: *See*—
Green, David T.; Bolanos, Henry; Young, Wayne P.; McGarry, Richard A.; Heaton, Lisa W.; and Ratcliff, Keith, 5,383,881, Cl. 606-143.000.

Bolioli, Giuseppe F.; and Prella, Giovanni, to Nestec S.A. Process for draining curd. 5,384,137, Cl. 426-36.000.

Bolliveau, Michel: *See*—
Cardon, Alain; Kerdiles, Yvon; Bolliveau, Michel; Ansel, Denis; and Debuigne, Jean, 5,383,892, Cl. 606-198.000.

Bolz, Joachim; Bata, Atilla; and Seeger, Herbert, to Merck Patent Gesellschaft mit beschrankter Haftung. Stabilized dopaminergic compositions. 5,384,323, Cl. 514-339.000.

Bolza-Schunemann, Claus A.; and Schaede, Johannes G., to Koenig & Bauer, Akteingesellschaft. Method for quality control of printed sheets. 5,384,859, Cl. 382-1.000.

Bond, Stephen P.: *See*—
McWhinnie, William R.; and Bond, Stephen P., 5,384,295, Cl. 502-5.000.

Bonet, Luis A.: *See*—
Yatim, David; Bonet, Luis A.; Corleto, Jose G.; and Floyd, Michael D., 5,384,807, Cl. 375-27.000.

Bonte, Frederic; Meybeck, Alain; and Marechal, Christian, to LVMH Recherche. Composition based upon hydrated lipidic lamellar phases or liposomes containing at least one derivative of labdane. 5,384,126, Cl. 424-450.000.

Borndoerfer, Horst: *See*—
Sezi, Recai; Borndoerfer, Horst; Leuschner, Rainer; Sebald, Michael; Birkle, Siegfried; and Ahne, Hellmut, 5,384,220, Cl. 430-8.000.

Boschker, Donald A.: *See*—
Johnson, William S.; Payne, Edward A.; Boschker, Donald A.; and Phipps, Benita W., 5,384,850, Cl. 380-52.000.

Bossaert, Jean; Bodelet, Philippe; and Tomietto, Thierry, to GE Medical Systems S.A. Device for the filtering of a video signal. 5,384,602, Cl. 348-628.000.

Boust, Jacques; Knosp, Bernard; Percheron-Guegan, Annick; and Canet, Olivier, to Saft. Hydridable material for the negative electrode of a nickel-hydride storage cell. 5,384,209, Cl. 429-59.000.

Boulanger, Jean-Luc: *See*—
Khuri-Yakub, Butrus; Ligneul, Patrice; and Boulanger, Jean-Luc, 5,383,369, Cl. 73-861.290.

Boulton, Jonathan M.: *See*—
Teowee, Gimtong; Boulton, Jonathan M.; and Uhlmann, Donald R., 5,384,294, Cl. 501-134.000.

Boulton, Michael L.: *See*—
Bays, Rodney; Boulton, Michael L.; Pascaloff, John H.; Stalcup, Gregory C.; and Vu, Dai N., 5,383,875, Cl. 606-1.000.

Bourgon, Jean-Pierre G.: *See*—
Lopatin, Andrew J.; Naaman, Antoine R.; and Bourgon, Jean-Pierre G., 5,384,845, Cl. 380-9.000.

Bovenschen, Dirk A.; and Goossens, Rudolf G., to Lantor B.V. Conducting reinforced plastics. 5,384,185, Cl. 428-235.000.

Bowen, David C.; and Long, Jerry A., to Molex Incorporated. Electrical connector with improved strain relief means. 5,383,796, Cl. 439-469.000.

Bowen, Mark E. C.: *See*—
Jacobs-Cook, Alan J.; Frere, Peter E. M.; and Bowen, Mark E. C., 5,384,872, Cl. 385-31.000.

Bowers, Mark C.: *See*—
Katerberg, James A.; and Bowers, Mark C., 5,384,583, Cl. 347-19.000.

Bowles Fluidics Corporation: *See*—
Stouffer, Ronald D., 5,383,781, Cl. 431-2.000.

Bown, Richard: *See*—
Husband, John C.; Bown, Richard; and Drage, Pamela G., 5,384,013, Cl. 162-168.100.

Bowsky, Benjamin; and Sciuto, George J., to Emerson Electric Co. In-line sight indicator. 5,383,338, Cl. 62-125.000.

Boyd, Brent A., to Xerox Corporation. Copy waiting machine interrupt slot mode. 5,384,633, Cl. 355-314.000.

Boyes, Robert N.; Tice, Thomas R.; Gilley, Richard M.; and Pledger, Kenneth L., to Innovata Biomed Limited. Pharmaceutical formulations comprising microcapsules. 5,384,133, Cl. 424-501.000.

BP Chemicals (Additives) Limited: *See*—
Cane, Charles; Crawford, John; and O'Connor, Sean P., 5,384,053, Cl. 252-18.000.

Bradshaw, Madeline J.: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chau, Lawrence K. M.; Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., 5,384,071, Cl. 252-299.630.

Brady, Thomas W.: *See*—
McCloskey, William D.; and Brady, Thomas W., 5,383,339, Cl. 62-238.500.

Brady, William J. Methods for rock mining with non-coring rotary tools. 5,383,526, Cl. 175-57.000.

Brake, Bobby G.: *See*—
Onan, David D.; Terry, Dralen T.; and Brake, Bobby G., 5,383,521, Cl. 166-293.000.

Brand, Rolf A.; Hofmann, Hans; and Hildebrandt, Jurgen, to Deutsche Aerospace AG. Cell structure for electrolyzer units and fuel cells. 5,384,208, Cl. 429-34.000.

Brandauer, Otto; and Goth, Gerhard, to Filterwerk Mann & Hummel GmbH. Tube switch. 5,383,493, Cl. 137-625.460.

Brannan, Ann; Burhenne, Roseann; Delustro, Frank A.; Smestad, Thomas L.; Fries, Louis; and Orland, Rees M., to Collagen Corporation. Method for treating fine superficial facial lines. 5,383,930, Cl. 623-11.000.

Brasilter Industria e Commercio Ltd.: *See*—
de Souza, Dacio M., 5,384,032, Cl. 210-104.000.

Brasserie Du Cardinal Fribourg S.A.: *See*—
Caluwaerts, Henri J. J., 5,384,135, Cl. 426-14.000.

Bratieres, Jean-Yves: *See*—
Labitte, Pierre V. A.; Bratieres, Jean-Yves; Grenot, Michel; and Prache, Brigitte, 5,384,542, Cl. 324-642.000.

Brehier, Jacques, to Ela Medical. Extractable cardiac probe and its application procedure. 5,383,924, Cl. 607-126.000.

Brennan, Thomas: *See*—
Moyal, Miki; Brennan, Thomas; and Vance, Gene, 5,384,727, Cl. 363-96.000.

Brennen, Michael B.: *See*—
Moran, Steven A.; and Brennen, Michael B., 5,384,696, Cl. 363-40.000.

Brenaki, Edwin F.; Patel, Dhaval C.; and Rovnyak, Richard M., Sr., to AT&T Corp. Telecommunications switch with integral feature installation capability. 5,384,823, Cl. 379-10.000.

Brentwood Industries, Inc.: *See*—
Rye, Palle, 5,384,178, Cl. 428-182.000.

Breteau, Jean-Marc: *See*—
Pocholle, Jean-Paul; Breteau, Jean-Marc; Papuchon, Michel; and Puech, Claude, 5,384,801, Cl. 372-43.000.

Brezny, Rasto, to W. R. Grace & Co.-Conn. Porous ceramic beads. 5,384,290, Cl. 501-81.000.

Bridges, Donald Y.; and Fisher, Charles W., to Bridges, Donald Y. Coupling with offset closure. 5,383,496, Cl. 138-99.000.

Bridgestone Corporation: *See*—
Sato, Kiyoshi; and Kohno, Yoshihide, 5,383,507, Cl. 152-527.000.
Siegenthaler, Karl J., 5,383,992, Cl. 156-117.000.
Siegenthaler, Karl J., 5,384,084, Cl. 264-237.000.

Briggs & Stratton Corporation: *See*—
Fiorenza, John A., II, 5,383,433, Cl. 123-416.000.

Brimmell, Victoria: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chau, Lawrence K. M.; Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., 5,384,071, Cl. 252-299.630.

Bringans, Ross D.: *See*—
Welch, David F.; Waarts, Robert G.; Major, Jo S.; Bringans, Ross D.; Fork, David K.; Connell, G. A. Neville; and Thornton, Robert L., 5,384,797, Cl. 372-23.000.

Brinkschroeder, Harald: *See*—
Fussnegger, Wolfgang; and Brinkschroeder, Harald, 5,383,592, Cl. 228-135.000.

Brisay Maschinen-GmbH: *See*—
Schmitt, Werner, 5,383,291, Cl. 38-31.000.

Brisken, Axel F.: *See*—
Jang, Yue-Teh; and Brisken, Axel F., 5,383,460, Cl. 128-660.030.

British Aerospace plc: *See*—
Angel, Robert G., 5,383,332, Cl. 60-228.000.

British Technology Group Limited: *See*—
McWhinnie, William R.; and Bond, Stephen P., 5,384,295, Cl. 502-5.000.

British Telecommunications public limited company: *See*—
Cameron, Ian R., 5,384,833, Cl. 379-67.000.
Kashyap, Raman; and Campbell, Robert J., 5,384,884, Cl. 385-129.000.
Stentiford, Frederick W.; and Steer, Martin G., 5,384,701, Cl. 364-419.030.

Britto, Frank J., Jr.: *See*—
Raloff, Valgene E.; Britto, Frank J., Jr.; and Jones, Glen A., 5,384,447, Cl. 219-137.310.

Britton, Barry K.; Hill, Dwight D.; and Oswald, William A., to AT&T Corp. Low-skew signal routing in a programmable array. 5,384,497, Cl. 326-44.000.

Brocke, Rolf; and Glagow, Klaus, to Metzeler Automotive Profiles GmbH. Process for the manufacture of a rigid cover for a vehicle roof and cover manufactured according to the process. 5,383,991, Cl. 156-100.000.

Brodsack, James W.: *See*—
Deutsch, Edward A.; Goedemans, Wilhelmus T.; Maria de Jong, Martinus T.; Miller, Kathleen M.; and Brodsack, James W., 5,384,113, Cl. 424-1.690.

Broderick, Melissa: *See*—
Rohr, William; Broderick, Melissa; and Gonzalez, Tony, 5,383,938, Cl. 623-22.000.

Brosius, Sibylle; Seiler, Erhard; Schwager, Harald; Kreas, Gerhard; and Schlemmer, Lothar, to BASF Aktiengesellschaft. Partially cross-linked composition comprising polymers of propylene and of ethylene. 5,384,369, Cl. 525-193.000.

Brost, Dale F.: *See*—
Marrelli, John D.; Brost, Dale F.; Siddiqui, Farhan; Pepin, Lisa L.; and Stafford, Joseph D., 5,383,353, Cl. 73-61.430.

Brother Kogyo Kabushiki Kaisha: *See*—
Hattori, Shigenori; Ishida, Kazuko; and Narukawa, Miyuki, 5,383,731, Cl. 400-76.000.
Hayashi, Kazutoshi, 5,383,413, Cl. 112-121.120.
Nishimura, Soichiro, 5,383,578, Cl. 222-108.000.
Okumura, Takashi, 5,384,585, Cl. 346-76.0PH.

Brotzmann, John M., to Heidelberg Druckmaschinen AG. Actuating device for clamping arrangement for printing plates in rotary printing presses. 5,383,401, Cl. 101-415.100.

Brouwer, Emilio A. Specimen container. 5,384,097, Cl. 422-102.000.

Brown, Ben G.; Kralmann, John A.; Liesen, Christopher D.; and Purdome, Mark J., to AT&T Corp. Computer controlled test facility for a telecommunication switch. 5,384,822, Cl. 379-10.000.

Brown, David L.; Aghasian, Motjaba; and Marko, Paul D., to Motorola, Inc. Method and apparatus for synchronization in a wireless telephone system. 5,384,828, Cl. 379-61.000.

Brown, Jerry R., to International Business Machines Corporation. Precision automatic scrolling for an image display system. 5,384,909, Cl. 395-155.000.

Brown, John, to Ebbert Engineering, Inc. Blind riveting system. 5,383,262, Cl. 29-243.525.

Brown, Roger A., to Puretan International, Inc. Support member for a tanning bed or comparable device. 5,383,916, Cl. 607-91.000.

Brown, Roy L., to Ortho-Flex Saddle Co., Inc. Saddle tree assembly having multiple progressively loaded adjustments. 5,383,328, Cl. 54-48.300.

Brown, Samuel; Phelan, Michael J.; and Werthessen, Nicholas M., to Polaroid Corporation. Wrap around template for film cassette. 5,384,610, Cl. 354-108.000.

Browning, James A. Flame sprayed coatings of material from solid wire or rods. 5,384,164, Cl. 427-449.000.

Brugger, Hubert; Enderle, Karl-Heinz; Hess, Harald; Isele, Frank; Senser, Horst; and Wenske, Rolf, to Sulzer-Escher Wyss GmbH. Roll for heating or cooling running webs. 5,383,833, Cl. 492-16.000.

Brugger, Wilhelm, to Dentalwerk Burmoos Gesellschaft m.b.H. Push-button operated chucking device for a dental angle piece. 5,383,785, Cl. 433-129.000.

Brunson, Welton K.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 5,383,450, Cl. 128-206.230.

Brunswick Corporation: *See*—
Donahue, Raymond J.; Cleary, Terrance M.; and Stinson, Terry D., 5,383,429, Cl. 123-197.300.

Brush, Jay P.: *See*—
Trnil, George C.; and Brush, Jay P., 5,383,776, Cl. 425-135.000.

Bruss, Jack: *See*—
Heiman, Jerome R.; and Bruss, Jack, 5,384,212, Cl. 429-143.000.

Bryan, Neil: *See*—
Armour, David G.; England, Johnathan G.; Bryan, Neil; and Van der Berg, Jakob A., 5,384,465, Cl. 250-492.210.

Bubon, Frank J.; Paul, Kenneth J.; and Pinkerton, Steven J., to Emhart Glass Machinery Investments Inc. Glass forehearth. 5,383,949, Cl. 65-346.000.

Buchert, Janusz. Method, apparatus and procedure for non-invasive monitoring blood glucose by measuring the polarization ratio of blood luminescence. 5,383,452, Cl. 128-633.000.

Buchholz, William. Tool trailer with open end. 5,383,698, Cl. 296-24.100.

Buchko, Christopher J.: *See*—
Winkler, James L.; Fodor, Stephen P. A.; Buchko, Christopher J.; Ross, Debra A.; and Aldwin, Lois, 5,384,261, Cl. 436-518.000.

Buchholz, Richard D., to St. Louis University. System for indicating the position of a surgical probe within a head on an image of the head. 5,383,454, Cl. 128-653.100.

Budde, Anna M.; Sand, I. Daniel; Dunn, Alan R.; and Kuo, Chung M., to BASF Corporation. Cellulose esters modified with anhydrides of dicarboxylic acids and their use in waterborne basecoats. 5,384,163, Cl. 427-385.500.

Budinger, William D. Poromeric material having uniformly distributed electrets for maintaining an electrostatic charge. 5,384,337, Cl. 521-68.000.

Buell, Kenneth B.: *See*—
Carlin, Edward P.; Buell, Kenneth B.; Lavoa, Gary D.; and Daniels, Dean J., 5,383,871, Cl. 604-385.200.

Buendia, Jean; Godard, Jean-Yves; Mackiewicz, Philippe; and Richard, Christian, to Roussel-Uclaf. Preparation process for 20-keto-21(S) hydroxy steroid compounds and intermediates. 5,384,419, Cl. 552-556.000.

Buess, Gerhard; Huss, Kirsten; Hempel, Sven; and Schuldt, Thomas, to Ethicon, Inc. Ligature and ligature applying endoscopic instrument. 5,383,882, Cl. 606-157.000.

Buffard, Jean-Pierre: *See*—
Gardaz, Claudine; and Buffard, Jean-Pierre, 5,383,264, Cl. 29-527.200.

Bullis, Stephen J.: *See*—
Wolff, Peter C.; Bullis, Stephen J.; and Hayes, Larry W., 5,383,389, Cl. 89-33.040.

Bulson, Jeffry M.; and Rau, C. Peter, to Emerson Electric Co. Low impedance surge protective device cables for power line usage. 5,384,429, Cl. 174-102.00R.

Bulucea, Constantin; Dermirlioglu, Esin; and Aronowitz, Sheldon, to National Semiconductor Corporation. CMOS latchup suppression by localized minority carrier lifetime reduction. 5,384,477, Cl. 257-372.000.

Bundo, Mutsuro. Omnidirectional propelling type airship. 5,383,627, Cl. 244-26.000.

Bunker, Stephen N.: *See*—
Armini, Anthony J.; and Bunker, Stephen N., 5,383,934, Cl. 623-16.000.

Bur, Anthony J.; Wang, Francis W.; Thomas, Charles L.; and Rose, Joseph L., to United States of America, Commerce. Method for detecting thermodynamic phase transitions during polymer injection molding. 5,384,079, Cl. 264-21.000.

Burchett, Lori W.: *See*—
Burchett, Mark T.; and Burchett, Lori W., 5,383,906, Cl. 606-236.000.

Burchett, Mark T.; and Burchett, Lori W. Nursing bottle with medication dispenser. 5,383,906, Cl. 606-236.000.

Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Volz, Peter; Beck, Erhard; Maas, Joachim; Dinkel, Peter; and Risch, Stefan, to Alfred Teves GmbH. Brake system with a device for controlling both brake slip and traction slip. 5,383,718, Cl. 303-113.200.

Burgess, Keith E., to Techniweave, Inc. Fluid separation devices and methods of making same. 5,384,044, Cl. 210-346.000.

Burhenne, Roseann: *See*—
Brannan, Ann; Burhenne, Roseann; Delustro, Frank A.; Smestad, Thomas L.; Fries, Louis; and Orland, Rees M., 5,383,930, Cl. 623-11.000.

Burke, James; and Linck, Ed, to Pyropower Corporation. Loop seal expansion joint. 5,383,316, Cl. 52-218.000.

Burke, James E., to Picker International, Inc. Journal bearing and radiation shield for rotating housing and anode/stationary cathode X-ray tubes. 5,384,820, Cl. 378-135.000.

Burlington Bio-Medical & Scientific Corp.: *See*—
Blum, Mel, 5,384,120, Cl. 424-84.000.

Burlington Industries, Inc.: *See*—
Padgett, William P., III, 5,383,415, Cl. 112-266.200.

Burnier, John P.: *See*—
Barker, Peter L.; Burnier, John P.; and Thorsett, Eugene D., 5,384,309, Cl. 514-11.000.

Burns, Chris R.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Burns, James A., to Becton, Dickinson and Company. Microcollection tube assembly. 5,384,096, Cl. 422-102.000.

Burress, Paul J.: *See*—
Hampton, Leonard B.; Bobrosky, Vincent L.; Burress, Paul J.; and Spence, Hollis, 5,383,252, Cl. 15-325.000.

Busato, Murray F.: *See*—
Cook, John E.; Busato, Murray F.; Casey, Gary L.; and Hanson, John D., 5,383,437, Cl. 123-520.000.

Buschulte, Rainer, to Heidelberger Druckmaschinen Aktiengesellschaft. Device for adjusting the supply of ink in the various ink zones of a printing press. 5,383,395, Cl. 101-365.000.

Buser, Hans-Peter: *See*—
Karrer, Friedrich; Buser, Hans-Peter; Ramos, Gerardo; Rindlisbacher, Alfred; Venanzi, Luigi M.; and Ward, Thomas R., 5,384,416, Cl. 549-453.000.

Bush, Rodney D.: *See*—
Bissett, Donald L.; Bush, Rodney D.; and Chatterjee, Ranjit, 5,384,115, Cl. 424-59.000.

Bushman, Boyd B., to Lockheed Corporation. Laser apparatus. 5,384,802, Cl. 372-89.000.

Butter, Bryce G.; Houseman, James D.; and Kovac, Stephen R., to Saf-T-Loc, Inc. Foot actuated wheel brake. 5,383,536, Cl. 188-1.120.

Buttram, Jonathan D., to Babcock & Wilcox Company, The. Crack orientation determination and detection using horizontally polarized shear waves. 5,383,365, Cl. 73-598.000.

Buyens, Marc O. R. G. Diamond wire saws. 5,383,443, Cl. 125-21.000.

Byard, Robert B. Apparatus for securing a shopping cart. 5,383,639, Cl. 248-346.100.

C. Itoh Fine Chemical Co., Ltd.: *See*—
Nishiwaki, Atsushi; Ikemiya, Norihito; Uchiyama, Hiroshi; Inagaki, Hideo; Sawada, Yasuo; and Ogino, Kazumi, 5,384,167, Cl. 427-569.000.

C. R. Bard, Inc.: *See*—
Stevens-Wright, Debbie, 5,383,852, Cl. 604-95.000.

C-2, Inc.: *See*—
Koch, Richard C., 5,383,643, Cl. 248-447.000.

Cadillac Gage Textron Inc.: *See*—
Bock, Peter D.; and O'Rourke, Glenn R., 5,383,680, Cl. 280-714.000.

Caine, Donald R., to Camco Manufacturing, Inc. Hose end cap with pivotal lock. 5,383,494, Cl. 138-87.000.

Caines, Tony L.; and Junker, Michael L., to DSM Copolymer, Inc. Continuous process for producing adducted EPM or EPDM oil solution. 5,384,371, Cl. 525-285.000.

CalComp Inc.: *See*—
Abernethy, Brian, 5,384,554, Cl. 331-153.000.
Rockwell, Lynn H., 5,384,688, Cl. 361-736.000.

Calka, Andrzej; and Ninham, Barry W., to Australian National University, The. Ball milling apparatus. 5,383,615, Cl. 241-172.000.

Callegaro, Lanfranco: *See*—
Crescenzi, Vittorio; and Callegaro, Lanfranco, 5,384,400, Cl. 536-2.000.

Caluwaerts, Henri J. J., to Brasserie Du Cardinal Fribourg S.A. Process for the manufacture of an alcohol-free beer having the organoleptic properties of a lager type pale beer. 5,384,135, Cl. 426-14.000.

Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Signorini, Ernesto; and Ferri, Mario, to Isagro S.r.l. Heterobicyclic derivatives with fungicidal activity. 5,384,325, Cl. 514-361.000.

Camco International Inc.: *See*—
Daly, Jeffery E.; and Kepka, Patsy N., 5,383,525, Cl. 175-57.000.

Camco Manufacturing, Inc.: *See*—
Caine, Donald R., 5,383,494, Cl. 138-87.000.

Camelot Technologies, Inc.: *See*—
Nemphos, Speros P.; and Bedell, Stanley F., 5,384,879, Cl. 385-100.000.

Cameron, Charles: *See*—
Mank, Larry; Barthel, Yves; Cameron, Charles; and Sarrazin, Patrick, 5,384,040, Cl. 208-251.00R.

Cameron, Ian R., to British Telecommunications public limited company. Voice-operated service. 5,384,833, Cl. 379-67.000.

Camet Company: *See*—
Sheller, David T., 5,384,099, Cl. 422-174.000.

Campbell, Edward N.; and Keller, Thomas J., to Dana Corporation. Flexible non-metallic bearing liner for telescopic steering column. 5,383,811, Cl. 464-89.000.

Campbell, Lawrence A. Electrochemical membrane sensor. 5,384,029, Cl. 204-415.000.

Campbell, Robert J.: *See*—
Kashyap, Raman; and Campbell, Robert J., 5,384,884, Cl. 385-129.000.

Cane, Charles; Crawford, John; and O'Connor, Sean P., to BP Chemicals (Additives) Limited. Production of a lubricating oil additive concentrate. 5,384,053, Cl. 252-18.000.

Canet, Olivier: *See*—
Bouet, Jacques; Knosp, Bernard; Percheron-Guegan, Annick; and Canet, Olivier, 5,384,209, Cl. 429-59.000.

Cann, Brian G.; and Hampton, Richard C. Ice skate blade assembly and removeable runner for same. 5,383,674, Cl. 280-11.180.

Cannon, Gregory L., to Motorola, Inc. Method and apparatus for identifying duplicate data messages in a communication system. 5,384,565, Cl. 340-825.440.

Canon Kabushiki Kaisha: *See*—
Anayama, Hideki; Yoshihara, Toshiyuki; Ainoya, Hideyuki; and Hirano, Hidetoshi, 5,384,625, Cl. 355-211.000.
Aoshima, Chikara, 5,384,506, Cl. 310-49.00R.
Asaba, Tetsuo; and Makino, Kenji, 5,383,970, Cl. 118-726.000.
Hayakawa, Yasuyoshi; Komatsu, Teruo; Isobe, Hironobu; and Kubota, Atsushi, 5,383,655, Cl. 271-10.000.
Hirano, Hirofumi; Bekki, Toshihiko; Kashimura, Makoto; Kiyohara, Takehiko; Nitta, Tetsuhiro; and Kimura, Tetsuo, 5,384,586, Cl. 346-134.000.
Ikeda, Ikumasa, 5,384,581, Cl. 345-186.000.
Kaihara, Shoji; and Fukahori, Hidehiko, 5,384,612, Cl. 354-149.100.
Kajiwara, Norio, 5,384,624, Cl. 355-207.000.
Kanome, Osamu; Kamitakahara, Hirofumi; Yoshino, Hitoshi; Sato, Tetsuya; and Hayashi, Hisanori, 5,383,834, Cl. 492-25.000.
Kobayashi, Junji, 5,384,672, Cl. 360-71.000.
Kugoh, Harumi; Araya, Junji; Yano, Hideyuki; and Furuya, Tadashi, 5,384,626, Cl. 355-219.000.
Maeda, Mitsuru; and Yoshida, Tadashi, 5,384,868, Cl. 382-56.000.
Ogawa, Yukio; Fukushima, Hiroyuki; and Mizuno, Rikako, 5,384,609, Cl. 354-81.000.
Saika, Toshihiro; Mizutani, Hidemasa; Kaifu, Noriyuki; and Kameshima, Toshio, 5,384,456, Cl. 250-208.100.
Sato, Hiroaki; Okutomi, Masatoshi; Yamamoto, Hiroyuki; Tamura, Hideyuki; and Okazaki, Hiroshi, 5,384,900, Cl. 395-100.000.
Sugino, Osamu, 5,384,590, Cl. 346-153.100.
Takagi, Shinji; Tanaka, Hideki; Kimura, Tatsuo; and Ashiwa, Jun, 5,384,587, Cl. 347-41.000.
Takahashi, Tsutomu, 5,383,730, Cl. 400-76.000.
Takehara, Yoshifumi; Hayakawa, Kimiaki; and Ueda, Noriyoshi, 5,384,634, Cl. 355-323.000.
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, masashi; and Onuma, Tsutomu, 5,384,224, Cl. 430-106.000.
Uchikata, Yoshio; and Otnishi, Toshiyuki, 5,383,734, Cl. 400-227.200.
Yamagami, Taku, 5,384,644, Cl. 358-426.000.
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Yoshinaga, Kazuo; Kurabayashi, Yutaka; Ohnishi, Toshikazu; Futami, Yukiko; and Miyazaki, Takeshi, 5,384,069, Cl. 252-299.010.

Canstar Italia S.p.A.: *See*—
Nicoletti, Graziano, 5,383,258, Cl. 24-68.08K.

Cantillon, Daniel J.: *See*—
Binder, Richard R. W.; Cantillon, Daniel J.; and Schneider, Jeffrey J., 5,384,217, Cl. 429-225.000.

Capone, Christopher D.: *See*—
Heilman, Martin S.; Kolenik, Steve A.; Capone, Christopher D.; Parisi, Carl M.; Prem, Edward K.; and Speicher, Vernon L., 5,383,840, Cl. 600-17.000.

Carborundum Company, The: *See*—
Lebold, Alan R.; and Ten Eyck, John D., 5,384,188, Cl. 428-283.000.

Card, Robert A.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Cardiac Pacemakers, Inc.: *See*—
O'Phelan, Michael, 5,383,914, Cl. 607-38.000.

Cardini, Giuseppe; Lombardi, Massimo; and Tarchi, Mauro, to Axis USA, Inc. Methods and apparatus for winding armatures with improved balance. 5,383,619, Cl. 242-7.05B.

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Jang, Yue-Teh; and Brisken, Axel F., 5,383,460, Cl. 128-660.030.

Cardon, Alain; Kerdiles, Yvon; Boliveau, Michel; Ansel, Denis; and Debuigne, Jean, to Meadox France. Stent for transluminal implantation. 5,383,892, Cl. 606-198.000.

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Biber, Klaus, 5,383,637, Cl. 248-291.000.

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Carlsen, Stephen E., to Aldus Corporation. Method for generating a fast inverse table. 5,384,902, Cl. 395-131.000.

Carlson, Bryan L., to Eco Tek, Inc. Metal and fluorine values recovery from mineral ore treatment. 5,384,105, Cl. 423-65.000.

Carlson, Gene D.; and Dela Cruz, Alfredo R., to Frye Copystystems, Inc. Carbon paper and method for making same. 5,384,199, Cl. 428-488.100.

Carlson, James G.; and Anderson, Jeffrey T., to Minnesota Mining and Manufacturing Company. Vinyl-sulfonated and non-sulfonated hydroxy functional polyurethane copolymers prepared from macromonomers and their use in magnetic recording media. 5,384,362, Cl. 525-77.000.

Carlson, Robert H.; and Baker, Daniel L., to Unisys Corporation. Protective system for insertion/extraction of PC boards in a powered-up environment. 5,384,492, Cl. 307-147.000.

Carmichael, Kathleen M.: *See*—
Listigovers, Nancy A.; Martin, Trevor I.; Normandin, Sharon E.; Carmichael, Kathleen M.; Hamer, Gordon K.; and Sullivan, Donald P., 5,384,223, Cl. 430-59.000.
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Carmine, James L.; and Ryntz, Rose A., to Akzo Nobel N.V. Naphthenic acid esters as dispersing agents for pigment additives and products incorporating same. 5,383,965, Cl. 106-284.240.

Carolin, Roger A.: *See*—
Thomas, Huw K.; Carolin, Roger A.; Erhardt, Heinrich S.; and McConnell, Christopher F., 5,383,484, Cl. 134-184.000.

Carpenter, Gary L. Device for carrying elongated ski equipment. 5,383,587, Cl. 224-257.000.

Carpentiere, Richard P.; Colligan, Francis D.; Belcourt, Ronald H., Jr.; and Giordano, Giuseppe, to United States Surgical Corporation. Surgical needle-suture attachment for controlled suture release. 5,383,902, Cl. 606-224.000.

Carrie, Michel J.: *See*—
Woo, Ricky Ah-Mae; Carrie, Michel J.; Cilley, William A.; Masters, Ronald A.; Michael, Daniel W.; and Vos, Eddy, 5,384,063, Cl. 252-142.000.

Carroll, Tony G.: *See*—
Blasen, John E.; and Carroll, Tony G., 5,383,651, Cl. 266-274.000.

Cartonneries de Thulin S.A.: *See*—
Lammerant, Henri; and Lammerant, Philip, 5,383,553, Cl. 206-309.000.

Cartwright, Richard W.: *See*—
Warner, Charles E.; Cartwright, Richard W.; and Straughn, James M., 5,383,486, Cl. 137-15.000.

Casavant, Scott D.; and Perlman, Stuart S., to General Electric Company. Television image format conversion system including noise reduction apparatus. 5,384,599, Cl. 348-473.000.

Casey, Gary L.: *See*—
Cook, John E.; Busato, Murray F.; Casey, Gary L.; and Hanson, John D., 5,383,437, Cl. 123-520.000.

Casio Computer Co., Ltd.: *See*—
Otsuka, Kazutaka, 5,384,836, Cl. 379-100.000.

Casio Electronics Manufacturing Co., Ltd.: *See*—
Otsuka, Kazutaka, 5,384,836, Cl. 379-100.000.

Cass, Todd A.: *See*—
Hettenlocher, Daniel P.; Kaplan, Ronald M.; Withgott, M. Margaret; Cass, Todd A.; Halvorsen, Per-Kristian; Bloomberg, Dan S.; and Rao, Ramana B., 5,384,863, Cl. 382-9.000.

Castalia AG: *See*—
Bauer, Wolfgang; Nagl, Gert; Steckelberg, Willi; Ritter, Josef; and Maeckshagen, Wilhelm, 5,383,961, Cl. 106-22.00R.

Castelli, Vincent J.: *See*—
Sorathia, Usman A.; Houghton, Deborah A.; Owen, David P.; Pipyna, Markus R.; Jones, Wayne C.; Castelli, Vincent J.; Fischer, Eugene C.; Venkatachalam, Ravanasamudram S.; Loup, Douglas; and Stephenson, Carlisle R., 5,383,567, Cl. 220-4.130.

Castillo, Sergio A., Jr.: *See*—
Taeuber, Ralph, Jr.; Castillo, Sergio A., Jr.; and Ash, Robert H., Jr., 5,383,694, Cl. 285-374.000.

Caterpillar Inc.: *See*—
Bock, Allyn P., 5,383,439, Cl. 123-563.000.
Goade, James C.; and Werner, Claude H., 5,383,391, Cl. 92-12.200.
Lakich, Michael S., 5,383,390, Cl. 91-361.000.
Richtsfeld, Viktor; and Weber, Rudolf, 5,383,563, Cl. 212-189.000.

Cawley, Clifton M.: *See*—
Cawley, Wesley D.; and Cawley, Clifton M., 5,383,760, Cl. 414-791.600.

Cawley, Wesley D.; and Cawley, Clifton M., to Ohmstede-Cawley, Ltd. Apparatus and method for container pattern-forming and palletizing. 5,383,760, Cl. 414-791.600.

Celsa LG: *See*—
Nadal, Guy, 5,383,887, Cl. 606-200.000.

Cencio, Luigi: *See*—
Vasolo, Pietro; Magnani, Alberto; Debbia, Emilio; Guglielmi, Claudio; Cencio, Luigi; and Gerbaudo, Luciano, 5,383,406, Cl. 105-401.000.

Cernohlavek, Leemer G.: *See*—
Stalling, David L.; Wood, Thomas S.; Kelly, Kevin P.; Cernohlavek, Leemer G.; Lochhaas, Philip D.; Schrier, Loren C.; and Strumpf, David M., 5,384,023, Cl. 204-186.000.

Ceskoslovenska akademie ved: *See*—
Veselracek, Petr; Lopour, Petr; and Sulc, Jiri , 5,384,370, Cl. 525-209.000.

CFMT, Inc.: *See*—
Thomas, Huw K.; Carolin, Roger A.; Erhardt, Heinrich S.; and McConnell, Christopher F., 5,383,484, Cl. 134-184.000.

Challoner, A. Dorian; and Or, Arthur C., to Hughes Aircraft Company. Determining liquid fill fraction on a spacecraft. 5,383,359, Cl. 73-290.00R.

Chambers, Gregory R.; Smith, Gary F.; and Yates, John B., III, to General Electric Company. Compatibilized compositions of polyphenylene ether, polyester resins and polycarbonate-polyester copolymers. 5,384,359, Cl. 525-64.000.

Champney, Clark B.: *See*—
Vance, Jack E.; Luce, Gerald J., deceased; Adair, Robert L., Jr.; and Champney, Clark B., 5,383,741, Cl. 403-383.000.

Chan, Alisa C.: *See*—
Dillard, Pamela A.; Chan, Alisa C.; and Kriopp, Robert K., 5,384,825, Cl. 379-59.000.

Chan, Dominic M.: *See*—
Bishop, Julie C.; Chan, Dominic M.; Donald, Dennis S.; Fodor, Ludovic; Pangratz, William R.; Russo, Glenn M.; and Shock, John R., 5,384,232, Cl. 430-440.000.

Chan, Lawrence K. M.: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., 5,384,071, Cl. 252-299.630.

Chaney, David B.; and Koncelik, Joseph A., to Zoetech, Inc. Orthopedic chair with forwardly and rearwardly inclined positions. 5,383,709, Cl. 297-302.000.

Chang, Hao H. Occlusion ureteral catheter for retrograde pyelography. 5,383,866, Cl. 604-280.000.

Chang, Min-Yan: *See*—
Neal, Lewis G.; Ma, Warren; Chang, Min-Yan; Zhou, Qian; Pereira, Carmo J.; Plumlee, Karl W.; and Beeckman, Jean W., 5,383,955, Cl. 95-34.000.

Chang, Ray: *See*—
Childs, Lawrence F.; Jones, Kenneth W.; Flannagan, Stephen T.; and Chang, Ray, 5,384,737, Cl. 365-189.050.

Chang, Tien-Tzu. Collapsible glasses. 5,384,604, Cl. 351-63.000.

Chang, Wei-Der: *See*—
Chin, Tsung-Shune; Chang, Wei-Der; and Deng, Ming-Cheng, 5,384,158, Cl. 427-129.000.

Chapas, Nicolas; Mynos, Philippe; and Stephan, Ronan, to Compagnie Europeenne de Composants Electroniques LCC. Process for producing laminated capacitors and capacitor made from such a process. 5,384,005, Cl. 156-629.000.

Chapman, Jeffrey A., to U.S. Philips Corporation. Electronic device manufacture using ion implantation. 5,384,266, Cl. 437-21.000.

Chappell, Cynthia L.; Dresden, Marc H., deceased; and by Dresden, Judith H., legal representative. Detection of schistosomiasis antibodies. 5,384,244, Cl. 435-7.220.

Chas, Jean-Bernard. Hollow jet thruster device. 5,383,801, Cl. 440-5.000.

Chase, Raymond S. Natural silica-containing cement and concrete composition. 5,383,967, Cl. 106-737.000.

Chase, William E.: *See*—
Tracy, Keith P.; and Chase, William E., 5,383,589, Cl. 224-324.000.

Chatterjee, Ranjit: *See*—
Bissett, Donald L.; Bush, Rodney D.; and Chatterjee, Ranjit, 5,384,115, Cl. 424-59.000.

Chaudhuri, Ratan K.: *See*—
Narayanan, Kolazi S.; Chaudhuri, Ratan K.; and Login, Robert B., 5,384,406, Cl. 546-243.000.

Chemie Linz Gesellschaft m.b.H.: *See*—
Horacek, Heinrich, 5,384,347, Cl. 524-100.000.

Chen, Ben: *See*—
Lar, Water; Chen, Ben; and Huang, Cheng H., 5,384,268, Cl. 437-20.000.

Chen, Chin-Pei, to Kalloy Industrial Co., Inc. Adjusting assembly for bicycle seat. 5,383,706, Cl. 297-215.150.

Chen, Simon, to Shiang Fu Woodware Co., Ltd. Drawer type CD-ROM storage cabinet. 5,383,722, Cl. 312-9.550.

Chen, Ted M.; and Wang, Yi-Ping, to Syntron Bioresearch, Inc. Method and apparatus for single step assays of ligand-containing fluids. 5,384,264, Cl. 436-525.000.

Chen, Tien-Tek; Schofield, Edward; Yau, Hwei-Ling; and Vishwakarma, Lal C., to Eastman Kodak Company. Photographic elements incorporating polymeric ultraviolet absorbers. 5,384,235, Cl. 430-512.000.

Chen, Yaoquan: *See*—
Chu, Chung K.; and Chen, Yaoquan, 5,384,396, Cl. 536-27.140.

Cheng, David W.; and Dong, David Q., to Beckman Instruments, Inc. Tachometer and rotor identification system for centrifuges. 5,383,838, Cl. 494-10.000.

Chesapeake Electronics Limited: *See*—
Tapping, Ian A.; and Colclough, Stephen H., 5,384,842, Cl. 379-387.000.

Chesterfield, Michael P.; Serra, Josep; and Koyfman, Ilya, to United States Surgical Corporation. Apparatus and method for producing braided suture products. 5,383,387, Cl. 87-56.000.

Chevallier, Bruno: *See*—
Lormeau, Jean-Claude; Chevallier, Bruno; and Salome, Marc L. V., 5,384,398, Cl. 536-21.000.

Chia, Wei-Kong: *See*—
Ku, Tsu-Wei; Chia, Wei-Kong; and Shieh, Dong-Ru, 5,384,720, Cl. 364-578.000.

Chiang, David: *See*—
Pedersen, Bruce B.; Chiang, David; Heile, Francis B.; McClintock, Cameron; So, Hock-Chuen; and Watson, James A., 5,384,499, Cl. 326-39.000.

Chiba, Kazunobu: *See*—
Kanota, Keiji; Inoue, Hajime; Uetake, Akihiro; Kawaguchi, Moriyuki; Kubota, Yukio; and Chiba, Kazunobu, 5,384,666, Cl. 360-32.000.

Children's Medical Center Corporation: *See*—
Lock, James E.; Mandell, Valerie; and Perry, Stanton, 5,383,926, Cl. 623-1.000.

Childs, Lawrence F.; Jones, Kenneth W.; Flannagan, Stephen T.; and Chang, Ray, to Motorola Inc. Pipelined memory having synchronous and asynchronous operating modes. 5,384,737, Cl. 365-189.050.

Chin, Albert K.: *See*—
Warner, Robert D.; Chin, Albert K.; and Stevens, Gail, 5,383,889, Cl. 606-192.000.

Chin, Tsung-Shune; Chang, Wei-Der; and Deng, Ming-Cheng, to National Science Council. Method for preparing a magnetic recording medium. 5,384,158, Cl. 427-129.000.

Chmiel, Oliver; and Traitler, Helmut, to Nestec S.A. Pectin-modified lipase from *Mucor javanicus* with lowered saturated/unsaturated fatty acid ratio. 5,384,256, Cl. 435-198.000.

Chmielewski, Doreen M.: *See*—
Chmielewski, Jerry; and Chmielewski, Doreen M., 5,384,045, Cl. 210-354.000.

Chmielewski, Jerry; and Chmielewski, Doreen M. Filter cleaner. 5,384,045, Cl. 210-354.000.

Cho, Alex, to Reynolds Metals Company. Method of improving transverse direction mechanical properties of aluminum-lithium alloy wrought product using multiple stretching steps. 5,383,986, Cl. 148-697.000.

Cho, Chih-Chen, to Texas Instruments Incorporated. Light emission from rare-earth element-doped CaF_2 thin films by electroluminescence. 5,384,795, Cl. 372-7.000.

Cho, Jaeahin, to Motorola, Inc. Methods for making and using a shallow semiconductor junction. 5,384,269, Cl. 437-22.000.

Choi, Kwong-Kit, to United States of America, Army. Voltage-tunable, multicolor infrared detectors. 5,384,469, Cl. 257-21.000.

Choi, Wai M.; and Boehnstedt, Werner, to W. R. Grace & Co.-Conn. Oxidation resistant enveloped separator. 5,384,211, Cl. 429-136.000.

Choi, Yun-Ho: *See*—
Park, Churoo; and Choi, Yun-Ho, 5,384,735, Cl. 365-189.050.

Chornenky, Victor I.: *See*—
Auer, Michael L.; Chornenky, Victor I.; Fettig, Peter T.; Gunderson, Richard C.; McBroom, Jeffrey A.; and Sharrow, James S., 5,383,467, Cl. 128-664.000.

Chou, Jim-Son: *See*—
Koch, Donald G.; Ting, Albert C.; and Chou, Jim-Son, 5,384,606, Cl. 351-158.000.

Christian, Jeffrey J.: *See*—
Holmes, Jeffrey E.; and Christian, Jeffrey J., 5,383,895, Cl. 606-206.000.

Christini, Roy A., to Aluminum Company of America. Method of producing magnesium vapor at atmospheric pressure. 5,383,953, Cl. 75-10.190.

Chromomed, Inc.: *See*—
Saunders, Alexander, 5,384,239, Cl. 435-2.000.

Chu, Chung K.; and Chen, Yaoquan, to University of Georgia Research Foundation, Inc., The. Process for the deoxygenation of nucleosides. 5,384,396, Cl. 536-27.140.

Chu, David C.; and Black, Alistair D., to Hewlett-Packard Company. Precision timed delay measurement using phaselocked CW technique. 5,384,541, Cl. 324-617.000.

Chu, Jack C.; Hsu, Louis Lu-Chee; Mii, Toshio; Shepard, Joseph F.; Stiffler, Scott R.; Tejwani, Manu J.; and Vishnesky, Edward J., to International Business Machines Corporation. Method for forming capacitors with roughened single crystal plates. 5,384,152, Cl. 427-81.000.

Chua, Christopher K. Y.; and Kuo, Shun-Meen, to Motorola, Inc. Optical interface unit and method of making. 5,384,873, Cl. 385-31.000.

Ciba-Geigy Corporation: *See*—
Ferrini, Pier G., 5,384,319, Cl. 514-227.800.
Karrer, Friedrich; Buser, Hans-Peter; Ramos, Gerardo; Rindlisbacher, Alfred; Venanzi, Luigi M.; and Ward, Thomas R., 5,384,416, Cl. 549-453.000.
Kunz, Walter; and Schurter, Rolf, 5,384,321, Cl. 504-261.000.
Rapold, Thomas; and Sena, Marcel, 5,384,403, Cl. 544-182.000.
Tsao, Fu-Pao, 5,383,550, Cl. 206-5.100.

Ciechanover, Aaron J.; Blumenfeld, Nava; and Gonen, Hedva, to Rappaport Family Institute for Research in the Medical Sciences. Ubiquitin carrier enzyme E2-F1, purification, production, and use. 5,384,255, Cl. 435-193.000.

Cilley, William A.: *See*—
Woo, Ricky Ah-Man; Carrie, Michel J.; Cilley, William A.; Masters, Ronald A.; Michael, Daniel W.; and Vos, Eddy, 5,384,063, Cl. 252-142.000.

Cimino, Daniel J.: *See*—
Moorwood, Charles A.; Singh, Charan J.; Holland, Dennis E.; Cimino, Daniel J.; Vo, Howard Q.; Yeung, Vickie M.; Crosbie, David; and Shah, Hareah K., 5,384,767, Cl. 370-13.100.

Cimpiter Corporation: *See*—
Echerer, Scott J.; and McNeill, Stephen R., 5,384,862, Cl. 382-6.000.

Cirrus Logic, Inc.: *See*—
Dudley, Trent; Glover, Neal; and King, Larry, 5,384,786, Cl. 371-37.100.
Romano, Paul M., 5,384,524, Cl. 318-569.000.

Cisneros, Gary M.: *See*—
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Citadel Investments Limited: *See*—
Nickel, Klaus D., 5,383,247, Cl. 15-250.040.

Clark, Bernard: *See*—
Morris, Frederick; and Clark, Bernard, 5,384,607, Cl. 351-158.000.

Clark, John: *See*—
Einfeller, Richard C.; and Clark, John, 5,384,161, Cl. 427-250.000.

Clark, Rick: *See*—
Schurman, Richard; Pearson, Robert E.; Reiter, Steve; Schurman, John; and Clark, Rick, 5,384,618, Cl. 355-32.000.

Clark, Stephen L., to Du Pont de Nemours, E. I., and Company. Locating tool for power pins and receptacles. 5,383,268, Cl. 29-747.000.

Clarke, Charles P.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crase, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Clarke, Henry C. Instruments and method for suturing and ligation. 5,383,877, Cl. 606-148.000.

Clarke Industries, Inc.: *See*—
Whitaker, Ernest R.; Fulghum, Trent A.; Keazer, James J.; and Pritchett, James A., 5,383,251, Cl. 15-320.000.

Clarke, John: *See*—
Farrar, David; Fleaher, Peter; Skinner, Malcolm; Clarke, John; and Marshall, David, 5,384,343, Cl. 523-129.000.

Clarkson, Quinten R. M., to Beecham Group p.l.c. Compounds. 5,384,112, Cl. 423-462.000.

Cleary, Terrance M.: *See*—
Donahue, Raymond J.; Cleary, Terrance M.; and Stinson, Terry D., 5,383,429, Cl. 123-197.300.

Clecim: *See*—
Michalon, Joseph; and Bertholon, Gerard, 5,383,306, Cl. 451-106.000.

Clobset, Steven J., to Compaq Computer Corporation. Circuit for placing a memory device into low power mode. 5,384,747, Cl. 365-226.000.

Cloutier, Robert P.; and Angeli, Gerald J., to Eastman Kodak Company. Single-use camera with weakened area to access film cassette. 5,384,613, Cl. 354-275.000.

Clowater, Lorna J.: *See*—
Zarek, Lawrence A.; Kozztowaty, Michele T.; and Clowater, Lorna J., 5,383,356, Cl. 73-118.200.

Clupper, Harold: *See*—
Kensey, Kenneth; and Clupper, Harold, 5,383,886, Cl. 606-185.000.

Clyburn, Belinda. Hair waving device and method. 5,383,480, Cl. 132-207.000.

CMI Corporation: *See*—
Swisher, George W., Jr.; and Murray, Stuart W., 5,383,725, Cl. 366-22.000.

Coates, David: *See*—
Geelhaar, Thomas; Rieger, Bernhard; Reiffenrath, Volker; Bartmann, Ekkehard; and Coates, David, 5,384,065, Cl. 252-299.630.

Coca-Cola Company, The: *See*—
Koyama, Masahiro; and Shinkawa, Shigeo, 5,384,143, Cl. 426-566.000.
Richter, Simon J.; and Paisley, Gary V., 5,383,576, Cl. 222-105.000.
Summerville, Don S.; Gillespie, Lionel D.; and Gamper, Steven C., 5,383,297, Cl. 40-611.000.

Codex Corporation: *See*—
Loasp, Martin G.; Fulling, Frank; DeMello, Wayne M.; and Neagle, William A., 5,384,780, Cl. 370-94.100.

Codina Soley, Antonio. Sliding doors. 5,383,304, Cl. 49-215.000.

Coe, Carlos J. Power capacitor powertrain. 5,384,521, Cl. 318-161.000.

Cohen, Leonard G.; Moesle, Adolph H., Jr.; and Venguarker, Ashish M., to AT&T Corp. Remote sensing in optical fiber networks by synchronously detecting backscattered optical signals. 5,384,635, Cl. 356-73.100.

Cohen, Nathan, to National Fertility Institute. Method and apparatus for processing images. 5,383,457, Cl. 128-660.070.

Coifman, Ronald; Meyer, Yves; and Wickerhauser, Mladen V., to Yale University; and Meyer, Yves. Method and apparatus for encoding and decoding using wavelet-packets. 5,384,725, Cl. 364-807.000.

Colclough, Stephen H.: *See*—
Tapping, Ian A.; and Colclough, Stephen H., 5,384,842, Cl. 379-387.000.

Coleman, John E.; Tipps, Barney A.; and Hotowski, Peter, to Velo-Bind, Inc. Cassette for binding strips. 5,383,756, Cl. 412-38.000.

Coles, Mark E.; and Kingston, James P., to Raytheon Company. Microwave circulator apparatus and method. 5,384,556, Cl. 333-1.100.

Colgate-Palmolive Company: *See*—
Prahs, Harald, 5,383,577, Cl. 222-107.000.

Colignon, Dietmar; Dorra, Erich; Panthel, Guenter; Schmidt, Wolfgang; and Wrede, Norbert, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of light-colored α-sulfofatty acid alkyl ester alkali metal salt pastes. 5,384,422, Cl. 554-98.000.

Collagen Corporation: *See*—
Brannan, Ann; Burhenne, Roseann; Delustro, Frank A.; Smestad, Thomas L.; Fries, Louis; and Orland, Rees M., 5,383,930, Cl. 623-11.000.

Collard, Jean-Noel: *See*—
Schirlin, Daniel G.; Collard, Jean-Noel; and Dunzin, Charles, 5,384,312, Cl. 514-63.000.

Collier, Ronda L.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crase, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Colligan, Francis D.: *See*—
Carpentiere, Richard P.; Colligan, Francis D.; Belcourt, Ronald H., Jr.; and Giordano, Giuseppe, 5,383,902, Cl. 606-224.000.

Collins, Imack L.: *See*—
Tuggle, Lloyd H.; Collins, Imack L.; and Sadler, Jeffrey G., 5,383,427, Cl. 123-51.0BA.

Collins, Jacqueline; Doeberl, Terrence M.; Gravell, Linda V.; and Hunter, Kevin D., to Pitney Bowes Inc. Mail processing system having a meter activity log. 5,384,708, Cl. 364-464.020.

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Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crase, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Collman, James P.: *See*—
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Coltrain, Bradley K.: *See*—
Long, Timothy E.; Coltrain, Bradley K.; and Teegarden, David M., 5,384,192, Cl. 428-336.000.
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Cominco Ltd.: *See*—
Cross, James B.; Beynon, Kenneth L.; and Hampton, Cashman R. S. M., 5,383,951, Cl. 71-61.000.

Commandeur, Raymond; and Sarron, Jean-Pierre, to Elf Atochem S.A. Heat transfer fluids comprising moso- and bis(methylbenzyl)xylene. 5,384,058, Cl. 252-73.000.

Common-Sense Industries, Inc.: *See*—
Wigley, Charles L., Sr., 5,383,254, Cl. 16-82.000.

CommStar, Inc.: *See*—
Zimmerman, Fred C.; and Severson, Verne L., 5,384,832, Cl. 379-67.000.

Compagnie Europeenne de Composants Electroniques LCC: *See*—
Chapas, Nicolas; Mynos, Philippe; and Stephan, Ronan, 5,384,005, Cl. 156-629.000.

Compaq Computer Corporation: *See*—
Clobset, Steven J., 5,384,747, Cl. 365-226.000.
Mesfin, Teodros; Kolas, Jon; and Youens, John E., 5,384,686, Cl. 361-686.000.
Computed Anatomy Inc.: *See*—
Gersten, Martin, 5,384,608, Cl. 351-212.000.
Concept Enterprises, Inc.: *See*—
Kwang, David, 5,384,855, Cl. 381-100.000.
Concept Packaging Limited: *See*—
Hallam, Derek, 5,383,595, Cl. 229-4.500.
Connell, G. A. Neville: *See*—
Welch, David F.; Waarts, Robert G.; Major, Jo S.; Bringans, Ross D.; Fork, David K.; Connell, G. A. Neville; and Thornton, Robert L., 5,384,797, Cl. 372-23.000.
Constant, Jennifer: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., 5,384,071, Cl. 252-299.630.
Contech Construction Products, Inc.: *See*—
Shade, James W., 5,383,693, Cl. 285-373.000.
Continental American Corporation: *See*—
Prater, Andy C., 5,383,806, Cl. 446-220.000.
Conyers, Susan M.: *See*—
Kidwell, David A.; and Conyers, Susan M., 5,384,265, Cl. 436-525.000.
Cook, Jeffrey A.: *See*—
Logothetis, Eleftherios M.; Hamburg, Douglas R.; Cook, Jeffrey A.; and Rimai, Lajos, 5,383,333, Cl. 60-276.000.
Cook, John E.; Busato, Murray F.; Casey, Gary L.; and Hanson, John D., to Siemens Automotive Limited. Integrity confirmation of evaporative emission control system against leakage. 5,383,437, Cl. 123-520.000.
Cook, Michael R., to Raychem Limited. Heater for heating a plastic sleeve about a portion of a wire harness. 5,384,889, Cl. 392-416.000.
Cook, Pauline J.: *See*—
Prasad, Ravi; and Cook, Pauline J., 5,383,956, Cl. 95-45.000.
Cooke, George C.: *See*—
Patterson, John F.; and Cooke, George C., 5,384,815, Cl. 376-444.000.
Cooper Industries, Inc.: *See*—
Berry, Richard C., 5,383,688, Cl. 285-49.000.
Cooper, William J.: *See*—
Deschenes, Charles L.; Jones, Terence J.; and Cooper, William J., 5,383,260, Cl. 24-711.000.
Cooper, William M.: *See*—
Andres, Todd E.; Alvarez, Edwardo; Cooper, William M.; Hughes, O. Richard; and Whiteside, Wendell G., 5,384,352, Cl. 524-404.000.
Cordasco, Louis M., Jr. Golf bag cover having a removable top. 5,383,505, Cl. 150-159.000.
Corleto, Jose G.: *See*—
Yatim, David; Bonet, Luis A.; Corleto, Jose G.; and Floyd, Michael D., 5,384,807, Cl. 375-27.000.
Corma Inc.: *See*—
Lupke, Manfred A. A., 5,383,998, Cl. 156-242.000.
Cornelius, Jack M., to PE Flo-Tech, Inc. Seal structure for rotary kiln. 5,383,672, Cl. 277-152.000.
Cornell, Harold P., III; and Werginz, Philip T., to Switchblade, Inc. Rotary lawn mower blade with replaceable cutting edge. 5,383,329, Cl. 56-255.000.
Cornell Research Foundation, Inc.: *See*—
Rajasekaran, Ayyappan K., 5,384,022, Cl. 204-299.00R.
Corning Incorporated: *See*—
Muir, Lance P., 5,383,948, Cl. 65-28.000.
Costanzo, Michael J.; and Maryanoff, Bruce E., to McNeilab, Inc. Anticonvulsant sorbopyranose sulfamates. 5,384,327, Cl. 514-456.000.
Cote, Robert E.: *See*—
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Cottringer, Thomas E.; van de Merwe, Ronald H.; Bauer, Ralph; and Yarbrough, Walter A., to Norton Company. Abrasive material and method. 5,383,945, Cl. 51-309.000.
Coulos, Andre , to GEC Alsthom Electromecanique SA. Method of installing an insert serving as a protective cladding on a part made of martensitic steel or of titanium-based alloy. 5,383,985, Cl. 148-527.000.
Counselman, Charles C., III, to Western Atlas International, Inc. System for determining position from suppressed carrier radio waves. 5,384,574, Cl. 342-357.000.
Couper, John R. Device for securing a hook to a line. 5,383,695, Cl. 289-17.000.
Courteille, Frederic; Coutel, Anne; Lebreton, Guy; and Veillard, Michel, to Farmalyoc. Solid porous unitary form comprising micro-particles and/or nano-particles, and its preparation. 5,384,124, Cl. 424-430.000.
Cousins, Scott: *See*—
Davis, Patricia A.; and Cousins, Scott, 5,384,333, Cl. 514-772.300.
Coutel, Anne: *See*—
Courteille, Frederic; Coutel, Anne; Lebreton, Guy; and Veillard, Michel, 5,384,124, Cl. 424-430.000.
Cowan, David M. Container for storing and displaying an article. 5,383,554, Cl. 206-310.000.
Cox, Timothy J.; and Armstrong, Randolph K., to Intermedics, Inc. Apparatus for high speed data communication between an external medical device and an implantable medical device. 5,383,912, Cl. 607-32.000.
Craft, Robert B., to Eaton Corporation. Transmission mainshaft thrust washer and retainer ring combination. 5,383,543, Cl. 192-48.800.
Craig, Bernard J.: *See*—
Wheeler, Barbara L.; Heatwole, Earnest L., Jr.; McGinley, Maureen T.; Seikaly, Richard M.; and Craig, Bernard J., 5,384,835, Cl. 379-96.000.
Craig, Michael S., to Binney & Smith, Inc. Solid marking composition containing glitter. 5,383,954, Cl. 106-19.00B.
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Benson, David K.; Crandall, Richard S.; Deb, Satyendra K.; and Stone, Jack L., 5,384,653, Cl. 359-270.000.
Crane, Stephen E.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.
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Crawforth, Linden J.; Foster, John S.; and Spong, Jaquelin K., to International Business Machines Corporation. Disk drive with controlled actuator oscillation for release of head carriers. 5,384,675, Cl. 360-75.000.
Creighton University Office of Technology Licensing: *See*—
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Crescenzi, Vittorio; and Callegaro, Lanfranco, to M.U.R.S.T. (Italian Ministry for Universities and Scientific and Technological Research). Esters of pectic and pectinic acid. 5,384,400, Cl. 536-2.000.
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., to AT&T Corp. System for providing personalized telephone calling features. 5,384,831, Cl. 379-67.000.
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Zajacek, John G.; Jubin, John C., Jr.; and Crocco, Guy L., 5,384,418, Cl. 549-531.000.
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Cross, James B.; Beynon, Kenneth I.; and Hampton, Cashman R. S. M., to Cominco Ltd. Production of granular ammonium sulphate using stripped zinc electrolyte as a granulating aid. 5,383,951, Cl. 71-61.000.
Crosspoint Solutions, Inc.: *See*—
Holzworth, Monta R.; Klein, Richard; Dixit, Pankaj; and Ingram, William P., III, 5,384,481, Cl. 257-530.000.
Crown Technology, Inc.: *See*—
Peterson, Joseph C., 5,384,064, Cl. 252-142.000.
Crowther, David J.; and Gutman, George, to Ovonic Synthetic Materials Company. X-ray optical element and method for its manufacture. 5,384,817, Cl. 378-84.000.
Crump, John C., III: *See*—
Winterson, Warren D.; Crump, John C., III; and Fischer, Eugene B., 5,383,479, Cl. 131-303.000.
Crutcher, Richard I.: *See*—
Bible, Don W.; Crutcher, Richard I.; Sohns, Carl W.; and Maddox, Stephen R., 5,384,543, Cl. 324-644.000.
Cullen, Michael J.; Gee, Thomas S.; Schubert, Thomas A.; Pursifull, Ross D.; and Kotwicki, Allan J., to Ford Motor Company. Method and apparatus for controlling ignition timing based on fuel-air composition during fuel excursions. 5,383,432, Cl. 123-406.000.
Cullen, Michael J.: *See*—
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Culp, Christopher G.: *See*—
Adams, David J.; Harbuziuk, Wayne L.; and Culp, Christopher G., 5,384,841, Cl. 379-266.000.
Cunningham, Charles; McLauchlan, John; Rixon, Frazer J.; and Szilagyi, Jozsef F., to Medical Research Council. Herpesvirus particles and vaccine. 5,384,122, Cl. 424-231.100.
Curry, Ward E., Jr., to ADCS/Air Duct Cleaning Systems, Inc. Method for cleaning heating, ventilating and air conditioning ducts. 5,383,973, Cl. 134-8.000.
Cuscurida, Michael: *See*—
Su, Wei-Yang; Herbstman, Sheldon; Russo, Joseph M.; Zimmerman, Robert L.; and Cuscurida, Michael, 5,383,942, Cl. 44-334.000.
Cutting, Douglass R.: *See*—
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CVD, Inc.: *See*—
Teverovsky, Alexander; MacDonald, James C.; Pickering, Michael A.; and Kirsch, Jeffery L., 5,383,969, Cl. 118-719.000.
Cyrus, Judith: *See*—
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Czajka, Raymond J.: *See*—
Anghelo, Pythos V.; and Czajka, Raymond J., 5,383,663, Cl. 273-118.00R.
Dahlqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahner, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, to Andritz Sprout-Bauer, Inc. Twin conical refiner with dual ribbon feeders. 5,383,608, Cl. 241-16.000.
Daicel Chemical Industries, Ltd.: *See*—
Ohyama, Kyuichi; Shimada, Giichi; Tokumoto, Yuichi; and Sakamoto, Kazuo, 5,384,426, Cl. 560-247.000.
Daido Metal Company Ltd.: *See*—
Tanaka, Tadashi; Sakamoto, Masaki; and Sato, Yoshiaki, 5,384,205, Cl. 428-643.000.
Daifuku Co., Ltd.: *See*—
Takaoka, Shigekazu; and Tsujimoto, Kazushi, 5,383,757, Cl. 414-240.000.
Daijogo, Akira: *See*—
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Dailey, James S.: *See*—
Fishback, Thomas L.; Reichel, Curtis J.; and Dailey, James S., 5,384,338, Cl. 521-131.000.
Daimler-Benz AG: *See*—
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Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,384,365, Cl. 525-105.000.
Dainippon Screen Mfg. Co., Ltd.: *See*—
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Daiso Co., Ltd.: *See*—
Kanesaki, Hiroyuki; Uegami, Kouji; and Nagao, Keishiro, 5,384,380, Cl. 526-292.900.
Dalton, John C., to Apple Computer, Inc. Method and apparatus for fuzzy logic rule execution. 5,384,898, Cl. 395-51.000.
Daly, James A.: *See*—
Patrick, Michael W.; and Daly, James A., 5,384,779, Cl. 370-85.120.
Daly, Jeffery E.; and Kepka, Patsy N., to Camco International Inc. Threaded ring retention mechanism. 5,383,525, Cl. 175-57.000.
Damien, Bruno: *See*—
Hendrickson, Alan F.; and Damien, Bruno, 5,384,847, Cl. 380-23.000.
Damon, Gerald D.: *See*—
Bair, John J.; Freel, Lee A.; Damon, Gerald D.; and Woods, Jerry D., 5,383,538, Cl. 188-218.00R.
Dana Corporation: *See*—
Campbell, Edward N.; and Keller, Thomas J., 5,383,811, Cl. 464-89.000.
Daneshvar, Yousef. Device for preventing post-catherization wound bleeding. 5,383,893, Cl. 606-201.000.
Daniels, Dean J.: *See*—
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Danninger Medical Technology, Inc.: *See*—
Kelly, Kevin A.; and Szpur, Romas, 5,383,919, Cl. 607-104.000.
Danzin, Charles: *See*—
Schirlin, Daniel G.; Collard, Jean-Noel; and Danzin, Charles, 5,384,312, Cl. 514-63.000.
Dao, Giang T.; De Qian, Qi; Tam, Nelson N.; Gaw, Eng T.; and Fujimoto, Harry H., to Intel Corporation. Reticle with structurally identical inverted phase-shifted features. 5,384,219, Cl. 430-5.000.
Darbonne, Lac, to Societe de developpement de l'industrie agro-alimentaire et de la pepiniere europeenne-SODIAPE. Process and installation for the preparation of frozen vegetables. 5,383,396, Cl. 99-537.000.
Date, Masashi; Sumiya, Takashi; and Takai, Hitoshi, to Sanyo Chemical Industries, Ltd. Process for producing water absorbent resin. 5,384,368, Cl. 525-186.000.
Daum, Wolfgang: *See*—
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Davidson, Frank: *See*—
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Davidson Textron Inc.: *See*—
Eisfeller, Richard C.; and Clark, John, 5,384,161, Cl. 427-250.000.
Davies, Robert B.; Anderson, Charles B.; Klingbeil, Lawrence S., Jr.; and Norris, George B., to Motorola Inc. Method of making a semiconductor device having a short gate length. 5,384,273, Cl. 437-41.000.
Davis, Charles R.; Duffy, Thomas P.; Hanakovic, Steven L.; Heck, Howard L.; Kolias, John T.; Kresge, John S.; Light, David N.; and Trivedi, Ajit K., to International Business Machines Corporation. Flex laminate package for a parallel processor. 5,384,690, Cl. 361-749.000.
Davis, Patricia A.; and Cousins, Scott, to University of Miami. Biodegradable injectable drug delivery polymer. 5,384,333, Cl. 514-772.300.
Davis, Robert A.: *See*—
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Davis, Wayne S.; Shirk, Michael E.; and Myers, Earl C., Jr., to Whitaker Corporation, The. Latch actuator for a connector. 5,383,794, Cl. 439-352.000.
Davy McKee (Poole) Limited: *See*—
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Dawn, Frederic S.; Guy, Walter W.; Kosmo, Joseph J.; Drennan, Arthur P.; and Tschirch, Richard P., to United States of America, National Aeronautics & Space Administration. Method for forming a glove attachment. 5,384,083, Cl. 264-130.000.
Day, James F.; Mueller, Wolf-Dieter; and Muth, Rainer H. R., to Hoechst Celanese Corporation. Process for making sodium acylisethionates. 5,384,421, Cl. 554-92.000.
Dayco Products, Inc.: *See*—
Winter, Jeffrey J.; Holden, Homer N.; and Lawrence, James L., 5,383,497, Cl. 138-122.000.
DCA Food Industries, Inc.: *See*—
Gagel, Simon; Sheen, ShiowShuh; and Moyer, John, 5,384,140, Cl. 426-243.000.
Dean, Ralph T.; and Valentine, Richard D., to Premark FEG Corporation. Sheet material gripping system. 5,383,326, Cl. 53-556.000.
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De Bakker, Johannes W. G.; Fokkink, Lambertus G. J.; Van Der Putten, Andreas M. T. P.; and Kox, Henricus A. M., to U.S. Philips Corporation. Method of selectively providing a pattern of a material other than glass on a glass substrate by electroless metallization. 5,384,154, Cl. 427-123.000.
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Dedic, Ian J., to Fujitsu Limited. Voltage storage circuits. 5,384,570, Cl. 341-172.000.
Deeba, Michel; Macaoay, John M.; Suitch, Paul R.; and von Ballmoos, Roland, to Engelhard Corporation. Composition for passivating vanadium in catalytic cracking and preparation thereof. 5,384,041, Cl. 208-253.000.
Deeke, Gary A.: *See*—
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Deeke, Ronald V.; and Deeke, Gary A. Mini Storage silo. 5,383,313, Cl. 52-82.000.
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Revankar, Gopal S., 5,383,513, Cl. 164-97.000.
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De Fornel, Frederique; Goudonnet, Jean-Pierre; and Mantovani, James, to SIM (Societe d'Investissement dans la Microscopie) S.A. Process and apparatus for optical near field microlithography. 5,384,464, Cl. 250-492.200.
De Goicoechea, George L.; and Hudson, John O., to Intervascular Inc. Non-thromogenic vascular prosthesis. 5,383,927, Cl. 623-1.000.
DeGregorio, Michael W.: *See*—
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DeGussa Aktiengesellschaft: *See*—
Deusser, Hans; Kerner, Dieter; Meyer, Jurgen; Michael, Gunther; and Stubbe, Andreas, 5,384,194, Cl. 428-405.000.
Delfulio, David M. Endotracheal tube stabilization device. 5,383,451, Cl. 128-207.170.
DeKalb Genetics Corporation: *See*—
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Dela Cruz, Alfredo R.: *See*—
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Delco Electronics Corporation: *See*—
Kennedy, Richard A.; Summe, Richard A.; and Pacourek, John R., 5,384,551, Cl. 331-17.000.
Dell USA, L.P.: *See*—
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Delong, Russell I.: *See*—
Nicholson, Warren B.; Pfouts, Mark D.; and Delong, Russell I., 5,383,855, Cl. 604-100.000.

DeLuca, Hector F.; and Wicha, Jerzy, to Wisconsin Alumni Research Foundation. 21-norvitamin D compounds. 5,384,313, Cl. 514-167.000.
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DeMello, Wayne M.: *See*—
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Deming, John P.: *See*—
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DeNale, Robert: *See*—
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den Dulk, Karel, to Medtronic, Inc. Method and apparatus for tachyarrhythmia detection and treatment. 5,383,910, Cl. 607-14.000.
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Dennis, Clarence. Food product slicer. 5,383,384, Cl. 83-762.000.
Dentalwerk Burmeon Gesellschaft m.b.H.: *See*—
Brugger, Wilhelm, 5,383,785, Cl. 433-129.000.
Deutsmrum J. P. Winkelstroeter KG: *See*—
Sernetz, Friedrich, 5,383,784, Cl. 433-7.000.
de Preneda, Jean A. H., to United States of America, Energy. Reusable crucible for containing corrosive liquids. 5,383,981, Cl. 148-237.000.
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Buluces, Constantin; Dermirlioglu, Esin; and Aronowitz, Sheldon, 5,384,477, Cl. 257-372.000.
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Deschenes, Charles L.; Jones, Terence J.; and Cooper, William J., to Avery Dennison Corporation. Fastener clip including one or more fasteners adapted for attaching buttons to a garment or like material. 5,383,260, Cl. 24-711.000.
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Dessel, Hugo V., to Molex Incorporated. Wire presence and identification system. 5,384,540, Cl. 324-539.000.
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Giles, David C.; Begin, Roger E.; Dugger, David R.; and Paskvan, Eric W., 5,384,200, Cl. 428-552.000.
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Harriehausen, Michael; Kasch, Dieter; and Manthey, Heinz, 5,383,628, Cl. 244-118.100.
Lenart-Kaupat, Wolfgang; and Kallies, Guenther, 5,383,818, Cl. 464-36.000.
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Baus, Dieter, 5,384,759, Cl. 369-32.000.
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Devlin, Mark T.; and Zerbouni, Moustapha B. Method and apparatus for handling of biopsy tissue specimen. 5,383,472, Cl. 128-771.000.
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Diamond, Lawrence H. Yellow karat gold casting alloys. 5,384,089, Cl. 420-511.000.
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Dickopp, Gerhard; Vaupel, Thomas; and Krabe, Detlef, to Telefunken. Method for the transmission of a signal. 5,384,811, Cl. 375-122.000.
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Different Dimensions Inc.: *See*—
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Mallary, Michael, 5,384,680, Cl. 360-126.000.
Patrick, Michael W.; and Daly, James A., 5,384,779, Cl. 370-85.120.
Dikowitz, Jerome N., to E. Gluck Corporation. Watch box. 5,383,552, Cl. 206-6.100.
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Pryaby, Daniel G.; and DiMarco, Matthew J., 5,384,816, Cl. 377-48.000.
DiMauro, Michael: *See*—
Marcello, Dominic; and DiMauro, Michael, 5,383,816, Cl. 454-359.000.
Diner, Naim F., to AT&T Corp. Variable attenuation optical fiber coupling. 5,384,885, Cl. 385-140.000.
DiNinno, Frank P., to Merck & Co., Inc. Bridged biphenyl carbapenem compounds, compositions containing such compounds and methods of use. 5,384,317, Cl. 514-210.000.
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Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Volz, Peter; Beck, Erhard; Maas, Joachim; Dinkel, Peter; and Risch, Stefan, 5,383,718, Cl. 303-113.200.
Dinulescu, Mircea. Heat exchanger apparatus. 5,383,516, Cl. 165-82.000.
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Hamilton, Peter W.; Dirksing, Robert S.; and Oder, Reuben F., 5,383,564, Cl. 215-221.000.
Dirygeas, S.A.: *See*—
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Dittmer, William H.: *See*—
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Diversified Products Corporation: *See*—
Michael, Farnet, 5,383,826, Cl. 482-3.000.
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Holzworth, Monta R.; Klein, Richard; Dixit, Pankaj; and Ingram, William P., III, 5,384,481, Cl. 257-530.000.
Dixon, James M., to Tri-Mark Metal Corporation. Indirect heater. 5,383,445, Cl. 126-110.00R.
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Doan, Trung T.; and Tuttle, Mark E., to Micron Semiconductor, Inc. Method to form a low resistant bond pad interconnect. 5,384,284, Cl. 437-190.000.
Doane, J. William; and Yang, Deng K., to Kent State University. Grey scale liquid crystal material. 5,384,067, Cl. 252-299.010.
Dobler, Walter: *See*—
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Doeberl, Terrence M.: *See*—
Collins, Jacqueline; Doeberl, Terrence M.; Gravell, Linda V.; and Hunter, Kevin D., 5,384,708, Cl. 364-464.020.
Doerr, Derek V.: *See*—
Field, Robert W.; and Doerr, Derek V., 5,383,282, Cl. 33-529.000.

Dohln, Guy V. Therapeutic saddle for handicapped persons. 5,383,327, Cl. 54-44.100.
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Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Hamabe, Isutomu, 5,384,853, Cl. 381-71.000.
Doi, Kouske; Niikura, Satoshi; Tokutake, Nobuo; Kohara, Hidekatsu; and Nakayama, Toshimasa, to Tokyo Ohka Kogyo Co., Ltd. Alkali-developable positive-working photosensitive resin composition. 5,384,228, Cl. 430-192.000.
Doll, John A. Mass air flow sensor device. 5,383,357, Cl. 73-118.200.
Domenig, Georg. Hinge arm fastening plate spacer. 5,383,255, Cl. 16-247.000.
Donahue, Raymond J.; Cleary, Terrance M.; and Stinson, Terry D., to Brunswick Corporation. Hypereutectic aluminum-silicon alloy connecting rod for a two-cycle internal combustion engine. 5,383,429, Cl. 123-197.300.
Donald, David K.; and Furber, Mark, to Fisons plc. 4,16-diazatetracyclo[23.3.1.1.Hu 14,17b . 0 Hu 4,9 triaconta-16,19-diene-2,3,10-trione derivatives. 5,384,316, Cl. 514-183.000.
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Donnelly Corporation: *See*—
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Doran, Thomas I.; Shiuey, Shian-Jan; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. 1α-fluoro-25-hydroxy-16-ene-23-yne-cholecalciferol. 5,384,314, Cl. 514-167.000.
Doris, Bruce B.; and Hegde, Rama I., to Motorola, Inc. Process for measuring surface topography using atomic force microscopy. 5,383,354, Cl. 73-105.000.
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Segal, Evan J., 5,383,492, Cl. 137-614.060.
Dorra, Erich: *See*—
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Douglas & Lomason Company: *See*—
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Dow Chemical Company, The: *See*—
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McKinney, Osborne K.; Everndyk, David A.; and Rowland, Michael E., 5,384,373, Cl. 526-212.000.
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Dow Corning Corporation: *See*—
Legrow, Gary E.; and Sudbury-Holtschlag, Joan E., 5,384,383, Cl. 528-23.000.
Dowell, Teresa J.; Newell, Gerald P.; and Zeffren, Eugene, to Helene Curtis, Inc. Opacifier for water-based compositions. 5,384,114, Cl. 424-70.100.
Downs, Stephen R.; Teel, James L., Jr.; and Herndon, Charles C., to Ericsson GE Mobile Communications Inc. Co-processor controlled switching apparatus and method for dispatching console. 5,384,854, Cl. 381-81.000.
Drage, Pamela G.: *See*—
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Drath, Thomas W. Gluteal muscle exercise apparatus. 5,383,831, Cl. 482-101.000.
Dravo Lime Company: *See*—
Tseng, Shiaw C.; Berisko, Daniel W.; and Babu, Manyam, 5,384,111, Cl. 423-242.100.
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Qureshi, Humayun; and Schwartz, Donald, 5,383,372, Cl. 73-864.170.
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Dreyfus, Larry M.: *See*—
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DSM Desotech, Inc.: *See*—
Szum, David M., 5,384,342, Cl. 522-172.000.
Du Pont Merck Pharmaceutical Company, The: *See*—
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Dubal, Hans-Rolf; Harada, Takamasa; Rieger, Heinz; Roech, Norbert; and Wegener, Peter, to Hoechst Aktiengesellschaft. Ferroelectric liquid-crystal display of high contrast and brightness. 5,384,168, Cl. 428-1.000.
Dubal, Hans-Rolf: *See*—
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DuBois, David M., to Playskool, Inc. Convertible toy truck/wagon. 5,383,808, Cl. 446-428.000.
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Duce, Richard W.; and Quinn, David B., to General Motors Corporation. Exhaust sensor including a composite tile sensing element and methods of making the same. 5,384,030, Cl. 204-426.000.
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Dudley, Trent; Glover, Neal; and King, Larry, to Cirrus Logic, Inc. Fast and efficient circuit for identifying errors introduced in Reed-Solomon codewords. 5,384,786, Cl. 371-37.100.
Duffy, Thomas P.: *See*—
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Dufourneaud, Jean-Marie. Process and device providing tightened operational safety for underground liquefied gas storage. 5,383,746, Cl. 405-53.000.
Dugger, David R.: *See*—
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Dulong, Carol, to Intel Corporation. Apparatus and method for determining the Manhattan distance between two points. 5,384,722, Cl. 364-715.010.
Duncan, Ian J. H.: *See*—
Foster, Matthew R.; Greenlees, Bruce; and Duncan, Ian J. H., 5,383,424, Cl. 119-174.000.
Dundorf, David. Pole structure for supporting a flag without furling thereabout. 5,383,420, Cl. 116-174.000.
Dunlap, Thomas G.: *See*—
Matzner, Bruce; Johansson, Eric B.; Wolters, Richard A., Jr.; Dunlap, Thomas G.; Elkins, Robert B.; King, Harold B.; and Sick, Paul W., 5,384,814, Cl. 376-352.000.
Dunmead, Stephen D.; and Howard, Kevin E., to Dow Chemical Company, The. Method for forming beta-silicon carbide whiskers, singly or in a matrix, using an organotitanium coordination compound catalyst. 5,383,421, Cl. 117-4.000.
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Clark, Stephen L., 5,383,268, Cl. 29-747.000.
Falini, Jeffery P.; and Gaultney, Lawrence D., 5,383,611, Cl. 241-30.000.
Frankfort, Hans R. E.; Knox, Benjamin H.; and Pai, Girish A., 5,384,082, Cl. 264-103.000.
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Dye, John D., to Kendall Co., The. Compression device having stepper motor controlled valves. 5,383,894, Cl. 606-201.000.

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Nishiwaki, Atsushi; Ikemiya, Norihito; Uchiyama, Hiroshi; Inagaki, Hideo; Sawada, Yasuo; and Ogino, Kazumi, 5,384,167, Cl. 427-569.000.
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E-Systems, Inc.: *See*—
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Earth Resources Corporation: *See*—
Mattern, Charles C.; and Nickens, Dan A., 5,383,498, Cl. 141-1.000.
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Kung, Teh-Ming; and Pope, Brian T., 5,384,304, Cl. 503-227.000.
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Loveridge, Jennifer C., 5,384,865, Cl. 382-54.000.
Oakes, Fred T., 5,384,242, Cl. 435-6.000.
Roberts, Thomas D., 5,384,375, Cl. 525-327.600.
Thibert, Daniel G., 5,383,591, Cl. 226-108.000.
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Eaton Corporation: *See*—
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Bair, John J.; and Woodard, Steven W., 5,383,539, Cl. 188-218.00R.
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Oravetz, David M.; Elms, Robert T.; Engel, Joseph C.; Klancher, Frank; and Kenny, Thomas J., 5,384,712, Cl. 364-550.000.
Patel, Kirit R., 5,383,544, Cl. 192-70.280.
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Seder, Thomas A.; Ebeltoft, William S.; and Meyer, W. David, 5,384,709, Cl. 364-468.000.
Ebenstein, Samuel E., to Ford Motor Company. Non-contact method of obtaining dimensional information about an object. 5,384,717, Cl. 364-560.000.
Ebersohl, Gerard; and Thuries, Edmond, to Gec Alsthom T & D SA. Control and self-monitoring system, in particular for a multipole electrical apparatus such as a high tension circuit breaker. 5,384,678, Cl. 361-62.000.
Ebner, Fritz F.; Macera, Ronald C.; Sulenski, Shelly D.; Gates, Janise M.; Mikolasis, Sue; Richar, James D.; and Hawes, M. Kerrigan, to Xerox Corporation. Scheduling page parameter variations for discrete job elements. 5,384,620, Cl. 355-202.000.
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Echerer, Scott J.; and McNeill, Stephen R., to Cimpiter Corporation. Radiographic image evaluation apparatus and method. 5,384,862, Cl. 382-6.000.
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Edele, Reinhard; Johannes, Reinhard; Krizek, Oldrich; and Schmid, Eckhardt, to SWF Auto-Electric GmbH. Wiper and washing system, especially for window panes of motor vehicles. 5,383,602, Cl. 239-184.100.
Edelson, Richard L., to Therakos, Inc. Non-specific immune system enhancement. 5,383,847, Cl. 604-6.000.
Edge Specialties, Inc.: *See*—
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Edo Corporation, Fiber Science Division: *See*—
Johnson, Terence C., 5,383,566, Cl. 220-562.000.
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Klaveness, Jo; Ege, Thorfinn; and Rocklage, Scott M., 5,384,109, Cl. 424-9.000.
Eggler, James F.; Marfat, Anthony; Melvin, Lawrence S., Jr.; and Masamune, Hiroko, to Pfizer Inc. Substituted sulfonamides and related compounds in the treatment of asthma, arthritis and related diseases. 5,384,318, Cl. 514-212.000.
Ehrat, Rainer: *See*—
Schlatter, Reinhard; Gabi, Urs; and Ehrat, Rainer, 5,384,004, Cl. 156-543.000.
Eisfeller, Richard C.; and Clark, John, to Davidson Textron Inc. System for making bright aluminum parts. 5,384,161, Cl. 427-250.000.
Ekino, Yoshio: *See*—
Taguchi, Masahiro; Hayashi, Yoshiro; Masuda, Ryuichi; and Ekino, Yoshio, 5,383,514, Cl. 164-255.000.
Ela Medical: *See*—
Brehier, Jacques, 5,383,924, Cl. 607-126.000.
El-Boher, Arie; Pechatnikov, Michael Z.; Menia, Boris M.; Novak, Semion M.; and Kabiri, Uri, to Ontec Ltd. Method and installation for continuous production of liquid ice. 5,383,342, Cl. 62-532.000.
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Moran, Steven A.; and Brennen, Michael B., 5,384,696, Cl. 363-40.000.
ElectroCom Automation L.P.: *See*—
Goetz, Walter C., Jr., 5,384,450, Cl. 235-462.000.
Elesa S.p.A.: *See*—
Bertani, Alberto, 5,383,360, Cl. 73-323.000.
Elf Atochem S.A.: *See*—
Commandeur, Raymond; and Sarron, Jean-Pierre, 5,384,058, Cl. 252-73.000.
Suc, Sophie; Defaye, Jacques; Gadelle, Andree; and Kerveunal, Jacques, 5,383,964, Cl. 106-210.000.
Eli Lilly and Company: *See*—
Fontana, Steven A., 5,384,332, Cl. 514-648.000.
Michel, Peter, 5,383,865, Cl. 604-232.000.
El-Khoury, Joseph E.; Timte, Frank W.; Kuchta, Gerard P.; and League, Edmond R., to Ford Motor Company. Electronic shift controller for a multiple ratio automotive transmission. 5,383,825, Cl. 477-149.000.
Elkins, Robert B.: *See*—
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Ellestad, Michael J. Illuminating device for use in hazardous situations. 5,383,633, Cl. 248-160.000.
Ellis, Richard J.; Patel, Ranjan C.; and Nairne, Robert J. D., to Minnesota Mining and Manufacturing Company. Positive-acting photothermographic materials. 5,384,238, Cl. 430-617.000.
Elms, Andrew, to Technophone Limited. Digital radio receiver with decoding of confidence level information substituted for interleaved data. 5,384,782, Cl. 371-2.100.
Elms, Robert T.: *See*—
Oravetz, David M.; Elms, Robert T.; Engel, Joseph C.; Klancher, Frank; and Kenny, Thomas J., 5,384,712, Cl. 364-550.000.
Elsag International N.V.: *See*—
Bertrand, Pierre; Birangi, Tourang; and Nemer, Joseph C., 5,383,367, Cl. 73-708.000.
Elton, John H.: *See*—
Barnsley, Michael F.; Sloan, Alan D.; Elton, John H.; Moreman, Charles S.; and Primiano, Guy A., 5,384,867, Cl. 382-56.000.
Emerson Electric Co.: *See*—
Bowsky, Benjamin; and Sciuto, George J., 5,383,338, Cl. 62-125.000.
Bulson, Jeffry M.; and Rau, C. Peter, 5,384,429, Cl. 174-102.00R.
Kidd, Roy E., 5,384,714, Cl. 364-550.000.
Emerson & Stern Associates, Inc.: *See*—
Hutchins, Sandra E., 5,384,893, Cl. 395-2.760.
Emhart Glass Machinery Investments Inc.: *See*—
Bubon, Frank J.; Paul, Kenneth J.; and Pinkerton, Steven J., 5,383,949, Cl. 65-346.000.
Emhart Inc.: *See*—
Nakagami, Eiji, 5,384,445, Cl. 219-98.000.
Emo, Bruce D.: *See*—
Morehouse, James H.; Furay, David M.; Alt, Robert A.; and Emo, Bruce D., 5,384,677, Cl. 360-99.120.
Emory University: *See*—
Scott, Neal A.; Hanson, Stephen R.; King, Spencer B., III; and Harker, Laurence A., 5,383,928, Cl. 623-1.000.
Enderle, Karl-Heinz: *See*—
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Endo, Yasushi: *See*—
Kojima, Masaya; Niitsuma, Kazuhiro; Hayakawa, Satoru; Kawamata, Toshio; and Endo, Yasushi, 5,384,175, Cl. 428-64.000.
Energy Compression Research Corp.: *See*—
Zucker, Oved S. F.; McIntyre, Iain A.; Solone, Paul J.; and Giorgi, David, 5,384,798, Cl. 372-26.000.
Energy Conservation Partnership Ltd.: *See*—
Johnson, Arthur F., 5,384,106, Cl. 423-235.000.
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Engel, Jurgen: *See*—
Dieter, Hans-Reinhold; Engel, Jurgen; Kutscher, Bernhard; Polymeropoulos, Emanuel; Szolenyi, Stefan; and Nickel, Bernd, 5,384,330, Cl. 514-535.000.
Engel, Steve J. Fishing rod holder with hook setting trigger. 5,383,298, Cl. 43-15.000.
Engelhard Corporation: *See*—
Deeba, Michel; Macaoay, John M.; Suitch, Paul R.; and von Ballmoos, Roland, 5,384,041, Cl. 208-253.000.
Feeley, Jennifer S.; Simone, Dianne O.; Quick, Leonard M.; and Hamil, Martha M., 5,384,300, Cl. 502-252.000.
England, Johnathan G.: *See*—
Armour, David G.; England, Johnathan G.; Bryan, Neil; and Van der Berg, Jakob A., 5,384,465, Cl. 250-492.210.
Englhard, Ronald F.; and Shanklin, Donald J., to Hayes Products L.P. Aspiration-type sprayer. 5,383,603, Cl. 239-314.000.
Enning, Norbert: *See*—
Kreis, Gundolf; Timm, Heinrich; Enning, Norbert; and Spies, Robert, 5,383,987, Cl. 156-60.000.
Enomoto, Kazumitsu: *See*—
Ogawa, Masahide; Abe, Kiyoshi; Takahashi, Masao; Washio, Yuzi; Enomoto, Kazumitsu; and Kitsu, Toshio, 5,384,191, Cl. 428-523.000.
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Paxman, Richard G., 5,384,455, Cl. 250-201.900.
Enso Diagnostics, Inc.: *See*—
Kline, Stanley, 5,384,241, Cl. 435-6.000.
Enga, Anthony B.; and Morse, Richard G., to Warner-Lambert Company. Perborate persulfate: protease denture cleanser tablet composition. 5,384,062, Cl. 252-99.000.
EP Technologies, Inc.: *See*—
Jackson, Jerome; and Stern, Roger A., 5,383,874, Cl. 606-1.000.
Epperson, Bert P., to Epperson-Thompson Golf, L.L.C. Golf putter and putter head. 5,383,664, Cl. 273-167.00B.
Epperson-Thompson Golf, L.L.C.: *See*—
Epperson, Bert P., 5,383,664, Cl. 273-167.00B.
Erhardt, Heinrich S.: *See*—
Thomas, Huw K.; Carolin, Roger A.; Erhardt, Heinrich S.; and McConnell, Christopher F., 5,383,484, Cl. 134-184.000.
Ericsson GE Mobile Communications Inc.: *See*—
Downs, Stephen R.; Teel, James L., Jr.; and Herndon, Charles C., 5,384,854, Cl. 381-81.000.
Rydbeck, Nils R., 5,384,844, Cl. 379-433.000.
Zinser, Richard L., 5,384,793, Cl. 371-69.100.
Ernecke, Christoph M.; Barten, Michael; and Toutaoui, Mustapha, to Otis Elevator Company. Adaptive digital velocity control loop for a high performance elevator door system with low cost. 5,384,439, Cl. 187-316.000.
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Gulliford, Philip; Imrons, Wim; and Teel, James L., 5,384,776, Cl. 370-85.100.
Escher, Claus: *See*—
Hemmerling, Wolfgang; Dubal, Hans-Rolf; Escher, Claus; Illian, Gerhard; Inoguchi, Yoshio; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,384,070, Cl. 252-299.610.
Escobosa, David S. Eyeglass retainer with sweatband. 5,384,605, Cl. 351-113.000.
Essex Corporation: *See*—
Turpin, Terry M., 5,384,573, Cl. 342-179.000.
Essig, Mitchell N.: *See*—
Wilk, Peter J.; and Essig, Mitchell N., 5,383,883, Cl. 606-169.000.
Estupinan, Miguel: *See*—
Munoz, Eugene J.; Estupinan, Miguel; and Bestyr, Charles A., 5,383,844, Cl. 602-20.000.
Eta SA Fabriques d'Ebauches: *See*—
Ferenczy, Laszlo, 5,384,755, Cl. 368-35.000.
Ethicon Endo-Surgery: *See*—
Hempel, Sven; and Wulf, Thomas, 5,383,861, Cl. 604-167.000.
Ethicon, Inc.: *See*—
Buess, Gerhard; Huss, Kirsten; Hempel, Sven; and Schuldt, Thomas, 5,383,882, Cl. 606-157.000.
Hooven, Michael D., 5,383,880, Cl. 606-142.000.
McGregor, Walter; and Shchervinsky, Semyon, 5,383,901, Cl. 606-223.000.
Ethyl Petrolium Additives, Inc.: *See*—
Kadkhodayan, Abbas, 5,384,054, Cl. 252-32.70E.
Etoh, Jun; Nakagome, Yoshinobu; Tanaka, Hitoshi; Kawamoto, Koji; and Aoki, Masakazu, to Hitachi, Ltd.; and Hitachi ULSI Engineering. Reference voltage generator. 5,384,740, Cl. 365-189.090.
Etzbach, Karl-Heinz; Beckmann, Stefan; Nuyken, Oskar; Strohriegl, Peter; and Mueller, Harry, to BASF Aktiengesellschaft. Copolymers with non-linear optical properties and the use thereof. 5,384,378, Cl. 526-256.000.
Etzbach, Karl-Heinz: *See*—
Bach, Volker; Etzbach, Karl-Heinz; and Sens, Ruediger, 5,384,402, Cl. 544-105.000.
Eurocopter France: *See*—
Aubry, Jacques A., 5,383,767, Cl. 416-134.00A.
Everest, John R. Explosive lines. 5,383,405, Cl. 102-275.800.
Everndyk, David A.: *See*—
McKinney, Osborne K.; Everndyk, David A.; and Rowland, Michael E., 5,384,373, Cl. 526-212.000.
Exxon Chemical Patents Inc.: *See*—
Turner, Howard W.; Hlatky, Gregory G.; and Eckman, Richard R., 5,384,299, Cl. 502-155.000.
Exxon Production Research Company: *See*—
Duren, Richard E.; and Andersen, Kenneth D., 5,384,752, Cl. 367-31.000.
Exxon Research & Engineering Co.: *See*—
Koros, Robert M., 5,384,336, Cl. 518-700.000.
Eylon, Dan: *See*—
Seidner, Daniel; and Eylon, Dan, 5,384,648, Cl. 358-534.000.
Exel, Inc.: *See*—
Kumagai, Ryohei, 5,384,866, Cl. 382-55.000.
Faict, Dirk: *See*—
Segers, Alain; Faict, Dirk; Duponchelle, Annick; Hartmes, Jean-Pierre; and Peluso, Francesco, 5,383,324, Cl. 53-425.000.
Falini, Jeffery P.; and Gaultney, Lawrence D., to Du Pont de Nemours, E. I., and Company. Direct in-line injection of particulate compositions in spraying systems. 5,383,611, Cl. 241-30.000.
Faloesi, Aldo; and Thomas, Paul. Unisex connector/modular adapter systems. 5,383,795, Cl. 439-362.000.
Fanuc Ltd.: *See*—
Kato, Tetsuaki, 5,384,525, Cl. 318-610.000.
Masuda, Teruo, 5,384,523, Cl. 318-568.190.
Farmalyoc: *See*—
Courteille, Frederic; Coutel, Anne; Lebreton, Guy; and Veillard, Michel, 5,384,124, Cl. 424-430.000.
Farnum, Sylvia A.: *See*—
Stevenson, Dina E.; Kirk, Mark P.; Farnum, Sylvia A.; Frank, William C.; Helland, Randall H.; Kitchin, Jonathan P.; Mader, Roger A.; Mizza, Mark B.; Newmark, Richard A.; Ramsden, William D.; Saktizadeh, Kumars; Spawn, Terence D.; and Tiers, George V., 5,384,237, Cl. 430-566.000.
Farr, Glyn P. R., to Lucas Industries Public Limited Company. Hydraulic braking systems for vehicles. 5,383,719, Cl. 303-113.200.
Farrar, David; Flesher, Peter; Skinner, Malcolm; Clarke, John; and Marshall, David, to Allied Colloids Limited. Water absorbing polymers. 5,384,343, Cl. 523-129.000.
Farwell, William D.: *See*—
Henson, Bradley S.; and Farwell, William D., 5,384,494, Cl. 327-331.000.
Fasola, Giancarlo; and Bassi, Mario, to Industrie Magneti Marelli S.p.A. Starter system for an internal combustion engine and a solenoid usable in the starter system. 5,383,428, Cl. 123-179.300.
Fatigante, Michael D.: *See*—
Mandy, John C.; and Fatigante, Michael D., 5,384,060, Cl. 251-92.000.
Faxon, Johan. Arrangement for cleaning of pipelines. 5,383,975, Cl. 134-22.110.
Feeley, Jennifer S.; Simone, Dianne O.; Quick, Leonard M.; and Hamil, Martha M., to Engelhard Corporation. Stabilized catalyst carrier and improved carrier configuration for catalytic combustion system. 5,384,300, Cl. 502-252.000.
Fehlmann, Wolfgang, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 5,383,436, Cl. 123-450.000.
Feistkorn, Werner; and Voss, Klaus-Peter, to Windmoller & Holscher. Method and apparatus for the reduction of the sag and/or of the varying stress profile of a flattened tubular film web produced by a blown film process. 5,384,080, Cl. 264-40.600.
Fennema, Paul: *See*—
Forare, Lester; Fennema, Paul; and Gagne, Roger, 5,383,449, Cl. 128-203.110.
Ferenczy, Laszlo, to Eta SA Fabriques d'Ebauches. Timepiece of the mechanical or electromechanical type including a drive wheel controlling at least one display system such as a date display. 5,384,755, Cl. 368-35.000.
Ferguson, Richard H.; and Wiedrich, Charles R., to PPG Industries, Inc. Chemical feeder. 5,384,102, Cl. 422-264.000.
Fernandez, Emilio A.; and Bezos, Angel P., to Pulse Electronics. Brake control of helper locomotive. 5,383,717, Cl. 303-3.000.
Ferri, Mario: *See*—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Sigaorini, Ernesto; and Ferri, Mario, 5,384,325, Cl. 514-368.000.
Ferrini, Pier G., to Ciba-Geigy Corporation. Aminoalkylphenyl compounds. 5,384,319, Cl. 514-227.800.
Fettes, Ian U.: *See*—
Stotesbury, Gregory S.; and Fettes, Ian U., 5,383,300, Cl. 43-24.000.
Fettig, Peter T.: *See*—
Auer, Michael L.; Chornesky, Victor I.; Fettig, Peter T.; Gunderson, Richard C.; McBroom, Jeffrey A.; and Sharrow, James S., 5,383,467, Cl. 128-664.000.
Fetting, Karl A.: *See*—
Shannon, John H.; Fetting, Karl A.; and Cote, Robert E., 5,384,875, Cl. 385-51.000.
Fiat Ferroviaria S.p.A.: *See*—
Vasolo, Pietro; Magnani, Alberto; Debbia, Emilio; Guglielmi, Claudio; Cencio, Luigi; and Gerbaudo, Luciano, 5,383,406, Cl. 105-401.000.
Fichte, Stanley L.: *See*—
Allen, Richard C.; Cisneros, Gary M.; Fichte, Stanley L.; Hughes, Gary N.; Johnson, Walter S.; Konsevich, James L.; Piccone, John; and Stewart, Bernard E., 5,384,652, Cl. 359-172.000.
Fiege, Helmut: *See*—
Klein, Alfons; Kron, Rudolf; Fiege, Helmut; and Paetz, Klaus-Christian, 5,384,059, Cl. 252-73.000.
Field, Robert W.; and Doerr, Derek V., to Field, Robert W.; and Kingston, Gordon J. Saddle-joint jig. 5,383,282, Cl. 33-529.000.
Filippo i. Vasteras Handelsbolag: *See*—
Droese, Walter, 5,383,245, Cl. 15-183.000.

Filippini, Lucio: *See*—
Casnaggi, Giovanni; Filippini, Lucio; Guameroli, Marilena; Riva, Raul; Garavaglia, Carlo; Signorini, Ernesto; and Ferri, Mario, 5,384,325, Cl. 514-368.000.

Filterwerk Mann & Hummel GmbH: *See*—
Brandauer, Otto; and Goth, Gerhard, 5,383,493, Cl. 137-625.460.

Finkbeiner, Ludwig; and Wilhelm, Manfred, to Robert Bosch GmbH. Tool for treating surfaces of structural parts and carrier material for the same. 5,384,201, Cl. 428-552.000.

Finkenzeller, Ulrich: *See*—
Poetsch, Eike; Jubb, Raymond; Finkenzeller, Ulrich; Jacob, Thomas; Ohngemach, Jorg; and Wilhelm, Stefan, 5,384,066, Cl. 252-299.010.

Florenza, John A., II, to Briggs & Stratton Corporation. Microprocessor-controlled inductive ignition system. 5,383,433, Cl. 123-416.000.

Fischer, Bernhard; Wunderling, Martin; and Guenther, Martin, to Hewlett-Packard Company. Method for manufacturing an optical probe. 5,383,453, Cl. 128-634.000.

Fischer, Eugene B.: *See*—
Winterson, Warren D.; Crump, John C., III; and Fischer, Eugene B., 5,383,479, Cl. 131-303.000.

Fischer, Eugene C.: *See*—
Sorathia, Usman A.; Houghton, Deborah A.; Owen, David P.; Pipyne, Markus R.; Jones, Wayne C.; Castelli, Vincent J.; Fischer, Eugene C.; Venkatachalam, Ravanasamudram S.; Loup, Douglas; and Stephenson, Carlisle R., 5,383,567, Cl. 220-4.130.

Fischer, Hans, to Schablonentechnik Kuestein Ges. m.b.H. Process for manufacturing a screen printing stencil. 5,384,007, Cl. 156-640.000.

Fishbeck, Thomas L.; Reichel, Curtis J.; and Dailey, James S., to BASF Corporation. CFC and HCFC-free rigid insulating foams having low-K factors and decreased flammability. 5,384,338, Cl. 521-131.000.

Fisher, Charles W.: *See*—
Bridges, Donald Y.; and Fisher, Charles W., 5,383,496, Cl. 118-99.000.

Fisher, Kevin D., to Quantum Corporation. PRML sampled data channel synchronous servo detector. 5,384,671, Cl. 360-51.000.

Fisk, Duane H.; and Playfair, David B., to Xerox Corporation. Automatic toner dispenser lid latching and unlatching system. 5,383,502, Cl. 141-364.000.

Fisons plc: *See*—
Donald, David K.; and Furber, Mark, 5,384,316, Cl. 514-183.000.
Jullien, Joseph P. R.; Batey, Jonathan H.; and Mellor, Robert, 5,384,461, Cl. 250-292.000.

Fister, Dietmar: *See*—
Konig, Theo; and Fister, Dietmar, 5,384,306, Cl. 501-152.000.

Fladung, Philip E. Multi-purpose plug-in electrical outlet adaptor. 5,383,799, Cl. 439-652.000.

Flannagan, Stephen T.: *See*—
Childs, Lawrence F.; Jones, Kenneth W.; Flannagan, Stephen T.; and Chang, Ray, 5,384,737, Cl. 365-189.050.

Flatten, Jeffrey J., to Teleflex Incorporated. Main deck quick change cargo system. 5,383,630, Cl. 244-118.600.

Fleet, George W. J.; and Winchester, Bryan G., to Monsanto Company. Hepditols. 5,384,417, Cl. 549-476.000.

Fleischhacker-Jeworrek, Margit: *See*—
Hauffe, Dieter; and Fleischhacker-Jeworrek, Margit, 5,383,982, Cl. 148-262.000.

Fleaher, Peter: *See*—
Farrar, David; Fleaher, Peter; Skinner, Malcolm; Clarke, John; and Marshall, David, 5,384,343, Cl. 523-129.000.

Flex Products, Inc.: *See*—
Phillips, Roger W.; Mayer, Thomas; and Ash, Gary S., 5,383,995, Cl. 156-230.000.

Fliedner, Christine; Schnippering, Friedhelm; Rodder, Karl-Martin, deceased (by Rodder, Krista, administrator); and Mattes, Reinhard, to Hals Aktiengesellschaft. Binders for storage-stable coating compositions. 5,384,350, Cl. 524-261.000.

Fliermans, Carl B.: *See*—
Hazen, Terry C.; and Fliermans, Carl B., 5,384,048, Cl. 210-605.000.

Flinders University of South Australia, The: *See*—
Berry, Michael N.; Town, Michael-Harold; Kresse, Georg-Burkhard; and Herrmann, Uwe, 5,384,246, Cl. 435-22.000.
Berry, Michael N.; Town, Michael-Harold; Kresse, Georg-Burkhard; and Hermann, Uwe, 5,384,247, Cl. 435-22.000.

Floettmann, Kai-Uwe: *See*—
Hild, Eugen; and Floettmann, Kai-Uwe, 5,383,275, Cl. 30-475.000.

Florida State University: *See*—
Holton, Robert A., 5,384,399, Cl. 544-97.000.

Flow Design, Inc.: *See*—
Golestan, Farhad; and Trantham, John M., 5,383,489, Cl. 137-804.000.

Floyd, Michael D.: *See*—
Yatim, David; Bonet, Luis A.; Corleto, Jose G.; and Floyd, Michael D., 5,384,807, Cl. 375-27.000.

Fluck, Rene , to SIG Schweizerische Industrie-Gesellschaft. Apparatus for selectively separating articles from a stack using wheel mounted pushers. 5,383,761, Cl. 414-798.900.

Flugstad, Bea; Cyrus, Judith; and Powers, Daniel J., to Hewlett-Packard Corporation. Method and apparatus for calibrating the energy output of a defibrillator. 5,384,544, Cl. 324-678.000.

Fluid Packaging Company Inc.: *See*—
Mandy, John C.; and Fatigante, Michael D., 5,384,060, Cl. 253-92.000.

Flytzani-Stephanopoulos, Maria; and Liu, Wei, to Massachusetts Institute of Technology. Catalyst for elemental sulfur recovery process. 5,384,301, Cl. 502-304.000.

FMC Corporation: *See*—
Taeuber, Ralph, Jr.; Castillo, Sergio A., Jr.; and Ash, Robert H., Jr., 5,383,694, Cl. 285-374.000.

Fodor, Ludovic: *See*—
Bishop, Julie C.; Chan, Dominic M.; Donald, Dennis S.; Fodor, Ludovic; Pangratz, William R.; Russo, Glenn M.; and Shock, John R., 5,384,232, Cl. 430-440.000.

Fodor, Stephen P. A.: *See*—
Winkler, James L.; Fodor, Stephen P. A.; Buchko, Christopher J.; Ross, Debra A.; and Aldwin, Lois, 5,384,261, Cl. 436-518.000.

Fokkink, Lambertus G. J.: *See*—
De Bakker, Johannes W. G.; Fokkink, Lambertus G. J.; Van Der Putten, Andreas M. T. P.; and Kox, Henricus A. M., 5,384,154, Cl. 427-123.000.

Folci, Giovanni A.: *See*—
Garughieri, Andrea; and Folci, Giovanni A., 5,383,382, Cl. 83-471.300.

Fontana, Steven A., to Eli Lilly and Company. Methods for inhibiting aortal smooth muscle cell proliferation and restenosis with 1,1,2-triphenylbut-1-ene derivatives. 5,384,332, Cl. 514-648.000.

Forare, Lester; Fennema, Paul; and Gagne, Roger, to Puritan-Bennett Corporation. Ventilator control system for mixing and delivery of gas. 5,383,449, Cl. 128-205.110.

Ford Motor Company: *See*—
Cullen, Michael J.; Gee, Thomas S.; Schubert, Thomas A.; Pursifull, Ross D.; and Kotwicki, Allan J., 5,383,432, Cl. 123-406.000.
Ebenstein, Samuel E., 5,384,717, Cl. 364-560.000.
El-Khoury, Joseph B.; Timte, Frank W.; Kuchta, Gerard P.; and League, Edmond R., 5,383,825, Cl. 477-149.000.
Hashemi, Amin H.; and Hill, Robert A., 5,383,950, Cl. 65-348.000.
Kerns, James M.; Cullen, Michael J.; and Sweppy, Michael S., 5,384,707, Cl. 364-431.110.
Kulmaczewski, David M., 5,383,363, Cl. 73-510.000.
Logothetis, Eleftherios M.; Hamburg, Douglas R.; Cook, Jeffrey A.; and Rimai, Lajos, 5,383,333, Cl. 60-276.000.
Macdonald, Fraser J., 5,383,540, Cl. 192-3.290.
Pierce, Stanley L., 5,383,822, Cl. 475-281.000.
Sooriakumar, Kathirgamasundaram; Barua, Debojit; and Fried, Marcus W., 5,383,597, Cl. 239-5.000.
Stockton, Thomas R., 5,383,542, Cl. 192-45.100.
Tibbles, Thomas T., 5,383,812, Cl. 474-28.000.
Zurek, Lawrence A.; Kosztowny, Michele T.; and Clowater, Lorna J., 5,383,356, Cl. 73-118.200.

Fork, David K.: *See*—
Welch, David F.; Waarts, Robert G.; Major, Jo S.; Bringans, Ross D.; Fork, David K.; Connell, G. A. Neville; and Thornton, Robert L., 5,384,797, Cl. 372-23.000.

Forrest, James, to Osprey Metals Limited. Device for introducing particulate material. 5,383,649, Cl. 266-44.000.

Forsyth, Michael J.: *See*—
Baxter, David C.; and Forsyth, Michael J., 5,383,582, Cl. 222-548.000.

Foster, Christopher J.; Gilkerson, Terence; Stocker, Richard; and Gilmore, Ian J., to Shell Research Limited. Herbicidal carboxamide compounds. 5,384,305, Cl. 504-130.000.

Foster, John S.: *See*—
Crawforth, Linden J.; Foster, John S.; and Spong, Jaquelin K., 5,384,675, Cl. 360-75.000.

Foster, Matthew R.; Greenlees, Bruce; and Duncan, Ian J. H., to Marmon Corporation of Canada, Ltd., The. Method and apparatus for increasing the quantity and improving the quality of hatchlings incubated and hatched under artificial conditions by exposing the eggs to natural sounds. 5,383,424, Cl. 119-174.000.

Fowler, John O.: *See*—
Banks, Simon A.; Adderley, Colin I.; Fowler, John O.; and Boardman, James E., 5,383,518, Cl. 165-166.000.

Fox, Ronald C. S., to Alcatel Australia Limited. Line switch control circuit arrangement for telephone subset. 5,384,837, Cl. 379-165.000.

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Sawhill, James W.; Freeman, Leon D.; and McKinney, Carl, 5,384,092, Cl. 422-32.000.

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Ramm, Jurgen; Beck, Eugen; Frei, Hugo; Zueger, Albert; and Peter, Gunter, 5,384,018, Cl. 204-192.380.

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Wunderlich, Jens-Christian; Schick, Ursula; Freidenreich, Jurgen; and Werry, Jurgen, 5,384,129, Cl. 424-451.000.

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Truty, Thomas J.; French, Jule L.; and Newell, Kevin M., 5,384,444, Cl. 219-69.120.

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Abbott, Donald C.; and Fritzsche, Robert M., 5,384,155, Cl. 427-125.000.

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Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,384,669, Cl. 360-48.000.

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Carlson, Gene D.; and Dela Cruz, Alfredo R., 5,384,199, Cl. 428-488.100.

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Ueno, Katsunori, 5,384,270, Cl. 437-40.000.

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Morikawa, Koji, 5,384,098, Cl. 422-111.000.

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Akao, Mutsuo; and Inoue, Koji, 5,384,173, Cl. 428-35.700.
Kojima, Masaya; Niitsuma, Kazuhiro; Hayakawa, Satoru; Kawamata, Toshio; and Endo, Yasushi, 5,384,175, Cl. 428-64.000.
Matsuoka, Koushin; Shimada, Yasuhiro; and Yoneyama, Hiroyuki, 5,384,236, Cl. 430-558.000.
Takahashi, Shinsuke; and Shibata, Norio, 5,384,162, Cl. 427-356.000.
Ueda, Fumitaka; Nishigaki, Junji; and Ikegawa, Akihiko, 5,384,234, Cl. 430-504.000.
Wakamatsu, Kan; Wakata, Yuichi; Satomura, Masato; and Namiki, Tomizo, 5,384,227, Cl. 430-156.000.

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Hasegawa, Ken; and Masui, Takanori, 5,384,645, Cl. 358-444.000.
Nakamura, Yasuo; Kogure, Yoshio; Ichikawa, Hideo; Miyazawa, Takuji; and Ryuzaki, Takahiko, 5,384,630, Cl. 355-277.000.
Sato, Katsuhiro; Torikoshi, Kaoru; Tanaka, Hiroyuki; Tambo, Fumiaki; and Akasaki, Yutaka, 5,384,076, Cl. 252-518.000.
Spitz, A. Lawrence, 5,384,864, Cl. 382-9.000.
Tambo, Fumiaki, 5,384,157, Cl. 427-126.300.
Uno, Yasuhiro, 5,384,517, Cl. 315-169.300.

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Masuda, Hiroyuki; Hosokawa, Kazutoshi; Fujii, Kensaku; and Ohga, Juro, 5,384,843, Cl. 379-391.000.

Fujii, Michihiro: *See*—
Watanabe, Mamoru; and Fujii, Michihiro, 5,384,629, Cl. 355-260.000.

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Tanaka, Masahide; Fujimoto, Tadaaki; and Takahata, Kazunori, 5,384,056, Cl. 252-56.00R.

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Fujino, Seiji: *See*—
Katada, Mitsutaka; Tsuruta, Kazuhiro; Fujino, Seiji; and Onoda, Michitoshi, 5,383,993, Cl. 156-153.000.

Fujitsu Limited: *See*—
Honjo, Ichiro; Sugishima, Kenji; and Yamabe, Masaki, 5,384,463, Cl. 250-398.000.

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Arimatsu, Masatomo, 5,384,907, Cl. 395-150.000.
Dedic, Ian J., 5,384,570, Cl. 341-172.000.
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Hiwatashi, Sanauki, 5,384,839, Cl. 379-219.000.
Kikuchi, Hiroaki, 5,384,848, Cl. 380-48.000.
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Nishida, Kenji; and Sato, Noriaki, 5,384,485, Cl. 257-751.000.
Shiba, Akira, 5,383,464, Cl. 128-661.090.
Tokuda, Hideo; and Tanizawa, Tetsu, 5,384,533, Cl. 324-158.100.
Tomita, Hiroyoshi; Yanagisawa, Makoto; and Kodama, Yukinori, 5,384,726, Cl. 365-63.000.
Tomita, Hiroyoshi, 5,384,789, Cl. 371-40.100.
Watanabe, Mamoru; and Fujii, Michihiro, 5,384,629, Cl. 355-260.000.
Yamato, Kouji; and Ito, Kazuhiko, 5,384,766, Cl. 370-13.000.
Yoshioka, Junichi; Okihara, Daijiro; Yamauchi, Chiaki; Watanabe, Takeshi; Nakajima, Toshiya; Ichikawa, Madoka; Takayama, Jun; Iseno, Akihiro; Ninomiya, Takeshi; and Hamada, Shinji, 5,384,673, Cl. 360-72.200.

Fujiwara, Masatsugu: *See*—
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, masashi; and Onuma, Tsutomu, 5,384,224, Cl. 430-106.000.

Fujiwara, Toshiaki: *See*—
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Fukahori, Hidehiko: *See*—
Kaihara, Shoji; and Fukahori, Hidehiko, 5,384,612, Cl. 354-149.100.

Fukano, Hiroshi: *See*—
Sumida, Hiroyasu; Itabashi, Akihisa; Fukano, Hiroshi; Shijo, Hiroyasu; Takashima, Hiroshi; Ogiwara, Takeshi; and Kishi, Fumio, 5,383,754, Cl. 412-11.000.

Fukase, Tadashi, to NEC Corporation. Method of forming a semiconductor device having self-aligned contact holes. 5,384,287, Cl. 437-228.000.

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Ogawa, Hisashi; Nabeshima, Yutaka; and Fukumoto, Masanori, 5,384,276, Cl. 437-52.000.

Fukushi, Keiji: *See*—
Koyama, Toru; Honjo, Koo; Suzuki, Masao; Takahashi, Akio; Mukoh, Akio; Fukushi, Keiji; and Numata, Seiji, 5,384,197, Cl. 428-457.000.

Fukushima, Hiroyuki: *See*—
Ogawa, Yukio; Fukushima, Hiroyuki; and Mizuno, Rikako, 5,384,609, Cl. 354-81.000.

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Fulghum, Trent A.: *See*—
Whitaker, Emert R.; Fulghum, Trent A.; Keazer, James J.; and Pritchett, James A., 5,383,251, Cl. 15-320.000.

Fulling, Frank: *See*—
Lomp, Martin G.; Fulling, Frank; DeMello, Wayne M.; and Neagle, William A., 5,384,780, Cl. 370-94.100.

Funnell, David M. Surgical biopsy instrument. 5,383,471, Cl. 128-751.000.

Furay, David M.: *See*—
Morehouse, James H.; Furay, David M.; Alt, Robert A.; and Emo, Bruce D., 5,384,677, Cl. 360-99.120.

Furber, Mark: *See*—
Donald, David K.; and Furber, Mark, 5,384,316, Cl. 514-183.000.

Furuhama, Shoichi: *See*—
Jorach, Rainer; Binder, Klaus; and Furuhama, Shoichi, 5,383,647, Cl. 251-63.000.

Furukawa Denchi Kabuiki Kaidu: *See*—
Furukawa, Jun, 5,384,210, Cl. 429-59.000.

Furukawa Electric Co., Ltd., The: *See*—
Naka, Yasuhiro; and Komura, Yukio, 5,383,946, Cl. 65-443.000.

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Furuki, Katsuya, to NEC Corporation. Hi-speed and low-power flip-flop. 5,384,493, Cl. 327-203.000.

Furuya, Tadashi: *See*—
Kugoh, Harumi; Araya, Junji; Yano, Hideyuki; and Furuya, Tadashi, 5,384,626, Cl. 355-219.000.

Fussnegger, Wolfgang; and Brinkschroeder, Harald, to Mercedes-Benz AG. Sheet-steel component and light sheet metal component welded joint. 5,383,592, Cl. 228-135.000.

Futami, Yukiko: *See*—
Yoshinaga, Kazuo; Kurabeyashi, Yutaka; Ohnishi, Toshikazu; Futami, Yukiko; and Miyazaki, Takeshi, 5,384,069, Cl. 252-299.010.
Fyson, John R., to Eastman Kodak Company. Effluent treatment. 5,384,036, Cl. 210-724.000.
G & H Technology, Inc.: *See*—
Kerek, Leslie; and Rudoy, Edward, 5,383,790, Cl. 439-248.000.
Gabi, Urs: *See*—
Schlatter, Reinhard; Gabi, Urs; and Ehrat, Rainer, 5,384,004, Cl. 156-543.000.
Gabrielidis, Pericles. Racket with improved strings pattern. 5,383,662, Cl. 273-33.000.
Gadelle, Andree: *See*—
Suc, Sophie; Defaye, Jacques; Gadelle, Andree; and Kervennal, Jacques, 5,383,964, Cl. 106-210.000.
Gaffney, Thomas W.; and Killen, Thomas E. Kit for door reinforcement. 5,383,509, Cl. 160-209.000.
Gagel, Simon; Sheen, ShiowShuh; and Moyer, John, to DCA Food Industries, Inc. Process for preparing tender, juicy microwaveable meat. 5,384,140, Cl. 426-243.000.
Gagne, Roger: *See*—
Forare, Lester; Fennema, Paul; and Gagne, Roger, 5,383,449, Cl. 128-205.110.
Galiasso, Roberto: *See*—
Prada, Ricardo; Galiasso, Roberto; Romero, Yilda; Reyes, Edito; and Rodriguez, Edilberto, 5,384,297, Cl. 502-66.000.
Gallucci, Robert R.: *See*—
Gemmell, Linda M.; Tennant, Otho W.; and Gallucci, Robert R., 5,384,353, Cl. 524-494.000.
Galperin, Leonid B., to UOP. Stable, high-yield reforming catalyst. 5,384,038, Cl. 208-138.000.
Gamper, Steven C.: *See*—
Summerville, Don S.; Gillespie, Lionel D.; and Gamper, Steven C., 5,383,297, Cl. 40-611.000.
Ganster, Otto: *See*—
Trinks, Rainer; Ganster, Otto; and Konigshofen, Heinrich, 5,384,385, Cl. 528-52.000.
Garavaglia, Carlo: *See*—
Canaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Signorini, Ernesto; and Ferri, Mario, 5,384,325, Cl. 514-368.000.
Gardaz, Claudine; and Buffard, Jean-Pierre, to SEB S.A. Process for the application of a fluorocarbonated resin base coating to a flat metallic support. 5,383,264, Cl. 29-527.200.
Gardemal, Robert C., Jr.; Otto, Kurt J.; and Roberts, Gregory A., to Loral Aerospace Corp. Real time connectivity algorithm system. 5,384,860, Cl. 382-1.000.
Gardner, Richard S.: *See*—
Webb, Phillip S.; Messner, Andrew R.; Street, John A.; and Gardner, Richard S., 5,383,289, Cl. 34-449.000.
Garrett, Mark H.; and Rytz, Daniel, to Sandoz Ltd. Rotatable crystal positioning apparatus. 5,384,663, Cl. 359-896.000.
Garuglieri, Andrea; and Folci, Giovanni A., to Black & Decker Inc. Saw table with releasable locking device. 5,383,382, Cl. 83-471.300.
Garuglieri, Andrea, to Black & Decker Inc. Tool mounting means and implement therefor. 5,383,383, Cl. 83-666.000.
Gas Research Institute: *See*—
Bennett, David E.; and Hopman, Jeffrey G., 5,383,350, Cl. 73-35.000.
Gaskins, Darius D.: *See*—
Parks, Terry J.; and Gaskins, Darius D., 5,384,788, Cl. 371-37.700.
Gatecliff, George W.: *See*—
Richardson, Hubert, Jr.; and Gatecliff, George W., 5,383,772, Cl. 418-55.400.
Gates, Janine M.: *See*—
Ebner, Fritz F.; Macera, Ronald C.; Sulenski, Shelly D.; Gates, Janine M.; Mikolanis, Sue; Richar, James D.; and Hawes, M. Kerrigan, 5,384,620, Cl. 355-202.000.
Gaultney, Lawrence D.: *See*—
Falini, Jeffery P.; and Gaultney, Lawrence D., 5,383,611, Cl. 341-30.000.
Gaw, Eag T.: *See*—
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Gay, Kenneth F. Open frame rack assembly. 5,383,562, Cl. 211-181.000.
Gaztech International Corporation: *See*—
Wong, Jacob Y., 5,384,640, Cl. 356-437.000.
GE Medical Systems: *See*—
Jedlitschka, Hans; and Delacroix, Vincent, 5,384,821, Cl. 378-199.000.
GE Medical Systems S.A.: *See*—
Boussert, Jean; Bodelet, Philippe; and Tomietto, Thierry, 5,384,602, Cl. 348-428.000.
GE Plastics Japan: *See*—
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, 5,384,388, Cl. 528-204.000.
Gebr. Happich GmbH: *See*—
Agro, Marc; Hilt, Gerard; Rust, Sabine; Hornung, Christian; Peters, Henning; and Zweigart, Gerhard, 5,383,700, Cl. 296-97.900.
GEC Alsthom Electromecanique SA: *See*—
Coulon, Andre , 5,383,985, Cl. 148-527.000.
Gec Alsthom T & D SA: *See*—
Ebersohl, Gerard; and Thuries, Edmond, 5,384,678, Cl. 361-62.000.
Gee, Thomas S.: *See*—
Callen, Michael J.; Gee, Thomas S.; Schubert, Thomas A.; Pursifull, Ross D.; and Kotwicki, Allan J., 5,383,432, Cl. 123-406.000.
Geelhaar, Thomas; Rieger, Bernhard; Reiffenrath, Volker; Bartmann, Ekkehard; and Coates, David, to Merck Patent Gesellschaft mit beschrankter Haftung. Matrix liquid-crystal display. 5,384,065, Cl. 252-299.630.
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Poetsch, ike; Binder, Werner; and Geelhaar, Thomas, 5,384,072, Cl. 252-299.630.
Gegenwarth, Richard E.; and Arnold, Anthony F., to International Business Machines Corporation. Resist protection of ball limiting metal during etch process. 5,384,283, Cl. 437-183.000.
Gehlbach, Peter: *See*—
Hoey, Michael; and Gehlbach, Peter, 5,383,873, Cl. 604-891.100.
Gelblum, Eugene A.: *See*—
Reilly, David M.; Havrilla, Joseph B.; Gelblum, Eugene A.; and Kazousky, Daniel, 5,383,858, Cl. 604-152.000.
Gell, Harold A., Jr.; and Haralambopoulos, Constantine. Method and apparatus for reflex blink reaction conditioning. 5,384,593, Cl. 348-61.000.
Gemmell, Linda M.; Tennant, Otho W.; and Gallucci, Robert R., to General Electric Company. Glass reinforced PC/ABS blend with toughness. 5,384,353, Cl. 524-494.000.
Genentech, Inc.: *See*—
Barker, Pefer L.; Burnier, John P.; and Thorsett, Eugene D., 5,384,309, Cl. 514-11.000.
Kogan, Timothy P.; and Somers, Todd C., 5,384,331, Cl. 514-646.000.
General Credit Forms, Incorporated: *See*—
McCormick, Joseph A., 5,383,817, Cl. 462-25.000.
General Electric Company: *See*—
Casavant, Scott D.; and Perlman, Stuart S., 5,384,599, Cl. 348-473.000.
Chambers, Gregory R.; Smith, Gary F.; and Yates, John B., III, 5,384,359, Cl. 525-64.000.
Gemmell, Linda M.; Tennant, Otho W.; and Gallucci, Robert R., 5,384,353, Cl. 524-494.000.
Gillette, Gregory R.; and Webb, Karen K., 5,384,159, Cl. 427-140.000.
Hall, Anne L., 5,383,462, Cl. 128-661.080.
Kwasnick, Robert F.; and Possin, George E., 5,384,271, Cl. 437-40.000.
Lay, Kenneth W., 5,384,307, Cl. 505-430.000.
Levinson, Lionel M.; Schultz, William N.; Lewis, Larry N.; Sumpter, Chris A.; and Zumbrum, Michael A., 5,384,357, Cl. 524-770.000.
Matzner, Bruce; Johansson, Eric B.; Wolters, Richard A., Jr.; Dunlap, Thomas G.; Elkins, Robert B.; King, Harold B.; and Sick, Paul W., 5,384,814, Cl. 376-352.000.
Neugebauer, Constantine A., deceased; Korman, Charles S.; Bates, David A.; Bicknell, William H.; and Daum, Wolfgang, 5,384,691, Cl. 361-794.000.
Richards, William D.; and Pickett, James E., 5,384,360, Cl. 525-68.000.
Scobbo, James J., Jr.; and Stoddard, Gregory J., 5,384,361, Cl. 525-74.000.
Tyrell, John A.; and Smith, Gary F., 5,384,387, Cl. 528-292.000.
Yates, John B., III, 5,384,363, Cl. 525-89.000.
General Motors Corporation: *See*—
Duce, Richard W.; and Quinn, David B., 5,384,030, Cl. 204-426.000.
Putty, Michael W.; and Eddy, David S., 5,383,362, Cl. 73-505.000.
Genesis, Inc.: *See*—
Hillman, Robert S.; and Pawelchak, John M., 5,383,848, Cl. 604-20.000.
Genus, Inc.: *See*—
Selbrede, Steven C., 5,383,971, Cl. 118-728.000.
Geo-Centers, Inc.: *See*—
Kidwell, David A.; and Conyers, Susan M., 5,384,265, Cl. 436-525.000.
Gerbaudo, Luciano: *See*—
Vanolo, Pietro; Magnani, Alberto; Debbia, Emilio; Gugliesi, Claudio; Cencio, Luigi; and Gerbaudo, Luciano, 5,383,406, Cl. 105-401.000.
Gerdes, William H.; Remus, Donald J.; Szymanski, Thomas; and Wolford, James A., to Norton Chemical Process Products Corp. Catalyst carrier. 5,384,302, Cl. 502-439.000.
German, Trevor J., to NCR Corporation. Zero hammer adjustment drum printer control technique. 5,383,399, Cl. 101-93.010.
Gersbech, John E., to International Business Machine Corp. Time domain component multiplexor. 5,384,546, Cl. 327-411.000.
Gershony, Gary; and Nowakowski, Karol W. Vascular sealing device. 5,383,896, Cl. 606-213.000.
Gersten, Martin, to Computed Anatomy Inc. Method for displaying corneal topography. 5,384,608, Cl. 351-212.000.
Geyer, Freddy; and Giraud, Dominique, to Aerospatiale Societe Nationale Industrielle. Articulated device for space vehicles, especially for temporarily sealing the aperture of space optical instruments. 5,384,661, Cl. 359-894.000.
Ghode, Anil P.; Diedrich, Thomas J.; and De Rome, Raymond D., to Snap-on Incorporated. Air motor with offset front and rear exhausts. 5,383,771, Cl. 418-15.000.

Gibbs, George S.: *See*—
Baxter, James T.; Vick, Doug M.; and Gibbs, George S., 5,383,765, Cl. 416-62.000.
Giebler, Siegfried: *See*—
Schairer, Werner; Angerstein, Jorg; Giebler, Siegfried; Riedel, Jurgen; and Mittele, Thomas, 5,384,471, Cl. 257-98.000.
Gilbarco: *See*—
Johnson, William S.; Payne, Edward A.; Boechler, Donald A.; and Phipps, Benita W., 5,384,850, Cl. 380-52.000.
Gilbert, Clifford W. Collapsible guitar having pivotal head. 5,383,385, Cl. 84-267.000.
Giles, David C.; Begin, Roger E.; Dugger, David R.; and Paskvan, Eric W., to Detroit Diesel Corporation. Thermal barrier coating and method of depositing the same on combustion chamber component surfaces. 5,384,200, Cl. 428-552.000.
Gilkerson, Terence: *See*—
Foster, Christopher J.; Gilkerson, Terence; Stocker, Richard; and Gilmore, Ian J., 5,384,305, Cl. 504-130.000.
Gillard, Clive H.; and Wilkinson, James H., to Sony United Kingdom Limited. Digital data apparatus for providing spatial multiplexing and demultiplexing of compressed data to be recorded and reproduced. 5,384,670, Cl. 360-48.000.
Gillespie, Lionel D.: *See*—
Summerville, Don S.; Gillespie, Lionel D.; and Gamper, Steven C., 5,383,297, Cl. 40-611.000.
Gillette Company, The: *See*—
Vu, Tuan M.; Krafton, Thomas J.; and Phipps, Alan M., 5,384,117, Cl. 424-66.000.
Gillette, Gregory R.; and Webb, Karen K., to General Electric Company. Process for restoring discharded silicone-polycarbonate parts. 5,384,159, Cl. 427-140.000.
Gilley, Richard M.: *See*—
Boyes, Robert N.; Tice, Thomas R.; Gilley, Richard M.; and Pledger, Kenneth L., 5,384,133, Cl. 424-501.000.
Gillis, Herbert R., to Imperial Chemical Industries PLC. Isocyanate reactive blends and internal mould release compositions. 5,384,351, Cl. 524-399.000.
Gilmore, Daniel R., III: *See*—
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Giorgi, David: *See*—
Zucker, Oved S. F.; McIntyre, Iain A.; Solone, Paul J.; and Giorgi, David, 5,384,798, Cl. 372-26.000.
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Glagow, Klaus: *See*—
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Glass, Jeffrey T.: *See*—
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Glassner, Andrew S.; Marimont, David H.; and Stone, Maureen C., to Xerox Corporation. Method of rendering a color image for an output medium from symbolic image data. 5,384,901, Cl. 395-131.000.
Glatt Ingenieurtechnik GmbH: *See*—
Bober, Reinhard; and Spielmann, Walter, 5,383,940, Cl. 23-313.0FB.
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Binder, Richard R. W.; Cantillon, Daniel J.; and Schneider, Jeffrey J., 5,384,217, Cl. 429-225.000.
Heiman, Jerome R.; and Bruss, Jack, 5,384,212, Cl. 429-143.000.
Glover, Neal: *See*—
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Waggamon, Dennis W.; and Whitaker, Louis G., 5,384,495, Cl. 307-326.000.
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Diersch, Rudolf; Janberg, Klaus; Methling, Dieter; and Schroder, Karl, 5,383,594, Cl. 228-234.300.
Goade, James C.; and Werner, Claude H., to Caterpillar Inc. Cradle bearing arrangement for axial piston hydraulic devices. 5,383,391, Cl. 92-12.200.
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Goedemans, Wilhelmus T.: *See*—
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Hehli, Markus; Gogolewski, Sylwester; and Perren, Stephan M., 5,383,931, Cl. 623-16.000.
Gold Effects, Inc.: *See*—
McLaughlin, Daniel A., 5,384,026, Cl. 205-117.000.
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Ciechanover, Aaron J.; Blumenfeld, Nava; and Gonen, Hedva, 5,384,255, Cl. 435-193.000.
Gonsalves, Alexander A.; Dudley, Everett D., Jr.; and Hogan, Gerard J., to Kraft General Foods, Inc. Low-fat, frozen whipped topping. 5,384,145, Cl. 426-565.000.
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Lattime, Richard R., 5,384,372, Cl. 526-83.000.
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Gordon, Terry. Floor mat dispensing apparatus and disposable floor mat. 5,383,570, Cl. 221-213.000.
Goth, Gerhard: *See*—
Brandauer, Otto; and Goth, Gerhard, 5,383,493, Cl. 137-625.460.
Goto, Makoto: *See*—
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De Fornel, Frederique; Goudonnet, Jean-Pierre; and Mantovani, James, 5,384,464, Cl. 250-492.200.
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Grace, Jimmie D. Dirt and rock removal apparatus for vehicle tires. 5,383,742, Cl. 404-15.000.
Grady, Alfred J., Jr.; Lal, Sudarshan; Mitchell, Mary J.; Okinaka, Yutaka; Smith, Craig G.; Trop, Harvey S.; and Wang, Chwan-Tasan, to AT&T Corp. Monitoring electroless plating baths. 5,384,153, Cl. 427-98.000.
Graham, John, to Alpha Industries, Inc. Double cut die set. 5,383,381, Cl. 83-385.000.
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Hassig, Fredy; and Stolz, Marcel, 5,383,755, Cl. 412-16.000.
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Urion, Kenard E., 5,383,737, Cl. 401-48.000.
Gravell, Linda V.: *See*—
Colline, Jacqueline; Doeberl, Terrence M.; Gravell, Linda V.; and Hunter, Kevin D., 5,384,708, Cl. 364-464.020.
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., to Secretary of State for Defence in her Britannic Majesty's Government of the U.K. of Gt. Britian and Northern Ireland. Chiral liquid crystal compounds. 5,384,071, Cl. 252-299.630.
Green, David T.; Bolanos, Henry; Young, Wayne P.; McGarry, Richard A.; Heaton, Lisa W.; and Ratcliff, Keith, to United States Surgi-

cal Corporation. Safety device for use with endoscopic instrumentation. 5,383,881, Cl. 606-143.000.
Green, James A., II; and Young, Donald C., to Union Oil Company of California. Oligomeric thiocarbonates. 5,384,329, Cl. 514-512.000.
Green, James R.: *See*—
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Greenfield, Arnold. Early warning heat sensor system. 5,384,562, Cl. 340-384.000.
Greenlees, Bruce: *See*—
Foster, Matthew R.; Greenlees, Bruce; and Duncan, Ian J. H., 5,383,424, Cl. 119-174.000.
Grossmeier Industrial Corp.: *See*—
Wang, Leao; and Wu, Peter, 5,383,819, Cl. 474-144.000.
Gregory, Peter; Kenyon, Ronald W.; Mistry, Prahalad M.; and Taylor, John A., to Zeneca Limited. Ink jet printing inks. 5,383,960, Cl. 106-22.000.
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Schobesberger, Claus; Weinrotter, Klaus; Griesser, Herbert; and Seidl, Sigrid, 5,384,390, Cl. 528-353.000.
Grim, Tracy E. Conformable shoe with vacuum formed sole. 5,383,290, Cl. 36-93.000.
Grinberg, Dennis N.; Rajagopalan, Sivaramakrishnan; Venkatesan, Ramarathnam; and Wei, Victor K.-W., to Bell Communications Research, Inc. Data compression. 5,384,568, Cl. 341-51.000.
Grocock, Peter G.; and Thomas, Philip M., to Davy McKee (Poole) Limited. Twin roll casting. 5,383,515, Cl. 164-480.000.
Groneberg, Robert D.: *See*—
Nicolaou, Kyriacos C.; Groneberg, Robert D.; Schreiner, Erwin P.; and Stahl, Wilhelm, 5,384,412, Cl. 549-214.000.
Grossi, Hermano: *See*—
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Guay, Gordon G.: *See*—
Rothstein, David M.; and Guay, Gordon G., 5,384,259, Cl. 435-252.130.
Guenther, Martin: *See*—
Fischer, Bernhard; Wunderling, Martin; and Guenther, Martin, 5,383,453, Cl. 128-634.000.
Gueret, Jean-Louis, to L'Oreal. Case, inter alia for make-up products, comprising a closing device that can be operated from the outside with aid of a push button. 5,383,560, Cl. 206-581.000.
Guerra, Miguel A.; and Stivers, David A., to Minnesota Mining and Manufacturing Company. Curing fluorocarbon elastomers. 5,384,374, Cl. 525-326.400.
Guglielmi, Claudio: *See*—
Vanolo, Pietro; Magnani, Alberto; Debbia, Emilio; Guglielmi, Claudio; Cencio, Luigi; and Gerbasdo, Luciano, 5,383,406, Cl. 105-401.000.
Guillou, Henri, to Hutchinson. Reinforcement for a sealing strip and a sealing strip including such reinforcement. 5,383,305, Cl. 49-440.000.
Gulda, Steven D.: *See*—
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Gulf States Paper Corporation: *See*—
Gulliver, Richard F.; and Green, James R., 5,383,596, Cl. 229-120.170.
Gulliford, Philip; Imron, Wim; and Teel, James L., to Erricsson GE Mobile Communications Inc. Audio routing within trunked radio frequency multisite switch. 5,384,776, Cl. 370-85.100.
Gulliver, Richard F.; and Green, James R., to Gulf States Paper Corporation. Plural tray compartment carton package. 5,383,596, Cl. 229-120.170.
Gunderson, Jeffrey E., to Acry Fab Inc. Lid dispenser. 5,383,571, Cl. 221-223.000.
Gunderson, Richard C.: *See*—
Auer, Michael L.; Chornenky, Victor I.; Fettig, Peter T.; Gunderson, Richard C.; McBroom, Jeffrey A.; and Sharrow, James S., 5,383,467, Cl. 128-664.000.
Gusmeroli, Marilena: *See*—
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Gutkind, J. Silvio; and Robbins, Keith C., to United States of America, Health and Human Services. Method for screening an agent for its ability to prevent cell transformation. 5,384,243, Cl. 435-6.000.
Gutman, George: *See*—
Crowther, David J.; and Gutman, George, 5,384,817, Cl. 371-34.000.
Gutweiler, Matthas; Hutten, Ulrich; Pfahler, Gerhard; and Schindler, Hermann, to Hoechst AG. Polyvinyl butyrals having improved thermal stability and light resistance. 5,384,346, Cl. 524-100.000.
Guy, Walter W.: *See*—
Dawn, Frederic S.; Guy, Walter W.; Kosmo, Joseph J.; Drennan, Arthur P.; and Tachirch, Richard P., 5,384,083, Cl. 264-130.000.
Guyot, Alain: *See*—
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H. C. Starck GmbH and Co.: *See*—
Konig, Theo; and Pister, Dietmar, 5,384,306, Cl. 501-152.000.
H. Weidmann AG: *See*—
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Hadea Schweitzer Corporation: *See*—
St. Louis, Daniel M.; and Schmidt, Ricky D., 5,383,312, Cl. 52-63.000.
Hafner & Krullmann GmbH: *See*—
Hafner, Manfred, 5,383,626, Cl. 242-614.100.
Hafner, Manfred, to Hafner & Krullmann GmbH. Take-up reel for rollable winding material. 5,383,626, Cl. 242-614.100.
Hagelauer, Ulrich, to Storz Medical AG. Apparatus for the generation of focussed acoustic pressure or shock waves for therapeutical applications with an x-ray locating device. 5,383,455, Cl. 128-653.100.
Hagen, Holger, to Pleiger Plastics Company. Semi-rigid sweeper cover. 5,383,246, Cl. 15-246.000.
Hagiwara, Tsuneo: *See*—
Sato, Kazuhiko; Hagiwara, Tsuneo; and Yamaura, Michio, 5,384,215, Cl. 429-213.000.
Haglund, Vernon. Variable angle post for coupling fence segments. 5,383,739, Cl. 403-107.000.
Haider, Franz: *See*—
Dahiqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahner, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.
Haikawa, Yukihiko: *See*—
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Hailey, Charles D., to Atlantic Richfield Company; and Hailey, Charles D., a part interest. Whipstock and method. 5,383,522, Cl. 166-382.000.
Halbert, David R.: *See*—
Ossann, Robert, Jr.; Ausman, Jeffery A.; and Halbert, David R., 5,384,433, Cl. 174-250.000.
Hall, Anne L., to General Electric Company. Wideband time-domain cross-correlation method using baseband data. 5,383,462, Cl. 128-661.080.
Hallam, Derek, to Concept Packaging Limited. Boxes. 5,383,595, Cl. 229-4.500.
Halliburton Company: *See*—
Onan, David D.; Terry, Dralen T.; and Brake, Bobby G., 5,383,521, Cl. 166-293.000.
Tucker, James C.; Winslow, Donald W.; Walter, Jeffrey S.; and Schwegman, Steven L., 5,383,520, Cl. 166-142.000.
Halvorsen, Per-Kristian: *See*—
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Hamabe, Isutomu: *See*—
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Hamada, Shinji: *See*—
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Hambleton, Philip T.; Hedgecock, Charles J. R.; Kay, David P.; Kuo, Elizabeth A.; and Tully, Wilfred R., to Roussel-Uclaf. 3-cycloalkylpropanamides. 5,384,423, Cl. 558-392.000.
Hamburg, Douglas R.: *See*—
Logothetis, Eleftherios M.; Hamburg, Douglas R.; Cook, Jeffrey A.; and Rimsi, Lajos, 5,383,333, Cl. 60-276.000.
Hamer, Gordon K.: *See*—
Listigovers, Nancy A.; Martin, Trevor I.; Normandin, Sharon E.; Carmichael, Kathleen M.; Hamer, Gordon K.; and Sullivan, Donald P., 5,384,223, Cl. 430-59.000.
Normandin, Sharon E.; Carmichael, Kathleen M.; Sullivan, Donald P.; Listigovers, Nancy A.; Martin, Trevor I.; and Hamer, Gordon K., 5,384,222, Cl. 430-58.000.
Hamil, Martha M.: *See*—
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Hamilton, Peter W.; Dirksing, Robert S.; and Oder, Reuben F., to Procter & Gamble Company, The. Adult friendly child-resistant attachement for containers used to store potentially dangerous materials. 5,383,564, Cl. 215-221.000.
Hammerslag, Julius G. Method of using a surface opening adhesive sealer. 5,383,899, Cl. 606-214.000.
Hamon, Serge, to Schlumberger Industries, S.A. Capillary action device for removing condensation formed on the inside surface of the window of a flowmeter. 5,383,358, Cl. 73-273.000.
Hampton, Cashman R. S. M.: *See*—
Cross, James B.; Beynon, Kenneth L.; and Hampton, Cashman R. S. M., 5,383,951, Cl. 71-61.000.
Hampton, Leonard B.; Bobrosky, Vincent L.; Burress, Paul J.; and Spence, Hollis, to White Consolidated Industries, Inc. Vacuum cleaner with improved assembly. 5,383,252, Cl. 15-325.000.
Hampton, Richard C.: *See*—
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Han, Insook: *See*—
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Hanada, Kazunori: *See*—
Komurasaki, Toshi; Toyoda, Hitoshi; Uchida, Daisuke; and Hanada, Kazunori, 5,384,394, Cl. 530-324.000.
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; and Ukima Colour & Chemicals Mfg. Co., Ltd. Release agents. 5,384,365, Cl. 525-105.000.
Hanada, Toshiro: *See*—
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Hanai, Nobuo: *See*—
Sasaki, Katsutoshi; Watanabe, Etsuyo; Nishi, Tatsunari; Sekine, Susumu; Hanai, Nobuo; and Hasegawa, Mamoru, 5,384,249, Cl. 435-68.100.
Hanakovic, Steven L.: *See*—
Davis, Charles R.; Duffy, Thomas P.; Hanakovic, Steven L.; Heck, Howard L.; Kolias, John T.; Kresge, John S.; Light, David N.; and Trivedi, Ajit K., 5,384,690, Cl. 361-789.000.
Hanano Corporation: *See*—
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Hanano, Takashi, to Hanano Corporation. Powdery mold release agent spray device. 5,383,775, Cl. 425-91.000.
Hancock, Steven M.: *See*—
Rodriguez, Arturo A.; Rutherfoord, Charles T.; Hancock, Steven M.; Kantner, Robert P., Jr.; and Pietras, Mark A., 5,384,598, Cl. 348-384.000.
Hani, Rahim; Berkowitz, Phillip T.; and Peterson, John L., to Olin Corporation. Process for making N-hydroxyl-2-thio-ouinazolin-4-ones. 5,384,405, Cl. 544-285.000.
Hanna, Paul K.; Piotowski, Andrzej M.; and Kershner, David L., to Akzo Nobel N.V. Copolymer of carbon monoxide and propylene and process for its formation. 5,384,393, Cl. 528-392.000.
Hansen, Charles N. Corrosion inhibitor. 5,383,962, Cl. 106-14.210.
Hanson, John D.: *See*—
Cook, John E.; Busato, Murray F.; Casey, Gary L.; and Hanson, John D., 5,383,437, Cl. 123-520.000.
Hanson, Stephen R.: *See*—
Scott, Neal A.; Hanson, Stephen R.; King, Spencer B., III; and Harker, Laurence A., 5,383,928, Cl. 623-1.000.
Hara, Osamu; and Nakajima, Kunihiko, to Three Bond Co., Ltd. Moisture-curable and photocurable silicone composition. 5,384,340, Cl. 522-99.000.
Harada, Takamasa: *See*—
Dubal, Hans-Rolf; Harada, Takamasa; Rieger, Heinz; Rosch, Norbert; and Wegener, Peter, 5,384,168, Cl. 428-1.000.
Haraguchi, Tsuyoshi: *See*—
Kuse, Satoru; Kobayashi, Hiroaki; Haraguchi, Tsuyoshi; and Yamashita, Hiroshi, 5,384,233, Cl. 430-461.000.
Haraguchi, Yoshiyuki; and Arita, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device adapted for preventing a test mode operation from undesirably occurring. 5,384,741, Cl. 365-201.000.
Haralambopoulos, Constantine: *See*—
Gell, Harold A., Jr.; and Haralambopoulos, Constantine, 5,384,593, Cl. 348-61.000.
Harbuziuk, Wayne L.: *See*—
Adams, David J.; Harbuziuk, Wayne L.; and Culp, Christopher G., 5,384,841, Cl. 379-266.000.
Harker, Laurence A.: *See*—
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Harlan Corporation: *See*—
Kaplan, James H., 5,383,541, Cl. 192-4.00C.
Harman International Industries, Inc.: *See*—
Plunkett, Bradley J., 5,383,267, Cl. 29-705.000.
Harriehausen, Michael; Kasch, Dieter; and Manthey, Heinz, to Deutsche Aerospace Airbus GmbH. Overhead luggage compartment, especially for passenger aircraft. 5,383,628, Cl. 244-118.100.
Harris Corporation: *See*—
Wilson, Steven E.; and Whybrew, Walter M., 5,384,555, Cl. 333-1.000.
Hart, Paul M.: *See*—
Dyks, Andrew J.; Hart, Paul M.; and Ter Meer, Hans U., 5,384,141, Cl. 426-478.000.
Hartman, Jean-Pierre: *See*—
Segers, Alain; Faict, Dirk; Duponchelle, Annick; Hartman, Jean-Pierre; and Peluso, Francesco, 5,383,324, Cl. 53-425.000.
Hartmann, Patrik: *See*—
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Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See*—
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Hasegawa, Ken; and Masui, Takanori, to Fuji Xerox Co., Ltd. Image rotating apparatus. 5,384,645, Cl. 358-444.000.
Hasegawa, Kinji; Asai, Takeo; and Murakami, Yoji, to Teijin Limited. Polyester film for lamination onto metal sheet for processing of said sheet, and use thereof. 5,384,354, Cl. 524-539.000.
Hasegawa, Mamoru: *See*—
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Hasegawa, Souichi: *See*—
Ohtake, Genji; Morohashi, Hisao; and Hasegawa, Souichi, 5,384,658, Cl. 359-707.000.
Hashemi, Amin H.; and Hill, Robert A., to Ford Motor Company. Apparatus for supporting a glass sheet during a tempering process. 5,383,950, Cl. 65-348.000.
Hashemi, Seyed H.: *See*—
Rathmell, Claude; Vance, Carroll S.; Barnes, David W.; and Hashemi, Seyed H., 5,383,269, Cl. 29-830.000.
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Jennings, James R.; Hayden, Percy; and Allchurch, Andrew J., 5,384,420, Cl. 549-541.000.
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Englhard, Ronald F.; and Shanklin, Donald J., 5,383,603, Cl. 239-314.000.

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Wheeler, Barbara L.; Heatwole, Earnest L., Jr.; McGinley, Maureen T.; Seikaly, Richard M.; and Craig, Bernard J., 5,384,835, Cl. 379-96.000.

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Davis, Charles R.; Duffy, Thomas P.; Hanakovic, Steven L.; Heck, Howard L.; Kotias, John T.; Kresge, John S.; Light, David N.; and Trivedi, Ajit K., 5,384,690, Cl. 361-789.000.

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Lotter, Frank; and Knodel, Waldemar R., 5,384,046, Cl. 210-484.000.

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Dowell, Teresa J.; Newell, Gerald P.; and Zeffren, Eugene, 5,384,114, Cl. 424-70.100.

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Bock, Harald; Helfrich, Wolfgang; and Heppke, Gerd, 5,384,068, Cl. 252-299.010.

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Colignon, Dietmar; Dorra, Erich; Panthel, Guenter; Schmidt, Wolfgang; and Wrede, Norbert, 5,384,422, Cl. 554-98.000.

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Henson, William D., to Recot, Inc. Process for preparing textured dough products. 5,384,142, Cl. 426-496.000.

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Herman Miller, Inc.: *See*—
Kelley, James O.; and Otto, John G., 5,383,318, Cl. 52-287.100.

Hermann, Uwe: *See*—
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Mattson, Rodney A.; Krochta, Todd J.; and Heuscher, Dominic J., 5,384,861, Cl. 382-6.000.

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Chu, David C.; and Black, Alistair D., 5,384,541, Cl. 324-617.000.
Fischer, Bernhard; Wunderling, Martin; and Guenther, Martin, 5,383,453, Cl. 128-634.000.
Klein, Matthew, 5,384,791, Cl. 371-5.100.
Robotti, Karla M.; and Myerholtz, Carl A., 5,384,411, Cl. 549-31.000.
Uhling, Thomas F., 5,384,532, Cl. 324-754.000.

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Miraki, Manouchehr; Walker, Blair; and Higgins, Sheryl W., 5,383,890, Cl. 606-194.000.

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Weaver, Max A.; Pruett, Wayne P.; Rhodes, Gerry; Hilbert, Samuel D.; and Parham, William W., 5,384,377, Cl. 525-437.000.

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Agro, Marc; Hilt, Gerard; Rust, Sabine; Hornung, Christian; Peters, Henning; and Zweigart, Gerhard, 5,383,700, Cl. 296-97.900.

Hip Developments Pty Ltd.: *See*—
Roger, Gregory J.; and Pinczewski, Leo A., 5,383,878, Cl. 606-73.000.

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Hirano, Hirofumi; Bekki, Toshihiko; Kashimura, Makoto; Kiyohara, Takehiko; Nitta, Tetsuhiro; and Kimura, Tetsuo, to Canon Kabushiki Kaisha. Ink jet recording apparatus operable in two positions. 5,384,586, Cl. 346-134.000.

Hirasawa, Yoichi: *See*—
Ogawa, Kinya; and Hirasawa, Yoichi, 5,383,943, Cl. 47-58.000.

Hirata, Sumiaki; and Maekawa, Kazunobu, to Minolta Camera Kabushiki Kaisha. System of controlling a plurality of copying machines interconnected through a private branch exchange. 5,384,622, Cl. 355-206.000.

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Hiruta, Mitsuhiko; Yoshida, Ryoichi; Nishizawa, Muneo; and Hiramatsu, Koji, to Takata Corporation. Rotary actuator-operated seat belt pretensioner. 5,383,623, Cl. 242-374.000.

Hisahara, Keiji, to Unisia Jecs Corporation. Radial piston pump with vent in hollow piston. 5,383,770, Cl. 417-273.000.

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Sato, Junichi; Seido, Masahiro; Nomoto, Akira; Kamo, Tomoichi; and Aihara, Katsuzo, 5,384,088, Cl. 505-120.000.

Hitachi Construction Machinery Co., Ltd.: *See*—
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Hitachi Instruments Engineering Co., Ltd.: *See*—
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Asakawa, Yoshiaki; Yamasaki, Katsuya; and Ichikawa, Akira, 5,384,891, Cl. 395-2.290.
Etoh, Jun; Nakagome, Yoshinobu; Tanaka, Hitoshi; Kawamoto, Koji; and Aoki, Masakazu, 5,384,740, Cl. 365-189.090.
Kaizaki, Kazuhiro; Kamimura, Masako; Matono, Takaaki; and Kubota, Sadao, 5,384,600, Cl. 348-556.000.
Kawabata, Kenji; Ogawa, Soichiro; Iijima, Susumu; Seki, Kunio; Mochizuki, Hirotaka; Goto, Makoto; Ikeda, Ryuichi; Sugino, Motohiro; and Onda, Kenichi, 5,384,516, Cl. 315-160.000.
Koyama, Toru; Honjo, Koo; Suzuki, Masao; Takahashi, Akio; Mukoh, Akio; Fukushi, Keiji; and Numata, Seiji, 5,384,197, Cl. 428-457.000.
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.
Murakami, Yoshiki; Takahashi, Tetsuhiko; and Yamamoto, Etsuji, 5,384,536, Cl. 324-309.000.
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Sameshima, Kenji; Makishima, Tatsuo; Hirai, Tadaaki; Takasaki, Yukio; Kubota, Misao; Tanioka, Kenkichi; and Shidara, Keiichi, 5,384,597, Cl. 348-325.000.
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Satomi, Shigeki; and Ono, Naoki, 5,384,783, Cl. 371-9.100.
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masatero; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.

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Kawabata, Kenji; Ogawa, Soichiro; Iijima, Susumu; Seki, Kunio; Mochizuki, Hirotaka; Goto, Makoto; Ikeda, Ryuichi; Sugino, Motohiro; and Onda, Kenichi, 5,384,516, Cl. 315-160.000.
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.

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Hlatky, Gregory G.: *See*—
Turner, Howard W.; Hlatky, Gregory G.; and Eckman, Richard R., 5,384,299, Cl. 502-155.000.

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Gutweiler, Matthias; Hutten, Ulrich; Pfahler, Gerhard; and Schindler, Hermann, 5,384,346, Cl. 524-100.000.

Hoechst Aktiengesellschaft: *See*—
Bock, Harald; Helfrich, Wolfgang; and Heppke, Gerd, 5,384,068, Cl. 252-299.010.
Dubal, Hans-Rolf; Harada, Takamasa; Rieger, Heinz; Roech, Norbert; and Wegener, Peter, 5,384,168, Cl. 428-1.000.
Hemmerling, Wolfgang; Dubal, Hans-Rolf; Escher, Claus; Illian, Gerhard; Inoguchi, Yoshio; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,384,070, Cl. 252-299.610.
Pfirmann, Ralf; and Papenfuhs, Theodor, 5,384,413, Cl. 549-246.000.
Schwab, Egon; Loos, Hans-Joachim; and Ziegert, Guster, 5,383,850, Cl. 604-58.000.

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Andres, Todd E.; Alvarez, Edwardo; Cooper, William M.; Hughes, O. Richard; and Whiteside, Wendell G., 5,384,352, Cl. 524-404.000.
Day, James F.; Mueller, Wolf-Dieter; and Muth, Rainer H. R., 5,384,421, Cl. 554-92.000.
Hou, Mean-Jeng; and Seenivasan, Narayanasamy, 5,384,010, Cl. 162-5.000.
Trail, George C.; and Brush, Jay P., 5,383,776, Cl. 425-135.000.

Hoey, Michael; and Gehlbach, Peter, to University of Minnesota, Regents of the. Smooth muscle chemical pacemaker. 5,383,873, Cl. 604-891.100.

Hofele, Hans: *See*—
Michael, Wolfgang; Thudium, Karl; Klemm, Peter; Schumann, Burkhardt; Hofele, Hans; and Rieger, Walter, 5,383,348, Cl. 73-405.000.

Hoffman, Ronald J. System for communicating through partitions. 5,384,838, Cl. 379-167.000.

Hoffmann, Gerhard: *See*—
Huemke, Klaus; and Hoffmann, Gerhard, 5,384,386, Cl. 528-107.000.

Hoffmann-La Roche Inc.: *See—*
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Schlacher, Gottlieb, 5,384,094, Cl. 422-64.000.

Hofmann, Hans: *See—*
Brand, Rolf A.; Hofmann, Hans; and Hildebrandt, Jurgen, 5,384,208, Cl. 429-34.000.

Hogan, Gerard J.: *See—*
Gonsalves, Alexander A.; Dudley, Everett D., Jr.; and Hogan, Gerard J., 5,384,145, Cl. 426-565.000.
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Holden, Homer N.: *See—*
Winter, Jeffrey J.; Holden, Homer N.; and Lawrence, James L., 5,383,497, Cl. 138-122.000.

Holland, Dennis E.: *See—*
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Hollnagel, Harold E.: *See—*
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Holluh, Peter: *See—*
Wachpt, Erik, 5,383,481, Cl. 134-56.00R.

Holmes, Jeffrey E.; and Christian, Jeffrey J., to Unisurge, Inc. Endoscopic surgical grasper and method. 5,383,895, Cl. 606-206.000.

Holton, Robert A., to Florida State University. Oxazinone compounds for the preparation of taxol. 5,384,399, Cl. 544-97.000.

Holzgrefe, Volker: *See—*
Heyse, Joerg; and Holzgrefe, Volker, 5,383,607, Cl. 239-585.400.

Holzworth, Monta R.; Klein, Richard; Dixit, Pankaj; and Ingram, William P., III, to Crosspoint Solutions, Inc. Antifuse circuit structure for use in a field programmable gate array and method of manufacture thereof. 5,384,481, Cl. 257-530.000.

Home, William. Refill-prevention valve. 5,383,487, Cl. 137-315.000.

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Sikes, W. David, 5,383,920, Cl. 607-112.000.

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Homma, Akira; Homma, Susumu; Sato, Hiroshi; and Hiroi, Hisao, 5,383,715, Cl. 301-5.230.

Homma, Susumu: *See—*
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Hommann, Edgar: *See—*
Bigler, Michael; Hommann, Edgar; and Myerly, Scott, 5,383,242, Cl. 15-22.100.

Honda, Akiko: *See—*
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Honda Gikzn Kogyo Kabushiki Kaisha: *See—*
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Niiyama, Tsunefumi, 5,383,379, Cl. 74-733.100.
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Honda, Ikuro: *See—*
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Honda, Satoshi: *See—*
Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, 5,384,522, Cl. 318-371.000.

Honda, Yukihiro: *See—*
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Honeywell Inc.: *See—*
Bjork, Paul E., 5,384,534, Cl. 324-160.000.
Jelinek, Jan, 5,384,698, Cl. 364-149.000.
Massey, W. Russell, 3,384,563, Cl. 340-825.210.
Sanders, Glen A.; and Strandjord, Lee K., 5,384,637, Cl. 356-350.000.
Shannon, John H.; Fetting, Karl A.; and Cote, Robert E., 5,384,875, Cl. 385-51.000.

Hong, Gary, to United Microelectronics Corporation. Mask ROM process. 5,384,478, Cl. 257-385.000.

Honjo, Ichiro; Sugishima, Kenji; and Yamabe, Masaki, to Fujitsu Limited. Pattern inspection apparatus and electron beam apparatus. 5,384,463, Cl. 250-398.000.

Honjo, Koo: *See—*
Koyama, Toru; Honjo, Koo; Suzuki, Masao; Takahashi, Akio; Mukoh, Akio; Fukuhi, Keiji; and Numata, Seiji, 5,384,197, Cl. 428-457.000.

Hoopengardner, Merle R., to Step Loc Corporation. Carpet seaming apparatus and method. 5,384,001, Cl. 156-391.000.

Hooven, Michael D., to Ethicon, Inc. Endoscopic surgical system with sensing means. 5,383,880, Cl. 606-142.000.

Hoover Universal, Inc.: *See—*
Osenkowski, Joseph M.; Weber, James L.; Wdziekonski, Wojciech; and Bart, Kurt A., 5,383,707, Cl. 297-238.000.

Hopman, Jeffrey G.: *See—*
Bennett, David E.; and Hopman, Jeffrey G., 5,383,350, Cl. 73-35.000.

Horacek, Heinrich, to Chemie Linz Gesellschaft m.b.H. Flame-resistant plastics containing trihydrazinotriazine, triguanidinotriazine or salts thereof. 5,384,347, Cl. 524-100.000.

Horiuchi, Yusuke: *See—*
Ogawa, Shinji; Kanou, Tomoyuki; and Horiuchi, Yusuke, 5,383,375, Cl. 74-330

Ohlendorf, Dieter; and Wingen, Rainer, 5,384,070, Cl. 252-299.610.

Inoue, Hajime: *See*—
Kanota, Keiji; Inoue, Hajime; Uetake, Akihiro; Kawaguchi, Moriyuki; Kubota, Yukio; and Chiba, Kazunobu, 5,384,666, Cl. 360-32.000.

Inoue, Hiroshi; and Ise, Tamotsu, to Tosoh Corporation. Polyarylene sulfide composite materials and preparation thereof. 5,384,196, Cl. 428-411.100.

Inoue, Hiroshi: *See*—
Miyata, Hiroshi; Inoue, Hiroshi; and Akimoto, Akira, 5,384,391, Cl. 528-377.000.

Inoue, Koji: *See*—
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Inoue, Sadayuki: *See*—
Ohkuma, Ikuo; Kumano, Makoto; Inoue, Sadayuki; Onishi, Ken; and Ishimoto, Junko, 5,384,665, Cl. 360-22.000.

Inoue, Yoshifumi; and Arai, Masatoshi, to Shin-Etsu Chemical Co., Ltd. Self-adhesive silicone compositions. 5,384,384, Cl. 528-24.000.

Insituform (Netherlands) BV: *See*—
Smith, Edward P., 5,384,086, Cl. 264-516.000.

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Mank, Larry; Barthel, Yves; Cameron, Charles; and Sarrazin, Patrick, 5,384,040, Cl. 208-251.00R.

INT Equipment Sales, Inc.: *See*—
Hilpert, Clifford L., 5,384,147, Cl. 426-615.000.

Integral Peripherals, Inc.: *See*—
Morehouse, James H.; Furay, David M.; Alt, Robert A.; and Emo, Bruce D., 5,384,677, Cl. 360-99.120.

Integrated Networks Corporation: *See*—
McCreary, Dann P.; Duclos, Philip J.; and Drogichen, Daniel P., 5,384,566, Cl. 340-825.050.

Intel Corporation: *See*—
Dao, Giang T.; De Qian, Qi; Tam, Nelson N.; Gaw, Eng T.; and Fujimoto, Harry H., 5,384,219, Cl. 430-5.000.
Dulong, Carol, 5,384,722, Cl. 364-715.010.
Jaff, Kosar A., 5,384,692, Cl. 361-807.000.
Keith, Michael; and Nickerson, Brian, 5,384,582, Cl. 345-199.000.
Marshall, R. A., 5,384,772, Cl. 370-60.000.
Sprague, David L.; and Keith, Michael, 5,384,904, Cl. 395-139.000.
Volk, Andrew M., 5,384,502, Cl. 327-157.000.

Inter-Source Recovery Systems, Inc.: *See*—
Nemedi, William D., 5,383,941, Cl. 29-402.080.

Interface Service Management, Inc.: *See*—
Waltz, Dale A., 5,383,972, Cl. 134-26.000.

Intermedics, Inc.: *See*—
Cox, Timothy J.; and Armstrong, Randolph K., 5,383,912, Cl. 607-32.000.

International Business Machine Corp.: *See*—
Gersbach, John E., 5,384,546, Cl. 327-411.000.

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Ahmadi, Hamid; Bantz, David F.; Bauchot, Frederic J.; Krishna, Arvind; La Maire, Richard O.; and Natarajan, Kadathur S., 5,384,777, Cl. 370-85.200.
Bloomfield, Marc A., 5,384,911, Cl. 395-157.000.
Brown, Jerry R., 5,384,909, Cl. 395-155.000.
Cha, Jack C.; Hsu, Louis Lu-Chen; Mii, Toshio; Shepard, Joseph F.; Stiffler, Scott R.; Tejwani, Manu J.; and Vishnesky, Edward J., 5,384,152, Cl. 427-81.000.
Crawforth, Linden J.; Foster, John S.; and Spong, Jaquelin K., 5,384,675, Cl. 360-75.000.
Davis, Charles R.; Duffy, Thomas P.; Hanakovic, Steven L.; Heck, Howard L.; Kolias, John T.; Kresge, John S.; Light, David N.; and Trivedi, Ajit K., 5,384,690, Cl. 361-789.000.
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,384,669, Cl. 360-48.000.
Gegenwarth, Richard E.; and Arnold, Anthony F., 5,384,283, Cl. 437-183.000.
Hassner, Martin A.; Karnin, Ehud D.; Schwiegelshohn, Uwe; and Tamura, Tetsuya, 5,384,567, Cl. 341-51.000.
Herrod, John A., 5,384,903, Cl. 395-134.000.
Hsu, Louis L.; Mii, Toshio; Shepard, Joseph F.; and Ogura, Seiki, 5,384,277, Cl. 437-52.000.
Kagami, Naoyuki; Kubo, Hiroaki; and Okada, Keiichi, 5,384,762, Cl. 369-44.280.
Karim, Faraydon O.; and Olson, Christopher H., 5,384,723, Cl. 364-748.000.
Kenney, Donald M.; and Luce, Stephen E., 5,384,281, Cl. 437-189.000.
Lim, Chan S.; McBride, Kevin M.; and Wakejima, Takaki, 5,384,700, Cl. 364-419.100.
Olnowich, Howard T.; Jabusch, John D.; Lusch, Robert F.; and Maniguet, Michael A., 5,384,773, Cl. 370-60.100.
Park, Jong W.; and Voldman, Steven H., 5,384,474, Cl. 257-304.000.
Rodriguez, Arturo A.; Rutherfoord, Charles T.; Hancock, Steven M.; Kantner, Robert F., Jr.; and Pietras, Mark A., 5,384,598, Cl. 348-384.000.
Torres, Robert J., 5,384,910, Cl. 395-156.000.
Vassiliadis, Stamatis; Kobrosly, Walid; and Triantafyllos, George, 5,384,894, Cl. 395-61.000.
Wickramasinghe, Hemantha K., 5,384,639, Cl. 356-355.000.

International Design & Mtg., Inc.: *See*—
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International Technology Corporation: *See*—
Millan, Rudolph R., 5,383,747, Cl. 405-128.000.

International Telecommunications Satellite Organization: *See*—
Lopatin, Andrew J.; Naaman, Antoine R.; and Bourgon, Jean-Pierre G., 5,384,845, Cl. 380-9.000.

Intervascular Inc.: *See*—
De Goicoechea, George L.; and Hudson, John O., 5,383,927, Cl. 623-1.000.

Intevep, S.A.: *See*—
Prada, Ricardo; Galiasso, Roberto; Romero, Yilda; Reyes, Edito; and Rodriguez, Edilberto, 5,384,297, Cl. 502-66.000.

Ionica, Inc.: *See*—
Loftis, Joseph M.; and Wachter, William J., 5,384,813, Cl. 176-272.000.

Irvine, S. J., III. Modular trailer. 5,383,703, Cl. 296-181.000.

Isagro S.r.l.: *See*—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Signorini, Ernesto; and Ferri, Mario, 5,384,325, Cl. 514-368.000.

Iscar Ltd.: *See*—
Satran, Amir; and Smilovici, Carol, 5,383,750, Cl. 407-113.000.

Ise, Tamotsu: *See*—
Inoue, Hiroshi; and Ise, Tamotsu, 5,384,196, Cl. 428-411.100.

Iseda, Ken, to Kabushiki Kaisha Toshiba. Paper sheet feeder. 5,383,654, Cl. 271-9.000.

Isele, Frank: *See*—
Brugger, Hubert; Enderle, Karl-Heinz; Hess, Harald; Isele, Frank; Senser, Horst; and Wenske, Rolf, 5,383,833, Cl. 492-16.000.

Iseno, Akihiro: *See*—
Yoshioka, Junichi; Okihara, Daijiro; Yamauchi, Chiaki; Watanabe, Takashi; Nakajima, Toshiya; Ichikawa, Madoka; Takayama, Jun; Iseno, Akihiro; Ninomiya, Takeshi; and Hamada, Shinji, 5,384,673, Cl. 360-72.200.

Ishida Co., Ltd.: *See*—
Tokutu, Harunori, 5,383,561, Cl. 209-645.000.

Ishida, Kazuko: *See*—
Hattori, Shigenori; Ishida, Kazuko; and Narukawa, Miyuki, 5,383,731, Cl. 400-76.000.

Ishida, Takayoshi: *See*—
Naka, Shun-ichi; and Ishida, Takayoshi, 5,384,480, Cl. 257-414.000.

Ishida, Yasushi: *See*—
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Awai, Takashi, 5,384,584, Cl. 346-76.0PH.

Ishii, Toshio: *See*—
Sato, Toshio; Ishii, Toshio; Sugiyama, Shunichi; and Yada, Akira, 5,384,166, Cl. 427-547.000.

Ishikawa, Shinji: *See*—
Hirai, Shigeru; Kakii, Toshiaki; Ishikawa, Shinji; and Kanamori, Hiroo, 5,384,874, Cl. 385-34.000.

Ishimori, Takashi, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Tohoku Kabushiki Kaisha. Substrate handling apparatus. 5,383,783, Cl. 432-253.000.

Ishimoto, Junko: *See*—
Ohkuma, Ikuo; Kumano, Makoto; Inoue, Sadayuki; Onishi, Ken; and Ishimoto, Junko, 5,384,665, Cl. 360-22.000.

Ishiwa, Kouji: *See*—
Terasoka, Hirobito; Hata, Kautyuki; Miyamoto, Kunihiko; and Ishiwa, Kouji, 5,384,216, Cl. 429-223.000.

Ishizuka, Masaharu: *See*—
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Isidoro, Alessandro L.; and Tsai, Howard S., to AT&T Corp. Multimedia call configuration system. 5,384,771, Cl. 370-58.200.

Ismail, Mohammed: *See*—
Sakurai, Satoshi; and Ismail, Mohammed, 5,384,548, Cl. 190-253.000.

Isobe, Hironobu: *See*—
Hayakawa, Yasuyoshi; Komatsu, Teruo; Isobe, Hironobu; and Kubota, Atsushi, 5,383,655, Cl. 271-10.000.

ISP Investments Inc.: *See*—
Narayanan, Kolazi S.; Chaudhuri, Ratan K.; and Login, Robert B., 5,384,406, Cl. 546-243.000.

Itabashi, Akihisa: *See*—
Sumida, Hiroyasu; Itabashi, Akihisa; Fukano, Hiroshi; Shijo, Hiroyasu; Takashima, Hiroshi; Ogiwara, Takeshi; and Kishi, Fumio, 5,383,754, Cl. 412-11.000.

Itagaki, Makoto; Kawasaki, Eiichi; Shinkoda, Kazuya; and Suewaka, Kousuke, to Mitsui Toatsu Chemicals, Inc. Actinic-radiation-curing hot-melt pressure-sensitive composition. 5,384,341, Cl. 522-111.000.

Iterated Systems, Inc.: *See*—
Barnsley, Michael F.; Sloan, Alan D.; Elton, John H.; Moreman, Charles S.; and Primiano, Guy A., 5,384,867, Cl. 382-56.000.

Ito, Kazuhiko: *See*—
Yamato, Kouji; and Ito, Kazuhiko, 5,384,766, Cl. 370-13.000.

Ito, Narushi, to NEC Corporation. Biosensor with a data memory. 5,384,028, Cl. 204-403.000.

Ito, Noriki; Yasunaga, Tomoyuki; Iizumi, Yuichi; and Araki, Tomio, to Yamanouchi Pharmaceutical Co., Ltd. Diurea derivatives useful as medicaments and processes for the preparation thereof. 5,384,425, Cl. 560-139.000.

Ito, Takeo; and Yokoyama, Hirotaka, to Kabushiki Kaisha Toshiba. Magnetic recording medium and a method for producing the same wherein the medium has two magnetic layers differing in degree of orientation. 5,384,182, Cl. 428-212.000.

Ito, Takuo: *See*—
Shimamune, Minoru; Ito, Takuo; Negishi, Takao; and Takano, Kouzou, 5,384,882, Cl. 385-116.000.

Ito, Yukinobu; and Moriya, Eiji, to Kabushiki Kaisha Toshiba. Nuclear magnetic resonance imaging system with noise reduced intercom. 5,384,537, Cl. 324-318.000.

Itoh, Masahiko: *See*—
Noro, Tetsuya; Itoh, Masahiko; Ohyama, Nobuya; Kanai, Hiroshi; and Ishizuka, Masaharu, 5,384,432, Cl. 174-117.0FF.

IVT Graphics AB: *See*—
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Iwama, Nobuyuki; Okazaki, Kiyoshi; and Kanaya, Yasuhiro, to Kabushiki Kaisha Toshiba. Ultrasonic therapy apparatus. 5,383,459, Cl. 128-660.030.

Iwamoto, Hisashi: *See*—
Konishi, Yasuhiro; Miyamoto, Takayuki; Kajimoto, Takeshi; and Iwamoto, Hisashi, 5,384,745, Cl. 365-230.030.

Iwamoto, Kiyoshi: *See*—
Oki, Tomio; and Iwamoto, Kiyoshi, 5,384,180, Cl. 428-195.000.

Iwamura, Kohji: *See*—
Shonai, Masami; Torii, Yasuhiro; and Iwamura, Kohji, 5,383,532, Cl. 180-269.000.

Iwasaki, Junji: *See*—
Yamada, Yoshiaki; Iwasaki, Junji; and Ohmori, Masashi, 5,383,482, Cl. 134-66.000.

Iwasaki, Motoya, to NEC Corporation. Clock recovery circuit for extracting clock information from a received baseband signal. 5,384,552, Cl. 331-25.000.

Iwatsuka, Yoshihisa; and Tamiwa, Takeshi, to YamahaHatsudoki Kabushiki Kaisha. Method for mounting component chips and apparatus therefor. 5,383,270, Cl. 29-840.000.

Izume, Masayuki, to I. mar Planning, Inc. Apparatus for supplying ink to printing machine. 5,383,394, Cl. 101-350.000.

Izumi, John Y. Angle trisector. 5,383,276, Cl. 33-1.0AP.

Izumi, Takayoshi: *See*—
Ootani, Toshihiro; and Izumi, Takayoshi, 5,384,093, Cl. 422-63.000.

Jabusch, John D.: *See*—
Olnowich, Howard T.; Jabusch, John D.; Lusch, Robert F.; and Maniguet, Michael A., 5,384,773, Cl. 370-60.100.

Jaccard, Andre R. Hand tenderizer. 5,383,814, Cl. 452-141.000.

Jackson, Adam: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., 5,384,071, Cl. 252-299.630.

Jackson, Jerome; and Stern, Roger A., to EP Technologies, Inc. Systems for identifying catheters and monitoring their use. 5,383,874, Cl. 606-1.000.

Jackson, Scott A.: *See*—
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,384,669, Cl. 360-48.000.

Jacob, Thomas: *See*—
Poetsch, Eike; Jubb, Raymond; Finkenzeller, Ulrich; Jacob, Thomas; Ohngemach, Jorg; and Wilhelm, Stefan, 5,384,066, Cl. 252-299.010.

Jacobddon, Rolf A., to Atlas Copco Tools AB. Pneumatic turbine. 5,383,762, Cl. 415-121.200.

Jacobs-Cook, Alan J.; Frere, Peter E. M.; and Bowen, Mark E. C., to Lucas Industries Public Limited Company. Optical device and a method of manufacture thereof. 5,384,872, Cl. 385-31.000.

Jadhav, Prabhakar K.: *See*—
Arentzen, Rene; Jadhav, Prabhakar K.; Kobos, Robert K.; and Smart, Bruce E., 5,384,254, Cl. 435-181.000.

Jaenecke, Peter, to Alcatel N.V. Abstractor. 5,384,897, Cl. 395-27.000.

Jaff, Kosar A., to Intel Corporation. Socket with in-socket embedded integrated circuit. 5,384,692, Cl. 361-807.000.

Jagini, Shyam S., to Texas Instruments Incorporated. Electronic circuit and method for half adder logic. 5,384,724, Cl. 364-770.000.

James, Kelvin B. System for controlling artificial knee joint action in an above knee prosthesis. 5,383,939, Cl. 623-24.000.

James River Corporation of Virginia: *See*—
Hazard, Sherrill J., Jr., 5,384,011, Cl. 162-9.000.
Hazard, Sherrill J., Jr., 5,384,012, Cl. 162-9.000.
Schulz, Galyn A., 5,383,778, Cl. 425-363.000.

Janberg, Klaus: *See*—
Dierach, Rudolf; Janberg, Klaus; Methling, Dieter; and Schroder, Karl, 5,383,594, Cl. 228-234.300.

Janchy Esterprise Co., Ltd.: *See*—
Shen, Shun T., 5,383,294, Cl. 40-209.000.

Janda, Kim, to Scripps Research Institute, The. Molecules with antibody combining sites that catalyze carbocyclic ring formation from 5,6-ethylenically unsaturated sulfonate molecules. 5,384,252, Cl. 435-166.000.

Jang, Yue-Teh; and Brisken, Axel F., to Cardiovascular Imaging Systems, Inc. Method and apparatus for ultrasound imaging and atherectomy. 5,383,460, Cl. 128-660.030.

Jansson, Tomasz P.: *See*—
Savant, Gajendra D.; and Jansson, Tomasz P., 5,384,221, Cl. 430-19.000.

Januzz, Michael J., to Merrell Dow Pharmaceuticals Inc. Method of preventing neutrophil mediated connective tissue damage. 5,384,119, Cl. 424-78.080.

Jarvis, Eric E., to Midwest Research Institute. Method for fabricating a substrate having spaced apart microcapillaries thereon. 5,383,512, Cl. 164-46.000.

Jatco Corporation: *See*—
Mori, Akimasa, 5,383,820, Cl. 475-123.000.

JBF Scientific Company, Inc.: *See*—
Bianchi, Ralph A.; Sarnacki, Walter P.; and Watkins, Robert L., 5,384,043, Cl. 210-242.300.

Jedlitschka, Hans; and Delacroix, Vincent, to GE Medical Systems. Radiogenic unit. 5,384,821, Cl. 378-199.000.

Jee, Seong-gil, to Samsung Electronics Co., Ltd. Second harmonic generating method and apparatus thereof. 5,384,796, Cl. 372-22.000.

Jelinek, Jan, to Honeywell Inc. Structured multiple-input multiple-output rate-optimal controller. 5,384,698, Cl. 364-149.000.

Jennings, James R.; Hayden, Percy; and Allchurch, Andrew J., to Imperial Chemical Industries plc. Production of ethylene oxide. 5,384,420, Cl. 549-541.000.

Jensen, Eric J.: *See*—
Blier, Darren J.; and Jensen, Eric J., 5,384,751, Cl. 367-15.000.

Jensen, Sven: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Herah, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Jeong, Je-chang, to Samsung Electronics Co., Ltd. Apparatus and method for encoding/decoding data including the suppression of blocking artifacts. 5,384,849, Cl. 380-49.000.

Jet Spray Corp.: *See*—
LeMarbe, Edward S.; and Nguyen, Sao V., 5,383,581, Cl. 222-459.000.

Ji, Seong-hua, to Samsung Electron Devices Co., Ltd. Cathode ray tube with improved focusing characteristics. 5,384,513, Cl. 313-442.000.

Jinbo, masashi: *See*—
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, masashi; and Onuma, Tsutomu, 5,384,224, Cl. 430-106.000.

Johannes, Reinhard: *See*—
Edele, Reinhard; Johannes, Reinhard; Krizek, Oldrich; and Schmid, Eckhardt, 5,383,602, Cl. 239-284.100.

Johansson, Eric B.: *See*—
Matzner, Bruce; Johansson, Eric B.; Wolters, Richard A., Jr.; Dunlap, Thomas G.; Elkins, Robert B.; King, Harold B.; and Sick, Paul W., 5,384,814, Cl. 376-352.000.

Johlin, Frederick C., Jr., to Wilson-Cook Medical, Inc. Method for selective endoscopic cannulation of ductal structures. 5,383,849, Cl. 604-53.000.

Johnson, Arthur F., to Energy Conservation Partnership Ltd. Method for removing pollutants from a gas stream using a fractional condensing heat exchanger. 5,384,106, Cl. 423-235.000.

Johnson, Daphne R., to Miles Inc. Process for the preparation of dispersible quinacridones. 5,383,966, Cl. 106-495.000.

Johnson, Edward P. Method for rejuvenating a drainfield or dry well. 5,383,974, Cl. 134-21.000.

Johnson, James A.; and Mehra, Madhav, to Eastman Kodak Company. Fabricating lens array structures for imaging devices. 5,384,231, Cl. 430-321.000.

Johnson & Johnson Professional, Inc.: *See*—
Wilson, Stephen; Rogers, Laurel; and Ritchie, Allan, 5,383,932, Cl. 623-16.000.

Johnson, Keith W. Rooter guide assembly. 5,383,503, Cl. 144-144.50R.

Johnson, Kent D.: *See*—
Tusick, Judith H.; and Johnson, Kent D., 5,383,568, Cl. 220-606.000.

Johnson, Richard F.; and Miller, Gregory S., to Douglas & Lomason Company. Seat position adjusting apparatus. 5,383,640, Cl. 248-372.100.

Johnson Service Company: *See*—
Pascucci, Gregory A., 5,384,697, Cl. 364-139.000.

Johnson, Terence C., to Edo Corporation, Fiber Science Division. Dual-chamber composite pressure vessel and method of fabrication thereof. 5,383,566, Cl. 220-562.000.

Johnson, Walter S.: *See*—
Allen, Richard C.; Cisneros, Gary M.; Fickes, Stanley L.; Hughes, Gary N.; Johnson, Walter S.; Konsevich, James L.; Piccone, John; and Stewart, Bernard E., 5,384,652, Cl. 359-172.000.

Johnson, William S.; Payne, Edward A.; Boechker, Donald A.; and Phipps, Benita W., to Gilbarco. Security apparatus and system for retail environments. 5,384,850, Cl. 380-52.000.

Johnston, B. Keith: *See*—
Swarup, Shanti; Sharma, Brij N.; and Johnston, B. Keith, 5,384,367, Cl. 525-169.000.

Jones, Glen A.: *See*—
Raloff, Valgene E.; Britto, Frank J., Jr.; and Jones, Glen A., 5,384,447, Cl. 219-137.310.

Jones, Kenneth W.: *See*—
Childs, Lawrence F.; Jones, Kenneth W.; Flannagan, Stephen T.; and Chang, Ray, 5,384,737, Cl. 365-189.050.

Jones, Terence J.: *See*—
Descheneu, Charles L.; Jones, Terence J.; and Cooper, William J., 5,383,260, Cl. 24-711.000.

Jones, Wayne C.: *See*—
Sorathia, Usman A.; Houghton, Deborah A.; Owen, David P.; Pipyne, Markus R.; Jones, Wayne C.; Castelli, Vincent J.; Fi-

ocher, Eugene C.; Venkatachalam, Ravanasamudram S.; Loup, Douglas; and Stephenson, Carlisle R., 5,383,567, Cl. 220-4.130.

Jorach, Rainer; Binder, Klaus; and Furuhama, Shoichi, to Daimler-Benz AG. Gas-injection valve for internal combustion engine. 5,383,647, Cl. 251-63.600.

Joseph Galkin Corporation: *See*—
Block, Charles; and Mintz, Leon, 5,383,418, Cl. 112-304.000.

Joto, Takuma, to Sharp Kabushiki Kaisha. Information processing system with a power control unit. 5,384,721, Cl. 364-707.000.

Jubb, Raymond: *See*—
Poetsch, Eike; Jubb, Raymond; Finkenzeller, Ulrich; Jacob, Thomas; Obergemach, Jorg; and Wilhelm, Stefan, 5,384,066, Cl. 252-299.010.

Jubin, John C., Jr.: *See*—
Zajacek, John G.; Jubin, John C., Jr.; and Crocco, Guy L., 5,384,418, Cl. 549-531.000.

Jullien, Joseph P. R.; Batey, Jonathan H.; and Mellor, Robert, to Fisons plc. Process for the manufacture of a multipolar elongate-electrode lens or mass filter. 5,384,461, Cl. 250-292.000.

Jung, Chal-Min; and Suh, Young-Ho, to Samsung Electronics Co., Ltd. Data output circuit of a semiconductor memory device. 5,384,736, Cl. 365-189.050.

Jung, Eugene J.; Keown, Kenneth; and Turk, Peter I. C., to Medtronic, Inc. Rapid exchange catheter. 5,383,853, Cl. 604-96.000.

Junker, Michael L.: *See*—
Caines, Tony L.; and Junker, Michael L., 5,384,371, Cl. 525-285.000.

JX Crystals, Inc.: *See*—
Fraas, Robert M.; Fraas, Lewis M.; and Fraas, Jany X., 5,383,976, Cl. 136-253.000.

Kabiri, Uri: *See*—
El-Bober, Arie; Pechatnikov, Michael Z.; Menin, Boris M.; Novak, Semion M.; and Kabiri, Uri, 5,383,342, Cl. 62-532.000.

Kaburaki, Yoshiaki, to Tomoegawa Paper Co., Ltd. Conductive substrate comprising carbon black and inorganic powders. 5,384,190, Cl. 428-323.000.

Kabushiki Kaisha Riken: *See*—
Muramatsu, Gyo; Yoshida, Kiyohide; Sumiya, Satoshi; and Abe, Akira, 5,384,110, Cl. 423-239.100.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Nagasaka, Chikao; and Amano, Tokuhiro, 5,383,708, Cl. 297-250.100.

Kabushiki Kaisha Toshiba: *See*—
Aoki, Masami; and Takato, Hiroshi, 5,384,280, Cl. 437-67.000.
Hirakui, Katsuya; and Oyatsu, Masayuki, 5,383,791, Cl. 439-312.000.
Iijima, Yasuo, 5,384,454, Cl. 235-492.000.
Iseda, Ken, 5,383,654, Cl. 271-9.000.
Ito, Takeo; and Yokoyama, Hirotaka, 5,384,182, Cl. 428-212.000.
Ito, Yukinobu; and Moriya, Eiji, 5,384,537, Cl. 324-318.000.
Iwama, Nobuyuki; Okazaki, Kiyoshi; and Kanaya, Yasuhiro, 5,383,459, Cl. 128-660.030.
Kamohara, Eiji; and Sugawara, Shigeru, 5,384,512, Cl. 313-414.000.
Konno, Mitsuo, 5,384,486, Cl. 257-752.000.
Koyama, Mikio; and Tanimoto, Hiroshi, 5,384,501, Cl. 327-336.000.
Matsunami, Tokumi, 5,384,631, Cl. 355-308.000.
Miyakawa, Tadashi; and Asano, Masamichi, 5,384,742, Cl. 365-218.000.
Ono, Katsuhiro; Anno, Hidero; Kitami, Takayuki; Sugiura, Hiroyuki; and Tanaka, Makoto, 5,384,818, Cl. 378-132.000.
Ono, Katsuhiro, 5,384,819, Cl. 378-132.000.
Sato, Hiroshi; and Hoshino, Makoto, 5,384,834, Cl. 379-88.000.
Shimada, Yutaka; Kato, Hitoshi; Kakizaki, Junichi; Aoki, Kazutugu; Mori, Haruki; and Shiotsuki, Tatsuo, 5,383,984, Cl. 156-345.000.
Sueoka, Atsushi; and Koinuma, Hiroyuki, 5,384,733, Cl. 365-189.010.
Saizu, Katsuto, 5,384,491, Cl. 307-113.000.
Tsuda, Yukio, 5,384,591, Cl. 346-154.000.
Tsunoda, Tetsujiro, 5,384,683, Cl. 361-313.000.
Yahata, Masamitsu, 5,384,475, Cl. 257-314.000.
Yoda, Nobuhisa, 5,384,785, Cl. 371-30.000.
Yoshikawa, Susumu; and Sudo, Akira, 5,384,473, Cl. 257-255.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Shonai, Masasu; Torii, Yasuhiro; and Iwamura, Kohji, 5,383,532, Cl. 180-269.000.

Kabushikigaisha Tokyo Kikai Seisakusho: *See*—
Ueda, Koichi; Kawarazaki, Yuzo; Shibe, Noriyuki; and Sato, Masayoshi, 5,383,393, Cl. 101-220.000.

Kabushikikaisha Barudan: *See*—
Sekakibara, Hisato; Shinoda, Kou; and Murata, Yoshihiro, 5,383,412, Cl. 112-78.000.

Kadkhodayan, Abbas, to Ethyl Petroleum Additives, Inc. Process for metal salts of hydrocarbyl dithiophosphoric acid. 5,384,054, Cl. 252-32.70E.

Kadota, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Apparatus with two dimensioosal screen on which three dimensional objects are displayed as a single image. 5,384,580, Cl. 345-145.000.

Kaga Electronics Co. Ltd.: *See*—
Tashiro, Tsukasa; Hayashi, Shigeo; Miyazaki, Toshiyuki; and Sogo, Norihito, 5,384,576, Cl. 345-3.000.

Kagami, Naoyuki; Kubo, Hiroaki; and Okada, Keiichi, to International Business Machines Corporation. Focusing servo in an optical disk drive. 5,384,762, Cl. 369-44.280.

Kaifu, Noriyuki: *See*—
Saika, Toshihiro; Mizutani, Hidemasa; Kaifu, Noriyuki; and Kameshima, Toshio, 5,384,456, Cl. 250-208.100.

Kaihara, Shoji; and Fukahori, Hidehiko, to Canon Kabushiki Kaisha. Camera having a pop up flash unit driven by one direction of a motor. 5,384,612, Cl. 354-149.100.

Kaiser, Robert T.: *See*—
Shirlin, Jack W.; and Kaiser, Robert T., 5,383,632, Cl. 248-118.500.

Kaizaki, Kazuhiro; Kamimura, Masako; Matono, Takaaki; and Kubota, Sadao, to Hitachi, Ltd. System and method for converting video signals for display on television receiver screens of differing aspect ratios. 5,384,600, Cl. 348-556.000.

Kajimoto, Takeshi: *See*—
Konishi, Yasuhiro; Miyamoto, Takayuki; Kajimoto, Takeshi; and Iwamoto, Hisashi, 5,384,745, Cl. 365-230.030.

Kajiwara, Hidefumi: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masatoru; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.

Kajiwara, Norio, to Canon Kabushiki Kaisha. Image forming apparatus with automatic control for drawing cassette therefrom. 5,384,624, Cl. 355-207.000.

Kakii, Toshiaki: *See*—
Hirai, Shigeru; Kakii, Toshiaki; Ishikawa, Shinji; and Kanamori, Hiroo, 5,384,874, Cl. 385-34.000.

Kakizaki, Junichi: *See*—
Shimada, Yutaka; Kato, Hitoshi; Kakizaki, Junichi; Aoki, Kazutugu; Mori, Haruki; and Shiotsuki, Tatsuo, 5,383,984, Cl. 156-345.000.

Kakizaki, Shinobu: *See*—
Nakamura, Michiya; and Kakizaki, Shinobu, 5,383,679, Cl. 280-707.000.

Kalemba, Jacek: *See*—
McCready, Derek; and Kalemba, Jacek, 5,383,780, Cl. 425-552.000.

Kali und Salz Aktiengesellschaft: *See*—
Singewald, Arno; Wendt, Otto; Nurnberger, Gunter; Paetz, Dieter; Walczyk, Wolfgang; and Muller, Klaus-Dieter, 5,383,952, Cl. 71-63.000.

Kallies, Guenther: *See*—
Lessat-Kaupat, Wolfgang; and Kallies, Guenther, 5,383,818, Cl. 464-36.000.

Kallinger-Prskawetz-Jacobsen, Christine. Flat key with interchangeable shaft. 5,383,345, Cl. 70-395.000.

Kalloy Industrial Co., Inc.: *See*—
Chen, Chin-Pei, 5,383,706, Cl. 297-215.150.

Kalnes, Tom N., to UOP. Integrated process for the production of distillate hydrocarbon. 5,384,037, Cl. 208-85.000.

Kamada, Etsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Spherical seed cores, spherical granules and process for production thereof. 5,384,130, Cl. 424-461.000.

Kaman Aerospace Corporation: *See*—
Ulich, Bobby L.; Smith, Duane; and Keeler, R. Norris, 5,384,589, Cl. 348-31.000.

Kambara, Takashi: *See*—
Kido, Shojiro; Nakamura, Toshiaki; Kambara, Takashi; Taga, Yoshitaka; and Nagase, Haruo, 5,384,518, Cl. 315-225.000.

Kameshima, Toshio: *See*—
Saika, Toshihiro; Mizutani, Hidemasa; Kaifu, Noriyuki; and Kameshima, Toshio, 5,384,456, Cl. 250-208.100.

Kamimura, Masako: *See*—
Kaizaki, Kazuhiro; Kamimura, Masako; Matono, Takaaki; and Kubota, Sadao, 5,384,600, Cl. 348-556.000.

Kaminishizono, Takeyoshi; Watanabe, Tetsumi; and Momose, Yutaka, to Aisin Seiki Kabushiki Kaisha. Compressor integral with stirling engine. 5,383,334, Cl. 60-517.000.

Kamioka, Nobuo; Tokumura, Hiroshi; and Yoshino, Toru, to Akebono Brake Industry Co., Ltd.; and Akeboad Research and Development Centre Ltd. Friction material containing BT resin dust. 5,384,344, Cl. 523-149.000.

Kamitakahara, Hirofumi: *See*—
Kanome, Osamu; Kamitakahara, Hirofumi; Yoshino, Hitoshi; Sato, Tetsuya; and Hayashi, Hisanori, 5,383,834, Cl. 492-25.000.

Kamiya, Naoyuki, to Nippondenso Co., Ltd. Rotational speed control apparatus for internal combustion engines. 5,383,430, Cl. 123-339.000.

Kamiyama, Misao; and Zeze, Kazuo, to Takata Corporation. Inflatable seat belt apparatus. 5,383,713, Cl. 297-471.000.

Kamo, Tomoichi: *See*—
Sato, Junichi; Seido, Masahiro; Nomoto, Akira; Kamo, Tomoichi; and Aihara, Katsuzo, 5,384,088, Cl. 505-120.000.

Kamohara, Eiji; and Sugawara, Shigeru, to Kabushiki Kaisha Toshiba. Electron gun for cathode-ray tube. 5,384,512, Cl. 313-414.000.

Kamprath, David R.: *See*—
Mandel, Barry P.; Kamprath, David R.; Barrientos, Francesca A.; Van Dongen, Richard A.; DeSanctis, Anthony T.; and Rizzolo, Charles D., 5,383,656, Cl. 271-258.000.

Kanai, Hiroshi: *See*—
Noro, Tetsuya; Itoh, Masahiko; Ohyama, Nobuya; Kanai, Hiroshi; and Ishizuka, Masaharu, 5,384,432, Cl. 174-117.0FF.

Kanai, Takao; Atsuta, Hitoshi; Sezaki, Yoshinori; and Mandai, Ichirou, to Dainippon Screen Mfg. Co., Ltd. Method of and apparatus for inspecting pattern on printed board. 5,384,711, Cl. 364-489.000.

Kanakura, Akihiro; Kishida, Takahito; Yebuuchi, Naoya; and Maruta, Masayuki, to Nippon Paint Co., Ltd. Process for producing toner. 5,384,226, Cl. 430-137.000.

Kanamori, Hiroo: *See*—
Hirai, Shigeru; Kakii, Toshiaki; Ishikawa, Shinji; and Kanamori, Hiroo, 5,384,874, Cl. 385-34.000.

Kanaya, Yasuhiro: *See*—
Iwama, Nobuyuki; Okazaki, Kiyoshi; and Kanaya, Yasuhiro, 5,383,459, Cl. 128-660.030.

Kane, Robert C.; and Hilgers, Kevin B., to Motorola, Inc. Field emission device with horizontal emitter. 5,384,509, Cl. 313-309.000.

Kanehachi, Kaoru, to Nippon Precision Circuits Inc. Method of making a combined semiconductor device and inductor. 5,384,274, Cl. 437-47.000.

Kaneko, Ryoichi: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masatoru; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.

Kaneyaki, Hiroyuki; Uegami, Kouji; and Nagao, Keishiro, to Daiso Co., Ltd. Polymerizable compositions and high refractive plastic lens obtained therefrom. 5,384,380, Cl. 526-292.900.

Kanome, Osamu; Kamitakahara, Hirofumi; Yoshino, Hitoshi; Sato, Tetsuya; and Hayashi, Hisanori, to Canon Kabushiki Kaisha. Roll stamper for forming a base for information recording medium. 5,383,834, Cl. 492-25.000.

Kanota, Keiji; Inoue, Hajime; Uetake, Akihiro; Kawaguchi, Moriyuki; Kubota, Yukio; and Chiba, Kazunobu, to Sony Corporation. Digital picture signal recording apparatus in which a field interval is recorded on a plurality of tracks exhibiting a track pitch no greater than 5.5 μm by a rotary drum having a diameter no greater than 25mm and a rotary speed no less than 150 rps. 5,384,666, Cl. 360-32.000.

Kanou, Tomoyuki: *See*—
Ogawa, Shinji; Kanou, Tomoyuki; and Horiuchi, Yusuke, 5,383,375, Cl. 74-330.000.

Kantner, Robert F., Jr.: *See*—
Rodriguez, Arturo A.; Rutherfoord, Charles T.; Hancock, Steven M.; Kantner, Robert F., Jr.; and Pietras, Mark A., 5,384,598, Cl. 348-384.000.

Kaplan, James H., to Harlan Corporation. Automatic gear shift lock. 5,383,541, Cl. 192-4.00C.

Kaplan, Murray M. Decagon shaped bridge bidder. 5,383,666, Cl. 273-148.00R.

Kaplan, Ronald M.: *See*—
Huttenlocher, Daniel P.; Kaplan, Ronald M.; Withgott, M. Margaret; Cass, Todd A.; Halvorsen, Per-Kristian; Bloomberg, Dan S.; and Rao, Ramana B., 5,384,863, Cl. 382-9.000.

Kaplan, Solomon D.: *See*—
Kowalewski, James M.; Kaplan, Solomon D.; and Katz, Boris M., 5,383,392, Cl. 101-183.000.

Karaba, James M., Jr.: *See*—
Winter, Frank F.; and Karaba, James M., Jr., 5,383,414, Cl. 112-162.000.

Karim, Faryadon O.; and Olson, Christopher H., to International Business Machines Corporation. Method and apparatus for floating point normalization. 5,384,723, Cl. 364-748.000.

Karl, Darwin M. Bracket system for mounting a cable splicing tool to a pedestal. 5,383,636, Cl. 248-278.000.

Karnin, Ehud D.: *See*—
Hassner, Martin A.; Karnin, Ehud D.; Schwiegelshohn, Uwe; and Tamura, Tetsuya, 5,384,567, Cl. 341-51.000.

Karrer, Friedrich; Buser, Hans-Peter; Ramos, Gerardo; Rindlisbacher, Alfred; Venanzi, Luigi M.; and Ward, Thomas R., to Ciba-Geigy Corporation. Methyldioxolan. 5,384,416, Cl. 549-453.000.

Kasch, Dieter: *See*—
Harriehausen, Michael; Kasch, Dieter; and Masthey, Heinz, 5,383,628, Cl. 244-118.100.

Kashimura, Makoto: *See*—
Hirano, Hirofumi; Bekki, Toshihiko; Kashimura, Makoto; Kiyohara, Takehiko; Nitta, Tetsuhiro; and Kimura, Tetsuo, 5,384,586, Cl. 346-134.000.

Kashyap, Raman; and Campbell, Robert J., to British Telecommunications public limited company. Method of forming optical fibre gratings. 5,384,884, Cl. 385-129.000.

Katada, Mitsutaka; Tsuruta, Kazuhiro; Fujino, Seiji; and Onoda, Michitoshi, to Nippon Soken Inc. Method of bonding semiconductor substrates. 5,383,993, Cl. 156-153.000.

Katerberg, James A.; and Bowers, Mark C., to Scitex Digital Printing, Inc. Ink jet stimulation monitoring. 5,384,583, Cl. 347-19.000.

Kato, Hitoshi: *See*—
Shimada, Yutaka; Kato, Hitoshi; Kakizaki, Junichi; Aoki, Kazutugu; Mori, Haruki; and Shiotsuki, Tatsuo, 5,383,984, Cl. 156-345.000.

Kato, Masao: *See*—
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.

Kato, Shuzo: *See*—
Yagi, Toshiharu; Kato, Shuzo; and Kubota, Shuji, 5,384,809, Cl. 375-39.000.

Kato, Tetsuaki, to Fanuc Ltd. Method of controlling a servomotor. 5,384,525, Cl. 318-610.000.

Katoh, Chieji: *See*—
Nakasuji, Masataka; Fujiwara, Toshiaki; Katoh, Chieji; and Shindoh, Shigeru, 5,384,579, Cl. 345-123.000.

Katou, Ryuichi: *See*—
Aoki, Seiji; Katou, Ryuichi; and Nakamura, Yasuhiro, 5,383,461, Cl. 128-660.070.

Katz, Boris M.: *See*—
Kowalewski, James M.; Kaplan, Solomon D.; and Katz, Boris M., 5,383,392, Cl. 101-183.000.

Kauth, Hermann: *See*—
Alewelt, Wolfgang; Kauth, Hermann; and Kuhling, Steffen, 5,384,389, Cl. 528-168.000.

Kauvar, Lawrence M., to Terrapin Technologies, Inc. Method to produce immunodiagnostic reagents. 5,384,263, Cl. 436-518.000.

Kawabata, Frederick Y., to Tektronix, Inc. Automatic skew calibration for multi-channel signal sources. 5,384,781, Cl. 371-1.000.

Kawabata, Kenji; Ogawa, Soichiro; Iijima, Susumu; Seki, Kunio; Mochizuki, Hirotaka; Goto, Makoto; Ikeda, Ryuichi; Segino, Motohiro; and Ouda, Kenichi, to Hitachi, Ltd.; Hitachi Microcomputer System, Ltd.; and Hitachi Video & Information System, Inc. Information processing apparatus including a control circuit for controlling a liquid crystal display illumination based on whether illuminatio power is being supplied from an AC power source or from a battery. 5,384,516, Cl. 315-160.000.

Kawaguchi, Moriyuki: *See*—
Kanota, Keiji; Inoue, Hajime; Uetake, Akihiro; Kawaguchi, Moriyuki; Kubota, Yukio; and Chiba, Kazunobu, 5,384,666, Cl. 360-32.000.

Kawai, Takashi: *See*—
Saito, Kenji; Sekiguchi, Masahito; Masaki, Shinzaburo; Yoshihara, Hiroshi; Takahashi, Kazuhiko; Minamisaka, Kazuya; and Kawai, Takashi, 5,384,409, Cl. 548-371.400.

Kawakami, Hiroaki: *See*—
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, masashi; and Onuma, Tsutomu, 5,384,224, Cl. 430-106.000.

Kawamata, Toshio: *See*—
Kojima, Masaya; Niitsuma, Kazuhiro; Hayakawa, Satoru; Kawamata, Toshio; and Endo, Yasushi, 5,384,175, Cl. 428-64.000.

Kawamoto, Koji: *See*—
Etoh, Jun; Nakagome, Yoshinobu; Tasaka, Hitoshi; Kawamoto, Koji; and Aoki, Masakazu, 5,384,740, Cl. 365-189.090.

Kawarazaki, Yuzo: *See*—
Ueda, Koichi; Kawarazaki, Yuzo; Shiba, Noriyuki; and Sato, Masayoshi, 5,383,393, Cl. 101-220.000.

Kawasaki, Eiichi: *See*—
Itagaki, Makoto; Kawasaki, Eiichi; Shinkoda, Kazuya; and Suewaka, Kousuke, 5,384,341, Cl. 522-111.000.

Kawasaki, Kenichi: *See*—
Yoshida, Yoshikazu; Kawasaki, Kenichi; Horiuwa, Shozo; Mita, Hiroyuki; and Fukuzawa, Keiji, 5,384,557, Cl. 333-21.00A.

Kawasaki, Toyokazu: *See*—
Koishikawa, Kouji; Shishido, Motoyoshi; and Kawasaki, Toyokazu, 5,383,440, Cl. 123-572.000.

Kay, David P.: *See*—
Hambleton, Philip T.; Hedgecock, Charles J. R.; Kay, David P.; Kuo, Elizabeth A.; and Tully, Wilfred R., 5,384,423, Cl. 558-392.000.

Kay, Ira M. Wide field of view reflex sight for a bow. 5,383,278, Cl. 33-265.000.

Kazel, Michael D. Garment hanger for vehicle seat. 5,383,588, Cl. 224-275.000.

Kazousky, Daniel: *See*—
Reilly, David M.; Havrilla, Joseph B.; Gelblum, Eugene A.; and Kazousky, Daniel, 5,383,858, Cl. 604-152.000.

KCS Industries Inc.: *See*—
Battles, Timothy J.; and Hollnagel, Harold E., 5,383,397, Cl. 100-31.000.

Keating, James T.; Baucom, Everett I.; and Batman, James M., to Du Pont de Nemours, E. I., and Company. Membrane reinforced with modified leno weave fabric. 5,384,019, Cl. 204-252.000.

Keazer, James J.: *See*—
Whitaker, Emert R.; Fulghum, Trent A.; Keazer, James J.; and Pritchett, James A., 5,383,251, Cl. 15-320.000.

Keeler, R. Norris: *See*—
Ulich, Bobby L.; Smith, Duane; and Keeler, R. Norris, 5,384,589, Cl. 348-31.000.

Keeth, Brent, to Micron Semiconductor, Inc. Summing circuit with biased inputs and an unbiased output. 5,384,739, Cl. 365-189.090.

Keimel, John G., to Medtronic, Inc. Diagnostic telemetry system for an apparatus for detection and treatment of tachycardia and fibrillation. 5,383,909, Cl. 607-7.000.

Keith, Michael; and Nickerson, Brian, to Intel Corporation. Conversion of image data from subsampled format to clut format. 5,384,582, Cl. 345-199.000.

Keith, Michael: *See*—
Sprague, David L.; and Keith, Michael, 5,384,904, Cl. 395-139.000.

Keller, Arnold, to Waldemar Link GmbH & Co. Endoprosthesis. 5,383,933, Cl. 623-16.000.

Keller, David A.; Davidson, Frank; Black, Kevin; and Webb, George, to Alcatel NA Cable Systems, Inc. Dielectric ribbon optical fiber cable. 5,384,880, Cl. 385-109.000.

Keller, Thomas J.: *See*—
Campbell, Edward N.; and Keller, Thomas J., 5,383,811, Cl. 464-89.000.

Kelley, David, Jr.: *See*—
Lynch, William R.; Smith, Larry D.; Wiant, Matthew J.; Bisaca, Robert R.; and Kelley, David, Jr., 5,384,148, Cl. 426-632.000.

Kelley, Douglas G.; and Rogers, Deborah M., to Nalco Chemical Company. Hydrazones as oxygen scavengers in boiler water systems. 5,384,050, Cl. 210-750.000.

Kelley, James O.; and Otto, John G., to Herman Miller, Inc. Raceway cable retention and accommodation apparatus. 5,383,318, Cl. 52-287.100.
Kelley, Jeremy J.: *See*—
Wachi, Leslie S.; and Kelley, Jeremy J., 5,383,256, Cl. 24-71.100.
Kellogg Company: *See*—
Bedard, Aimee M.; Lai, Grace H.; Wullschleger, Richard D.; and Kincaid, James G., 5,384,144, Cl. 426-557.000.
Lai, Grace H.; and Wullschleger, Richard D., 5,384,136, Cl. 426-19.000.
Kelly, Kevin A.; and Szpur, Roman, to Danninger Medical Technology, Inc. Thermal therapy pad. 5,383,919, Cl. 607-104.000.
Kelly, Kevin P.: *See*—
Stalling, David L.; Wood, Thomas S.; Kelly, Kevin P.; Cernohlavek, Leemer G.; Lochhaas, Philip D.; Schrier, Loren C.; and Strumpf, David M., 5,384,023, Cl. 204-186.000.
Kendall Co., The: *See*—
Dye, John D., 5,383,894, Cl. 606-201.000.
Kennametal Inc.: *See*—
Mogilnicki, Victor D., 5,383,673, Cl. 279-46.400.
Kennedy, Paul G., to Penn Troy Machine Co., Inc. Stainless steel security cap for fire hydrants. 5,383,495, Cl. 138-89.000.
Kennedy, Richard A.; Summe, Richard A.; and Pacourek, John R., to Dekco Electronics Corporation. Fast locking phase locked loop frequency synthesizer. 5,384,551, Cl. 331-17.000.
Kenney, Donald M.; and Luce, Stephen E., to International Business Machines Corporation. Non-conformal and oxidizable etch stops for submicron features. 5,384,281, Cl. 437-189.000.
Kenny, Thomas J.: *See*—
Oravetz, David M.; Elms, Robert T.; Engel, Joseph C.; Klancher, Frank; and Kenny, Thomas J., 5,384,712, Cl. 364-550.000.
Kensey, Kenneth; and Clupper, Harold, to Kensey Nash Corporation. Methods and instruments for performing medical procedures percutaneously without a trocar. 5,383,886, Cl. 606-185.000.
Kensey Nash Corporation: *See*—
Kensey, Kenneth; and Clupper, Harold, 5,383,886, Cl. 606-185.000.
Kent State University: *See*—
Doane, J. William; and Yang, Deng K., 5,384,067, Cl. 252-299.010.
Kenyon, Ronald W.: *See*—
Gregory, Peter; Kenyon, Ronald W.; Mistry, Prahalad M.; and Taylor, John A., 5,383,960, Cl. 106-22.00R.
Keown, Kenneth: *See*—
Jung, Eugene J.; Keown, Kenneth; and Turk, Peter I. C., 5,383,853, Cl. 604-96.000.
Kepka, Patsy N.: *See*—
Daly, Jeffery E.; and Kepka, Patsy N., 5,383,525, Cl. 175-57.000.
Kerdiles, Yvon: *See*—
Cardon, Alain; Kerdiles, Yvon; Boliveau, Michel; Ansel, Denis; and Debuigne, Jean, 5,383,892, Cl. 606-198.000.
Kerek, Leslie; and Rudoy, Edward, to G & H Technology, Inc. Connector with floating self-alignment and zero impulse separation mechanisms. 5,383,790, Cl. 439-248.000.
Kerner, Dieter: *See*—
Deusser, Hans; Kerner, Dieter; Meyer, Jurgen; Michael, Gunther; and Stubbe, Andreas, 5,384,194, Cl. 428-405.000.
Kerns, James M.; Cullen, Michael J.; and Sweppy, Michael S., to Ford Motor Company. Diagnostic airflow measurement. 5,384,707, Cl. 364-431.110.
Kershner, David L.: *See*—
Hanna, Paul K.; Piotowski, Andrzej M.; and Kershner, David L., 5,384,393, Cl. 528-392.000.
Kervenaal, Jacques: *See*—
Sac, Sophie; Defaye, Jacques; Gadelle, Andree; and Kervenaal, Jacques, 5,383,964, Cl. 106-210.000.
Kettner, Charles A., to Du Pont Merck Pharmaceutical Company, The. Removal of boronic acid protecting groups by transesterification. 5,384,410, Cl. 548-405.000.
Khokhar, Abdul R.: *See*—
Perez-Soler, Roman; Han, Insook; and Khokhar, Abdul R., 5,384,127, Cl. 424-450.000.
Khuri-Yakub, Butrus; Ligneul, Patrice; and Boulanger, Jean-Luc, to Schlumberger Industries. Device for measuring the velocity of a fluid. 5,383,369, Cl. 73-861.290.
Kida, Hiroshi: *See*—
Shikama, Shinsuke; Kida, Hiroshi; and Daigogo, Akira, 5,384,659, Cl. 139-719.000.
Kidd, Roy E., to Emerson Electric Co. Pump controller program. 5,384,714, Cl. 364-550.000.
Kido, Shojiro; Nakamura, Toshiaki; Kambara, Takashi; Taga, Yoshitaka; and Nagase, Haruo, to Matsushita Electric Works, Ltd. Power source device. 5,384,518, Cl. 315-225.000.
Kido, Tsutomu: *See*—
Takai, Hisashi; and Kido, Tsutomu, 5,383,870, Cl. 604-378.000.
Kidwell, David A.; and Conyers, Susan M., to Geo-Centers, Inc.; and United States of America, Navy. Biomolecules bound to catalytic inorganic particles, immunoassays using the same. 5,384,265, Cl. 436-525.000.
Kiesel, Gerd H.; Blume, Wilfried; and Meyer, Dieter, to Beneform GmbH. Air conduit arrangement for the ventilation or air conditioning of the interior of a vehicle and method for producing an air conduit arrangement. 5,383,815, Cl. 454-137.000.
Kikuchi, Hiroaki, to Fujitsu Limited. Encrypted virtual terminal equipment having initialization device for preventing reply attack. 5,384,848, Cl. 380-48.000.
Kikuda, Shigeru: *See*—
Mori, Shigeru; Suwa, Makoto; Miyamoto, Hiroshi; Morooka, Yoshikazu; Kikuda, Shigeru; and Kinoshita, Mitsuya, 5,384,784, Cl. 371-21.100.
Kilhenny, Brett: *See*—
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Killen, Thomas E.: *See*—
Gaffney, Thomas W.; and Killen, Thomas E., 5,383,509, Cl. 160-209.000.
Kim, Dae-il, to Samsung Electron Devices Co., Ltd. Plasma display device. 5,384,514, Cl. 313-585.000.
Kim, Eung J.: *See*—
Oh, Jae S.; and Kim, Eung J., 5,384,424, Cl. 560-25.000.
Kim, Kwan-sung, to SamSung Electronics Co., Ltd. Signal compression recording and reproducing method. 5,384,763, Cl. 369-124.000.
Kimberly-Clark Corporation: *See*—
Roessler, Thomas H.; and Siebers, Bruce M., 5,383,872, Cl. 604-391.000.
Kimura, Kenji; Samizo, Motohiko; Tanaka, Shinya; Honda, Yukihiro; Sasaki, Manji; and Yachigo, Shinichi, to Sumitomo Chemical Company, Limited. Hindered piperidine stabilizers and production thereof. 5,384,348, Cl. 524-103.000.
Kimura, Tatsuo: *See*—
Takagi, Shinji; Tanaka, Hideki; Kimura, Tatsuo; and Ashiwa, Jun, 5,384,587, Cl. 347-41.000.
Kimura, Tetsuo: *See*—
Hirano, Hirofumi; Bekki, Toshihiko; Kashimura, Makoto; Kiyohara, Takehiko; Nitta, Tetsuhiro; and Kimura, Tetsuo, 5,384,586, Cl. 346-134.000.
Kimura, Yoshihiko, to Mitsubishi Materials Corporation. Slicing machine. 5,383,444, Cl. 125-13.020.
Kinashi, Hiroshi: *See*—
Ohashi, Kunio; Kinashi, Hiroshi; and Tokuyama, Mitsuru, 5,384,623, Cl. 355-207.000.
Kincaid, James G.: *See*—
Bedard, Aimee M.; Lai, Grace H.; Wullschleger, Richard D.; and Kincaid, James G., 5,384,144, Cl. 426-557.000.
King, Harold B.: *See*—
Matzner, Bruce; Johansson, Eric B.; Wolters, Richard A., Jr.; Dunlap, Thomas G.; Elkins, Robert B.; King, Harold B.; and Sick, Paul W., 5,384,814, Cl. 376-352.000.
King, Larry: *See*—
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King, Spencer B., III: *See*—
Scott, Neal A.; Hanson, Stephen R.; King, Spencer B., III; and Harker, Laurence A., 5,383,928, Cl. 623-1.000.
Kingston, Gordon J.: *See*—
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Kingston, James P.: *See*—
Coles, Mark E.; and Kingston, James P., 5,384,556, Cl. 333-1.100.
Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Hamabe, Isutomu, to Nissan Motor Co., Ltd. Active noise reduction apparatus. 5,384,853, Cl. 381-71.000.
Kinoshita, Mitsuya: *See*—
Mori, Shigeru; Suwa, Makoto; Miyamoto, Hiroshi; Morooka, Yoshikazu; Kikuda, Shigeru; and Kinoshita, Mitsuya, 5,384,784, Cl. 371-21.100.
Kioritz Corporation: *See*—
Yokocho, Yoetsu; Kuwano, Michiyasu; and Aiyama, Fumihiko, 5,383,330, Cl. 56-256.000.
Kipnes, Hyman J. Hand held device for measuring screw threads by the three-wire method. 5,383,286, Cl. 33-829.000.
Kirk, Mark P.: *See*—
Stevenson, Dian E.; Kirk, Mark P.; Farnum, Sylvia A.; Frank, William C.; Helland, Randall H.; Kitchin, Jonathan P.,; Mader, Roger A.; Mizen, Mark B.; Newmark, Richard A.; Ramaden, William D.; Sakizadeh, Kumars; Spawn, Terence D.; and Tiers, George V., 5,384,237, Cl. 430-566.000.
Kirsch, Jeffery L.: *See*—
Teverovsky, Alexander; MacDonald, James C.; Pickering, Michael A.; and Kirsch, Jeffery L., 5,383,969, Cl. 118-719.000.
Kishi, Fumio: *See*—
Sumida, Hiroyasu; Itabashi, Akihisa; Fukano, Hiroshi; Shijo, Hiroyasu; Takashima, Hiroshi; Ogiwara, Takeshi; and Kishi, Fumio, 5,383,754, Cl. 412-11.000.
Kishida, Takahito: *See*—
Kanakura, Akihiro; Kishida, Takahito; Yabuuchi, Naoya; and Maruta, Masayuki, 5,384,226, Cl. 430-137.000.
Kitabayashi, Tetsuo; and Watanabe, Toshiya, to Toto Ltd. Electrostatic chuck. 5,384,681, Cl. 361-234.000.
Kitabayashi, Tetsuo: *See*—
Watanabe, Toshiya; and Kitabayashi, Tetsuo, 5,384,682, Cl. 361-234.000.
Kitami, Takayuki: *See*—
Ono, Katsuhiro; Anno, Hidero; Kitami, Takayuki; Sugiura, Hiroyuki; and Tanaka, Makoto, 5,384,818, Cl. 378-132.000.
Kitchin, Jonathan P.,: *See*—
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Kitsu, Toshio: *See*—
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Kiyohara, Takehiko: *See*—
Hirano, Hirofumi; Bekki, Toshihiko; Kashimura, Makoto; Kiyohara, Takehiko; Nitta, Tetsuhiro; and Kimura, Tetsuo, 5,384,586, Cl. 346-134.000.
Klain, Miroslav: *See*—
Safar, Peter; Stezoski, S. William; and Klain, Miroslav, 5,383,854, Cl. 604-98.000.
Klancher, Frank: *See*—
Oravetz, David M.; Elms, Robert T.; Engel, Joseph C.; Klancher, Frank; and Kenny, Thomas J., 5,384,712, Cl. 364-550.000.
Klaveness, Jo; Ege, Thorfinn; and Rocklage, Scott M., to Nycomed Imaging AS. Diagnostic magnetometry using superparamagnetic particles. 5,384,109, Cl. 424-9.000.
Klein, Alfons; Kron, Rudolf; Fiege, Helmut; and Paetz, Klaus-Christian, to Bayer Aktiengesellschaft. Heat transfer fluid and process for its preparation. 5,384,059, Cl. 252-73.000.
Klein, Matthew, to Hewlett-Packard Company. Measuring worst case susceptibility of digital microwave radios to multipath fading. 5,384,791, Cl. 371-5.100.
Klein, Richard: *See*—
Holzworth, Monta R.; Klein, Richard; Dixit, Pankaj; and Ingram, William P., III, 5,384,481, Cl. 257-530.000.
Kleinfelder, Stuart A. Apparatus and method for acquiring and detecting stale data. 5,384,713, Cl. 364-550.000.
Klemm, Peter: *See*—
Michael, Wolfgang; Thudium, Karl; Klemm, Peter; Schumann, Burkhardt; Hofele, Hans; and Rieger, Walter, 5,383,348, Cl. 72-405.000.
Kline, Stanley, to Enzo Diagnostics, Inc. Specific binding assay compound with inhibitive self-quenching characteristics. 5,384,241, Cl. 435-6.000.
Klingbeil, Lawrence S., Jr.: *See*—
Davies, Robert B.; Anderson, Charles B.; Klingbeil, Lawrence S., Jr.; and Norris, George B., 5,384,273, Cl. 437-41.000.
Klinger, Joan. Universal incontinence device. 5,383,867, Cl. 604-385.100.
Klinsuttho, Pricha: *See*—
Krawetz, Arthur A.; Klinsuttho, Pricha; Phan, Phat A.; and Phung, Quyet, 5,383,352, Cl. 73-54.010.
Knittel, Brian C.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Herah, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.
Knoch, Martin: *See*—
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Knodel, Waldemar R.: *See*—
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Knorpp, Kurt: *See*—
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Knosp, Bernard: *See*—
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Knowles, David B., to Transitions Optical, Inc. Photochromic naphthopyran compounds. 5,384,077, Cl. 252-586.000.
Knowles, John H., Jr.; and Yabusaki, DeeAnn L., to LittlePoint Corporation. Method for measuring topical dosage dispensed. 5,383,373, Cl. 73-865.800.
Knox, Benjamin H.: *See*—
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Koatsu Gas Koygo Co., Ltd.: *See*—
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Kobayashi, Atsushi; Onga, Makoto; Sase, Masatoshi; and Sato, Yasushi, to Sony Corporation. CCD imaging system with two extended horizontal registers. 5,384,596, Cl. 348-241.000.
Kobayashi, Hiroaki: *See*—
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Kobayashi, Hiroo: *See*—
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Kobayashi, Isamu; and Aramaki, Yuji, to Kubota Corporation. Composite fibers of potassium hexatitanate and titanium dioxide. 5,383,963, Cl. 106-36.000.
Kobayashi, Junji, to Canon Kabushiki Kaisha. Recording or reproducing apparatus. 5,384,672, Cl. 360-71.000.
Kobayashi, Kouji: *See*—
Miyaoka, Shunichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.
Kobayashi, Makoto: *See*—
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Kobayashi, Takeo; Nishida, Takao; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure control system of a camera having an interval mode. 5,384,617, Cl. 354-419.000.
Kobe Steel, USA, Inc.: *See*—
Tachibana, Takeshi; Thompson, Dale G., Jr.; and Glass, Jeffrey T., 5,384,470, Cl. 257-77.000.
Kobler, Armin: *See*—
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Kobos, Robert K.: *See*—
Arentzen, Rene; Jadhav, Prabhakar K.; Kobos, Robert K.; and Smart, Bruce E., 5,384,254, Cl. 435-181.000.
Kobrosly, Walid: *See*—
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Koch, Donald G.; Ting, Albert C.; and Chou, Jim-Son, to Allergan, Inc. Diffractive/refractive spectacle and intraocular lens system for age-related macular degeneration. 5,384,606, Cl. 351-158.000.
Koch, Richard C., to C-2, Inc. Keyboard cover and copy holder. 5,383,643, Cl. 248-447.000.
Kodama, Yukinori: *See*—
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Koehler, Steven F., to Eastman Kodak Company. Combined recording of magnetic data and optical guide track on photographic film. 5,384,664, Cl. 360-3.000.
Koenig & Bauer, Akteingesellschaft: *See*—
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Kogan, Timothy P.; and Somers, Todd C., to Genentech, Inc. Ketamine analogues for treatment of thrombocytopenia. 5,384,331, Cl. 514-646.000.
Kogure, Tomohiko, to Yokohama Rubber Co., Ltd., The. Pneumatic tire having reduced noise. 5,383,506, Cl. 152-209.00R.
Kogure, Yoshio: *See*—
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Kohara, Hidekatsu: *See*—
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Kohda, Toshiyuki: *See*—
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Kohler Coating Machinery Corporation, The: *See*—
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Kohler, Gregory R.: *See*—
Dahlqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahner, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.
Kohler, Herbert B., to Kohler Coating Machinery Corporation, The. Web transfer mechanism and method for a continuous winder. 5,383,622, Cl. 242-527.200.
Kohlhammer, Klaus; Petersen, Hermann; and Dobler, Walter, to Wacker Chemie GmbH. Graft copolymers having improved phase binding between the graft base and the grafted-on polymer phase. 5,384,381, Cl. 526-330.000.
Kohnke, Ole B., to Ambu International A/S. Training manikin for practicing external cardiac massage. 5,383,786, Cl. 434-265.000.
Kohno, Yoshihide: *See*—
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Kohno, Yoshio: *See*—
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Koinuma, Hiroyuki: *See*—
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Koishikawa, Kouji; Shishido, Motoyoshi; and Kawasaki, Toyokazu, to Honda Giken Kogyo Kabushiki Kaisha. Blow-by gas circulating system for 4-cycle engine. 5,383,440, Cl. 123-572.000.
Kojima, Kenji: *See*—
Kurotori, Tsuneo; Mochizuki, Manabu; Ariyama, Kenzo; Kojima, Kenji; Tsuruoka, Ichiro; Echigo, Katsuhiro; and Miyao, Mayumi, 5,384,225, Cl. 430-116.000.
Kojima, Masaya; Niitsuma, Kazuhiro; Hayakawa, Satoru; Kawamata, Toshio; and Endo, Yasushi, to Fuji Photo Film Co., Ltd. Magnetic recording disc comprising a non-magnetic underlayer and a magnetic layer comprising ferromagnetic particles and a binder. 5,384,175, Cl. 428-64.000.
Kokusai Kokoluki Kabushiki Kaisha: *See*—
Matumoto, Shigeru, 5,383,361, Cl. 73-471.000.
Kolas, Jon: *See*—
Mesfin, Teodros; Kolas, Jon; and Youens, John E., 5,384,686, Cl. 361-686.000.
Kolbly, Kenneth, to Novak, Steve. Portable spirometer. 5,383,470, Cl. 128-725.000.
Kolenik, Steve A.: *See*—
Heilman, Marlin S.; Kolenik, Steve A.; Capone, Christopher D.; Parisi, Carl M.; Prem, Edward K.; and Speicher, Vernon L., 5,383,840, Cl. 600-17.000.

Kolias, John T.: *See—*
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Komatsu, Teruo: *See—*
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Komatsu, Yoshihiro, to Sony Corporation. Interpolation type flash analog-to-digital converter. 5,384,569, Cl. 341-159.000.

Komori Corporation: *See—*
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Komura, Osamu: *See—*
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Komura, Yukio: *See—*
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Komurasaki, Toshi; Toyoda, Hitoshi; Uchida, Daisuke; and Hanada, Kazunori, to Taisho Pharmaceutical Co., Ltd. Tumor cell growth inhibitor. 5,384,394, Cl. 530-324.000.

Koncelik, Joseph A.: *See—*
Chaney, David B.; and Koncelik, Joseph A., 5,383,709, Cl. 297-302.000.

Kondo, Kunio; Kushida, Takahiro; and Ueda, Masakatsu, to Sumitomo Metal Industries, Ltd. Martensitic stainless steel suitable for use in oil wells. 5,383,983, Cl. 148-325.000.

Kondo, Yuji: *See—*
Takahashi, Masaji; and Kondo, Yuji, 5,383,364, Cl. 73-517.00R.

Konica Corporation: *See—*
Kuse, Satoru; Kobayashi, Hiroaki; Haraguchi, Tsuyoshi; and Yamashita, Hiroshi, 5,384,233, Cl. 430-461.000.

Konig, Theo; and Fister, Dietmar, to H. C. Starck GmbH and Co. Fine-particle oxide ceramic powders. 5,384,306, Cl. 501-152.000.

Konigshofen, Heinrich: *See—*
Trinks, Rainer; Ganster, Otto; and Konigshofen, Heinrich, 5,384,385, Cl. 528-52.000.

Konishi, Yasuhiro; Miyamoto, Takayuki; Kajimoto, Takeshi; and Iwamoto, Hisashi, to Mitsubishi Denki Kabushiki Kaisha. Synchronous semiconductor memory device. 5,384,745, Cl. 365-230.030.

Konno, Mitsuo, to Kabushiki Kaisha Toshiba. Integrated circuit device having signal wiring structure of ultrahigh-speed performance. 5,384,486, Cl. 257-752.000.

Konsevich, James L.: *See—*
Allen, Richard C.; Cisneros, Gary M.; Fickes, Stanley L.; Hughes, Gary N.; Johnson, Walter S.; Konsevich, James L.; Piccone, John; and Stewart, Bernard E., 5,384,652, Cl. 359-172.000.

Kopp, Monte L.: *See—*
Korsunsky, Ionif; Schroepfer, Richard C.; and Kopp, Monte L., 5,383,792, Cl. 439-326.000.

Korhonen, Hannu: *See—*
Rantanen, Rauno; Lummila, Markku; Korhonen, Hannu; Paloviita, Petri; and Koskinen, Jukka, 5,383,968, Cl. 118-119.000.

Korman, Charles S.: *See—*
Neugebauer, Constantine A., deceased; Korman, Charles S.; Bates, David A.; Bicknell, William H.; and Daum, Wolfgang, 5,384,691, Cl. 361-794.000.

Kornhaas, Robert: *See—*
Morbe, Matthias; and Kornhaas, Robert, 5,384,539, Cl. 324-527.000.

Koros, Robert M., to Exxon Research & Engineering Co. Bubble column, tube side slurry process and apparatus. 5,384,336, Cl. 518-700.000.

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Rantanen, Rauno; Lummila, Markku; Korhonen, Hannu; Paloviita, Petri; and Koskinen, Jukka, 5,383,968, Cl. 118-119.000.

Koskuba, William V.: *See—*
Wilson, Anton F.; and Koskuba, William V., 5,384,616, Cl. 354-414.000.

Kosmo, Joseph J.: *See—*
Dawn, Frederic S.; Guy, Walter W.; Kosmo, Joseph J.; Drennan, Arthur P.; and Tschirch, Richard P., 5,384,083, Cl. 264-130.000.

Kozziowny, Michele T.: *See—*
Zurek, Lawrence A.; Kozziowny, Michele T.; and Clowater, Lorna J., 5,383,356, Cl. 73-118.200.

Kotil, Douglas L.: *See—*
Reisdorff, Robert A.; and Kotil, Douglas L., 5,383,749, Cl. 405-232.000.

Kotlyar, Michael, to Atlantic Richfield Company. Pump seal test apparatus and method. 5,383,351, Cl. 73-40.000.

Kotowski, Stefan: *See—*
Oppermann, Gunter; Weinhardt, Rudiger; and Kotowski, Stefan, 5,384,020, Cl. 204-280.000.

Kotwicki, Allan J.: *See—*
Cullen, Michael J.; Gee, Thomas S.; Schubert, Thomas A.; Pursifull, Ross D.; and Kotwicki, Allan J., 5,383,432, Cl. 123-406.000.

Kovac, Stephen R.: *See—*
Butler, Bryce G.; Houseman, James D.; and Kovac, Stephen R., 5,383,536, Cl. 188-1.120.

Kowalewski, James M.; Kaplan, Solomon D.; and Katz, Boris M., to Ward Holding Company, Inc. Sheet registration control. 5,383,392, Cl. 101-183.000.

Kowallis, Reid B.: *See—*
Moring, Stephen E.; Albin, Michael S.; Kowallis, Reid B.; Lee, Thomas E.; Mead, Dennis E.; Nickel, John H.; Oldham, Mark F.; Reel, Richard T.; Orpin, Timothy S.; and Woods, Janice C., 5,384,024, Cl. 204-299.00R.

Kox, Henricus A. M.: *See—*
De Bakker, Johannes W. G.; Fokkink, Lambertus G. J.; Van Der Putten, Andreas M. T. P.; and Kox, Henricus A. M., 5,384,154, Cl. 427-123.000.

Koyama, Masahiro; and Shinkawa, Shigeo, to Coca-Cola Company, The. Process for the production of canned coffee. 5,384,143, Cl. 426-546.000.

Koyama, Mikio; and Tanimoto, Hiroshi, to Kabushiki Kaisha Toshiba. Integration circuit including a differential amplifier having a variable transconductance. 5,384,501, Cl. 327-336.000.

Koyama, Toru; Honjo, Koo; Suzuki, Masao; Takahashi, Akio; Mukoh, Akio; Fukushi, Keiji; and Numata, Seiji, to Hitachi, Ltd. Superconducting magnet coil and curable resin composition used therein. 5,384,197, Cl. 428-457.000.

Koyama, Toru: *See—*
Nagata, Atsushi; Koyama, Toru; and Nagata, Norinari, 5,383,682, Cl. 280-777.000.

Koyfman, Ilya: *See—*
Chesterfield, Michael P.; Serra, Josep; and Koyfman, Ilya, 5,383,387, Cl. 87-56.000.

Kraft General Foods, Inc.: *See—*
Gonsalves, Alexander A.; Dudley, Everett D., Jr.; and Hogan, Gerard J., 5,384,145, Cl. 426-565.000.
Gonsalves, Alexander A.; and Hogan, Gerard J., 5,384,146, Cl. 426-565.000.
Lynch, William R.; Smith, Larry D.; Wiant, Matthew J.; Bianca, Robert R.; and Kelley, David, Jr., 5,384,148, Cl. 426-632.000.
Wilkinson, Roger D.; and Lindsay, Dean R., 5,383,558, Cl. 206-508.000.

Krafton, Thomas J.: *See—*
Vu, Tuan M.; Krafton, Thomas J.; and Phipps, Alan M., 5,384,117, Cl. 424-66.000.

Krahe, Detlef: *See—*
Dickopp, Gerhard; Vaupel, Thomas; and Krahe, Detlef, 5,384,811, Cl. 375-122.000.

Krallmann, John A.: *See—*
Brown, Ben G.; Krallmann, John A.; Liesen, Christopher D.; and Purdome, Mark J., 5,384,822, Cl. 379-10.000.

Kramer, Klaus: *See—*
Wotting, Gerhard; Knoch, Martin; and Kramer, Klaus, 5,384,081, Cl. 264-45.000.

Krantz, Kermit E., to Medi-Flex Hospital Products. Tape applicator. 5,383,900, Cl. 606-215.000.

Krasser, Josef: *See—*
Dahiqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahner, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.

Krauss, Mark, to American Cord & Webbing Co., Inc. Co-injection molded buckle. 5,383,257, Cl. 24-625.000.

Krauss, Mark J., to American Cord & Webbing Co., Inc. Non-choking strain-reducing dog harness. 5,383,426, Cl. 119-793.000.

Krawetz, Arthur A.; Klinsuttho, Pricha; Phan, Phat A.; and Phung, Quyet, to United States of America, Air Force. Method for the measurement of bulk modulus and pressure viscosity of liquids. 5,383,352, Cl. 73-54.010.

Krehbiel, Fred L.: *See—*
Fuerst, Robert M.; and Krehbiel, Fred L., 5,384,435, Cl. 174-262.000.

Krein, Gundolf; Timm, Heinrich; Enning, Norbert; and Spies, Robert, to Audi A.G. Cast and assembly method for motor vehicle bodywork. 5,383,987, Cl. 156-60.000.

Kresge, John S.: *See—*
Davis, Charles R.; Duffy, Thomas P.; Hanakovic, Steven L.; Heck, Howard L.; Kolias, John T.; Kresge, John S.; Light, David N.; and Trivedi, Ajit K., 5,384,690, Cl. 361-789.000.

Kress, Gerhard: *See—*
Brosius, Sibylle; Seiler, Erhard; Schwager, Harald; Kress, Gerhard; and Schlemmer, Lothar, 5,384,369, Cl. 525-193.000.

Kresse, Georg-Burkhard: *See—*
Berry, Michael N.; Town, Michael-Harold; Kresse, Georg-Burkhard; and Herrmann, Uwe, 5,384,246, Cl. 435-22.000.
Berry, Michael N.; Town, Michael-Harold; Kresse, Georg-Burkhard; and Herrmann, Uwe, 5,384,247, Cl. 435-22.000.

Kreymer, Naum: *See—*
Anderson, Gordon K.; Kreymer, Naum; and Tatham, Tom E., 5,383,335, Cl. 62-89.000.

Krieger, Joseph P., to Hydro Modular Systems, Inc. Fluid control method. 5,383,241, Cl. 8-159.000.

Krishna, Arvind: *See—*
Ahmadi, Hamid; Bantz, David F.; Bauchot, Frederic J.; Krishna, Arvind; La Maire, Richard O.; and Natarajan, Kadathur S., 5,384,777, Cl. 370-85.200.

Krizek, Oldrich: *See—*
Edele, Reinhard; Johannes, Reinhard; Krizek, Oldrich; and Schmid, Eckhardt, 5,383,602, Cl. 239-284.100.

Krochta, Todd J.: *See—*
Mattson, Rodney A.; Krochta, Todd J.; and Heuscher, Dominic J., 5,384,861, Cl. 382-6.000.

Krogman, Stanely R.; and Moore, Kevin D., to Illinois Tool Works Inc. Machine for applying carrier stock to containers, such as beverage cans, selectively in rim-applied or side-applied carrier position. 5,383,321, Cl. 53-48.400.

Kroll, Mark W., to Angeion Corporation. System and method for delivering multiple closely spaced defibrillation pulses. 5,383,907, Cl. 607-5.000.

Krolopp, Robert K.: *See—*
Dillard, Pamela A.; Chan, Alina C.; and Krolopp, Robert K., 5,384,825, Cl. 379-59.000.

Kron, Rudolf: *See—*
Klein, Alfons; Kron, Rudolf; Fiege, Helmut; and Paetz, Klaus-Christian, 5,384,059, Cl. 252-73.000.

Kross, Robert D.; and Siff, Elliott J., to Alcide Corporation. Anti-inflammatory formulations for inflammatory diseases. 5,384,134, Cl. 424-661.000.

Kruesi, Frederick C.: *See—*
Heilemen, David W., Jr.; Bennett, Tommy L.; Kruesi, Frederick C.; and Latimer, Robert A., 5,384,829, Cl. 379-67.000.

Krupp Polysius AG: *See—*
Longhurst, Don, 5,383,610, Cl. 241-30.000.

Krzyzek, Richard A.; Laureen, Cheryl R. M.; and Anderson, Paul C., to DeKalb Genetics Corporation. Genetic transformation of maize cells by electroporation of cells pretreated with pectin degrading enzymes. 5,384,253, Cl. 435-172.300.

Ku, Tzu-Wei; Chia, Wei-Kong; and Shieh, Doag-Ru, to Hitachi Micro Systems Inc. Logic circuit simulator and logic simulation method having reduced number of simulation events. 5,384,720, Cl. 364-578.000.

Kuban, Daniel P.: *See—*
Martin, H. Lee; and Kuban, Daniel P., 5,384,588, Cl. 348-15.000.

Kubasko, James J. Thermally stable solenoid utilizing wound electric heating wire. 5,384,448, Cl. 219-209.000.

Kubein-Meesenburg, Dietmar; and Nagerl, Hans, to Theusner, Joachim. Artificial joint as an endoprosthesis for the human shoulder joint. 5,383,936, Cl. 623-19.000.

Kubo, Hiroaki: *See—*
Kagami, Naoyuki; Kubo, Hiroaki; and Okada, Keiichi, 5,384,762, Cl. 369-44.280.

Kubota, Atsushi: *See—*
Hayakawa, Yasuyoshi; Komatsu, Teruo; Isobe, Hironobu; and Kubota, Atsushi, 5,383,655, Cl. 271-10.000.

Kubota Corporation: *See—*
Kobayashi, Isamu; and Aramaki, Yuji, 5,383,963, Cl. 106-36.000.
Yoshioka, Hidetaka; and Takada, Fumio, 5,383,531, Cl. 180-233.000.

Kubota, Miso: *See—*
Samesshima, Kenji; Makishima, Tatsuo; Hirai, Tadaaki; Takasaki, Yukio; Kubota, Miso; Tamioka, Kenkichi; and Shidara, Keiichi, 5,384,597, Cl. 348-325.000.

Kubota, Sadao: *See—*
Kaizaki, Kazuhiro; Kaminura, Masako; Matono, Takaaki; and Kubota, Sadao, 5,384,600, Cl. 348-556.000.

Kubota, Shuji: *See—*
Yagi, Toshiharu; Kato, Shuzo; and Kubota, Shuji, 5,384,809, Cl. 375-39.000.

Kubota, Yukio: *See—*
Kanota, Keiji; Inoue, Hajime; Uetake, Akihiro; Kawaguchi, Moriyuki; Kubota, Yukio; and Chiba, Kazunobu, 5,384,666, Cl. 360-32.000.

Kuchta, Gerard P.: *See—*
El-Khoury, Joseph E.; Timte, Frank W.; Kuchta, Gerard P.; and League, Edmond R., 5,383,825, Cl. 477-149.000.

Kudo, Masaki; and Shirakawa, Tokio, to Yamaha Corporation. Tone signal generating device. 5,383,386, Cl. 84-622.000.

Kugler, Karl-Heinz; and Riedel, Karlheinz, to Robert Bosch GmbH. Method of damping engine vibrations. 5,383,434, Cl. 123-419.000.

Kugoh, Harumi; Araya, Junji; Yano, Hideyuki; and Furuya, Tadashi, to Canon Kabushiki Kaisha. Charging member, process cartridge and image forming apparatus. 5,384,626, Cl. 355-219.000.

Kuhasalo, Antti, to Valmet Paper Machinery Inc. Method and wire group in a dryer section provided with a single-wire draw. 5,383,287, Cl. 34-117.000.

Kuhling, Steffen: *See—*
Alewelt, Wolfgang; Kauth, Hermann; and Kuhling, Steffen, 5,384,389, Cl. 528-168.000.

Kulmaczewski, David M., to Ford Motor Company. Inertial measurement unit providing linear and angular outputs using only fixed linear accelerometer sensors. 5,383,363, Cl. 73-510.000.

Kumagai, Ryohei, to Ezel, Inc. Thinning method of an image. 5,384,866, Cl. 382-55.000.

Kumakura, Junzo, to Sony Corporation. Disk changer player with stocker between loading/unloading position and reproducing unit. 5,384,760, Cl. 369-38.000.

Kumakura, Masayuki: *See—*
Nishida, Keiji; Kumakura, Masayuki; and Mochida, Junichi, 5,383,336, Cl. 62-115.000.

Kumano, Makoto: *See—*
Ohkuma, Ikuo; Kumano, Makoto; Inoue, Sadayuki; Onishi, Ken; and Ishimoto, Junko, 5,384,665, Cl. 360-22.000.

Kung, Teh-Ming; and Pope, Brian T., to Eastman Kodak Company. Receiving element subbing layer for use in thermal dye transfer. 5,384,304, Cl. 503-227.000.

Kunz, Walter; and Schurter, Rolf, to Ciba-Geigy Corporation. Microbicidal compositions. 5,384,321, Cl. 504-261.000.

Kuo, Chung M.: *See—*
Budde, Anna M.; Saad, I. Daniel; Dunn, Alan R.; and Kuo, Chung M., 5,384,163, Cl. 427-385.500.

Kuo, Elizabeth A.: *See—*
Hambleton, Philip T.; Hedgecock, Charles J. R.; Kay, David P.; Kuo, Elizabeth A.; and Tully, Wilfred R., 5,384,423, Cl. 558-392.000.

Kuo, Shin C., to Ta Yen Paper Box Container Co., Ltd. Method for manufacturing high hardness kraft paper-made board block. 5,383,999, Cl. 156-267.000.

Kuo, Shun-Meen: *See—*
Chun, Christopher K. Y.; and Kuo, Shun-Meen, 5,384,873, Cl. 385-31.000.

Kurabayashi, Yutaka: *See—*
Yoshinaga, Kazuo; Kurabayashi, Yutaka; Ohnishi, Toshikazu; Futami, Yukiko; and Miyazaki, Takeshi, 5,384,069, Cl. 252-299.010.

Kuraishi, Fumio: *See—*
Yumoto, Kazuhito; Wakabayashi, Norio; Nakazawa, Masao; Wakabayashi, Shinichi; Wada, Norio; Kuraishi, Fumio; and Shimada, Toshihiko, 5,384,204, Cl. 428-626.000.

Kuratomi, Yasunori: *See—*
Takimoto, Akio; Tanaka, Yukio; Asayama, Junko; Akiyama, Koji; Kuratomi, Yasunori; and Ogawa, Hisahito, 5,384,649, Cl. 359-67.000.

Kuriyama, Hirotada; Maki, Yukio; and Kohno, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. SRAM memory structure and manufacturing method thereof. 5,384,731, Cl. 365-182.000.

Kuriyama, Katsumi: *See—*
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,384,365, Cl. 525-105.000.

Kuriyama, Mitsuo: *See—*
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masatoru; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.

Kuroda, Hideo; and Sakamoto, Yasunori, to Lion Corporation. Water-decomposable non-woven fabric. 5,384,189, Cl. 428-288.000.

Kurotori, Tsuneo; Mochizuki, Manabu; Ariyama, Kenzo; Kojima, Kenji; Tsuruoka, Ichiro; Echigo, Katsuhiro; and Miyao, Mayumi, to Ricoh Company, Ltd. Liquid developer for latent electrostatic images. 5,384,225, Cl. 430-116.000.

Kuse, Satoru; Kobayashi, Hiroaki; Haraguchi, Tsuyoshi; and Yamashita, Hiroshi, to Konica Corporation. Chemicals kit including a container formed of multilayer film, for processing photographic light-sensitive materials. 5,384,233, Cl. 430-461.000.

Kushida, Takahiro: *See—*
Kondo, Kunio; Kushida, Takahiro; and Ueda, Masakatsu, 5,383,983, Cl. 148-325.000.

Kusunoki, Mitsugu: *See—*
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.

Kutscher, Bernhard: *See—*
Dieter, Hans-Reinhold; Engel, Jurgen; Kutscher, Bernhard; Polymeropoulos, Emanuel; Szelenyi, Stefan; and Nickel, Bernd, 5,384,330, Cl. 514-535.000.

Kuwano, Michiyasu: *See—*
Yokocho, Yoetsu; Kuwano, Michiyasu; and Aiyama, Fumihiko, 5,383,330, Cl. 56-256.000.

Kvaerner Earl and Wright (a division of Kvaerner H&G Offshore Ltd.): *See—*
Waddell, John W., 5,383,748, Cl. 405-217.000.

Kwan, Shing F., to Modrovich, Ivan E. Stable, single-liquid alpha-amylase reagent. 5,384,245, Cl. 435-22.000.

Kwang, David, to Concept Enterprises, Inc. Audio system for vehicular application. 5,384,855, Cl. 381-100.000.

Kwasnick, Robert F.; and Possin, George E., to General Electric Company. Method for reduction of off-current in thin film transistors. 5,384,271, Cl. 437-40.000.

Kyosmo, Noboru; Osuga, Yoshiharu; and Yashima, Noboru, to Mitsubishi Denki Kabushiki Kaisha. Acoustic system. 5,384,856, Cl. 381-101.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Sasaki, Katsutoshi; Watanabe, Etsuyo; Nishi, Tatsunari; Sekine, Susumu; Hanai, Nobuo; and Hasegawa, Mamoru, 5,384,249, Cl. 435-68.100.

L.A. Rumbold Limited: *See—*
Granados, Reginald F.; and Robinson, Michael J., 5,383,704, Cl. 297-115.000.

L. Schuler GmbH: *See—*
Michael, Wolfgang; Thudium, Karl; Klemm, Peter; Schumann, Burkhardt; Hofele, Hans; and Rieger, Walter, 5,383,348, Cl. 72-405.000.

Laboratorios Leti S.A.: *See—*
Berrese, Lubertus, 5,384,395, Cl. 530-379.000.

Laborde, Edgardo; and Schroeder, Mel, to Warner-Lambert Company. 7-substituted quinolones and naphthyridones as antibecterial agents. 5,384,407, Cl. 544-298.000.

Lacey, David: *See—*
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chea, Lawrence K. M.; Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., 5,384,071, Cl. 252-299.630.

Ladas, Tom: *See—*
DiPippo, Ascanio; Lohse, William A.; and Ladas, Tom, 5,384,125, Cl. 424-443.000.

Laffler, Ronald A.; and DeVourney, Thomas, to White Consolidated Industries. Roller tube for awning and method of forming. 5,383,346, Cl. 72-51.000.

Lahitte, Pierre V. A.; Bratieres, Jean-Yves; Grenot, Michel; and Prache, Brigitte, to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle. Device for estimating, at high temperature, the electromagnetic properties of a material. 5,384,542, Cl. 324-642.000.

Lahrer, William F., III: *See*—
Dahiqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahrer, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.

Lahrman, Frank H.: *See*—
Roe, Donald C.; Berg, Charles J.; and Lahrman, Frank H., 5,384,179, Cl. 428-192.000.

Lai, Grace H.; and Wullschleger, Richard D., to Kellogg Company. Psyllium-enriched dough products and method for making the same. 5,384,136, Cl. 426-19.000.

Lai, Grace H.: *See*—
Bedard, Aimee M.; Lai, Grace H.; Wullschleger, Richard D.; and Kincaid, James G., 5,384,144, Cl. 426-557.000.

Lai, Herman. Valve for three-way tubings. 5,383,485, Cl. 137-102.000.

Lai, Kiong H.; Yu, Wan S.; and Davis, Robert A., to Uniroyal Chemical Company, Inc.; and Uniroyal Chemical Ltd./Ltee. Thiophene substituted cycloamines, compositions and use. 5,384,315, Cl. 514-231.500.

Lai, Shui T. Laser wave mixing and harmonic generation of laser beams. 5,384,803, Cl. 372-100.000.

Laih, Shyh-Chin: *See*—
Hsieh, Min-Lang; and Laih, Shyh-Chin, 5,384,615, Cl. 354-409.000.

L'Air Liquide: *See*—
Barbe, Christian; and Masurel, Dominique, 5,383,957, Cl. 96-8.000.

Laitinen, Jyrki, to Valmet Paper Machinery, Incorporated. Method and device for measurement of the nip force and/or nip pressure in a nip formed by a revolving roll or a band that is used in the manufacture of paper. 5,383,371, Cl. 73-862.550.

Lal, Sudarshan: *See*—
Grady, Alfred J., Jr.; Lal, Sudarshan; Mitchell, Mary J.; Okinaka, Yutaka; Smith, Craig G.; Trop, Harvey S.; and Wang, Chwan-Taana, 5,384,153, Cl. 427-98.000.

Lalchandani, Amrit K.: *See*—
Lam, Nim C.; and Lalchandani, Amrit K., 5,384,710, Cl. 364-489.000.

Lam, Leo K.: *See*—
Martin, Graham J.; Lam, Leo K.; and Hutchings, Thomas J., 5,384,636, Cl. 356-350.000.

Lam, Nim C.; and Lalchandani, Amrit K., to National Semiconductor Corporation. Circuit level netlist generation. 5,384,710, Cl. 364-489.000.

La Maire, Richard O.: *See*—
Ahmadi, Hamid; Bantz, David F.; Bauchot, Frederic J.; Krishna, Arvind; La Maire, Richard O.; and Natarajan, Kadathur S., 5,384,777, Cl. 370-85.200.

Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, to Gist-brocades, N.V.; and Plant Genetics System, NV. Glucose isomerases with an altered pH optimum. 5,384,257, Cl. 435-234.000.

Lambridis, George C.; and Goodwin, Nathanial, to Whittaker, Clark & Daniels, Inc. Light stable color compositions. 5,384,131, Cl. 424-490.000.

Lammerant, Henri; and Lammerant, Philip, to Cartonneries de Thulin S.A. Case for receiving at least one data storage disk. 5,383,553, Cl. 206-309.000.

Lammerant, Philip: *See*—
Lammerant, Henri; and Lammerant, Philip, 5,383,553, Cl. 206-309.000.

Lanaro, Walter, to Lawer S.r.l. Device for the preparation of mixtures, for example the preparation of dye solutions in textile plants. 5,383,726, Cl. 366-168.000.

Lancelot, Harry B., III, to Richmond Screw Anchor Company. Combination mechanical/grout sleeve coupling for concrete reinforcement bars. 5,383,740, Cl. 403-267.000.

Lanfranconi, Antonio; and Munari, Giorgio, to Inge, S.p.A. Container for containing two flowable materials in separated compartments, but permitting the two materials to be mixed for dispensing, before the container is opened. 5,383,579, Cl. 222-129.000.

Lang, Alfred: *See*—
Dahiqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahrer, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.

Lang, Volker. Device for warming and moistening gases having both an active and passive heat exchanger. 5,383,447, Cl. 128-201.130.

Lange, Barry C.: *See*—
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Lanning, Steven G.: *See*—
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., 5,384,831, Cl. 379-67.000.

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Bovenschen, Dirk A.; and Goossens, Rudolf G., 5,384,185, Cl. 428-235.000.

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Laticrete International, Inc.: *See*—
Rothberg, Henry M., 5,383,314, Cl. 52-169.500.

Latimer, Robert A.: *See*—
Heileman, David W., Jr.; Bennett, Tommy L.; Kruesi, Frederick C.; and Latimer, Robert A., 5,384,829, Cl. 379-67.000.

Latt, Leslie: *See*—
Piasio, Roger N.; and Latt, Leslie, 5,384,262, Cl. 436-518.000.

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Carlin, Edward P.; Buell, Kenneth B.; Lavon, Gary D.; and Daniels, Dean J., 5,383,871, Cl. 604-385.200.

Lawer S.r.l.: *See*—
Lanaro, Walter, 5,383,726, Cl. 366-168.000.

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Lay, Kenneth W., to General Electric Company. Oxide superconductor tape having silver alloy sheath with increased hardness. 5,384,307, Cl. 505-430.000.

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Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Le Bozec Aeronautique: *See*—
Mayeur, J. P., 5,384,535, Cl. 324-204.000.

League, Edmond R.: *See*—
El-Khoury, Joseph E.; Timte, Frank W.; Kuchta, Gerard P.; and League, Edmond R., 5,383,825, Cl. 477-149.000.

Lear Seating Corporation: *See*—
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Lee, Ho-cheol, to Samsung Electronics Co., Ltd. Data output buffer of a synchronous semiconductor memory device. 5,384,750, Cl. 365-233.000.

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Lin, Jing-Chie; Lin, Jainn-Yuan; and Lee, Sheng-Long, 5,384,016, Cl. 204-64.00R.

Lee, Thomas E.: *See*—
Moring, Stephen E.; Albin, Michael S.; Kowallis, Reid B.; Lee, Thomas E.; Mead, Dennis E.; Nickel, John H.; Oldham, Mark F.; Reel, Richard T.; Orpin, Timothy S.; and Woods, Janice C., 5,384,024, Cl. 204-299.00R.

Lee, Tsu-Wei F., to Paradigm Technology, Inc. Look ahead flag for FIFO. 5,384,744, Cl. 365-221.000.

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Bachmann, Peter; Leers, Dieter; and Wiechert, Detlef, 5,384,195, Cl. 428-408.000.

Legrow, Gary E.; and Sudbury-Holtschlag, Joan E., to Dow Corning Corporation. Pristine phenylpropylalkylsiloxanes. 5,384,383, Cl. 528-23.000.

Leivan, Wayne L. Pull out cup and can holder. 5,383,586, Cl. 214-42.460.

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Vreman, Hendrik J.; and Stevenson, David K., 5,383,469, Cl. 128-719.000.
Zhang, Xunsu; Uffelman, Erich; and Collman, James P., 5,384,397, Cl. 540-143.000.

LeMarbe, Edward S.; and Nguyen, Sao V., to Jet Spray Corp. Static mixing nozzle. 5,383,581, Cl. 222-459.000.

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Waelput, Erik, 5,383,481, Cl. 134-56.00R.

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Schobesberger, Claus; Weinrotter, Klaus; Griesser, Herbert; and Seidl, Sigrid, 5,384,390, Cl. 528-353.000.

LeonHard Kurz GmbH & Co.: *See*—
Suess, Joachim; and Suessner, Hubert, 5,383,687, Cl. 283-86.000.

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Vincent, Michel; Remond, Georges; Portevin, Bernard; Herve, Yolande; Lepagnol, Jean; and de Nanteuil, Guillaume, 5,384,322, Cl. 514-299.000.

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Volk, Thomas G.; Leschinger, Matthew; and Parkerson, Jimmy W., 5,384,427, Cl. 174-38.000.

Lesny, Jan; and Aindow, Joseph D. Ultrasonic instrument. 5,383,465, Cl. 128-662.050.

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Leuschner, Rainer: *See*—
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Levinson, Lionel M.; Schultz, William N.; Lewis, Larry N.; Sumpter, Chris A.; and Zumbrum, Michael A., to General Electric Company. Infrared radiation curable organopolysiloxane compositions. 5,384,357, Cl. 524-770.000.

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Balaban, David B.; and Tufano, Anthony, 5,384,441, Cl. 200-139.000.

Levitov, Alexander B., to Abbis Corporation. Safety syringe. 5,383,857, Cl. 604-110.000.

Levitt, Roy C. Process and apparatus for localizing a source of charged particles using an electric field. 5,384,462, Cl. 250-374.000.

Levy, Alejandro V.; and Warner, Donald, to Associated Universities, Inc. Preventive maintenance system for the photomultiplier detector blocks of pet scanners. 5,384,699, Cl. 364-413.130.

Lewczuk, Miroslav H. Multicontainer packaging system. 5,383,323, Cl. 53-398.000.

Lewis, Larry N.: *See*—
Levinson, Lionel M.; Schultz, William N.; Lewis, Larry N.; Sumpter, Chris A.; and Zumbrum, Michael A., 5,384,357, Cl. 524-770.000.

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Melber, Albrecht; Rie, Kyong-Tachong; and Schnatbaum, Frank, 5,383,980, Cl. 148-222.000.

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Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Liao, Tsun-Chi, to Hwa Shin Musical Instrument Co., Ltd. Collapsible guitar stand. 5,383,634, Cl. 248-166.000.

Liconic AG: *See*—
Rheinberger, Volker M.; Unterbrink, Gary; Malin, Cosmas; and Sawatzki, Harry L., 5,383,752, Cl. 409-105.000.

Lieber, Winfried, to Siemens Aktiengesellschaft. Method and apparatus for identifying the position of two groups of light waveguides to be aligned. 5,384,870, Cl. 385-15.000.

Liebert, Richard T. Drive and control mechanisms for human powered vehicles. 5,383,675, Cl. 280-266.000.

Liesen, Christopher D.: *See*—
Brown, Ben G.; Krallmann, John A.; Liesen, Christopher D.; and Purdome, Mark J., 5,384,822, Cl. 379-10.000.

Lift Mates, Inc.: *See*—
Patrick, William E., 5,383,758, Cl. 414-680.000.

Light, David N.: *See*—
Davis, Charles R.; Duffy, Thomas P.; Hanakovic, Steven L.; Heck, Howard L.; Kolias, John T.; Kreage, John S.; Light, David N.; and Trivedi, Ajit K., 5,384,690, Cl. 361-789.000.

Lightcap, L. Lawrence, Jr. Adjustable arrow rest assembly. 5,383,441, Cl. 124-44.500.

Ligneul, Patrice: *See*—
Khuri-Yakub, Butrus; Ligneul, Patrice; and Boulanger, Jean-Luc, 5,383,369, Cl. 73-861.290.

Lilley, Frank M., to Lilley, Pamela Star. Massaging device. 5,383,841, Cl. 601-128.000.

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Lilley, Frank M., 5,383,841, Cl. 601-128.000.

Lim, Chan S.; McBride, Kevin M.; and Wakejima, Takaki, to International Business Machines Corporation. Method and system for storing multiple, modifiable Yomi and Kanji strings in a structured document. 5,384,700, Cl. 364-419.100.

Lin, Gaille. Low particle wafer automatic flat aligner. 5,383,759, Cl. 414-257.000.

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Lin, Jing-Chie; Lin, Jainn-Yuan; and Lee, Sheng-Long, 5,384,016, Cl. 204-64.00R.

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Lin, Lark. VCR terminal connector. 5,383,798, Cl. 439-578.000.

Lin, Rudy, to Armour Swift-Eckrich. Integrated process for producing meat protein, broth, myoglobin pigment, fat and bone meal. 5,384,149, Cl. 426-646.000.

Lin, Yeon-Yu. Hydraulic buffer hinge. 5,383,253, Cl. 16-54.000.

Linck, Ed: *See*—
Burke, James; and Linck, Ed, 5,383,316, Cl. 52-218.000.

Lindsay, Dean R.: *See*—
Wilkinson, Roger D.; and Lindsay, Dean R., 5,383,558, Cl. 206-506.000.

Lion Corporation: *See*—
Kuroda, Hideo; and Sakamoto, Yasunori, 5,384,189, Cl. 428-288.000.

Lioy, Gerald T.: *See*—
Behe, Thomas J.; Rommelmann, Heiko; Gilmore, Daniel R., III; and Lioy, Gerald T., 5,384,627, Cl. 355-247.000.

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Listigovers, Nancy A.; Martin, Trevor L; Normandin, Sharon E.; Carmichael, Kathleen M.; Hamer, Gordon K.; and Sullivan, Donald P., to Xerox Corporation. Photoconductive imaging members with polymer binders. 5,384,223, Cl. 430-59.000.

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Normandin, Sharon E.; Carmichael, Kathleen M.; Sullivan, Donald P.; Listigovers, Nancy A.; Martin, Trevor L; and Hamer, Gordon K., 5,384,222, Cl. 430-58.000.

LittlePoint Corporation: *See*—
Knowles, John H., Jr.; and Yabusaki, DeeAnn L, 5,383,373, Cl. 73-865.800.

Litton Systems, Inc.: *See*—
Belt, Roger F.; and Ings, John B., 5,384,156, Cl. 427-127.000.
Martin, Graham J.; Lam, Leo K.; and Hutchings, Thomas J., 5,384,636, Cl. 356-350.000.

Liu, Wei: *See*—
Flytzani-Stephanopoulos, Maria; and Liu, Wei, 5,384,301, Cl. 502-304.000.

Lochhaas, Philip D.: *See*—
Stalling, David L.; Wood, Thomas S.; Kelly, Kevin P.; Cernohlavek, Leemer G.; Lochhaas, Philip D.; Schrier, Loren C.; and Strumpf, David M., 5,384,023, Cl. 204-186.000.

Lock, James E.; Mandell, Valerie; and Perry, Stanton, to Children's Medical Center Corporation. Re-expandable endoprosthesis. 5,383,926, Cl. 623-1.000.

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Bushman, Boyd B., 5,384,802, Cl. 372-89.000.

Lockheed Missiles and Space Co., Inc.: *See*—
Robb, Paul N., 5,384,657, Cl. 359-665.000.

Loftis, Joseph M.; and Wachter, William J., to Ionics, Inc. Highly damped storage rack for nuclear fuel assemblies. 5,384,813, Cl. 376-272.000.

Login, Robert B.: *See*—
Narayanan, Kolazi S.; Chaudhuri, Ratan K.; and Login, Robert B., 5,384,406, Cl. 546-243.000.

Logitech, Inc.: *See*—
Sommer, Rene , 5,384,457, Cl. 250-214.00R.

Logothetis, Eleftherios M.; Hamburg, Douglas R.; Cook, Jeffrey A.; and Rimai, Lajos, to Ford Motor Company. Method for biasing a hego sensor in a feedback control system. 5,383,333, Cl. 60-276.000.

Lohse, William A.: *See*—
DiPippo, Ascanio; Lohse, William A.; and Ladas, Tom, 5,384,125, Cl. 424-443.000.

Lombardi, Massimo; and Pisani, Gianluigi, to Axis USA, Inc. Apparatus for facilitating the changing of shrouds in armature winding machines. 5,383,620, Cl. 242-7.05B.

Lombardi, Massimo: *See*—
Cardini, Giuseppe; Lombardi, Massimo; and Tarchi, Mauro, 5,383,619, Cl. 242-7.05B.
Santandrea, Luciano; and Lombardi, Massimo, 5,383,618, Cl. 242-1.10R.

Lomp, Martin G.; Fulling, Frank; DeMello, Wayne M.; and Neagle, William A., to Codex Corporation. High speed modem, method and system for achieving synchronous data compression. 5,384,780, Cl. 370-94.100.

Long, Jerry A.: *See*—
Bowen, David C.; and Long, Jerry A., 5,383,796, Cl. 439-469.000.

Long, John A. Letter sheet forming apparatus. 5,383,836, Cl. 493-342.000.

Long, Timothy E.; Coltrain, Bradley K.; and Teegarden, David M., to Eastman Kodak Company. Block and graft copolymers as adhesion promoters. 5,384,192, Cl. 428-336.000.

Longhurst, Don, to Krupp Polysius AG. Method of operating a material bed roll mill. 5,383,610, Cl. 241-30.000.

Loos, Hans-Joachim: *See*—
Schwab, Egon; Loos, Hans-Joachim; and Ziegert, Gunter, 5,383,850, Cl. 604-58.000.

Lopatin, Andrew J.; Naaman, Antoine R.; and Bourgon, Jean-Pierre G., to International Telecommunications Satellite Organization. Command modulation system having command generator unit for commanding a plurality of different types of controlled units. 5,384,845, Cl. 380-9.000.

Lopour, Petr: *See*—
Vondracek, Petr; Lopour, Petr; and Salc, Jiri , 5,384,370, Cl. 525-209.000.

Loral Aerospace Corp.: *See*—
Gardemal, Robert C., Jr.; Otto, Kurt J.; and Roberts, Gregory A., 5,384,860, Cl. 382-1.000.

L'Oreal: *See*—
Gueret, Jean-Louis, 5,383,560, Cl. 206-581.000.

Lormeau, Jean-Claude; Chevallier, Bruno; and Salome, Marc L. V., to Sanofi, Elf. High molecular mass N,O-sulphated heparosans, process for their preparation and the pharmaceutical compositions which contain them. 5,384,398, Cl. 536-21.000.

Lotter, Frank; and Knodel, Waldemar R., to Heinrich Fiedler GmbH & Co KG. Screen element. 5,384,046, Cl. 210-484.000.

Lotti, Victor J.: *See*—
Baker, Raymond; Lotti, Victor J.; and Showell, Graham A., 5,384,408, Cl. 544-336.000.

Loup, Douglas: *See*—
Sorathia, Usman A.; Houghton, Deborah A.; Owen, David P.; Pippyne, Markus R.; Jones, Wayne C.; Castelli, Vincent J.; Fischer, Eugene C.; Venkatachalam, Ravanasamudram S.; Loup, Douglas; and Stephenson, Carlisle R., 5,383,567, Cl. 220-4.130.

Loveridge, Jennifer C., to Eastman Kodak Company. Adaptive, hybrid median filter for temporal noise suppression. 5,384,865, Cl. 382-54.000.

Loving, Dann R. Remote control flying model spaceship. 5,383,810, Cl. 446-57.000.

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Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, 5,384,487, Cl. 257-786.000.

Lucas Industries: *See*—
Phillips, Ronald, 5,383,435, Cl. 123-450.000.

Lucas Industries Public Limited Company: *See*—
Farr, Glyn P. R., 5,383,719, Cl. 303-113.200.
Jacobs-Cook, Alan J.; Frere, Peter E. M.; and Bowen, Mark E. C., 5,384,872, Cl. 385-31.000.

Luce, Cheryl L., Gerald J. Luce II, Deborah L. Bizaro, Cynthia A. Luce, executors: *See*—
Vance, Jack E.; Luce, Gerald J., deceased; Adair, Robert L., Jr.; and Champney, Clark B., 5,383,741, Cl. 403-383.000.

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Vance, Jack E.; Luce, Gerald J., deceased; Adair, Robert L., Jr.; and Champney, Clark B., 5,383,741, Cl. 403-383.000.

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Kenney, Donald M.; and Luce, Stephen E., 5,384,281, Cl. 437-189.000.

Luch, Daniel, to Portola Packaging, Inc. Neck finish for containers of rigid material. 5,383,565, Cl. 215-317.000.

Lucky Limited: *See*—
Oh, Jae S.; and Kim, Eung J., 5,384,424, Cl. 560-25.000.

Ludgate, Michael J.: *See*—
Wilkinson, James H.; Ludgate, Michael J.; Soloff, Jonathan M.; and Stone, Jonathan J., 5,384,869, Cl. 382-56.000.

Lukich, Michael S., to Caterpillar Inc. Multi-variable control of multi-degree of freedom linkages. 5,383,390, Cl. 91-361.000.

Lumbroso, Roger, to Sorapec S.A. Method of producing metal hydroxides. 5,384,017, Cl. 204-96.000.

Lummila, Markku: *See*—
Rantanen, Rauno; Lummila, Markku; Korhonen, Hannu; Paloviita, Petri; and Koskinen, Jukka, 5,383,968, Cl. 118-119.000.

Lupke, Manfred A. A., to Corma Inc. Apparatus for modifying corrugated or ribbed pipe to have a smooth outer wall. 5,383,998, Cl. 156-242.000.

Lur, Water; Chen, Ben; and Huang, Cheng H., to United Microelectronics Corporation. Charge damage free implantation by introduction of a thin conductive layer. 5,384,268, Cl. 437-20.000.

Lusch, Robert F.: *See*—
Olnowich, Howard T.; Jabusch, John D.; Lusch, Robert F.; and Maniguet, Michael A., 5,384,773, Cl. 370-60.100.

Lus, Lionel T. V., to Pacusma Co. Ltd. Receptacle wall plate with built-in protection circuitry. 5,384,428, Cl. 174-66.000.

Luxtec Corporation: *See*—
Morris, Frederick; and Clark, Bernard, 5,384,607, Cl. 351-158.000.

LVMH Recherche: *See*—
Bonte, Frederic; Meybeck, Alain; and Marechal, Christian, 5,384,126, Cl. 424-450.000.

Lynam, Niall R.; McCabe, Ian A.; and Schierbeek, Kenneth L., to Donnelly Corporation. Electrochromic device capable of prolonged coloration. 5,384,578, Cl. 345-105.000.

Lynch, William R.; Smith, Larry D.; Wiant, Matthew J.; Bianca, Robert R.; and Kelley, David, Jr., to Kraft General Foods, Inc. Caramel confections and processes for preparing and using. 5,384,148, Cl. 426-612.000.

Lynk, Charles N., Jr.; and Van Horn, Mark, to Motorola, Inc. Apparatus and method for attenuating a multicarrier input signal of a linear device. 5,384,547, Cl. 330-136.000.

Lytton, Robert L., to Texas A&M University System, The. System identification and analysis of subsurface radar signals. 5,384,715, Cl. 364-550.000.

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Lau, Michael, 5,383,860, Cl. 604-167.000.

M & R Printing Equipment, Inc.: *See*—
Szyszko, Aleksander, 5,383,400, Cl. 101-126.000.

M.U.R.S.T. (Italian Ministry for Universities and Scientific and Technological Research): *See*—
Cresceazi, Vittorio; and Callegaro, Lanfranco, 5,384,400, Cl. 536-2.000.

Ma, Warren: *See*—
Neal, Lewis G.; Ma, Warren; Chang, Min-Yan; Zhou, Qian; Pereira, Carmo J.; Plumlee, Karl W.; and Beeckman, Jean W., 5,383,955, Cl. 95-34.000.

Maas, Joachim: *See*—
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Macaoay, John M.: *See*—
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Macdonald, Fraser J., to Ford Motor Company. Torque converter bypass clutch piston-pump drive for an automatic transmission. 5,383,540, Cl. 192-3.290.

MacDonald, James C.: *See*—
Teverovsky, Alexander; MacDonald, James C.; Pickering, Michael A.; and Kirsch, Jeffery L., 5,383,969, Cl. 118-719.000.

MacDonald, Peter S.: *See*—
Adler, Alan J.; and MacDonald, Peter S., 5,383,660, Cl. 273-65.0EG.

Macera, Ronald C.: *See*—
Ebner, Fritz F.; Macera, Ronald C.; Sulenski, Shelly D.; Gates, Janine M.; Mikolanis, Sue; Richar, James D.; and Hawes, M. Kerrigan, 5,384,620, Cl. 355-202.000.

Machine-O-Matic Limited: *See*—
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Mackiewicz, Philippe: *See*—
Buendia, Jean; Godard, Jean-Yves; Mackiewicz, Philippe; and Richard, Christian, 5,384,419, Cl. 552-556.000.

Mackinlay, Jock D.; and Robertson, George G., to Xerox Corporation. Avoiding oscillation in interactive animation. 5,384,908, Cl. 395-152.000.

MacLean, Neil H., Jr.: *See*—
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,384,669, Cl. 360-48.000.

Maddali, Vijay K.: *See*—
Rozman, Gregory I.; Maddali, Vijay K.; and Markunas, Albert L., 5,384,527, Cl. 322-10.000.

Maddox, Stephen R.: *See*—
Bible, Don W.; Crutcher, Richard I.; Sohns, Carl W.; and Maddox, Stephen R., 5,384,543, Cl. 324-644.000.

Mader, Roger A.: *See*—
Stevenson, Dian E.; Kirk, Mark P.; Farnum, Sylvia A.; Frank, William C.; Helland, Randall H.; Kitchin, Jonathan P.,; Mader, Roger A.; Mizen, Mark B.; Newmark, Richard A.; Ramaden, William D.; Sakizadeh, Kumars; Spawn, Terence D.; and Tiers, George V., 5,384,237, Cl. 430-566.000.

Maeda, Mitsuru; and Yoshida, Tadashi, to Canon Kabushiki Kaisha. Image information coding apparatus. 5,384,868, Cl. 382-56.000.

Maekawa, Kazunobu: *See*—
Hirata, Sumiaki; and Maekawa, Kazunobu, 5,384,622, Cl. 135-206.000.

Maelstrom, Inc.: *See*—
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Maeno, Yoshimi: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masateru; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.

Magnani, Alberto: *See*—
Vanolo, Pietro; Magnani, Alberto; Debbia, Emilio; Gugliesi, Claudio; Cencio, Luigi; and Gerbaudo, Luciano, 5,383,406, Cl. 105-401.000.

Major, Jo S.: *See*—
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Makino, Kenji: *See*—
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Deutsch, Edward A.; Goedemans, Wilhelmus T.; Maria de Jong, Martinus T.; Miller, Kathleen M.; and Brodack, James W., 5,384,113, Cl. 424-1.690.
Rajagopalan, Raghavan, 5,384,108, Cl. 424-9.000.

Mamerow, Bernd: *See*—
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Lock, James E.; Mandell, Valerie; and Perry, Stanton, 5,383,926, Cl. 623-1.000.

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De Fornel, Frederique; Goudonnet, Jean-Pierre; and Mantovani, James, 5,384,464, Cl. 250-492.200.

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Maravan, S.A.: *See*—
Padron, Aaron; Anez, Ender; and Possamai, Raul, 5,384,039, Cl. 208-167.000.

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Maria de Jong, Martinus T.: *See*—
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Glassner, Andrew S.; Marimont, David H.; and Stone, Maureen C., 5,384,901, Cl. 395-131.000.

Marko, Paul D.: *See*—
Brown, David L.; Aghaalian, Motjaba; and Marko, Paul D., 5,384,828, Cl. 379-61.000.

Markunas, Albert L.: *See*—
Rozman, Gregory I.; Maddali, Vijay K.; and Markunas, Albert L., 5,384,527, Cl. 322-10.000.

Marley Pump Company, The: *See*—
Williams, Jeffrey R., 5,383,769, Cl. 417-238.000.

Marmon Corporation of Canada, Ltd., The: *See*—
Foster, Matthew R.; Greenlees, Bruce; and Duncan, Ian J. H., 5,383,424, Cl. 119-174.000.

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Marshall, David: *See*—
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Wolff, Peter C.; Bullis, Stephen J.; and Hayes, Larry W., 5,383,389, Cl. 89-33.040.

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Bible, Don W.; Crutcher, Richard I.; Sohns, Carl W.; and Maddox, Stephen R., 5,384,543, Cl. 324-644.000.

Martin, Trevor I.: *See*—
Listigovers, Nancy A.; Martin, Trevor I.; Normandin, Sharon E.; Carmichael, Kathleen M.; Hamer, Gordon K.; and Sullivan, Donald P., 5,384,223, Cl. 430-59.000.
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Maruta, Takayuki: *See*—
Takami, Nobuo; Sugihara, Kazuyuki; Maruta, Takayuki; Nojima, Kazuo; Sawayama, Noboru; Yoshimatsu, Kaoru; Watabe, Katsuji; and Yoneda, Takuji, 5,384,628, Cl. 355-259.000.

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Costanzo, Michael J.; and Maryanoff, Bruce E., 5,384,327, Cl. 514-456.000.

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Masamune, Hiroko: *See*—
Eggler, James F.; Marfat, Anthony; Melvin, Lawrence S., Jr.; and Masamune, Hiroko, 5,384,318, Cl. 514-212.000.

Maselli, Vito C.: *See*—
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Maslinski, Raymond E.: *See*—
Godshalk, Russell L.; Maslinski, Raymond E.; Muster, Frank L.; Telle, Lawrence B.; and Wetzel, Thomas J., 5,384,646, Cl. 358-448.000.

Massachusetts Institute of Technology: *See*—
Flytzani-Stephanopoulos, Maria; and Liu, Wei, 5,384,301, Cl. 502-304.000.
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Masse, Patrick J.: *See*—
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Zinsmeyer, Charles D.; Parnell, James A.; Poole, Dan R.; and Massey, Carl D., 5,383,733, Cl. 400-208.000.

Massey, W. Russell, to Honeywell Inc. Method and apparatus for time synchronization of bus type local area networks including hierarchical networks. 5,384,563, Cl. 340-825.210.

Masters, Ronald A.: *See*—
Woo, Ricky Ah-Man; Carrie, Michel J.; Cilley, William A.; Masters, Ronald A.; Michael, Daniel W.; and Vos, Eddy, 5,384,063, Cl. 252-142.000.

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Toyama, Toshiyuki; Yamamoto, Yasushi; Uematsu, Takahiro; and Masuda, Masanori, 5,383,774, Cl. 418-66.000.

Masuda, Ryuichi: *See*—
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Masuda, Takashi: *See*—
Shimoda, Mitsugi; Hatori, Hiroaki; Takubo, Yoshinori; Masuda, Takashi; and Takada, Hirokaza, 5,383,277, Cl. 33-18.100.

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Masurel, Dominique: *See*—
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Matasovic, Josef D., to Baker Hughes Incorporated. Floating inlet tube. 5,384,033, Cl. 210-121.000.

Matheson, Mark W. Truck's one-man convertible camper-top/skiff. 5,383,702, Cl. 296-157.000.

Mathis, Cleo D.; and Henry, Jeff C. Self-cleaning whirlpool system. 5,383,239, Cl. 4-541.100.

Matono, Takaaki: *See*—
Kaizaki, Kazuhiro; Kamimura, Masako; Matono, Takaaki; and Kubota, Sadao, 5,384,600, Cl. 348-556.000.

Matrix Science Corporation: *See*—
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Matsubara, Kenkichi: *See*—
Nakanishi, Yoshikazu; Matsubara, Kenkichi; and Nakazawa, Tamotsu, 5,383,303, Cl. 49-181.000.

Matsuda, Ryosuke: *See*—
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Matsui, Jin-Joo; Komura, Osamu; Yamakawa, Akira; and Miyake, Masaya, to Sumitomo Electric Industries, Ltd. Silicon nitride composite sintered body and process for producing the same. 5,384,292, Cl. 501-97.000.

Matsuki, Toshitsugu: *See*—
Seiki, Noritsugu; Matsuki, Toshitsugu; and Hayashi, Masayuki, 5,384,184, Cl. 428-230.000.

Matsumoto, Hiroyuki, to Nikon Corporation. Reproduction-only magneto-optical disk with selectively exchange coupled layers, and reproduction method and reproduction apparatus therefor. 5,384,758, Cl. 369-13.000.

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Matsuoka, Koushin; Shimada, Yasuhiro; and Yoneyama, Hiroyuki, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,384,236, Cl. 430-558.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Aoki, Seiji; Katou, Ryuichi; and Nakamura, Yasuhiro, 5,383,461, Cl. 128-660.070.
Araki, Shoichi; Nomura, Hiroyoshi; Wakami, Noboru; and Imanaka, Takeshi, 5,384,716, Cl. 364-557.000.
Kadota, Hiroshi, 5,384,580, Cl. 345-145.000.
Nishizawa, Hiroshi, 5,383,265, Cl. 29-598.000.
Ogawa, Hisashi; Nabeshima, Yutaka; and Fukumoto, Masanori, 5,384,276, Cl. 437-52.000.
Ohtani, Daisuke, 5,384,207, Cl. 429-9.000.
Sakaguchi, Takashi, 5,384,595, Cl. 348-208.000.
Sakane, Shigeo; Kobda, Toshiyuki; Yamamoto, Hiroshi; and Shimeki, Yasuharu, 5,384,896, Cl. 395-24.000.
Sugihara, Sachiko; Miura, Akira; and Ohta, Akira, 5,384,214, Cl. 429-206.000.
Takimoto, Akio; Tanaka, Yukio; Asayama, Junko; Akiyama, Koji; Kuratomi, Yasunori; and Ogawa, Hisahito, 5,384,649, Cl. 359-67.000.
Yamashita, Haruo; and Yumiba, Takashi, 5,384,601, Cl. 348-577.000.

Matsushita Electric Works, Ltd.: *See*—
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Kido, Shojuro; Nakamura, Toshiaki; Kambara, Takashi; Taga, Yoshitaka; and Nagase, Haruo, 5,384,518, Cl. 315-225.000.

Mattern, Charles C.; and Nickens, Dan A., to Earth Resources Corporation. Cylinder rupture vessel with cylinder rotation mechanism and rupture mechanism. 5,383,498, Cl. 141-1.000.

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Mattes, Reinhard: *See*—
Fliedner, Christine; Schnippering, Friedhelm; Rodder, Karl-Martin, deceased; and Mattes, Reinhard, 5,384,350, Cl. 524-261.000.

Mattingly, William R.; Blum, Michael; and Nasser, Christopher, to Matrix Science Corporation. Electrical connector shell reinforcement means and method of fabricating same. 5,383,272, Cl. 29-476.000.

Mattson, Rodney A.; Krochta, Todd J.; and Heuscher, Dominic J., to Picker International, Inc. Multi-parameter image display with real time interpolation. 5,384,861, Cl. 382-6.000.

Matumoto, Shigeru, to Kokusai Keisokuki Kabushiki Kaisha. Wheel balance measuring apparatus. 5,383,361, Cl. 73-471.000.

Matzner, Bruce; Johansson, Eric B.; Wolters, Richard A., Jr.; Dunlap, Thomas G.; Elkins, Robert B.; King, Harold B.; and Sick, Paul W., to General Electric Company. Lower tie plate strainers for boiling water reactors. 5,384,814, Cl. 376-352.000.

Mauelshagen, Wilhelm: *See*—
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Maurer, Jorg P.: *See*—
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Mausser, Wilhelm: *See*—
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Max Co., Ltd.: *See*—
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Mayer, Manfred, to Precismeca Gesellschaft fur Fordertechnik mbH. Conveyor-belt cylinder. 5,383,549, Cl. 198-842.000.

Mayer, Steven T.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Fox, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Mayer, Thomas: *See*—
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Mayeur, J. P., to Le Bosec Aeronautique. Electric magnetic detector of magnetic particles in a stream of fluid. 5,384,535, Cl. 324-204.000.

Mays, Richard C.; Hazzah, Karen G.; and Sauser, Martin H., Jr., to Hayes Microcomputer Products, Inc. Packet assembler. 5,384,770, Cl. 370-43.000.

Mazda Motor Corporation: *See*—
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Mazzini, Leonardo, to Alenia Spazio S.p.A. Triaxially stabilized satellite provided with electric propulsors for orbital maneuvering and attitude control. 5,383,631, Cl. 244-169.000.

McBride, Kevin M.: *See*—
Lim, Chan S.; McBride, Kevin M.; and Wakejima, Takaki, 5,384,700, Cl. 364-419.100.

McBroom, Jeffrey A.: *See*—
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McCabe, Ian A.: *See*—
Lynam, Niall R.; McCabe, Ian A.; and Schierbeek, Kenneth L., 5,384,578, Cl. 345-105.000.

McCart, John R.: *See*—
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McClanahan, Robert F.: *See*—
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McClintock, Cameron: *See*—
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McCloskey, William D.; and Brady, Thomas W., to Baltimore Aircoil Company, Inc. Supplemental cooling system for coupling to refrigerant-cooled apparatus. 5,383,339, Cl. 62-238.500.

McConnell, Christopher F.: *See*—
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McCormick, Joseph A., to General Credit Forms, Incorporated. Multiple ply paper roll. 5,383,817, Cl. 462-25.000.

McCready, Derek; and Kalemba, Jacek, to Husky Injection Molding Systems Ltd. Apparatus for forming threaded molded article. 5,383,780, Cl. 425-552.000.

McCreary, Dann P.; Duclos, Philip J.; and Drogichen, Daniel P., to Integrated Networks Corporation. Load sharing system for computer network protocols. 5,384,566, Cl. 340-825.050.

McCullough, Francis P., Jr.: *See*—
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McDermott, Kevin. Direction indicator for navigation. 5,383,280, Cl. 33-361.000.

McGarry, Richard A.: *See*—
Green, David T.; Bolanos, Henry; Young, Wayne P.; McGarry, Richard A.; Heaton, Lisa W.; and Ratcliff, Keith, 5,383,881, Cl. 606-143.000.

McGill University: *See*—
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McGinley, Maureen T.: *See*—
Wheeler, Barbara L.; Heatwole, Earnest L., Jr.; McGinley, Maureen T.; Seikaly, Richard M.; and Craig, Bernard J., 5,384,835, Cl. 375-96.000.

McGinness, Thomas G. Supercritical oxidation reactor. 5,384,051, Cl. 210-761.000.

McGregor, Walter; and Shchervinsky, Semyon, to Ethicon, Inc. Blunt point needles. 5,383,901, Cl. 606-223.000.

McIntire, David B. Adjustable shock cord end. 5,383,259, Cl. 24-300.000.

McIntosh, Ian: *See*—
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McIntyre, Iain A.: *See*—
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McKinney, Carl: *See*—
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McKinney, Osborne K.; Eversdyk, David A.; and Rowland, Michael E., to Dow Chemical Company, The. Modified copolymers of ethylene-alpha olefin carboxylic acids. 5,384,373, Cl. 526-212.000.

McKinnon, Charles N., Jr.; Peterson, Steven F.; Smith, Paul E.; Nakagawa, Takaaki; and Bartholomew, Victor L., to Bioject Inc. Needleless hypodermic injection device. 5,383,851, Cl. 604-68.000.

McLauchlan, John: *See*—
Cunningham, Charles; McLauchlan, John; Rixon, Frazer J.; and Szilagyi, Jozsef F., 5,384,122, Cl. 424-231.100.

McLaughlin, Daniel A., to Gold Effects, Inc. Method for gold plating a metallic surface. 5,384,026, Cl. 205-117.000.

McLaughlin, Kevin T.; and Parkes, John J., to Motorola, Inc. Combination display backlight and light sensor. 5,384,577, Cl. 345-102.000.

McMahon, Michael J., to Illinois Tool Works, Inc. Method and apparatus for manufacturing reclosable plastic bags utilizing pre-heated zipper. 5,383,989, Cl. 156-66.000.

McNeil-PPC, Inc.: *See*—
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McNeilab, Inc.: *See*—
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McWhinnie, William R.; and Bond, Stephen P., to British Technology Group Limited. Method of creating a pillared layered clay (PILC). 5,384,295, Cl. 502-5.000.

Mead, Dennis E.: *See*—
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Meadox France: *See*—
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Meadox Medicals, Inc.: *See*—
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Medex, Inc.: *See*—
Nicholson, Warren B.; Pfouts, Mark D.; and Delong, Russell I., 5,383,855, Cl. 604-100.000.

Medi-Flex Hospital Products: *See*—
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Medical Research Council: *See*—
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Medrad, Inc.: *See*—
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Medtronic, Inc.: *See*—
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Keimel, John G., 5,383,909, Cl. 607-7.000.
Zipes, Douglas P.; Ulrich, Clare P.; Blankenau, Paul D.; and Terrell, William M., 5,383,922, Cl. 607-122.000.

Meezan, Elias; and Wang, Rongxiang, to University of Alabama Research Foundation. Method of and compounds for treatment for cystic fibrosis. 5,384,128, Cl. 424-450.000.

Mehra, Madhav: *See*—
Johnson, James A.; and Mehra, Madhav, 5,384,231, Cl. 430-321.000.

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Wamprecht, Christian; Meier-Westhues, Hans-Ulrich; Meixner, Jurgen; and Ruf, Gunter, 5,384,358, Cl. 525-28.000.

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Hilliard, Donald P.; and Mensa, Dean L., 5,384,458, Cl. 250-227.170.

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Fussnegger, Wolfgang; and Brinkschroeder, Harald, 5,383,592, Cl. 228-135.000.
Niemeier, Gerd; and Schneider, Frank, 5,383,690, Cl. 285-137.100.

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Hauffe, Dieter; and Fleischhacker-Jeworrek, Margit, 5,383,982, Cl. 148-262.000.

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Mas, Jean-Manuel; and Metivier, Pascal, 5,384,415, Cl. 549-428.000.

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Michael, Farnet, to Diversified Products Corporation. User interface console for exercise equipment. 5,383,826, Cl. 482-3.000.

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Raphael, Ian P., 5,383,574, Cl. 222-1.000.

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Rathmell, Claude; Vance, Carroll S.; Barnes, David W.; and Hashemi, Seyed H., 5,383,269, Cl. 29-830.000.

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Miller, Curtis H., 5,384,103, Cl. 422-310.000.

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Doan, Trung T.; and Tuttle, Mark E., 5,384,284, Cl. 437-190.000.
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Keeth, Brent, 5,384,739, Cl. 365-189.090.
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Yamauchi, Hiroshi; Utsugi, Hideki; and Midorikawa, Yuichiro, 5,384,251, Cl. 435-87.000.

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Benson, David K.; Crandall, Richard S.; Deb, Satyendra K.; and Stone, Jack L., 5,384,653, Cl. 359-270.000.
Jarvis, Eric E., 5,383,512, Cl. 164-46.000.

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Miles Inc.: *See*—
Johnson, Daphne R., 5,383,966, Cl. 106-495.000.

Millan, Rudolph R., to International Technology Corporation. System for treating a subterranean formation having an aquifer contaminated with organics. 5,383,747, Cl. 405-128.000.

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Johnson, Richard F.; and Miller, Gregory S., 5,383,640, Cl. 348-372.100.

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Balsimo, William V., 5,383,573, Cl. 221-264.000.
Carlson, James G.; and Anderson, Jeffrey T., 5,384,362, Cl. 525-77.000.
Ellis, Richard J.; Patel, Ranjan C.; and Nairne, Robert J. D., 5,384,238, Cl. 430-617.000.
Guerra, Miguel A.; and Stivers, David A., 5,384,374, Cl. 525-326.400.
Mitchell, James G., 5,384,003, Cl. 156-510.000.
Stevenson, Dian E.; Kirk, Mark P.; Farnum, Sylvia A.; Frank, William C.; Helland, Randall H.; Kitchin, Jonathan P.; Mader, Roger A.; Mizen, Mark B.; Newmark, Richard A.; Ramsden, William D.; Sakizadeh, Kumars; Spawn, Terence D.; and Tiers, George V., 5,384,237, Cl. 430-566.000.

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Nishida, Syuzou; Hsikawa, Yukihiko; Minoda, Hidenori; and Nakata, Ichiro, 5,384,674, Cl. 360-72.200.

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Fukushima, Shigenobu, 5,384,647, Cl. 358-456.000.
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Nakajima, Akio; and Muramatsu, Hideo, 5,384,632, Cl. 355-313.000.
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Minolta Co., Ltd.: *See*—
Imura, Kenji, 5,384,641, Cl. 356-446.000.

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Block, Charles; and Mintz, Leon, 5,383,418, Cl. 112-304.000.

Mirahi, Manouchehr; Walker, Blair; and Higgins, Sheryl W., to Baxter International Inc. Low-profile single-lumen perfusion balloon catheter. 5,383,890, Cl. 606-194.000.

Misaizu, Iwao: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,384,365, Cl. 525-105.000.

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Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,384,257, Cl. 435-234.000.

Mistele, Thomas: *See*—
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Mistry, Prahalad M.: *See*—
Gregory, Peter; Kenyon, Ronald W.; Mistry, Prahalad M.; and Taylor, John A., 5,383,960, Cl. 106-22.00K.

Mita, Hiroyuki: *See*—
Yoshida, Yoshikazu; Kawasaki, Kenichi; Horisawa, Shozo; Mita, Hiroyuki; and Fukuzawa, Keiji, 5,384,557, Cl. 333-21.00A.

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Grady, Alfred J., Jr.; Lal, Sudarshan; Mitchell, Mary J.; Okinaka, Yutaka; Smith, Craig G.; Trop, Harvey S.; and Wang, Chwan-Tsann, 5,384,153, Cl. 427-98.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
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Fujimura, Takeo, 5,384,511, Cl. 313-402.000.
Haraguchi, Yoshiyuki; and Arita, Yutaka, 5,384,741, Cl. 365-201.000.
Hirai, Tatsuya, 5,384,286, Cl. 437-207.000.
Konishi, Yasuhiro; Miyamoto, Takayuki; Kajimoto, Takeshi; and Iwamoto, Hisashi, 5,384,745, Cl. 365-230.030.
Kuriyama, Hirotada; Maki, Yukio; and Kohno, Yoshio, 5,384,731, Cl. 365-182.000.
Kyouno, Noboru; Osuga, Yoshiharu; and Yashima, Noboru, 5,384,856, Cl. 381-103.000.
Mori, Shigeru; Suwa, Makoto; Miyamoto, Hiroshi; Morooka, Yoshikazu; Kikuda, Shigeru; and Kinoshita, Mitsuya, 5,384,784, Cl. 371-21.100.
Okamoto, Yasushi; and Arimoto, Akiya, 5,384,778, Cl. 370-85.300.
Sakashita, Kazuhiro, 5,384,275, Cl. 437-51.000.
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Shiba, Tetsuo; and Takahashi, Shogo, 5,384,282, Cl. 437-90.000.
Shikama, Shinsuke; Kida, Hiroshi; and Daijogo, Akira, 5,384,659, Cl. 359-719.000.
Takanaka, Masao, 5,384,794, Cl. 372-2.000.
Taniguchi, Akihisa, 5,384,479, Cl. 257-412.000.
Tokui, Akira; and DeBeeck, Maria O., 5,384,218, Cl. 430-5.000.
Tsujihashi, Kumiko; Tsujihashi, Yoshiki; and Shinohara, Hirofumi, 5,384,734, Cl. 365-189.040.
Yamada, Yoshiaki; Iwasaki, Junji; and Ohmori, Masashi, 5,383,482, Cl. 134-66.000.
Yamazaki, Mitsuru; Yashiro, Masakazu; and Ijichi, Toshiya, 5,384,531, Cl. 324-765.000.
Yokoyama, Eiji; and Nagasawa, Masato, 5,384,676, Cl. 360-77.130.

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Mitsui Petrochemical Industries, Ltd.: *See*—
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Tanaka, Masahide; Fujimoto, Tadaaki; and Takahata, Kazunori, 5,384,056, Cl. 252-56.00R.

Mitsui Toatsu Chemicals, Inc.: *See*—
Itagaki, Makoto; Kawasaki, Eiichi; Shinkoda, Kazuya; and Suewaka, Kousuke, 5,384,341, Cl. 522-111.000.

Miura, Akira: *See*—
Sugihara, Sachiko; Miura, Akira; and Ohta, Akira, 5,384,214, Cl. 429-206.000.

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Yokomizo, Takao; Kobayashi, Hiroo; Yagi, Tadashi; Yukimachi, Hiroshi; Azeda, Takahiro; Tsuchiya, Yoshiro; Moritani, Toshifumi; Ohtsuka, Masahito; Waragai, Tsuyoshi; and Miyake, Hiroaki, 5,384,619, Cl. 355-200.000.

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Miyake, Yuichi: *See*—
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Miyamoto, Hiroshi: *See*—
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Miyamoto, Kunihiko: *See*—
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Miyamoto, Takayuki: *See*—
Konishi, Yasuhiro; Miyamoto, Takayuki; Kajimoto, Takeshi; and Iwamoto, Hisashi, 5,384,745, Cl. 365-230.030.

Miyamoto, Tsumoru: *See*—
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Miyao, Mayumi: *See*—
Kurotori, Tsuneo; Mochizuki, Manabu; Ariyama, Kenzo; Kojima, Kenji; Tsuruoka, Ichiro; Echigo, Katsuhiro; and Miyao, Mayumi, 5,384,225, Cl. 430-116.000.

Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, to Hitachi, Ltd.; and Hitachi Microcomputer System, Ltd. Semiconductor integrated circuit device. 5,384,738, Cl. 365-189.080.

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Miyazaki, Takeshi: *See*—
Yoshinaga, Kazuo; Kurabayashi, Yutaka; Ohnishi, Toshikazu; Futami, Yukiko; and Miyazaki, Takeshi, 5,384,069, Cl. 252-299.010.

Miyazaki, Toshiyuki: *See*—
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Miyazawa, Takuji: *See*—
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Mizen, Mark B.: *See*—
Stevenson, Dian E.; Kirk, Mark P.; Farnum, Sylvia A.; Frank, William C.; Helland, Randall H.; Kitchin, Jonathan P.,; Mader, Roger A.; Mizen, Mark B.; Newmark, Richard A.; Ramsden, William D.; Sakizadeh, Kumars; Spawn, Terence D.; and Tiers, George V., 5,384,237, Cl. 430-566.000.

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Ogawa, Masahide; Abe, Kiyoshi; Takahashi, Masao; Washio, Yuzi; Enomoto, Kazumitsu; and Kitsu, Toshio, 5,384,191, Cl. 428-323.000.

Mizutani, Hidemasa: *See*—
Saika, Toshihiro; Mizutani, Hidemasa; Kaifu, Noriyuki; and Kameshima, Toshio, 5,384,456, Cl. 250-208.100.

Moberg, Sheldon B., to Pacesetter, Inc. Rate-responsive implantable stimulation device having a miniature hybrid-mountable accelerometer-based sensor and method of fabrication. 5,383,473, Cl. 128-782.000.

Mobil Oil Corporation: *See*—
Ashjian, Henry, 5,384,055, Cl. 252-51.50A.
Princen, H. M.; and Staffeld, Peter O., 5,384,052, Cl. 210-787.000.
Tsao, Ying-Yen P., 5,384,296, Cl. 502-66.000.

Mochida, Junichi: *See*—
Nishida, Keiji; Kumakura, Masayuki; and Mochida, Junichi, 5,383,336, Cl. 62-115.000.

Mochizuki, Hirotaka: *See*—
Kawabata, Kenji; Ogawa, Soichiro; Iijima, Susumu; Seki, Kunio; Mochizuki, Hirotaka; Goto, Makoto; Ikeda, Ryuichi; Sugino, Motohiro; and Onda, Kenichi, 5,384,516, Cl. 315-160.000.

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Moczygemba, George A.: *See*—
Trepka, William J.; Stacy, Nathan E.; and Moczygemba, George A., 5,384,349, Cl. 524-111.000.

Modrovich, Ivan E.: *See*—
Kwan, Shing F., 5,384,245, Cl. 435-22.000.

Moeller Marine Products: *See*—
Huse, O. C., 5,383,644, Cl. 248-523.000.

Moesle, Adolph H., Jr.: *See*—
Cohen, Leonard G.; Moesle, Adolph H., Jr.; and Vengsarker, Ashish M., 5,384,635, Cl. 356-73.100.

Mogilnicki, Victor D., to Kennametal Inc. Collet for a square-shank tap. 5,383,673, Cl. 279-46.400.

Mohammed, Kas: *See*—
Antenucci, Robert N.; Barndt, Richard L.; and Mohammed, Kas, 5,384,311, Cl. 514-53.000.

Molex Incorporated: *See*—
Bowen, David C.; and Long, Jerry A., 5,383,796, Cl. 439-469.000.
Deasel, Hugo V., 5,384,540, Cl. 324-539.000.
Fuerst, Robert M.; and Krehbiel, Fred L., 5,384,435, Cl. 174-262.000.
Seong, AuYong C.; Wong, Yuen P.; and Sang, Lai M., 5,383,797, Cl. 439-476.000.
Watanabe, Yoshinori, 5,383,789, Cl. 439-159.000.

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Kaminishizono, Takeyoshi; Watanabe, Tetsumi; and Momose, Yutaka, 5,383,334, Cl. 60-517.000.

Monger, Robert T. Electrician's center point gauge to facilitate placing conduit holes in electrical boxes. 5,383,281, Cl. 33-520.000.

Monsanto Company: *See*—
Fleet, George W. J.; and Winchester, Bryan G., 5,384,417, Cl. 549-476.000.

Montgomery, John A.; and Secrist, John A., III, to Southern Research Institute. 2'-fluoro-2-haloarabinoadinosines and their pharmaceutical compositions. 5,384,310, Cl. 514-46.000.

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Montres Rolex S.A.: *See*—
Besson, Rene, 5,384,754, Cl. 368-28.000.

Moock, Andrew W.: *See*—
Weisburn, James T.; Sankey, James K.; and Moock, Andrew W., 5,383,557, Cl. 206-387.130.

Moore, Bradley T.: *See*—
Ibok, Effiong E.; and Moore, Bradley T., 5,384,272, Cl. 437-43.000.

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Uemura, Tomoyoshi; Akamatsu, Yoshimi; Yoshida, Yuichi; and Moriwaki, Yoshikazu, 5,384,187, Cl. 428-262.000.

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Ito, Yukinobu; and Moriya, Eiji, 5,384,537, Cl. 324-318.000.

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Morohashi, Hisao: *See*—
Ohtake, Genji; Morohashi, Hisao; and Hasegawa, Souichi, 5,384,658, Cl. 359-707.000.

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Brown, David L.; Aghaalian, Motjaba; and Marko, Paul D., 5,384,828, Cl. 379-61.000.
Cannon, Gregory L., 5,384,565, Cl. 340-825.440.
Childs, Lawrence F.; Jones, Kenneth W.; Flannagan, Stephen T.; and Chang, Ray, 5,384,737, Cl. 365-189.050.
Cho, Jaeshin, 5,384,269, Cl. 437-22.000.
Chun, Christopher K. Y.; and Kuo, Shun-Meen, 5,384,873, Cl. 385-31.000.
Davies, Robert B.; Anderson, Charles B.; Klingbeil, Lawrence S., Jr.; and Norris, George B., 5,384,273, Cl. 437-41.000.
Dillard, Pamela A.; Chan, Alisa C.; and Krolopp, Robert K., 5,384,825, Cl. 379-59.000.
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Kane, Robert C.; and Hilgera, Kevin B., 5,384,509, Cl. 313-309.000.
Lynk, Charles N., Jr.; and Van Horn, Mark, 5,384,547, Cl. 330-136.000.
McLaughlin, Kevin T.; and Parkes, John J., 5,384,577, Cl. 345-102.000.
Patino, Joseph; Bogut, Henry A.; and Hernandez, Pedro P., 5,384,459, Cl. 250-229.000.
Sitaram, Arkalgud; Maniar, Papu D.; and Wetzel, Jeffrey T., 5,384,285, Cl. 437-200.000.
Yatim, David; Bonet, Luis A.; Corleto, Jose G.; and Floyd, Michael D., 5,384,807, Cl. 375-27.000.

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Lambeir, Anne-Marie; Lastera, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,384,257, Cl. 435-234.000.

Mrajca, Ted. Card counter and dispenser. 5,383,572, Cl. 221-259.000.

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Etzbach, Karl-Heinz; Beckmann, Stefan; Nuyken, Oskar; Strohriegl, Peter; and Mueller, Harry, 5,384,378, Cl. 526-256.000.

Mueller, Wolf-Dieter: *See*—
Day, James F.; Mueller, Wolf-Dieter; and Muth, Rainer H. R., 5,384,421, Cl. 554-92.000.

Muir, Lance P., to Corning Incorporated. Method and apparatus for crackoff and neck sealing of cathode ray tube funnels. 5,383,948, Cl. 65-28.000.

Mukai, Hirochika; Nakajo, Tomoyuki; and Negoro, Toshihito, to Pegasus Sewing Machine Mfg. Co., Ltd. Automatic apparatus for hemming a tubular workpiece. 5,383,410, Cl. 112-63.000.

Mukoh, Akio: *See*—
Koyama, Toru; Hoajo, Koo; Suzuki, Masao; Takahashi, Akio; Mukoh, Akio; Fukushi, Keiji; and Numata, Seiji, 5,384,197, Cl. 428-457.000.

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Muller, Klaus-Dieter: *See*—
Singewald, Arno; Wendt, Otto; Nurnberger, Gunter; Paetz, Dieter; Walczyk, Wolfgang; and Muller, Klaus-Dieter, 5,383,952, Cl. 71-63.000.

Multiplex Technology, Inc.: *See*—
Strauss, Philip R.; and Crosby, John B., 5,384,603, Cl. 348-730.000.

Munari, Giorgio: *See*—
Lanfranconi, Antonio; and Munari, Giorgio, 5,383,579, Cl. 222-129.000.

Munoz, Eugene J.; Estupinan, Miguel; and Bastyr, Charles A., to Smith & Nephew Donjoy, Inc. Humeral fracture brace. 5,383,844, Cl. 602-20.000.

Munster, Heinrich F.: *See*—
Dahiqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahner, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.

Murakami, Eiji: *See*—
Oishi, Katsuyoshi, 5,384,660, Cl. 359-841.000.

Murakami, Hiroshi; and Sakaida, Tetsu. Speed reducer. 5,383,821, Cl. 475-164.000.

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Hasegawa, Kinji; Asai, Takeo; and Murakami, Yoji, 5,384,354, Cl. 524-539.000.

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Muramatsu, Hideo: *See*—
Nakajima, Akio; and Muramatsu, Hideo, 5,384,632, Cl. 355-313.000.

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Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Hamabe, Isutomu, 5,384,853, Cl. 381-71.000.

Murata Manufacturing Co., Ltd.: *See*—
Mandai, Harufumi; and Sugo, Kimihide, 5,384,434, Cl. 174-258.000.
Minowa, Kenji; Sakai, Norio; Saito, Tetsuro; and Yoshimura, Toshimi, 5,383,997, Cl. 156-235.000.

Murata, Yoshihiro: *See*—
Sakakibara, Hisato; Shinoda, Kou; and Murata, Yoshihiro, 5,383,412, Cl. 112-78.000.

Murgita, Robert A., to McGill University. Expression and purification of cloned alpha-fetoprotein. 5,384,250, Cl. 435-69.600.

Murphy, D. Thomas. Wastewater treatment process. 5,384,049, Cl. 210-629.000.

Murray, Stuart W.: *See*—
Swisher, George W., Jr.; and Murray, Stuart W., 5,383,725, Cl. 366-22.000.

Muser, Josef: *See*—
Dahiqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahner, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.

Musselman, Ronald L.: *See*—
Dahiqvist, Karl T. G.; Haider, Franz; Kohler, Gregory R.; Krasser, Josef; Lahner, William F., III; Lang, Alfred; Mausser, Wilhelm; Munster, Heinrich F.; Muser, Josef; Musselman, Ronald L.; and Writzl, Walter, 5,383,608, Cl. 241-16.000.

Muster, Frank L.: *See*—
Godshalk, Russell L.; Maslinski, Raymond E.; Muster, Frank L.; Telle, Lawrence B.; and Wetzel, Thomas J., 5,384,646, Cl. 358-448.000.

Muth, Rainer H. R.: *See*—
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Muth, Ross: *See*—
Totakura, Nagabhushanam; and Muth, Ross, 5,383,904, Cl. 606-218.000.

Muto Pure Chemicals Company Ltd.: *See*—
Muto, Yunosuke, 5,383,569, Cl. 221-203.000.

Muto, Yunosuke, to Muto Pure Chemicals Company Ltd. Automatic delivery apparatus for prepared slide glass sheets. 5,383,569, Cl. 221-203.000.

Myerholtz, Carl A.: *See*—
Robotti, Karla M.; and Myerholtz, Carl A., 5,384,411, Cl. 549-31.000.

Myerly, Scott: *See*—
Bigler, Michael; Hommann, Edgar; and Myerly, Scott, 5,383,242, Cl. 15-22.100.

Myers, Earl C., Jr.: *See*—
Davis, Wayne S.; Shirk, Michael E.; and Myers, Earl C., Jr., 5,383,794, Cl. 439-352.000.

Myers, William M.; Ramsey, Keith A.; and Andrus, Paul G., to Battelle Memorial Institute. Method of forming relief surfaces. 5,384,571, Cl. 347-4.000.

Myseon, Philippe: *See*—
Chapas, Nicolas; Myseon, Philippe; and Stephan, Ronan, 5,384,005, Cl. 156-629.000.

Naaman, Antoine R.: *See*—
Lopatin, Andrew J.; Naaman, Antoine R.; and Bourgon, Jean-Pierre G., 5,384,845, Cl. 380-9.000.

Nabeshima, Yutaka: *See*—
Ogawa, Hisashi; Nabeshima, Yutaka; and Fukumoto, Masanori, 5,384,276, Cl. 437-52.000.

Nadal, Guy, to Celsa LG. Device for selectively forming a temporary blood filter. 5,383,887, Cl. 606-200.000.

Nagai, Katsutoshi: *See*—
Kobayashi, Takeo; Nishida, Takao; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, 5,384,617, Cl. 354-419.000.

Nagai, Takashi: *See*—
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, 5,384,388, Cl. 528-204.000.

Nagao, Keishiro: *See*—
Kanesaki, Hiroyuki; Uegami, Kouji; and Nagao, Keishiro, 5,384,380, Cl. 526-292.900.

Nagasaka, Chikao; and Amano, Tokuhiro, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Child seat and anchoring structure for mounting the child seat onto vehicle seat. 5,383,708, Cl. 297-250.100.

Nagasawa, Masato: *See*—
Yokoyama, Eiji; and Nagasawa, Masato, 5,384,676, Cl. 360-77.130.

Nagase, Haruo: *See*—
Kido, Shojiro; Nakamura, Toshiaki; Kambara, Takashi; Taga, Yoshitaka; and Nagase, Haruo, 5,384,518, Cl. 315-225.000.

Nagata, Atsushi; Koyama, Toru; and Nagata, Norinari, to Toyoda Gosei Co., Ltd. Steering wheel assembly having an air bag device. 5,383,682, Cl. 280-777.000.

Nagata, Norinari: *See*—
Nagata, Atsushi; Koyama, Toru; and Nagata, Norinari, 5,383,682, Cl. 280-777.000.

Nagerl, Hans: *See*—
Kubein-Meesenburg, Dietmar; and Nagerl, Hans, 5,383,936, Cl. 623-19.000.

Nagl, Gert: *See*—
Bauer, Wolfgang; Nagl, Gert; Steckelberg, Willi; Ritter, Josef; and Mauelshagen, Wilhelm, 5,383,961, Cl. 106-22.00R.

Nairne, Robert J. D.: *See*—
Ellis, Richard J.; Patel, Ranjan C.; and Nairne, Robert J. D., 5,384,238, Cl. 430-617.000.

Naka, Shun-ichi; and Ishida, Takayoshi, to Sharp Kabushiki Kaisha. Clear-mold solid-state imaging device using a charge coupled device. 5,384,480, Cl. 257-414.000.

Naka, Yasuhiro; and Komura, Yukio, to Furukawa Electric Co., Ltd., The. Optical fiber production method and production apparatus thereof. 5,383,946, Cl. 65-443.000.

Nakagami, Eiji, to Emhart Inc. Stud welding gun. 5,384,445, Cl. 219-99.000.

Nakagawa, Takaaki: *See*—
McKinnon, Charles N., Jr.; Peterson, Steven F.; Smith, Paul E.; Nakagawa, Takaaki; and Bartholomew, Victor L., 5,383,851, Cl. 604-61.000.

Nakagawa, Yuzo: *See*—
Ogawa, Motoyasu; and Nakagawa, Yuzo, 5,383,764, Cl. 313-199.300.

Nakago, Manabu, to NEC Corporation. Current limiting circuit and method of manufacturing same. 5,384,529, Cl. 323-312.000.

Nakagome, Yoshinobu: *See*—
Etoh, Jun; Nakagome, Yoshinobu; Tanaka, Hitoshi; Kawamoto, Koji; and Aoki, Masakazu, 5,384,740, Cl. 365-189.090.

Nakajima, Akio; and Muramatsu, Hideo, to Minolta Camera Kabushiki Kaisha. Digital copier enabling setting of a plurality of copying conditions in a single setting operation before copying is initiated. 5,384,632, Cl. 355-313.000.

Nakajima, Kunihiko: *See*—
Hara, Osamu; and Nakajima, Kunihiko, 5,384,340, Cl. 522-99.000.

Nakajima, Toshiya: *See*—
Yoshioka, Junichi; Okihara, Daijiro; Yamauchi, Chiaki; Watanabe, Takashi; Nakajima, Toshiya; Ichikawa, Madoka; Takayama, Jun; Iseno, Akihiro; Ninomiya, Takeshi; and Hamada, Shinji, 5,384,673, Cl. 360-72.200.

Nakajo, Tomoyuki: *See*—
Mukai, Hirochika; Nakajo, Tomoyuki; and Negoro, Toshihito, 5,383,410, Cl. 112-63.000.

Nakamoto, Shinya: *See*—
Nakayama, Noriyuki; and Nakamoto, Shinya, 5,384,258, Cl. 435-320.100.

Nakamura, Kazumitsu; and Tomiyoshi, Rikio, to Hitachi, Ltd.; and Hitachi Instruments Engineering Co., Ltd. Electron beam lithography apparatus and a method thereof. 5,384,466, Cl. 250-492.220.

Nakamura, Kenichi: *See*—
Uchiyama, Masaaki; Nakamura, Kenichi; Nezu, Takashi; and Ozaki, Hidekatsu, 5,384,706, Cl. 364-424.050.

Nakamura, Michiya; and Kakizaki, Shinobu, to Unisia Jecs Corporation. Arrangement of suspension system for automotive vehicle. 5,383,679, Cl. 280-707.000.

Nakamura, Toshiaki: *See*—
Kido, Shojiro; Nakamura, Toshiaki; Kambara, Takashi; Taga, Yoshitaka; and Nagase, Haruo, 5,384,518, Cl. 315-225.000.

Nakamura, Yasuhiro: *See*—
Aoki, Seiji; Katou, Ryuichi; and Nakamura, Yasuhiro, 5,383,461, Cl. 128-660.070.

Nakamura, Yasuo; Kogure, Yoshio; Ichikawa, Hideo; Miyazawa, Takuji; and Ryuzaki, Takahiko, to Fuji Xerox Co., Ltd. Pressure roller driver for sheet forwarding apparatus. 5,384,630, Cl. 355-277.000.

Nakanishi Engineering Co., Ltd.: *See*—
Nakanishi, Yoshikazu; Matsubara, Kenkichi; and Nakazawa, Tamotsu, 5,383,303, Cl. 49-181.000.

Nakanishi, Yoshikazu; Matsubara, Kenkichi; and Nakazawa, Tamotsu, to Nakanishi Engineering Co., Ltd. Window. 5,383,303, Cl. 49-181.000.

Nakasato, Toshikazu: *See*—
Takado, Yutaka; Nakasato, Toshikazu; Nogata, Tetsuro; Tezuka, Eiji; and Yokoi, Toshio, 5,384,172, Cl. 428-35.700.

Nakashibe, Yasutaka, to NEC Corporation. Semiconductor integrated circuit device having input protective circuit. 5,384,482, Cl. 257-547.000.

Nakasuji, Masataka; Fujiwara, Toshiaki; Katoh, Chieji; and Shindoh, Shigeru, to Sharp Kabushiki Kaisha. Information display apparatus and method of scrolling displayed data. 5,384,579, Cl. 345-123.000.

Nakata, Ichiro: *See*—
Nishida, Syuzou; Haikawa, Yukihiko; Minoda, Hidenori; and Nakata, Ichiro, 5,384,674, Cl. 360-72.200.

Nakayama, Michiaki: *See*—
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.

Nakayama, Noriyuki; and Nakamoto, Shinya, to NEC Corporation. *Bacillus stearothermophilus* and *E. coli* plasmids. 5,384,258, Cl. 435-320.100.

Nakayama, Tadashi; Ono, Kohei; Yamamori, Shinji; Hosaka, Hidehiro; Sato, Yoji; Shioya, Shiniti; and Imai, Takasuke, to Nihon Kohden Corporation. Cardiac output and right ventricular ejection fraction system. 5,383,468, Cl. 128-713.000.

Nakayama, Toshimasa: *See*—
Doi, Kouske; Niikura, Satoshi; Tokutake, Nobuo; Kohara, Hidekatsu; and Nakayama, Toshimasa, 5,384,228, Cl. 430-192.000.

Nakazawa, Masao: *See*—
Yumoto, Kazuhito; Wakabayashi, Norio; Nakazawa, Masao; Wakabayashi, Shinichi; Wada, Norio; Kuraishi, Fumio; and Shimada, Toshihiko, 5,384,204, Cl. 428-626.000.

Nakazawa, Tamotsu: *See*—
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Nakazawa, Yoshihiro: *See*—
Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, 5,384,522, Cl. 318-371.000.

Nalco Chemical Company: *See*—
Kelley, Douglas G.; and Rogers, Deborah M., 5,384,050, Cl. 210-750.000.

Nambu, Tsutomu, to Nikka Kabushiki Kaisha. Printing cylinder cleaning apparatus. 5,383,404, Cl. 101-425.000.

Namiki, Tomizo: *See*—
Wakamatsu, Kan; Wakata, Yuichi; Satomura, Masato; and Namiki, Tomizo, 5,384,227, Cl. 430-156.000.

Narayanan, Kolazi S.; Chaudhuri, Ratan K.; and Login, Robert B., to ISP Investments Inc. Water-soluble biologically active ammonium salts. 5,384,406, Cl. 546-243.000.

Nardella, Paul C., to American Cardiac Ablation Co., Inc. Fluid cooled electrosurgical probe for cutting and cauterizing tissue. 5,383,876, Cl. 606-49.000.

Narukawa, Miyuki: *See*—
Hattori, Shigenori; Ishida, Kazuko; and Narukawa, Miyuki, 5,383,731, Cl. 400-76.000.

Nasser, Christopher: *See*—
Mattingly, William R.; Blum, Michael; and Nasser, Christopher, 5,383,272, Cl. 29-876.000.

Natarajan, Kadathur S.: *See*—
Ahmadi, Hamid; Bantz, David F.; Bauchot, Frederic J.; Krishna, Arvind; La Maire, Richard O.; and Natarajan, Kadathur S., 5,384,777, Cl. 370-85.200.

National Fertility Institute: *See*—
Cohen, Nathan, 5,383,457, Cl. 128-660.070.

National Gypsum Company: *See*—
Menchetti, Robert J., 5,383,317, Cl. 52-220.200.

National Science Council: *See*—
Chin, Tsung-Shune; Chang, Wei-Der; and Deng, Ming-Cheng, 5,384,158, Cl. 427-129.000.
Lin, Jing-Chie; Lin, Jainn-Yuan; and Lee, Sheng-Long, 5,384,016, Cl. 204-64.000R.

National Semiconductor Corporation: *See*—
Bulucea, Constantin; Dermirlioglu, Esin; and Aroseowitz, Sheldon, 5,384,477, Cl. 257-372.000.
Lasa, Nim C.; and Lalchandani, Amrit K., 5,384,710, Cl. 364-489.000.
Moorwood, Charles A.; Singh, Charan J.; Holland, Dennis E.; Cimino, Daniel J.; Vo, Howard Q.; Yeung, Vickie M.; Crosbie, David; and Shah, Haresh K., 5,384,767, Cl. 370-13.100.

Naton, Paul E., to Oatey Company. Compositions containing hollow microspheres. 5,384,345, Cl. 523-218.000.

NCR Corporation: *See*—
German, Trevor J., 5,383,399, Cl. 101-93.010.
He, Duanfeng, 5,384,452, Cl. 235-462.000.
Hsu, Sawyer C.; Tran, Bao Q.; and Wang, Robert T., 5,383,793, Cl. 439-327.000.
Milne, Douglas L.; McIntosh, Ian; Peebles, John; and Swinton, James, 5,384,468, Cl. 250-560.000.

Neagle, William A.: *See*—
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Neal, Lewis G.; Ma, Warren; Chang, Min-Yan; Zhou, Qian; Pereira, Carmo J.; Plumlee, Karl W.; and Beeckman, Jean W., to Noxso Corporation. Nitrogen oxides and sulfur oxides removal utilizing transport line adsorber. 5,383,955, Cl. 95-34.000.

Nebolon, Joseph F., to Smith & Nephew Donjoy Inc. Hinged orthopedic brace having compliant support components. 5,383,845, Cl. 602-26.000.

NEC Corporation: *See*—
Fukase, Tadashi, 5,384,287, Cl. 437-228.000.
Furuki, Katsuya, 5,384,493, Cl. 327-203.000.
Ito, Narushi, 5,384,028, Cl. 204-403.000.
Iwasaki, Motoya, 5,384,552, Cl. 331-25.000.
Maruhashi, Kenichi, 5,384,558, Cl. 333-33.000.
Nakago, Manabu, 5,384,529, Cl. 323-312.000.
Nakashibe, Yasutaka, 5,384,482, Cl. 257-547.000.
Nakayama, Noriyuki; and Nakamoto, Shinya, 5,384,258, Cl. 435-320.100.
Orikasa, Hiromi, 5,384,827, Cl. 379-61.000.
Sano, Toshifumi, 5,384,687, Cl. 361-689.000.
Takahashi, Masaji; and Kondo, Yuji, 5,383,364, Cl. 73-517.00R.
Takahashi, Tetsuya, 5,384,505, Cl. 327-262.000.
Yagi, Toshiharu; Kato, Shuzo; and Kubota, Shuji, 5,384,809, Cl. 375-39.000.
Yamanaka, Yutaka, 5,384,728, Cl. 365-114.000.

Nedungadi, Ashok: *See*—
Franke, Ernest; Nedungadi, Ashok; and Bartlett, Glynn, 5,383,368, Cl. 73-800.000.

Negishi, Takao: *See*—
Shimamune, Minoru; Ito, Takuo; Negishi, Takao; and Takano, Kouzou, 5,384,882, Cl. 385-116.000.

Negoro, Toshihito: *See*—
Mukai, Hirochika; Nakajo, Tomoyuki; and Negoro, Toshihito, 5,383,410, Cl. 112-63.000.

Nelson, James P.: *See*—
Tong, Robert; Poplett, James M.; Goodwin, Mark L.; Anderson, Ronald L.; and Nelson, James P., 5,384,685, Cl. 361-503.000.

Nemedi, William D., to Inter-Source Recovery Systems, Inc. Segmented centrifugal separator scroll housing. 5,383,941, Cl. 29-402.080.

Nemer, Joseph C.: *See*—
Bertrand, Pierre; Birangi, Tourang; and Nemer, Joseph C., 5,383,367, Cl. 73-708.000.

Nemphos, Speros P.; and Bedell, Stanley F., to Camelot Technologies, Inc. Cable jacketing. 5,384,879, Cl. 385-100.000.

Neoprobe Corporation: *See*—
Arnold, Mark W.; and Thurston, Marlin O., 5,383,456, Cl. 128-653.100.

Nestec S.A.: *See*—
Bolioli, Giuseppe F.; and Prella, Giovanni, 5,384,137, Cl. 426-38.000.
Chmiel, Oliver; and Traitler, Helmut, 5,384,256, Cl. 435-198.000.

Neugebauer, Constantine A., deceased (by Neugebauer, Martha M., executrix); Korman, Charles S.; Bates, David A.; Bicknell, William H.; and Daum, Wolfgang, to General Electric Company. High density interconnect multi-chip modules including embedded distributed power supply elements. 5,384,691, Cl. 361-794.000.

Neugebauer, Martha M., executrix: *See*—
Neugebauer, Constantine A., deceased; Korman, Charles S.; Bates, David A.; Bicknell, William H.; and Daum, Wolfgang, 5,384,691, Cl. 361-794.000.

Neuroth, David H.: *See*—
Anthony, Roger B.; and Neuroth, David H., 5,384,430, Cl. 174-115.000.

New Ideas International: *See*—
Baxter, James T.; Vick, Doug M.; and Gibbs, George S., 5,383,765, Cl. 416-62.000.

New Microtime Inc.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

New Oji Paper Co., Ltd.: *See*—
Nishimura, Masaki; and Toyofuku, Kunitaka, 5,384,303, Cl. 503-209.000.

Newell, Gerald P.: *See*—
Dowell, Teresa J.; Newell, Gerald P.; and Zeffren, Eugene, 5,384,114, Cl. 424-70.100.

Newell, Kevin M.: *See*—
Truty, Thomas J.; French, Jule L.; and Newell, Kevin M., 5,384,444, Cl. 219-69.120.

Newgarden, Joseph E., Jr. Robot table tennis net and server assembly. 5,383,658, Cl. 273-30.000.

Newmark, Richard A.: *See*—
Stevenson, Dian E.; Kirk, Mark P.; Farnum, Sylvia A.; Frank, William C.; Helland, Randall H.; Kitchin, Jonathan P.,; Mader, Roger A.; Mizen, Mark B.; Newmark, Richard A.; Ramsden, William D.; Sakizadeh, Kunars; Spawn, Terence D.; and Tiers, George V., 5,384,237, Cl. 430-566.000.

Newport News Shipbuilding and Dry Dock Company: *See*—
Vance, Jack E.; Luce, Gerald J., deceased; Adair, Robert L., Jr.; and Champney, Clark B., 5,383,741, Cl. 403-383.000.

Nezu, Takashi: *See*—
Uchiyama, Masaki; Nakamura, Kenichi; Nezu, Takashi; and Ozaki, Hidekatsu, 5,384,706, Cl. 364-424.050.

Nguyen, Sao V.: *See*—
LeMarbe, Edward S.; and Nguyen, Sao V., 5,383,581, Cl. 222-459.000.

Nicholson, Hugh B., to Maelstrom, Inc. Propulsion system. 5,383,802, Cl. 440-38.000.

Nicholson, Warren B.; Pfouts, Mark D.; and Delong, Russell L, to Medex, Inc. Electronically monitored angioplasty system. 5,383,855, Cl. 604-100.000.

Nickel, Bernd: *See*—
Dieter, Hans-Reinhold; Engel, Jurgen; Kutscher, Bernhard; Polymeropoulos, Emanuel; Szelenyi, Stefan; and Nickel, Bernd, 5,384,330, Cl. 514-535.000.

Nickel, John H.: *See*—
Moring, Stephen E.; Albin, Michael S.; Kowallis, Reid B.; Lee, Thomas E.; Mead, Dennis E.; Nickel, John H.; Oldham, Mark F.; Reel, Richard T.; Orpin, Timothy S.; and Woods, Janice C., 5,384,024, Cl. 204-299.00R.

Nickel, Klaus D., to Citadel Inventments Limited. Washing installation for windshields or motor vehicles, aircraft, locomotives or the like. 5,383,247, Cl. 15-250.040.

Nickens, Dan A.: *See*—
Mattern, Charles C.; and Nickens, Dan A., 5,383,498, Cl. 141-1.000.

Nickerson, Brian: *See*—
Keith, Michael; and Nickerson, Brian, 5,384,582, Cl. 345-199.000.

Nicol, Alexander. Drive system having a linkage for controlling the operation of groundwheels in a motor vehicle. 5,383,528, Cl. 180-6.200.

Nicolaou, Kyriacos C.; Groneberg, Robert D.; Schreiner, Erwin P.; and Stahl, Wilhelm, to Scripps Research Institute, The. Saccharide intermediates in the formation of the calicheamicin and esperamicin oligosaccharides. 5,384,412, Cl. 549-214.000.

Nicoletti, Graziano, to Canstar Italia S.p.A. Ski-boot fastening with a device for adjusting the fastening tension. 5,383,258, Cl. 24-68.0SK.

Niemeier, Gerd; and Schneider, Frank, to Mercedes-Benz AG. Arrangement for fastening a fluid line to a body particularly a fuel filter for an internal combustion engine. 5,383,690, Cl. 285-137.100.

Nihon Bayer Agrochem K.K.: *See*—
Shiokawa, Kozo; Tsuboi, Shinichi; Moriya, Koichi; Honda, Ikuro; Hattori, Yumi; and Shibuya, Katsuhiko, 5,384,324, Cl. 514-365.000.

Nihon Kohden Corporation: *See*—
Nakayama, Tadashi; Ono, Kohei; Yamamori, Shinji; Hosaka, Hidehiro; Sato, Yoji; Shioya, Shiniti; and Imai, Takasuke, 5,383,468, Cl. 128-713.000.

Nihon Medi-Physics Co., Ltd.: *See*—
Takahashi, Keietsu; Ueda, Nobuo; and Hazue, Masaaki, 5,384,401, Cl. 536-18.700.

Nihon Plast Co., Ltd.: *See*—
Sato, Izumi, 5,383,681, Cl. 280-728.00B.

Niikura, Satoshi: *See*—
Doi, Kouske; Niikura, Satoshi; Tokutake, Nobuo; Kohara, Hidekatsu; and Nakayama, Toshimasa, 5,384,228, Cl. 430-192.000.

Niitsuma, Kazuhiro: *See*—
Kojima, Masaya; Niitsuma, Kazuhiro; Hayakawa, Satoru; Kawamata, Toshio; and Endo, Yasushi, 5,384,175, Cl. 428-64.000.

Niiyama, Tsunefumi, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic pressure control for automatic transmission. 5,383,379, Cl. 74-733.100.

Nikka Kabushiki Kaisha: *See*—
Nambe, Tsutomu, 5,383,404, Cl. 101-425.000.

Nikkiso, Co., Ltd.: *See*—
Ogawa, Motoyasu; and Nakagawa, Yuzo, 5,383,764, Cl. 415-199.300.

Nikon Corporation: *See*—
Hasuda, Masanori, 5,384,614, Cl. 354-286.000.
Matsumoto, Hiroyuki, 5,384,758, Cl. 369-13.000.

Nikula, Dale; and Shanahan, Brian. Ladder clamping device. 5,383,533, Cl. 182-107.000.

Nilsen, Kevin J.: *See*—
Weimer, Alan W.; and Nilsen, Kevin J., 5,384,291, Cl. 501-81.000.

Nilsson, Nils S.: *See*—
Wrangberth, Jan S.; and Nilsson, Nils S., 5,383,724, Cl. 312-325.000.

Nilsson, Sigvard: *See*—
Nordin, Henrik; and Nilsson, Sigvard, 5,384,857, Cl. 381-183.000.

Ninham, Barry W.: *See*—
Calka, Andrzej; and Ninham, Barry W., 5,383,615, Cl. 241-172.000.

Ninomiya, Takeshi: *See*—
Yoshioka, Junichi; Okihara, Daijiro; Yamauchi, Chiaki; Watanabe, Takashi; Nakajima, Toshiya; Ichikawa, Madoka; Takayama, Jun; Iseno, Akihiro; Ninomiya, Takeshi; and Hamada, Shinji, 5,384,673, Cl. 360-72.200.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Uemura, Tomoyoshi; Akamatsu, Yoshimi; Yoshida, Yuichi; and Moriwaki, Yoshikazu, 5,384,187, Cl. 428-262.000.

Nippon Hoso Kyokai: *See*—
Sameshima, Kenji; Makishima, Tatsuo; Hirai, Tadaaki; Takasaki, Yukio; Kubota, Misao; Tanioka, Kenkichi; and Shidara, Keiichi, 5,384,597, Cl. 348-325.000.

Nippon Paint Co., Ltd.: *See*—
Kanakura, Akihiro; Kishida, Takahito; Yabuuchi, Naoya; and Maruta, Masayuki, 5,384,226, Cl. 430-137.000.

Nippon Petrochemicals Company, Limited: *See*—
Sugisawa, Kunio; Hoshino, Hiroyuki; and Hayashi, Shozo, 5,384,684, Cl. 361-323.000.

Nippon Precision Circuits Inc.: *See*—
Kanehachi, Kaoru, 5,384,274, Cl. 437-47.000.

Nippon Soken Inc.: *See*—
Katada, Mitsutaka; Tsuruta, Kazuhiro; Fujino, Seiji; and Onoda, Michitoshi, 5,383,993, Cl. 156-153.000.

Nippon Steel Corporation: *See*—
Ushioda, Kohsaku; Yoshinaga, Naoki; and Akisue, Osamu, 5,384,206, Cl. 428-659.000.

Nippon Telegraph and Telephone Corporation: *See*—
Yagi, Toshiharu; Kato, Shuzo; and Kubota, Shuji, 5,384,809, Cl. 375-39.000.

Nippon Thompson Co., Ltd.: *See*—
Agari, Norimasa, 5,384,202, Cl. 428-577.000.

Nippondenso Co., Ltd.: *See*—
Kamiya, Naoyuki, 5,383,430, Cl. 123-339.000.

Nishi, Tatsunari: *See*—
Sasaki, Katsutoshi; Watanabe, Etsuyo; Nishi, Tatsunari; Sekine, Susumu; Hanai, Nobuo; and Hasegawa, Mamoru, 5,384,249, Cl. 435-68.100.

Nishida, Keiji; Kumakura, Masayuki; and Mochida, Junichi, to Sanyo Electric Co., Ltd. Automatic control address setting type distributively arranged air conditioner group apparatus. 5,383,336, Cl. 62-115.000.

Nishida, Kenji; and Sato, Noriaki, to Fujitsu Limited. Contact structure for connecting an electrode to a semiconductor. 5,384,485, Cl. 257-751.000.

Nishida, Syuzou; Haikawa, Yukihiko; Minoda, Hidenori; and Nakata, Ichiro, to Sharp Kabushiki Kaisha. Image recording/reproducing apparatus which displays images to be searched. 5,384,674, Cl. 360-72.200.

Nishida, Takao: *See*—
Kobayashi, Takeo; Nishida, Takao; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, 5,384,617, Cl. 354-419.000.

Nishigaki, Junji: *See*—
Ueda, Fumitaka; Nishigaki, Junji; and Ikegawa, Akihiko, 5,384,234, Cl. 430-504.000.

Nishiguchi, Masanori, to Sumitomo Electric Industries, Ltd. Semiconductor chip mounting method and apparatus. 5,384,000, Cl. 156-297.000.

Nishimaki, Tatsuo, to Seiko Epson Corporation. Semiconductor device comprising a function change over switching circuit having a nonvolatile storage device. 5,384,732, Cl. 365-185.000.

Nishimura, Eiji; and Honda, Akiko, to Mazda Motor Corporation. Engine output characteristic control system for vehicle. 5,383,431, Cl. 123-399.000.

Nishimura, Masaki; and Toyofuku, Kunitaka, to New Oji Paper Co., Ltd. Thermosensitive recording material. 5,384,303, Cl. 503-209.000.

Nishimura, Soichiro, to Brother Kogyo Kabushiki Kaisha. Particle carrying device for carrying waste particles to a waste particle receptacle. 5,383,578, Cl. 222-108.000.

Nishiwaki, Atsushi; Ikemiya, Norihito; Uchiyama, Hiroshi; Inagaki, Hideo; Sawada, Yasuo; and Ogino, Kazumi, to E.C. Chemical Co., Ltd.; C. Itoh Fine Chemical Co., Ltd.; and Nishiwaki, Atsushi. Method for the surface treatment of a metal by atmospheric pressure plasma. 5,384,167, Cl. 427-569.000.

Nishizawa, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Method for fixing FG magnet. 5,383,265, Cl. 29-598.000.

Nishizawa, Jun-ichi; and Ohmi, Tadahiro, to Zaidan Hojin Handotai Kenkyu Shinkokai. Short channel MOSFET with buried anti-punch through region. 5,384,476, Cl. 257-345.000.

Nishizawa, Muneo: *See*—
Hiruta, Mitsuhiko; Yoshida, Ryoichi; Nishizawa, Muneo; and Hiramatsu, Koji, 5,383,623, Cl. 242-374.000.

Nissan Chemical Industries, Ltd.: *See*—
Nogami, Tatsuya; and Sakai, Rie, 5,384,356, Cl. 524-726.000.

Nissan Motor Co., Ltd.: *See*—
Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Hamabe, Isutomu, 5,384,853, Cl. 381-71.000.
Sakagami, Atsushi; Watanabe, Shizuhisa; Sugiura, Kazumasa; and Oho, Shigeru, 5,384,765, Cl. 370-13.000.

Nitta, Tetsuhiro: *See*—
Hirano, Hirofumi; Bekki, Toshihiko; Kashimura, Makoto; Kiyohara, Takehiko; Nitta, Tetsuhiro; and Kimura, Tetsuo, 5,384,586, Cl. 346-134.000.

NKK Corporation: *See*—
Sato, Toshio; Ishii, Toshio; Sugiyama, Shunichi; and Yada, Akira, 5,384,166, Cl. 427-547.000.

Noda, Seiichi. Scraper conveyor. 5,383,547, Cl. 198-728.000.

Noe, Ronald O., to Westinghouse Electric Corporation. Uranium carbonate extraction process. 5,384,104, Cl. 423-15.000.

Nogami, Tatsuya; and Sakai, Rie, to Nissan Chemical Industries, Ltd. Liquid coating composition forming a liquid crystal display element insulating film. 5,384,356, Cl. 524-726.000.

Nogata, Tetsuro: *See*—
Takado, Yutaka; Nakasato, Toshikazu; Nogata, Tetsuro; Tezuka, Eiji; and Yokoi, Toshio, 5,384,172, Cl. 428-35.700.

Nojima, Kazuo: *See*—
Takami, Nobuo; Sugihara, Kazuyuki; Maruta, Takayuki; Nojima, Kazuo; Sawayama, Noboru; Yoshimatsu, Kaoru; Watabe, Katsuji; and Yoneda, Takuji, 5,384,628, Cl. 355-259.000.

Nokia Telecommunications Oy: *See*—
Alvesalo, Antero, 5,384,824, Cl. 379-59.000.

Nomoto, Akira: *See*—
Sato, Junichi; Seido, Masahiro; Nomoto, Akira; Kamo, Tomoichi; and Aihara, Katsuzo, 5,384,088, Cl. 505-120.000.

Nomura, Hiroyoshi: *See*—
Araki, Shoichi; Nomura, Hiroyoshi; Wakami, Noboru; and Imanaka, Takeshi, 5,384,716, Cl. 364-557.000.

Nordal, Per-Erik, to Dyno Particles A.S. Data storage medium and method for recording and reading of data. 5,384,764, Cl. 369-275.100.

Nordin, Henrik; and Nilsson, Sigvard, to Peltor Aktienbolag. Snap-in attachment for ear defender cup. 5,384,857, Cl. 381-183.000.

Nordvall, Per, to IVT Graphics AB. Arrangement in an infrared dryer for a sheet offset press. 5,383,403, Cl. 101-424.100.

Normandin, Sharon E.; Carmichael, Kathleen M.; Sullivan, Donald P.; Listigovers, Nancy A.; Martin, Trevor I.; and Hamer, Gordon K., to Xerox Corporation. Imaging member processes. 5,384,222, Cl. 430-58.000.

Normandin, Sharon E.: *See*—
Listigovers, Nancy A.; Martin, Trevor I.; Normandin, Sharon E.; Carmichael, Kathleen M.; Hamer, Gordon K.; and Sullivan, Donald P., 5,384,223, Cl. 430-59.000.

Noro, Tetsuya; Itoh, Masahiko; Ohyama, Nobuya; Kanai, Hiroshi; and Ishizuka, Masaharu, to TDK Corporation. Two-layered tape lead wire for magnetic head. 5,384,432, Cl. 174-117.0FF.

Norrid, Paul E. Needle thread stitch formation monitor. 5,383,417, Cl. 112-278.000.

Norris, George B.: *See*—
Davies, Robert B.; Anderson, Charles B.; Klingbeil, Lawrence S., Jr.; and Norris, George B., 5,384,273, Cl. 437-41.000.

Northern Telecom Limited: *See*—
Meyer, John A., 5,383,723, Cl. 312-265.400.

Northwestern University: *See*—
Razeghi, Manijeh, 5,384,151, Cl. 427-58.000.

Norton Chemical Process Products Corp.: *See*—
Gerdes, William H.; Remus, Donald J.; Szymanski, Thomas; and Wolford, James A., 5,384,302, Cl. 502-439.000.

Norton Company: *See*—
Cottringer, Thomas E.; van de Merwe, Ronald H.; Bauer, Ralph; and Yarbrough, Walter A., 5,383,945, Cl. 51-309.000.
Sampietro, Bruno, 5,383,309, Cl. 451-533.000.

Novacor Chemicals, Ltd.: *See*—
Taylor, Joe, 5,384,183, Cl. 428-216.000.

Novak, Semion M.: *See*—
El-Bober, Arie; Pechatnikov, Michael Z.; Menin, Boris M.; Novak, Semion M.; and Kabiri, Uri, 5,383,342, Cl. 62-532.000.

Novak, Steve: *See*—
Kolbly, Kenneth, 5,383,470, Cl. 128-725.000.

Novamont S.p.A.: *See*—
Bastioli, Catia; Bellotti, Vittorio; Romano, Giancarlo; and Tosin, Maurizio, 5,384,170, Cl. 428-34.100.

Nowakowski, Karol W.: *See*—
Gershony, Gary; and Nowakowski, Karol W., 5,383,896, Cl. 606-213.000.

Noxso Corporation: *See*—
Neal, Lewis G.; Ma, Warren; Chang, Min-Yan; Zhou, Qian; Pereira, Carmo J.; Plumlee, Karl W.; and Beeckman, Jean W., 5,383,955, Cl. 95-34.000.

NSK Ltd.: *See*—
Ono, Katsuyasu, 5,383,388, Cl. 89-1.140.

NSM Aktiengesellschaft: *See*—
Mulder, Arjen J., 5,383,546, Cl. 194-203.000.

Numako, Norio: *See*—
Kobayashi, Takeo; Nishida, Takao; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, 5,384,617, Cl. 354-419.000.

Numata, Seiji: *See*—
Koyama, Toru; Houjo, Koo; Suzuki, Masao; Takahashi, Akio; Mukoh, Akio; Fukushi, Keiji; and Numata, Seiji, 5,384,197, Cl. 428-457/100.

Nurnberger, Gunter: *See*—
Singewald, Arno; Wendt, Otto; Nurnberger, Gunter; Paetz, Dieter; Walczyk, Wolfgang; and Muller, Klaus-Dieter, 5,383,952, Cl. 71-63.000.

Nuyken, Oskar: *See*—
Etzbach, Karl-Heinz; Beckmann, Stefan; Nuyken, Oskar; Strohriegl, Peter; and Mueller, Harry, 5,384,378, Cl. 526-256.000.

Nycomed Imaging AS: *See*—
Klaveness, Jo; Ege, Thorfinn; and Rocklage, Scott M., 5,384,109, Cl. 424-9.000.

Nyo, Htay L.: *See*—
Desai, Jawahar M.; and Nyo, Htay L., 5,383,917, Cl. 607-702.000.

Oakes, Fred T., to Eastman Kodak Company. Diagnostic kit, primer composition and their use for replication or detection of nucleic acids. 5,384,242, Cl. 435-6.000.

Oatey Company: *See*—
Naton, Paul E., 5,384,345, Cl. 523-218.000.

O'Connor, Sean P.: *See*—
Cane, Charles; Crawford, John; and O'Connor, Sean P., 5,384,053, Cl. 252-18.000.

Odai, Nobuhiro, to Tsubakimoto Chain Co. Oil-operated tensioner for toothed belt. 5,383,813, Cl. 474-110.000.

Odaka, Masanori: *See*—
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.

Oder, Reuben F.: *See*—
Hamilton, Peter W.; Dirksing, Robert S.; and Oder, Reuben F., 5,383,564, Cl. 215-221.000.

Odstrchel, Gerald: *See*—
Sirdesai, Sunil J.; and Odstrchel, Gerald, 5,383,959, Cl. 106-21.00A.

Ogashiwa, Toshinori, to Tanaka Denshi Kogyo Kabushiki Kaisha. Fine wire for forming bump electrodes using a wire bonder. 5,384,090, Cl. 420-555.000.

Ogata, Takashi: *See*—
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.

Ogawa, Hisahito: *See*—
Takimoto, Akio; Tanaka, Yukio; Asayama, Junko; Akiyama, Koji; Kuratomi, Yasunori; and Ogawa, Hisahito, 5,384,649, Cl. 359-67.000.

Ogawa, Hisashi; Nabeshima, Yutaka; and Fukumoto, Masanori, to Matsushita Electric Industrial Co., Ltd. Method of fabricating a memory device with a multilayer insulating film. 5,384,276, Cl. 437-52.000.

Ogawa, Kinya; and Hirasawa, Yoichi, to Shin-Etsu Chemical Co. Ltd. Soil block for pot plant cultivation and a method of cultivating pot plants using the same. 5,383,943, Cl. 47-58.000.

Ogawa, Masahide; Abe, Kiyoshi; Takahashi, Masao; Washio, Yuuzi; Enomoto, Kazumitsu; and Kitsu, Toshio, to Mizusawa Industrial Chemicals, Ltd. Amorphous silica filler. 5,384,191, Cl. 428-323.000.

Ogawa, Motoyasu; and Nakagawa, Yuzo, to Nikkiso, Co., Ltd. Diffusor pump having diffusor blades. 5,383,764, Cl. 415-199.300.

Ogawa, Shinji; Kanou, Tomoyuki; and Horiuchi, Yusuke, to Toyota Jidoshs Kabushiki Kaisha. Gear speed change system with two counter shafts. 5,383,375, Cl. 74-330.000.

Ogawa, Soichiro: *See*—
Kawabata, Kenji; Ogawa, Soichiro; Iijima, Susumu; Seki, Kunio; Mochizuki, Hirotaka; Goto, Makoto; Ikeda, Ryuichi; Sugino, Motohiro; and Onda, Kenichi, 5,384,516, Cl. 315-160.000.

Ogawa, Yukio; Fukushima, Hiroyuki; and Mizuno, Rikako, to Canon Kabushiki Kaisha. Integrated camera-tripod system. 5,384,609, Cl. 354-81.000.

Ogino, Kazumi: *See*—
Nishiwaki, Atsushi; Ikemiya, Norihito; Uchiyama, Hiroshi; Inagaki, Hideo; Sawada, Yasuo; and Ogino, Kazumi, 5,384,167, Cl. 427-569.000.

Ogiwara, Takeshi: *See*—
Sumida, Hiroyasu; Itabashi, Akihisa; Fukano, Hiroshi; Shijo, Hiroyasu; Takashima, Hiroshi; Ogiwara, Takeshi; and Kishi, Fumio, 5,383,754, Cl. 412-11.000.

Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, to New Microtime Inc. Real time video image processing system. 5,384,912, Cl. 395-164.000.

Ogura, Seiki: *See*—
Hsu, Louis L.; Mii, Toshio; Shepard, Joseph F.; and Ogura, Seiki, 5,384,277, Cl. 437-52.000.

Oh, Jae S.; and Kim, Eung J., to Lucky Limited. Process for the selective preparation of 4,4-methylene-bis-(N-phenylalkylcarbamate). 5,384,424, Cl. 560-25.000.

Ohashi, Jun: *See*—
Prater, Robert W.; and Ohashi, Jun, 5,383,609, Cl. 241-29.000.

Ohashi, Kunio; Kinashi, Hiroshi; and Tokuyama, Mitsuru, to Sharp Kabushiki Kaisha. Process control stabilizing system including a cleaning device for the corona wires. 5,384,623, Cl. 355-207.000.

Ohga, Juro: *See*—
Masuda, Hiroyuki; Hosokawa, Kazutoshi; Fujii, Kensaku; and Ohga, Juro, 5,384,843, Cl. 379-391.000.

Ohio State University, The: *See*—
Sakurai, Satoshi; and Ismail, Mohammed, 5,384,548, Cl. 330-253.000.

Ohio State University Research Foundation, The: *See*—
Arnold, Mark W.; and Thurston, Marlin O., 5,383,456, Cl. 128-653.100.

Ohkubo, Takeshi: *See*—
Yamamoto, Hiroshi; and Ohkubo, Takeshi, 5,383,261, Cl. 29-40.000.

Ohkuma, Ikuo; Kumano, Makoto; Inoue, Sadayuki; Onishi, Ken; and Ishimoto, Junko, to Mitsubushi Denki Kabushiki Kaisha. Data dividing apparatus. 5,384,665, Cl. 360-22.000.

Ohlendorf, Dieter: *See*—
Hemmerling, Wolfgang; Dubal, Hans-Rolf; Escher, Claus; Illian, Gerhard; Inoguchi, Yoshio; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,384,070, Cl. 252-299.610.

Ohmi, Tadahiro: *See*—
Nishizawa, Jun-ichi; and Ohmi, Tadahiro, 5,384,476, Cl. 257-343.000.

Ohmori, Kiyoshi; and Aoki, Yoshitaka, to Sony Corporation. Magneto-optical disc recording and/or reproducing apparatus. 5,384,757, Cl. 369-13.000.

Ohmori, Masashi: *See*—
Yamada, Yoshiaki; Iwasaki, Junji; and Ohmori, Masashi, 5,383,482, Cl. 134-56.000.

Ohmstede-Cawley, Ltd.: *See*—
Cawley, Wesley D.; and Cawley, Clifton M., 5,383,760, Cl. 414-791.600.

Ohngemach, Jorg: *See*—
Poetsch, Eike; Jubb, Raymond; Finkenzeller, Ulrich; Jacob, Thomas; Ohngemach, Jorg; and Wilhelm, Stefan, 5,384,066, Cl. 252-299.010.

Ohnishi, Toshikazu: *See*—
Yoshimaga, Kazuo; Kurabayashi, Yutaka; Ohnishi, Toshikazu; Futami, Yukiko; and Miyazaki, Takeshi, 5,384,069, Cl. 252-299.010.

Ohnishi, Toshiyuki: *See*—
Uchikata, Yoshio; and Ohnishi, Toshiyuki, 5,383,734, Cl. 400-227.200.

Ohno Research & Development Laboratories Co. Ltd.: *See*—
Ohtake, Genji; Morohashi, Hisao; and Hasegawa, Souichi, 5,384,658, Cl. 399-707.000.

Oho, Shigeru: *See*—
Sakagami, Atsushi; Watanabe, Shizuhisa; Sugiura, Kazumasa; and Oho, Shigeru, 5,384,765, Cl. 370-13.000.

Ohta, Akira: *See*—
Sugihara, Sachiko; Miura, Akira; and Ohta, Akira, 5,384,214, Cl. 429-206.000.

Ohta, Kimiharu; and Yuki, Masahiro, to Sumitomo Special Metals Co., Ltd. Magnetic field generation device for use in superconductive type MRI. 5,384,538, Cl. 324-319.000.

Ohtake, Genji; Morohashi, Hisao; and Hasegawa, Souichi, to Ohno Research & Development Laboratories Co. Ltd. Plastic optical member and light-quantity-controlling member each having a light-diffusing layer on its surface. 5,384,658, Cl. 359-707.000.

Ohtani, Daisuke, to Matsushita Electric Industrial Co., Ltd. Electronic apparatus with battery power source. 5,384,207, Cl. 429-9.000.

Ohtsuka, Masahito: *See*—
Yokomizo, Takao; Kobayashi, Hiroo; Yagi, Tadashi; Yukimachi, Hiroshi; Azeda, Takahiro; Tsuchiya, Yoshiro; Moritani, Toshifumi; Ohtsuka, Masahito; Waragai, Tsuyoshi; and Miyake, Hiroaki, 5,384,619, Cl. 355-200.000.

Ohuchida, Shuichi; Toda, Masaaki; and Miyamoto, Tsumoru, to Ono Pharmaceutical Co., Ltd. Benzopyran derivatives. 5,384,414, Cl. 549-389.000.

Ohyama, Kyuichi; Shimada, Giichi; Tokumoto, Yuichi; and Sakamoto, Kazuo, to Daicel Chemical Industries, Ltd. Process for the preparation of isopropyl acetate. 5,384,426, Cl. 560-247.000.

Ohyama, Nobuya: *See*—
Noro, Tetsuya; Itoh, Masahiko; Ohyama, Nobuya; Kanai, Hiroshi; and Ishizuka, Masaharu, 5,384,432, Cl. 174-117.0FF.

Oishi, Katsumi; and Takano, Masahisa, to Seikosha Co., Ltd. Set parameter memory means and time recorder. 5,384,718, Cl. 364-569.000.

Oishi, Katsuyoshi, to Murakami, Eiji. Foldable outside rearview mirror. 5,384,660, Cl. 359-841.000.

Okada, Chikara: *See*—
Yamamoto, Kazuhiko; Miyake, Yuichi; and Okada, Chikara, 5,383,978, Cl. 148-101.000.

Okada, Hiroyuki: *See*—
Tsuji, Kenji; Fujino, Akihiko; Ichikawa, Tsutomu; Seki, Reiji; and Okada, Hiroyuki, 5,384,611, Cl. 354-131.000.

Okada, Keiichi: *See*—
Kagami, Naoyuki; Kubo, Hiroaki; and Okada, Keiichi, 5,384,762, Cl. 369-44.260.

Okada, Masayasu, to Toyoda Gosei Co., Ltd. Weatherstrip for automobiles. 5,383,701, Cl. 296-146.900.

Okami, Takehide, to Shin-Etsu Chemical Co., Ltd. Organopolysiloxane composition and process for producing cured product of the same. 5,384,075, Cl. 252-511.000.

Okamoto, Yasushi; and Arimoto, Akiya, to Mitsubishi Denki Kabushiki Kaisha. Communication control apparatus. 5,384,778, Cl. 370-85.300.

Okazaki, Hiroshi: *See*—
Sato, Hiroaki; Okutomi, Masatoshi; Yamamoto, Hiroyuki; Tamura, Hideyuki; and Okazaki, Hiroshi, 5,384,900, Cl. 395-100.000.

Okazaki, Kiyoshi: *See*—
Iwama, Nobuyuki; Okazaki, Kiyoshi; and Kansya, Yasuhiro, 5,383,459, Cl. 128-660.030.

Oki, Tomio; and Iwamoto, Kiyoshi, to Tomoegawa Paper Co., Ltd. Electrostatic recording medium. 5,384,180, Cl. 428-195.000.

Okihara, Daijiro: *See*—
Yoshioka, Junichi; Okihara, Daijiro; Yamauchi, Chiaki; Watanabe, Takashi; Nakajima, Toshiya; Ichikawa, Madoka; Takayama, Jun; Iseno, Akihiro; Ninomiya, Takeshi; and Hamada, Shinji, 5,384,673, Cl. 360-72.200.

Okinaka, Yutaka: *See*—
Grady, Alfred J., Jr.; Lal, Sudarshan; Mitchell, Mary J.; Okinaka, Yutaka; Smith, Craig G.; Trop, Harvey S.; and Wang, Chwan-Taam, 5,384,153, Cl. 427-98.000.

Okulov, Pavel D. Writing instrument with plural feeds. 5,383,736, Cl. 401-45.000.

Okumura, Takashi, to Brother Kogyo Kabushiki Kaisha. Thermal stenciling device. 5,384,585, Cl. 346-76.0PH.

Okutomi, Masatoshi: *See*—
Sato, Hiroaki; Okutomi, Masatoshi; Yamamoto, Hiroyuki; Tamura, Hideyuki; and Okazaki, Hiroshi, 5,384,900, Cl. 395-100.000.

Oldham, Mark F.: *See*—
Moring, Stephen E.; Albin, Michael S.; Kowallis, Reid B.; Lee, Thomas E.; Mead, Dennis E.; Nickel, John H.; Oldham, Mark F.; Reel, Richard T.; Orpin, Timothy S.; and Woods, Janice C., 5,384,024, Cl. 204-299.00R.

Olin Corporation: *See*—
Hani, Rahim; Berkowitz, Phillip T.; and Peterson, John L., 5,384,405, Cl. 544-285.000.

Olive, Graham J.: *See*—
Baker, Stephen J.; Wood, Karl J.; Olive, Graham J.; and Smith, Jeffrey N., 5,384,719, Cl. 364-578.000.

Olnowich, Howard T.; Jabusch, John D.; Lusch, Robert F.; and Maniguet, Michael A., to International Business Machines Corp. Multi-media analog/digital/optical switching apparatus. 5,384,773, Cl. 370-60.100.

Olsen, Ib I., to Valence Technology, Inc. Method for making solid electrolytes employing low boiling point solvents. 5,384,213, Cl. 429-192.000.

Olsen, Steven L.; and Riding, Kim D., to Morton International, Inc. Automated diameter gauging system. 5,383,283, Cl. 33-555.100.

Olson, Christopher H.: *See*—
Karim, Faraydon O.; and Olson, Christopher H., 5,384,723, Cl. 364-748.000.

Olson, Keith E.: *See*—
Besse, Michael E.; Ihns, Deborah A.; and Olson, Keith E., 5,384,364, Cl. 252-90.000.

Olympus Optical Co., Ltd.: *See*—
Iba, Yoichi, 5,384,654, Cl. 359-364.000.

Omori, Mamoru; and Hirai, Toshio. Rare earth oxide-alumina-silica sintered body and method of producing the same. 5,384,293, Cl. 501-120.000.

Onan, David D.; Terry, Dralen T.; and Brake, Bobby G., to Halliburton Company. Fly ash cementing compositions and methods. 5,383,521, Cl. 166-293.000.

Onda, Kenichi: *See*—
Kawabata, Kenji; Ogawa, Soichiro; Iijima, Susumu; Seki, Kunio; Mochizuki, Hirotaka; Goto, Makoto; Ikeda, Ryuichi; Sugino, Motohiro; and Onda, Kenichi, 5,384,516, Cl. 315-160.000.

Onga, Makoto: *See*—
Kobayashi, Atsushi; Onga, Makoto; Sase, Masatoshi; and Sato, Yasushi, 5,384,596, Cl. 348-241.000.

Onishi, Ken: *See*—
Ohkuma, Ikuo; Kumano, Makoto; Inoue, Sadayuki; Onishi, Ken; and Ishimoto, Junko, 5,384,665, Cl. 360-22.000.

Onizuka, Takahiro: *See*—
Saka, Yuuji; and Onizuka, Takahiro, 5,383,800, Cl. 439-787.000.

Ono, Katsuhiro; Anno, Hidero; Kitami, Takayuki; Sugiura, Hiroyuki; and Tanaka, Makoto, to Kabushiki Kaisha Toshiba. X-ray tube of the rotary anode type. 5,384,818, Cl. 378-132.000.

Ono, Katsuhiro, to Kabushiki Kaisha Toshiba. X-ray tube of the rotary anode type. 5,384,819, Cl. 378-132.000.

Ono, Katsuyasu, to NSK Ltd. Starting device. 5,383,388, Cl. 89-1.140.

Ono, Kohei: *See*—
Nakayama, Tadashi; Ono, Kohei; Yamamori, Shinji; Hosaka, Hidehiro; Sato, Yoji; Shioya, Shiniti; and Imai, Takasuke, 5,383,468, Cl. 128-713.000.

Ono, Naoki: *See*—
Satomi, Shigeki; and Ono, Naoki, 5,384,783, Cl. 371-9.100.

Ono Pharmaceutical Co., Ltd.: *See*—
Ohuchida, Shuichi; Toda, Masaaki; and Miyamoto, Tsumoru, 5,384,414, Cl. 549-389.000.

Ono, Takeshi: *See*—
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Awai, Takashi, 5,384,584, Cl. 346-76.0PH.

Onoda, Michitoshi: *See*—
Katada, Mitsutaka; Tsuruta, Kazuhiro; Fujino, Seiji; and Onoda, Michitoshi, 5,383,993, Cl. 156-153.000.

Onoda, Takeshi: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masateru; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.

Ontec Ltd.: *See*—
El-Boher, Arie; Pechatnikov, Michael Z.; Mesin, Boris M.; Novak, Semion M.; and Kabiri, Uri, 5,383,342, Cl. 62-532.000.

Onuma, Tsutomu: *See*—
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, masashi; and Onuma, Tsutomu, 5,384,224, Cl. 430-106.000.

Ootani, Toshihiro; and Izumi, Takayoshi, to Toa Medical Electronics Co., Ltd. Apparatus for aspirating and discharging a liquid sample. 5,384,093, Cl. 422-63.000.

O'Phelan, Michael, to Cardiac Pacemakers, Inc. Diagnostic connector port for a pulse generator. 5,383,914, Cl. 607-38.000.

Oppermann, Gunter; Weinhardt, Rudiger; and Kotowski, Stefan, to Heraeus Elektrochemie GmbH. Anode structure for cathodic protection against corrosion, and method for making the anode structure. 5,384,020, Cl. 204-280.000.

Opresco, Florin; and Van Brunt, Roger, to Apple Computer, Inc. Method and apparatus for a bus transceiver incorporating a high speed binary data transfer mode with a ternary control transfer mode having a full duplex, dominant logic transmission scheme. 5,384,769, Cl. 370-24.000.

Opresco, Florin: *See*—
Van Brunt, Roger; and Opresco, Florin, 5,384,808, Cl. 375-36.000.

Opticon Sensors Europe BV: *See*—
Peng, Ke- Ou, 5,384,453, Cl. 235-467.000.

Or, Arthur C.: *See*—
Challoner, A. Dorian; and Or, Arthur C., 5,383,359, Cl. 73-290.00R.

Oravetz, David M.; Elms, Robert T.; Engel, Joseph C.; Klancher, Frank; and Kenny, Thomas J., to Eaton Corporation. Energy monitoring system for a plurality of local stations with snapshot polling from a central station. 5,384,712, Cl. 364-550.000.

Origin Medsystems, Inc.: *See*—
Warner, Robert D.; Chin, Albert K.; and Stevens, Gail, 5,383,889, Cl. 606-192.000.

Orikasa, Hiromi, to NEC Corporation. Cordless telephone system capable of quickly establishing connection during call setup phase. 5,384,827, Cl. 379-61.000.

Orland, Rees M.: *See*—
Brannan, Ann; Burhenne, Roseann; Delustro, Frank A.; Smestad, Thomas L.; Fries, Louis; and Orland, Rees M., 5,383,930, Cl. 623-11.000.

Orlow, Seth J.: *See*—
Pawelek, John; Osber, Michael P.; and Orlow, Seth J., 5,384,116, Cl. 424-63.000.

O'Rourke, Glenn R.: *See*—
Bock, Peter D.; and O'Rourke, Glenn R., 5,383,680, Cl. 280-714.000.

Orpin, Timothy S.: *See*—
Moring, Stephen E.; Albin, Michael S.; Kowallis, Reid B.; Lee, Thomas E.; Mead, Dennis E.; Nickel, John H.; Oldham, Mark F.; Reel, Richard T.; Orpin, Timothy S.; and Woods, Janice C., 5,384,024, Cl. 204-299.00R.

Ortho-Flex Saddle Co., Inc.: *See*—
Brown, Roy L., 5,383,328, Cl. 54-44.300.

Orthotic Rehabilitation Products, Inc.: *See*—
Stern, Elliot L., 5,383,827, Cl. 482-47.000.

Osaka, Keiji; and Yanagi, Toru, to Sumitomo Electric Industries, Ltd. Method for fusion connecting optical fibers utilizing V-grooves with nonconducting layer. 5,384,878, Cl. 385-96.000.

Osann, Robert, Jr.; Ausman, Jeffery A.; and Halbert, David R., to Aptix Corporation. Printed circuit structure including power, decoupling and signal termination. 5,384,433, Cl. 174-250.000.

Osann, Robert, Jr.: *See*—
Switky, Andrew; and Osann, Robert, Jr., 5,383,787, Cl. 439-67.000.

Osber, Michael P.: *See*—
Pawelek, John; Osber, Michael P.; and Orlow, Seth J., 5,384,116, Cl. 424-63.000.

Osborn, Thomas W., III, to Procter & Gamble Company, The. Thin, flexible sanitary napkin. 5,383,869, Cl. 604-385.100.

Osborne, C. Kent; and DeGregorio, Michael W., to Board of Regents, The University of Texas System; and Yale University. Detection of onset of antiestrogen resistance in breast cancer. 5,384,260, Cl. 436-64.000.

Oscar Gossler KG (GmbH & Co.): *See*—
Riedel, Hartmut; and Schultz, Adolf, 5,384,804, Cl. 373-137.000.

Osei-Gyimah, Peter: *See*—
Gironda, Kevin F.; Osei-Gyimah, Peter; and Lange, Barry C., 5,384,326, Cl. 514-372.000.

Osenkowski, Joseph M.; Weber, James L.; Wdziekonski, Wojciech; and Bart, Kurt A., to Hoover Universal, Inc. Interlock for fold down seat back and integral child seat. 5,383,707, Cl. 297-238.000.

Osprey Metals Limited: *See*—
Forrest, James, 5,383,649, Cl. 266-44.000.

Osterwalder, Johann M., to Martin Marietta Corporation. Frequency stabilized laser with electronic tunable external cavity. 5,384,799, Cl. 372-32.000.

Osuga, Yoshiharu: *See*—
Kyouno, Noboru; Osuga, Yoshiharu; and Yashima, Noboru, 5,384,856, Cl. 381-103.000.

Oswald, William A.: *See*—
Britton, Barry K.; Hill, Dwight D.; and Oswald, William A., 5,384,497, Cl. 326-44.000.

Otis Elevator Company: *See*—
Ernecke, Christoph M.; Barten, Michael; and Toutaoui, Mustapha, 5,384,439, Cl. 187-316.000.

O'Toole, Frank K.: *See*—
Thorman, Christopher S.; Swartzendruber, James A.; and O'Toole, Frank K., 5,383,376, Cl. 74-474.000.

Otsuka, Kazutaka, to Casio Electronics Manufacturing Co., Ltd.; and Casio Computer Co., Ltd. Facsimile apparatus automatically registrable of identification name. 5,384,836, Cl. 379-100.000.

Otto, John G.: *See*—
Kelley, James O.; and Otto, John G., 5,383,318, Cl. 52-287.100.

Otto, Kurt J.: *See*—
Gardemal, Robert C., Jr.; Otto, Kurt J.; and Roberts, Gregory A., 5,384,860, Cl. 382-1.000.

Ovonic Synthetic Materials Company: *See*—
Crowther, David J.; and Gutman, George, 5,384,817, Cl. 378-34.000.

Owen, David P.: *See*—
Sorathia, Usman A.; Houghton, Deborah A.; Owen, David P.; Pipyne, Markus R.; Jones, Wayne C.; Castelli, Vincent J.; Fischer, Eugene C.; Venkatachalam, Ravanasamudram S.; Loup, Douglas; and Stephenson, Carlisle R., 5,383,567, Cl. 220-4.130.

Owens-Illinois Plastic Products Inc.: *See*—
Robinson, Gerald R., 5,383,779, Cl. 425-525.000.

Oyatsu, Masayuki: *See*—
Hirakui, Katsuya; and Oyatsu, Masayuki, 5,383,791, Cl. 439-317.000.

Ozaki, Hidekatsu: *See*—
Uchiyama, Masaaki; Nakamura, Kenichi; Nezu, Takashi; and Ozaki, Hidekatsu, 5,384,706, Cl. 364-424.050.

Pace, Paul G. Powered clamp for mounting mold parts to molding machine. 5,383,777, Cl. 425-192.00R.

Pacesetter, Inc.: *See*—
Moberg, Sheldon B., 5,383,473, Cl. 128-782.000.

Pacourek, John R.: *See*—
Kennedy, Richard A.; Summe, Richard A.; and Pacourek, John R., 5,384,551, Cl. 331-17.000.

Pacusma Co. Ltd.: *See*—
Luu, Lionel T. V., 5,384,428, Cl. 174-66.000.

Padgett, William P., III, to Burlington Industries, Inc. Textured surface effect fabric and methods of manufacture. 5,383,415, Cl. 112-266.200.

Padilla, Santiag N.: *See*—
Rontome, Carlo P.; and Padilla, Santiag N., 5,384,091, Cl. 422-30.000.

Padron, Aaron; Anez, Ender; and Possanai, Raul, to Maraven, S.A. Crude oil dehydration and desalting system with a higher gravity than 10 degrees API in mixing pipelines. 5,384,039, Cl. 208-187.000.

Paetz, Dieter: *See*—
Singewald, Arno; Wendt, Otto; Nurnberger, Gunter; Paetz, Dieter; Walczyk, Wolfgang; and Muller, Klaus-Dieter, 5,383,952, Cl. 71-63.000.

Paetz, Klaus-Christian: *See*—
Klein, Alfons; Kron, Rudolf; Fiege, Helmut; and Paetz, Klaus-Christian, 5,384,059, Cl. 252-73.000.

Paganelli, Guido. Process for preparing elastomeric thermoplastic blends and blends thus obtained. 5,384,366, Cl. 525-133.000.

Pai, Daniel Y.; Rodriguez, Stephen S.; and Sinta, Roger F., to Shipley Company Inc. Photoimageable compositions for electrodeposition. 5,384,229, Cl. 430-270.000.

Pai, Girish A.: *See*—
Frankfort, Hans R. E.; Knox, Benjamin H.; and Pai, Girish A., 5,384,082, Cl. 264-103.000.

Paisley, Gary V.: *See*—
Richter, Simon J.; and Paisley, Gary V., 5,383,576, Cl. 222-105.000.

Palekar, Vishwesh M.: *See*—
Tierney, John W.; Wender, Irving; and Palekar, Vishwesh M., 5,384,335, Cl. 518-700.000.

Palm, Erich, to SFS Stadler Holding AG. Rivet fastener. 5,383,753, Cl. 411-29.000.

Paloviita, Petri: *See*—
Rantanen, Rauno; Lummila, Markku; Korhonen, Hannu; Paloviita, Petri; and Koskinen, Jukka, 5,383,968, Cl. 118-119.000.

Panetta, Thomas F. Hypothermia reducing body exclosure. 5,383,918, Cl. 607-104.000.

Pangratz, William R.: *See*—
Bishop, Julie C.; Chan, Dominic M.; Donald, Dennis S.; Fodor, Ludovic; Pangratz, William R.; Russo, Glenn M.; and Shock, John R., 5,384,232, Cl. 430-440.000.

Panning, Martin H. Air seal for the product discharge of a cyclone separator or similar device. 5,383,614, Cl. 241-79.100.

Panthel, Guenter: *See*—
Colignon, Dietmar; Dorra, Erich; Panthel, Guenter; Schmidt, Wolfgang; and Wrede, Norbert, 5,384,422, Cl. 554-98.000.

Paoli, Stephen A. Desinewing machine for producing coarse-textured meat. 5,383,809, Cl. 452-138.000.

Papazian, Carol J.: *See*—
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., 5,384,831, Cl. 379-67.000.

Papenfuhs, Theodor: *See*—
Pfirmann, Ralf; and Papenfuhs, Theodor, 5,384,413, Cl. 549-246.000.

Pappas, Statis J.: *See*—
Beloff, Marvin; and Pappas, Statis J., 5,383,308, Cl. 451-519.000.

Papuchon, Michel: *See*—
Pocholle, Jean-Paul; Breteau, Jean-Marc; Papuchon, Michel; and Puech, Claude, 5,384,801, Cl. 372-43.000.

Paradigm Technology, Inc.: *See*—
Lee, Tsu-Wei F., 5,384,744, Cl. 365-221.000.

Paragon Trade Brands, Inc.: *See*—
Herrmann, Thomas R.; and Teodoro, Donald J., 5,383,988, Cl. 156-64.000.

Paramount Die & Machine Products, Inc.: *See*—
Shamir, Amos, 5,384,559, Cl. 337-197.000.

Parham, William W.: *See*—
Weaver, Max A.; Pruett, Wayne P.; Rhodes, Gerry; Hilbert, Samuel D.; and Parham, William W., 5,384,377, Cl. 525-437.000.

Parisi, Carl M.: *See*—
Heilman, Martin S.; Kolesik, Steve A.; Capone, Christopher D.; Parisi, Carl M.; Prem, Edward K.; and Speicher, Vernon L., 5,383,840, Cl. 600-17.000.

Parisi, Michael A.: *See*—
Hatch, Gilbert J.; and Parisi, Michael A., 5,384,621, Cl. 355-204.000.

Park, Churoo; and Choi, Yun-Ho, to SamSung Electronics Co., Ltd. Data output buffer of a semiconductor memory device. 5,384,735, Cl. 365-189.090.

Park, Jong W.; and Voldman, Steven H., to International Business Machines Corporation. Double grid substrate plate trench. 5,384,474, Cl. 257-304.000.

Parkerson, Jimmy W.: *See*—
Volk, Thomas G.; Leschinger, Matthew; and Parkerson, Jimmy W., 5,384,427, Cl. 174-38.000.

Parkes, John J.: *See*—
McLaughlin, Kevin T.; and Parkes, John J., 5,384,577, Cl. 345-102.000.

Parks, Terry J.; and Gaskins, Darius D., to Dell USA, L.P. Apparatus and method for optimal error correcting code to parity conversion. 5,384,788, Cl. 371-37.700.

Parnell, James A.: *See*—
Zinsmeyer, Charles D.; Parnell, James A.; Poole, Dan R.; and Massey, Carl D., 5,383,733, Cl. 400-208.000.

Partika, Lawrence, to Becton, Dickinson and Company. Instrument having enhanced ultrasound visibility. 5,383,466, Cl. 128-662.030.

Pascaloff, John H.: *See*—
Bays, Rodney; Boulton, Michael L.; Pascaloff, John H.; Stalcup, Gregory C.; and Vu, Dai N., 5,383,875, Cl. 606-1.000.

Pasch, Nicholas F.: *See*—
Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, 5,384,487, Cl. 257-786.000.

Pascucci, Gregory A., to Johnson Service Company. Networked facilities management system with balanced differential analog control outputs. 5,384,697, Cl. 364-139.000.

Paskvan, Eric W.: *See*—
Giles, David C.; Begin, Roger E.; Dugger, David R.; and Paskvan, Eric W., 5,384,200, Cl. 428-552.000.

Patel, Dhaval C.: *See*—
Brenski, Edwin F.; Patel, Dhaval C.; and Rovnyak, Richard M., Sr., 5,384,823, Cl. 379-10.000.

Patel, Kirit R., to Eaton Corporation. Force transmitting assembly. 5,383,544, Cl. 192-70.280.

Patel, Ranjan C.: *See*—
Ellis, Richard J.; Patel, Ranjan C.; and Nairne, Robert J. D., 5,384,238, Cl. 430-617.000.

Patino, Joseph; Bogut, Henry A.; and Hernandez, Pedro P., to Motorola, Inc. Illuminated switch and keypad assembly having a light gradient and a light conductive elastomeric assembly. 5,384,459, Cl. 250-229.000.

Patrick, Michael W.; and Daly, James A., to Digital Equipment Corporation. State machines for configuration of a communications network. 5,384,779, Cl. 370-85.120.

Patrick, William E., to Lift Mates, Inc. Load positioning arm. 5,383,758, Cl. 414-680.000.

Patriot Packaging Corporation: *See*—
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Patterson, John F.; and Cooke, George C., to Siemens Power Corporation. Hydraulic resistance strip for a light water reactor. 5,384,815, Cl. 376-444.000.

Paul, Adrian J.: *See*—
Paul, John; and Paul, Adrian J., 5,384,437, Cl. 177-256.000.

Paul, John; and Paul, Adrian J., to Adrian J. Paul Company. Torque bar suspension scale with strap assemblies. 5,384,437, Cl. 177-256.000.

Paul, John, to Adrian J. Paul Company. Torque bar suspension scale with strap assemblies. 5,384,438, Cl. 177-256.000.

Paul, Kenneth J.: *See*—
Bubon, Frank J.; Paul, Kenneth J.; and Pinkerton, Steven J., 5,383,949, Cl. 65-346.000.

Paul, Michael; Wilks, Eberhard; and Mamerow, Bernd, to Zahnradfabrik Friedrichshafen AG. Driven axle. 5,383,378, Cl. 74-650.000.

Pavlica, Pamela C.; and Schirmer, William W. Valance structure. 5,383,508, Cl. 160-38.000.

Pavlichko, Joseph P.: *See*—
Polovsky, Stuart B.; Moshel, Harold L.; Pavlichko, Joseph P.; and Friedman, Amnon, 5,384,334, Cl. 514-777.000.

Pawelchak, John M.: *See*—
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Pawelek, John; Osber, Michael P.; and Orlow, Seth J., to Yale University. Synthetic melanin as a sunscreen and tanning agent. 5,384,116, Cl. 424-63.000.

Paxman, Richard G., to Environmental Research Institute of Michigan. Measurement-diverse speckle imaging. 5,384,455, Cl. 250-201.900.

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Johnson, William S.; Payne, Edward A.; Boschker, Donald A.; and Phipps, Benita W., 5,384,850, Cl. 380-52.000.

PE Flo-Tech, Inc.: *See*—
Cornelius, Jack M., 5,383,672, Cl. 277-152.000.

Pearce, Phillip W., to Black & Decker Inc. Workbench and worktable. 5,383,977, Cl. 144-286.00A.

Pearson, Robert E.: *See*—
Schurman, Richard; Pearson, Robert E.; Reiter, Steve; Schurman, John; and Clark, Rick, 5,384,618, Cl. 355-32.000.

Pechatnikov, Michael Z.: *See*—
El-Boher, Arie; Pechatnikov, Michael Z.; Menin, Boris M.; Novak, Semion M.; and Kabiri, Uri, 5,383,342, Cl. 62-532.000.

Pedersen, Bruce B.; Chiang, David; Heile, Francis B.; McClintock, Cameron; So, Hock-Chuen; and Watson, James A., to Altera Corporation. High-density erasable programmable logic device architecture using multiplexer interconnections. 5,384,499, Cl. 326-39.000.

Pedersen, John R. C. Carburetor metering system and wick. 5,384,074, Cl. 261-107.000.

Pedut, Hai; Yavin, Zvi; Djerassi, Shlomo; and Goral, Avihu, to State of Israel-Ministry of Defence Armament Development Authority, Rafael. Stabilized payload. 5,383,645, Cl. 248-637.000.

Peebles, John: *See*—
Milne, Douglas L.; McIntosh, Ian; Peebles, John; and Swinton, James, 5,384,468, Cl. 250-560.000.

Peerless Industries, Inc.: *See*—
Bergetz, Carl A., 5,383,641, Cl. 248-425.000.

Pegasus Sewing Machine Mfg. Co., Ltd.: *See*—
Mukai, Hirochika; Nakajo, Tomoyuki; and Negoro, Toshihito, 5,383,410, Cl. 112-63.000.

Peimer, Clayton; and Bohn, Susan M. Surgical drape for surgery on an extremity. 5,383,476, Cl. 128-849.000.

Peirce, Roger L., to Visa International Service Association. Authorization matching system. 5,384,449, Cl. 235-380.000.

Pelosi, Raymond K. Combined identification device and timepiece. 5,384,756, Cl. 368-281.000.

Peltor Aktienbolag: *See*—
Nordin, Henrik; and Nilsson, Sigvard, 5,384,857, Cl. 381-183.000.

Peluso, Francesco: *See*—
Segers, Alain; Faict, Dirk; Dupouchelle, Annick; Hartman, Jean-Pierre; and Peluso, Francesco, 5,383,324, Cl. 53-425.000.

Peng, Johnson, to Duracraft Corporation. Vaporizer with electrode positioning. 5,384,888, Cl. 392-336.000.

Peng, Ke- Ou, to Opticon Sensors Europe BV. Bar code scanner with a scanning pattern divider. 5,384,453, Cl. 235-467.000.

Penn Troy Machine Co., Inc.: *See*—
Kennedy, Paul G., 5,383,495, Cl. 138-89.000.

Pepin, Lisa L.: *See*—
Marrelli, John D.; Brost, Dale F.; Siddiqui, Farhan; Pepin, Lisa L.; and Stafford, Joseph D., 5,383,353, Cl. 73-61.430.

Percheron-Guegan, Annick: *See*—
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Pereira, Carmo J.: *See*—
Neal, Lewis G.; Ma, Warren; Chang, Min-Yan; Zhou, Qian; Pereira, Carmo J.; Plumlee, Karl W.; and Beeckman, Jean W., 5,383,955, Cl. 95-34.000.

Perez-Soler, Roman; Han, Insook; and Khokhar, Abdul R., to Board of Regents, The University of Texas System. Stable liposomal formulations of lipophilic platinum compounds. 5,384,127, Cl. 424-450.000.

Perlman, Stuart S.: *See*—
Casavant, Scott D.; and Perlman, Stuart S., 5,384,599, Cl. 348-473.000.

Perren, Stephan M.: *See*—
Hehli, Markus; Gogolewski, Sylwester; and Perren, Stephan M., 5,383,931, Cl. 623-16.000.

Perry, Charles O. Flexible chair. 5,383,712, Cl. 297-448.000.

Perry, Stanton: *See*—
Lock, James E.; Mandell, Valerie; and Perry, Stanton, 5,383,926, Cl. 623-1.000.

PerSeptive Biosystems, Inc.: *See*—
Afeyan, Noubar B.; Regnier, Fred E.; and Dean, Robert C., Jr., 5,384,042, Cl. 210-198.200.

Peter, Gunter: *See*—
Ramm, Jurgen; Beck, Eugen; Frei, Hugo; Zueger, Albert; and Peter, Gunter, 5,384,018, Cl. 204-192.380.

Peters, Henning: *See*—
Agro, Marc; Hilt, Gerard; Rust, Sabine; Hornung, Christian; Peters, Henning; and Zweigart, Gerhard, 5,383,700, Cl. 296-97.900.

Peters, Richard E., to Ultimate Power Products. Benchpress shirt. 5,383,235, Cl. 2-115.000.

Petersen, Hermann: *See*—
Kohlhammer, Klaus; Petersen, Hermann; and Dobler, Walter, 5,384,381, Cl. 526-330.000.

Peterson, John L.: *See*—
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Peterson, Joseph C., to Crowa Technology, Inc. Hydrochloric acid pickling accelerator. 5,384,064, Cl. 252-142.000.

Peterson, Steven F.: *See*—
McKinnon, Charles N., Jr.; Peterson, Steven F.; Smith, Paul E.; Nakagawa, Takaaki; and Bartholomew, Victor L., 5,383,851, Cl. 604-68.000.

Pfahler, Gerhard: *See*—
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Pfirmann, Ralf; and Papenfuhs, Theodor, to Hoechst Aktiengesellschaft. Process for the preparation of tetrafluorophthalic acid and/or tetrafluorophthalic anhydride. 5,384,413, Cl. 549-246.000.

Pfizer Inc: *See*—
Ando, Kazuo; and Ikeda, Takafumi, 5,384,320, Cl. 514-231.200.

Pfizer Inc.: *See*—
Eggler, James F.; Marfat, Anthony; Melvin, Lawrence S., Jr.; and Masamune, Hiroko, 5,384,318, Cl. 514-212.000.

Pflueger, Randall J., to Massachusetts Institute of Technology. Bootstrap voltage reference circuit utilizing an N-type negative resistance device. 5,384,530, Cl. 323-313.000.

Pfouts, Mark D.: *See*—
Nicholson, Warren B.; Pfouts, Mark D.; and Delong, Russell I., 5,383,855, Cl. 604-100.000.

Phan, Phat A.: *See*—
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Phelan, Michael J.: *See*—
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Philip Morris Incorporated: *See*—
Winterson, Warren D.; Crump, John C., III; and Fischer, Eugene B., 5,383,479, Cl. 131-303.000.

Philipp, Harald A.: *See*—
Plimon, Anton; Philipp, Harald A.; and Winklhofer, Ernst, 5,384,467, Cl. 250-554.000.

Philistin-Rabaud, Jil F.: *See*—
Ward, William J.; and Philistin-Rabaud, Jil F., 5,384,174, Cl. 428-80.000.

Phillips, Arnold G. Bone wax applicator and method for dressing bone tissue. 5,383,879, Cl. 606-86.000.

Phillips, Cal M.: *See*—
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Phillips Petroleum Company: *See*—
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Phillips, Richard L.: *See*—
Larson, Ralph I.; Phillips, Richard L.; and Beane, Alan F., 5,383,340, Cl. 62-259.200.

Phillips, Roger W.; Mayer, Thomas; and Ash, Gary S., to Flex Products, Inc. Method of making optical thin flakes and inks incorporating the same. 5,383,995, Cl. 156-230.000.

Phillips, Ronald, to Lucas Industries. Fuel pumping apparatus. 5,383,435, Cl. 123-450.000.

Phipps, Alan M.: *See*—
Vu, Tuan M.; Krafton, Thomas J.; and Phipps, Alan M., 5,384,117, Cl. 424-66.000.

Phipps, Benita W.: *See*—
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Photonics Corporation: *See*—
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Phung, Quyet: *See*—
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Physical Optics Corporation: *See*—
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Pisio, Roger N.; and Latt, Leslie, to Quantix Systems, L.P. Quantitative immunoassay for volatile organic compounds. 5,384,262, Cl. 436-518.000.

Picard, Joseph A.; and Stiskovic, Drago R., to Warner-Lambert Company. Oxysulfonyl carbamates. 5,384,328, Cl. 514-490.000.

Piccone, John: *See*—
Allen, Richard C.; Cisneros, Gary M.; Fickes, Stanley L.; Hughes, Gary N.; Johnson, Walter S.; Konsevich, James L.; Piccone, John; and Stewart, Bernard E., 5,384,652, Cl. 359-172.000.

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Pickering, Michael A.: *See*—
Teverovsky, Alexander; MacDonald, James C.; Pickering, Michael A.; and Kirsch, Jeffery L., 5,383,969, Cl. 118-719.000.

Pickett, James E.: *See*—
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Pierce, Stanley L., to Ford Motor Company. Multiple speed automatic transmission for automotive vehicles. 5,383,822, Cl. 475-281.000.

Pietras, Mark A.: *See*—
Rodriguez, Arturo A.; Rutherfoord, Charles T.; Hancock, Steven M.; Kantner, Robert F., Jr.; and Pietras, Mark A., 5,384,598, Cl. 346-384.000.

Pilgrim, David R. Outboard motor cooling system. 5,383,803, Cl. 440-88.000.

Pinczewski, Leo A.: *See*—
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Pinkerton, Steven J.: *See*—
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Pinnacle Research Institute, Inc.: *See*—
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Piotowski, Andrzej M.: *See*—
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Pipinias, John, to Milton Roy Company. Valve for controlling flow. 5,383,648, Cl. 251-333.000.

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Pisani, Gianluigi: *See*—
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Pitney Bowes Inc.: *See*—
Berson, William; and Hubbard, David W., 5,383,732, Cl. 400-120.010.
Berson, William; and Marcus, James R., 5,384,846, Cl. 380-23.000.
Collins, Jacqueline; Doeberl, Terrence M.; Gravell, Linda V.; and Hunter, Kevin D., 5,384,708, Cl. 364-464.020.

Plant Genetics System, NV: *See*—
Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,384,257, Cl. 435-234.000.

Playfair, David B.: *See*—
Fisk, Duane H.; and Playfair, David B., 5,383,502, Cl. 141-364.000.

Playskool, Inc.: *See*—
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Pledger, Kenneth L.: *See*—
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Pleiger Plastics Company: *See*—
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Plimon, Anton; Philipp, Harald A.; and Winklhofer, Ernst, to AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof.Dr.Dr.h.c. Hans List. Optoelectronic measuring device for monitoring a combustion chamber. 5,384,467, Cl. 250-554.000.

Plumlee, Karl W.: *See*—
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Pneumo Abex Corporation: *See*—
Anderson, Gordon K.; Kreymer, Naum; and Tatham, Tom E., 5,383,335, Cl. 62-89.000.

Pocholle, Jean-Paul; Breteau, Jean-Marc; Papuchon, Michel; and Puech, Claude, to Thomson-CSF. Power lasers with semiconductor filter. 5,384,801, Cl. 372-43.000.

Poetsch, Eike; Jubb, Raymond; Finkenzeller, Ulrich; Jacob, Thomas; Ohngemach, Jorg; and Wilhelm, Stefan, to Merck Patent Gesellschaft mit beschrankter Haftung. Electrooptical system. 5,384,066, Cl. 252-299.010.

Poetsch, ike; Binder, Werner; and Geelhaar, Thomas, to Merck Patent Gesellschaft mit beschrankter Haftung. Methylenecyclobutane derivatives. 5,384,072, Cl. 252-299.630.

Poganitsch, Ernst: *See*—
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Polaroid Corporation: *See*—
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Pollier, James D. Magnetic collector for lubrication systems. 5,383,534, Cl. 184-6.250.

Polovsky, Stuart B.; Moshel, Harold L.; Pavlichko, Joseph P.; and Friedman, Amnon, to Amerchol Corporation. Alkoxylated alkyl glucoside ether quaternaries useful in personal care. 5,384,334, Cl. 514-777.000.

Polymeropoulos, Emanuel: *See*—
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Pomagalski S.A.: *See*—
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Pool, Robert H.: *See*—
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Poole, Dan R.: *See*—
Zinsmeyer, Charles D.; Parnell, James A.; Poole, Dan R.; and Massey, Carl D., 5,383,733, Cl. 400-208.000.

Pope, Brian T.: *See*—
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Poplett, James M.: *See*—
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Portevin, Bernard: *See*—
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Portola Packaging, Inc.: *See*—
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Possin, George E.: *See*—
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Poston, Wendy L.: *See*—
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Powell, Nikki: *See*—
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Powers, Daniel J.: *See*—
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PPG Industries, Inc.: *See*—
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Swarup, Shanti; Sharma, Brij N.; and Johnston, B. Keith, 5,384,367, Cl. 525-169.000.
Prache, Brigitte: *See*—
Lahitte, Pierre V. A.; Bratieres, Jean-Yves; Grenot, Michel; and Prache, Brigitte, 5,384,542, Cl. 324-642.000.
Prada, Ricardo; Galiasso, Roberto; Romero, Yilda; Reyes, Edito; and Rodriguez, Edilberto, to Intevep, S.A. Hydrocracking of feedstocks and catalyst therefor. 5,384,297, Cl. 502-66.000.
Praha, Harald, to Colgate-Palmolive Company. Plastic tube produced by blow molding. 5,383,577, Cl. 222-107.000.
Prasad, Ravi; and Cook, Pauline J., to Praxair Technology, Inc. Start-up and shut down processes for membrane systems and membrane systems useful for the same. 5,383,956, Cl. 95-45.000.
Prater, Andy C., to Continental American Corporation. Inflatable balloons with anti-blooming and anti-fogging coatings. 5,383,806, Cl. 446-220.000.
Prater Industries, Inc.: *See*—
Prater, Robert W.; and Ohashi, Jun, 5,383,609, Cl. 241-29.000.
Prater, Robert W.; and Ohashi, Jun, to Prater Industries, Inc. Method for pulverization of vegetable fiber materials and its pressure roller system. 5,383,609, Cl. 241-29.000.
Praxair Technology, Inc.: *See*—
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Precismeca Gesellschaft fur Fordertechnik mbH: *See*—
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Precor Incorporated: *See*—
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Premji, Gulam, to Bertrand Faure Ltd. Manual seat back latch for vehicles. 5,383,710, Cl. 297-378.120.
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Pritchard, Gary E. Apparatus and method for electrically weighing bales in a mobile crop baler. 5,384,436, Cl. 177-136.000.
Pritchett, James A.: *See*—
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Procter & Gamble Company, The: *See*—
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Carlin, Edward P.; Buell, Kenneth B.; Lavon, Gary D.; and Daniels, Dean J., 5,383,871, Cl. 604-385.200.
Hamilton, Peter W.; Dirksing, Robert S.; and Oder, Reuben F., 5,383,564, Cl. 215-221.000.
Osborn, Thomas W., III, 5,383,869, Cl. 604-385.100.
Roe, Donald C.; Berg, Charles J.; and Lahrman, Frank H., 5,384,179, Cl. 428-192.000.
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Woo, Ricky Ah-Man; Carrie, Michel J.; Cilley, William A.; Masters, Ronald A.; Michael, Daniel W.; and Vos, Eddy, 5,384,063, Cl. 252-142.000.
Proctor, Charles W. Composite comprising staple fiber and filament yarn. 5,383,331, Cl. 57-225.000.
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Prysby, Daniel G.; and DiMarco, Matthew J., to Texas Instruments Incorporated. Frequency divider circuit. 5,384,816, Cl. 377-48.000.
Przirembel, Hans R.; and Meyer, Robert C., to United Technologies Corporation. Cooled vane. 5,383,766, Cl. 416-97.00A.
Public Health Laboratory Service Board: *See*—
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Waschinski, Klaus-Markus; Schmitz, Arno; and Rubartsch, Ute, 5,384,169, Cl. 428-34.100.

Rubin, William L.: *See*—
Michaels, John F.; and Rubin, William L., 5,384,572, Cl. 342-169.000.

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Kerek, Leslie; and Rudoy, Edward, 5,383,790, Cl. 439-248.000.

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Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., 5,384,831, Cl. 379-67.000.

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Bishop, Julie C.; Chan, Dominic M.; Donald, Dennis S.; Fodor, Ludovic; Pangratz, William R.; Russo, Glenn M.; and Shock, John R., 5,384,232, Cl. 430-440.000.

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Carmine, James L.; and Ryntz, Rose A., 5,383,965, Cl. 106-284.240.

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Garrett, Mark H.; and Rytz, Daniel, 5,384,663, Cl. 359-896.000.

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Stewart, John V.; and Phillips, Cal M., 5,383,716, Cl. 301-124.200.

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Tuggle, Lloyd H.; Collins, Imack L.; and Sadler, Jeffrey G., 5,383,427, Cl. 123-51.0BA.

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Butter, Bryce G.; Houseman, James D.; and Kovac, Stephen R., 5,383,536, Cl. 188-1.120.

Safar, Peter; Stezoski, S. William; and Klain, Miroslav, to University of Pittsburgh of the Commonwealth System of Higher Education. Portable and modular cardiopulmonary bypass apparatus and associated aortic balloon catheter and associated method. 5,383,854, Cl. 604-98.000.

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Sagnes, Olivier; DuBois, Jean-Claude; Massardier, Valerie; van Hoang, Tran; and Guyot, Alain, to Thomson-CSF. Process to produce polyparaphenylene vinylene or polyparathienylene vinylene polymers. 5,384,392, Cl. 528-380.000.

Saika, Toshihiro; Mizutani, Hidemasa; Kaifu, Noriyuki; and Kameshima, Toshio, to Canon Kabushiki Kaisha. Image sensor in which illumination by electroluminescent device is synchronized with reading operation. 5,384,456, Cl. 250-208.100.

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St. Louis, Daniel M.; and Schmidt, Ricky D., to Haden Schweitzer Corporation. Contaminant shield. 5,383,312, Cl. 52-63.000.

St. Louis University: *See*—
Bucholz, Richard D., 5,383,454, Cl. 128-653.100.

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Golshan, Shahin; St. Martin, Craig A.; and Rhodine, Craig W., 5,384,488, Cl. 257-786.000.

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Shioyama, Shuichiro; and Saita, Norihiro, 5,383,529, Cl. 180-140.000.

Saito, Kenji; Sekiguchi, Masahito; Masaki, Shinzaburo; Yoshihara, Hiroshi; Takahashi, Kazuhiko; Minamisaka, Kazuya; and Kawai, Takashi, to Sumitomo Chemical Company, Limited. Process for producing 5-amino-3-methylpyrazole. 5,384,409, Cl. 548-371.400.

Saito, Masashi: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,384,365, Cl. 525-105.000.

Saito, Tetsuro: *See*—
Minowa, Kenji; Sakai, Norio; Saito, Tetsuro; and Yoshimura, Toshimi, 5,383,997, Cl. 156-235.000.

Saka, Yuuji; and Onizuka, Takahiro, to Sumitomo Wiring Systems, Ltd. Relay terminal for use in branch connecting box. 5,383,800, Cl. 439-787.000.

Sakagami, Atsushi; Watanabe, Shizuhisa; Sugiura, Kazumasa; and Ohe, Shigeru, to Nissan Motor Co., Ltd. Automobile multiplex data communication system including fail-safe function for LAN communication network. 5,384,765, Cl. 370-13.000.

Sakaguchi, Takashi, to Matsushita Electric Industrial Co., Ltd. Motion detector and image stabilizing system. 5,384,595, Cl. 348-208.000.

Sakai, Norio: *See*—
Minowa, Kenji; Sakai, Norio; Saito, Tetsuro; and Yoshimura, Toshimi, 5,383,997, Cl. 156-235.000.

Sakai, Rie: *See*—
Nogami, Tatsuya; and Sakai, Rie, 5,384,356, Cl. 524-726.000.

Sakaida, Tetsu: *See*—
Murakami, Hiroshi; and Sakaida, Tetsu, 5,383,821, Cl. 475-164.000.

Sakakibara, Hisato; Shinoda, Kou; and Murata, Yoshihiro, to Kabushikikaisha Barudan. Embroidery sewing machine. 5,383,412, Cl. 112-78.000.

Sakamoto, Kazuo: *See*—
Ohyama, Kyuichi; Shimada, Giichi; Tokumoto, Yuichi; and Sakamoto, Kazuo, 5,384,426, Cl. 560-247.000.

Sakamoto, Masaaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; and Sato, Yoshiaki, 5,384,205, Cl. 428-643.000.

Sakamoto, Yasunori: *See*—
Kuroda, Hideo; and Sakamoto, Yasunori, 5,384,189, Cl. 428-288.000.

Sakar, Josip. Pressure control for mechanical arbor press. 5,383,263, Cl. 29-251.000.

Sakashita, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing a semiconductor integrated circuit device, and an electronic circuit device. 5,384,275, Cl. 437-51.000.

Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, to GE Plastics Japan. Method of producing copolymerized polycarbonates. 5,384,388, Cl. 528-204.000.

Sakata, Yoshitsugu; Hanada, Toshiro; Matsuda, Ryosuke; and Matsuda, Yoshiyuki, to Wako Pure Chemical Industries, Ltd. Process for measuring an analyte with an oxidase and an oxidizable color reagent and surfactants. 5,384,248, Cl. 435-25.000.

Sakane, Shigeo; Kohda, Toshiyuki; Yamamoto, Hiroshi; and Shimeki, Yasuharu, to Matsushita Electric Industrial Co., Ltd. Learning machine. 5,384,896, Cl. 395-24.000.

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Saliga, Thomas V.: *See*—
Inga, Jorge J.; and Saliga, Thomas V., 5,384,643, Cl. 358-403.000.

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Lormeau, Jean-Claude; Chevallier, Bruno; and Salome, Marc L. V., 5,384,398, Cl. 536-21.000.

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Riviere, Alfredo V.; and Saluja, Navtej S., 5,383,347, Cl. 72-260.000.

Salvador, Joseph D., Jr.: *See*—
Teets, David A.; and Salvador, Joseph D., Jr., 5,383,671, Cl. 273-407.000.

Sameshima, Katsumi, to Rohm Co., Ltd. Semiconductor storage device having ferroelectric film. 5,384,729, Cl. 365-145.000.

Sameshima, Kenji; Makishima, Tatsuo; Hirai, Tadaaki; Takasaki, Yukio; Kubota, Misao; Tanioka, Kenkichi; and Shidara, Keiichi, to Hitachi, Ltd.; and Nippon Hoso Kyokai. Image pickup tube utilizing third electrode and its operating method. 5,384,597, Cl. 348-325.000.

Samizo, Motohiko: *See*—
Kimura, Kenji; Samizo, Motohiko; Tanaka, Shinya; Honda, Yukihiro; Sasaki, Manji; and Yachigo, Shinichi, 5,384,348, Cl. 524-103.000.

Sampietro, Bruno, to Norton Company. Abrasive tool. 5,383,309, Cl. 451-533.000.

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Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., 5,384,071, Cl. 252-299.630.

Samsung Electron Devices Co., Ltd.: *See*—
Ji, Seong-hun, 5,384,513, Cl. 313-442.000.
Kim, Dae-il, 5,384,514, Cl. 313-585.000.

Samsung Electronics Co., Ltd.: *See*—
Jee, Seong-gil, 5,384,796, Cl. 372-22.000.
Jeong, Je-chang, 5,384,849, Cl. 380-49.000.
Jung, Chul-Min; and Suh, Young-Ho, 5,384,736, Cl. 365-189.050.
Kim, Kwan-sung, 5,384,763, Cl. 369-124.000.
Lee, Ho-cheol, 5,384,750, Cl. 365-233.000.
Park, Churoo; and Choi, Yun-Ho, 5,384,735, Cl. 365-189.050.
Sim, Sun-ecoa, 5,384,642, Cl. 358-336.000.

Sand, I. Daniel: *See*—
Budde, Anna M.; Sand, I. Daniel; Dunn, Alan R.; and Kuo, Chung M., 5,384,163, Cl. 427-385.500.

Sanders, Glen A.; and Strandjord, Lee K., to Honeywell Inc. Fiber optic gyroscope modulation amplitude control. 5,384,637, Cl. 356-350.000.

Sanders, Joe L., to Western Atlas International, Inc. Self-orienting seismic detector. 5,384,753, Cl. 367-163.000.

Sandman, Robert B., Jr.: *See*—
Houser, Guy M.; and Sandman, Robert B., Jr., 5,384,085, Cl. 264-313.000.

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Garrett, Mark H.; and Rytz, Daniel, 5,384,663, Cl. 359-896.000.

Sands, Mark D.; Schwandt, Daniel A.; Tsang, Soddy; and Williams, Wes A., to Precor Incorporated. Belt and deck assembly for an exercise treadmill. 5,383,828, Cl. 482-54.000.

Sanemitsu, Yoshikado, to Mitsubishi Denki Kabushiki Kaisha. Memory card with two SRAM arrays with different data holding voltages and power back-up. 5,384,748, Cl. 365-229.000.

Sang, Lai M.: *See*—
Seong, AuYong C.; Wong, Yuen P.; and Sang, Lai M., 5,383,797, Cl. 439-476.000.

Sankey, James K.: *See*—
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Sano, Toshifumi, to NEC Corporation. Cooling structure for electronic circuit package. 5,384,687, Cl. 361-689.000.

Sanofi, Elf: *See*—
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Santandrea, Luciano; and Lombardi, Massimo, to Axis S.p.A. Machine and method for winding two-pole stators. 5,383,618, Cl. 242-1.10R.

Santoku Metal Industry Co., Ltd.: *See*—
Yamamoto, Kazuhiko; Miyake, Yuichi; and Okada, Chikara, 5,383,978, Cl. 148-101.000.

Sanyo Chemical Industries, Ltd.: *See*—
Date, Masashi; Sumiya, Takashi; and Takai, Hitoshi, 5,384,368, Cl. 525-186.000.

Sanyo Electric Co., Ltd.: *See*—
Nishida, Keiji; Kumakura, Masayuki; and Mochida, Junichi, 5,383,336, Cl. 62-115.000.

Sanyo Machine America Corporation: *See*—
Abramson, Kenneth D.; and Abe, Tetsuo, 5,383,370, Cl. 73-862.230.

Sapia, John A. Debris-free rain gutter cover system. 5,383,310, Cl. 52-12.000.

Sara Lee Corporation: *See*—
Webb, Phillip S.; Messner, Andrew R.; Street, John A.; and Gardner, Richard S., 5,383,289, Cl. 34-449.000.

Sarfarazi, Faezeh M. Sarfarazi corneal incision closure. 5,383,898, Cl. 606-214.000.

Sarnacki, Walter P.: *See*—
Bianchi, Ralph A.; Sarnacki, Walter P.; and Watkins, Robert L., 5,384,043, Cl. 210-242.300.

Sarrazin, Patrick: *See*—
Mank, Larry; Barthel, Yves; Cameron, Charles; and Sarrazin, Patrick, 5,384,040, Cl. 208-251.00R.

Sarron, Jean-Pierre: *See*—
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Sartori, Maurice, to B. J. Mackie and Co. (Aust.)Pty. Ltd. Material cutting machine for slicing a cylinder. 5,383,380, Cl. 82-70.100.

Sasaki, Katsutoshi; Watanabe, Etsuyo; Nishi, Tatsunari; Sekine, Susumu; Hanai, Nobuo; and Hasegawa, Mamoru, to Kyowa Hakko Kogyo Co., Ltd. α2→3 sialyltransferase. 5,384,249, Cl. 435-68.100.

Sasaki, Manji: *See*—
Kimura, Kenji; Samizo, Motohiko; Tanaka, Shinya; Honda, Yukihiro; Sasaki, Manji; and Yachigo, Shinichi, 5,384,348, Cl. 524-103.000.

Sasaki, Shigemi: *See*—
Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, 5,384,522, Cl. 318-371.000.

Sase, Masatoshi: *See*—
Kobayashi, Atsushi; Onga, Makoto; Sase, Masatoshi; and Sato, Yasushi, 5,384,596, Cl. 348-241.000.

Sato, Hiroaki; Okutomi, Masatoshi; Yamamoto, Hiroyuki; Tamura, Hideyaki; and Okazaki, Hiroshi, to Canon Kabushiki Kaisha. Method of managing an image memory by a process independent of an image processing process. 5,384,900, Cl. 395-100.000.

Sato, Hiroshi; and Hoshino, Makoto, to Kabushiki Kaisha Toshiba. Telephone apparatus using a detachable memory device. 5,384,834, Cl. 379-61.000.

Sato, Hiroshi: *See*—
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Sato, Izumi, to Nihon Plast Co., Ltd. Occupant restraint system. 5,383,681, Cl. 280-728.00B.

Sato, Junichi; Seido, Masahiro; Nomoto, Akira; Kamo, Tomoichi; and Aihara, Katsuzo, to Hitachi Cable, Ltd.; and Hitachi Ltd. Oxide superconductive material of Tl (thallium) and Pb (lead) system and method for manufacturing the same. 5,384,088, Cl. 505-120.000.

Sato, Katsuhiro; Torikoshi, Kaoru; Tanaka, Hiroyuki; Tambo, Fumiaki; and Akasaki, Yutaka, to Fuji Xerox Co., Ltd. Resistive film-forming composition and electronic components using the same. 5,384,076, Cl. 252-518.000.

Sato, Kazuhiko; Hagiwara, Tsuneo; and Yamaura, Michio, to Teijin Limited. Polypyrrole shaped material, process for production thereof, and secondary battery. 5,384,215, Cl. 429-213.000.

Sato, Kiyoshi; and Kohno, Yoshihide, to Bridgestone Corporation. Pneumatic radial tires including waved reinforcing elements between belt and carcass. 5,383,507, Cl. 152-527.000.

Sato, Masayoshi: *See*—
Ueda, Koichi; Kawarazaki, Yuzo; Shiba, Noriyuki; and Sato, Masayoshi, 5,383,393, Cl. 101-220.000.

Sato, Noriaki: *See*—
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Sato, Tetsuya: *See*—
Kanome, Osamu; Kamitakahara, Hirofumi; Yoshino, Hitoshi; Sato, Tetsuya; and Hayashi, Hisanori, 5,383,834, Cl. 492-25.000.

Sato, Toshio; Ishii, Toshio; Sugiyama, Shunichi; and Yada, Akira, to NKK Corporation. Method for controlling coating weight on a hot-dipped steel strip. 5,384,166, Cl. 427-547.000.

Sato, Yasushi: *See*—
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Sato, Yoji: *See*—
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Sato, Yoshiaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; and Sato, Yoshiaki, 5,384,205, Cl. 428-643.000.

Satomi, Shigeki; and Ono, Naoki, to Hitachi, Ltd. Network system and line switching method used therein. 5,384,783, Cl. 371-9.100.

Satomura, Masato: *See*—
Wakamatsu, Kan; Wakata, Yuichi; Satomura, Masato; and Namiki, Tomizo, 5,384,227, Cl. 430-156.000.

Satran, Amir; and Smilovici, Carol, to Iscar Ltd. Exchangeable milling cutting inserts. 5,383,750, Cl. 407-113.000.

Saunders, Alexander, to Chronomed, Inc. Method for analyzing the glycation of hemoglobin. 5,384,239, Cl. 435-2.000.

Saurer Sticksysteme: *See*—
Henz, Jurg; Schreiber, Max; Kobler, Armin; Wiest, Karl W.; and Selm, Livio, 5,383,416, Cl. 112-298.000.

Sauser, Martin H., Jr.: *See*—
Maya, Richard C.; Hazzah, Karen G.; and Sauser, Martin H., Jr., 5,384,770, Cl. 370-43.000.

Savant, Gajendra D.; and Jannson, Tomasz P., to Physical Optics Corporation. Birefringent azo dye polymer erasable optical storage medium. 5,384,221, Cl. 430-19.000.

Sawada, Yasuo: *See*—
Nishiwaki, Atsuhi; Ikemiya, Norihito; Uchiyama, Hiroshi; Inagaki, Hideo; Sawada, Yasuo; and Ogino, Kazumi, 5,384,167, Cl. 427-569.000.

Sawamoto, Hideo: *See*—
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.

Sawatzki, Harry L.: *See*—
Rheinberger, Volker M.; Unterbrink, Gary; Malin, Cosmas; and Sawatzki, Harry L., 5,383,752, Cl. 409-105.000.

Sawayama, Noboru: *See*—
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Sawhill, James W.; Freeman, Leon D.; and McKinney, Carl. Treatment of infectious wastes. 5,384,092, Cl. 422-32.000.

Schablonentechnik Kuestein Ges. m.b.H.: *See*—
Fischer, Hans, 5,384,007, Cl. 156-640.000.

Schacher, Gottlieb, to Hoffmann-La Roche Inc. Diagnostic processing station. 5,384,094, Cl. 422-64.000.

Schaede, Johannes G.: *See*—
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Schaeffer Magnetics, Inc.: *See*—
Tusques, Alain, 5,384,431, Cl. 174-117.00F.

Schairer, Werner; Angerstein, Jorg; Giebler, Siegfried; Riedel, Jurgen; and Mistele, Thomas, to Temic Telefunken microelectronic GmbH. Opto-electronic component with narrow aperture angle. 5,384,471, Cl. 257-98.000.

Scharen, Beat, to Ascom Audiosys AG. Hearing aid having a programmable audio input. 5,384,852, Cl. 381-68.000.

Scheckler, Chad A.; Yost, Jeffrey J.; and Gould, Jon D., to Refractron Technologies Corporation. Filter dryer body. 5,384,047, Cl. 210-490.000.

Schick, Ursula: *See*—
Wunderlich, Jens-Christian; Schick, Ursula; Freidenreich, Jurgen; and Werry, Jurgen, 5,384,129, Cl. 424-451.000.

Schierbeek, Kenneth L.: *See*—
Lynam, Niall R.; McCabe, Ian A.; and Schierbeek, Kenneth L., 5,384,578, Cl. 345-105.000.

Schiff, Steven M. Bidirectional lead connector for left or right sided implantation of pacemakers and/or other implantable electrophysiologic devices and a method for using the same. 5,383,913, Cl. 607-38.000.

Schindler, Hermann: *See*—
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Schirlin, Daniel G.; Collard, Jean-Noel; and Danzin, Charles, to Merrell Dow Pharmaceuticals Inc. Substituted silyl alkylene amines. 5,384,312, Cl. 514-63.000.

Schirmer, William W.: *See*—
Pavlica, Pamela C.; and Schirmer, William W., 5,383,908, Cl. 160-38.000.

Schladetzky, Robert P.: *See*—
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Schlag, John F.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Schlatter, Reinhard; Gabi, Urs; and Ehrat, Rainer, to Alusuisse-Lonza Services Ltd. Apparatus for the production of a flame resistant to nonflammable composite panel. 5,384,004, Cl. 156-543.000.

Schlemmer, Lothar: *See*—
Brosius, Sibylle; Seiler, Erhard; Schwager, Harald; Kress, Gerhard; and Schlemmer, Lothar, 5,384,369, Cl. 525-193.000.

Schlumberger Industries: *See*—
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Schlumberger Industries, S.A.: *See*—
Hamon, Serge, 5,383,358, Cl. 73-273.000.

Schmid, Eckhardt: *See*—
Edele, Reinhard; Johannes, Reinhard; Krizek, Oldrich; and Schmid, Eckhardt, 5,383,602, Cl. 239-284.100.

Schmidt, Guenther, to Robert Bosch GmbH. Braking system for motor vehicles. 5,383,720, Cl. 303-113.500.

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Schmitt, Peter J., to Meadox Medicals, Inc. Three-dimensional braided soft tissue prosthesis. 5,383,925, Cl. 623-1.000.

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Schmitz, Arno: *See*—
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Schnatbaum, Frank: *See*—
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Schobesberger, Claus; Weinrotter, Klaus; Griesser, Herbert; and Seidl, Sigrid, to Lenzing Aktiengesellschaft. Flame-retardant, high temperature resistant polyimide fibers and process for producing the same. 5,384,390, Cl. 528-353.000.

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Schroter, Horst; and Andreas, Horst, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Arrangement for filling coal in oven chambers of a coke oven battery. 5,384,015, Cl. 202-251.000.

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Schurman, Richard; Pearson, Robert E.; Reiter, Steve; Schurman, John; and Clark, Rick, to Secrest, Tom. Storage apparatus comprising a plurality of layers. 5,384,618, Cl. 355-32.000.

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Schwab, Egon; Loos, Hans-Joachim; and Ziegert, Gunter, to Hoechst Aktiengesellschaft. Inhaler. 5,383,850, Cl. 604-58.000.

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Sciuto, George J.: *See*—
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Scobbo, James J., Jr.; and Stoddard, Gregory J., to General Electric Company. Core-shell ABS copolymers and method for their preparation. 5,384,361, Cl. 525-74.000.

Scorey, Clive, to Ametek, Specialty Metal Products Division. Aluminum-silicon carbide composite and process for making the same. 5,384,087, Cl. 419-10.000.

Scott, Neal A.; Hanson, Stephen R.; King, Spencer B., III; and Harker, Laurence A., to Emory University. Stent sheath for local drug delivery. 5,383,928, Cl. 623-1.000.

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Selbrede, Steven C., to Genus, Inc. Differential pressure CVD chuck. 5,383,971, Cl. 118-728.000.
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Sernetz, Friedrich, to Dentaurum J. P. Winkelstroeter KG. Auxiliary orthodontic appliance. 5,383,784, Cl. 433-7.000.
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Shannon, John H.; Fetting, Karl A.; and Cote, Robert E., to Honeywell Inc. Fiber optic coupler package and packaging method. 5,384,875, Cl. 385-51.000.
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Shen, Ming-Tung. Integrated circuit chip including superimposed upper and lower printed circuit boards. 5,384,689, Cl. 361-761.000.
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Sherif, Fawzy G., to Akzo Nobel N.V. Reforming hydrocarbons using transition metal carbide catalyst and gaseous oxygen. 5,384,027, Cl. 208-134.000.
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Shigekawa, Brian L.; and Hsieh, Yung-Ao, to AKZO N.V. Ligand gold bonding. 5,384,073, Cl. 252-313.100.
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Shih, Lionel C.; and Wood, Tracy G., to Ampex Corporation. Data recording system having unique end-of-recording and start-of-recording format indicators. 5,384,668, Cl. 360-39.000.
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Shimamune, Minoru; Ito, Takuo; Negishi, Takao; and Takano, Kouzou, to Toray Industries, Inc. Image display device and its manufacturing method. 5,384,882, Cl. 385-116.000.
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Tseng, Dennis, 5,384,460, Cl. 250-231.140.
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Stentiford, Frederick W.; and Steer, Martin G., 5,384,701, Cl. 364-419.000.
Steffes, Helmut: *See*—
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Volz, Peter; Beck, Erhard; Maas, Joachim; Dinkel, Peter; and Risch, Stefan, 5,383,718, Cl. 303-113.200.
Stegmaier, Alwin; and Zwick, Kenneth J., to Robert Bosch GmbH. Fuel injection valve and method for adjusting a fuel injection valve. 5,383,606, Cl. 239-575.000.
Stentiford, Frederick W.; and Steer, Martin G., to British Telecommunications public limited company. Language translation system. 5,384,701, Cl. 364-419.030.
Step Loc Corporation: *See*—
Hoopengardner, Merle R., 5,384,001, Cl. 156-391.000.
Stephan, Ronan: *See*—
Chapas, Nicolas; Myason, Philippe; and Stephan, Ronan, 5,384,005, Cl. 156-679.000.
Stephenson, Carlisle R.: *See*—
Sorathia, Usman A.; Houghton, Deborah A.; Owen, David P.; Pipyne, Markus R.; Jones, Wayne C.; Castelli, Vincent J.; Fischer, Eugene C.; Venkatachalam, Ravanasamudram S.; Loup, Douglas; and Stephenson, Carlisle R., 5,383,567, Cl. 220-4.130.
Sterling, Rodney D.: *See*—
TeKolste, Robert D.; and Sterling, Rodney D., 5,384,650, Cl. 359-77.000.
Sterling Winthrop Inc.: *See*—
Singh, Baldev; Bacon, Edward R.; and Illig, Carl R., 5,384,107, Cl. 424-5.000.
Stern, Elliot L., to Orthotic Rehabilitation Products, Inc. Inflatable hand orthosis. 5,383,827, Cl. 482-47.000.
Stern, Roger A.: *See*—
Jackson, Jerome; and Stern, Roger A., 5,383,874, Cl. 606-1.000.
Stevens, Ewell E. Watercraft trim system. 5,383,419, Cl. 114-286.000.

Stevens, Gail: *See*—
Warner, Robert D.; Chin, Albert K.; and Stevens, Gail, 5,383,889, Cl. 606-192.000.

Stevens-Wright, Debbie, to C. R. Bard, Inc. Catheter with independent proximal and distal control. 5,383,852, Cl. 604-95.000.

Stevenson, David K.: *See*—
Vreman, Hendrik J.; and Stevenson, David K., 5,383,469, Cl. 128-719.000.

Stevenson, Dian E.; Kirk, Mark P.; Farnum, Sylvia A.; Frank, William C.; Helland, Randall H.; Kitchin, Jonathan P.,; Mader, Roger A.; Mizen, Mark B.; Newmark, Richard A.; Ramsden, William D.; Sahizadeh, Kumars; Spawn, Terence D.; and Tiers, George V., to Minnesota Mining and Manufacturing Company. Quaternary-ammonium phenylsulfonylacetate thermal-dye-bleach agents. 5,384,237, Cl. 430-566.000.

Stewart, Bernard E.: *See*—
Allen, Richard C.; Cisneros, Gary M.; Fickes, Stanley L.; Hughes, Gary N.; Johnson, Walter S.; Konsevich, James L.; Piccone, John; and Stewart, Bernard E., 5,384,652, Cl. 359-172.000.

Stewart, Bradley G.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Stewart, John V.; and Phillips, Cal M., to S.A.F.E.-Q.R. Corporation. Quick-release bicycle axle fastener. 5,383,716, Cl. 301-124.200.

Stewart, William K.: *See*—
Sieber, Jonathan D.; Sieber, Joseph S.; and Stewart, William K., 5,384,594, Cl. 348-169.000.

Stezoski, S. William: *See*—
Safar, Peter; Stezoski, S. William; and Klain, Miroslav, 5,383,854, Cl. 604-96.000.

Stier, David E.: *See*—
Gordon, Robert L.; and Stier, David E., 5,383,835, Cl. 493-330.000.

Stiffler, Scott R.: *See*—
Chu, Jack C.; Hsu, Louis Lu-Chen; Mii, Toshio; Shepard, Joseph F.; Stiffler, Scott R.; Tejwani, Manu J.; and Vishnesky, Edward J., 5,384,152, Cl. 427-81.000.

Stinson, Terry D.: *See*—
Donahue, Raymond J.; Cleary, Terrance M.; and Stinson, Terry D., 5,383,429, Cl. 123-197.300.

Stivers, David A.: *See*—
Guerra, Miguel A.; and Stivers, David A., 5,384,374, Cl. 525-126.400.

Stobby, William G.: *See*—
Suh, Kyung W.; Stobby, William G.; and McCullough, Francis P., Jr., 5,384,193, Cl. 428-375.000.

Stocker, Richard: *See*—
Foster, Christopher J.; Gilkerson, Terence; Stocker, Richard; and Gilmore, Ian J., 5,384,305, Cl. 504-130.000.

Stockton, Thomas R., to Ford Motor Company. Overrunning clutch. 5,383,542, Cl. 192-45.100.

Stoddard, Gregory J.: *See*—
Scobbo, James J., Jr.; and Stoddard, Gregory J., 5,384,361, Cl. 525-74.000.

Stolmeijer, Andre ; Van Attekum, Paulus M. T. M.; Den Blanken, Hubertus; Van Der Plas, Paulus A.; and De Werdt, Reinier, to U.S. Philips Corporation. Method of manufacturing a semiconductor device comprising a silicon body in which semiconductor regions are formed by ion implantations. 5,384,279, Cl. 437-57.000.

Stolz, Marcel: *See*—
Hassig, Fredy; and Stolz, Marcel, 5,383,755, Cl. 412-16.000.

Stone, Jack L.: *See*—
Benson, David K.; Crandall, Richard S.; Deb, Satyendra K.; and Stone, Jack L., 5,384,653, Cl. 359-270.000.

Stone, Jonathan J.: *See*—
Wilkinson, James H.; Ludgate, Michael J.; Soloff, Jonathan M.; and Stone, Jonathan J., 5,384,869, Cl. 382-56.000.

Stone, Julian, to AT&T Corp. Passive temperature-insensitive fabry-perot etalons. 5,384,877, Cl. 385-70.000.

Stone, Maureen C.: *See*—
Glassner, Andrew S.; Marimont, David H.; and Stone, Maureen C., 5,384,901, Cl. 395-131.000.

Stotz Medical AG: *See*—
Hagelauer, Ulrich, 5,383,455, Cl. 128-653.100.

Stotesbury, Gregory S.; and Fettes, Ian U., to AFTCO Mfg. Co., Inc. Lightweight roller guide and tip for fishing rods. 5,383,300, Cl. 43-24.000.

Stoeffler, Ronald D., to Bowles Fluidics Corporation. Burner method and apparatus. 5,383,781, Cl. 431-2.000.

Strandjord, Lee K.: *See*—
Sanders, Glen A.; and Strandjord, Lee K., 5,384,637, Cl. 356-350.000.

Strasberg, Gerson. Computer screen accessory. 5,383,642, Cl. 248-442.200.

Stratmas, Wayne P. Luminous display device. 5,383,295, Cl. 40-545.000.

Straughn, James M.: *See*—
Warner, Charles E.; Cartwright, Richard W.; and Straughn, James M., 5,383,486, Cl. 137-15.000.

Strauss, Philip R.; and Crosby, John B., to Multiplex Technology, Inc. Video signal splitter with DC short circuit protection. 5,384,603, Cl. 348-730.000.

Street, John A.: *See*—
Webb, Phillip S.; Messner, Andrew R.; Street, John A.; and Gardner, Richard S., 5,383,289, Cl. 34-449.000.

Strickland Industries, Inc.: *See*—
Strickland, James K., 5,383,311, Cl. 52-20.000.

Strickland, James K., to Strickland Industries, Inc. Lined structure and liner. 5,383,311, Cl. 52-20.000.

Strohriegl, Peter: *See*—
Etzbach, Karl-Heinz; Beckmann, Stefan; Nuyken, Oskar; Strohriegl, Peter; and Mueller, Harry, 5,384,378, Cl. 526-256.000.

Strong, Robert D., to Apple Computer, Inc. Dynamic language model for speech recognition. 5,384,892, Cl. 395-2.520.

Strumpf, David M.: *See*—
Stalling, David L.; Wood, Thomas S.; Kelly, Kevin P.; Cernohlavek, Leemer G.; Lochhaas, Philip D.; Schrier, Loren C.; and Strumpf, David M., 5,384,023, Cl. 204-186.000.

Struven, Kenneth C., to Imtec Products, Inc. Apparatus and method for protecting chemical bath seals. 5,383,488, Cl. 137-340.000.

Stubbe, Andreas: *See*—
Deusser, Hans; Kerner, Dieter; Meyer, Jurgen; Michael, Gunther; and Stubbe, Andreas, 5,384,194, Cl. 428-405.000.

Stuck, Andrew G. Method of servicing a watercraft. 5,383,653, Cl. 269-17.000.

Styles, Robert L. Air freshener retainer. 5,383,598, Cl. 239-57.000.

Su, Wei-Yang; Herbstman, Sheldon; Russo, Joseph M.; Zimmerman, Robert L.; and Cuscurida, Michael, to Texaco Inc. Fuel composition. 5,383,942, Cl. 44-334.000.

Suc, Sophie; Defaye, Jacques; Gadelle, Andree; and Kervennal, Jacques, to Elf Atochem S.A. Process for the oxidation of cationic starches and amphoteric starches, containing carboxyl and cationic groups, thus obtained. 5,383,964, Cl. 106-210.000.

Sudbury-Holtschlag, Joan E.: *See*—
Legrow, Gary E.; and Sudbury-Holtschlag, Joan E., 5,384,383, Cl. 528-23.000.

Sudo, Akira: *See*—
Yoshikawa, Susumu; and Sudo, Akira, 5,384,473, Cl. 257-255.000.

Sueoka, Atsushi; and Koinuma, Hiroyuki, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 5,384,733, Cl. 365-189.010.

Suess, Joachim; and Suessner, Hubert, to LeonHard Kurz GmbH & Co. Value document and embossing foil for the production thereof. 5,383,687, Cl. 283-86.000.

Suessner, Hubert: *See*—
Suess, Joachim; and Suessner, Hubert, 5,383,687, Cl. 283-86.000.

Suewaka, Kousuke: *See*—
Itagaki, Makoto; Kawasaki, Eiichi; Shinkoda, Kazuya; and Suewaka, Kousuke, 5,384,341, Cl. 522-111.000.

Sugawara, Shigeru: *See*—
Kamohara, Eiji; and Sugawara, Shigeru, 5,384,512, Cl. 313-414.000.

Sugihara, Kazuyuki: *See*—
Takami, Nobuo; Sugihara, Kazuyuki; Maruta, Takayuki; Nojima, Kazuo; Sawayama, Noboru; Yoshimatsu, Kaoru; Watabe, Katsuji; and Yoneda, Takuji, 5,384,628, Cl. 355-259.000.

Sugihara, Sachiko; Miura, Akira; and Ohta, Akira, to Matsushita Electric Industrial Co., Ltd. Manufacturing of zinc-alkaline batteries. 5,384,214, Cl. 429-206.000.

Sugino, Motohiro: *See*—
Kawabata, Kenji; Ogawa, Soichiro; Iijima, Susumu; Seki, Kunio; Mochizuki, Hirotaka; Goto, Makoto; Ikeda, Ryuichi; Sugino, Motohiro; and Onda, Kenichi, 5,384,516, Cl. 315-160.000.

Sugino, Osamu, to Canon Kabushiki Kaisha. Image forming apparatus having function for automatically setting transfer and separation condition. 5,384,590, Cl. 346-153.100.

Sugisawa, Kunio; Hoshino, Hiroyuki; and Hayashi, Shozo, to Nippon Petrochemicals Company, Limited. Metallized plastic film capacitor. 5,384,684, Cl. 361-323.000.

Sugishima, Kenji: *See*—
Honjo, Ichiro; Sugishima, Kenji; and Yamabe, Masaki, 5,384,463, Cl. 250-191.000.

Sugiura, Hiroyuki: *See*—
Ono, Katsuhiro; Anno, Hidero; Kitami, Takayuki; Sugiura, Hiroyuki; and Tanaka, Makoto, 5,384,818, Cl. 378-132.000.

Sugiura, Kazumasa: *See*—
Sakagami, Atsushi; Watanabe, Shizuhisa; Sugiura, Kazumasa; and Oho, Shigeru, 5,384,765, Cl. 370-13.000.

Sugiyama, Shunichi: *See*—
Sato, Toshio; Ishii, Toshio; Sugiyama, Shunichi; and Yada, Akira, 5,384,166, Cl. 427-547.000.

Sugo, Kimihide: *See*—
Mandai, Harufumi; and Sugo, Kimihide, 5,384,434, Cl. 174-258.000.

Suh, Kyung W.; Stobby, William G.; and McCullough, Francis P., Jr., to Dow Chemical Company, The. Stabilized and carbonaceous expanded fibers. 5,384,193, Cl. 428-375.000.

Suh, Young-Ho: *See*—
Jung, Chul-Min; and Suh, Young-Ho, 5,384,736, Cl. 365-189.050.

Suitch, Paul R.: *See*—
Deeba, Michel; Macaoay, John M.; Suitch, Paul R.; and von Ballmoos, Roland, 5,384,041, Cl. 208-253.000.

Suizu, Katsuto, to Kabushiki Kaisha Toshiba. Main switch feeding a controllable on/off sub-switch. 5,384,491, Cl. 307-113.000.

Sulc, Jiri : *See*—
Vondracek, Petr; Lopour, Petr; and Sulc, Jiri , 5,384,370, Cl. 525-209.000.

Sulenski, Shelly D.: *See*—
Ebner, Fritz F.; Macera, Ronald C.; Sulenski, Shelly D.; Gates, Janine M.; Mikolanis, Sue; Richar, James D.; and Hawea, M. Kerrigan, 5,384,620, Cl. 355-202.000.

Sullivan, Donald P.: *See*—
Listigovers, Nancy A.; Martin, Trevor L; Normandin, Sharon E.; Carmichael, Kathleen M.; Hamer, Gordon K.; and Sullivan, Donald P., 5,384,223, Cl. 430-59.000.
Normandin, Sharon E.; Carmichael, Kathleen M.; Sullivan, Donald P.; Listigovers, Nancy A.; Martin, Trevor L; and Hamer, Gordon K., 5,384,222, Cl. 430-58.000.

Sullivan, Katharyne M.; and McCart, John R., to X M Corporation. Stereoscopic viewing device. 5,384,655, Cl. 359-472.000.

Sulzer-Escher Wyss GmbH: *See*—
Brugger, Hubert; Enderle, Karl-Heinz; Hess, Harald; Isele, Frank; Senser, Horst; and Wenske, Rolf, 5,383,833, Cl. 492-16.000.

Sumida, Hiroyasu; Itabashi, Akihisa; Fukano, Hiroshi; Shijo, Hiroyasu; Takashima, Hiroshi; Ogiwara, Takeshi; and Kishi, Fumio, to Ricoh Company, Ltd. Image forming apparatus having an image orientation identifying device and a binding device. 5,383,754, Cl. 412-11.000.

Sumimoto, Tsutomu: *See*—
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,384,738, Cl. 365-189.080.

Sumitomo Chemical Company, Limited: *See*—
Kimura, Kenji; Samizo, Motohiko; Tanaka, Shinya; Honda, Yukihiro; Sasaki, Manji; and Yachigo, Shinichi, 5,384,348, Cl. 524-103.000.
Saito, Kenji; Sekiguchi, Masahito; Masaki, Shinzaburo; Yoshihara, Hiroshi; Takahashi, Kazuhiko; Minamisaka, Kazuya; and Kawai, Takashi, 5,384,409, Cl. 548-371.400.

Sumitomo Electric Industries, Ltd.: *See*—
Hirai, Shigeru; Kakii, Toshiaki; Ishikawa, Shinji; and Kanamori, Hiroo, 5,384,874, Cl. 385-34.000.
Matsui, Jin-Joo; Komura, Osamu; Yamakawa, Akira; and Miyake, Masaya, 5,384,292, Cl. 501-97.000.
Nishiguchi, Masanori, 5,384,000, Cl. 156-297.000.
Osaka, Keiji; and Yanagi, Toru, 5,384,878, Cl. 385-96.000.

Sumitomo Metal Industries, Ltd.: *See*—
Kondo, Kunio; Kushida, Takahiro; and Ueda, Masakatsu, 5,383,983, Cl. 148-325.000.

Sumitomo Special Metals Co., Ltd.: *See*—
Ohta, Kimiharu; and Yuki, Masahiro, 5,384,538, Cl. 324-319.000.

Sumitomo Wiring Systems, Ltd.: *See*—
Saka, Yuuji; and Onizuka, Takahiro, 5,383,800, Cl. 439-787.000.

Sumiya, Satoshi: *See*—
Muramatsu, Gyo; Yoshida, Kiyohide; Sumiya, Satoshi; and Abe, Akira, 5,384,110, Cl. 423-239.100.

Sumiya, Takashi: *See*—
Date, Masashi; Sumiya, Takashi; and Takai, Hitoshi, 5,384,368, Cl. 525-186.000.

Summagraphics Corporation: *See*—
Zinsmeyer, Charles D.; Parnell, James A.; Poole, Dan R.; and Massey, Carl D., 5,383,733, Cl. 400-208.000.

Summe, Richard A.: *See*—
Kennedy, Richard A.; Summe, Richard A.; and Pacourek, John R., 5,384,551, Cl. 331-17.000.

Summers, David P., to American BioMed, Inc. Spinal disc surgical instrument. 5,383,884, Cl. 606-170.000.

Summerville, Don S.; Gillespie, Lionel D.; and Gamper, Steven C., to Coca-Cola Company, The. Vendor selection panel assembly. 5,383,297, Cl. 40-611.000.

Sumpter, Chris A.: *See*—
Levinson, Lionel M.; Schultz, William N.; Lewis, Larry N.; Sumpter, Chris A.; and Zumbrum, Michael A., 5,384,357, Cl. 524-770.000.

Sundquist, Jarl, to AB Hallde Maskiner. Scraper arrangement pertaining to food processors. 5,383,613, Cl. 241-37.500.

Sundstrand Corporation: *See*—
Rozman, Gregory I.; Maddali, Vijay K.; and Markunas, Albert L., 5,384,527, Cl. 322-10.000.

Suwa, Makoto: *See*—
Mori, Shigeru; Suwa, Makoto; Miyamoto, Hiroshi; Morooka, Yoshikazu; Kikuda, Shigeru; and Kinoshita, Mitsuya, 5,384,784, Cl. 371-21.100.

Suwa, Masateru: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masateru; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.

Suzuki, Masao: *See*—
Koyama, Toru; Honjo, Koo; Suzuki, Masao; Takahashi, Akio; Mukoh, Akio; Fukushi, Keiji; and Numata, Seiji, 5,384,197, Cl. 428-457.000.

Svaighert, Mike, to Svaighert, Mike; and International Design & Mtg., Inc. Pulp mill apparatus. 5,383,616, Cl. 241-242.000.

Svendsen, Hugh B.: *See*—
Anderson, Eric C.; and Svendsen, Hugh B., 5,384,890, Cl. 395-2.000.

Swain, Thomas L.: *See*—
Andresen, Nord C.; DiGennaro, Richard S.; and Swain, Thomas L., 5,384,662, Cl. 359-894.000.

Swartz, Harry E., Jr., to UNISYS Corporation. Universal power distribution system. 5,384,490, Cl. 307-38.000.

Swartzbaugh, Jim. Flush cup extenders for electrical discharge machines. 5,384,443, Cl. 219-69.120.

Swartzendruber, James A.: *See*—
Thorman, Christopher S.; Swartzendruber, James A.; and O'Toole, Frank K., 5,383,376, Cl. 74-474.000.

Swarup, Shanti; Sharma, Brij N.; and Johnston, B. Keith, to PPG Industries, Inc. Carbamate urea or urethane-functional epoxy acrylic with polyacid. 5,384,367, Cl. 525-169.000.

Sweeney, Michael B.; and Echt, Debra S., to Ventritex, Inc. Defibrillation system having innominate vein electrode and method for its use. 5,383,908, Cl. 607-5.000.

Swei, Gwo S.: *See*—
Arthur, David J.; Swei, Gwo S.; Horn, Allen F., III; and Kilheany, Brett, 5,384,181, Cl. 428-195.000.

Sweppy, Michael S.: *See*—
Kerns, James M.; Cullen, Michael J.; and Sweppy, Michael S., 5,384,707, Cl. 364-431.110.

SWF Auto-Electric GmbH: *See*—
Edele, Reinhard; Johannes, Reinhard; Krizek, Oldrich; and Schmid, Eckhardt, 5,383,602, Cl. 239-284.100.

Swinton, James: *See*—
Milne, Douglas L.; McIntosh, Ian; Peebles, John; and Swinton, James, 5,384,468, Cl. 250-560.000.

Swisher, George W., Jr.; and Murray, Stuart W., to CMI Corporation. Asphalt/dust/rubber processing equipment. 5,383,725, Cl. 366-22.000.

Swisher, George W., Jr. Vehicle having a drive train with two shock-absorbing couplings. 5,383,743, Cl. 404-90.000.

Switchblade, Inc.: *See*—
Cornell, Harold P., III; and Werginz, Philip T., 5,383,329, Cl. 56-255.000.

Switky, Andrew; and Osann, Robert, Jr., to Aptix Corporation. Integrated circuit package with direct access to internal signals. 5,383,787, Cl. 439-67.000.

Synergy Semiconductor: *See*—
Wong, Thomas S. W., 5,384,498, Cl. 326-31.000.

Synthes (U.S.A.): *See*—
Hehli, Markus; Gogolewski, Sylwester; and Perren, Stephan M., 5,383,931, Cl. 623-16.000.

Syntron Bioresearch, Inc.: *See*—
Chen, Ted M.; and Wang, Yi-Ping, 5,384,264, Cl. 436-525.000.

Syron Engineering & Manufacturing Corp.: *See*—
Herbermann, Alfred F., 5,383,738, Cl. 403-56.000.

Szelenyi, Stefan: *See*—
Dieter, Hans-Reinhold; Engel, Jurgen; Kutacher, Bernhard; Polymeropoulos, Emanuel; Szelenyi, Stefan; and Nickel, Bernd, 5,384,330, Cl. 514-535.000.

Szilagyi, Jozsef F.: *See*—
Cunningham, Charles; McLauchlan, John; Rixon, Frazer J.; and Szilagyi, Jozsef F., 5,384,122, Cl. 424-231.100.

Szpur, Roman: *See*—
Kelly, Kevin A.; and Szpur, Roman, 5,383,919, Cl. 607-104.000.

Szum, David M., to DSM Desotech, Inc. Vinyl ether urethane silanes. 5,384,342, Cl. 522-172.000.

Szymanski, Thomas: *See*—
Gerdes, William H.; Remus, Donald J.; Szymanski, Thomas; and Wolford, James A., 5,384,302, Cl. 502-439.000.

Szyszko, Aleksander, to M & R Printing Equipment, Inc. Article detector for printing press. 5,383,400, Cl. 101-126.000.

Ta Yen Paper Box Container Co., Ltd.: *See*—
Kuo, Shin C., 5,383,999, Cl. 156-267.000.

Tabata, Yasushi: *See*—
Kobayashi, Takeo; Nishida, Takao; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, 5,384,617, Cl. 354-419.000.

Tabei, Eiichi: *See*—
Shigeru, Mori; Tabei, Eiichi; and Umehara, Hisashi, 5,384,382, Cl. 528-15.000.

Tachibana, Takeshi; Thompson, Dale G., Jr.; and Glass, Jeffrey T., to Kobe Steel, USA, Inc. High temperature rectifying contact including polycrystalline diamond and method for making same. 5,384,470, Cl. 257-77.000.

Taeuber, Ralph, Jr.; Castillo, Sergio A., Jr.; and Ash, Robert H., Jr., to FMC Corporation. Load segment assembly with wire rope. 5,383,694, Cl. 285-374.000.

Taga, Yoshitaka: *See*—
Kido, Shojiro; Nakamura, Toshiaki; Kambara, Takashi; Taga, Yoshitaka; and Nagase, Haruo, 5,384,518, Cl. 315-225.000.

Tagawa, Shinichi: *See*—
Inagaki, Shoji; and Tagawa, Shinichi, 5,384,705, Cl. 364-424.050.

Taguchi, Masahiro; Hayashi, Yoshiro; Masuda, Ryuichi; and Ekino, Yoshio, to Toyota Jidosha Kabushiki Kaisha. Vacuum casting apparatus. 5,383,514, Cl. 164-255.000.

Taisho Pharmaceutical Co., Ltd.: *See*—
Komurasaki, Toshi; Toyoda, Hitoshi; Uchida, Daisuke; and Hanada, Kazunori, 5,384,394, Cl. 530-324.000.

Takada, Fumio: *See*—
Yoshioka, Hidetaka; and Takada, Fumio, 5,383,531, Cl. 180-231.000.

Takada, Hirokazu: *See*—
Shimoda, Mitsugi; Hatori, Hiroaki; Takubo, Yoshinori; Masuda, Takashi; and Takada, Hirokazu, 5,383,277, Cl. 33-18.100.

Takada, Ryuji; and Hazaki, Eiichi, to Hitachi Construction Machinery Co., Ltd. Method of and device for driving piezo-electric elements and system for controlling micromotion mechanism. 5,384,507, Cl. 310-317.000.

Takado, Yutaka; Nakasato, Toshikazu; Nogata, Tetsuro; Tezuka, Eiji; and Yokoi, Toshio, to Tonen Chemical Corporation; and Toyota Jidosha Kabushiki Kaisha. Multi-layer plastic fuel tank. 5,384,172, Cl. 428-35.700.

Takagi, Shinji; Tanaka, Hideki; Kimura, Tatsuo; and Ashiwa, Jun, to Canon Kabushiki Kaisha. Multi-drop ink-jet recording method with

compensation for image density non-uniformities. 5,384,587, Cl. 347-41.000.
Takahashi, Akio: *See*—
Koyama, Toru; Honjo, Koo; Suzuki, Masao; Takahashi, Akio; Mukoh, Akio; Fukushi, Keiji; and Numata, Seiji, 5,384,197, Cl. 428-457.000.
Takahashi, Hironori; Urakami, Tsuneyuki; and Aoshima, Shinichiro, to Hamamatsu Photonics K.K. Sampling-type optical voltage detector utilizing movement of interference fringe. 5,384,638, Cl. 356-351.000.
Takahashi, Kazuhiko: *See*—
Saito, Kenji; Sekiguchi, Masahito; Masaki, Shinzaburo; Yoshihara, Hiroshi; Takahashi, Kazuhiko; Minamisaka, Kazuya; and Kawai, Takashi, 5,384,409, Cl. 548-371.400.
Takahashi, Keietsu; Ueda, Nobuo; and Hazue, Masaaki, to Nihon Medi-Physics Co., Ltd. Chemical product usable as a non-radioactive carrier. 5,384,401, Cl. 536-18.700.
Takahashi, Masaji; and Kondo, Yuji, to NEC Corporation. Three-axis acceleration sensor variable in capacitance under application of acceleration. 5,383,364, Cl. 73-517.00R.
Takahashi, Masakatsu, to Takahashi, Masakatsu. Scale usable as life line. 5,383,285, Cl. 33-756.000.
Takahashi, Masao: *See*—
Ogawa, Masahide; Abe, Kiyoshi; Takahashi, Masao; Washio, Yuuzi; Enomoto, Kazumitsu; and Kitsu, Toshio, 5,384,191, Cl. 428-323.000.
Takahashi, Shinsuke; and Shibata, Norio, to Fuji Photo Film Co., Ltd. Method and apparatus for simultaneously applying a multi-layered coating at high speeds. 5,384,162, Cl. 427-356.000.
Takahashi, Shintaro: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masateru; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.
Takahashi, Shogo: *See*—
Shiba, Tetsuo; and Takahashi, Shogo, 5,384,282, Cl. 437-90.000.
Takahashi, Tetsuhiko: *See*—
Murakami, Yoshiki; Takahashi, Tetsuhiko; and Yamamoto, Etsuji, 5,384,536, Cl. 324-309.000.
Takahashi, Tetsuya, to NEC Corporation. Delayed-pulse generator having means for stabilizing the charging current. 5,384,505, Cl. 327-262.000.
Takahashi, Tsutomu, to Canon Kabushiki Kaisha. Document processing apparatus that magnifies only black portions of characters. 5,383,730, Cl. 400-76.000.
Takahata, Kazunori: *See*—
Tanaka, Masahide; Fujimoto, Tadaaki; and Takahata, Kazunori, 5,384,056, Cl. 252-56.00R.
Takai, Hisashi; and Kido, Tsutomu, to Mitsui Petrochemical Industries, Ltd.; and Uni-Charm Corporation. Liquid-permeable topsheet for body fluid absorptive goods. 5,383,870, Cl. 604-378.000.
Takai, Hitoshi: *See*—
Date, Masashi; Sumiya, Takashi; and Takai, Hitoshi, 5,384,368, Cl. 525-186.000.
Takami, Nobuo; Sugihara, Kazuyuki; Maruta, Takayuki; Nojima, Kazuo; Sawayama, Noboru; Yoshimatsu, Kaoru; Watabe, Katsuji; and Yoneda, Takuji, to Ricoh Company, Ltd. Developing device for image forming equipment. 5,384,628, Cl. 355-259.000.
Takanaka, Masao, to Mitsubishi Denki Kabushiki Kaisha. Undulator where the wavelength of the radiation light is changed by varying the frequency of the electromagnetic wave travelling in the waveguide. 5,384,794, Cl. 372-2.000.
Takano, Hiroshi; and Asai, Takeshi, to Komori Corporation. Apparatus for mounting plate on plate cylinder. 5,383,402, Cl. 101-415.100.
Takano, Kouzou: *See*—
Shimamune, Minoru; Ito, Takuo; Negishi, Takao; and Takano, Kouzou, 5,384,882, Cl. 385-116.000.
Takano, Masahisa: *See*—
Oishi, Katsumi; and Takano, Masahisa, 5,384,718, Cl. 364-569.000.
Takaoka, Shigekazu; and Tsujimoto, Kazushi, to Daifuku Co., Ltd. Multi-deck parking structure. 5,383,757, Cl. 414-240.000.
Takasaki, Naruto: *See*—
Tanaka, Yutaka; and Takasaki, Naruto, 5,384,905, Cl. 395-143.000.
Takasaki, Yukio: *See*—
Sameshima, Kenji; Makishima, Tatsuo; Hirai, Tadaaki; Takasaki, Yukio; Kubota, Misao; Tanioka, Kenkichi; and Shidara, Keiichi, 5,384,597, Cl. 348-325.000.
Takashima, Hiroshi: *See*—
Sumida, Hiroyasu; Itabashi, Akihisa; Fukano, Hiroshi; Shijo, Hiroyasu; Takashima, Hiroshi; Ogiwara, Takeshi; and Kishi, Fumio, 5,383,754, Cl. 412-11.000.
Takata Corporation: *See*—
Hiruta, Mitsuhiko; Yoshida, Ryoichi; Nishizawa, Muneo; and Hiramatsu, Koji, 5,383,623, Cl. 242-374.000.
Kamiyama, Misao; and Zeze, Kazuo, 5,383,713, Cl. 297-471.000.
Takato, Hiroshi: *See*—
Aoki, Masami; and Takato, Hiroshi, 5,384,280, Cl. 437-67.000.
Takayama, Jun: *See*—
Yoshioka, Junichi; Okihara, Daijiro; Yamauchi, Chiaki; Watanabe, Takashi; Nakajima, Toshiya; Ichikawa, Madoka; Takayama, Jun; Iseno, Akihiro; Ninomiya, Takeshi; and Hamada, Shinji, 5,384,673, Cl. 360-72.200.
Takeda, Isoshi; and Hayashi, Shigeyoshi, to Rohm Co., Ltd. Voltage control oscillation circuit. 5,384,553, Cl. 331-111.000.
Takehara, Yoshifumi; Hayakawa, Kimiaki; and Ueda, Noriyoshi, to Canon Kabushiki Kaisha. Sheet post-processing apparatus having trays for receiving sets of sheets. 5,384,634, Cl. 355-323.000.
Takimoto, Akio; Tanaka, Yukio; Asayama, Junko; Akiyama, Koji; Kurstomi, Yasunori; and Ogawa, Hisahito, to Matsushita Electric Industrial Co., Ltd. Liquid crystal spatial light modulator with electrically isolated reflecting films connected to electrically isolated pixel portions of photo conductor. 5,384,649, Cl. 359-67.000.
Takubo, Yoshinori: *See*—
Shimoda, Mitsugi; Hatori, Hiroaki; Takubo, Yoshinori; Masuda, Takashi; and Takada, Hirokazu, 5,383,277, Cl. 33-18.100.
Tam, Nelson N.: *See*—
Dao, Giang T.; De Qian, Qi; Tam, Nelson N.; Gaw, Eng T.; and Fujimoto, Harry H., 5,384,219, Cl. 430-5.000.
Tamaki, Kenji: *See*—
Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, 5,384,522, Cl. 318-371.000.
Tambo, Fumiaki, to Fuji Xerox Co., Ltd. Tungsten oxide film, process for producing same and electrochromic device using same. 5,384,157, Cl. 427-126.300.
Tambo, Fumiaki: *See*—
Sato, Katsuhiro; Torikoshi, Kaoru; Tanaka, Hiroyuki; Tambo, Fumiaki; and Akasaki, Yutaka, 5,384,076, Cl. 252-518.000.
Tamglass Engineering Oy: *See*—
Montonen, Jori, 5,383,947, Cl. 65-25.400.
Tami, Mark G. Sight guard sight. 5,383,279, Cl. 33-265.000.
Tamiwa, Takeshi: *See*—
Iwatsuka, Yoshihisa; and Tamiwa, Takeshi, 5,383,270, Cl. 29-840.000.
Tamrock Oy: *See*—
Rinnemaa, Heikki, 5,383,524, Cl. 173-1.000.
Tamura, Hideyuki: *See*—
Sato, Hiroaki; Okutomi, Masatoshi; Yamamoto, Hiroyuki; Tamura, Hideyuki; and Okazaki, Hiroshi, 5,384,900, Cl. 395-100.000.
Tamura, Tetsuya: *See*—
Hassner, Martin A.; Karnin, Ehud D.; Schwiegelshohn, Uwe; and Tamura, Tetsuya, 5,384,567, Cl. 341-51.000.
Tan, Toshimi: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Maeno, Yoshimi; Suwa, Masateru; Kaneko, Ryoichi; Onoda, Takeshi; Kajiwara, Hidefumi; Watanabe, Yasuo; Takahashi, Shintaro; and Tan, Toshimi, 5,383,768, Cl. 416-241.00R.
Tanaka Denshi Kogyo Kabushiki Kaisha: *See*—
Ogashiwa, Toshinori, 5,384,090, Cl. 420-555.000.
Tanaka, Hideki: *See*—
Takagi, Shinji; Tanaka, Hideki; Kimura, Tatsuo; and Ashiwa, Jun, 5,384,587, Cl. 347-41.000.
Tanaka, Hiroyuki: *See*—
Sato, Katsuhiro; Torikoshi, Kaoru; Tanaka, Hiroyuki; Tambo, Fumiaki; and Akasaki, Yutaka, 5,384,076, Cl. 252-518.000.
Tanaka, Hitoshi: *See*—
Etoh, Jun; Nakagome, Yoshinobu; Tanaka, Hitoshi; Kawamoto, Koji; and Aoki, Masakazu, 5,384,740, Cl. 365-189.090.
Tanaka, Makoto: *See*—
Ono, Katsuhiro; Anno, Hidero; Kitami, Takayuki; Sugiura, Hiroyuki; and Tanaka, Makoto, 5,384,818, Cl. 378-132.000.
Tanaka, Masahide; Fujimoto, Tadaaki; and Takahata, Kazunori, to Mitsui Petrochemical Industries, Ltd. Polycarbonate and use thereof. 5,384,056, Cl. 252-56.00R.
Tanaka, Shigeki, to Sharp Kabushiki Kaisha. Sample and hold circuit. 5,384,496, Cl. 327-94.000.
Tanaka, Shinya: *See*—
Kimura, Kenji; Samizo, Motohiko; Tanaka, Shinya; Honda, Yukihiro; Sasaki, Manji; and Yachigo, Shinichi, 5,384,348, Cl. 524-103.000.
Tanaka, Tadashi; Sakamoto, Masaaki; and Sato, Yoshiaki, to Daido Metal Company Ltd. Multi-layer slide bearing having Al-Sn alloy layer with high fatigue strength and conformability. 5,384,205, Cl. 428-643.000.
Tanaka, Yukio: *See*—
Takimoto, Akio; Tanaka, Yukio; Asayama, Junko; Akiyama, Koji; Kuratomi, Yasunori; and Ogawa, Hisahito, 5,384,649, Cl. 359-67.000.
Tanaka, Yutaka; and Takasaki, Naruto, to Hitachi Software Engineering Co., Ltd. Method for tracing a line image by monitoring the distance between two trace base points. 5,384,905, Cl. 395-143.000.
Tandem Computers Incorporated: *See*—
Horst, Robert W., 5,384,906, Cl. 395-550.000.
Taniguchi, Akihisa, to Mitsubishi Denki Kabushiki Kaisha. Field effect transistor with T-shaped gate electrode. 5,384,479, Cl. 257-412.000.
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, masashi; and Onuma, Tsutomu, to Canon Kabushiki Kaisha. Toner for developing electrostatic image. 5,384,224, Cl. 430-106.000.
Tanimoto, Hiroshi: *See*—
Koyama, Mikio; and Tanimoto, Hiroshi, 5,384,501, Cl. 327-336.000.
Tanioka, Kenkichi: *See*—
Sameshima, Kenji; Makishima, Tatsuo; Hirai, Tadaaki; Takasaki, Yukio; Kubota, Misao; Tanioka, Kenkichi; and Shidara, Keiichi, 5,384,597, Cl. 348-325.000.
Tanizawa, Tetsu: *See*—
Tokuda, Hideo; and Tanizawa, Tetsu, 5,384,533, Cl. 324-158.100.
Tapping, Ian A.; and Colclough, Stephen H., to Chesilvale Electronics Limited. Programmable telephone. 5,384,842, Cl. 379-387.000.
Tarchi, Mauro: *See*—
Cardini, Giuseppe; Lombardi, Massimo; and Tarchi, Mauro, 5,383,619, Cl. 242-7.05B.

Tashiro, Tsukasa; Hayashi, Shigeo; Miyazaki, Toshiyuki; and Sogo, Norihito, to Totoku Electric Co., Ltd.; and Kaga Electronics Co. Ltd. CRT display device. 5,384,576, Cl. 345-3.000.
Tatham, Tom E.: *See*—
Anderson, Gordon K.; Kreymer, Naum; and Tatham, Tom E., 5,383,335, Cl. 62-89.000.
Taylor, Clarence R. Combination golf ball pick-up and teeing device. 5,383,659, Cl. 273-32.00B.
Taylor, Joe, to Novacor Chemicals, Ltd. Degradable films. 5,384,183, Cl. 428-216.000.
Taylor, John A.: *See*—
Gregory, Peter; Kenyon, Ronald W.; Mistry, Prahalad M.; and Taylor, John A., 5,383,960, Cl. 106-22.00K.
TCNL Technologies, Inc.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 5,383,450, Cl. 128-206.230.
TDK Corporation: *See*—
Noro, Tetsuya; Itoh, Masahiko; Ohyama, Nobuya; Kanai, Hiroshi; and Ishizuka, Masaharu, 5,384,432, Cl. 174-117.0FF.
Teague, Jim C., to Hydro-Chem Systems, Inc. Radio controlled spraying device. 5,383,605, Cl. 239-526.000.
Techniweave, Inc.: *See*—
Burgess, Keith E., 5,384,044, Cl. 210-346.000.
Technophone Limited: *See*—
Elms, Andrew, 5,384,782, Cl. 371-2.100.
Tecumseh Products Company: *See*—
Richardson, Hubert, Jr.; and Gatecliff, George W., 5,383,772, Cl. 418-55.400.
Richardson, Hubert, Jr., 5,383,773, Cl. 418-57.000.
Teegarden, David M.: *See*—
Long, Timothy E.; Coltrain, Bradley K.; and Teegarden, David M., 5,384,192, Cl. 428-336.000.
Teel, James L.: *See*—
Gulliford, Philip; Imron, Wim; and Teel, James L., 5,384,776, Cl. 370-85.100.
Teel, James L., Jr.: *See*—
Downs, Stephen R.; Teel, James L., Jr.; and Herndon, Charles C., 5,384,854, Cl. 381-81.000.
Teets, David A.; and Salvador, Joseph D., Jr. Anchoring system for a three dimensional animal target. 5,383,671, Cl. 273-407.000.
Teijin Limited: *See*—
Hasegawa, Kinji; Asai, Takeo; and Murakami, Yoji, 5,384,354, Cl. 524-539.000.
Saiki, Noritsugu; Matsuki, Toshitsugu; and Hayashi, Masayuki, 5,384,184, Cl. 428-230.000.
Sato, Kazuhiko; Hagiwara, Tsuneo; and Yamaura, Michio, 5,384,215, Cl. 429-213.000.
Tejwani, Manu J.: *See*—
Chu, Jack C.; Hsu, Louis Lu-Chen; Mii, Toshio; Shepard, Joseph F.; Stiffler, Scott R.; Tejwani, Manu J.; and Vishnesky, Edward J., 5,384,152, Cl. 427-81.000.
TeKolste, Robert D.; and Sterling, Rodney D., to Hughes Aircraft Company. Light valve with twisted perpendicular liquid crystal with a negative dielectric anisotropy. 5,384,650, Cl. 359-77.000.
Tektronix, Inc.: *See*—
Kawabata, Frederick Y., 5,384,781, Cl. 371-1.000.
Teleflex Incorporated: *See*—
Boike, Randy J., 5,383,377, Cl. 74-502.000.
Flatten, Jeffrey J., 5,383,630, Cl. 244-118.600.
Telefunken: *See*—
Dickopp, Gerhard; Vaupel, Thomas; and Krahe, Detlef, 5,384,811, Cl. 375-122.000.
TeleRobotics International, Inc.: *See*—
Martin, H. Lee; and Kuban, Daniel P., 5,384,588, Cl. 348-15.000.
Telle, Lawrence B.: *See*—
Godahalk, Russell L.; Maslinski, Raymond E.; Muster, Frank L.; Telle, Lawrence B.; and Wetzel, Thomas J., 5,384,646, Cl. 358-448.000.
Temic Telefunken microelectronic GmbH: *See*—
Schairer, Werner; Angerstein, Jorg; Giebler, Siegfried; Riedel, Jurgen; and Mistele, Thomas, 5,384,471, Cl. 257-98.000.
Ten Eyck, John D.: *See*—
Lebold, Alan R.; and Ten Eyck, John D., 5,384,188, Cl. 428-383.000.
Tennant, Otho W.: *See*—
Gemmell, Linda M.; Tennant, Otho W.; and Gallucci, Robert R., 5,384,353, Cl. 524-494.000.
Teodoro, Donald J.: *See*—
Herrmann, Thomas R.; and Teodoro, Donald J., 5,383,988, Cl. 156-64.000.
Teowee, Gimtong; Boulton, Jonathan M.; and Uhlmann, Donald R., to United States of America, Air Force. Sol-gel derived lead oxide containing ceramics. 5,384,294, Cl. 501-134.000.
Terajima, Hisao: *See*—
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Awai, Takashi, 5,384,584, Cl. 346-76.0PH.
Teraoka, Hirohito; Hata, Kazuyuki; Miyamoto, Kunihiko; and Ishiwa, Kouji, to Toshiba Battery Co., Ltd. Paste-type electrode for alkali secondary cell. 5,384,216, Cl. 429-223.000.
Ter Meer, Hans U.: *See*—
Dyka, Andrew J.; Hart, Paul M.; and Ter Meer, Hans U., 5,384,141, Cl. 426-478.000.
Terrapin Technologies, Inc.: *See*—
Kauvar, Lawrence M., 5,384,263, Cl. 436-518.000.
Terrell, William M.: *See*—
Zipea, Duglas P.; Ulrich, Clare P.; Blankenau, Paul D.; and Terrell, William M., 5,383,922, Cl. 607-122.000.
Terry, Dralen T.: *See*—
Onan, David D.; Terry, Dralen T.; and Brake, Bobby G., 5,383,521, Cl. 166-293.000.
Teverovsky, Alexander; MacDonald, James C.; Pickering, Michael A.; and Kirsch, Jeffery L., to CVD, Inc. Process and apparatus for supplying zinc vapor continuously to a chemical vapor deposition process from a continuous supply of solid zinc. 5,383,969, Cl. 118-719.000.
Texaco Inc.: *See*—
Marrelli, John D.; Brost, Dale F.; Siddiqui, Farhan; Pepin, Lisa L.; and Stafford, Joseph D., 5,383,353, Cl. 73-61.430.
Su, Wei-Yang; Herbstman, Sheldon; Russo, Joseph M.; Zimmerman, Robert L.; and Cuscurida, Michael, 5,383,942, Cl. 44-334.000.
Texas A&M Univeristy System, The: *See*—
Lytton, Robert L., 5,384,715, Cl. 364-550.000.
Texas Instruments Incorporated: *See*—
Abbott, Donald C.; and Fritzsche, Robert M., 5,384,155, Cl. 427-125.000.
Cho, Chih-Chen, 5,384,795, Cl. 372-7.000.
Giolma, William H., 5,384,746, Cl. 365-225.700.
Golshan, Shahin; St. Martin, Craig A.; and Rhodine, Craig W., 5,384,488, Cl. 257-786.000.
Hutchins, Larry D.; and York, Rudy L., 5,384,267, Cl. 437-3.000.
Jagini, Shyam S., 5,384,724, Cl. 364-770.000.
Prysby, Daniel G.; and DiMarco, Matthew J., 5,384,816, Cl. 377-48.000.
Ying, Peter S., 5,384,288, Cl. 437-228.000.
Tezuka, Eiji: *See*—
Takado, Yutaka; Nakasato, Toshikazu; Nogata, Tetsuro; Tezuka, Eiji; and Yokoi, Toshio, 5,384,172, Cl. 428-35.700.
Thach, Chris H. Heart tool pendant. 5,383,343, Cl. 63-1.100.
Thacker, Gregory; and Thacker, Patsy. Duct brush. 5,383,243, Cl. 15-104.180.
Thacker, Patsy: *See*—
Thacker, Gregory; and Thacker, Patsy, 5,383,243, Cl. 15-104.180.
Therakos, Inc.: *See*—
Edelson, Richard L., 5,383,847, Cl. 604-6.000.
Theusner, Joachim: *See*—
Kubein-Meesenburg, Dietmar; and Nageri, Hans, 5,383,936, Cl. 623-19.000.
Thibert, Daniel G., to Eastman Kodak Company. Interface device between a feeding device and a receiving station for photographic material. 5,383,591, Cl. 226-108.000.
Thomas, Charles L.: *See*—
Bur, Anthony J.; Wang, Francis W.; Thomas, Charles L.; and Rose, Joseph L., 5,384,079, Cl. 264-21.000.
Thomas, Huw K.; Carolin, Roger A.; Erhardt, Heinrich S.; and McConnell, Christopher F., to CFMT, Inc. Static megasonic cleaning system for cleaning objects. 5,383,484, Cl. 134-184.000.
Thomas J. Lipton Co., Division of Conopco, Inc.: *See*—
Dyka, Andrew J.; Hart, Paul M.; and Ter Meer, Hans U., 5,384,141, Cl. 426-478.000.
Thomas, Nathaniel. Stand for large screen television sets. 5,383,721, Cl. 312-7.200.
Thomas, Paul: *See*—
Falossi, Aldo; and Thomas, Paul, 5,383,795, Cl. 439-362.000.
Thomas, Philip M.: *See*—
Grocock, Peter G.; and Thomas, Philip M., 5,383,515, Cl. 164-480.000.
Thomas, Timothy N.; and Schladetzky, Robert P. Bicycle body support apparatus. 5,383,677, Cl. 280-288.400.
Thommel, Jurgen: *See*—
Smolnik, Heinz-Dieter; and Thommel, Jurgen, 5,384,035, Cl. 210-635.000.
Thompson, Dale G., Jr.: *See*—
Tachibana, Takeshi; Thompson, Dale G., Jr.; and Glass, Jeffrey T., 5,384,470, Cl. 257-77.000.
Thomson-CSF: *See*—
Pocholle, Jean-Paul; Breteau, Jean-Marc; Papuchon, Michel; and Puech, Claude, 5,384,801, Cl. 372-43.000.
Sagnes, Olivier; DuBois, Jean-Claude; Massardier, Valerie; van Hoang, Tran; and Guyot, Alain, 5,384,392, Cl. 528-380.000.
Thorman, Christopher S.; Swartzendruber, James A.; and O'Toole, Frank K., to Deere & Company. Hydrostatic transmission coantrol structure. 5,383,376, Cl. 74-474.000.
Thornton, Robert L.: *See*—
Welch, David F.; Waarts, Robert G.; Major, Jo S.; Bringans, Ross D.; Fork, David K.; Connell, G. A. Neville; and Thornton, Robert L., 5,384,797, Cl. 372-23.000.
Thorsett, Eugene D.: *See*—
Barker, Peter L.; Burnier, John P.; and Thorsett, Eugene D., 5,384,309, Cl. 514-11.000.
Three Bond Co., Ltd.: *See*—
Hara, Osamu; and Nakajima, Kunihiko, 5,384,340, Cl. 522-99.000.
Thudium, Karl: *See*—
Michael, Wolfgang; Thudium, Karl; Kleman, Peter; Schumann, Burkhardt; Hofele, Hans; and Rieger, Walter, 5,383,348, Cl. 72-405.000.
Thunderbird Technologies, Inc.: *See*—
Vinal, Albert W., 5,384,730, Cl. 365-156.000.
Thuries, Edmond: *See*—
Ebersohl, Gerard; and Thuries, Edmond, 5,384,678, Cl. 361-62.000.

Thurston, Martin O.: *See*—
Arnold, Mark W.; and Thurston, Marlin O., 5,383,456, Cl. 128-653.100.

Thwaites, Michael J., to BOC Group plc, The. Sputtering apparatus. 5,384,021, Cl. 204-298.210.

Tibbles, Thomas T., to Ford Motor Company. Radio control valve for a continuously variable transmission. 5,383,812, Cl. 474-28.000.

Tice, Thomas R.: *See*—
Boyes, Robert N.; Tice, Thomas R.; Gilley, Richard M.; and Pledger, Kenneth L., 5,384,133, Cl. 424-501.000.

Tierney, John W.; Wender, Irving; and Palekar, Vishwesh M., to University of Pittsburgh. Methanol synthesis using a catalyst combination of alkali or alkaline earth salts and reduced copper chromite. 5,384,335, Cl. 518-700.000.

Tiers, George V.: *See*—
Stevenson, Dian E.; Kirk, Mark P.; Farnum, Sylvia A.; Frank, William C.; Helland, Randall H.; Kitchin, Jonathan P.,; Mader, Roger A.; Mizen, Mark B.; Newmark, Richard A.; Ramsden, William D.; Sakizadeh, Kumars; Spawn, Terence D.; and Tiers, George V., 5,384,237, Cl. 430-566.000.

TII Industries, Inc.: *See*—
Smith, Thomas J., 5,384,679, Cl. 361-119.000.

Timm, Heinrich: *See*—
Kreis, Gundolf; Timm, Heinrich; Eaning, Norbert; and Spies, Robert, 5,383,987, Cl. 156-60.000.

Timothy, Earle: *See*—
Smith, Christopher E.; and Timothy, Earle, 5,384,451, Cl. 235-462.000.

Timte, Frank W.: *See*—
El-Khoury, Joseph E.; Timte, Frank W.; Kuchta, Gerard P.; and League, Edmond R., 5,383,825, Cl. 477-149.000.

Ting, Albert C.: *See*—
Koch, Donald G.; Ting, Albert C.; and Chou, Jim-Son, 5,384,606, Cl. 351-158.000.

Tippmann, Dennis J. Pump action marking pellet gun. 5,383,442, Cl. 124-76.000.

Tipps, Barney A.: *See*—
Coleman, John E.; Tipps, Barney A.; and Hotowski, Peter, 5,383,756, Cl. 412-38.000.

Tkatchouk, Elena N.; Tsyganova, Tatiana N.; and Staebler, Regula, to Tradotec, S.A. Apparatus for producing a hypoxic gaseous mixture using hollow fibers of poly-4-methyl-penthene-1. 5,383,448, Cl. 128-205.110.

Toa Medical Electronics Co., Ltd.: *See*—
Ootani, Toshihiro; and Izumi, Takayoshi, 5,384,093, Cl. 422-63.000.

Toda, Masaaki: *See*—
Ohuchida, Shuichi; Toda, Masaaki; and Miyamoto, Tsumoru, 5,384,414, Cl. 549-389.000.

Todd, James S.: *See*—
Zimmerman, Richard C.; Alberte, Randall S.; Todd, James S.; and Crews, Phillip, 5,384,176, Cl. 428-68.000.

Tokico Ltd.: *See*—
Uchiyama, Masaaki; Nakamura, Kenichi; Nezu, Takashi; and Ozaki, Hidekatsu, 5,384,706, Cl. 364-424.050.

Tokuda, Hideo; and Tanizawa, Tetsu, to Fujitsu Limited. Testing method, testing circuit and semiconductor integrated circuit having testing circuit. 5,384,533, Cl. 324-158.100.

Tokui, Akira; and DeBeeck, Maria O., to Mitsubishi Denki Kabushiki Kaisha. Photomask and pattern transfer method for transferring a pattern onto a substrate having different levels. 5,384,218, Cl. 430-5.000.

Tokumoto, Yuichi: *See*—
Ohyama, Kyuichi; Shimada, Giichi; Tokumoto, Yuichi; and Sakamoto, Kazuo, 5,384,426, Cl. 560-247.000.

Tokumura, Hiroshi: *See*—
Kamioka, Nobuo; Tokumura, Hiroshi; and Yoshino, Toru, 5,384,344, Cl. 523-149.000.

Tokutake, Nobuo: *See*—
Doi, Kouske; Niikura, Satoshi; Tokutake, Nobuo; Kohara, Hidekatsu; and Nakayama, Toshimasa, 5,384,228, Cl. 430-192.000.

Tokutu, Harunori, to Ishida Co., Ltd. Weight checker-sorter. 5,383,561, Cl. 209-645.000.

Tokuyama, Mitsuru: *See*—
Ohashi, Kunio; Kinashi, Hiroshi; and Tokuyama, Mitsuru, 5,384,623, Cl. 355-207.000.

Tokyo Electron Kabushiki Kaisha: *See*—
Ishimori, Takashi, 5,383,783, Cl. 432-253.000.

Tokyo Electron Limited: *See*—
Shimada, Yutaka; Kato, Hitoshi; Kakizaki, Junichi; Aoki, Kazutugu; Mori, Haruki; and Shiotsuki, Tatsuo, 5,383,984, Cl. 156-345.000.

Tokyo Electron Tohoku Kabushiki Kaisha: *See*—
Ishimori, Takashi, 5,383,783, Cl. 432-253.000.

Tokyo Electron Tohoku Limited: *See*—
Shimada, Yutaka; Kato, Hitoshi; Kakizaki, Junichi; Aoki, Kazutugu; Mori, Haruki; and Shiotsuki, Tatsuo, 5,383,984, Cl. 156-345.000.

Tokyo Ohka Kogyo Co., Ltd.: *See*—
Doi, Kouske; Niikura, Satoshi; Tokutake, Nobuo; Kohara, Hidekatsu; and Nakayama, Toshimasa, 5,384,228, Cl. 430-192.000.

Tollum, Ronald E., to Wangtek, Inc. Magnetic recording system with pulse qualification and error correction circuitry. 5,384,790, Cl. 371-40.100.

Tomaka, Leonard P.; and Dreyfus, Larry M. Combination tray, bed tray and bathroom tray. 5,383,411, Cl. 108-129.000.

Tomietto, Thierry: *See*—
Bossaert, Jean; Bodelet, Philippe; and Tomietto, Thierry, 5,384,602, Cl. 348-628.000.

Tomita, Hiroyoshi; Yanagisawa, Makoto; and Kodama, Yukinori, to Fujitsu Limited. Semiconductor memory device having a capability for controlled activation of sense amplifiers. 5,384,726, Cl. 365-63.000.

Tomita, Hiroyoshi, to Fujitsu Limited. Semiconductor memory device having ECC circuit for decreasing the number of common bus lines to realize large scale integration and low power consumption. 5,384,789, Cl. 371-40.100.

Tomiyoshi, Rikio: *See*—
Nakamura, Kazumitsu; and Tomiyoshi, Rikio, 5,384,466, Cl. 250-492.220.

Tomoda, Akihiro: *See*—
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Awai, Takashi, 5,384,584, Cl. 346-76.0PH.

Tomoegawa Paper Co., Ltd.: *See*—
Kaburaki, Yoshiaki, 5,384,190, Cl. 428-323.000.
Oki, Tomio; and Iwamoto, Kiyoshi, 5,384,180, Cl. 428-195.000.

Tonen Chemical Corporation: *See*—
Takado, Yutaka; Nakasato, Toshikazu; Nogata, Tetsuro; Tezuka, Eiji; and Yokoi, Toshio, 5,384,172, Cl. 428-35.700.

Tong, Robert; Poplett, James M.; Goodwin, Mark L.; Anderson, Ronald L.; and Nelson, James P., to Pinnacle Research Institute, Inc. Screen printing of microprotrusions for use as a space separator in an electrical storage device. 5,384,685, Cl. 361-503.000.

Toray Industries, Inc.: *See*—
Shimamune, Minoru; Ito, Takuo; Negishi, Takao; and Takano, Kouzou, 5,384,882, Cl. 385-116.000.

Toren Consulting Pty Limited: *See*—
Toren, Thomas, 5,383,559, Cl. 206-533.000.

Toren, Thomas, to Toren Consulting Pty Limited. Dispensing container for tablets. 5,383,559, Cl. 206-533.000.

Torii, Katsutoshi: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,384,365, Cl. 525-105.000.

Torii, Yasuhiro: *See*—
Shouai, Masami; Torii, Yasuhiro; and Iwamura, Kohji, 5,383,532, Cl. 180-269.000.

Torikoshi, Kaoru: *See*—
Sato, Katsuhiro; Torikoshi, Kaoru; Tanaka, Hiroyuki; Tambo, Fumiaki; and Akasaki, Yutaka, 5,384,076, Cl. 252-518.000.

Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, to Honda Giken Kogyo Kabushiki Kaisha. Braking control system for an electric vehicle. 5,384,522, Cl. 318-371.000.

Torres, Robert J., to International Business Machines Corporation. Method and apparatus for facilitating operator reconfiguration of a graphical user interface in a data processing system. 5,384,910, Cl. 395-156.000.

Toshiba Battery Co., Ltd.: *See*—
Teraoka, Hirohito; Hata, Kautyuki; Miyamoto, Kunihiko; and Ishiwa, Kouji, 5,384,216, Cl. 429-223.000.

Tosin, Maurizio: *See*—
Bastioli, Catia; Bellotti, Vittorio; Romano, Giancarlo; and Tosin, Maurizio, 5,384,170, Cl. 428-34.100.

Tosoh Corporation: *See*—
Inahara, Kiyoshi; and Yano, Akihiro, 5,384,298, Cl. 502-104.000.
Inoue, Hiroshi; and Ise, Tamotsu, 5,384,196, Cl. 428-411.100.
Miyata, Hiroshi; Inoue, Hiroshi; and Akimoto, Akira, 5,384,391, Cl. 428-377.000.

Totakura, Nagabhushanam, to United States Surgical Corporation. Dimethylsiloxane-alkylene oxide copolymer coatings for filaments. 5,383,903, Cl. 606-228.000.

Totakura, Nagabhushanam; and Muth, Ross, to United States Surgical Corporation. Stiffened surgical device. 5,383,904, Cl. 606-228.000.

Toto Ltd.: *See*—
Kitabayashi, Tetsuo; and Watanabe, Toshiya, 5,384,681, Cl. 361-234.000.
Watanabe, Toshiya; and Kitabayashi, Tetsuo, 5,384,682, Cl. 361-234.000.

Totoku Electric Co., Ltd.: *See*—
Tashiro, Tsukasa; Hayashi, Shigeo; Miyazaki, Toshiyuki; and Sogo, Norihito, 5,384,576, Cl. 345-3.000.

Tou, Julius T. Method for self-correction of grammar in machine translation. 5,384,702, Cl. 364-419.080.

Toutaoui, Mustapha: *See*—
Ernecke, Christoph M.; Barten, Michael; and Toutaoui, Mustapha, 5,384,439, Cl. 187-316.000.

Tovey, H. Jonathan: *See*—
Zvenyatsky, Boris; Aranyi, Ernest; and Tovey, H. Jonathan, 5,383,888, Cl. 606-206.000.

Town, Michael-Harold: *See*—
Berry, Michael N.; Town, Michael-Harold; Kresse, Georg-Burkhard; and Herrmann, Uwe, 5,384,246, Cl. 435-22.000.
Berry, Michael N.; Town, Michael-Harold; Kresse, Georg-Burkhard; and Hermann, Uwe, 5,384,247, Cl. 435-22.000.

Toyama, Toshiyuki; Yamamoto, Yasushi; Uematsu, Takahiro; and Masuda, Masanori, to Daikin Industries, Ltd. Rotary compressor having blade integrated in roller. 5,383,774, Cl. 418-66.000.

Toyne, Kenneth J.: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.;

Jackson, Adam; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; and Samra, Amarjit K., 5,384,071, Cl. 252-299.630.

Toyoda Gosei Co., Ltd.: *See*—
Nagata, Atsushi; Koyama, Toru; and Nagata, Norinari, 5,383,682, Cl. 280-777.000.
Okada, Masayasu, 5,383,701, Cl. 296-146.900.

Toyoda, Hitoshi: *See*—
Komurasaki, Toshi; Toyoda, Hitoshi; Uchida, Daisuke; and Hanada, Kazunori, 5,384,394, Cl. 530-324.000.

Toyofuku, Kunitaka: *See*—
Nishimura, Masaki; and Toyofuku, Kunitaka, 5,384,303, Cl. 503-209.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Inagaki, Shoji; and Tagawa, Shinichi, 5,384,705, Cl. 364-424.050.
Ogawa, Shinji; Kanoe, Tomoyuki; and Horiuchi, Yusuke, 5,383,375, Cl. 74-330.000.
Taguchi, Masahiro; Hayashi, Yoshiro; Masuda, Ryuichi; and Ekino, Yoshio, 5,383,514, Cl. 164-255.000.
Takado, Yutaka; Nakasato, Toshikazu; Nogata, Tetsuro; Tezuka, Eiji; and Yokoi, Toshio, 5,384,172, Cl. 428-35.700.

Tracy, Keith P.; and Chase, William E. Modular carrier system for elongate articles. 5,383,589, Cl. 224-324.000.

Tradotec, S.A.: *See*—
Tkatchouk, Elena N.; Tsyganova, Tatiana N.; and Staebler, Regula, 5,383,448, Cl. 128-205.110.

Trail, George C.; and Brush, Jay P., to Hoechst Celanese Corporation. Apparatus for analyzing polymer defects. 5,383,776, Cl. 425-135.000.

Traitler, Helmut: *See*—
Chmiel, Oliver; and Traitler, Helmut, 5,384,256, Cl. 435-198.000.

Tran, Bao Q.: *See*—
Hsu, Sawyer C.; Tran, Bao Q.; and Wang, Robert T., 5,383,793, Cl. 439-327.000.

Transitions Optical, Inc.: *See*—
Knowles, David B., 5,384,077, Cl. 252-586.000.

Trantham, John M.: *See*—
Golestan, Farhad; and Trantham, John M., 5,383,489, Cl. 137-504.000.

Trepka, William J.; Stacy, Nathan E.; and Moczygemba, George A., to Phillips Petroleum Company. Conjugated diene/monovinylarene copolymers and preparation thereof. 5,384,349, Cl. 524-111.000.

Tri-Mark Metal Corporation: *See*—
Dixon, James M., 5,383,445, Cl. 126-110.00R.

Triantafyllos, George: *See*—
Vassiliadis, Stamatis; Kobrosly, Walid; and Triantafyllos, George, 5,384,894, Cl. 395-61.000.

Trinh, Toan, to Proctor & Gamble Company, The. Non-destructive carriers for cyclodextrin complexes. 5,384,186, Cl. 428-240.000.

Trinks, Rainer; Ganster, Otto; and Konigshofen, Heinrich, to Bayer Aktiengesellschaft. Two-component polyurethane reactive compositions. 5,384,385, Cl. 528-52.000.

Trivedi, Ajit K.: *See*—
Davis, Charles R.; Duffy, Thomas P.; Hanakovic, Steven L.; Heck, Howard L.; Kolias, John T.; Kresge, John S.; Light, David N.; and Trivedi, Ajit K., 5,384,690, Cl. 361-789.000.

Trombola, Daniel M.: *See*—
Meuschke, Robert E.; and Trombola, Daniel M., 5,384,812, Cl. 376-260.000.

Trop, Harvey S.: *See*—
Grady, Alfred J., Jr.; Lal, Sudarshan; Mitchell, Mary J.; Okinaka, Yutaka; Smith, Craig G.; Trop, Harvey S.; and Wang, Chwan-Tsann, 5,384,153, Cl. 427-98.000.

Truty, Thomas J.; French, Jule L.; and Newell, Kevin M., to Basix Technologies Ltd. Sleeve forming wire passageway around pickup. 5,384,444, Cl. 219-69.120.

TRW Inc.: *See*—
Vance, Jack E.; Luce, Gerald J., deceased; Adair, Robert L., Jr.; and Champney, Clark B., 5,383,741, Cl. 403-383.000.

Tsai, Howard S.: *See*—
Isidoro, Alessandro L.; and Tsai, Howard S., 5,384,771, Cl. 370-58.200.

Tsai, Tzu-Jan J. Toy glider with adjustable flying path. 5,383,805, Cl. 446-66.000.

Tsang, Soddy: *See*—
Sands, Mark D.; Schwandt, Daniel A.; Tsang, Soddy; and Williams, Wes A., 5,383,828, Cl. 482-54.000.

Tsao, Fu-Pao, to Ciba-Geigy Corporation. Contact lens case. 5,383,550, Cl. 206-5.100.

Tsao, Ying-Yen P., to Mobil Oil Corporation. Thermally stable noble metal-container zeolite catalyst. 5,384,296, Cl. 502-66.000.

Tschirch, Richard P.: *See*—
Dawn, Frederic S.; Guy, Walter W.; Kosmo, Joseph J.; Drennan, Arthur P.; and Tschirch, Richard P., 5,384,083, Cl. 264-130.000.

Tseng, Dennis, to Silitek Corporation; and Tseng, Dennis. Encoder with a light emitting editing wheel. 5,384,460, Cl. 250-231.140.

Tseng, Shiaw C.; Berisko, Daniel W.; and Babu, Manyam, to Dravo Lime Company. Magnesium-enhanced lime scrubbing of sulfur dioxide with production of a high solids content sludge. 5,384,111, Cl. 423-242.100.

Tsubakimoto Chain Co.: *See*—
Odai, Nobuhiro, 5,383,813, Cl. 474-110.000.

Tsuboi, Shinichi: *See*—
Shiokawa, Kozo; Tsuboi, Shinichi; Moriya, Koichi; Hosoda, Ikuro; Hattori, Yumi; and Shibuya, Katsuhiko, 5,384,324, Cl. 514-365.000.

Tsuchiya, Yoshiro: *See*—
Yokomizo, Takao; Kobayashi, Hiroo; Yagi, Tadashi; Yukimachi, Hiroshi; Azeda, Takahiro; Tsuchiya, Yoshiro; Moritani, Toshifumi; Ohtsuka, Masahito; Waragai, Tsuyoshi; and Miyake, Hiroaki, 5,384,619, Cl. 355-200.000.

Tsuda, Yukio, to Kabushiki Kaisha Toshiba. Electrophotographic recording device. 5,384,591, Cl. 346-154.000.

Tsuji, Hiroshi, to Asahi Glass Company Ltd. Method for bending and laminating a pair of glass plates. 5,383,990, Cl. 156-102.000.

Tsuji, Kenji; Fujino, Akihiko; Ichikawa, Tsutomu; Seki, Reiji; and Okada, Hiroyuki, to Minolta Camera Kabushiki Kaisha. Camera system capable of wireless flash photographing. 5,384,611, Cl. 354-131.000.

Tsujihashi, Kumiko; Tsujihashi, Yoshiki; and Shinohara, Hirofumi, to Mitsubishi Denki Kabushiki Kaisha. Multiport memory device and an operation method thereof. 5,384,734, Cl. 365-189.040.

Tsujihashi, Yoshiki: *See*—
Tsujihashi, Kumiko; Tsujihashi, Yoshiki; and Shinohara, Hirofumi, 5,384,734, Cl. 365-189.040.

Tsujimoto, Kazushi: *See*—
Takaoka, Shigekazu; and Tsujimoto, Kazushi, 5,383,757, Cl. 414-240.000.

Tsukamoto, Hideharu: *See*—
Uehara, Seigo; and Tsukamoto, Hideharu, 5,383,625, Cl. 242-572.000.

Tsunoda, Tetsujiro, to Kabushiki Kaisha Toshiba. Intelligent power device module. 5,384,683, Cl. 361-313.000.

Tsuruoka, Ichiro: *See*—
Kurotori, Tsuneo; Mochizuki, Manabu; Ariyama, Kenzo; Kojima, Kenji; Tsuruoka, Ichiro; Echigo, Katsuhiro; and Miyao, Mayumi, 5,384,225, Cl. 430-116.000.

Tsuruta, Kazuhiro: *See*—
Katada, Mitsutaka; Tsuruta, Kazuhiro; Fujino, Seiji; and Onoda, Michitoshi, 5,383,993, Cl. 156-153.000.

Tsyganova, Tatiana N.: *See*—
Tkatchouk, Elena N.; Tsyganova, Tatiana N.; and Staebler, Regula, 5,383,448, Cl. 128-205.110.

Tucker, James C.; Winslow, Donald W.; Walter, Jeffrey S.; and Schwegman, Steven L., to Halliburton Company. Coiled tubing inflatable packer with circulating port. 5,383,520, Cl. 166-142.000.

Tufano, Anthony: *See*—
Balaban, David B.; and Tufano, Anthony, 5,384,441, Cl. 200-339.000.

Tuggle, Lloyd H.; Collins, Imack L.; and Sadler, Jeffrey G., to WCI Outdoor Products, Inc. Two-cycle, air-cooled uniflow gasoline engine for powering a portable tool. 5,383,427, Cl. 123-51.0BA.

Tully, Wilfred R.: *See*—
Hambleton, Philip T.; Hedgecock, Charles J. R.; Kay, David P.; Kuo, Elizabeth A.; and Tully, Wilfred R., 5,384,423, Cl. 554-392.000.

Tunney, Scott E.; Rakes, Gary A.; and Coltrain, Bradley K., to Eastman Kodak Company. Organic/inorganic hybrid materials. 5,384,376, Cl. 525-431.000.

Turk, Peter I. C.: *See*—
Jung, Eugene J.; Keown, Kenneth; and Turk, Peter I. C., 5,383,853, Cl. 604-96.000.

Turner, Howard W.; Hlatky, Gregory G.; and Eckman, Richard R., to Exxon Chemical Patents Inc. Ionic metallocene catalyst compositions. 5,384,299, Cl. 502-155.000.

Turpin, Terry M., to Essex Corporation. Image synthesis using time sequential holography. 5,384,573, Cl. 342-179.000.

Tusick, Judith H.; and Johnson, Kent D., to Avery Dennison Corporation. Method and article for packaging paper and the like. 5,383,568, Cl. 220-606.000.

Tusques, Alain, to Schaeffer Magnetics, Inc. Joint assembly for power and signal coupling between relatively rotatable structures. 5,384,431, Cl. 174-117.00F.

Tuttle, Mark E.: *See*—
Doan, Trung T.; and Tuttle, Mark E., 5,384,284, Cl. 437-190.000.

Tyrell, John A.; and Smith, Gary F., to General Electric Company. Amine-functionalized polyester. 5,384,387, Cl. 528-292.000.

Uchida, Daisuke: *See*—
Komurasaki, Toshi; Toyoda, Hitoshi; Uchida, Daisuke; and Hanada, Kazunori, 5,384,394, Cl. 530-324.000.

Uchikata, Yoshio; and Ohnishi, Toshiyuki, to Canon Kabushiki Kaisha. Image recording apparatus having a ribbon drive slip clutch. 5,383,734, Cl. 400-227.200.

Uchiyama, Hiroshi: *See*—
Nishiwaki, Atsushi; Ikemiya, Norihito; Uchiyama, Hiroshi; Inagaki, Hideo; Sawada, Yasuo; and Ogino, Kazumi, 5,384,167, Cl. 427-569.000.

Uchiyama, Masaaki; Nakamura, Kenichi; Nezu, Takashi; and Ozaki, Hidekatsu, to Tokico Ltd. Suspension system for vehicle. 5,384,706, Cl. 364-424.050.

Ueda, Fumitaka; Nishigaki, Junji; and Ikegawa, Akihiko, to Fuji Photo Film Co., Ltd. Silver halide color photographic photosensitive materials. 5,384,234, Cl. 430-504.000.

Ueda, Hiromi: *See*—
Martin, Gary D.; and Ueda, Hiromi, 5,384,774, Cl. 370-82.000.

Ueda, Koichi; Kawarazaki, Yuzo; Shiba, Noriyuki; and Sato, Masayoshi, to Kabushikigaisha Tokyo Kikai Seisakusho. Multicolor lithographic rotary press. 5,383,393, Cl. 101-220.000.

Ueda, Masakatsu: *See*—
Kondo, Kunio; Kushida, Takahiro; and Ueda, Masakatsu, 5,383,983, Cl. 148-325.000.

Ueda, Nobuo: *See*—
Takahashi, Keietsu; Ueda, Nobuo; and Hazue, Masaaki, 5,384,401, Cl. 336-18.700.
Ueda, Noriyoshi: *See*—
Takehara, Yoshifumi; Hayakawa, Kimiaki; and Ueda, Noriyoshi, 5,384,634, Cl. 355-323.000.
Uegani, Kouji: *See*—
Kaneseki, Hiroyuki; Uegani, Kouji; and Nagao, Keishiro, 5,384,380, Cl. 526-292.900.
Uehara, Seigo; and Tsukamoto, Hideharu, to Sony Magnescale Inc. Reel holder for use in tape winding apparatus. 5,383,625, Cl. 242-572.000.
Uematsu, Takahiro: *See*—
Toyama, Toshiyuki; Yamamoto, Yasushi; Uematsu, Takahiro; and Masuda, Masanori, 5,383,774, Cl. 418-66.000.
Uemura, Tomoyoshi; Akamatsu, Yoshimi; Yoshida, Yuichi; and Moriwaki, Yoshikazu, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Biodegradable resin compositions and laminates based thereon. 5,384,187, Cl. 428-262.000.
Ueno, Katsunori, to Fuji Electric Co., Ltd. Method of producing silicon carbide MOSFET. 5,384,270, Cl. 437-40.000.
Uetake, Akihiro: *See*—
Kanota, Keiji; Inoue, Hajime; Uetake, Akihiro; Kawaguchi, Moriyuki; Kubota, Yukio; and Chiba, Kazunobu, 5,384,666, Cl. 360-32.000.
Uffelman, Erich: *See*—
Zhang, Xumu; Uffelman, Erich; and Collman, James P., 5,384,397, Cl. 540-143.000.
Uhling, Thomas F., to Hewlett-Packard Company. Bipolar test probe. 5,384,532, Cl. 324-754.000.
Uhlmann, Donald R.: *See*—
Teowee, Gimtong; Boulton, Jonathan M.; and Uhlmann, Donald R., 5,384,294, Cl. 501-134.000.
Ukima Colour & Chemicals Mfg. Co., Ltd.: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,384,365, Cl. 525-105.000.
Ulich, Bobby L.; Smith, Duane; and Keeler, R. Norris, to Kaman Aerospace Corporation. Spectrally dispersive imaging lidar system. 5,384,589, Cl. 348-31.000.
Ulrich, Clare P.: *See*—
Zipes, Dugias P.; Ulrich, Clare P.; Blankenau, Paul D.; and Terrell, William M., 5,383,922, Cl. 607-122.000.
Ultimate Power Products: *See*—
Peters, Richard E., 5,383,235, Cl. 2-115.000.
Umehara, Hisashi: *See*—
Shigeru, Mori; Tabei, Eiichi; and Umehara, Hisashi, 5,384,382, Cl. 528-15.000.
Uni-Charm Corporation: *See*—
Takai, Hisashi; and Kido, Tsutomu, 5,383,870, Cl. 604-378.000.
Union Oil Company of California: *See*—
Allen, William C., 5,384,355, Cl. 524-650.000.
Green, James A., II; and Young, Donald C., 5,384,329, Cl. 514-512.000.
Union Special Corporation: *See*—
Winter, Frank F.; and Karaba, James M., Jr., 5,383,414, Cl. 112-162.000.
Uniroyal Chemical Company, Inc.: *See*—
Lai, Kiong H.; Yu, Wan S.; and Davis, Robert A., 5,384,315, Cl. 514-231.500.
Uniroyal Chemical Ltd./Ltee: *See*—
Lai, Kiong H.; Yu, Wan S.; and Davis, Robert A., 5,384,315, Cl. 514-231.300.
Unisia Jecs Corporation: *See*—
Hisahara, Keiji, 5,383,770, Cl. 417-273.000.
Nakamura, Michiya; and Kakizaki, Shinobu, 5,383,679, Cl. 280-707.000.
Unisurge, Inc.: *See*—
Holmes, Jeffrey E.; and Christian, Jeffrey J., 5,383,895, Cl. 606-206.000.
Unisys Corporation: *See*—
Carlson, Robert H.; and Baker, Daniel L., 5,384,492, Cl. 307-147.000.
Heileman, David W., Jr.; Bennett, Tommy L.; Krucsi, Frederick C.; and Latimer, Robert A., 5,384,829, Cl. 379-67.000.
Swartz, Harry E., Jr., 5,384,490, Cl. 307-38.000.
United Microelectronics Corporation: *See*—
Hong, Gary, 5,384,478, Cl. 257-385.000.
Lur, Water; Chen, Ben; and Huang, Cheng H., 5,384,268, Cl. 437-20.000.
United Parcel Service of America, Inc.: *See*—
Smith, Christopher E.; and Timothy, Earle, 5,384,451, Cl. 235-462.000.
United States of America
Air Force: *See*—
Krawetz, Arthur A.; Klinsuttho, Pricha; Phan, Phat A.; and Phung, Quyet, 5,383,352, Cl. 73-54.010.
Teowee, Gimtong; Boulton, Jonathan M.; and Uhlmann, Donald R., 5,384,294, Cl. 501-134.000.
Army: *See*—
Choi, Kwong-Kit, 5,384,469, Cl. 257-21.000.
Skudera, William J., Jr., 5,384,545, Cl. 327-284.000.
Commerce: *See*—
Bur, Anthony J.; Wang, Francis W.; Thomas, Charles L.; and Rose, Joseph L., 5,384,079, Cl. 264-21.000.
Energy: *See*—
de Pruneda, Jean A. H., 5,383,981, Cl. 148-237.000.
Hazen, Terry C.; and Fliermans, Carl B., 5,384,048, Cl. 210-605.000.
Health and Human Services: *See*—
Gutkind, J. Silvio; and Robbins, Keith C., 5,384,243, Cl. 435-6.000.
National Aeronautics & Space Administration: *See*—
Dawn, Frederic S.; Guy, Walter W.; Kosmo, Joseph J.; Drennan, Arthur P.; and Tschirch, Richard P., 5,384,083, Cl. 264-130.000.
Navy: *See*—
Blier, Darren J.; and Jensen, Eric J., 5,384,751, Cl. 367-15.000.
Hilliard, Donald P.; and Mensa, Dean L., 5,384,458, Cl. 250-227.170.
Kidwell, David A.; and Conyers, Susan M., 5,384,265, Cl. 436-525.000.
Rogers, George W.; Solka, Jeffrey L.; Priebe, Carey E.; and Poston, Wendy L., 5,384,895, Cl. 395-23.000.
Sorathia, Usman A.; Houghton, Deborah A.; Owen, David P.; Pipyne, Markus R.; Jones, Wayne C.; Castelli, Vincent J.; Fischer, Eugene C.; Venkatachalam, Ravanasamudram S.; Loup, Douglas; and Stephenson, Carlisle R., 5,383,567, Cl. 220-4.130.
Wallingford, Errol E.; and DeNale, Robert, 5,383,366, Cl. 73-602.000.
U.S. Philips Corporation: *See*—
Bachmann, Peter; Leers, Dieter; and Wiechert, Detlef, 5,384,195, Cl. 428-408.000.
Chapman, Jeffrey A., 5,384,266, Cl. 437-21.000.
De Bakker, Johannes W. G.; Fokkink, Lambertus G. J.; Van Der Putten, Andreas M. T. P.; and Kox, Henricus A. M., 5,384,154, Cl. 427-123.000.
Muller, Ingo; Poganitsch, Ernst; and Rottig, Gilbert, 5,383,273, Cl. 30-43.920.
Rikken, Gerardus L. J. A.; and Venhuizen, Antonius H. J., 5,384,883, Cl. 385-122.000.
Stolmeijer, Andre ; Van Attekum, Paulus M. T. M.; Den Blanken, Hubertus; Van Der Plas, Paulus A.; and De Werdt, Reinier, 5,384,279, Cl. 437-57.000.
United States Surgical Corporation: *See*—
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Wnuk, Joseph; and Wargo, Lawrence T., 5,384,440, Cl. 200-5.00R.
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Andresen, Nord C.; DiGennaro, Richard S.; and Swain, Thomas L., 5,384,662, Cl. 359-894.000.
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Chu, Chung K.; and Chen, Yaoquan, 5,384,396, Cl. 536-27.140.
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Hoey, Michael; and Gehlbach, Peter, 5,383,873, Cl. 604-891.100.
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Galperin, Leonid B., 5,384,038, Cl. 208-138.000.
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Dean, Ralph T.; and Valentine, Richard D., 5,383,326, Cl. 53-556.000.
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Ilmarinen, Antti, 5,383,288, Cl. 34-392.000.
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Van Brunt, Roger; and Oprescu, Florin, to Apple Computer, Inc. Method and apparatus for transmitting NRZ data signals across an isolation barrier disposed in an interface between adjacent devices on a bus. 5,384,808, Cl. 375-36.000.
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Oprescu, Florin; and Van Brunt, Roger, 5,384,769, Cl. 370-24.000.
Vance, Carroll S.: *See*—
Rathmell, Claude; Vance, Carroll S.; Barnes, David W.; and Hashemi, Seyed H., 5,383,269, Cl. 29-830.000.
Vance, Gene: *See*—
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van de Merwe, Ronald H.: *See*—
Cottringer, Thomas E.; van de Merwe, Ronald H.; Bauer, Ralph; and Yarbrough, Walter A., 5,383,945, Cl. 51-309.000.
Van Den Berg, Henricus F. G. M., to Air New Zealand Limited. Engine mounting and transportation apparatus. 5,383,652, Cl. 269-17.000.
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Armour, David G.; England, Johnathan G.; Bryan, Neil; and Van der Berg, Jakob A., 5,384,465, Cl. 250-492.210.
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van der Lely, Cornelis. Implement for cleaning teats for milk-producing animals. 5,383,423, Cl. 119-158.000.
Van der Plas, Gert: *See*—
Van de Voorde, Ingrid Z. B.; Mestdagh, Denis J. G.; Van der Plas, Gert; Sierens, Christiaan H. J.; and Verbiest, Willem J. A., 5,384,651, Cl. 359-152.000.
Van Der Plas, Paulus A.: *See*—
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Van Der Putten, Andreas M. T. P.: *See*—
De Bakker, Johannes W. G.; Fokkink, Lambertus G. J.; Van Der Putten, Andreas M. T. P.; and Kox, Henricus A. M., 5,384,154, Cl. 427-123.000.
Van de Voorde, Ingrid Z. B.; Mestdagh, Denis J. G.; Van der Plas, Gert; Sierens, Christiaan H. J.; and Verbiest, Willem J. A., to Alcatel N.V. Optical transmission system. 5,384,651, Cl. 359-152.000.
Van Dongen, Richard A.: *See*—
Mandel, Barry P.; Kamprath, David R.; Barrientos, Francesca A.; Van Dongen, Richard A.; DeSanctis, Anthony T.; and Rizzolo, Charles D., 5,383,656, Cl. 271-258.000.
van Hoang, Tran: *See*—
Sagnes, Olivier; DuBois, Jean-Claude; Massardier, Valerie; van Hoang, Tran; and Guyot, Alain, 5,384,392, Cl. 528-380.000.
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Lynk, Charles N., Jr.; and Van Horn, Mark, 5,384,547, Cl. 330-136.000.
Van Loo, Brino A., to Stadium Design B.V. Packing for small objects with slider closure. 5,383,556, Cl. 206-338.000.
Vanolo, Pietro; Magnani, Alberto; Debbia, Emilio; Gugliesi, Claudio; Cencio, Luigi; and Gerbaudo, Luciano, to Fiat Ferroviaria S.p.A. Body structure for railway vehicles. 5,383,406, Cl. 105-401.000.
van Ouwerkerk, Cornelis: *See*—
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Vascor, Inc.: *See*—
Heilman, Marlin S.; Kolenik, Steve A.; Capone, Christopher D.; Parisi, Carl M.; Prem, Edward K.; and Speicher, Vernon L., 5,383,840, Cl. 600-17.000.
Vasseneix, Andre , to France, Denis. Method for the preservation of food compositions of the pancake, fritter and similar paste type. 5,384,139, Cl. 426-128.000.
Vassiliadis, Stamatis; Kobrosly, Walid; and Triantafyllos, George, to International Business Machines Corp. Fuzzy reasoning database question answering system. 5,384,894, Cl. 395-61.000.
Vaupel, Thomas: *See*—
Dickopp, Gerhard; Vaupel, Thomas; and Krahe, Detlef, 5,384,811, Cl. 375-122.000.
Vazelaire, Philippe. Modular unit for a tubular ultrasonic reactor. 5,384,508, Cl. 310-334.000.
Vecchione, Elizabeth J.; and Vecchione, J., Jr. Flexible display banner. 5,383,296, Cl. 40-604.000.
Vecchione, J., Jr.: *See*—
Vecchione, Elizabeth J.; and Vecchione, J., Jr., 5,383,296, Cl. 40-604.000.
Veillard, Michel: *See*—
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VeloBind, Inc.: *See*—
Coleman, John E.; Tipps, Barney A.; and Hotowski, Peter, 5,383,756, Cl. 412-38.000.
Venanzi, Luigi M.: *See*—
Karrer, Friedrich; Buser, Hans-Peter; Ramos, Gerardo; Riedlisbacher, Alfred; Venanzi, Luigi M.; and Ward, Thomas R., 5,384,416, Cl. 549-453.000.
Vengsarker, Ashish M.: *See*—
Cohen, Leonard G.; Moesle, Adolph H., Jr.; and Vengsarker, Ashish M., 5,384,635, Cl. 356-73.100.
Venhuizen, Antonius H. J.: *See*—
Rikken, Gerardus L. J. A.; and Venhuizen, Antonius H. J., 5,384,883, Cl. 385-122.000.
Venkatachalam, Ravanasamudram S.: *See*—
Sorathia, Usman A.; Houghton, Deborah A.; Owen, David P.; Pipyne, Markus R.; Jones, Wayne C.; Castelli, Vincent J.; Fischer, Eugene C.; Venkatachalam, Ravanasamudram S.; Loup, Douglas; and Stephenson, Carlisle R., 5,383,567, Cl. 220-4.130.
Venkatesan, Ramarathnam: *See*—
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Ventritex, Inc.: *See*—
Sweeney, Michael B.; and Echt, Debra S., 5,383,908, Cl. 607-5.000.
Verbera, Steven; and Sexton, Timothy C., to Anthony Manufacturing Corp. Vandal resistant part circle pop-up gear driven rotary irrigation sprinkler. 5,383,600, Cl. 239-205.000.
Verbiest, Willem J. A.: *See*—
Van de Voorde, Ingrid Z. B.; Mestdagh, Denis J. G.; Van der Plas, Gert; Sierens, Christiaan H. J.; and Verbiest, Willem J. A., 5,384,651, Cl. 359-152.000.
Vereinigte Drahtwerke A.G.: *See*—
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Verhaegen, Caspar: *See*—
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Vick, Doug M.: *See*—
Baxter, James T.; Vick, Doug M.; and Gibbs, George S., 5,383,765, Cl. 416-62.000.
Vinal, Albert W., to Thunderbird Technologies, Inc. Coincident activation of pass transistors in a random access memory. 5,384,730, Cl. 365-156.000.
Vincent, Michel; Remond, Georges; Portevin, Bernard; Herve, Yolande; Lepagnol, Jean; and de Nanteuil, Guillaume, to Adir et Compagnie. Nitrogen-containing bicyclic compounds and pharmaceutical compositions thereof. 5,384,322, Cl. 514-299.000.
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Vo, Howard Q.: *See*—
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Voigt, Bernard. Shock absorbing seat. 5,383,705, Cl. 297-211.000.
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Park, Joag W.; and Voldman, Steven H., 5,384,474, Cl. 257-304.000.
Volk, Andrew M., to Intel Corporation. Phase locked loop circuitry with split loop filter. 5,384,502, Cl. 327-157.000.
Volk, Thomas G.; Leschinger, Matthew; and Parkerson, Jimmy W., to Reliance Comm/Tec Corporation. Flood protection pedestal. 5,384,427, Cl. 174-38.000.

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Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Volz, Peter; Beck, Erhard; Maas, Joachim; Dinkel, Peter; and Risch, Stefan, 5,383,718, Cl. 303-113.200.

von Ballmoos, Roland: *See*—
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Vondracek, Petr; Lopour, Petr; and Sulc, Jiri , to Ceskoslovenska akademie ved. Rubbers swellable with water and aqueous solutions and the method for prodncing the same. 5,384,370, Cl. 525-209.000.

Vos, Eddy: *See*—
Woo, Ricky Ah-Man; Carrie, Michel J.; Cilley, William A.; Mastera, Ronald A.; Michael, Daniel W.; and Vos, Eddy, 5,384,063, Cl. 252-142.000.

Voss, Klaus-Peter: *See*—
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Vought Aircraft Company: *See*—
Wheetley, Michael J.; and Shelby, James W., 5,383,751, Cl. 408-1.00R.

Vreman, Hendrik J.; and Stevenson, David K., to Leland Stanford Junior University, Board of Trustees of the. Neonatal hemolysis detection using end-tidal breath sampler and analyzer apparatus. 5,383,469, Cl. 128-719.000.

Vu, Dai N.: *See*—
Buys, Rodney; Boulton, Michael L.; Pascaloff, John H.; Stalcup, Gregory C.; and Vu, Dai N., 5,383,875, Cl. 606-1.000.

Vu, Tuan M.; Krafton, Thomas J.; and Phipps, Alan M., to Gillette Company, The. Antiperspirant. 5,384,117, Cl. 424-66.000.

W. L. Gore & Associates, Inc.: *See*—
Spencer, Mark, 5,383,788, Cl. 439-67.000.

W. R. Grace & Co.-Conn.: *See*—
Brezny, Rasto, 5,384,290, Cl. 501-81.000.
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Wachi, Leslie S.; and Kelley, Jeremy J. Rope cinching device. 5,383,256, Cl. 24-71.100.

Wachter, William J.: *See*—
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Wacker Chemie GmbH: *See*—
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Wada, Norio: *See*—
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Wada, Satoshi: *See*—
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Waddell, John W., to Kvaerner Earl and Wright (a division of Kvaerner H&G Offshore Ltd.). Offshore structure and installation method. 5,383,748, Cl. 405-217.000.

Wade, Andrew E.: *See*—
Ogrinc, Michael A.; Card, Robert A.; Burns, Chris R.; Clarke, Charles P.; Collier, Ronda L.; Collins, Kevin M.; Crane, Stephen E.; Hersh, Clifford; Knittel, Brian C.; Mayer, Steven T.; Stead, Lawrence; Wade, Andrew E.; Lay, Robert L.; Stewart, Bradley G.; Pon, Raymond; Leyland, Robert; Schlag, John F.; and Jensen, Sven, 5,384,912, Cl. 395-164.000.

Waelput, Erik, to Waelput, Erik; Hollub, Peter; and Lentini, Joseph. System for cleaning internal combustion engines. 5,383,481, Cl. 134-56.00R.

Waggamon, Dennis W.; and Whitaker, Louis G., to GMI Holdings, Inc. Wiring error detector for door operator. 5,384,495, Cl. 307-326.000.

Wakabayashi, Norio: *See*—
Yumoto, Kazuhito; Wakabayashi, Norio; Nakazawa, Masao; Wakabayashi, Shinichi; Wada, Norio; Kuraishi, Fumio; and Shimada, Toshihiko, 5,384,204, Cl. 428-626.000.

Wakabayashi, Shinichi: *See*—
Yumoto, Kazuhito; Wakabayashi, Norio; Nakazawa, Masao; Wakabayashi, Shinichi; Wada, Norio; Kuraishi, Fumio; and Shimada, Toshihiko, 5,384,204, Cl. 428-626.000.

Wakamatsu, Kan; Wakata, Yuichi; Satomura, Masato; and Namiki, Tomizo, to Fuji Photo Film Co., Ltd. Image forming materials prepared using 2-diazo-1,2-asphthoquinone compounds having fluorine atom containing substituent groups. 5,384,227, Cl. 430-156.000.

Wakami, Noboru: *See*—
Araki, Shoichi; Noesura, Hiroyoshi; Wakami, Nobora; and Imasaka, Takeshi, 5,384,716, Cl. 364-557.000.

Wakata, Yuichi: *See*—
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Wakejima, Takaki: *See*—
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Wako Pure Chemical Industries, Ltd.: *See*—
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Walczyk, Wolfgang: *See*—
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Waldemar Link GmbH & Co.: *See*—
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Walker, Blair: *See*—
Miraki, Manouchehr; Walker, Blair; and Higgins, Sheryl W., 5,383,890, Cl. 606-194.000.

Walker, Marshall D. Nose bleed kid. 5,383,891, Cl. 606-196.000.

Wallingford, Errol E.; and DeNale, Robert, to United States of America, Navy. Ultrasonic two probe system for locating and sizing. 5,383,366, Cl. 73-602.000.

Walter, Jeffrey S.: *See*—
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Waltz, Dale A., to Interface Service Management, Inc. Method of carpet cleaning and maintenance. 5,383,972, Cl. 134-26.000.

Wamprecht, Christian; Meier-Westhues, Hans-Ulrich; Meixner, Jurgen; and Ruf, Gunter, to Bayer Aktiengesellschaft. Process for the production of hydroxy-functional copolymers. 5,384,358, Cl. 525-28.000.

Wang, Chwan-Tsann: *See*—
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Wang, Francis W.: *See*—
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Wang, Leao; and Wu, Peter, to Greenmaster Industrial Corp. Damping device for gymnastic apparatus. 5,383,819, Cl. 474-144.000.

Wang, Robert T.: *See*—
Hsu, Sawyer C.; Tran, Bao Q.; and Wang, Robert T., 5,383,793, Cl. 455-327.000.

Wang, Rongxiang: *See*—
Meezan, Elias; and Wang, Rongxiang, 5,384,128, Cl. 424-450.000.

Wang, Yi-Ping: *See*—
Chen, Ted M.; and Wang, Yi-Ping, 5,384,264, Cl. 436-525.000.

WangDAT, Inc.: *See*—
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Waagtek, Inc.: *See*—
Tollum, Ronald E., 5,384,790, Cl. 371-40.100.

Waragai, Tsuyoshi: *See*—
Yokomizo, Takao; Kobayashi, Hiroo; Yagi, Tadashi; Yukimachi, Hiroshi; Azeda, Takahiro; Tsuchiya, Yoshiro; Moritani, Toshifumi; Ohtsuka, Masahito; Waragai, Tsuyoshi; and Miyake, Hiroaki, 5,384,619, Cl. 355-200.000.

Ward, Harold R.; Woods, Jerry D.; and Williams, Roger A., to Eaton Corporation. Clutch control. 5,383,823, Cl. 477-86.000.

Ward Holding Company, Inc.: *See*—
Kowalewski, James M.; Kaplan, Solomon D.; and Katz, Boris M., 5,383,392, Cl. 101-183.000.

Ward, Thomas R.: *See*—
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Ward, William J.; and Philistin-Rabaud, Jil F., to Smith & Nephew plc. Adhesive sheet. 5,384,174, Cl. 428-40.000.

Wargo, Lawrence T.: *See*—
Wnuk, Joseph; and Wargo, Lawrence T., 5,384,440, Cl. 200-5.00R.

Warner, Charles E.; Cartwright, Richard W.; and Straughn, James M., to Fremark FEG Corporation. Method of operating a warewasher drain valve. 5,383,486, Cl. 137-15.000.

Warner, Donald: *See*—
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Warner-Lambert Company: *See*—
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Laborde, Edgardo; and Schroeder, Mel, 5,384,407, Cl. 544-298.000.
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Warner, Robert D.; Chin, Albert K.; and Stevens, Gail, to Origin Medsystems, Inc. Tethered everting balloon retractor for hollow bodies and method of using. 5,383,889, Cl. 606-192.000.

Warren, Michael A.: *See*—
Collins, Joseph L., Jr.; Warren, Michael A.; Demey, Charles F., III; and Marritt, Clifford R., 5,383,322, Cl. 53-53.000.

Waschinski, Klaus-Markus; Schmitz, Arno; and Rubartsch, Ute, to BASF Lacke + Farben Aktiengeseilschaft. Process for the preparation of closures for packaging containers. 5,384,169, Cl. 428-34.100.

Washburn, Robert D.: *See*—
Head, David A.; Washburn, Robert D.; and McClanahan, Robert F., 5,384,515, Cl. 313-607.000.

Washio, Yuuzi: *See*—
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Watabe, Katsuji: *See*—
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Watanabe, Etsuyo: *See*—
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Watanabe, Mamoru; and Fujii, Michihiro, to Fujitsu Limited. Developer cartridge and image forming apparatus using the same. 5,384,629, Cl. 355-260.000.

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Watanabe, Toshiya; and Kitabayashi, Tetsuo, to Toto Ltd. Electrostatic chuck. 5,384,682, Cl. 361-234.000.

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Watanabe, Yoshinori, to Molex Incorporated. Multi-fulcrum card ejecting mechanism. 5,383,789, Cl. 439-159.000.

Water-Jel Technologies, Inc.: *See*—
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Watkins, Robert L.: *See*—
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Watson, James A.: *See*—
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Watson, Randy C.; and Baiocchi, Richard L. Air pressure knee brace apparatus. 5,383,843, Cl. 602-13.000.

Watts, John D. Threaded tubular connection. 5,383,692, Cl. 285-239.000.

Watts, Ridley, to Patriot Packaging Corporation. Method and apparatus for making improved dunnage. 5,383,837, Cl. 493-352.000.

WCI Outdoor Products, Inc.: *See*—
Tuggle, Lloyd H.; Collins, Imack L.; and Sadler, Jeffrey G., 5,383,427, Cl. 123-51.0BA.

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Weaver, Max A.; Pruett, Wayne P.; Rhodes, Gerry; Hilbert, Samuel D.; and Parham, William W., to Eastman Chemical Company. Toners for polyesters. 5,384,377, Cl. 525-437.000.

Webb, George: *See*—
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Webb Industries: *See*—
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Webb, Karen K.: *See*—
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Webb, Philip S.; Messner, Andrew R.; Street, John A.; and Gardner, Richard S., to Sara Lee Corporation. Textile drying system. 5,383,289, Cl. 34-449.000.

Weber, James L.: *See*—
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Webster Laboratories, Inc.: *See*—
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Webster, Wilton W., Jr., to Webster Laboratories, Inc. Steerable catheter having puller wire with shape memory. 5,383,923, Cl. 607-125.000.

Weeks, Alton S., Sr. Adjustable trim strips for bathroom fixtures. 5,383,240, Cl. 4-584.000.

Wegener, Peter: *See*—
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Weimer, Alan W.; and Nilsen, Kevin J., to Dow Chemical Company, The. Carbothermal synthesis precursors. 5,384,291, Cl. 501-81.000.

Weingarten, Zvi, to Bermad. Diaphragm control valve. 5,383,646, Cl. 251-61.100.

Weinhardt, Rudiger: *See*—
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Weinmeier, Robert J. Golf club securer and organizer. 5,383,555, Cl. 206-315.600.

Weinrotter, Klaus: *See*—
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Weisburn, James T.; Sankey, James K.; and Moock, Andrew W., to Alpha Enterprises, Inc. Cassette storage container with hub engaging fingers and adjacent stops. 5,383,557, Cl. 206-387.130.

Weiss, Edward J. Child carrier and stroller attachable to a bicycle. 5,383,585, Cl. 224-31.000.

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Welch, David F.; Waarts, Robert G.; Major, Jo S.; Bringans, Ross D.; Fork, David K.; Connell, G. A. Neville; and Thornton, Robert L., to SDL, Inc.; and Xerox Corporation, part interest to each. Monolithic multi-wavelength laser diode array. 5,384,797, Cl. 372-23.000.

Wender, Irving: *See*—
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Wendt, Otto: *See*—
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Wertheasen, Nicholas M.: *See*—
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Western Atlas International, Inc.: *See*—
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Sanders, Joe I., 5,384,753, Cl. 367-163.000.

Westinghouse Electric Corporation: *See*—
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Westmoreland, Donald L., to Micron Semiconductor, Inc. Reductive elimination chemical vapor deposition processes utilizing organometallic precursor compounds in semiconductor wafer processing. 5,384,289, Cl. 437-245.000.

Wetzel, Jeffrey T.: *See*—
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Wheeler, Barbara L.; Heatwole, Earnest L., Jr.; McGinley, Maureen T.; Seikaly, Richard M.; and Craig, Bernard J., to Bell Atlantic Network Services, Inc. Public telephone network including a distributed imaging system. 5,384,835, Cl. 379-96.000.

Wheetley, Michael J.; and Shelby, James W., to Vought Aircraft Company. Manually positioned computer controlled drilling machine. 5,383,751, Cl. 408-1.00R.

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Whitaker Corporation, The: *See*—
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Korsunsky, Iosif; Schroepfer, Richard C.; and Kopp, Monte L., 5,383,792, Cl. 439-326.000.

Whitaker, Emert R.; Fulghum, Trent A.; Keazer, James J.; and Pritchett, James A., to Clarke Industries, Inc. Floor scrubber having interlocking tanks. 5,383,251, Cl. 15-320.000.

Whitaker, Louis G.: *See*—
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White Consolidated Industries: *See*—
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White Consolidated Industries, Inc.: *See*—
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Whittaker, Clark & Daniels, Inc.: *See*—
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Whittredge, David A. Alternating motion device for animating graphical structures. 5,383,292, Cl. 40-124.100.

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Wilczek, Lech, to Du Pont de Nemours, E. I., and Company. Compositions and process of using in refrigeration. 5,384,057, Cl. 252-68.000.
Wilhelm, Manfred: *See*—
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Williams, Jeffrey R., to Marley Pump Company, The. Retrofit strainer attachment for gasoline pumps. 5,383,769, Cl. 417-238.000.
Williams, Robert M. Apparatus for segregating low BTU material for a multi-source of fuel materials. 5,383,612, Cl. 241-34.000.
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Williams, Wes A.: *See*—
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Winder, Gary C. Aerosol spray can adaptor. 5,383,580, Cl. 222-325.000.
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Winter, Frank F.; and Karaba, James M., Jr., to Union Special Corporation. Apparatus for making a three needle stitch with cover thread. 5,383,414, Cl. 112-162.000.
Winter, Jeffrey J.; Holden, Homer N.; and Lawrence, James L., to Dayco Products, Inc. Flexible hose construction having an inner corrugated hose made of polymeric material. 5,383,497, Cl. 138-122.000.
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Wnuk, Joseph; and Wargo, Lawrence T., to United Technologies Automotive, Inc. Automotive seat switch assembly. 5,384,440, Cl. 200-5.00R.
Wolfe, John R., Sr., to Wilkerson Corporation. Separable connector for pressure fluid components. 5,383,689, Cl. 285-137.100.
Wolff, Peter C.; Bullis, Stephen J.; and Hayes, Larry W., to Martin Marietta Corporation. Ammunition indexing mechanism. 5,383,389, Cl. 89-33.040.
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Wotting, Gerhard; Knoch, Martin; and Kramer, Klaus, to Bayer AG. Process for production of silicon nitride material. 5,384,081, Cl. 264-65.000.
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Sato, Toshio; Ishii, Toshio; Sugiyama, Shunichi; and Yada, Akira, 5,384,166, Cl. 427-547.000.
Yagi, Tadashi: *See*—
Yokomizo, Takao; Kobayashi, Hiroo; Yagi, Tadashi; Yukimachi, Hiroshi; Azeda, Takahiro; Tsuchiya, Yoshiro; Moritani, Toshifumi; Ohtsuka, Masahito; Waragai, Tsuyoshi; and Miyake, Hiroaki, 5,384,619, Cl. 355-200.000.
Yagi, Toshiharu; Kato, Shuzo; and Kubota, Shuji, to Nippon Telegraph and Telephone Corporation; and NEC Corporation. Error control coding arrangement for digital communicatiosn system. 5,384,809, Cl. 375-39.000.
Yahata, Masamitsu, to Kabushiki Kaisha Toshiba. Semiconductor device and method of manufacturing the same. 5,384,475, Cl. 257-314.000.
Yale University: *See*—
Apfel, Robert E., 5,384,203, Cl. 428-613.000.
Coifman, Ronald; Meyer, Yves; and Wickerhauser, Mladen V., 5,384,725, Cl. 364-807.000.
Osborne, C. Kent; and DeGregorio, Michael W., 5,384,260, Cl. 436-64.000.
Pawelek, John; Ober, Michael P.; and Orlow, Seth J., 5,384,116, Cl. 424-63.000.
Yamabe, Masaki: *See*—
Honjo, Ichiro; Sugishima, Kenji; and Yamabe, Masaki, 5,384,463, Cl. 250-398.000.
Yamada, Yoshiaki; Iwasaki, Junji; and Okmori, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor processing apparatus and module. 5,383,482, Cl. 134-66.000.
Yamagami, Taku, to Canon Kabushiki Kaisha. Image processing method and apparatus for encoding variable-length data. 5,384,644, Cl. 358-426.000.
Yamaha Corporation: *See*—
Fujimori, Junichi, 5,384,851, Cl. 381-17.000.
Kudo, Masaki; and Shirakawa, Tokio, 5,383,386, Cl. 84-622.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Shiohara, Masakazu, 5,383,530, Cl. 180-227.000.
YamahaHatsudoki Kabushiki Kaisha: *See*—
Iwatsuka, Yoshihisa; and Tamiwa, Takeshi, 5,383,270, Cl. 29-840.000.
Yamakawa, Akira: *See*—
Matsui, Jin-Joo; Komura, Osamu; Yamakawa, Akira; and Miyake, Masaya, 5,384,292, Cl. 501-97.000.
Yamamori, Shinji: *See*—
Nakayama, Tadashi; Ono, Kohei; Yamamori, Shinji; Hosaka, Hidehiro; Sato, Yoji; Shioya, Shiniti; and Imai, Takasuke, 5,383,468, Cl. 128-713.000.
Yamamoto, Etsuji: *See*—
Murakami, Yoshiki; Takahashi, Tetsuhiko; and Yamamoto, Etsuji, 5,384,536, Cl. 324-309.000.
Yamamoto, Hiroshi; and Ohkubo, Takeshi, to Hoeda Gikeu Kogyo Kabushiki Kaisha. Turret machine tool. 5,383,261, Cl. 29-40.000.
Yamamoto, Hiroshi: *See*—
Sakaue, Shigeo; Kohda, Toshiyuki; Yamamoto, Hiroshi; and Shimeki, Yasuharu, 5,384,896, Cl. 395-24.000.
Yamamoto, Hiroyuki: *See*—
Sato, Hiroaki; Okutomi, Masatoshi; Yamamoto, Hiroyuki; Tamura, Hideyuki; and Okazaki, Hiroshi, 5,384,900, Cl. 395-100.000.
Yamamoto, Kazuhiko; Miyake, Yuichi; and Okada, Chikara, to Santoku Metal Industry Co., Ltd. Alloy ingot for permanent magnet, anisotropic powders for permanent magnet, method for producing same and permanent magnet. 5,383,978, Cl. 148-101.000.
Yamamoto, Yasushi: *See*—
Toyama, Toshiyuki; Yamamoto, Yasushi; Uematsu, Takahiro; and Masuda, Masanori, 5,383,774, Cl. 418-66.000.
Yamanaka, Yutaka, to NEC Corporation. Optical information storage apparatus using optical fiber. 5,384,728, Cl. 365-114.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Ito, Noriki; Yasunaga, Tomoyuki; Iizumi, Yuichi; and Araki, Tomio, 5,384,425, Cl. 560-138.000.
Yamasa Shoyu Kabushiki Kaisha: *See*—
Yamauchi, Hiroshi; Utsugi, Hideki; and Midorikawa, Yuichiro, 5,384,251, Cl. 435-87.000.
Yamasaki, Katsuya: *See*—
Asakawa, Yoshiaki; Yamasaki, Katsuya; and Ichikawa, Akira, 5,384,891, Cl. 395-2.290.
Yamasaki, Richard G., to Silicon Systems, Inc. Maximum likelihood sequence metric calculator. 5,384,560, Cl. 340-146.200.
Yamashita, Haruo; and Yumiba, Takashi, to Matsushita Electric Industrial Co., Ltd. Color adjustment apparatus for automatically changing colors. 5,384,601, Cl. 348-577.000.
Yamashita, Hiroshi: *See*—
Kuse, Satoru; Kobayashi, Hiroaki; Haraguchi, Tsuyoshi; and Yamashita, Hiroshi, 5,384,233, Cl. 430-461.000.
Yamato, Kouji; and Ito, Kazuhiko, to Fujitsu Limited. LAN management system in electronic switching apparatus. 5,384,766, Cl. 370-13.000.
Yamauchi, Chiaki: *See*—
Yoshioka, Junichi; Okihara, Daijiro; Yamauchi, Chiaki; Watanabe, Takashi; Nakajima, Toshiya; Ichikawa, Madoka; Takayama, Jun; Iseno, Akihiro; Ninomiya, Takeshi; and Hamada, Shinji, 5,384,673, Cl. 360-72.200.
Yamauchi, Hiroshi; Utsugi, Hideki; and Midorikawa, Yuichiro, to Yamasa Shoyu Kabushiki Kaisha. Process for producing nucleosides. 5,384,251, Cl. 435-87.000.
Yamaura, Michio: *See*—
Sato, Kazuhiko; Hagiwara, Tsuneo; and Yamaura, Michio, 5,384,215, Cl. 429-213.000.
Yamazaki, Mitsuru; Yashiro, Masakazu; and Ijichi, Toshiya, to Mitsubishi Electrical Engineering Co. Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Apparatus for inspecting characteristics of semiconductor chips. 5,384,531, Cl. 324-765.000.
Yanagi, Toru: *See*—
Ooaka, Keiji; and Yanagi, Toru, 5,384,878, Cl. 385-96.000.
Yanagisawa, Makoto: *See*—
Tomita, Hiroyoshi; Yanagisawa, Makoto; and Kodama, Yukinori, 5,384,726, Cl. 365-63.000.
Yang, Deng K.: *See*—
Doane, J. William; and Yang, Deng K., 5,384,067, Cl. 252-299.010.
Yang, Jerry S. C. Multi-purpose lamp. 5,384,694, Cl. 362-298.000.
Yang, Ming-Tung. Adjustable-type additive pressure windshield wiper. 5,383,249, Cl. 15-250.420.
Yang, Tai-Her. Balanced drive motors with cross-coupled excitation. 5,384,520, Cl. 318-79.000.
Yano, Akihiro: *See*—
Inahara, Kiyoshi; and Yano, Akihiro, 5,384,298, Cl. 502-104.000.
Yano, Hideyuki: *See*—
Kuboh, Harumi; Araya, Junji; Yano, Hideyuki; and Furuya, Tadashi, 5,384,626, Cl. 355-219.000.

Yap, Loo T., to BOC Group, Inc., The. Gas-lance apparatus and method. 5,383,782, Cl. 432-22.000.
Yarbrough, Walter A.: *See*—
Cottringer, Thomas E.; van de Merwe, Ronald H.; Bauer, Ralph; and Yarbrough, Walter A., 5,383,945, Cl. 51-309.000.
Yashima, Noboru: *See*—
Kyouno, Noboru; Osuga, Yoshiharu; and Yashima, Noboru, 5,384,856, Cl. 381-103.000.
Yashiro, Masakazu: *See*—
Yamazaki, Mitsuru; Yashiro, Masakazu; and Ijichi, Toshiya, 5,384,531, Cl. 324-765.000.
Yasunaga, Tomoyuki: *See*—
Ito, Noriki; Yasunaga, Tomoyuki; Iizumi, Yuichi; and Araki, Tomio, 5,384,425, Cl. 560-138.000.
Yates, John B., III, to General Electric Company. Compositions of polyphenylene ether, polyester, linear tapered block copolymers and further elastomeric materials. 5,384,363, Cl. 525-89.000.
Yates, John B., III: *See*—
Chambers, Gregory R.; Smith, Gary F.; and Yates, John B., III, 5,384,359, Cl. 525-64.000.
Yatim, David; Bonet, Luis A.; Corleto, Jose G.; and Floyd, Michael D., to Motorola, Inc. ADPCM transcoder with integral tone generation and method therefor. 5,384,807, Cl. 375-27.000.
Yau, Hwei-Ling: *See*—
Chen, Tien-Teh; Schofield, Edward; Yau, Hwei-Ling; and Vishwakarma, Lal C., 5,384,235, Cl. 430-512.000.
Yavin, Zvi: *See*—
Pedut, Hai; Yavin, Zvi; Djerassi, Shlomo; and Goral, Avihu, 5,383,645, Cl. 248-637.000.
Yeang, Vickie M.: *See*—
Moorwood, Charles A.; Singh, Charan J.; Holland, Dennis E.; Cimino, Daniel J.; Vo, Howard Q.; Yeung, Vickie M.; Crosbie, David; and Shah, Haresh K., 5,384,767, Cl. 370-13.100.
Yin, Patrick, to Aspec Technology, Inc. Symmetrical multi-layer metal logic array with continuous substrate taps and extension portions for increased gate density. 5,384,472, Cl. -204.000.
Ying, Peter S., to Texas Instruments Incorporated. Method of forming a planarized insulation layer. 5,384,288, Cl. 437-228.000.
Yoda, Nobuhisa, to Kabushiki Kaisha Toshiba. Electronic image information scanning and filing apparatus. 5,384,785, Cl. 371-30.000.
Yokocho, Yoetsu; Kuwano, Michiyasu; and Aiyama, Fumihiko, to Kioritz Corporation. Hand-held edger. 5,383,330, Cl. 56-256.000.
Yokohama Rubber Co., Ltd., The: *See*—
Kogure, Tomohiko, 5,383,506, Cl. 152-209.00R.
Yokoi, Toshio: *See*—
Takado, Yutaka; Nakasato, Toshikazu; Nogata, Tetsuro; Tezuka, Eiji; and Yokoi, Toshio, 5,384,172, Cl. 428-35.700.
Yokomizo, Takao; Kobayashi, Hiroo; Yagi, Tadashi; Yukimachi, Hiroshi; Azeda, Takahiro; Tsuchiya, Yoshiro; Moritani, Toshifumi; Ohtsuka, Masahito; Waragai, Tsuyoshi; and Miyake, Hiroaki, to Canon Kabushiki Kaisha. Image forming apparatus having re-feeding unit. 5,384,619, Cl. 355-200.000.
Yokoyama, Eiji; and Nagasawa, Masato, to Mitsubishi Denki Kabushiki Kaisha. Magnetic head position controller in a magnetic recording and reproducing apparatus. 5,384,676, Cl. 360-77.130.
Yokoyama, Hirotaka: *See*—
Ito, Takeo; and Yokoyama, Hirotaka, 5,384,182, Cl. 428-212.000.
Yokoyama, Minoru: *See*—
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Awai, Takashi, 5,384,584, Cl. 346-76.0PH.
Yoneda, Takuji: *See*—
Takami, Nobuo; Sugihara, Kazuyuki; Maruta, Takayuki; Nojima, Kazuo; Sawayama, Noboru; Yoshimatsu, Kaoru; Watabe, Katsuji; and Yoneda, Takuji, 5,384,628, Cl. 355-259.000.
Yoneyama, Hiroyuki: *See*—
Matsuoka, Koushin; Shimada, Yasuhiro; and Yoneyama, Hiroyuki, 5,384,236, Cl. 430-558.000.
York, Rudy L.: *See*—
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Yoshida, Kiyohide: *See*—
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Yoshida, Ryoichi: *See*—
Hiruta, Mitsuhiko; Yoshida, Ryoichi; Nishizawa, Museo; and Hiramatsu, Koji, 5,383,623, Cl. 242-374.000.
Yoshida, Tadashi: *See*—
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Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Awai, Takashi, to Canon Kabushiki Kaisha. Thermal transfer recording method and apparatus with oppositely conveyed ink sheet and recording medium controlled to maintain a substantially constant conveyance ratio. 5,384,584, Cl. 346-76.0PH.
Yoshida, Yoshikazu; Kawasaki, Kenichi; Horisawa, Shozo; Mita, Hiroyuki; and Fukuzawa, Keiji, to Sony Corporation. Polarization separator and waveguide-microstrip line mode transformer for microwave apparatus. 5,384,557, Cl. 333-21.00A.
Yoshida, Yuichi: *See*—
Uemura, Tomoyoshi; Akamatsu, Yoshimi; Yoshida, Yuichi; and Moriwaki, Yoshikazu, 5,384,187, Cl. 428-262.000.
Yoshihara, Hiroshi: *See*—
Saito, Kenji; Sekiguchi, Masahito; Masaki, Shiazaburo; Yoshihara, Hiroshi; Takahashi, Kazuhiko; Minamisaka, Kazuya; and Kawai, Takashi, 5,384,409, Cl. 548-371.400.
Yoshihara, Toshiyuki: *See*—
Anayama, Hideki; Yoshihara, Toshiyuki; Ainoya, Hideyuki; and Hirano, Hidetoshi, 5,384,625, Cl. 355-211.000.
Yoshikawa, Susumu; and Sudo, Akira, to Kabushiki Kaisha Toshiba. Semiconductor body having element formation surfaces with different orientations. 5,384,473, Cl. 257-255.000.
Yoshimatsu, Kaoru: *See*—
Takami, Nobuo; Sugihara, Kazuyuki; Maruta, Takayuki; Nojima, Kazuo; Sawayama, Noboru; Yoshimatsu, Kaoru; Watabe, Katsuji; and Yoneda, Takuji, 5,384,628, Cl. 355-259.000.
Yoshimura, Toshimi: *See*—
Minowa, Kenji; Sakai, Norio; Saito, Tetsuro; and Yoshimura, Toshimi, 5,383,997, Cl. 156-235.000.
Yoshinaga, Kazuo; Kurabayashi, Yutaka; Ohnishi, Toshikazu; Futami, Yukiko; and Miyazaki, Takeshi, to Canon Kabushiki Kaisha. Polymeric liquid crystal compoeition and liquid crystal device. 5,384,069, Cl. 252-299.010.
Yoshinaga, Naoki: *See*—
Ushioda, Kohsaku; Yoshinaga, Naoki; and Akisue, Osamu, 5,384,206, Cl. 428-659.000.
Yoshinaka, Tadaaki, to Sony Corporation. Picture data recording apparatus and picture data reproducing apparatus. 5,384,787, Cl. 371-37.400.
Yoshino, Hitoshi: *See*—
Kanome, Osamu; Kamitakahara, Hirofumi; Yoshino, Hitoshi; Sato, Tetsuya; and Hayashi, Hisanori, 5,383,834, Cl. 492-25.000.
Yoshino, Toru: *See*—
Kamioka, Nobuo; Tokumura, Hiroshi; and Yoshino, Toru, 5,384,344, Cl. 523-149.000.
Yoshioka, Hidetaka; and Takada, Fumio, to Kubota Corporation. Turn control system for a four wheel drive vehicle. 5,383,531, Cl. 180-233.000.
Yoshioka, Junichi; Okihara, Daijiro; Yamauchi, Chiaki; Watanabe, Takashi; Nakajima, Toshiya; Ichikawa, Madoka; Takayama, Jun; Iseno, Akihiro; Ninomiya, Takeshi; and Hamada, Shinji, to Fujitsu Limited. Magnetic-tape storage apparatus. 5,384,673, Cl. 360-72.200.
Yost, Jeffrey J.: *See*—
Scheckler, Chad A.; Yost, Jeffrey J.; and Gould, Jon D., 5,384,047, Cl. 210-490.000.
Youens, John E.: *See*—
Mesfin, Teodros; Kolas, Jon; and Youens, John E., 5,384,686, Cl. 361-686.000.
Young, Donald C.: *See*—
Green, James A., II; and Young, Donald C., 5,384,329, Cl. 514-512.000.
Young, Joel K.: *See*—
Blatchford, Jo Ann; DeFazio, Pamela L.; and Young, Joel K., 5,384,840, Cl. 379-229.000.
Young, Wayne P.: *See*—
Green, David T.; Bolanos, Henry; Young, Wayne P.; McGarry, Richard A.; Heaton, Lisa W.; and Ratcliff, Keith, 5,383,881, Cl. 606-143.000.
Yu, Wan S.: *See*—
Lai, Kiong H.; Yu, Wan S.; and Davis, Robert A., 5,384,315, Cl. 514-231.500.
Yuasa Battery Co., Ltd.: *See*—
Hirachi, Katsuya, 5,384,792, Cl. 371-66.000.
Yuki, Masahiro: *See*—
Ohta, Kimiharu; and Yuki, Masahiro, 5,384,538, Cl. 324-319.000.
Yukimachi, Hiroshi: *See*—
Yokomizo, Takao; Kobayashi, Hiroo; Yagi, Tadashi; Yukimachi, Hiroshi; Azeda, Takahiro; Tsuchiya, Yoshiro; Moritani, Toshifumi; Ohtsuka, Masahito; Waragai, Tsuyoshi; and Miyake, Hiroaki, 5,384,619, Cl. 355-200.000.
Yumiba, Takashi: *See*—
Yamashita, Haruo; and Yumiba, Takashi, 5,384,601, Cl. 348-577.000.
Yumoto, Kazuhito; Wakabayashi, Norio; Nakazawa, Masao; Wakabayashi, Shinichi; Wada, Norio; Kuraishi, Fumio; and Shimada, Toshihiko, to Shinko Electric Industries Co. Ltd. Tape automated bonding in semiconductor technique. 5,384,204, Cl. 428-626.000.
Zagar, Paul S.: *See*—
Hawes, Mark A.; and Zagar, Paul S., 5,384,500, Cl. 326-39.000.
Zahnradfabrik Friedrichshafen AG: *See*—
Paul, Michael; Wilks, Eberhard; and Mamerow, Bernd, 5,383,378, Cl. 74-650.000.
Runge, Wolfgang; and Hengstler, Hans-Dieter, 5,383,824, Cl. 477-110.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi; and Ohmi, Tadahiro, 5,384,476, Cl. 257-345.000.
Zajacek, John G.; Jubin, John C., Jr.; and Crocco, Guy L., to Arco Chemical Technology, L.P. Integrated process for epoxide production. 5,384,418, Cl. 549-531.000.
Zambell, Robert G. Steering wheel lock assembly. 5,383,344, Cl. 70-209.000.
Zeffren, Eugene: *See*—
Dowell, Teresa J.; Newell, Gerald P.; and Zeffren, Eugene, 5,384,114, Cl. 424-70.100.
Zeile, Kim A.: *See*—
Snyder, Kent D.; Zyski, Gerald J., Jr.; Zeile, Kim A.; and Runstrom, James F., 5,384,704, Cl. 364-424.010.
Zelayeta, Joe: *See*—
Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, 5,384,487, Cl. 257-786.000.

Zeneca Limited: *See*—
Gregory, Peter; Kenyon, Ronald W.; Mistry, Prahalad M.; and Taylor, John A., 5,383,960, Cl. 106-22.00K.
Zerhouni, Moustapha B.: *See*—
Devlin, Mark T.; and Zerhouni, Moustapha B., 5,383,472, Cl. 128-771.000.
Zeze, Kazuo: *See*—
Kamiyama, Misao; and Zeze, Kazuo, 5,383,713, Cl. 297-471.000.
Zhang, Xumu; Uffelman, Erick; and Collman, James P., to Leland Stanford Junior University, The Board of Trustees of the. Tetraphenylporphyrin compounds and method. 5,384,397, Cl. 540-143.000.
Zhou, Qian: *See*—
Neal, Lewis G.; Ma, Warren; Chang, Min-Yan; Zhou, Qian; Pereira, Carmo J.; Plumlee, Karl W.; and Beeckman, Jean W., 5,383,955, Cl. 95-34.000.
Ziegert, Gunter: *See*—
Schwab, Egon; Loos, Hans-Joachim; and Ziegert, Gunter, 5,383,850, Cl. 604-58.000.
Zimmer, Inc.: *See*—
Baya, Rodney; Boulton, Michael L.; Pascaloff, John H.; Stalcup, Gregory C.; and Vu, Dai N., 5,383,875, Cl. 606-1.000.
Rohr, William; Broderick, Melissa; and Gonzalez, Tony, 5,383,938, Cl. 623-22.000.
Zimmerman, Fred C.; and Severson, Verne L., to CommStar, Inc. Method and apparatus for a telephone message announcing device. 5,384,832, Cl. 379-67.000.
Zimmerman, Richard C.; Alberte, Randall S.; Todd, James S.; and Crews, Phillip. Phenolic acid sulfate esters for prevention of marine biofouling. 5,384,176, Cl. 428-68.000.
Zimmerman, Robert L.: *See*—
Su, Wei-Yang; Herbstman, Sheldon; Russo, Joseph M.; Zimmerman, Robert L.; and Cuscurida, Michael, 5,383,942, Cl. 44-334.000.
Zinser, Richard L., to Ericsson GE Mobile Communications Inc. Fading and random pattern error protection method for dynamic bit allocation sub-band coding. 5,384,793, Cl. 371-69.100.
Zinsmeyer, Charles D.; Parnell, James A.; Poole, Dan R.; and Massey, Carl D., to Summagraphics Corporation. Ribbon cassette for a printer. 5,383,733, Cl. 400-208.000.
Zipes, Douglas P.; Ulrich, Clare P.; Blankenau, Paul D.; and Terrell, William M., to Medtronic, Inc. RF lead-fixation and implantable lead. 5,383,922, Cl. 607-122.000.
Zoetech, Inc.: *See*—
Chaney, David B.; and Koncelik, Joseph A., 5,383,709, Cl. 297-302.000.
Zucker, Oved S. F.; McIntyre, Iain A.; Solone, Paul J.; and Giorgi, David, to Energy Compression Research Corp. Photoconductively controlled electro-optic laser modulation. 5,384,798, Cl. 372-26.000.
Zuckerman, Andrew M., to Different Dimensions Inc. Hanger with irremovable information tab. 5,383,583, Cl. 223-85.000.
Zueger, Albert: *See*—
Ramm, Jurgen; Beck, Eugen; Frei, Hugo; Zueger, Albert; and Peter, Gunter, 5,384,018, Cl. 204-192.380.
Zumbrum, Michael A.: *See*—
Levinson, Lionel M.; Schultz, William N.; Lewis, Larry N.; Sumpter, Chris A.; and Zumbrum, Michael A., 5,384,357, Cl. 524-770.000.
Zur, Avigdor; and Shechtman, Itzhak, to Uri Rapoport. Refrigeration, heating and air conditioning system for vehicles. 5,383,341, Cl. 62-476.000.
Zur, David. Agricultural air/liquid sprayer having an inflatable spraying sleeve. 5,383,599, Cl. 239-77.000.
Zurcher, Walter: *See*—
Schwaller, Edwin; and Zurcher, Walter, 5,384,693, Cl. 362-72.000.
Zurek, Lawrence A.; Kosztowny, Michele T.; and Clowater, Lorna J., to Ford Motor Company. Mass air flow sensor arrangement having increased dynamic range. 5,383,356, Cl. 73-118.200.
Zvenyatsky, Boris; Aranyi, Ernest; and Tovey, H. Jonathan, to United States Surgical Corporation. Articulating endoscopic surgical apparatus. 5,383,888, Cl. 606-206.000.
Zweigart, Gerhard: *See*—
Agro, Marc; Hilt, Gerard; Rust, Sabine; Hornung, Christian; Peters, Henning; and Zweigart, Gerhard, 5,383,700, Cl. 296-97.900.
Zwick, Kenneth J.: *See*—
Stegmaier, Alwin; and Zwick, Kenneth J., 5,383,606, Cl. 239-575.000.
Zyski, Gerald J., Jr.: *See*—
Snyder, Kent D.; Zyski, Gerald J., Jr.; Zeile, Kim A.; and Runstrom, James F., 5,384,704, Cl. 364-424.010.
569396 Alberta Ltd.: *See*—
Wright, James A.; and Ring, Curtis P., 5,383,519, Cl. 166-78.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JANUARY, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Calpis Food Industry Co., Ltd, The: *See*—
Iwanami, Takefumi; Maruta, Kiyoshi; Murota, Ichiya; and Miyazaki, Hiroshi, Re. 34,837, Cl. 424-442.000.

Hitachi, Ltd.: *See*—
Ozeki, Masayoshi, Re. 34,835, Cl. 345-153.000.

IMI Cornelius Inc.: *See*—
Swanson, Craig A., Re. 34,834, Cl. 62-398.000.

Iwanami, Takefumi; Maruta, Kiyoshi; Murota, Ichiya; and Miyazaki, Hiroshi, to Calpis Food Industry Co., Ltd, The. Feeds. Re. 34,837, Cl. 424-442.000.

Maruta, Kiyoshi: *See*—
Iwanami, Takefumi; Maruta, Kiyoshi; Murota, Ichiya; and Miyazaki, Hiroshi, Re. 34,837, Cl. 424-442.000.

Miyazaki, Hiroshi: *See*—
Iwanami, Takefumi; Maruta, Kiyoshi; Murota, Ichiya; and Miyazaki, Hiroshi, Re. 34,837, Cl. 424-442.000.

Murota, Ichiya: *See*—
Iwanami, Takefumi; Maruta, Kiyoshi; Murota, Ichiya; and Miyazaki, Hiroshi, Re. 34,837, Cl. 424-442.000.

Murrell, Edmond E. Eyewear retainer. Re. 34,836, Cl. 351-123.000.

Ozeki, Masayoshi, to Hitachi, Ltd. Method and apparatus for editing document in colors. Re. 34,835, Cl. 345-153.000.

Swanson, Craig A., to IMI Cornelius Inc. Ice cooled beverage dispenser and method of making same. Re. 34,834, Cl. 62-398.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Boiardi, Mario: *See*—
Gayle, Harold R.; Wilkinson, William T.; and Boiardi, Mario, B1 5,092,496, Cl. 222-386.000.

Browning Arms Company: *See*—
Larson, Marlow W., B1 5,020,507, Cl. 124-25.600.

Fox, David K., to Railway Equipment Company. Variable placement interchangeable lamp system. B1 4,784,356, 1-24-95, Cl. 246-125.000.

Fujitsu Limited: *See*—
Nishio, Yukio; and Hirose, Kazunori, B1 5,068,691, Cl. 355-259.000.

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Krishnakumar, Seppayan M.; and Collette, Wayne N., to Continental PET Technologies, Inc. Container with end grip. 354,685, 1-24-95, Cl. D9-343.000.
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Lee, Chun S., to Schnadig Corporation. Combined seating unit and table. 354,628, 1-24-95, Cl. D6-335.000.
Lee, Chun S., to Schnadig Corporation. Sofa. 354,635, 1-24-95, Cl. D6-381.000.
Lee, James. Multiple electrical socket unit. 354,731, 1-24-95, Cl. D13-142.000.
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Linden, Erkki O.; and Ronnholm, Karl S., to Fiskars Consumer Oy Ab. Transplanter. 354,661, 1-24-95, Cl. D8-10.000.
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Stoddard, David C. F.; and Stephens, Frank H., 354,642, Cl. D6-450.000.
Medby, Roger. Pair of vehicle side pails. 354,722, 1-24-95, Cl. D12-414.000.
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Meister, Herbert E., Jr., to Pitney Bowes Inc. Inserter machine. 354,766, 1-24-95, Cl. D18-99.000.
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Sheridan, Joan D. Christmas stocking. 354,706, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,707, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,708, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,709, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,710, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,711, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,713, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,714, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,715, 1-24-95, Cl. D11-126.000.
Sheridan, Joan D. Christmas stocking. 354,716, 1-24-95, Cl. D11-126.000.
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Warren, Craig B.: *See*—
Butler, Jerry F.; and Warren, Craig B., 354,690, Cl. D10-46.000.
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Orlandini, Paolo; and Lucci, Roberto, 354,631, Cl. D6-366.000.
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Willis, Tucker; and Cinquemani, James, Jr., to Chaenomeles, Inc. Mail box. 354,829, 1-24-95, Cl. D99-33.000.
Wilson, Tracie L. C.: *See*—
Lathrop, Gregory A.; Marazita, Dominic; and Wilson, Tracie L. C., 354,684, Cl. D9-523.000.
Wixey, Barry D., to Delta International Machinery Corp. Bench top table saw. 354,757, 1-24-95, Cl. D15-133.000.
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Colani, Luigi; and Schnyder, Meinrad, 354,746, Cl. D14-114.000.
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NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 330
136 5,384,547
253 5,384,548
298 5,384,549

CLASS 331
17 5,384,550
5,384,551
25 5,384,552
111 5,384,553
153 5,384,554

CLASS 333
1 5,384,555
1.1 5,384,556
21 A 5,384,557
33 5,384,558

CLASS 337
197 5,384,559

CLASS 340
146.2 5,384,560
323 R 5,384,561
584 5,384,562
825.05 5,384,566
825.21 5,384,563
825.44 5,384,564
5,384,565

CLASS 341
51 5,384,567
5,384,568
159 5,384,569
172 5,384,570

CLASS 342
4 5,384,571
169 5,384,572
179 5,384,573
357 5,384,574

CLASS 343
909 5,384,575

CLASS 345
3 5,384,576
102 5,384,577
105 5,384,578
123 5,384,579
145 5,384,580
153 Re.34,835
186 5,384,581
199 5,384,582

CLASS 346
76 PH 5,384,584
5,384,585
134 5,384,586
153.1 5,384,590
154 5,384,591
157 5,384,592

CLASS 347
19 5,384,583
41 5,384,587

CLASS 348
15 5,384,588
31 5,384,589
61 5,384,593
169 5,384,594
208 5,384,595
241 5,384,596
325 5,384,597
384 5,384,598
473 5,384,599
556 5,384,600
577 5,384,601
628 5,384,602
730 5,384,603

CLASS 351
63 5,384,604
123 Re.34,836
5,384,605
158 5,384,606
5,384,607
212 5,384,608

CLASS 354
81 5,384,609
108 5,384,610
131 5,384,611
149.1 5,384,612
275 5,384,613
286 5,384,614
409 5,384,615
414 5,384,616
419 5,384,617

CLASS 355
32 5,384,618
200 5,384,619
202 5,384,620
204 5,384,621
206 5,384,622
207 5,384,623
5,384,624
211 5,384,625
219 5,384,626
247 5,384,627
259 5,384,628
B1 5,068,691
260 5,384,629
277 5,384,630
308 5,384,631
313 5,384,632
314 5,384,633
323 5,384,634

CLASS 356
73.1 5,384,635
150 5,384,636
5,384,637
151 5,384,638
355 5,384,639
437 5,384,640
446 5,384,641

CLASS 358
336 5,384,642
403 5,384,643
426 5,384,644
444 5,384,645
448 5,384,646
456 5,384,647
534 5,384,648

CLASS 359
67 5,384,649
77 5,384,650
152 5,384,651
172 5,384,652
270 5,384,653
364 5,384,654
472 5,384,655
569 5,384,656

665 5,384,657
707 5,384,658
719 5,384,659
841 5,384,660
894 5,384,661
5,384,662
896 5,384,663

CLASS 360
3 5,384,664
22 5,384,665
32 5,384,666
33.1 5,384,667
39 5,384,668
48 5,384,669
5,384,670
51 5,384,671
71 5,384,672
72.2 5,384,673
5,384,674
75 5,384,675
77.13 5,384,676
99.12 5,384,677
126 5,384,680

CLASS 361
62 5,384,678
119 5,384,679
234 5,384,681
5,384,682
313 5,384,683
323 5,384,684
503 5,384,685
686 5,384,686
689 5,384,687
736 5,384,688
761 5,384,689
789 5,384,690
794 5,384,691
807 5,384,692

CLASS 362
72 5,384,693
298 5,384,694

CLASS 363
40 5,384,696

CLASS 364
139 5,384,697
149 5,384,698
413.13 5,384,699
419.03 5,384,701
419.08 5,384,702
419.1 5,384,700
419.19 5,384,703
424.01 5,384,704
424.05 5,384,705
5,384,706
431.11 5,384,707
464.02 5,384,708
468 5,384,709
489 5,384,710
5,384,711
550 5,384,712
5,384,713
5,384,714
557 5,384,716
560 5,384,717
569 5,384,718
578 5,384,719
5,384,720
707 5,384,721
715.01 5,384,722
748 5,384,723
770 5,384,724
807 5,384,725

CLASS 365
63 5,384,726
96 5,384,727
114 5,384,728
145 5,384,729
156 5,384,730
182 5,384,731
185 5,384,732
189.01 5,384,733
189.04 5,384,734
189.05 5,384,735
5,384,736
5,384,737
189.08 5,384,738
189.09 5,384,739
5,384,740
201 5,384,741
218 5,384,742
5,384,743
221 5,384,744
225.7 5,384,746
226 5,384,747
229 5,384,748
230.01 5,384,749
230.03 5,384,745
233 5,384,750

CLASS 366
22 5,383,725
168 5,383,726

CLASS 367
15 5,384,751
38 5,384,752
163 5,384,753

CLASS 368
28 5,384,754
35 5,384,755
281 5,384,756

CLASS 369
13 5,384,757
5,384,758
32 5,384,759
38 5,384,760
44.26 5,384,761
44.28 5,384,762
124 5,384,763
275.1 5,384,764

CLASS 370
13 5,384,765
5,384,766
13.1 5,384,767
14 5,384,768
24 5,384,769
43 5,384,770
58.2 5,384,771
60 5,384,772
60.1 5,384,773
82 5,384,774
84 5,384,775
85.1 5,384,776
85.12 5,384,779
85.2 5,384,777
85.3 5,384,778
94.1 5,384,780

CLASS 371
1 5,384,781
2.1 5,384,782
5.1 5,384,791
9.1 5,384,783
21.1 5,384,784
30 5,384,785
37.1 5,384,786
37.4 5,384,787
37.7 5,384,788
40.1 5,384,789
5,384,790
66 5,384,792
69.1 5,384,793

CLASS 372
2 5,384,794
7 5,384,795
22 5,384,796
23 5,384,797
26 5,384,798
32 5,384,799
38 5,384,800
43 5,384,801
89 5,384,802
100 5,384,803

CLASS 373
137 5,384,804

CLASS 378
7 5,384,805
8 5,384,806
27 5,384,807
36 5,384,808
39 5,384,809
94 5,384,810
122 5,384,811

CLASS 376
260 5,384,812
272 5,384,813
352 5,384,814
444 5,384,815

CLASS 377
48 5,384,816

CLASS 378
84 5,384,817
132 5,384,818
5,384,819
135 5,384,820
199 5,384,821

CLASS 379
10 5,384,822
5,384,823
59 5,384,824
5,384,825
60 5,384,826
61 5,384,827
5,384,828
67 5,384,829
5,384,830
5,384,831
5,384,832
5,384,833

88 5,384,834
96 5,384,835
100 5,384,836
165 5,384,837
167 5,384,838
219 5,384,839
229 5,384,840
266 5,384,841
387 5,384,842
391 5,384,843
433 5,384,844

CLASS 380
9 5,384,845
23 5,384,846
5,384,847
48 5,384,848
49 5,384,849
52 5,384,850

CLASS 381
17 5,384,851
68 5,384,852
71 5,384,853
81 5,384,854
100 5,384,855
103 5,384,856
183 5,384,857

CLASS 382
1 5,384,859
5,384,860
6 5,384,861
5,384,862
9 5,384,863
5,384,864
54 5,384,865
55 5,384,866
56 5,384,867
5,384,868
5,384,869

CLASS 383
11 5,383,727

CLASS 384
482 5,383,728
545 5,383,729

CLASS 385
15 5,384,870
19 5,384,871
31 5,384,872
5,384,873
34 5,384,874
51 5,384,875
64 5,384,876
70 5,384,877
96 5,384,878
100 5,384,879
109 5,384,880
115 5,384,881
116 5,384,882
122 5,384,883
129 5,384,884
140 5,384,885
147 5,384,887

CLASS 392
336 5,384,888
416 5,384,889

CLASS 395
2 5,384,890
2.29 5,384,891
2.52 5,384,892
2.76 5,384,893
23 5,384,895
24 5,384,896
27 5,384,897
51 5,384,898
61 5,384,894
100 5,384,899
5,384,900
131 5,384,901
5,384,902
134 5,384,903
139 5,384,904
143 5,384,905
147 5,384,886
150 5,384,907
152 5,384,908
155 5,384,909
156 5,384,910
157 5,384,911
164 5,384,912
550 5,384,906

CLASS 400
76 5,383,730
5,383,731
120.01 5,383,732
208 5,383,733
227.2 5,383,734
479 5,383,735

CLASS 401
45 5,383,736
48 5,383,737

CLASS 403
56 5,383,738
107 5,383,739
267 5,383,740
383 5,383,741

CLASS 404
15 5,383,742
90 5,383,743

CLASS 405
36 5,383,744
52 5,383,745
53 5,383,746
128 5,383,747
217 5,383,748
232 5,383,749

CLASS 407
113 5,383,750

CLASS 408
1 R 5,383,751

CLASS 409
105 5,383,752

CLASS 411
29 5,383,753

CLASS 412
11 5,383,754
16 5,383,755
38 5,383,756

CLASS 414
240 5,383,757
257 5,383,759
680 5,383,758
791.6 5,383,760
798.9 5,383,761

CLASS 415
121.2 5,383,762
159 5,383,763
199.3 5,383,764

CLASS 416
62 5,383,765
97 A 5,383,766
134 A 5,383,767
241 R 5,383,768

CLASS 417
238 5,383,769
273 5,383,770

CLASS 418
15 5,383,771
55.4 5,383,772
57 5,383,773
66 5,383,774

CLASS 419
10 5,384,087

CLASS 420
511 5,384,089
555 5,384,090

CLASS 422
30 5,384,091
32 5,384,092
40 B1 5,093,080
63 5,384,093
64 5,384,094
100 5,384,095
102 5,384,096
5,384,097
111 5,384,098
174 5,384,099
180 5,384,100
211 5,384,101
264 5,384,102
310 5,384,103

CLASS 423
15 5,384,104
65 5,384,105
235 5,384,106
239.1 5,384,110
242.1 5,384,111
462 5,384,112

CLASS 424
1.69 5,384,113
5 5,384,107
9 5,384,108
5,384,109
59 5,384,115
63 5,384,116
66 5,384,117
70.1 5,384,114
70.13 5,384,118
78.08 5,384,119
84 5,384,120

F95.1 5,384,121
5,384,123
231.1 5,384,122
430 5,384,124
442 Re.34,837
443 5,384,125
450 5,384,126
5,384,127
5,384,128
431 5,384,129
461 5,384,130
490 5,384,131
499 5,384,132
501 5,384,133
664 5,384,134

CLASS 428
91 5,383,775
135 5,383,776
192 R 5,383,777
363 5,383,778
525 5,383,779
552 5,383,780

CLASS 426
14 5,384,135
19 5,384,136
36 5,384,137
111 5,384,138
128 5,384,139
243 5,384,140
478 5,384,141
496 5,384,142
546 5,384,143
557 5,384,144
565 5,384,145
5,384,146
615 5,384,147
632 5,384,148
646 5,384,149
5,384,150

CLASS 427
58 5,384,151
81 5,384,152
98 5,384,153
123 5,384,154
125 5,384,155
126.3 5,384,157
127 5,384,156
129 5,384,158
140 5,384,159
250 5,384,161
288 5,384,160
356 5,384,162
385.5 5,384,163
449 5,384,164
461 5,384,165
547 5,384,166
569 5,384,167

CLASS 428
1 5,384,168
34.1 5,384,169
5,384,170
34.4 5,384,171
35.7 5,384,172
5,384,173
40 5,384,174
64 5,384,175
68 5,384,176
182 5,384,177
5,384,178
192 5,384,179
195 5,384,180
5,384,181
212 5,384,182
216 5,384,183
230 5,384,184
235 5,384,185
240 5,384,186
262 5,384,187
283 5,384,188
288 5,384,189
323 5,384,190
5,384,191
5,384,192
336 5,384,193
378 5,384,194
405 5,384,195
408 5,384,196
411.1 5,384,197
457 5,384,199
488.1 5,384,200
552 5,384,201
5,384,202
577 5,384,203
613 5,384,206
626 5,384,205
643 5,384,207
659 5,384,208

CLASS 429
9 5,384,209
34 5,384,210
89 5,384,211

143 5,384,212
192 5,384,213
206 5,384,214
213 5,384,215
223 5,384,216
225 5,384,217

CLASS 430
5 5,384,218
5,384,219
8 5,384,220
19 5,384,221
58 5,384,222
59 5,384,223
106 5,384,224
116 5,384,225
137 5,384,226
156 5,384,227
192 5,384,228
270 5,384,229
313 5,384,230
321 5,384,231
440 5,384,232
461 5,384,233
504 5,384,234
512 5,384,235
558 5,384,236
566 5,384,237
617 5,384,238

CLASS 431
2 5,383,781

CLASS 432
22 5,383,782
253 5,383,783

CLASS 433
7 5,383,784
129 5,383,785

CLASS 434
265 5,383,786

CLASS 438
2 5,384,239
5 5,384,240
6 5,384,241
5,384,242
5,384,243
7.22 5,384,244
22 5,384,245
5,384,246
5,384,247
25 5,384,248
68.1 5,384,249
69.6 5,384,250
87 5,384,251
166 5,384,252
172.3 5,384,253
181 5,384,254
193 5,384,255
198 5,384,256
234 5,384,257
252.33 5,384,259
320.1 5,384,258

CLASS 436
64 5,384,260
518 5,384,261
5,384,262
5,384,263
525 5,384,264
5,384,265

CLASS 437
3 5,384,267
20 5,384,268
21 5,384,266
22 5,384,269
40 5,384,270
5,384,271
41 5,384,273
43 5,384,272
47 5,384,274
51 5,384,275
52 5,384,276
5,384,277
5,384,278
57 5,384,279
67 5,384,280
90 5,384,282
183 5,384,283
189 5,384,281
190 5,384,284
200 5,384,285
207 5,384,286
228 5,384,287
5,384,288
245 5,384,289

CLASS 439
67 5,383,787
5,383,788
159 5,383,789
248 5,383,790
312 5,383,791

326	5,383,792	63	5,383,830	360	5,384,325					86	5,383,879
327	5,383,793	101	5,383,831	372	5,384,326		CLASS 526		CLASS 552	142	5,383,880
352	5,383,794			456	5,384,327	83	5,384,372	556	5,384,419	143	5,383,881
362	5,383,795		CLASS 483	490	5,384,328	212	5,384,373			148	5,383,877
469	5,383,796	1	5,383,832	512	5,384,329	256	5,384,378		CLASS 554	157	5,383,882
476	5,383,797			535	5,384,330	286	5,384,379	92	5,384,421	169	5,383,883
578	5,383,798		CLASS 492	646	5,384,331	292.9	5,384,380	98	5,384,422	170	5,383,884
652	5,383,799	16	5,383,833	648	5,384,332	330	5,384,381			182	5,383,885
707	5,383,800	25	5,383,834	772.1	5,384,333				CLASS 558	185	5,383,886
				777	5,384,334		CLASS 528	392	5,384,423	192	5,383,889
	CLASS 440		CLASS 493			15	5,384,382			194	5,383,890
5	5,383,801	330	5,383,835		CLASS 518	23	5,384,383		CLASS 560	196	5,383,891
38	5,383,802	342	5,383,836	700	5,384,335	24	5,384,384	25	5,384,424	198	5,383,892
88	5,383,803	352	5,383,837		5,384,336	52	5,384,385	138	5,384,425	200	5,383,887
						107	5,384,386	247	5,384,426	201	5,383,893
	CLASS 441		CLASS 494		CLASS 521	148	5,384,389				5,383,894
66	5,383,804	10	5,383,838	68	5,384,337	204	5,384,388		CLASS 600	206	5,383,888
				131	5,384,338	292	5,384,387	16	5,383,839		5,383,895
	CLASS 446		CLASS 501			353	5,384,390	17	5,383,840	213	5,383,896
37	5,383,810	81	5,384,290		CLASS 522	377	5,384,391				5,383,897
66	5,383,805		5,384,291	3	5,384,339	380	5,384,392		CLASS 601	216	5,383,898
220	5,383,806	97	5,384,292	99	5,384,340	392	5,384,393	128	5,383,841		5,383,899
428	5,383,808	128	5,384,293	111	5,384,341			151	5,383,842	215	5,383,900
		134	5,384,294	172	5,384,342		CLASS 528			223	5,383,901
	CLASS 451	152	5,384,306			324	5,384,394		CLASS 602	224	5,383,902
106	5,383,306				CLASS 523	379	5,384,395	13	5,383,843	228	5,383,903
519	5,383,308		CLASS 502	129	5,384,343			20	5,383,844		5,383,904
533	5,383,309	5	5,384,295	149	5,384,344		CLASS 536	26	5,383,845	232	5,383,905
543	5,383,307	66	5,384,296	218	5,384,345	2	5,384,400	59	5,383,846	236	5,383,906
			5,384,297			18.7	5,384,401				
	CLASS 482	104	5,384,298		CLASS 524	21	5,384,398		CLASS 604		CLASS 607
138	5,383,809	135	5,384,299	100	5,384,346	27.14	5,384,396	6	5,383,847	5	5,383,907
141	5,383,814	252	5,384,300		5,384,347			20	5,383,848		5,383,908
		304	5,384,301	103	5,384,348		CLASS 540	53	5,383,849	7	5,383,909
	CLASS 484	439	5,384,302	111	5,384,349	143	5,384,397	58	5,383,850	18	5,383,910
137	5,383,815			261	5,384,350			68	5,383,851	19	5,383,911
359	5,383,816		CLASS 503	399	5,384,351		CLASS 544	95	5,383,852	32	5,383,912
		209	5,384,303	804	5,384,352	97	5,384,399	96	5,383,853	38	5,383,913
	CLASS 462	227	5,384,304	494	5,384,353	105	5,384,402	98	5,383,854		5,383,914
25	5,383,817			539	5,384,354	182	5,384,403	100	5,383,855	60	5,383,915
			CLASS 504	650	5,384,355	201	5,384,404	101	5,383,856	91	5,383,916
	CLASS 464	130	5,384,305	726	5,384,356	285	5,384,405	110	5,383,857	104	5,383,918
36	5,383,818	261	5,384,321	770	5,384,357	298	5,384,407	152	5,383,858		5,383,919
89	5,383,811					336	5,384,408	164	5,383,859	112	5,383,920
			CLASS 505		CLASS 525			167	5,383,860	114	5,383,921
	CLASS 474	120	5,384,048	28	5,384,358		CLASS 546		5,383,861	122	5,383,922
28	5,383,812	430	5,384,307	64	5,384,359	243	5,384,406	187	5,383,862	125	5,383,923
110	5,383,813			68	5,384,360			198	5,383,863	126	5,383,924
144	5,383,819		CLASS 514	74	5,384,361		CLASS 548	210	5,383,864	702	5,383,917
		8	5,384,308	77	5,384,362	371.4	5,384,409	232	5,383,865		
	CLASS 475	11	5,384,309	89	5,384,363	405	5,384,410	280	5,383,866		CLASS 623
123	5,383,820	46	5,384,310	105	5,384,365			378	5,383,870	1	5,383,925
164	5,383,821	53	5,384,311	133	5,384,366		CLASS 549	385.1	5,383,867		5,383,926
281	5,383,822	63	5,384,312	149	5,384,367	31	5,384,411		5,383,868		5,383,927
		107	5,384,313	186	5,384,368	214	5,384,412		5,383,869		5,383,928
	CLASS 477		5,384,314	193	5,384,369	246	5,384,413	385.2	5,383,871	8	5,383,929
86	5,383,823	183	5,384,316	209	5,384,370	389	5,384,414	391	5,383,872	11	5,383,930
110	5,383,824	210	5,384,317	285	5,384,371	428	5,384,415	891.1	5,383,873	16	5,383,931
149	5,383,825	212	5,384,318	326.4	5,384,374	453	5,384,416				5,383,932
		227.8	5,384,319	327.6	5,384,375	476	5,384,417		CLASS 606		5,383,933
	CLASS 482	231.2	5,384,320	437	5,384,377	541	5,384,418	1	5,383,874		5,383,934
3	5,383,826	231.5	5,384,315	438	5,384,376	561	5,384,420		5,383,875	19	5,383,935
47	5,383,827	299	5,384,322	631	5,384,373			49	5,383,876	20	5,383,936
54	5,383,828	339	5,384,323					73	5,383,878	22	5,383,937
57	5,383,829	365	5,384,324							24	5,383,938
											5,383,939

D1—	124	354,613		599	354,635		46	354,690		414	354,722		99	354,765		377	354,804
D2—	869	354,614			354,651		91	354,691		422	354,728			354,766		403	354,805
	901	354,615		632	354,652	D11—	4	354,696	D13—	106	354,729	D19—	26	354,767	D24—	101	354,806
	961	354,616			354,653		6	354,700		125	354,730		27	354,768		104	354,807
	964	354,617	D7—	392.1	354,655		34	354,694		142	354,731		36	354,689		110	354,808
	970	354,618		108	354,656			354,697		147	354,732		60	354,769		126	354,809
D3—	217	354,619		511	354,657		126	354,692		153	354,733		72	354,770		140	354,810
	218	354,620		629	354,658			354,698		156	354,734		82	354,771		165	354,811
	347	354,621		673	354,659			354,701			354,736		88	354,772		189	354,812
	281	354,622	D8—	1	354,660			354,703		158	354,735		99	354,773		190	354,813
D4—	100	354,623		10	354,661			354,704		164	354,737	D20—	15	354,774			354,814
	108	354,624		14	354,662			354,705		169	354,738		42	354,775	D25—	16	354,815
	109	354,625		47	354,663			354,706		184	354,739	D21—	11	354,776			354,816
	116	354,626		51	354,664			354,707	D14—	100	354,740		68	354,777		33	354,817
D6—	300	354,627			354,665			354,708			354,741		171	354,779		58	354,818
	125	354,628		90	354,666			354,709			354,742		191	354,780		102	354,819
	356	354,629		98	354,667			354,710			354,743			354,781		124	354,820
	364	354,630		331	354,668			354,711		106	354,744		204	354,783		126	354,792
	366	354,631		352	354,669			354,713		107	354,745		214	354,782		138	354,821
	369	354,632		353	354,670			354,714		114	354,746			354,784	D26—	28	354,822
		354,633			354,671			354,715		115	354,747		219	354,785			354,823
	375	354,634		354	354,672			354,716		148	354,748		220	354,786			354,824
	381	354,635			354,673			354,717		151	354,749		226	354,787	D99—	80	354,825
	406	354,636			354,674			354,718		216	354,750	D22—	115	354,788		8	354,826
	432	354,637		367	354,675			354,719		218	354,751		117	354,789		29	354,827
	433	354,638			354,676		166	354,712		240	354,752		132	354,790			354,828
	450	354,639		396	354,677		231	354,699	D15—	7	354,753		134	354,791		33	354,829
		354,640	D9—	341	354,678		232	354,720			354,754	D23—	201	354,793			354,830
		354,641		413	354,679		223	354,695			354,755		207	354,794		34	354,831
		354,642		428	354,680			354,702		15	354,756		209	354,795		35	354,832
	484	354,643		434	354,681		224	354,693		133	354,757			354,796			354,833
	491	354,644			354,687	D12—	12	354,721		141	354,758		253	354,797		36	354,834
	552	354,654		449	354,682		92	354,778	D16—	131	354,761		252	354,798		38	354,835
	566	354,645		520	354,683		108	354,723		209	354,762			354,800		43	354,836
	567	354,646		523	354,684		125	354,724		306	354,763		259	354,799		99	354,837
	575	354,647		543	354,685		146	354,725		339	354,759		263	354,801			354,838
	579	354,648		544	354,686		181	354,726			354,760		309	354,802			354,839
	598	354,649	D10—	31	354,688		400	354,727	D18—	53	354,764		328	356,803			

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01 :	5,383,254	5,383,601	5,384,092	5,384,675	09 :	5,383,308	5,384,036
	5,383,596	5,383,603	5,384,176	5,384,685		5,383,314	5,384,045
	5,383,644	5,383,643	5,384,213	5,384,692		5,383,387	5,384,097
	5,383,672	5,383,660	5,384,319	5,384,703		5,383,558	5,384,333
	5,383,826	5,383,662	5,384,721	5,384,710		5,383,712	5,384,399
	5,383,827	5,383,668	5,384,239	5,384,713		5,383,732	5,384,448
	5,384,128	5,383,696	5,384,245	5,384,721		5,383,842	5,384,459
	5,384,138	5,383,702	5,384,252	5,384,723		5,383,847	5,384,555
	5,384,310	5,383,742	5,384,261	5,384,744		5,383,881	5,384,562
04 :	5,383,676	5,383,744	5,384,263	5,384,767		5,383,902	5,384,565
	5,383,788	5,383,745	5,384,264	5,384,789		5,383,903	5,384,577
	5,383,867	5,383,747	5,384,309	5,384,775		5,383,904	5,384,643
	5,384,269	5,383,777	5,384,329	5,384,793		5,383,949	5,384,702
	5,384,373	5,383,787	5,384,331	5,384,791		5,383,956	5,384,838
	5,384,394	5,383,793	5,384,355	5,384,797		5,384,087	5,384,911
	5,384,436	5,383,793	5,384,397	5,384,798		5,384,116	13 : 5,383,240
	5,384,554	5,383,795	5,384,411	5,384,799		5,384,203	5,383,297
	5,384,589	5,383,804	5,384,412	5,384,803		5,384,318	5,383,415
	5,384,637	5,383,838	5,384,431	5,384,808		5,384,403	5,383,496
	5,384,669	5,383,843	5,384,433	5,384,814		5,384,451	5,383,582
	5,384,688	5,383,864	5,384,443	5,384,823		5,384,489	5,383,576
	5,384,873	5,383,843	5,384,449	5,384,860		5,384,708	5,383,610
	5,384,875	5,383,848	5,384,458	5,384,864		5,384,723	5,383,765
05 :	5,383,251	5,383,851	5,384,472	5,384,881		5,384,846	5,383,928
	5,383,667	5,383,853	5,384,477	5,384,890	10 :	5,383,611	5,384,068
06 :	5,383,239	5,383,866	5,384,481	5,384,892		5,384,019	5,384,306
	5,383,244	5,383,868	5,384,487	5,384,893		5,384,057	5,384,452
	5,383,259	5,383,874	5,384,490	5,384,898		5,384,148	5,384,770
	5,383,287	5,383,889	5,384,492	5,384,901		5,384,254	5,384,867
	5,383,372	5,383,890	5,384,496	5,384,908		5,384,410	5,384,885
	5,383,298	5,383,893	5,384,458	5,384,912		5,092,496	15 : 5,383,256
	5,383,300	5,383,899	5,384,499	5,093,080	12 :	5,383,311	5,384,049
	5,383,302	5,383,908	5,384,502	08 : 5,383,299		5,383,315	16 : 5,383,327
	5,383,320	5,383,911	5,384,503	5,383,316		5,383,329	5,383,419
	5,383,335	5,383,913	5,384,510	5,383,408		5,383,451	5,383,510
	5,383,337	5,383,917	5,384,526	5,383,512		5,383,477	5,384,284
	5,383,351	5,383,921	5,384,541	5,383,587		5,383,497	5,384,289
	5,383,359	5,383,923	5,384,580	5,383,597		5,383,498	5,384,500
	5,383,369	5,383,929	5,384,566	5,383,598		5,383,499	5,384,739
	5,383,649	5,383,930	5,384,567	5,383,629		5,383,509	17 : 5,383,252
	5,383,681	5,383,939	5,384,575	5,383,638		5,383,570	5,383,276
	5,383,469	5,383,943	5,384,598	5,383,678		5,383,585	5,383,313
	5,383,470	5,383,971	5,384,603	5,383,689		5,383,616	5,383,321
	5,383,473	5,383,976	5,384,605	5,383,695		5,383,624	5,383,352
	5,383,481	5,383,981	5,384,606	5,383,711		5,383,666	5,383,390
	5,383,488	5,383,988	5,384,636	5,384,106		5,383,716	5,383,391
	5,383,508	5,383,994	5,384,640	5,384,278		5,383,727	5,383,400
	5,383,555	5,383,995	5,384,650	5,384,524		5,383,739	5,383,411
	5,383,565	5,384,001	5,384,652	5,384,532		5,383,766	5,383,414
	5,383,574	5,384,008	5,384,657	5,384,653		5,383,802	5,383,491
	5,383,586	5,384,009	5,384,662	5,384,656		5,383,810	5,383,513
	5,383,588	5,384,024	5,384,668	5,384,677		5,383,920	5,383,584
	5,383,600	5,384,025	5,384,671	5,384,786		5,383,973	5,383,609

	5,383,641		5,384,301		5,383,612		5,384,231		5,384,495		5,383,760
	5,383,663		5,384,530		5,383,714		5,384,235		5,384,348		5,383,803
	5,383,721		5,384,556		5,384,023		5,384,241		5,384,571		5,383,831
	5,383,769		5,384,574		5,384,108		5,384,242		5,384,583		5,383,839
	5,383,771		5,384,594		5,384,113		5,384,259		5,384,838		5,383,846
	5,383,796		5,384,607	31 :	5,383,474		5,384,271		5,384,861		5,383,884
	5,383,809		5,384,610		5,383,749		5,384,277	40 :	5,383,235		5,383,912
	5,383,817		5,384,680		5,383,885		5,384,283		5,383,241		5,383,916
	5,383,879		5,384,774		5,384,078		5,384,304		5,383,290		5,383,942
	5,383,906		5,384,779		5,384,564		5,384,307		5,383,520		5,384,083
	5,383,989		5,384,780	32 :	5,383,756		5,384,357		5,383,521		5,384,127
	5,384,037		5,384,879		5,384,101		5,384,359		5,383,522		5,384,142
	5,384,038	26 :	5,383,236	33 :	5,383,972		5,384,360		5,383,725		5,384,147
	5,384,050		5,383,238		5,384,161		5,384,361		5,383,743		5,384,244
	5,384,054		5,383,262		5,384,164		5,384,363		5,383,811		5,384,260
	5,384,114		5,383,312		5,384,230		5,384,376		5,383,896		5,384,267
	5,384,145		5,383,518		5,384,616		5,384,387		5,384,349		5,384,272
	5,384,146		5,383,333	34 :	5,383,310		5,384,429		5,384,430		5,384,285
	5,384,149		5,383,346		5,383,344		5,384,441		5,384,437		5,384,288
	5,384,151		5,383,356		5,383,420		5,384,559		5,384,438		5,384,299
	5,384,342		5,383,362		5,383,425		5,384,572	41 :	5,383,617		5,384,352
	5,384,427		5,383,363		5,383,466		5,384,592		5,384,515		5,384,373
	5,384,435		5,383,370		5,383,480		5,384,608		5,384,544		5,384,375
	5,384,444		5,383,374		5,383,635		5,384,613		5,384,582		5,384,404
	5,384,447		5,383,377		5,383,737		5,384,620		5,384,772		5,384,450
	5,384,509		5,383,381		5,383,782		5,384,621		5,384,781		5,384,483
	5,384,527		5,383,385		5,383,862		5,384,627	42 :	5,383,246		5,384,488
	5,384,561		5,383,421		5,383,901		5,384,633		5,383,288		5,384,547
	5,384,816		5,383,432		5,384,041		5,384,639		5,383,279		5,384,686
	5,384,820		5,383,443		5,384,052		5,384,646		5,383,441		5,384,715
	5,384,823		5,383,523		5,384,055		5,384,655		5,383,484		5,384,723
	5,384,835		5,383,537		5,384,060		5,384,664		5,383,492		5,384,727
	5,384,841		5,383,538		5,384,062		5,384,679		5,383,630		5,384,737
	5,384,906		5,383,539		5,384,089		5,384,690		5,383,671		5,384,746
18 :	5,383,439		5,383,540		5,384,096		5,384,691		5,383,674		5,384,747
	5,383,442		5,383,543		5,384,131		5,384,699		5,383,703		5,384,752
	5,383,799		5,383,543		5,384,156		5,384,756		5,383,792		5,384,753
	5,383,875		5,383,605		5,384,232		5,384,773		5,383,794		5,384,788
	5,383,922		5,383,632		5,384,300		5,384,777		5,383,840		5,384,795
	5,383,938		5,383,640		5,384,311		5,384,793		5,383,854		5,384,802
	5,384,064		5,383,680		5,384,316		5,384,831		5,383,831		5,384,825
	5,384,332		5,383,699		5,384,317		5,384,863		5,383,886		5,384,827
	5,384,339		5,383,707		5,384,326		5,384,886		5,383,897		5,384,847
	5,384,551		5,383,738		5,384,334		5,384,894		5,383,953		5,384,910
	5,384,714		5,383,772		5,384,336		5,384,909		5,383,954		5,384,283
19* :	5,383,849		5,383,773		5,384,393	37 :	5,383,255		5,383,955	49 :	5,383,586
	5,384,085		5,383,812		5,384,406		5,383,286		5,383,958		5,383,962
	5,384,199		5,383,822		5,384,469		5,383,322		5,384,077		5,384,033
	5,384,550		5,383,823		5,384,504		5,383,331		5,384,111		5,384,822
	5,384,709		5,383,825		5,384,545		5,383,478		5,384,150		5,020,507
20 :	5,383,541		5,383,829		5,384,599		5,383,494		5,384,178		5,383,389
	5,383,891		5,383,893		5,384,635		5,383,621		5,384,296	50 :	5,384,281
21 :	5,383,900		5,383,941		5,384,771		5,383,661		5,384,327		5,384,474
	5,383,243		5,383,950		5,384,806		5,383,673		5,384,335		5,384,546
	5,383,357		5,383,967		5,384,810		5,383,776		5,384,337		5,383,278
22 :	5,383,859		5,384,030		5,384,826		5,383,856		5,384,367	51 :	5,383,281
	5,383,271		5,384,136		5,384,840		5,384,073		5,384,418		5,383,289
	5,383,427		5,384,144		5,384,877		5,384,082		5,384,497		5,383,296
	5,384,371		5,384,163		5,384,906		5,384,240		5,384,563		5,383,365
23 :	5,383,401		5,384,171	35 :	5,384,051		5,384,421		5,384,568		5,383,472
	5,383,648		5,384,200	36 :	5,383,237		5,384,730		5,384,696		5,383,479
	5,384,044		5,384,291		5,383,286		5,384,844		5,384,712		5,383,657
	5,384,262		5,384,328		5,383,301		5,384,850		5,384,812		5,383,717
24 :	5,383,280		5,384,338		5,383,317	39 :	5,383,263		5,384,813		5,383,741
	5,383,339		5,384,351		5,383,323		5,383,326		5,384,829		5,383,986
	5,383,392		5,384,383		5,383,418		5,383,436		5,384,876		5,384,153
	5,383,567		5,384,407		5,383,452		5,383,486	44 :	5,383,257		5,384,265
	5,383,609		5,384,440		5,383,476		5,383,503		5,383,426		5,384,521
	5,383,781		5,384,446		5,383,495		5,383,544		5,383,808		5,384,776
	5,383,841		5,384,455		5,383,502		5,383,557		5,384,125		5,384,835
	5,383,974		5,384,578		5,383,505		5,383,562		5,384,751		5,384,854
	5,384,079		5,384,704		5,383,552		5,383,564	45 :	5,383,606		5,384,895
	5,384,118		5,384,707		5,383,554		5,383,568		5,383,966	53 :	Re.34,836
	5,384,243		5,384,717		5,383,583		5,383,582		5,384,010		5,383,446
	5,384,290		5,384,817		5,383,642		5,383,622		5,384,184		5,383,548
	5,384,308	27 :	5,383,274		5,383,656		5,383,639		5,384,882		5,383,665
	5,384,462		5,383,307		5,383,659		5,383,686	46 :	5,383,698		5,383,677
	5,384,573		5,383,350		5,383,675		5,383,693	47 :	5,383,343		5,383,758
	5,384,593		5,383,384		5,383,684		5,383,709		5,383,417		5,383,828
	5,384,700		5,383,467		5,383,688		5,383,779		5,383,651		5,383,860
	5,384,845		5,383,573		5,383,705		5,383,806		5,383,658		5,384,611
25 :	5,383,260		5,383,857		5,383,723		5,383,837		5,383,685		5,384,815
	5,383,292		5,383,873		5,383,735		5,383,855		5,384,105		5,384,902
	5,383,295		5,383,907		5,383,814		5,383,869		5,384,377	54 :	5,384,102
	5,383,340		5,383,909		5,383,835		5,383,871		5,384,543	55 :	5,383,376
	5,383,372		5,383,914		5,383,883		5,383,880		5,384,588		5,383,397
	5,383,373		5,383,915		5,383,888		5,383,919	48 :	Re.34,834		5,383,429
	5,383,457		5,384,003		5,383,905		5,383,937		5,383,269		5,383,433
	5,383,471		5,384,031		5,383,918		5,384,002		5,383,293		5,383,462
	5,383,533		5,384,103		5,383,925		5,384,014		5,383,353		5,383,511
	5,383,852		5,384,253		5,383,948		5,384,061		5,383,354		5,383,517
	5,383,876		5,384,362		5,383,956		5,384,063		5,383,368		5,383,571
	5,383,894		5,384,364		5,384,022		5,384,067		5,383,422		5,383,589
	5,383,898		5,384,374		5,384,027		5,384,099		5,383,450		5,383,614
	5,383,926		5,384,534		5,384,047		5,384,115		5,383,489		5,383,636
	5,383,932		5,384,698		5,384,107		5,384,119		5,383,525		5,383,653
	5,383,934		5,384,832		5,384,1211		5,384,165		5,383,527		5,383,778
	5,383,989		4,784,356		5,384,134		5,384,179		5,383,633		5,383,872
	5,384,042	28 :	5,384,198		5,384,140		5,384,186		5,383,694		5,384,011
	5,384,043	29 :	5,383,328		5,384,152		5,384,193		5,383,692		5,384,012
	5,384,117		5,383,338		5,384,159		5,384,302		5,383,694		5,384,212
	5,384,155		5,383,454		5,384,160		5,384,345		5,383,733		5,384,217
	5,384,181		5,383,526		5,384,188		5,384,353		5,383,740		5,384,313
	5,384,211		5,383,536		5,384,192		5,384,372		5,383,751		5,384,697
	5,384,229		5,383,581		5,384,222		5,384,442		5,383,759		

01 :	354,675		354,767		354,678		354,795		354,794		354,822
	354,694		354,769		354,724		354,811		354,805		354,828
04 :	354,645		354,770		354,784	28 :	354,788		354,832		354,829
	354,647		354,772		354,790		354,814	39 :	354,658	49 :	354,836
	354,712		354,780	17 :	354,613	29 :	354,640		354,666	51 :	354,796
	354,752		354,781		354,628		354,662		354,677	53 :	354,663
06 :	354,614		354,782		354,633		354,720		354,687		354,682
	354,615		354,792		354,653		354,777		354,725		354,739
	354,619		354,798		354,688	33 :	354,685		354,785	54 :	354,671
	354,622		354,799		354,730		354,834		354,827		354,787
	354,623		354,808		354,745	34 :	354,751		354,838	55 :	354,656
	354,625		354,824		354,833		354,813	40 :	354,665	56 :	354,692
	354,629	09 :	354,673	18 :	354,737	36 :	354,624		354,802		354,698
	354,632		354,738		354,810		354,651	41 :	354,617		354,701
	354,633		354,745		354,825		354,693		354,819		354,703
	354,636		354,766	19 :	354,758		354,695	42 :	354,757		354,704
	354,644		354,821		354,831		354,702		354,779		354,705
	354,646	12 :	354,620	21 :	354,786		354,748		354,809		354,706
	354,669		354,630	23 :	354,736		354,759	45 :	354,660		354,707
	354,670		354,664	24 :	354,626		354,780		354,791		354,708
	354,679		354,690		354,684		354,776	47 :	354,616		354,709
	354,680		354,733		354,771		354,783		354,650		354,710
	354,691		354,740	25 :	354,618		354,812		354,681		354,711
	354,722		354,789		354,743		354,813		354,749		354,713
	354,723		354,820	26 :	354,634		354,826		354,804		354,714
	354,726		354,837		354,667		354,830	48 :	354,727		354,715
	354,728	13 :	354,621		354,683	37 :	354,649		354,754		354,716
	354,732		354,639	27 :	354,637		354,689		354,773		354,717
	354,741		354,641		354,639		354,747		354,816		354,718
	354,744		354,642		354,756		354,753		354,817		354,719
	354,761		354,648								

PLANT PATENTS

06 :	9,046	9,047				

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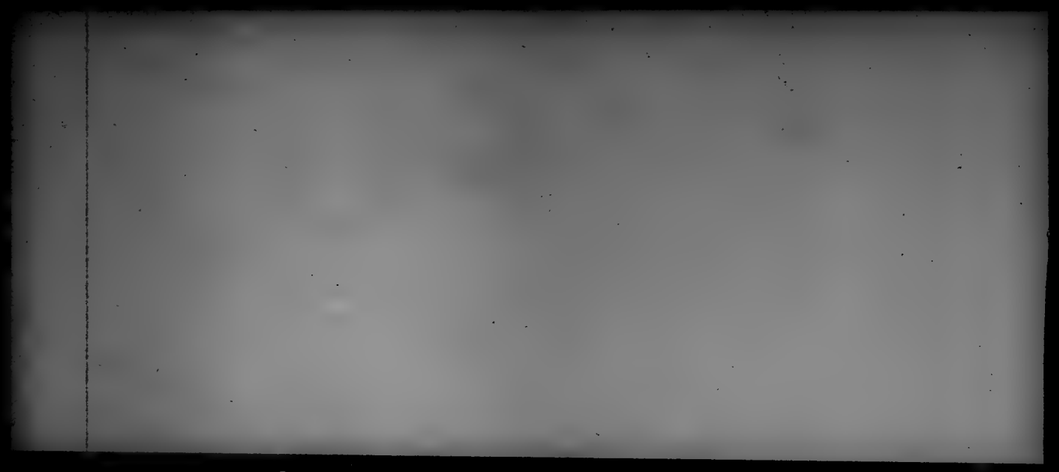
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Ronald H. Brown, Secretary
PATENT AND TRADEMARK OFFICE
Bruce A. Lehman, Commissioner

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 12, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 28, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,083,314 through 5,084,913
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 26, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,720,874 through 4,722,097
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 24, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,426,739 through 4,428,078
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 23, 1994 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,080	06/540,865	02/11/86
(4,360,255)	(06/286,332)	(11/23/82)
Re. 32,384	06/673,442	03/31/87
(4,359,960)	(06/227,013)	(11/23/82)
Re. 32,793	07/075,356	11/29/88
(4,623,860)	(06/747,923)	(11/18/86)
Re. 33,490	07/272,719	12/18/90
(4,622,730)	(06/704,967)	(11/18/86)
Re. 33,539	07/272,525	02/19/91
(4,623,076)	(06/708,157)	(11/18/86)
4,359,800	06/240,799	11/23/82
4,359,812	06/224,991	11/23/82
4,359,854	06/225,016	11/23/82
4,359,860	06/274,449	11/23/82
4,359,862	06/297,544	11/23/82
4,359,863	06/218,608	11/23/82
4,359,864	06/275,077	11/23/82
4,359,875	06/256,228	11/23/82
4,359,877	06/262,250	11/23/82
4,359,878	06/246,843	11/23/82
4,359,884	06/225,304	11/23/82
4,359,891	06/222,419	11/23/82
4,359,899	06/218,317	11/23/82
4,359,908	06/221,014	11/23/82
4,359,921	06/245,031	11/23/82
4,359,922	06/245,029	11/23/82
4,359,927	06/230,250	11/23/82
4,359,928	06/230,559	11/23/82
4,359,937	06/261,396	11/23/82
4,359,938	06/218,114	11/23/82
4,359,957	06/229,099	11/23/82
4,359,961	06/223,100	11/23/82
4,359,962	06/298,244	11/23/82
4,359,970	06/245,272	11/23/82
4,359,987	06/229,131	11/23/82
4,359,993	06/228,136	11/23/82
4,359,997	06/219,969	11/23/82
4,360,020	06/216,037	11/23/82
4,360,027	06/278,605	11/23/82
4,360,049	06/240,671	11/23/82
4,360,052	06/331,639	11/23/82
4,360,059	06/251,465	11/23/82
4,360,067	06/252,851	11/23/82
4,360,075	06/262,464	11/23/82
4,360,083	06/257,282	11/23/82
4,360,108	06/222,390	11/23/82
4,360,113	06/284,673	11/23/82
4,360,155	06/291,313	11/23/82
4,360,163	06/226,160	11/23/82
4,360,170	06/221,714	11/23/82
4,360,181	06/241,630	11/23/82
4,360,185	06/255,199	11/23/82
4,360,247	06/225,892	11/23/82
4,360,259	06/234,203	11/23/82
4,360,274	06/222,180	11/23/82
4,360,277	06/221,811	11/23/82
4,360,279	06/275,770	11/23/82
4,360,282	06/242,033	11/23/82
4,360,300	06/294,734	11/23/82

Patent Number	Serial Number	Issue Date
4,360,325	06/238,785	11/23/82
4,360,330	06/282,414	11/23/82
4,360,362	06/311,827	11/23/82
4,360,374	06/310,332	11/23/82
4,360,375	06/219,503	11/23/82
4,360,387	06/241,801	11/23/82
4,360,388	06/233,434	11/23/82
4,360,397	06/242,149	11/23/82
4,360,399	06/272,794	11/23/82
4,360,400	06/280,424	11/23/82
4,360,403	06/263,401	11/23/82
4,360,405	06/281,536	11/23/82
4,360,407	06/360,251	11/23/82
4,360,409	06/269,490	11/23/82
4,360,415	06/230,457	11/23/82
4,360,416	06/258,126	11/23/82
4,360,422	06/292,850	11/23/82
4,360,431	06/259,435	11/23/82
4,360,442	06/311,271	11/23/82
4,360,460	06/217,277	11/23/82
4,360,462	06/313,974	11/23/82
4,360,463	06/298,678	11/23/82
4,360,466	06/325,069	11/23/82
4,360,471	06/329,845	11/23/82
4,360,472	06/329,846	11/23/82
4,360,473	06/230,579	11/23/82
4,360,476	06/334,402	11/23/82
4,360,478	06/249,041	11/23/82
4,360,482	06/314,598	11/23/82
4,360,485	06/271,072	11/23/82
4,360,486	06/320,024	11/23/82
4,360,489	06/230,913	11/23/82
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4,972,326	07/471,001	11/20/90
4,972,327	07/327,321	11/20/90
4,972,335	07/298,898	11/20/90
4,972,361	07/193,813	11/20/90
4,972,362	07/209,156	11/20/90
4,972,381	07/414,970	11/20/90
4,972,382	07/359,808	11/20/90
4,972,404	07/311,806	11/20/90
4,972,406	07/222,787	11/20/90
4,972,410	07/382,264	11/20/90
4,972,426	07/444,957	11/20/90
4,972,428	07/527,370	11/20/90
4,972,429	07/273,228	11/20/90
4,972,443	07/265,097	11/20/90
4,972,447	07/315,384	11/20/90
4,972,451	07/468,501	11/20/90
4,972,459	07/331,819	11/20/90
4,972,470	07/083,258	11/20/90
4,972,475	07/306,212	11/20/90
4,972,477	07/188,055	11/20/90
4,972,479	07/072,157	11/20/90
4,972,481	07/285,970	11/20/90
4,972,491	07/278,324	11/20/90
4,972,492	07/322,957	11/20/90
4,972,495	07/287,176	11/20/90
4,972,516	07/437,141	11/20/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,226,348, Re. S.N. 08/345,284, Oct. 6, 1994, Cl. 91/436, ELECTRO-HYDRAULIC QUICK DROP CIRCUIT, Joseph E. Dezelan, et. al., Owner of Record: *Caterpillar Inc., Peoria, Ill.*, Attorney or Agent: John W. Grant, Ex. Gp.: 3401

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,777,066, Reexam. No. 90/003,616, Oct. 27, 1994, Cl. 375/114, METHOD AND SYSTEM FOR SYNCHRONIZING THE TRANSMISSION OF DIGITAL DATA WHILE PROVIDING VARIABLE LENGTH FILLER CODE, David C. Nicholas, Owner of Record: *Research Foundation, Inc., Iowa State University, Ames, Iowa*, Attorney or Agent: George M. Cooper, Jones, Tullar and Cooper, Arlington, Va., Ex. Gp.: 2614, Requester: Murata Business Systems, Inc., Plano, Tex.

4,491,834, Reexam. No. 90/003,611, Oct. 21, 1994, Cl. 345/123, DISPLAY CONTROLLING APPARATUS, Tetsuji Oguchi, Owner of Record: *Nippon Electric Co., Ltd., Tokyo, Japan*, Attorney or Agent: David A. Blumenthal, Foley & Lardner, Washington, D.C., Ex. Gp.: 2609, Requester: Owner

4,812,176, Reexam. No. 90/003,605, Oct. 17, 1994, Cl. 148/610, PROCESS FOR THE PRODUCTION OF A STRIP OF A CHROMIUM STAINLESS STEEL OF A DUPLEX STRUCTURE HAVING HIGH STRENGTH AND ELONGATION AS WELL AS REDUCED PLANE ANISOTROPY, Teruo Tanaka, et. al., Owner of Record: *Nisshin Steel Co., Ltd., Tokyo, Japan*, Attorney or Agent: Matthew Jacob, Wenderoth, Lind & Ponack, Washington, D.C., Ex. Gp.: 1101, Requester: Allegheny Ludlum Corp., Pittsburgh, Pa.

4,824,491, Reexam. No. 90/003,606, Oct. 17, 1994, Cl. 148/610, PROCESS FOR THE PRODUCTION OF A STRIP OF A CHROMIUM STAINLESS STEEL OF A DUPLEX STRUCTURE HAVING HIGH STRENGTH AND ELOGATION AS WELL AS REDUCED PLANE ANISOTROPY, Teruo Tanaka, et. al., Owner of Record: *Nisshin Steel Co., Ltd., Tokyo, Japan*, Attorney or Agent: Wenderoth, Lind & Ponack, Washington, D.C., Ex. Gp.: 1101, Requester: Allegheny Ludlum Corp., Pittsburgh, Pa.

4,842,579, Reexam. No. 90/003,608, Oct. 18, 1994, Cl. 604/022, ATHERECTOMY DEVICE, Samuel Shiber, Owner of Record: *Surgical Systems & Instruments, Inc., Mundelein, Ill.*, Attorney or Agent: None, Ex. Gp.: 3306, Requester: Andrew F. Farr & Herbert R. Radisch, San Diego, Calif.

4,876,555, Reexam. No. 90/003,607, Oct. 18, 1994, Cl. 343/895, RESONANCE LABEL AND METHOD FOR ITS FABRICATION, Paul R. Jorgensen, Owner of Record: *Actron Entwicklungs AG, Rotkreuz Lde, Risch, Switzerland*, Attorney or Agent: Ostrolenk, Faber, Gerb & Soffen, New York, N.Y., Ex. Gp.: 2508, Requester: All-Tag Security AG, Rotkreuz/Zug, Switzerland

4,889,521, Reexam. No. 90/003,615, Oct. 26, 1994, Cl. 474/164, MULTISTAGE SPROCKET ASSEMBLY FOR A BICYCLE, Masashi Nagano, Owner of Record: *Shimano, Inc., Sakai-Shi, Japan*, Attorney or Agent: James A. Deland, J. Deland Law Office, San Ramon, Calif., Ex. Gp.: 3506, Requester: Owner

4,889,602, Reexam. No. 90/003,592, Oct. 7, 1994, Cl. 205/191, ELECTROPLATING BATH AND METHOD FOR FORMING ZINC-NICKEL ALLOY COATING, Katsuhide Oshima, et. al., Owner of Record: *Dipsol Chemicals, Ltd., Tokyo, Japan*, Attorney or Agent: Robert Charles Beam, Blue Bell, Pa., Ex. Gp.: 1102, Requester: Owner

5,060,485, Reexam. No. 90/003,614, Oct. 25, 1994, Cl. 062/225, EXPANSION VALVE, Masaru Watanabe, et. al., Owner of Record: *Fujikoki America, Inc., Dallas, Tex.*, Attorney or Agent: William R. Gustavson, Richards, Medlock & Andrews, Dallas, Tex., Ex. Gp.: 3404, Ex. Gp.: Owner

5,113,182, Reexam. No. 90/003,613, Oct. 21, 1994, Cl. 340/825.31, VEHICLE DOOR LOCKING SYSTEM DETECTING THAT ALL DOORS ARE CLOSED, Michael J. Suman, et. al., Owner of Record: *Prince Corp., Holland, Mich.*, Attorney or Agent: Harold W. Reick, Price, Heneveld, Cooper, Dewitt & Litton, Grand Rapids, Mich., Ex. Gp.: 2604, Requester: Lectron Products, Inc., c/o Harness, Dickey & Pierce, Bloomfield Hills, Mich.

5,231,634, Reexam. No. 90/003,610, Oct. 19, 1994, Cl. 370/95.1, MEDIUM ACCESS PROTOCOL FOR WIRELESS LENS, Rick R. Giles, et. al., Owner of Record: *Proxim, Inc., Mountain View, Calif.*, Attorney or Agent: Michael J. Ure, Burns, Doane, Swecker & Mathis, Alexandria, Va., Ex. Gp.: 2603, Requester: Owner

Commissioner Ordered Reexaminations

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.2(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.24(a)(5) and 1.525(b)).

5,329,672, Reexam. No. 90/003,612, Oct. 31, 1994, Cl. 024/067.900, METAL WIRE PAPER CLIP STRUCTURE, Linda A. Froehlich, et. al., Owner of Record: *Linda A. Froehlich & Richard D. Froehlich, Pittsburgh, Pa.*, Attorney or Agent: Raymond N. Baker, Shanley & Baker, Washington, D.C., Ex. Gp.: 3507, Requester: Commissioner of Patents and Trademarks, Washington, D.C.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 19, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
95,857	71/074,198	03/17/1914
310,849	71/341,731	03/13/1934
310,855	71/341,897	03/13/1934
310,863	71/325,518	03/13/1934
310,866	71/320,829	03/13/1934
310,869	71/320,828	03/13/1934
310,900	71/342,597	03/13/1934
310,903	71/342,568	03/13/1934
310,909	71/343,788	03/13/1934
310,917	71/343,847	03/13/1934
310,918	71/343,846	03/13/1934
310,925	71/343,634	03/13/1934
310,926	71/343,663	03/13/1934
310,937	71/344,375	03/13/1934
310,948	71/343,461	03/13/1934
310,952	71/344,226	03/13/1934
310,954	71/343,493	03/13/1934
310,958	71/344,275	03/13/1934
310,959	71/340,418	03/13/1934
310,964	71/340,065	03/13/1934
310,983	71/340,645	03/13/1934
310,984	71/335,240	03/13/1934
311,000	71/337,390	03/13/1934
311,038	71/343,962	03/13/1934
311,041	71/343,970	03/13/1934
311,047	71/343,975	03/13/1934
311,048	71/343,974	03/13/1934
311,076	71/343,549	03/13/1934
311,079	71/343,550	03/13/1934
311,091	71/342,803	03/13/1934
311,094	71/342,852	03/13/1934
311,103	71/342,934	03/13/1934
311,104	71/343,392	03/13/1934
311,107	71/344,008	03/13/1934
311,114	71/342,814	03/13/1934
311,138	71/342,735	03/13/1934
311,139	71/342,713	03/13/1934
311,152	71/342,021	03/13/1934
311,161	71/342,325	03/13/1934
311,177	71/343,075	03/13/1934
569,443	71/614,829	01/20/1953
581,683	71/642,482	10/27/1953
582,725	71/629,994	11/24/1953
586,734	71/639,215	03/09/1954
586,861	71/622,663	03/16/1954
586,872	71/627,354	03/16/1954
586,885	71/629,824	03/16/1954
586,902	71/633,217	03/16/1954
586,906	71/633,793	03/16/1954
586,909	71/634,768	03/16/1954
586,913	71/635,427	03/16/1954
586,920	71/636,820	03/16/1954
586,925	71/637,359	03/16/1954
586,927	71/637,400	03/16/1954
586,932	71/637,818	03/16/1954
586,933	71/637,835	03/16/1954
586,936	71/638,756	03/16/1954
586,946	71/640,409	03/16/1954
586,948	71/640,665	03/16/1954
586,951	71/641,169	03/16/1954
586,956	71/641,810	03/16/1954
586,963	71/642,186	03/16/1954
586,966	71/642,461	03/16/1954
586,967	71/642,490	03/16/1954
586,987	71/643,606	03/16/1954
586,988	71/643,853	03/16/1954
586,989	71/643,930	03/16/1954
586,990	71/643,960	03/16/1954
587,005	71/645,065	03/16/1954

Reg. No.	Serial Number	Reg. Date
587,007	71/645,274	03/16/1954
587,011	71/645,609	03/16/1954
587,016	71/645,846	03/16/1954
587,018	71/645,939	03/16/1954
587,031	71/646,601	03/16/1954
587,038	71/647,256	03/16/1954
587,040	71/647,280	03/16/1954
587,041	71/647,281	03/16/1954
587,042	71/647,330	03/16/1954
587,044	71/647,430	03/16/1954
587,049	71/647,659	03/16/1954
587,051	71/647,704	03/16/1954
587,052	71/647,765	03/16/1954
587,058	71/647,873	03/16/1954
587,060	71/647,905	03/16/1954
587,065	71/647,953	03/16/1954
587,072	71/648,132	03/16/1954
587,079	71/648,297	03/16/1954
587,082	71/648,355	03/16/1954
587,084	71/648,378	03/16/1954
587,097	71/648,789	03/16/1954
587,101	71/648,967	03/16/1954
587,102	71/648,999	03/16/1954
587,104	71/649,005	03/16/1954
587,105	71/649,022	03/16/1954
587,111	71/649,186	03/16/1954
587,112	71/649,212	03/16/1954
587,114	71/649,273	03/16/1954
587,131	71/617,215	03/16/1954
587,133	71/624,683	03/16/1954
587,143	71/638,689	03/16/1954
587,146	71/640,024	03/16/1954
946,892	72/401,419	11/07/1972
968,055	72/423,077	09/11/1973
976,791	72/425,887	01/15/1974
976,808	72/444,649	01/15/1974
980,174	72/434,566	03/12/1974
980,180	72/419,762	03/12/1974
980,182	72/380,057	03/12/1974
980,185	72/427,566	03/12/1974
980,194	72/453,982	03/12/1974
980,195	72/429,323	03/12/1974
980,196	72/431,951	03/12/1974
980,197	72/453,009	03/12/1974
980,198	72/454,640	03/12/1974
980,202	72/419,106	03/12/1974
980,209	72/441,321	03/12/1974
980,210	72/442,497	03/12/1974
980,214	72/444,752	03/12/1974
980,215	72/444,903	03/12/1974
980,220	72/423,609	03/12/1974
980,223	72/443,604	03/12/1974
980,224	72/446,152	03/12/1974
980,227	72/455,499	03/12/1974
980,230	72/446,027	03/12/1974
980,235	72/445,045	03/12/1974
980,236	72/446,322	03/12/1974
980,237	72/447,243	03/12/1974
980,238	72/447,244	03/12/1974
980,239	72/447,301	03/12/1974
980,242	72/448,762	03/12/1974
980,245	72/454,790	03/12/1974
980,250	72/423,757	03/12/1974
980,252	72/428,123	03/12/1974
980,256	72/447,784	03/12/1974
980,259	72/452,831	03/12/1974
980,261	72/462,678	03/12/1974
980,266	72/437,101	03/12/1974
980,275	72/411,427	03/12/1974
980,279	72/426,433	03/12/1974
980,283	72/437,335	03/12/1974
980,285	72/438,476	03/12/1974
980,286	72/439,591	03/12/1974
980,287	72/439,935	03/12/1974
980,310	72/452,352	03/12/1974
980,311	72/452,723	03/12/1974
980,312	72/452,724	03/12/1974
980,313	72/452,727	03/12/1974
980,321	72/454,274	03/12/1974
980,324	72/431,223	03/12/1974
980,328	72/439,284	03/12/1974
980,332	72/440,825	03/12/1974
980,333	72/441,226	03/12/1974
980,335	72/452,146	03/12/1974
980,336	72/453,706	03/12/1974
980,337	72/459,622	03/12/1974
980,338	72/404,444	03/12/1974
980,339	72/411,145	03/12/1974
980,340	72/427,413	03/12/1974
980,343	72/440,374	03/12/1974
980,349	72/443,173	03/12/1974
980,352	72/450,446	03/12/1974
980,353	72/451,645	03/12/1974
980,357	72/454,697	03/12/1974
980,358	72/457,332	03/12/1974
980,359	72/457,439	03/12/1974
980,361	72/457,441	03/12/1974
980,363	72/457,444	03/12/1974
980,364	72/457,446	03/12/1974
980,366	72/420,015	03/12/1974
980,367	72/434,368	03/12/1974
980,368	72/404,438	03/12/1974
980,369	72/423,540	03/12/1974
980,370	72/423,811	03/12/1974
980,372	72/431,324	03/12/1974
980,375	72/446,379	03/12/1974
980,377	72/454,546	03/12/1974
980,379	72/456,258	03/12/1974
980,382	72/394,841	03/12/1974
980,386	72/429,837	03/12/1974
980,406	72/452,681	03/12/1974
980,407	72/307,371	03/12/1974
980,412	72/427,132	03/12/1974
980,413	72/427,718	03/12/1974
980,416	72/438,267	03/12/1974
980,418	72/440,271	03/12/1974
980,422	72/455,360	03/12/1974
980,424	72/452,408	03/12/1974
980,429	72/394,188	03/12/1974
980,435	72/440,640	03/12/1974
980,437	72/447,375	03/12/1974
980,443	72/428,910	03/12/1974
980,444	72/432,337	03/12/1974
980,445	72/432,674	03/12/1974
980,447	72/434,403	03/12/1974
980,451	72/444,135	03/12/1974
980,453	72/446,574	03/12/1974
980,456	72/451,443	03/12/1974
980,457	72/451,463	03/12/1974
980,458	72/451,969	03/12/1974
980,461	72/453,988	03/12/1974
980,462	72/454,729	03/12/1974
980,463	72/454,892	03/12/1974
980,465	72/456,769	03/12/1974
980,467	72/457,990	03/12/1974
980,468	72/459,767	03/12/1974
980,472	72/465,139	03/12/1974
980,473	72/465,140	03/12/1974
980,474	72/465,142	03/12/1974
980,475	72/402,318	03/12/1974
980,476	72/441,220	03/12/1974
980,478	72/352,835	03/12/1974
980,486	72/419,419	03/12/1974
980,490	72/431,993	03/12/1974
980,491	72/432,218	03/12/1974
980,492	72/432,716	03/12/1974
980,497	72/443,701	03/12/1974
980,508	72/426,254	03/12/1974
980,510	72/432,874	03/12/1974
980,512	72/435,410	03/12/1974
980,514	72/436,651	03/12/1974
980,515	72/437,225	03/12/1974
980,516	72/444,954	03/12/1974
980,518	72/451,684	03/12/1974
980,522	72/374,585	03/12/1974
980,523	72/376,475	03/12/1974

Reg. No.	Serial Number	Reg. Date
980,527	72/410,014	03/12/1974
980,538	72/438,880	03/12/1974
980,539	72/440,270	03/12/1974
980,543	72/442,677	03/12/1974
980,544	72/443,917	03/12/1974
980,551	72/422,503	03/12/1974
980,553	72/433,588	03/12/1974
980,557	72/439,042	03/12/1974
980,562	72/447,612	03/12/1974
980,564	72/448,498	03/12/1974
980,566	72/391,462	03/12/1974
980,567	72/428,609	03/12/1974
980,571	72/448,459	03/12/1974
980,572	72/449,711	03/12/1974
980,576	72/447,316	03/12/1974
980,577	72/450,108	03/12/1974
980,585	72/448,768	03/12/1974
980,586	72/448,769	03/12/1974
980,590	72/365,036	03/12/1974
980,593	72/421,413	03/12/1974
980,603	72/350,795	03/12/1974
980,604	72/432,217	03/12/1974
980,606	72/439,810	03/12/1974
980,607	72/439,813	03/12/1974
980,612	72/406,119	03/12/1974
980,613	72/453,201	03/12/1974
980,614	72/405,297	03/12/1974
980,616	72/399,372	03/12/1974
980,629	72/424,992	03/12/1974
980,630	72/434,193	03/12/1974
980,632	72/452,955	03/12/1974
980,633	72/438,968	03/12/1974
980,634	72/370,599	03/12/1974
980,635	72/415,557	03/12/1974

Consent Order

Roche has entered into a Consent Order with the Federal Trade Commission with respect to the merger of a subsidiary of Roche Holdings, Inc. and Genetech, Inc. (FTC Docket No. C 3315). As part of such Consent Order, Roche has agreed to grant non-exclusive licenses upon written applications made until December 13, 2000 under its United States CD4-Based Therapeutic Patent Portfolio, which includes U.S. Patent Application Serial No. 07/510,773 - "Chimeric CD4-Immunoglobulin Polypeptides," by Klaus Karjalainen and Andre Traunecker, filed April 18, 1990. Roche is willing to grant such non-exclusive licenses to all qualified applicants at a royalty not in excess of one percent (1%) of net sales if only Process Patents are licensed, or three percent (3%) of net sales if Product Patents are licensed. The license agreement will contain other reasonable and customary terms and conditions. Copies of the FTC Consent Order and all relevant patents (as defined in the Order) are available from Roche upon written request. Any interested party should respond to:

Hoffman-La Roche Inc.
Attn: George M. Gould, Esq.
Vice President & Chief Patent Counsel
340 Kingsland Street
Nutley, N.J. 07110

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded as in the case of default.

Fresh Express, Inc., Columbus, Ohio, Reg. No. 1,613,311, for the mark "FRESH EXPRESS CAFE", Canc. No. 22,710.

Specialty Restaurants Corp., Long Beach, Calif., Reg. No. 1,087,513, for the mark "THE CHILI PEPPER", Canc. No. 23,036.

Joseph R. Agozino, Alpine, Calif., Reg. No. 1,792,086, for the mark "MOOSA CREEK NURSERIES NATIVES XERIPHYTES CALIFORNIA PLANT RESOURCES AND DESIGN", Canc. No. 22,885.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded as in the case of default.

The Beverage Source Inc., San Francisco, Calif., Reg. No. 1,519,105, for the mark "HOMBRE", Canc, No. 23,199.

La Vaquita Food Products, Inc., Somerville, Mass., Reg. No. 1,736,815, for the mark "LA VAQUITA", Canc. No. 23,198.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded as in the case of default.

Mendelson-Zeller Co., Inc., Fresno, Calif., Reg. No. 430,329, for the mark "GLOBAL", Canc. No. 22,294.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by

certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded as in the case of default.

Paragon Classics, Inc., Roseville, Minn., Reg. No. 1,613,713, for the mark "PARAGON CLASSICS (stylized)", Canc. No. 21,855.

Charles Fogararty, d.b.a. Helen of toy, Brooklyn, N.Y., Reg. No. 676,260, for the mark "TASK FORCE AND DESIGN", Canc. No. 22,094.

Clifford M. Larson, Hoffman Estates, Ill., Reg. No. 1,488,183 for the mark "THE EDGE", Canc. No. 22,303.

The Biopractice Group II, Inc., Bethlehem, Pa., Reg. No. 1,482,960, for the mark "LIVING WATERS", Canc. No. 22,653.

Information Engineering, Inc. d.b.a. Information Engineering Institute, Falls Church, Va., Reg. No. 1,595,733 for the mark "MACINSTITUTE", Canc. No. 22,288.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registration identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded as in the case of default.

International TIC Sales Corp., Santa Ana, Calif., Reg. No. 1,705,541, for the mark "BILZ NORTH AMERICA", Canc. No. 22,617.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Department of Commerce
Patent and Trademark Office

[Docket No. 941259-4359]

Request for Comments on Proposed Utility Examination Guidelines

Agency: Patent and Trademark Office, Commerce

Action: Notice and request for public comments.

Summary: The Patent and Trademark Office (PTO) requests comments from any interested member of the public on proposed internal guidelines that will be used by patent examiners in their review of patent applications for compliance with 35 U.S.C. § 101. Because these guidelines govern internal practices, they are exempt from notice and comment rulemaking under 5 U.S.C. § 553(b)(A).

Dates: Written comments on the proposed guidelines will be accepted by the PTO until February 24, 1995.

Addresses: Written comments should be addressed to the Commissioner of Patents and Trademarks, marked to the attention of Jeff Kushan. Comments submitted by mail should be sent to Commissioner of Patents and Trademarks, Box 4, Patent and Trademark Office, Washington, D.C. 20231. Comments may also be submitted by telefax at (703) 305-8885 and by electronic mail through the Internet to "comments-biotech@uspto.gov." Written comments should include the following information:

- name and affiliation of the individual responding;

- an indication of whether comments offered represent views of the respondent's organization or are the respondent's personal views; and

- if applicable, information on the respondent's organization, including the type of organization (e.g., business, trade group, university, non-profit organization) and general areas of interest.

Parties presenting written comments are requested, where possible, to provide their comments in machine readable format. Such submissions may be provided by electronic mail messages sent over the Internet, or on a 3.5" floppy disk formatted for use in either a Macintosh or MS-DOS based computer. Machine-readable submissions should be provided as unformatted text (e.g., ASCII or plain text).

Written comments will be available for public inspection on or about March 1, 1995, in Room 902 of Crystal Park Two, 2121 Crystal Drive, Arlington, Virginia. In addition, comments provided in machine readable format will be available on or around March 1, 1995, through anonymous file transfer protocol (ftp) via the Intenet (address: comments.uspto.gov) and through the World Wide Web (address: www.uspto.gov).

For Further Information Contact: Jeff Kushan by telephone at (703) 305-9300, by fax at (703) 305-8885, by electronic mail at kushan@uspto.gov, or by mail marked to his attention addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.

Supplementary Information

I. Guidelines for Examination of Applications for Compliance with the Utility Requirement

A. Introduction

The following guidelines establish the policies and procedures to be followed by Examiners when examining applications for compliance with the utility requirement of 35 U.S.C. § 101. The guidelines also address issues that may arise during examination of applications claiming protection for inventions in the field of biotechnology and human therapy. The guidelines are accompanied by an overview of applicable legal precedent governing the utility requirement.

B. Guidelines for Examination of Applications for Compliance With 35 U.S.C. § 101

Examiners must adhere to the following procedures when examining applications for compliance with 35 U.S.C. § 101.

1. Determine what the applicant has claimed as his or her invention. This is done to:

a) ensure that the applicant has claimed statutory subject matter (e.g., a process, a machine, a composition or a manufacture); and

b) ascertain what the invention is for purposes of determining whether it is "useful."

2. Review the specification and claims to determine if the applicant has disclosed or asserted any credible utility for the claimed invention.

a) If the applicant has asserted that the claimed invention is useful for any particular purpose and that assertion would be considered credible by a person of ordinary skill in the art, the Examiner should not impose a rejection based on § 101. Credibility is to be assessed from the perspective of one of ordinary skill in the art in view of any evidence of record (e.g., data, statements, opinions, references, etc.) that is relevant to the applicant's assertions.

b) If the applicant has not asserted that the claimed invention is useful for a particular purpose but such a use would be readily apparent to a person of ordinary skill in the art, the Examiner should not impose a rejection under § 101.

3. If the applicant has not asserted any credible utility for the claimed invention or a utility would not be readily apparent to one of ordinary skill in the art, reject the claims under § 101. To be considered appropriate by the Office, a rejection under § 101 must include the following elements:

a) A prima facie showing that the claimed invention has no utility. A prima facie showing of no utility must establish that it is more likely than not that a person of ordinary skill in the art would not consider credible any utility for the claimed invention that has been asserted by the applicant. Where no utility has been asserted in the disclosure, the prima facie showing must support a finding that a person of ordinary skill would not be able to ascertain any use for the claimed invention. A prima facie showing must contain:

i) a well-reasoned statement by the Examiner that clearly sets forth the reasoning used in reaching his or her conclusions;

ii) support for factual findings relied upon by the Examiner in reaching his or her conclusions; and

iii) support for conclusions of the Examiner that evidence provided by the applicant to support an asserted utility would not be considered persuasive to a person of ordinary skill in the art.

b) Evidence that supports any factual assertions relied upon by the Examiner in establishing the prima facie showing. Whenever possible, the Examiner must provide documentary evidence that supports the factual basis of a prima facie showing of no utility (e.g., scientific or technical journals, excerpts from treatises or books, or U.S. or foreign patents). If documentary evidence is not available, the Examiner should note this fact and specifically explain the scientific basis for his or her conclusions.

4. A rejection under § 101 should not be maintained if an asserted utility for the claimed invention would be considered credible by a person of ordinary skill in the art in view of all evidence of record.

Once a prima facie showing of no utility has been properly established, the applicant bears the burden of rebutting it. The applicant can do this by amending the claims, by providing reasoning or arguments, or by providing evidence in the form of a declaration under 37 CFR § 1.132 or a printed publication, that rebuts the prima facie showing. Once a response has been received by the Examiner, he or she should review the original disclosure, any evidence relied upon in establishing the prima facie showing, any claim amendments and any new reasoning or evidence provided by the applicant in support of an asserted utility. It is essential that the Examiner recognize, fully consider and respond to each substantive element of any response to a rejection under § 101.

Examiners are reminded that they must treat as true credible statements made by an applicant or a declarant in the specification or in a declaration provided under 37 CFR § 1.132, unless they can show that one of ordinary skill in the art would have a rational basis to doubt the truth of such statements. Thus, not accepting the opinion of a qualified expert that is based on an appropriate factual record would clearly be improper.

II. Additional Information

The PTO has prepared an analysis of the law governing 35 U.S.C. § 101 to support the guidelines outlined above. Interested members of the public are invited to comment on the legal analysis as well as the guidelines. Copies of the legal analysis can be obtained from Jeff Kushan, who can be reached using the information indicated above.

Dec. 23 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Overview of Legal Precedent Governing the Utility Requirement

I. General Principles Governing Utility Rejections

The Office must examine each application to ensure compliance with the utility requirement of 35 U.S.C. § 101. In discharging this obligation, however, Examiners must keep in mind several general principles that control application of the utility requirement.

As interpreted by the Federal courts, the utility requirement has two purposes.[1] First, § 101 defines which categories of inventions are eligible for patent protection. An invention that is not a machine, an article of manufacture, a composition or a process cannot be patented.[2] Second, § 101 serves to ensure that patents are granted on only those inventions which are "useful." This second purpose has a Constitutional footing--Article I, Section 8 of the Constitution authorizes Congress to provide exclusive rights to inventors to promote the "useful arts."[3] Thus, to satisfy the requirements of § 101, an applicant must claim an invention that is statutory subject matter and must show that the claimed invention is "useful" for some purpose, either explicitly or implicitly. Application of this latter element of the utility requirement is the focus of these guidelines.

A. The Utility Requirement Requires that the Claimed Invention Have "Real World Value"

To satisfy § 101, an invention must be "useful."[4] The Court of Customs and Patent Appeals (CCPA) and other courts have used the term "practical utility" as one measure of this concept. As the court stated in *Nelson v. Bowler*:

> "Practical utility" is a shorthand way of attributing "real-world" value to claimed subject matter. In other words, one skilled in the art can use a claimed discovery in a manner which provides some immediate benefit to the public.[5]

Examiners must be careful not to interpret the phrase "immediate benefit to the public" or similar formulations in other cases[6] to mean that products or services based on the claimed invention must be "currently available" to the public in order to satisfy § 101. Rather, the Examiner should accept as sufficient *any* reasonable use that an applicant has identified for the invention that can be viewed as providing a public benefit.

B. Wholly Inoperative Inventions Are Not "Useful" Inventions under 35 U.S.C. § 101; "Incredible" Utility

An invention that is inoperative (e.g., the invention does not operate to produce the results claimed by the patent applicant) is not a "useful" invention in the meaning of the patent law.[7] However, as the Federal Circuit has stated, "[t]o violate § 101 the claimed device must be *totally incapable of achieving a useful result*."[8] If an invention is only *partially* successful in achieving a useful result, a rejection of the claimed invention as a whole under § 101 is *not* appropriate.[9]
Cases decided by a Federal court in which a claimed invention was held to lack utility under § 101 because it was "inoperative"

have been rare. Uniformly, in these cases the utility asserted by the applicant was "incredible in the light of knowledge of the art, or factually misleading"[10] when initially considered by the Examiner.
Examples include: an invention asserted to change the taste of food using a magnetic field,[11] a perpetual motion machine,[12] a method for increasing the energy output of fossil fuels upon combustion through exposure to a magnetic field,[13] uncharacterized compositions for curing cancer[14] and a method of restoring hair growth.[15] In view of the rare nature of such cases, Examiners should not label an asserted utility "incredible" unless it is clearly appropriate to do so.

C. Therapeutic or Pharmacological Utility[16]

Inventions asserted to have utility in the treatment of human or animal disorders are subject to the same legal requirements for utility as inventions in any other field of technology.[17] As such, pharmacological or therapeutic inventions that provide *any* "immediate benefit to the public" satisfy § 101.
Courts have repeatedly found that the mere *identification* of a pharmacological activity of a compound relevant to an asserted pharmacological use provides an "immediate benefit to the public" and thus satisfies § 101.[18] As the CCPA held in *Nelson v. Bowler*:

> Knowledge of the pharmacological activity of any compound is obviously beneficial to the public. It is inherently faster and easier to combat illnesses and alleviate symptoms when the medical profession is armed with an arsenal of chemicals having known pharmacological activities. Since it is crucial to provide researchers with an incentive to disclose pharmacological activities in as many compounds as possible, we conclude that adequate proof of any such activity constitutes a showing of practical utility.[19]

Similarly, courts have found utility despite that fact that an applicant is at a very early stage in the development of a pharmaceutical product or therapeutic regimen based on a claimed pharmacological or bioactive compound or composition.[20] Accordingly, Examiners should not construe § 101, under the logic of "practical" utility or otherwise, as requiring an applicant to demonstrate that a therapeutic agent based on a claimed invention is a safe or fully effective drug for humans.[21] These general principles are equally applicable to situations where an applicant has claimed a process for treating a human or animal disorder. In such cases, the asserted utility is usually clear--the invention is asserted to be useful in treating the particular disorder. If the asserted utility is *credible*,[22] there is no basis for an Examiner to challenge such a claim on the grounds that it lacks utility under § 101.

II. Procedural Considerations Related to Rejections for Lack of Utility

A. The Claimed Invention is the Focus of the Utility Requirement

As noted above, the *claimed* invention is the focus of the assessment of whether an applicant has satisfied the utility requirement of § 101. Statements made by the applicant in the specification or incident to prosecution of the application before the Office cannot, standing alone, be the basis for a rejection under § 101.[23]
It is common for an applicant to identify several uses for an invention, particularly where the invention is a product (e.g., a machine, an article of manufacture or a composition of matter). However, irrespective of the category of invention that is claimed (e.g., product or process), an applicant need only disclose *one credible utility* for the claimed invention to satisfy § 101.[24] If *one* asserted utility is credible, utility for the claimed invention *as a whole* is established.[25]
Examiners should be especially careful not to read into a claim unclaimed results, limitations or embodiments of an invention.[26] Doing so can inappropriately change the relationship of an asserted utility to the claimed invention and raise issues not relevant to examination of that claim.

B. Is There an Asserted or Readily Apparent Utility for the Claimed Invention?

After identifying what the claimed invention is, the Examiner should review the specification to ascertain if there are any statements asserting that the claimed invention is useful for any particular purpose. A complete disclosure should include a statement which identifies a specific utility for the invention. Such statements can be detailed statements of why an invention is believed to be useful by the applicant. They can also take the form of more general assertions of useful applications of the invention.
Some degree of specificity is needed in identifying utility. For example, a statement that a composition has an unspecified "biological activity" without any explanation of why the composition with that activity would be considered useful should not be viewed as a specific assertion of utility.[27]
If the Examiner cannot find any statements asserting utility for the claimed invention in the specification, he or she should then query whether a utility would be readily apparent to a person of ordinary skill from either the disclosure or from the characteristics of the invention. The result of this initial evaluation determines the next step for the Examiner in the review for compliance with utility.

1. An Asserted Utility Creates a Presumption of Utility

An applicant's assertion of utility creates a presumption of utility that will be sufficient, *in most cases*, to satisfy the utility requirement of 35 U.S.C. § 101.[28] As the CCPA stated in *In re Langer*:

> As a matter of Patent Office practice, a specification which contains a disclosure of utility which corresponds in scope to the subject matter sought to be patented *must* be taken as sufficient to satisfy the utility requirement of § 101 for the entire claimed subject matter *unless* there is a reason for one skilled in the art to question the objective truth of the statement of utility or its scope.[29]

To overcome this presumption, the Examiner must establish that it is more likely than not that one of ordinary skill in the art would doubt the truth of the statement of utility.[30] In other words, the Examiner must show that the asserted utility is not *credible*.

2. When is an Asserted Utility Not "Credible"?

Compliance with § 101 is a question of fact.[31] Where an applicant has specifically asserted that an invention has a particular utility, that assertion cannot simply be dismissed by an Examiner as being "wrong," even when the Examiner may believe the assertion is not accurate beyond a reasonable doubt. Rather, the Examiner must determine if the assertion of utility is *credible*. If it is, the Examiner should not reject the claimed invention under § 101.
To assess credibility, the Examiner should determine if one of ordinary skill in the art would consider the assertions of the applicant to have *any* reasonable scientific basis. If they do, they should not be challenged as not being credible. Only where they do not (e.g., if the assertion is "incredible in view of contemporary knowledge"), should the Examiner challenge the statement as not being credible. In making credibility determinations, the Examiner must consider the full record of evidence related to the asserted utility, including any data and reasoning provided by the applicant in the specification and any references cited by the applicant to support utility. The Examiner must also consider information that is generally known in the art regarding the asserted utility.
As noted above, rejections under § 101 have been rarely sustained by Federal courts. Generally speaking, in these rare cases, the § 101 rejection was sustained because the applicant asserted a utility that could only be true if it violated a scientific principle, such as the second law of thermodynamics, or a law of nature, or was *wholly* inconsistent with contemporary knowledge in the art.[32] The phrase "incredible utility" has come to be associated with such cases. "Incredible utility," however, is a *conclusion, not a starting point for analysis under § 101*. A conclusion that an asserted utility is "incredible" thus can

be reached only after the Examiner has evaluated both the assertions of the applicant regarding utility *and* any evidentiary basis for those assertions. An Examiner should be particularly careful not to start with the presumption that an asserted utility is *per se* "incredible" and then proceed to base a rejection under § 101 on that presumption.
Special care should be taken when assessing the credibility of an asserted therapeutic utility for a claimed invention. In such cases, a previous lack of success in treating a disease or condition, or the absence of a proven animal model for testing the effectiveness of drugs for treating a disorder in humans, should *not*, standing alone, serve as a basis for challenging the asserted utility under § 101.

3. No Statement of Utility for the Claimed Invention in the Specification Does Not Negate Utility

Occasionally, an applicant will not explicitly state in the specification or otherwise assert a specific utility for the claimed invention. In such cases, if a person of ordinary skill would recognize a utility for the claimed invention if provided with the specification at the time of its filing, no rejection under § 101 should be imposed.[33] For example, if an application teaches the cloning and characterization of the nucleotide sequence of a well-known protein such as insulin, and those skilled in the art at the time of filing knew that insulin had a well-established use, it would be improper to reject the claimed invention as lacking utility under § 101.

C. Initial Burden is on the Examiner to Establish *Prima Facie* Case and Provide Evidentiary Support Thereof

To properly reject a claimed invention under 35 U.S.C. § 101, the Examiner must (a) make a *prima facie* showing that the claimed invention lacks utility, and (b) provide a sufficient evidentiary basis for factual assumptions relied upon in establishing the prima facie showing.[34] If the Examiner cannot develop a proper *prima facie* case and provide evidentiary support for a rejection under § 101, a rejection on this ground should not be imposed.[35]
The *prima facie* showing must be set forth in a well-reasoned statement. In the statement, the Examiner must articulate sound reasons why a person of ordinary skill in the art would conclude that it is *more likely than not* that an asserted utility is not *credible* or that one of ordinary skill would not recognize utility for the claimed invention if unstated. The statement should specifically identify the scientific basis of the Examiner's conclusions. The statement must also explain why any evidence of record that supports the asserted utility would not be persuasive to one of ordinary skill.
In addition to the statement setting forth the *prima facie* showing, the Examiner must provide evidentiary support for the *prima facie* case. In most cases, the Examiner can and should provide documentary evidence (e.g., articles in scientific journals, or excerpts from patents or scientific treatises) that supports his or her factual conclusions. Only when documentary evidence is not readily available should the Examiner attempt to satisfy the Office's requirement for evidentiary support for the factual basis of the *prima facie* showing *solely* through an explanation of relevant scientific principles.
It is imperative that Examiners use specificity in setting forth an initial rejection under § 101 and support their factual conclusions. For example, the Examiner should explain why any *in vitro* or *in vivo* data supplied by the applicant would not be reasonably predictive of an asserted therapeutic utility from the perspective of a person of ordinary skill in the art. By using specificity, the applicant will be able to identify the assumptions made by the Examiner in setting forth rejection and will be able to address those assumptions properly.

D. Evidentiary Requests by an Examiner to Support an Asserted Utility

As the courts have recognized, in appropriate situations the Office may require an applicant to substantiate an asserted utility for a claimed invention.[36] However, requests for additional evidence should be imposed rarely, and *only* if necessary to support the scientific credibility of the asserted utility (*e.g.*, if the asserted utility is not consistent with the evidence of record and current scientific knowledge). As the CCPA stated in *In re Isaacs*, "it is clearly improper for the Examiner to make a demand for further test data, which as evidence would be essentially redundant and would seem to serve for nothing except perhaps to unduly burden the applicant.[37] Whenever possible, Examiners should identify the nature of evidence which, if provided, would be persuasive in establishing the credibility of an asserted utility.

E. Consideration of a Response to a *Prima Facie* Rejection for Lack of Utility

If an Examiner has properly rejected a claimed invention under § 101, the burden shifts to the applicant to rebut the *prima facie* showing.[38] An applicant can do this using any combination of the following: amendments to the claims, arguments or reasoning, or new evidence[39] submitted in an declaration under 37 CFR § 1.132, or in a printed publication.
Once a response has been provided, the Examiner must review the complete record, including the claims, to determine if it is appropriate to maintain the rejection under § 101. If the record as a whole would make it more likely than not that the asserted utility for the claimed invention would be considered credible by a person of ordinary skill in the art, the Examiner should not maintain the rejection.[40] If the Examiner concludes otherwise, he or she should maintain the rejection under § 101.

F. Evaluation of Evidence Related to Utility

There is no predetermined amount or character of evidence that must be provided by an applicant to support an asserted utility, therapeutic or otherwise. Rather, the character and amount of evidence needed to support an asserted utility will vary depending on what is claimed,[41] and whether the asserted utility appears to contravene established scientific principles and beliefs.[42] Furthermore, the applicant does *not* have to provide evidence sufficient to establish that an asserted utility is true "beyond a reasonable doubt."[43] Nor must an applicant provide evidence such that it establishes an asserted utility as a matter of statistical certainty.[44] Instead, evidence will be sufficient if, considered as a whole, it leads a person of ordinary skill in the art to conclude that the asserted utility is *more likely than not true*.

III. Special Considerations for Asserted Therapeutic or Pharmacological Utilities

The Federal courts have consistently reversed rejections by the Office asserting a lack of utility under § 101 for inventions claiming a pharmacological or therapeutic utility where an applicant has provided evidence supporting such a utility. In view of this, Examiners should be particularly careful in their review of evidence provided in support of an asserted therapeutic or pharmacological utility.

A. A Reasonable Correlation Between Evidence and Asserted Utility is Sufficient

As a general matter, evidence of pharmacological or other biological activity of a compound will be relevant to an asserted therapeutic use if there is a *reasonable* correlation between the activity in question and the asserted utility.[45] The applicant does not have to prove that there is a statistically proven correlation between characteristics of a compound and the asserted use, nor does he or she have to provide actual evidence of success in treating humans where such a utility is asserted.

B. Structural Similarity to Useful Products

The courts have on several occasions found evidence of structural similarity to known compounds with particular therapeutic or pharmacological uses as supporting therapeutic utility of a newly claimed compound.[46] Such evidence, when provided by an applicant in support of an assertion of utility, should be given appropriate weight in determining whether one skilled in the art would find the asserted utility credible.

C. Data from *In Vitro* and Animal Testing is Generally Sufficient to Support Therapeutic Utility

Data generated using *in vitro* assays and testing in animals almost invariably will be sufficient to support an asserted therapeutic or pharmacological utility.[47] In *no* case has a Federal court required an applicant to support an asserted utility with data from human clinical trials.

If an applicant provides data from *in vitro* and animal tests to support an asserted utility, the Examiner should determine if the tests, including the test parameters and choice of animal, would be viewed by one skilled in the art as being reasonably predictive of the asserted utility.[48] If so, and the data supplied is consistent with the asserted utility, the Examiner should not maintain a rejection under § 101. This approach is to be followed not only in cases where there are art-recognized animal models for assessing utility in human disease and treatment, but also where no such validation of a specific test has been performed. Thus, if one skilled in the art would accept the animal tests as being *reasonably predictive* of utility in humans, they should be considered sufficient to support the credibility of the asserted utility.[49] Examiners should be careful not to find evidence unpersuasive simply because no animal model for the human disease condition had been established prior to the filing of the application.[50]

D. Human Clinical data

There is no decisional law that requires an applicant to provide data from human clinical trials to establish utility for an invention related to treatment of human disorders,[51] even with respect to situations where no art-recognized animal models existed for the human disease encompassed by the claims.[52] Examiners should not impose on applicants the unnecessary burden of providing evidence from human clinical trials. Examiners should note that before a drug can *enter* human clinical trials, the sponsor (e.g., often the applicant) must establish a sufficient basis to those *especially* skilled in the art (e.g., the Food and Drug Administration) that the drug will be effective to some degree in treating the stated disorder. *Thus, as a general rule, if an applicant has initiated human clinical trials for a product or process used for treating an indication, the subject of that trial has met the burden of being reasonably predictive of utility.*

E. Safety and Efficacy Considerations

The Examiner must confine his or her examination, for purposes of utility, to compliance with the statutory requirements of the patent law. Other agencies of the government have been assigned the responsibility of ensuring conformance to standards established by statute for the advertisement, use, sale or distribution of drugs.[53] Thus, while an applicant may on occasion need to provide evidence to show that an invention will work as claimed, it is improper for an Examiner to request evidence of safety in the treatment of humans, or regarding the *degree* of effectiveness.[54]

F. Treatment of Specific Disease Conditions

Claims directed to a method of treating or curing a disease for which there have been no previously successful treatments or cures warrant careful review for compliance with § 101.[55] The mere fact that there is no known cure for a disease, however, should not serve as the basis of an Examiner's conclusion that such an invention lacks utility. Rather, the Examiner should only reject the claims under § 101 if he or she can establish a *prima facie* case that the asserted utility is not *credible*.

In such cases, the Examiner should carefully review what is being claimed by the applicant. An assertion that the claimed invention is useful in treating a symptom of an incurable disease may be considered scientifically credible by a person of ordinary skill in the art on the basis of a fairly modest amount of evidence or support. In constrast, an assertion that the claimed invention will be useful in "curing" the disease may require a significantly greater amount of evidentiary support to be considered scientifically credible by a person of ordinary skill in the art.[56]

In these cases, it is important to note that the Food and Drug Administration has promulgated regulations that enable a party to conduct clinical trials for drugs used to treat life threatening and severely-debilitating illnesses, even where no alternative therapy exists.[57] Implicit in these regulations is the recognition that experts qualified to evaluate the effectiveness of therapeutics can and often do find a sufficient basis to conduct clinical trials of drugs for "incurable" or previously untreatable illnesses. Thus, affidavit evidence from experts in the art indicating that there is a reasonable expectation of success, supported by sound reasoning, usually should be sufficient to establish that such a utility is *credible*.

[1] The utility requirement is found in section 101 of title 35, United States Code, which reads:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

[2] *See Diamond v. Chakrabarty*, 447 U.S. 303, 206 USPQ 193 (1980); *Diamond v. Diehr*, 450 U.S. 175, 209 USPQ 1 (1981).

[3] *See Carl Zeiss Stiftung v. Renishaw PLC*, 945 F.2d 1173, 20 USPQ2d 1094 (Fed. Cir. 1991).

[4] Courts have recognized that the term "useful" used with reference to the utility requirement can be a difficult term to define. *Brenner v. Manson*, 383 U.S. 519, 529, 148 USPQ 689, 693 (1966) (simple everyday word like "useful" can be "pregnant with ambiguity when applied to the facts of life."). Despite this, courts readily find inventions "useful." For example, in *Nelson v. Bowler*, 626 F.2d 853, 206 USPQ 881 (CCPA 1980), the CCPA held that a composition was "useful" because it had been shown to possess a particular pharmacological activity.

[5] *Nelson v. Bowler*, 626 F.2d 853, 856, 206 USPQ 881, 883 (CCPA 1980).

[6] *See e.g., Brenner v. Manson*, 383 U.S. at 534-535, 148 USPQ at 695.

[7] *See. e.g., Newman v. Quigg*, 877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989); *In re Harwood*, 390 F.2d 985, 989, 156 USPQ 673, 676 (CCPA 1968) ("An inoperative invention, of course does not satisfy the requirement of 35 U.S.C. 101 that an invention be useful.").

[8] *Brooktree Corp. v. Advanced Micro Devices. Inc.*, 977 F.2d 1555, 24 USPQ2d 1401, 1412 (Fed. Cir. 1992) (emphasis added). *See also, E.I. du Pont De Nemours and Co. v. Berkley and Co.*, 620 F.2d 1247, 1260 n.17, 205 USPQ 1, 10 n.17 (8th Cir. 1980) ("A small degree of utility is sufficient. The claimed invention must only be capable of performing some beneficial function...An invention does not lack utility merely because the particular embodiment disclosed in the patent lacks perfection or performs crudely...A commercially successful product is not required... Nor is it essential that the invention accomplish all its intended functions...or operate under all conditions....partial success being sufficient to demonstrate patentable utility...In short, the defense of nonutility cannot be sustained without proof of total incapacity" [citations omitted].).

[9] In such cases, a rejection under 35 U.S.C. § 112 may be appropriate. *See, In re Gardner*, 475 F.2d 1389, 177 USPQ 396 (CCPA), *reh'g denied*, 480 F.2d 879 (CCPA 1973); *In re Marzocchi*, 439 F.2d 220, 169 USPQ 367 (CCPA 1971).

[10] *In re Citron*, 325 F.2d 248, 253, 139 USPQ 516, 520 (CCPA 1963).

[11] *Fregeau v. Mossinghoff*, 776 F.2d 1034, 227 USPQ 848 (Fed. Cir. 1985).

[12] *Newman v. Quigg*, 877 F.2d at 1581, 11 USPQ2d at 1340.

[13] *In re Ruskin*, 354 F.2d 393, 148 USPQ 221 (CCPA 1966).

[14] *In re Citron*, 325 F.2d 248, 139 USPQ 516 (CCPA 1963).

[15] *In re Ferens*, 417 F.2d 1072, 163 USPQ 609 (CCPA 1969).

[16] The CCPA in *Nelson* used the term "pharmacological" utility. Examiners should rely on the guidance of *Nelson* and other cases in evaluating therapeutic, prophylactic, or pharmacological utility.

[17] *In re Chilowsky*, 229 F.2d 457, 461-2, 108 USPQ 321, 325 (CCPA 1956) ("There appears to be no basis in the statutes or decisions for requiring any more conclusive evidence of operativeness in one type of case than another. The character and amount of evidence needed may vary, depending on whether the alleged operation described in the application appears to accord with or to contravene established scientific principles or to depend upon principles alleged but not generally recognized, but the degree of certainty as to the ultimate fact of operativeness or inoperativeness should be the same in all cases"); *In re Gazave*, 379 F.2d 973, 978, 154 USPQ 92, 96 (CCPA 1967) ("Thus, in the usual case where the mode of operation alleged can be readily understood and conforms to the known laws of physics and chemistry, operativeness is not questioned, and no further evidence is required.")

[18] In *Nelson v. Bowler*, the CCPA addressed the practical utility requirement in the context of an interference proceeding. Bowler challenged the patentability of the invention claimed by Nelson on the basis that Nelson had failed to sufficiently and persuasively disclose in his application a practical utility for the invention. Nelson had developed and claimed a class of synthetic prostaglandins modeled on naturally occurring prostaglandins. Naturally occurring prostaglandins are bioactive compounds that, at the time of Nelson's application, had a recognized value in pharmacology (e.g., the stimulation of uterine smooth muscle which resulted in labor induction or abortion, the ability to raise or lower blood pressure, etc.). To support the utility he identified in his disclosure, Nelson included in his application the results of tests demonstrating the bioactivity of his new substituted prostaglandins relative to the bioactivity of naturally occurring prostaglandins. The Court concluded that Nelson had satisfied the practical utility requirement in identifying the synthetic prostaglandins as pharmacologically active compounds. In reaching this conclusion, the court considered and rejected arguments advanced by Bowler that attacked the evidentiary basis for Nelson's assertions that the compounds were pharmacologically active.

In *In re Jolles*, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980), an inventor claimed protection for pharmaceutical compositions for treating leukemia. The active ingredient in the compositions was a structural analog to a known anti-cancer agent. The applicant provided evidence showing that the claimed analogs had the same general pharmaceutical activity as the known anti-cancer agents. The Court reversed the Board's finding that the asserted pharmaceutical utility was "incredible," pointing to the evidence that showed the relevant pharmocological activity.

In *Cross v. Iizuka*, 753 F.2d 1040, 224 USPQ 739 (Fed. Cir. 1985), the Federal Circuit affirmed a finding by the Board of Patent Appeals and Interferences that a pharmacological utility had been disclosed in the application of one party to an interference proceeding. The invention that was the subject of the interference count was a chemical compound used for treating blood disorders. Cross had challenged the evidence in Iizuka's specification that supported the claimed utility. However, the Federal Circuit relied extensively on *Nelson v. Bowler* in finding that Iizuka's application had sufficiently disclosed a pharmacological utility for the compounds. It distinguished the case from cases where an only a generalized "nebulous" expression, such as "biological properties," had been disclosed in a specification. Such statements, the court held, "convey little explicit indication regarding the utility of a compound," 753 F.2d at 1048, 224 USPQ 745 (citing *In re Kirk*, 376 F.2d 936, 941, 153 USPQ 48, 52 (1967)).

[19] *Nelson v. Bowler*, 626 F.2d at 856, 206 USPQ at 883.

[20] The Federal Circuit, in *Cross v. Iizuka*, 753 F.2d 1040, 1051, 224 USPQ 739, 747-748 (Fed. Cir. 1985), commented on the significance of data from *in vitro* testing that showed pharmacological activity:

We perceive no insurmountable difficulty, under appropriate circumstances, in finding that the first link in the screening chain, *in vitro* testing, may establish a practical utility for the compound in question. Successful *in vitro* testing will marshal resources and direct the expenditure of effort to further in vivo testing of the most potent compounds, thereby providing an immediate benefit to the public, analogous to the benefit provided by the showing of an *in vivo* utility.

[21] *See, e.g., In re Sichert*, 566 F.2d 1154, 196 USPQ 209 (CCPA 1977); *In re Hartop*, 311 F.2d 249, 135 USPQ 419 (CCPA 1962); *In re Anthony*, 414 F.2d 1383, 162 USPQ 594 (CCPA 1969); *In re Watson*, 517 F.2d 465, 186 USPQ 11 (CCPA 1975).

[22] See section II.B. regarding evaluation of an asserted utility.

[23] *See, e.g., Raytheon v. Roper*, 724 F.2d 951,958, 220 USPQ 592 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835 (1984) ("When a properly claimed invention meets at least one stated objective, utility under § 101 is clearly shown."); *Tol-O-Matic, Inc. v. Proma Produkt-Und Mktg. Gesellschaft m.b.h.*, 945 F.2d 1546, 1553, 20 USPQ2d 1332, 1338 (Fed. Cir. 1991)("It is not required that a particular characteristic set forth in the prosecution history be achieved in order to satisfy § 101.").

[24] *See, e.g., In re Gottlieb*, 328 F.2d 1016, 1019, 140 USPQ 665, 668 (CCPA 1964) ("Having found that the antibiotic is useful for *some* purpose, it becomes unnecessary to decide whether it is in fact useful for the other purposes 'indicated' in the specification as possibly useful").

[25] *See, e.g., Gottlieb*, 328 F.2d at 1019; 140 USPQ at 668, *In re Malachowski*, 530 F.2d 1402, 189 USPQ 432 (CCPA 1976); *Hoffman v. Klaus*, 9 USPQ2d 1657 (Bd. Pat. App. & Inter. 1988).

[26] *See, In re re Krimmel*, 292 F.2d 948, 130 USPQ 215 (CCPA 1961).

[27] *In re Kirk*, 376 F.2d 936, 153 USPQ 48 (CCPA 1967); *In re Joly*, 376 F.2d 906, 153 USPQ 45 (CCPA 1967).

[28] *See, e.g., In re Jolles*, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980); *In re Irons*, 340 F.2d 974, 111 USPQ 351 (1965); *In re Langer*, 503 F.2d 1380, 183 USPQ 288 (CCPA 1974); *In re Sichert*, 566 F.2d 1154, 1159, 196 USPQ 209, 212-13 (CCPA 1977).

[29] *In re Langer*, 503 F.2d 1380, 1391, 183 USPQ 288, 297 (CCPA 1974) (Emphasis in original).

[30] The evidentiary standard used throughout *ex parte* examination is a preponderance of the evidence. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992) ("After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument."); *In re Corkill*, 771 F.2d 1496, 1500, 226 USPQ 1005, 1008 (Fed. Cir. 1985). A preponderance of the evidence exists when it suggests that it is more likely than not that the assertion in question is true. *Herman v. Huddleston*, 459 U.S. 375, 390 (1983).

[31] *Raytheon v. Roper*, 724 F.2d at 956, 220 USPQ at 596.

[32] *In re Gazave*, 379 F.2d 973, 978, 154 USPQ 92, 96 (CCPA 1967), provides a good perspective on rejections for lack of utility. In reversing the Board's rejection for lack of utility where the applicant had asserted a specific utility, the CCPA held:

Appellant's discovery here does not appear to us to be of such a "speculative," abstruse or esoteric nature that it must inherently be considered unbelievable, "incredible," or "factually misleading." Nor does operativeness appear "unlikely" or an assertion thereof appear to run counter "to what would be believed would happen by the ordinary person" in the art. Nor does appellant's field of endeavor appear to be one where "little of a successful nature has been developed" or one which "from common knowledge has long been the subject matter of much humbuggery and fraud." Nor has the examiner presented evidence inconsistent with the assertions and evidence of operativeness presented by appellant.

[33] *In re Folkers*, 344 F.2d 970, 145 USPQ 390 (CCPA 1965).

[34] *In re Gaubert*, 524 F.2d 1222, 1224, 187 USPQ 664, 666 (CCPA 1975) ("Accordingly, the PTO must do more than merely question operability - it must set forth factual reasons which would lead one skilled in the art to question the objective truth of the statement of operability.").

[35] *See, e.g., In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992) ("[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant... If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent"). *See also, Fregeau v. Mossinghoff*, 776 F.2d 1034, 227 USPQ 848 (Fed. Cir. 1985) (applying *prima facie* case law to section 101); *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984).

[36] *See In re Pottier*, 376 F.2d 328, 330, 153 USPQ 407, 408 (CCPA 1967) ("When the operativeness of any process would be deemed unlikely by one of ordinary skill in the art, it is not improper for the examiner to call for evidence of operativeness"). *See also In re Jolles*, 628 F.2d at 1327, 206 USPQ at 890; *In re Citron*, 325 F.2d 248, 139 USPQ 516 (CCPA 1963); *In re Novak*, 306 F.2d 924, 928, 134 USPQ 335, 337 (CCPA 1962).

[37] *In re Isaacs*, 347 F.2d 887, 890, 146 USPQ 193, 196 (CCPA 1965).

[38] *In re Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444 ("the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant... After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument.").

[39] New evidence provided by an applicant must be relevant to the issues raised in the rejection. For example, declarations in which conclusions are not forth without establishing a nexus between those conclusions and the supporting evidence, or which merely express opinions, may be of limited probative value with regard to rebutting a *prima facie* case. *In re Grunwell*, 609 F.2d 486, 203 USPQ 1055 (CCPA

1979); *In re Buchner*, 929 F.2d 660, 18 USPQ2d 1331 (Fed. Cir. 1991). *See also, Manual of Patent Examining Procedure*, § 716 (Rev. 16, 1994).

[40] As the CCPA stated in reference to review of an applicant's response to a *prima facie* showing of obviousness in *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976):

> When prima facie obviousness is established and evidence is submitted in rebuttal, the decision-maker must start over... An earlier decision should not, as it was here, be considered as set in concrete, and applicant's rebuttal evidence then be evaluated only on its knockdown ability. Analytical fixation on an earlier decision can tend to provide that decision with an undeserved broadened umbrella effect. Prima facie obviousness is a legal conclusion, not a fact. Facts established by rebuttal evidence must be evaluated along with the facts on which the earlier conclusion was reached, not against the conclusion itself... [S]uch finding will rest upon evaluation of all facts in evidence, uninfluenced by any earlier conclusion reached by an earlier board upon a different record.

[41] In *Ex parte Ferguson*, 117 USPQ 229 (Bd. App. 1957), the applicant asserted that a drug would provide relief from the pain of ulcers. The Examiner rejected the claims on the basis that the applicant had not shown that the drug was effective in curing ulcers. The Board reversed the Examiner and indicated that the evidence necessary to support the asserted utility merely had to demonstrate that the subjects felt better after using the drug.

[42] *In re Gazave*, 379 F.2d at 978, 154 USPQ at 96 (CCPA 1967); *In re Chilowsky*, 229 F.2d at 462, 108 USPQ at 325.

[43] *In re Irons* 340 F.2d at 978, 144 USPQ at 354.

[44] *Nelson v. Bowler*, 626 F.2d 853, 856-857, 206 USPQ 881, 883-84 (CCPA 1980) (reversing the Board and rejecting Bowler's arguments that the evidence of utility was statistically insignificant. The court pointed out that a rigorous correlation is not necessary when the test is reasonably predictive of the response).

[45] *Cross v. Iizuka*, 753 F.2d 1040, 224 USPQ 739 (Fed. Cir. 1985); *In re Jolles*, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980); *Nelson v. Bowler*, 626 F.2d 853, 206 USPQ 881 (CCPA 1980).

[46] In *In re Jolles*, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980), the claimed compounds were found to have utility based on a close structural relationship to daunorubicin and doxorubicin, both of which were known to be useful in cancer chemotherapy. The evidence of close structural similarity with the known compounds was presented in conjunction with evidence demonstrating substantial activity of the claimed compounds in animals customarily employed for screening anti-cancer agents.

[47] The CCPA has sustained rejections under § 101 for a claimed therapeutic utility *in only two instances*. *In re Citron*, 325 F.2d at 253, 139 USPQ at 520 (therapeutic utility for an uncharacterized biological extract not supported or scientifically credible); *In re Buting*, 418 F.2d 540, 543, 163 USPQ 689, 690 (CCPA 1969) (confusing lack of enablement under § 112 for range of species claimed for lack of utility of claimed invention as a whole under § 101 because record did not establish a credible basis for the assertion that the single class of compounds in question would be useful in treating disparate types of cancers). In contrast, in the vast majority of cases where § 101 was the basis of a rejection, the courts have relied on a varying combination of data from *in vitro* and animal testing, and from structural similarities to known compounds to find credible an asserted utility. *See, e.g., Cross v. Iizuka*, 753 F.2d 1040, 224 USPQ 739 (Fed. Cir. 1985); *In re Jolles*, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980); *Nelson v. Bowler*, 626 F.2d 853, 856, 206 USPQ 881, 883 (CCPA 1980); *In re Gazave*, 379 F.2d 973, 154 USPQ 92 (CCPA 1967); *In re Hartop*, 311 F.2d 249, 135 USPQ 419 (CCPA 1962); *In re Krimmel*, 292 F.2d 948, 130 USPQ 215 (CCPA 1961).

[48] *See, e.g., Ex parte Maas*. 9 USPQ2d 1746 (Bd. Pat. App. & Inter. 1987); *Ex parte Balsavini*, 21 USPQ2d 1892 (Bd. Pat. App. & Inter. 1991).

[49] A number of decisions have addressed the question of whether animal data provide sufficient evidence of utility.

In *In re Hartop*, 311 F.2d 249, 135 USPQ 419 (CCPA 1962), the applicant submitted affidavit evidence that the compound tested successfully for therapeutic effectiveness and acute toxicity in the "standard experimental animal". The court held that "inherent in the concept of the 'standard experimental animal' is the ability of one skilled in the art to make the appropriate correlation between the results actually observed with the animal experiments and the probable results in human therapy". Therefore, the court concluded that appellants' claimed solutions were useful within the meaning of 35 U.S.C. § 101".

In *In re Krimmel*, 292 F.2d 948, 130 USPQ 215 (CCPA 1961), the court held that when the specification teaches the use of the claimed compound for the treatment of any animal, and is not limited to the treatment of humans, and when statistically significant tests with "standard experimental animals" establish that the compound exhibits a useful pharmaceutical property, sufficient statutory utility for the compound has been presented. The court defined "standard experimental animals" as "whatever animal is usually used by those skilled in the art to establish the particular pharmaceutical application in question." 292 F.2d at 953, 130 USPQ at 219.

In *Ex parte Krepelka*, 231 USPQ 746 (Bd. Pat. App. & Inter. 1986), the Board reversed the Examiner's rejection under 35 U.S.C. § 101 that claims drawn to compounds asserted to be useful in treating human cancer were "incredible" and thus lacked patentable utility. The Examiner did not support the assertions with any evidence to controvert evidence in the applicant's disclosure. The evidence in the disclosure included test results derived from acceptable experimental animals, *i.e.*, results from animals which were known to correlate with pharmacological effects observed in humans, were sufficient to demonstrate the utility of the claimed compounds.

[50] Lack of an appropriate animal model to assess effectiveness of a drug or a treatment modality should not itself preclude a finding that an invention has utility. *See, In re Chilowsky*, 229 F.2d at 461, 108 USPQ at 325 ("The mere fact that something has not previously been done clearly is not, in itself, a sufficient basis for rejecting all applications purporting to disclose how to do it."); *In re Wooddy*, 331 F.2d 636, 639, 141 USPQ 518, 520 (CCPA 1964) ("It appears that no one on earth is certain as of the present whether the process claimed will operate in the manner claimed. Yet absolute certainty is not required by the law. The mere fact that something has not previously been done clearly is not, in itself, a sufficient basis for rejecting all applications purporting to disclose how to do it").

[51] Indeed, in *In re Isaacs*, 347 F.2d 889, 146 USPQ 193 (1963), the CCPA stated:

> No authority has been cited and we have been able to find none which requires that in order to secure a patent, utility of a pharmacologically active substance must be proved by in vivo testing. The mere fact that the claimed invention may have possible utility *in vivo* does not warrant disregard of *in vitro* activity where the claims are not limited to in vivo use [347 F.2d at 889, 146 USPQ at 195].

Similarly, in *In re Langer*, 503 F. 2d at 1393-94, the CCPA, after considering the evidence relied upon by the Office in imposing a § 101 rejection stated:

> It is not proper for the Patent Office to require clinical testing in humans to rebut a prima facie case for lack of utility when the pertinent references which establish the prima facie case show in vitro tests and when they do not show in vivo tests employing standard experimental animals.

[52] In *Ex parte Balsavini*, 21 USPQ2d 1892 (Bd. Pat. App. & Inter. 1991) (human clinical data is not required to demonstrate the utility of the claimed invention, even though those skilled in the art might not accept other evidence to establish the efficacy of the claimed therapeutic compositions and the operativeness of the claimed methods of treating humans).

[53] Congress has created a special agency to determine both the safety, and the effectiveness, of new drugs. That agency is the Food and Drug Administration (FDA). According to 21 U.S.C. § 355(a), in order to introduce any new drug, an individual must obtain approval of an application filed with the FDA. The statute defines "drug" extremely broadly and defines "new drug" as any drug not generally recognized as both safe and effective for the use suggested. *See* 35 U.S.C. §§ 321(g) and (p). Under the FDA, the clinical investigation of a new drug is divided into three distinct phases. The general principles of new drug investigations require the agency to assess the likelihood that the drug will meet the statutory standards for marketing approval before granting approval of these phases. 21 CFR § 312.22(a). Part of these statutory standards include the requirement that the drug *prove effective*, a higher standard than the utility requirement. 21 U.S.C. § 355(a), 21 CFR § 314.105. *Cf. In re Irons*, 340 F.2d 974, 978, 144 USPQ 351,354 (CCPA 1965) (reversing the Board of Appeals' utility rejection and pointing out that proof with a double blind test even where the art recognized a very significant placebo effect amounted to proof beyond a reasonable doubt, which was not required to comply with 35 U.S.C. § 101). Indeed, the simple request to begin testing the drug requires submission of an explanation of the rationale for the research, as well as information relating to the effectiveness of the drug. 21 CFR §§ 312.23 (a) (3) (iv), (5) (iv), (8) (i), and (9) (i). Thus, the FDA pursues a two-prong test to provide approval for testing. Under that test, an applicant must show the drug is not injurious to health and that there is a reasoned expectation to think the drug will actually work. As a review matter, there must be a rational reason to think that the compound will actually be effective.

If the use approved by the FDA is not set forth in the specification, FDA approval may not satisfy 35 U.S.C. § 101. However, if the approved use is one set forth in the specification, the Examiner must be extremely hesitant to challenge utility. In such a situation, the inventor has signed an oath stating a utility (*i.e.*, the application) and experts at the FDA have assessed the likelihood that the drug will be effective for the utility indicated and found it satisfactory. Thus, in challenging utility, the examiner is at odds with those experts designated by Congress to decide the issue and who have assessed the likelihood that the drug will meet the statutory standard of efficacy.

[54] *See In re Sichert*, 566 F.2d 1154, 196 USPQ 209 (1977); *In re Hartop*, 311 F.2d 249, 135 USPQ 419 (CCPA 1962); *In re Anthony*, 414 F.2d 1383, 162 USPQ 594 (CCPA 1969); *In re Watson*, 517 F.2d 465, 186 USPQ 11 (CCPA 1975); *In re Krimmel*, 292 F.2d 948, 130 USPQ 215 (CCPA 1961); *Ex parte Jovanovics*, 211 USPQ 907 (Bd. Pat. App. & Inter. 1981).

[55] The credibility of an asserted utility for treating a human disorder may be more difficult to establish where current scientific understanding suggests that the such a task would be impossible. Such a determination has always required a good understanding of the state of the art at the time of the invention. For example, in the 1960s, there were a number of cases where an asserted use in treating cancer in humans was viewed as "incredible." *In re Jolles*, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980); *In re Buting*, 418 F.2d 540, 163 USPQ 689 (CCPA 1969); *Ex parte Stevens*, 16 USPQ2d 1379 (Bd. Pat. App. & Inter. 1990); *Ex parte Busse*, 1 USPQ2d 1908 (Bd. Pat. App. & Inter. 1986); *Ex parte Krepelka*, 231 USPQ 746 (Bd. Pat. App. & Inter. 1986); *Ex parte Jovanovics*, 211 USPQ 907 (Bd. Pat. App. & Inter. 1981).

[56] *In re Sichert*, 566 F.2d 1154, 196 USPQ 209 (CCPA 1977); *In re Jolles*, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980). *See also, Ex parte Ferguson*, 117 USPQ 229 (Bd. Pat. App. & Inter. 1957).

[57] *See* 21 CFR §§ 312.80-88.

Certificate of Correction
For Week of January 31, 1995

P. 8,790	5,193,050	5,298,213	5,324,016
Re. 34,584	5,195,124	5,298,367	5,324,073
Re. 34,654	5,198,380	5,298,405	5,324,364
D. 319,016	5,199,364	5,298,808	5,324,793
D. 343,657	5,199,751	5,298,821	5,325,138
D. 345,325	5,204,243	5,300,938	5,325,374
D. 348,432	5,204,711	5,302,008	5,325,396
D. 349,029	5,205,149	5,302,709	5,325,438
D. 352,374	5,208,246	5,304,468	5,325,668
D. 352,690	5,211,316	5,305,047	5,326,551
4,450,472	5,217,132	5,305,222	5,326,751
4,721,499	5,237,549	5,305,242	5,326,963
4,721,500	5,238,736	5,305,698	5,327,323
4,872,674	5,244,453	5,306,345	5,327,959
4,924,149	5,244,677	5,306,992	5,328,639
4,971,479	5,245,755	5,307,132	5,328,653
4,998,639	5,247,077	5,309,212	5,329,619
5,030,464	5,248,089	5,309,509	5,330,803
5,035,739	5,254,190	5,309,707	5,331,241
5,043,064	5,254,435	5,309,743	5,334,264
5,049,641	5,255,900	5,310,436	5,334,335
5,061,310	5,257,295	5,311,170	5,334,456
5,077,509	5,264,157	5,311,493	5,334,837
5,096,513	5,265,956	5,311,757	5,334,866
5,103,746	5,266,707	5,311,839	5,334,965
5,137,818	5,273,705	5,315,397	5,335,292
5,152,625	5,275,002	5,317,022	5,335,940
5,154,494	5,278,376	5,318,703	5,336,425
5,162,350	5,280,440	5,319,867	5,336,949
5,169,778	5,283,040	5,320,957	5,337,406
5,173,814	5,284,618	5,321,528	5,337,492
5,180,072	5,289,147	5,321,646	5,338,006
5,182,003	5,291,225	5,322,025	5,338,157
5,183,311	5,293,366	5,322,568	5,339,705
5,187,046	5,293,862	5,322,631	5,339,805
5,187,612	5,294,517	5,323,629	5,339,917
5,191,101	5,298,195	5,323,853	5,341,059
5,342,178	5,348,344	5,357,733	5,364,108
5,342,546	5,348,425	5,357,762	5,364,833
5,342,589	5,348,739	5,357,868	5,365,238
5,342,592	5,348,840	5,358,210	5,365,267
5,342,762	5,348,860	5,358,339	5,365,470
5,342,792	5,350,121	5,359,471	5,365,518
5,343,218	5,351,374	5,359,533	5,365,545
5,343,325	5,352,150	5,359,590	5,366,076
5,343,436	5,352,628	5,359,795	5,366,092
5,343,511	5,352,918	5,360,567	5,366,224
5,344,442	5,353,027	5,360,591	5,366,244
5,344,828	5,353,038	5,360,621	5,366,273
5,345,125	5,353,224	5,360,636	5,366,296
5,345,243	5,353,437	5,360,767	5,366,630
5,345,266	5,353,479	5,360,779	5,367,075
5,345,350	5,353,741	5,362,152	5,367,191
5,345,737	5,353,973	5,362,178	5,367,598
5,346,050	5,354,119	5,362,189	5,367,691
5,347,005	5,354,691	5,362,302	5,367,858
5,347,441	5,354,815	5,362,377	5,368,523
5,347,491	5,354,930	5,362,910	5,368,935
5,347,804	5,355,791	5,362,963	5,369,177
5,348,077	5,355,889	5,363,464	5,369,185
5,348,120	5,356,381	5,363,676	5,369,644
5,348,276	5,356,986	5,363,776	5,369,960

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

November 28-December 2, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-2	EX	74/211,391	Centurion Int'l., Inc.	whether the matter asserted for registration in each case functions as a trademark for the recited goods or is, instead, mere product ornamentation; whether the asserted marks are registrable under Section 2(f)	Refusal Affirmed (in each case)		pairs of stripes (of black, blue, green, yellow or brown) extending around the surface of the goods [radio antennae; cap portion of radio antenna]		No
	EX	74/211,392							
	EX	74/211,393							
	EX	74/211,394							
	EX	74/211,395							
	EX	74/211,396							
	EX	74/211,397							
	EX	74/211,398							
	EX	74/211,399							
	EX	74/211,400							
12-2	EX	74/244,325	Table Toys, Inc.	2(e)(1)	Refusal Reversed		"TABLE TOYS" [children's play tables having a playing surface for mating with multi-piece snap together building toys]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box NEW APP FEE	New trademark applications and fees.
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Box 3	Mail for the Office of Personnel from NFC.
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Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
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Colorado	Denver Public Library	(303) 640-8847
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Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
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	Orlando: University of Central Florida Libraries	(407) 823-2562
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
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Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
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	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
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Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
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J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	01/06/94
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	11/04/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	03/22/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	01/20/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	06/16/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/17/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/31/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	12/07/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	308-0771	12/13/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/14/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/20/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/16/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	12/20/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	11/30/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	01/06/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	07/16/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/30/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during December 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....Numbers 4,060,852 to 4,065,811 inclusive
Plant Patents.....4,161 to 4,173

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Jan. 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/26/94	11/14/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/05/94	10/19/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/05/94	09/19/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/01/94	10/12/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/28/94	11/02/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/12/94	09/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/19/94	10/18/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/19/94	09/23/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/28/94	08/25/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/21/94	11/17/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/14/94	11/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/94	11/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/15/94	09/06/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	07/14/94	—0—
Renewals (All Classes)	11/17/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

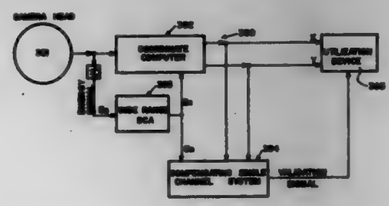
1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

JANUARY 31, 1995

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,095,100 (2465th)
SIGNAL PROCESSING EQUIPMENT FOR RADIATION IMAGING APPARATUS
Dan Inbar, Haifa, and Yitzhak Klein, Kiryat Yam, both of Israel, assignors to Elscint, Ltd., Haifa, Israel
Reexamination Request No. 90/003,451, Jun. 6, 1994.
Reexamination Certificate for Patent No. 4,095,100, issued Jun. 13, 1978, Ser. No. 723,620, Sep. 14, 1976.
Claims priority, application Israel, Sep. 17, 1975, 48111
Int. Cl.[6] G01T *1/208, 1/164*
U.S. Cl. 250—349



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–5 is confirmed.

1. In signal processing equipment for use with radiation imaging apparatus of the type having a scintillation crystal responsive to radiation stimuli for producing light events at spatial locations corresponding to the locations at which the stimuli interact with the crystal, and a plurality of photodetectors arranged in a predetermined array with respect to the crystal for viewing light events therein and producing output signals in response thereto, wherein the signal processing equipment includes means responsive to the output signals for generating an energy signal E_n representative of the total energy of the light event producing such signals; and coordinate computation circuitry responsive to the output signals produced by the occurrence of a light event for computing its spatial coordinates, the improvement in the signal processing equipment comprising:

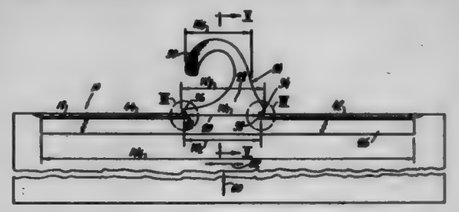
means for validating the event only if E_n lies within an energy window functionally related to the coordinates of the light event.

B1 4,834,553 (2461st)
PLASTIC FILM PACKAGE WITH A HANGER
Ronald Bennett, Bay Shore, N.Y., assignor to Ultra Creative Corp., Brooklyn, N.Y.
Reexamination Request No. 90/003,337, Feb. 22, 1994.
Reexamination Certificate for Patent No. 4,834,553, issued May 30, 1989, Ser. No. 214,238, Jul. 1, 1988.
Int. Cl.[6] B65D *33/14*
U.S. Cl. 383—23

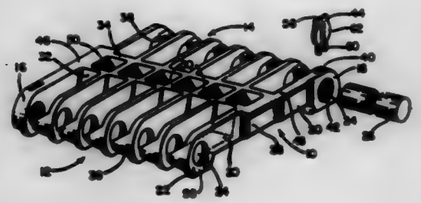
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–13 are cancelled.

[1. A package comprising a wall of plastic film defining an internal chamber adapted to accommodate an article to be packed, said wall being provided with a slit, and a flat hanger including a first part in said chamber and a second part on said first part extending through said slit and externally of said chamber to constitute a structure by which said wall can be supported in hanging relation, said second part including means for locking said hanger against retraction into said chamber, said first part and means being spaced to define squared-notches into which said wall extends and said hanger including a throat portion interconnecting said first part ans means, said throat portion and slit having substantially equal widths, said first part and means having width exceeding the width of said slit, said plastic film having an elastic limit which permits said means to be forced through said slit without substantial permanent deformation of said wall adjacent said slit, said means including wings extending in opposite direction from said second part and being of a shape to facilitate penetration of the second part though said slit, said wings providing a width for said second part exceeding that of said slit, said wings each including a rounded portion and a wedge shaped portion facilitating penetration of the second part though said slit, said first and second parts including said wings and said throat portion being of the same thickness.]



B1 4,934,518 (2462nd)
MODULAR CENTER DRIVE CONVEYOR BELT
James M. Lapeyre, New Orleans, La., assignor to Laitram Corporation, Harahan, La.
Reexamination Request No. 90/003,333, Feb. 11, 1994.
Reexamination Certificate for Patent No. 4,934,518, issued Jun. 19, 1990, Ser. No. 352,641, May 12, 1989.
Continuation of Ser. No. 277,512, Nov. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 52,845, May 21, 1987, abandoned, which is a continuation of Ser. No. 179,523, Aug. 19, 1990, Pat. No. 4,832,187
Int. Cl.[6] B65G *17/06*
U.S. Cl. 198—853



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 3, 4, 7–9, 13–16, 19, 24, 25, 29–50, 54, 57–62, 69–83 and 84–88 is confirmed.

Claims 1, 2, 5, 6, 10–12, 17, 18, 20–23, 26–28, 51–53, 55, 56, 63–68 and 84–90 are determined to be patentable as amended.

New claims 89–103 are added and determined to be patentable.

1. A module for constructing a linked conveyor belt capable of being driven by sprockets in at least one direction of intended travel, said module having a width, [a] *an upper* conveying surface *on which a product is conveyed*, and a bottom surface, and comprising:

a first plurality of link ends;

a second plurality of link ends;

at least some of said first and second pluralities of link ends being formed to circumscribe a pivot hole;

the pivot holes of each plurality of link ends being aligned on respective first and second substantially parallel pivot axes;

an intermediate structure integral with and connecting the first and second pluralities of link ends, said intermediate structure having at least two transverse elements extending at least partially across the width of the module and substantially parallel to the pivot axes, *said intermediate structure forming at least part of said upper conveying surface;* and[;]

a plurality of longitudinal members integral with [the] *and* intersecting said transverse elements,

said at least two transverse elements and said longitudinal members defining at least two sprocket recesses extending from the bottom surface toward the conveying surface and capable of receiving cooperative sprocket teeth;

said at least two transverse elements having a driving surface within said sprocket recesses and at least a portion of each of said driving surfaces extending downwardly toward the bottom surface and in the direction of intended travel;

said first and second pluralities of link ends and said intermediate structure being an integral structure of molded plastic material.

B1 5,124,538 (2463rd)

SCANNER

Charles Lapinski, Bethlehem; Charles Eckert, Telford; Richard Skolowski, Green Lane; James Cox, Quakertown; William Scott, Sellersville; Edward Chaleff, Doylestown; Jeffrey G. Sharpe, Hatfield, and David A. Wurz, Chalfont, all of Pa., assignors to Accu-Sort Systems, Inc., Telford, Pa.

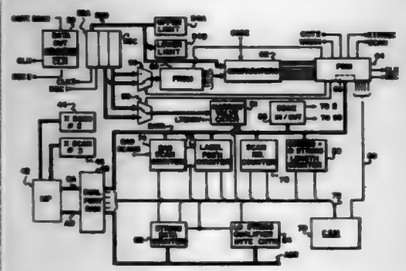
Reexamination Request No. 90/003,023, Apr. 12, 1993.

Reexamination Certificate for Patent No. 5,124,538, issued Jun. 23, 1992, Ser. No. 586,545, Sep. 21, 1990.

Continuation-in-part of Ser. No. 237,517, Aug. 26, 1988, Pat. No. 5,028,772

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—467



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–32, 34–57 and 59–60 is confirmed.

Claims 33 and 58 are cancelled.

1. A scanner for reading machine-readable code on an object, comprising:

scanning means for repetitively scanning said code and for providing a scan signal repetitively corresponding to at least fragments of said code;

data means coupled to said scanning means and responsive to its scan signal for repetitively storing said scan signal; and

registration means coupled to said data means for reconstructing at least a portion of said code from at least two of said fragments of said code including means for identifying matching portions of said two fragments, and means for shifting said two fragments relative to one another until said matching portions are identified in registration.

B1 5,192,255 (2464th)

ADJUSTABLE INCLINE SYSTEM FOR EXERCISE EQUIPMENT

William T. Dalebout; S. Ty Measom, and Scott R. Watterson, all of Logan, Utah, assignors to Citicorp North America, Inc.

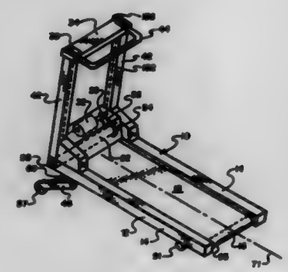
Reexamination Request No. 90/003,477, Jun. 27, 1994.

Reexamination Certificate for Patent No. 5,192,255, issued Mar. 9, 1993, Ser. No. 806,977, Dec. 12, 1991.

Continuation of Ser. No. 494,590, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 256,486, Oct. 12, 1988, Pat. No. 4,913,396

Int. Cl.[6] A63B *23/00*

U.S. Cl. 482—54



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1 & 2 is confirmed.

1. A method of adjusting the incline of a treadmill, said method comprising:

providing a treadmill having a first end, a second end, a frame and a walking surface, said treadmill having a support pivotedly connected to said frame proximate said first end of said treadmill, said support having a proximal end adapted for engaging an underlying surface and supporting said treadmill frame above said underlying surface, said treadmill further including an adjustable pneumatic spring pivotedly mounted to said support on one end of said adjustable pneumatic spring and to said frame on an opposing end of said adjustable pneumatic spring, said adjustable pneumatic spring including a control means adapted for controlling a force exerted by said adjustable penumatic spring on said support and said frame by opening and closing a valve contained within said adjustable penumatic spring, said control means being operable by a user standing upright on said walking surface, said treadmill further including an underlying surface engaging fulcrum mounted on said frame proximate said second end of said treadmill;

positioning a user in an upright orientation atop said walking surface;

said user actuating said control means to open said valve, said adjustable pneumatic spring thereby operating to urge said proximal end of said support outward away from said frame and along said underlying support surface, said proximal end of said support thereby applying an upwardly directed force to said treadmill frame and urging said treadmill frame upwardly;

said user walking along said walking surface between said underlying surface engaging fulcrum and said first end of said treadmill to apply a downwardly directed force on said treadmill in opposition to said force being applied by said adjustable pneumatic spring;

said user positioning himself at a location on said walking surface between said fulcrum and said first end of said treadmill to a selected, downwardly directed force on said treadmill sufficient to counteract said upwardly directed force and to position said treadmill walking surface in a selected inclination; and

said user operating said control means from an upright orientation atop said walking surface to close said valve and thereby lock said adjustable pneumatic spring in place to lock said treadmill walking surface in said selected inclination.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,838

PERMANENT MAGNET AND METHOD FOR PRODUCING SAME

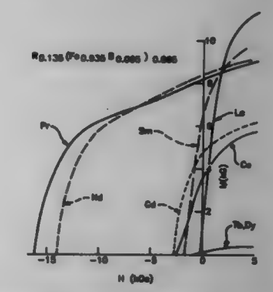
Kaneo Mohri, and Jiro Yamasaki, both of Fukuoka, Japan, assignors to TDK Corporation, Tokyo, Japan

Original No. 4,765,848, dated Aug. 23, 1988, Ser. No. 814,183, Dec. 27, 1985. Application for reissue Aug. 23, 1990, Ser. No. 572,562

Claims priority, application Japan, Dec. 31, 1984, 59-280125; Sep. 17, 1985, 60-205004; Sep. 17, 1985, 60-205005; Sep. 17, 1985, 60-205006; Nov. 21, 1985, 60-259816

Int. Cl.[6] H01F *1/04*

U.S. Cl. 148—302 27 Claims



1. A permanent [magnet] *magnetic powder or ribbon obtained by the rapid cooling method and* having a composition expressed by $(Ce_zLa_{1-z})_x(Fe_{1-v}B_v)_{1-x}$ with a proviso of $0.4 \leq x \leq 0.9$, $0.05 \leq z \leq 0.3$, and $0.01 \leq v \leq 0.3$ and having a coercive force (iHc) of at least 4 kOe.

Re. 34,839

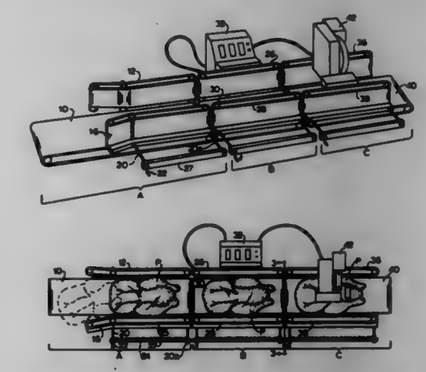
WEIGHING AND LABELING APPARATUS AND METHOD

Sidney S. Tolson, Scotland Neck, N.C., assignor to Ossid Corporation, Rocky Mount, N.C.

Original No. 5,086,855, dated Feb. 11, 1992, Ser. No. 615,810, Nov. 13, 1990. Application for reissue Mar. 8, 1993, Ser. No. 31,825

Int. Cl.[6] G01G *23/38, 19/00;* B65G *15/14*

U.S. Cl. 177—5 12 Claims



11. An apparatus for the weighing and labeling of a product, being one of a sequence, with a non-flat bottom in a high-speed processing environment, comprising:

(a) first conveyor means having an entry end and an exit end and means operative to align and stabilize a product with a non-flat bottom in a position suitable for being weighed while moving on a second conveyor means at a weighing station;

(b) second conveyor means having an entry end at which said aligned and stabilized product with a non-flat bottom is received from said exit end of said first conveyor means, said second conveyor means being operative to maintain said product with a non-flat bottom aligned and stabilized while on said second conveyor means and to discharge said product at an exit end of said second conveyor means in a position suited to the labeling of said product;

(c) said second conveyor means being mounted on a weighing device capable of registering the weight of any product carried thereby to produce individual product weight information and transmitting said product weight information as a signal to a signal processing device;

(d) third conveyor means having an entry end at which the aligned, stabilized and weighed product is received from the exit end of the second conveyor means, said third conveyor means including a horizontal conveyor aligned with said second conveyor means to support and transport said products during a labeling operation and including a pair of vertical control belts mounted in a pair of parallel planes perpendicular to said horizontal conveyor and operative in a direction parallel to the direction of said horizontal conveyor at a synchronous speed therewith, said vertical control belts being separated by a space such that said product with a non-flat bottom is gripped securely therebetween; and

(e) labeling means mounted adjacent said third conveyor means and connected to said signal processing device, said labeling means being capable in response to said signal of imprinting and transferring a label onto each product in sequence prior to each said product being expelled from the said weighing-/labeling apparatus and while each said product is stabilized and is in continuous motion on said third horizontal conveyor.

Re. 34,840

ELECTROPHOTOGRAPHIC APPARATUS WITH MANUAL AND PROGRAMMABLE BLADE CLEANER

Yasuyoshi Yamaguchi, and Susumu Matsuda, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Original No. 5,073,800, dated Dec. 17, 1991, Ser. No. 518,653, May 3, 1990. Application for reissue Nov. 25, 1992, Ser. No. 981,260

Claims priority, application Japan, May 11, 1989, 1-117843; May 11, 1989, 1-117845

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—297 10 Claims

1. An electrophotographic apparatus, comprising:

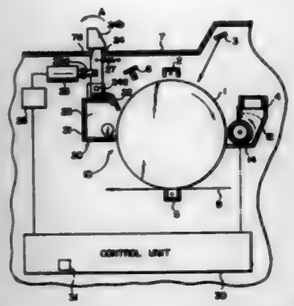
image forming means including an image carrier, for forming an image on a recording medium;

[magnetic] *primary* cleaning means for [magnetically] cleaning a surface of the image carrier for each cycle of image formation;

mechanical cleaning means for *supplementing said primary cleaning means by* mechanically cleaning the surface of the image carrier, said mechanical cleaning means including a contact member movable between a contact position where the contact member is in contact with the surface of the image carrier, thereby cleaning the surface, and an off position where the contact member is kept spaced apart from the surface of the image carrier, the contact member normally being in the off position; and

actuating means for selectively moving the contact member

from the normally off position to the contact position, said actuating means including drive means for moving the contact member to the contact position, and control means for actuating the drive means at predetermined



time intervals and for predetermined operating time durations, said control means including means for changing said operating time durations when a predetermined number of said time intervals has occurred.

Re. 34,841

MICRO-CUVETTE UNIT FOR FACILITATING THE IDENTIFICATION OF SAMPLES

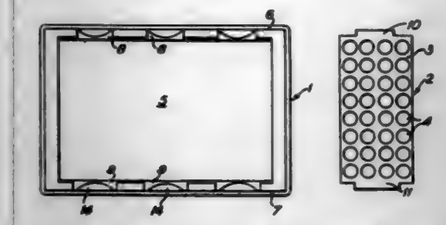
Osmo A. Suovaniemi; Pertti Ekholm, and Paul Partanen, all of Helsinki, Finland, assignors to Labsystems Oy, Helsinki, Finland

Original No. 4,319,841, dated Mar. 16, 1982, Ser. No. 125,475, Feb. 28, 1980. Application for reissue Sep. 25, 1992, Ser. No. 951,719

Claims priority, application Finland, Mar. 1, 1979, 790692

Int. Cl.[6] G01N *21/03*; C12M *1/20*

U.S. Cl. 356—244 **9 Claims**



1. A micro-cuvette unit comprising a plurality of cuvettes in the form of [a matrix arranged] *rectangularly shaped cuvette components* so that said cuvettes may be handled as [one unit] *a unit*, wherein the structural body of the micro-cuvette unit comprises a rectangular frame part *having a rectangular opening* which is designed so that a plurality of *rectangular* cuvette components may be fitted [to] *into* said frame one after the other, each *rectangular* cuvette component comprising a plurality of cuvettes arranged in the form of a line or matrix and connected to each other directly or by means of [sufficient discs whereby] *support discs*, said *rectangular opening of said* frame part [is] *being* open in the middle *thereof* at least within the area covered by said cuvettes in said *rectangular* cuvette [components and] *components*, wherein said *rectangular* frame part contains two opposite sides which are provided with connecting means for joining said cuvette components to said frame [part] *part, and* wherein said connecting means between said frame part and said cuvette components are different on different sides of said frame part and on different sides of said cuvette components respectively so as to determine the positions of said cuvette components in relation to each other and to facilitate the identification of samples placed within said cuvettes and preventing said samples from becoming intermixed with one another.

Re. 34,842

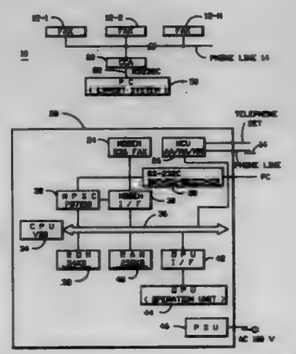
FACSIMILE REMOTE DIAGNOSTIC SYSTEM

Koichi Ejiri, Yokohama; Tina Jong, Los Altos, Calif.; Rithy Roth, Richmond, Calif., and Lak M. Lam, Pleasanton, Calif., assignors to Ricoh Corporation, San Jose, Calif.

Original No. 4,965,676, dated Oct. 23, 1990, Ser. No. 317,190, Feb. 28, 1989. Application for reissue Oct. 22, 1992, Ser. No. 965,076

Int. Cl.[6] H04H *1/00*

U.S. Cl. 356—406 **12 Claims**



7. A remote diagnostic system for image reproducing apparatuses comprising:

at least one image reproducing apparatus;

means for controlling communications with each of said image reproducing apparatus;

a transmission line connected between each of said image reproducing apparatus and said means for controlling communications;

remote diagnostic means for remotely communicating with each of said image reproducing apparatus through said means for controlling communication and over said transmission line, wherein said remote diagnostic means is a programmed computer, including means for storing control instructions for providing diagnostics to said image reproducing apparatus.

Re. 34,843

SIGNAL CONTROLLED WAVEFORM RECORDER

Hugo S. Ferguson, Averill Park, N.Y., assignor to Daffers Scientific, Inc., Poestenkill, N.Y.

Original No. 4,631,697, dated Dec. 23, 1986, Ser. No. 676,915, Nov. 30, 1984. Continuation-in-part of Ser. No. 522,356, Aug. 11, 1983, abandoned. Application for reissue Dec. 20, 1988, Ser. No. 288,029

Int. Cl.[6] G06F *3/05, 3/06*

U.S. Cl. 368—5 **15 Claims**

15. The signal controlled waveform recorder having a plurality of data channels for recording selected portions of a corresponding signal supplied to each one of the data channels, said recorder comprising:

means, associated with each one of said data channels and responsive to a corresponding one of a plurality of input signals and a clock pulse, for providing a corresponding one of a plurality of digital signals, wherein each of said digital signals corresponds to an associated one of said input signals and has a value substantially equal to a previously occurring value of said one input signal;

means for comparing substantially current values of said input signals with the values of said digital signals and producing a control signal in response to at least one pre-defined logical difference, said difference occurring between one of said input signals and a corresponding one of said digital signals; and

means, responsive to said control signal and to the digital signals, for storing in parallel a set of simultaneously occurring values of all of said digital signals, wherein each value in said set is a current value of a different corresponding one of said digital signals.

Re. 34,844

POWER TILT DEVICE

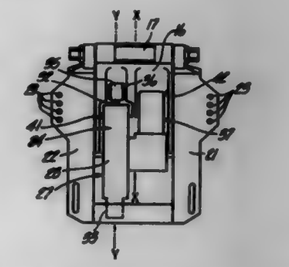
Hiroshi Ito, Shizuoka, and Ryoichi Nakase, Hamamatsu, both of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 5,049,099, dated Sep. 17, 1991, Ser. No. 567,697, Aug. 13, 1990. Continuation of Ser. No. 390,656, Aug. 7, 1989, abandoned, which is a continuation of Ser. No. 619,054, Jun. 11, 1984, abandoned. Application for reissue Apr. 26, 1993, Ser. No. 51,978

Claims priority, application Japan, Jun. 11, 1984, 58-105766

Int. Cl.[6] B63H *5/12*

U.S. Cl. 440—61 **12 Claims**



7. A power tilt and trim unit for a marine outboard drive, support means comprising a pair of spaced bracket arms lying on opposites sides of a vertically extending center plane for supporting said outboard drive by a hull of a watercraft for pivotal movement about a generally horizontally extending trim axis, a linear type fluid motor positioned between said bracket arms and having a cylinder housing defining a bore, a piston reciprocal in said bore, a piston rod affixed to said piston and extending from said cylinder housing, said piston rod and said cylinder housing each providing a respective eyelet to receive a pivot pin for effecting a respective pivotal connection between the hull and said outboard drive for effecting pivotal movement of said outboard drive upon actuation of said fluid motor, a pump for actuating said fluid motor, and drive means for said pump, said pump and said drive means being positioned in proximity to said fluid motor and adjacent to and inboard of said bracket arms, a trim pin extending between said bracket arms and adjacent the portion of said cylinder housing defining said bore for limiting the trim down adjustment of said outboard drive and for protecting said cylinder housing, said pump, said drive means and said fluid motor being positioned relative to said outboard drive and said bracket arms to be protected thereby, with said pump, drive means and fluid motor being positioned between the hull and said trim pin, said outboard drive having a pair of portions one of which is positioned to nest in part between said fluid motor and said pump and said drive means and the other of which nests in part between said fluid motor and one of said bracket arms, said pair of portions providing the pivotal connection to said fluid motor.

Re. 34,845

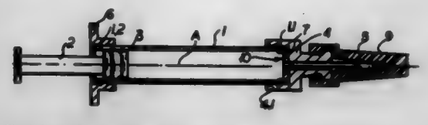
HYPODERMIC SYRINGE

Helmut Vetter, Ravensburg, and Peter Geprägs, Weingarten, both of Germany, assignors to Arzneimittel GmbH Apotheker Vetter & Co., Ravensburg, Germany

Original No. 5,069,670, dated Dec. 3, 1991, Ser. No. 578,731, Sep. 6, 1990. Application for reissue Dec. 2, 1993, Ser. No. 161,131

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—243 **13 Claims**



9. A hypodermic syringe comprising:

a tubular body extending along and centered on an axis and having an axial front end having an outer surface;

an end piece on the front end of the body;

a deformable seal fixed on the end piece, fittable sealingly against the front end and adapted to receive a needle;

mounting formations extending axially back from the end piece and having an inner surface radially confronting the outer surface of the front end of the body., one of the surfaces being formed with a front groove open radially toward the other surface and, axially spaced backward therefrom, with a rear groove radially toward the other surface, the other surface being formed with a ridge engageable in a front position of the end piece radially inward into the front groove and in a rear position of the end piece radially inward into the rear groove, the formations being of such an axial length that

the seal is fitted snugly against the front end in the rear position and blocks flow out of the body through the front end but is not snugly fitted against the front end in the front position and forms therewith a gap permitting flow out of the body through the front end; and

a piston axially displaceable in the body.

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PLANT PATENTS

GRANTED JANUARY 31, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,048

MINIATURE ROSE PLANT NAMED POULTOP

Mogens Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Weeks Wholesale Rose Grower, Inc., Upland, Calif.

Filed Jan. 5, 1994, Ser. No. 177,541
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of miniature rose plant substantially as described and illustrated herein.

9,049

VARIETY OF LILIUM NAMED HOLEAW

Petrus M. M. Hoff, Steenbergen, Netherlands, assignor to Hoffgaarde B.V., Steenbergen, Netherlands

Filed Jan. 4, 1994, Ser. No. 177,193
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinct variety of lily plant substantially as shown and described.

9,050

DIEFFENBACHIA NAMED 695-1

Richard J. Henny, Tavares, Fla., assignor to Florida Foundation Seed Producers, Inc., Greenwood, Fla.

Filed Nov. 15, 1993, Ser. No. 152,029
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.2 1 Claim

1. A new and distinct variety of Dieffenbachia plant substantially as described and shown herein, characterized particularly as to novelty by its variegated foliage, having three colors on the upper leaf surface, the dark green margins, blotches and spots in the light green areas of the leaves, the white midrib surrounded by light green central area over 40 to 50 percent of the leaf surface, the white petiole and freely suckering habit.

9,051

DIEFFENBACHIA NAMED 68814

Richard J. Henny, Tavares, Fla., assignor to Florida Foundation Seed Producers, Inc., Greenwood, Fla.

Filed Nov. 15, 1993, Ser. No. 152,121
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.2 1 Claim

1. A new and distinct variety of Dieffenbachia plant, substantially as shown and described herein, characterized particularly as to novelty by its unique, long, narrow leaves projecting outwardly from the main shoot in a star-like pattern, its leaves being several times as long as wide, its variegated foliage of three colors on the upper leaf surface, the colors being dark green margins, areas of dark green, lighter green and almost white blotches and spots over the surface of the leaves, its green-white petioles, and its full appearance beneath the main shoot.

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297–238	5,384,946
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229–834	5,384,956
229–895	5,384,957
240–001	5,384,972
236–25R	5,384,973
236–027	5,384,974
249–203	5,384,975
249–489	5,384,976
242–100	5,384,980
451–065	5,384,983
451–357	5,384,984
451–344	5,384,985
451–444	5,384,986
451–041	5,384,987
451–042	5,384,988
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451–057	5.384.991
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62–003	5,385,022
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73–640	5,385,051
73–517A	5,385,052
73–861	5,385,056
73–864	5,385,058
73–571	5,385,069
74–502	5,385,070
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ERRATA–CONTINUED

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414–608	5,385,440
414–627	5,385,441
439–419	5,385,485
203–062	5,385,649
210–710	5,385,673
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518–700	5,385,949
521–131	5,385,952
523–161	5,385,957
525–068	5,385,976
528–362	5,386,000
528–373	5,386,001
528–110	5,386,005
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528–012	5,386,007
528–087	5,386,008
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347–089	5,386,222
348–746	5,386,252
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PATENTS

GRANTED JANUARY 31, 1995

GENERAL AND MECHANICAL

5,384,913

BODY PART IMPACT GUARD

James M. Hendry, Epsom, United Kingdom, assignor to Santillo Limited, United Kingdom

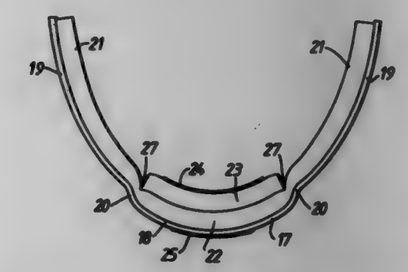
PCT No. PCT/GB90/01852, § 371 Date Jul. 27, 1992, § 102(e) Date Jul. 27, 1992, PCT Pub. No. WO91/08028, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 28, 1990, Ser. No. 853,732

Claims priority, application United Kingdom, Nov. 28, 1989, 8926962

Int. Cl.[6] A41D *13/00*

U.S. Cl. 2—2 5 Claims



1. A body part protective guard assembly generally shaped to the form of the body part area to be protected and which is intended to overlie the body part to be protected comprising:

an outer guard layer formed from a force resistant resiliently deformable material, the outer layer being padded with an impact absorbing material backing layer which when in use is interposed between the outer layer and the body part;

the outer layer comprising a single sheet of relatively stiff resiliently deformable non-compressible material effectively divided into a central part and two side parts extending outwardly away from opposite edge regions of the central part and connected to said central part by elongated profiled regions which are arranged to define regions of resilient flexure between the central and side parts to facilitate relative flexure therebetween whereby on an impact occurring on the central part relative resiliently resisted distortion displacement is possible between the central and the side parts by way of the profiled regions in such manner that the displacement assists in the absorption of and the transfer of impact force from the central to the side parts thereby to prevent the full impact force from being restricted only to the central part and thus to the impact absorbing material immediately associated therewith;

a cylindrical sleeve generally shaped to the form of the body part area to be protected and formed with a pocket;

said sleeve and pocket being formed from a flexible woven type cloth material;

said outer guard layer and impact absorbing material located within said pocket; and

wherein said sleeve is freely positionable along said body part to locate its pocket and guard layer at an area of the body to be protected so that the force of any blows to the body part at said area will be taken upon only by the guard and the flexure of its side parts and distributed to the body part through the impact absorbing material.

5,384,914

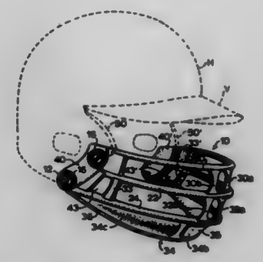
SPORTS FACE MASK

Lorine S. Cavenaugh, Salem; Henry G. Glass, Roanoke, and Alan B. Feldman, Salem, all of Va., assignors to Face Guard, Inc., Salem, Va.

Filed Jan. 14, 1994, Ser. No. 191,151

Int. Cl.[6] A42B *1/08*

U.S. Cl. 2—9 10 Claims



1. A sports face mask adapted when secured to a helmet to protect the face of the wearer from impact of an incoming object, comprising;

(a) a plurality of arcuate substantially horizontal bars extending from a first end to a second end in substantially parallel vertically separated orientation, said bars having a cross-sectional shape selected from a substantially V, U or T configuration and in either case being defined by a front surface curved outwardly relative to the mask and continuous with said front surface, a rear curved surface, said front and rear surfaces serving as boundary surfaces for solid rib portions defining said selected shape and established by and located between said surfaces and extending in separate, spaced apart locations for the length of said bars; and

(b) end panels integrally formed with said bars and mounting the respective said first and second ends of said bars, said end panels being adapted for securing said face mask to a sports helmet matable therewith.

5,384,915

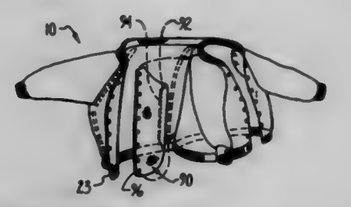
EXPANDABLE OUTERWEAR GARMENT

Kay A. Rodriguez, 2007 Paradise Rd., Las Vegas, Nev. 89104

Filed May 21, 1993, Ser. No. 65,602

Int. Cl.[6] A41D *1/00*

U.S. Cl. 2—93 3 Claims



1. A garment which comprises:

an outer jacket having an outer front portion, an outer back portion, and a pair of sleeves extending from said outer jacket, said outer back portion further comprises an expanded back portion of additional material, said expanded back portion securable to said outer back portion by suitable securing means;

an inner jacket portion having an inner front portion, an inner back lining portion, and an inner sleeve extending from said inner jacket portion; and

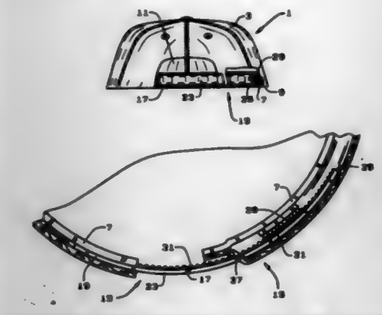
connecting means between said outer jacket and said inner jacket portion, and wherein said suitable securing means further comprises a lower pile member secured in a vertically oriented position on said expanded back portion, an upper pile member secured in a vertically oriented position on said expanded back portion, a first loop member secured in a vertically oriented position on said expanded back portion, and a second loop member secured in a diagonally oriented position on said expanded back portion.

5,384,916

SIZE ADJUSTABLE CAP

Alvin Portney, St. Louis, Mo., assignor to Western Textile Products Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 57,481, May 3, 1993, abandoned. This application Oct. 20, 1993, Ser. No. 139,416
Int. Cl.[6] A42B *1/22*
U.S. Cl. 2—195.2 4 Claims



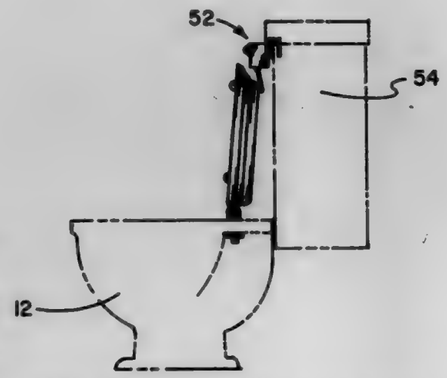
1. A size adjustable cap having a crown with an opening in the back of the cap between the cap and a size adjustment strap extending across the opening, said size adjustment strap having one end secured in fixed position to the cap in alignment with of a sweatband that is internally attached to the cap proximate its lower margin, said size adjustment strap having a free end that extends through a complementary shaped slot provided in the crown of the cap in the vicinity of the sweatband on an opposite side of the cap opening from the fixed end of the size adjustment strap in order to allow the size adjustment strap to pass through the complementary shaped slot for positionment between the sweatband and the crown, cooperating adjustable loop and hook fastening means associated with said size adjustment strap and said sweatband for engagement with one another when said size adjustment strap is positioned between the sweatband and the crown, said loop fastening means being associated with said size adjustment strap and facing the head of a user when the size adjustment strap extends through the complementary shaped slot in said crown while said hook fastening means are associated with said sweatband, and said size adjustment strap further including a strip of fabric material covering said loop fasteners and facing outwardly from a user when the cooperating adjustable loop and hook fastening means are in engagement with one another.

5,384,917

CHILD'S AUXILIARY TOILET SEAT

Wilma J. Epling, 203 Roberts St., Livingston, Tenn. 38570

Filed Aug. 31, 1993, Ser. No. 113,091
Int. Cl.[6] A47K *13/00*
U.S. Cl. 4—235 8 Claims



1. A new and improved child's auxiliary toilet seat for a toilet, comprising:

a hinge pin assembly which includes a hinge pin and first hinge members, connected to the toilet, for receiving said hinge pin,

a first toilet seat assembly which includes a first seat portion and a first hinge portion for connecting to said hinge pin, wherein said first toilet seat assembly is capable of being in a lowered orientation such that said first seat portion is supported by an upper rim of the toilet, and wherein said first toilet seat assembly is capable of being in a raised orientation such that said first seat portion is supported by said first hinge portion, said hinge pin, and said first hinge members,

a second toilet seat assembly which includes a second seat portion and a second hinge portion for connecting to said hinge pin, wherein said second toilet seat assembly is capable of being in a lowered orientation such that said second seat portion is supported by said first seat portion, and wherein said second seat portion is capable of being in a raised orientation such that said second seat portion is supported by said first hinge portion, said hinge pin, and said first hinge members, wherein said second seat portion includes a proximal portion which is proximal to said second hinge portion, includes a distal portion which is distal to said second hinge portion, and includes a first side portion and a second side portion that extend between said proximal portion and said distal portion, wherein said respective first side portion and said second side portion include respective leg supporting extension members which project toward each other from said respective first and second side portions, thereby narrowing said aperture, and

a toilet seat cover assembly which includes a cover portion and a third hinge portion for connecting to said hinge pin, wherein said toilet seat cover assembly is capable of being in a lowered orientation such that said cover portion is supported by said second seat portion, and wherein said cover portion is capable of being in a raised orientation such that said cover portion is supported by said first hinge portion, said hinge pin, and said first hinge members,

further including:

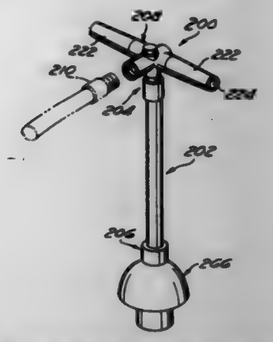
a signaling module installed on a water tank which supplies water to the toilet, said signaling module including a force-responsive assembly that is capable of sensing respective forces exerted by said toilet seat cover assembly, said second toilet seat assembly, and said first toilet seat assembly when said respective toilet seat cover assembly, said second toilet seat assembly, and said first toilet seat assembly are in a raised orientation.

5,384,918

PLUNGER DEVICE

Lisa M. Leighton, 1937 Sundance La., Costa Mesa, Calif. 92627, and Brian D. Stearns, Roseville, Calif., assignors to Lisa M. Leighton, Dana Point, Calif.

Filed Jun. 8, 1993, Ser. No. 74,327
Int. Cl.[6] E03D *9/00*
U.S. Cl. 4—255.05 10 Claims



1. A plunger device for forcing waste through a drain line of a plumbing fixture, comprising:

an elongate, tubular member having top and bottom ends;

a valve assembly fluidly coupled to the top end of said tubular member and adapted to have a water supply source fluidly coupled thereto;

a pair of elongate, tubular handle members attached to said valve assembly in a manner wherein said handle members extend perpendicularly relative said tubular member in opposed relation; and

a plunger member connected to the bottom end of said tubular member and defining an interior cavity which is in fluid communication with said tubular member, said plunger member further including a fluid outlet port and being sized and configured to cover and form a fluid-tight seal about a drain opening of said fixture in a manner wherein water is directed from said supply source, through said plunger device, and into said drain line via said outlet port;

said valve assembly comprising:

a housing defining an interior chamber;

a check valve disposed intermediate said interior chamber and said tubular member, said check valve being adapted to prevent the back-flow of water from said tubular member into said interior chamber;

a water inlet valve disposed intermediate said interior chamber and said water supply source, said inlet valve being adapted to channel water from said supply source to said interior chamber when actuated to an open position;

an actuation button disposed within said housing and cooperatively engaged to said water inlet valve in a manner wherein pressing said button is operable to actuate the inlet valve to the open position; and

at least one air inlet valve disposed within said housing intermediate said interior chamber and a respective one of said handle members, said air inlet valve being operable to create a vacuum break and close said water inlet valve by placing said interior chamber in fluid communication with ambient air via said handle member when the fluid pressure in said interior chamber is less than atmospheric pressure; said valve assembly being selectively actuatable between open and closed positions, and operable to channel water from said supply source into said tubular member when in the open position.

5,384,919

TOILET SEAT SUPPORTED BIDET

W. Fred Smith, 2048 Sage, Corona, Calif. 91720

Filed Dec. 16, 1993, Ser. No. 167,133
Int. Cl.[6] A61H *35/00*
U.S. Cl. 4—448 9 Claims



1. For use in combination with a toilet having a toilet seat which in its lowered position lies in a generally horizontal plane and which toilet seat defines a hole therethrough, an upper seating surface and an undersurface, a bidet comprising:

a valve having a valve body, an input for coupling to a supply of water under pressure, an output and an elongated valve handle having a first end pivotally coupled to said body and a second end for opening and closing said valve in response to pivotal motion of said handle in a first direction generally parallel to said horizontal plane of said toilet seat;

a nozzle pipe having a first end coupled to said valve output and a second end;

a nozzle supported upon said second end of said nozzle pipe; and

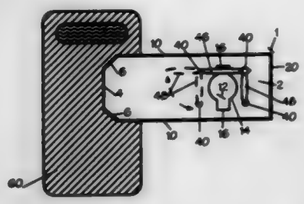
attachment means for securing said nozzle pipe to said toilet seat undersurface in a pivotal attachment whereby said nozzle is directed upwardly toward said hole in said toilet seat and said valve handle is accessible to a user seated upon said toilet seat and said valve body and said nozzle pipe are rotationally positionable to adjust the angular position of said nozzle with respect to the plane of said toilet seat by pivoting said valve handle in a second direction within a plane generally orthogonal to said horizontal plane of said toilet seat.

5,384,920

BEDSIDE TOILET FOR INCAPACITATED PATIENTS

Thomas R. Havens, 21000 Farm Rd., Vancleave, Miss. 39564

Filed Sep. 9, 1993, Ser. No. 119,002
Int. Cl.[6] A47K *11/06*
U.S. Cl. 84—480 1 Claim



1. A toilet for a bed ridden patient comprising:

a patient support, comprising a flat rectangular support, having a truncated end;

a toilet opening within said support, means for receiving wastes beneath said opening;

four rail support openings symmetrically disposed about said toilet opening;

a rail support assembly comprising a back rail and two side rails foldingly attached to the back rail, said rail support assembly removably inserted into said rail support openings;

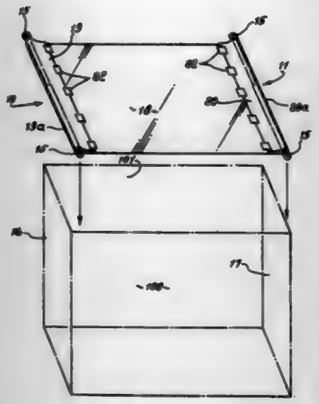
folding legs attached to said support at an end opposite said truncated end.

5,384,921

METHOD OF TOPPING A SHOWER OR TUB ENCLOSURE

Steven A. Zieg, 24659 Las Patranas, Yorba Linda, Calif. 92687

Filed Jan. 28, 1994, Ser. No. 187,538
Int. Cl.[6] A47K *3/22*; A61H *33/06*
U.S. Cl. 4—609 4 Claims



1. The method of installing a shower or tub enclosure top protective device, comprising in combination:

a) plastic sheet sized to extend across a shower or tub enclosure above the bather, the sheet having opposite end portions,

b) two elongated rods respectively directly attached to said sheet end portions to be movable toward and away from one another, accompanied by flexing of said sheet,

c) each said rod having ends engageable against shower or tub wall structure to support the rod,

d) said sheet having two loops respectively at said end portions, said two rods respectively received in said end loops,

said method including the steps:

i) installing the rods in the shower enclosure in selected parallel positions,

ii) measuring the distances between said installed rods at said ends thereof engaging said wall structure,

iii) removing the rods from said enclosure,

iv) spreading the sheet on a support surface and forming said loops at said end portions at separations corresponding to said measured distances,

v) inserting said rods in said loops,

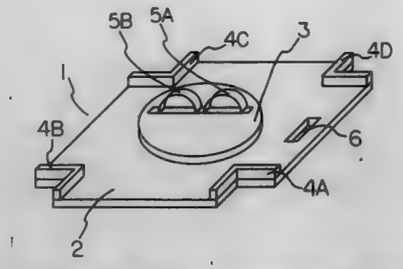
vi) and installing said rods in the shower enclosure to endwise engage said wall structure, with said sheet supported by and stretched between said two rods.

5,384,922

FOOT TURN TABLE FOR WHEEL CHAIR PATIENTS

Timothy L. Jobe, 9322 S. Carey Rd., Lithia, Fla. 32547

Filed Nov. 9, 1993, Ser. No. 149,277
Int. Cl.[6] A61G *12/00*
U.S. Cl. 5—81.1 2 Claims



1. A foot turn table for wheel chair patients, comprising:

a base plate, a rotary top plate, a set of bearings, and a set of mounting hardware;

said base plate made of a substantially square piece of flat material, said base plate having a thickness to provide suitable stability, said base plate having an upper surface, a lower surface, four indented corners, said corners being thicker than the remainder of said base plate, said thicker corners and said indentations providing safe, positioned, parking means for a wheel chair, while transferring a patient to a bed, said base plate attaching a circular pattern of said bearings on said upper surface, said base plate also having handle means for carrying purposes,

said rotary top plate being a substantially rounded piece of material, having a top surface, a bottom surface, an outer peripheral edge of an overhanging design, said outer peripheral edge providing covering means for said bearings, and said bottom surface of said rotary top plate providing bearing race means for said bearings,

said top rotary plate having rotatable attaching means for attaching said top rotary plate onto said top surface of said base plate, said bearings engaged said top surface of said base plate, and said bottom surface of said top rotary plate, thereby providing easy rotating means to said top rotary plate, said top rotary plate having foot restraining means for a patient, said foot restraining means, and said rotary top plate thereby rotatably restraining said feet of said patient during a transfer of said patient from said wheel chair.

5,384,923

SLEEPING MAT AND SEATING ARRANGEMENT

Phillip Hwang, and Lisa Hwang, both of Taipei, , assignors to Goodway Corporation, Taipei,

Filed Aug. 13, 1993, Ser. No. 106,207
Int. Cl.[6] A47G *9/06*
U.S. Cl. 5—419 11 Claims

1. An improved portable seating arrangement comprising, in combination:

a flexible, air tight body means defining an air-tight pad means receiving cavity and having spaced remote end edges and spaced apart lateral edges extending between said spaced apart end edges, and said body means having at least one fold-line means extending between said lateral edges and intermediate said remote end edges to define a seat portion extending from said fold line to one of said remote end edges and a back portion extending from said fold line to the other of said remote end edges and said back portion and said seat portion movable towards and away from each other along said fold line;

a flexible pad means in said pad means receiving cavity;

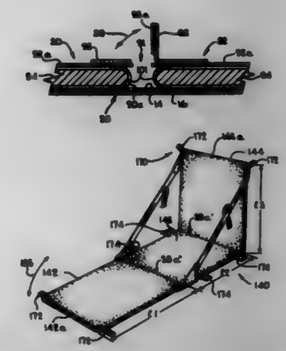
a pair of flexible tab portions coupled to said body means,

and one of said flexible tab portions at each of said remote end edges of said body means;

strap means coupled to said pair of tab portions means for detachable coupling together to restrain said body means in said seating position thereof;

means for providing said at least one fold line between said back portion and said seat portion;

a flexible member defining a pocket means on at least some of said lateral edges of said body means for defining a rod



receiving cavity extending from said fold line to regions adjacent said remote end edges, and said flexible member having walls defining a slit therethrough at said fold line;

first flexible strap means coupled to said flexible member for detachable coupling over said slit means;

second strap means coupled to said flexible member at said remote ends of said body member to retain said flexible member coupled to said body means; and

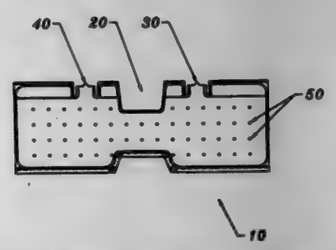
rod means removably insertable in said rod receiving cavity through said slit.

5,384,924

WARMING BLANKET HAVING MULTIPLE INLETS

Scott D. Dickerhoff, Manchester; Thomas F. Kappel, St. Louis, and Robert A. Virag, Chesterfield, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Aug. 3, 1992, Ser. No. 924,269
Int. Cl.[6] A61F *7/00*
U.S. Cl. 5—421 4 Claims



1. A blanket for use with a forced air convection system, wherein said blanket includes an inflation chamber with multiple inlet ports;

wherein said multiple inlet ports are initially sealed closed; and

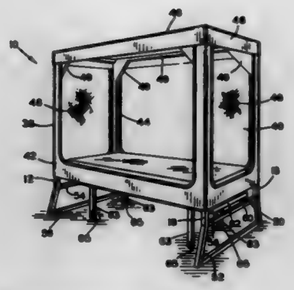
wherein said blanket includes means to selectively open said multiple inlet ports comprising a tear strip such that at least one of said multiple inlet ports remains closed when the blanket is supplied with forced air.

5,384,925

BED ENCLOSURE

Robert L. Vail, 6213 Cedar Point Rd., Oregon, Ohio 43618

Filed Jul. 30, 1993, Ser. No. 100,477
Int. Cl.[6] A47C *21/08*
U.S. Cl. 5—424 2 Claims



1. A bed enclosure comprising:

a frame including at least four upright side posts each including an upper portion and a lower portion, upper frame support members interconnecting said upper portions of said side posts together, lower frame support members interconnecting said lower portions of said side posts together, said frame defining a pair of generally vertical side walls of a predetermined length and a pair of opposed end walls of a predetermined width, said predetermined length being greater than said predetermined width; and

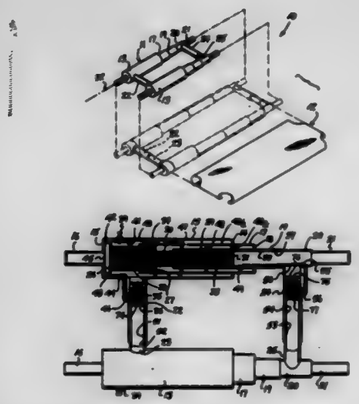
said lower portion of at least one of said side posts associated with each of said side walls is angled outwardly relative to said associated side wall and engageable with the floor at a point spaced outwardly from said associated side wall to thereby increase the vertical stability of the bed enclosure.

5,384,926

EXPANDABLE LITTER APPARATUS

Hamed H. Al-Bargi, 7901 Henry Ave. Bldg. E., Apt. 105, Philadelphia, Pa. 19128

Filed Oct. 20, 1993, Ser. No. 138,732
Int. Cl.[6] A61G *1/013*
U.S. Cl. 5—627 5 Claims



1. An expandable litter apparatus, comprising,

a framework, the framework arranged in a first retracted position and movable to a second expanded position, with

a cover member arranged for securement to the framework when the framework is in the second position, and the framework having spaced first tubular bodies arranged in a parallel coextensive relationship, with each of the first tubular bodies including a second tubular body received therewithin, and each second tubular body having a third tubular body received therewithin, and each third tubular body including a fourth tubular body received therewithin, and

each said first tubular body having a first body end wall and a first body front wall, with each said first body front wall having a first handle tube, and each said second tubular body having a second tubular body end wall receiving the third tubular body therethrough, and

a second handle tube fixedly mounted to the fourth tubular body coaxially aligned with the first tubular body, and

a first forward tube orthogonally and fixedly mounted to one of said first tubular bodies, and

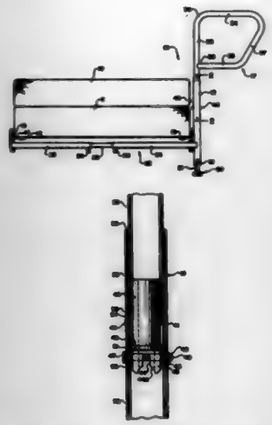
a second forward tube telescopingly received within the first forward tube, with the second forward tube integrally and fixedly mounted to a further of said first tubular bodies, with a first rear tube fixedly and integrally mounted to the fourth tubular body, with the first rear tube telescopingly receiving a second rear tube, with the second rear tube fixedly and integrally mounted to a further fourth tubular body, with latch means arranged to simultaneously release the first tubular body relative to the second tubular body, and the third tubular body relative to the second tubular body, and the fourth tubular body relative to the third tubular body, and the second forward tube relative to the first forward tube, and the second rear tube relative to the first rear tube.

5,384,927

SECURITY RAIL ATTACHMENT FOR A BED

Steve Mardero; Raymond Fulford, and Harry Van de Mosselaer, all of Winnipeg, Canada, assignors to Canadian Aging & Rehabilitation Product Development Corp., Winnipeg, Canada

Filed Jan. 27, 1993, Ser. No. 9,737
Int. Cl.[6] A47C *21/08*
U.S. Cl. 5—662 16 Claims



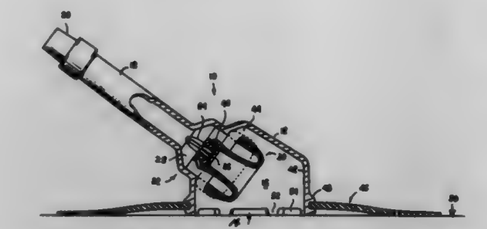
1. A combination of bed and a security rail for attachment to the bed the bed comprising a bed frame having side rails defined by a pair of angle irons each having a vertical flange and a horizontal flange, the security rail comprising a vertical post having a foot at a lower end for resting on a ground surface adjacent the bed frame, an elongate attachment member connected to the post and extending therefrom substantially at right angle thereto, each end of the attachment member having mounted thereon a respective one of a pair of clamping brackets each for clamped attachment to a respective one of said angle irons, a rail member including a post portion and a rail portion extending outwardly from the post portion to one side thereof, the post portion being arranged for mounting in the post to be supported thereby in vertical orientation with the rail portion extending therefrom in substantially horizontal orientation, the post portion being rotatable about a vertical axis of the post to move the horizontal rail portion between a first position in which it extends outwardly from the bed at right angle to the adjacent side of the bed and a second position in which it extends parallel to the adjacent side of the bed, and latching means for latching the post portion in said first and second positions, said latching means comprising a horizontal pin, means mounting the pin in the post and arranged for location of the pin at different height within the post, a lowermost surface of the post portion which is arranged for cooperation with the pin, the lowermost surface having two horizontal transverse notches thereacross arranged mutually at right angles such that a selected one of the notches can be engaged on the pin by downward vertical movement of the post portion, and means for limiting upward movement of the post portion relative to the post, the distance of upward movement being sufficient to allow release of the pin from the notches, each notch being shaped in cross-section to define a first U shaped portion having parallel sides shaped to engage over and receive the pin therein and a second mouth portion having diverging sides communicating with said parallel sides such that the mouth portion guides the pin into the notch to cause movement of the post portion to the required orientation.

5,384,928

SUBMERGED SURFACE CLEANER

Edward J. Khoury, Brackenhurst, South Africa, assignor to Swimline Holdings Limited, Johannesburg, South Africa

Filed Mar. 3, 1994, Ser. No. 205,877
Claims priority, application South Africa, Mar. 4, 1993, 931530
Int. Cl.[6] E04H *3/20*
U.S. Cl. 15—1.7 2 Claims



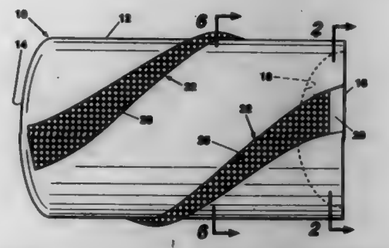
1. A device for cleaning a submerged surface which includes a valve having a body in which is formed a passage, the passage having an inlet and an outlet, and a valve member which is located in the passage between the inlet and the outlet, the valve member including a flexible element which is spaced from an inner wall of the passage to define an aperture for fluid flow, the flexible element being movable towards or away from the said wall to vary the size of the aperture, the outlet of the passage being adapted to be connected via a flexible hose or conduit to a suction source, a mouth which is defined by the said body being adapted to be brought into suction communication with the surface which is to be cleaned, the passage being inclined at an angle of between 30° and 60° relatively to the surface.

5,384,929

PIG FOR USE IN CLEANING THE INTERIOR WALL OF A PIPELINE

Dennis R. Smith, Tulsa, Okla., assignor to TDW Delaware, Inc., Wilmington, Del.

Filed Apr. 14, 1994, Ser. No. 227,671
Int. Cl.[6] B08B *9/04*
U.S. Cl. 15—104.061 6 Claims



1. A pig for use to clean the interior wall of a pipeline, the pig being configured and dimensioned to be moved through the pipeline by the flow of fluid therethrough, comprising:

an elongated cylindrical body made of plastic foam having an external diameter substantially equal to the internal diameter of the pipeline for which the pig is dimensioned, the pig body having an external cylindrical surface, a forward end and a rearward end;

a plurality of spaced apart shallow depth channels formed in said pig body cylindrical surface, each channel being in a spiral pattern, each channel extending from adjacent said forward end to adjacent said rearward end of said pig body; and

an elongated cleaning member positioned in each of said channels, each cleaning member being in the form of a plastic substratum having an upper and a lower surface, and including spaced apart upstanding plastic studs integrally projecting from said substratum upper surface, the studs having top surfaces that extend above said body external cylindrical surface, said substratum lower surface being bonded to said cylindrical body, said upstanding studs each having a top surface to non-abrasively contact and clean the interior surface of a pipeline.

5,384,930

PUSH BROOMS WITH FLEXIBLE COUPLINGS IN THE HANDLES

Thomas A. Uno, 606 Kawainui St., Kailua, Hi. 96734

Filed Mar. 10, 1994, Ser. No. 208,233
Int. Cl.[6] A46B *5/00*
U.S. Cl. 15—159.1 5 Claims

1. A new and improved push broom with a flexible coupling in the handle comprising, in combination:

a head having a block at its upper extent and bristles at its lower extent, the block having a planar upper surface with a threaded aperture located at an angle offset from the perpendicular to the upper surface;

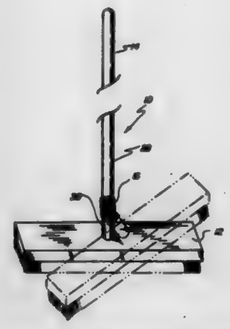
a handle formed as a rigid elongated cylindrical member having a long upper section adapted to be held by a user and having a short lower section, the lower end of the lower section being provided with screw threads for releasably coupling with the threaded aperture in the head, the lower end of the upper section being positioned proximate to the upper end of the lower section in alignment along a common axis with the facing ends thereof perpendicular to the common axis;

a coil spring coupling the lower end of the upper section with the upper end of the lower section, the spring having an upper extent frictionally receiving the lower extent of the upper section and a lower extent frictionally receiving the upper extent of the lower section with a central section of the spring located to encompass a space between the lower end of the upper section and the upper end of the lower section, the central section of the spring constituting about one third of the length of the entire spring;

a plurality of teeth formed into the spring in its area of engagement with its associated handle section;

an adhesive bubble formed of a rupturable membrane extending between the teeth of the spring with an adhesive liquid located therein adapted to be released upon the coupling of the spring to its associated handle section for the adhesive coupling therebetween; and

a dye bubble formed of a rupturable membrane extending between an outer most tooth of the spring and an adjacent wall of the spring with a dye located therein whereupon securement of the spring to its associated handle section will break the rupturable member and release the dye to provide an indication that the spring is properly coupled to the handle section.

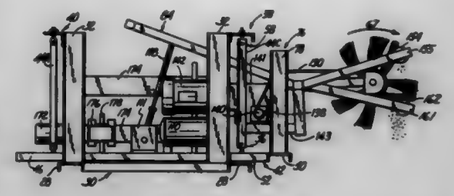


5,384,931

PAN CLEANING ASSEMBLY

Douglas R. Hanson, Anoka, Minn., assignor to Bake Star, Inc., Anoka, Minn.

Division of Ser. No. 872,610, Apr. 23, 1992, Pat. No. 5,239,722.
This application Jul. 23, 1993, Ser. No. 96,710
Int. Cl.[6] A47L *15/39*; A46B *13/02*
U.S. Cl. 15—246 9 Claims



1. An apparatus for dislodging material from a rotating brush having a brush axis and elongated bristles extending outwardly therefrom, the apparatus comprising:

a frame;

a bristle contact bar having a bar longitudinal axis, the bristle contact bar being mounted adjacent the brush at a selected radial distance from the brush axis for temporarily obstructing free rotation of the bristles about the brush axis such that the bristles are placed in spring tension as the brush rotates, wherein the bristle contact bar rotates on the bar longitudinal axis and releases the bristles when sufficient spring tension exists therein; and

second obstruction means mounted to the frame for contacting the bristles, the second obstruction means being spaced apart from the bristle contact bar such that the

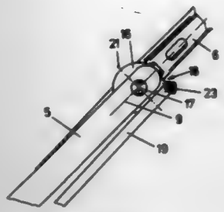
bristles strike the second obstruction means with spring tension when released from the bristle contact bar.

5,384,932

WINDSHIELD WIPER SYSTEM WITH BLADE ASSEMILY DRIVE FOR MAINTAINING A CONSTANT ATTACK ANGLE OF THE WIPER BLADE ON A CURVED WINDSHIELD

Stefan Buttlogg, Hans Nr. 26, A-6771, St. Anton Im Montafon, Austria

Filed Mar. 30, 1993, Ser. No. 39,808
Claims priority, application Austria, Oct. 4, 1990, A 2001/90
Int. Cl.[6] B60S *1/44, 1/40*
U.S. Cl. 15—250.23 7 Claims





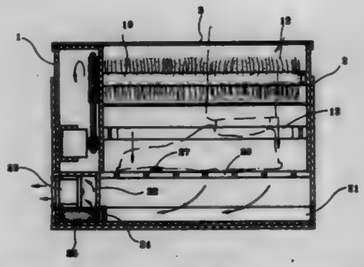
1. Windshield wiper system for vehicles with a windshield having a curved surface, comprising:
at least one elongated wiper arm mounted for oscillation about an oscillatory axis and having a free end;
an elongated wiper blade assembly defining a longitudinal axis, said wiper blade assembly being pivotally mounted on said free end of said wiper arm about an axis parallel to said longitudinal axis;
an oscillating drive for oscillating said wiper arm across the windshield;
pivot drive means connected to said wiper blade assembly for driving said wiper blade assembly about the axis parallel to said longitudinal axis as a function of an oscillatory position of said wiper arm;
a cam with a cam surface disposed on said free end of said wiper arm;
said pivot drive means including cam follower means riding on said cam surface for pivoting said wiper blade assembly about the axis parallel to said longitudinal axis relative to said wiper arm and for maintaining a substantially constant attack angle of said wiper blade assembly relative to the windshield during the oscillatory movement of said wiper arm; and
a shaft, which defines a longitudinal shaft axis, pivotally disposed on said free end of said wiper arm, said wiper arm oscillating about said oscillatory axis during the oscillatory motion and said shaft axis extending parallel to said oscillatory axis, said blade assembly coupled to said shaft and means for rotating said wiper blade assembly about said shaft axis during the oscillatory motion of said wiper arm.

5,384,933

PANTS CLEANING AND STERILIZING APPARATUS

Ping-Shi Wang, No. 22, Lane 21, San-Chung Rd., Nan-Kang Dist., Taipei, Taiwan, Prov. of China

Filed May 4, 1994, Ser. No. 237,933
Int. Cl.[6] B08B *11/00;* A46B *13/02*
U.S. Cl. 15—311 3 Claims



1. A pants cleaning and sterilizing apparatus comprising:
a housing having an upper casing sliding vertically in a bottom casing thereof and fixed in position by a fastening device thereof, said upper casing having a jacket on a top opening thereof for covering around the leg being inserted and a bottom opening in communication with said bottom casing;
two rotary brushes disposed parallel inside said upper casing and turned reversed directions to remove dust from either leg of the pants inserted;
a reversible motor drive controlled to turn said rotary brushes in reversed directions;
a dust collecting device installed inside said bottom casing to gather and collect dust, said dust collecting device comprising a dust collecting drawer made to slide in and out of said bottom casing and an induced-draft fan controlled to draw away air from said bottom casing permitting dust to be collected in said dust collecting drawer, air filter means disposed between said induced-draft fan and said dust collecting drawer to prohibit dust from being carried out of said bottom casing;
screen disposed inside said bottom casing and spaced above said dust collecting drawer;
sterilizing device installed inside said bottom casing and controlled to sterilize the pants inserted;
a push-button power switch controlled to turn on said motor drive, said induced-draft fan, and said sterilizing device; and
a control switch controlled to change the turning direction of said motor drive.

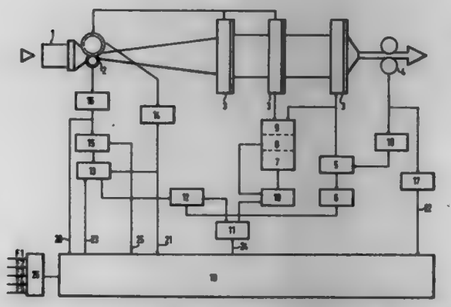
5,384,934

PROCESS AND DEVICE FOR THE REGULATION OF A DRAWING FRAME

Joachim Dämmig, Ingolstadt, Germany, assignor to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Jan. 28, 1993, Ser. No. 10,374
Claims priority, application Germany, Jan. 29, 1992, 4202352
Int. Cl.[6] D01H *5/32*
U.S. Cl. 19—239 11 Claims

1. A process for improving the regulation of a draw frame wherein measuring signals indicating thickness of a fiber sliver are detected at the input and output of the draw frame by measuring elements and processed by a regulating system of the draw frame, said process comprising the steps of:
interfacing a fuzzy controller with the regulating system of the draw frame;
inputting the measuring signals indicating the thickness of the fiber sliver into the fuzzy controller;
inputting various influencing factors not compensated for by the regulating system into the fuzzy controller, the influencing factors having an effect on the measuring signals;
linking and weighting the influencing factors with respect to the measuring signals in the fuzzy controller in accordance with fuzzy inference rules based on empirical data established in the fuzzy controller;



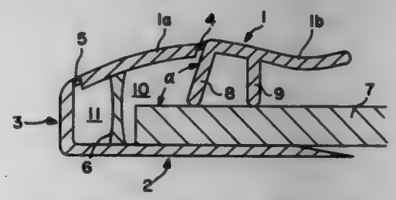
forming a measuring signal correction value in the fuzzy controller based on the linked and weighted influencing factors; and
applying the correction value on line to the regulating system of the draw frame before the measuring signals are processed by the regulating system beyond the elements which generated the measuring signals.

5,384,935

CLIP DEVICE

Horst-Werner Maier-Hunke, Iserlohn-Sümmern, and Günter Rupprecht, Arnsberg, both of Germany, assignors to "Durable" Hunke & Jochheim GmbH & Co. KG, Iserlohn, Germany

Filed Jan. 18, 1993, Ser. No. 80,142
Claims priority, application Germany, Jan. 19, 1992, 4220406
Int. Cl.[6] B42F *1/00;* F16B *2/00*
U.S. Cl. 24—67 R 28 Claims



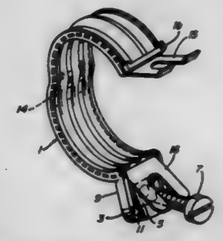
1. A clip device for articles to be clipped such as sheet stacks, notice boards, maps, calendars or the like said device having two clip legs connected together via a spine, one of which comprises two sections which are connected together at a distance from the spine by a joint extending parallel to the spine and of which the section connected to the part of the joint facing away from the spine is designed as an operating handle and is provided with a clip strut which in the clipping position assumes, with respect to the other clip leg, an engagement position which is defined by at least one stop and in which said clip strut is pressed resiliently against the article to be clipped or against the other clip leg which forms one piece with the spine, wherein of the two sections connected together by a joint, of the one clip leg, that section which lies between the spine and the joint connecting the two sections together is connected to the spine in the region of the spine via a further joint and at least one spring which, in the clipping position, presses the clip strut against the article to be clipped or against the other clip leg acts on this section.

5,384,936

PIPE-CLIP

Jan Van Walraven, GP Mijdrecht, Netherlands, assignor to J. van Walraven B.V., Mijdrecht, Netherlands

PCT No. PCT/NL92/00085, § 371 Date Sep. 10, 1993, § 102(e) Date Sep. 10, 1993
PCT Filed May 8, 1992, Ser. No. 958,361
Claims priority, application Netherlands, May 8, 1991, 9100793
Int. Cl.[6] F16L *33/04*
U.S. Cl. 24—279 8 Claims



1. A pipe-clip, comprising:
an annular clip body having on an inner side thereof a lining of an elastomeric material, and having two ends which are bent into first and second flanges which are to be pulled together by means of a fastening screw comprising a threaded shank and a head;
said first flange having an outwardly opening slot for receiving the shank of the fastening screw;
an auxiliary flange comprising a nut for the fastening screw, arranged so as to normally engage a first side face of said second flange which is turned away from said first flange, said auxiliary flange cooperating with the lining on the inner side of the clip body such that said auxiliary flange is bendable away from said second flange through a certain angle about an axis that is located adjacent a bend between said annular clip body and said second flange so as to cause said fastening screw, that is threaded through a slot-like opening in the second flange into said nut, to tilt outwardly;
said auxiliary flange, comprising said fastening nut, and said lining being formed of one strip of elastomeric material, said strip of elastomeric material comprising a main portion covering the inner side of said annular clip body and an extension portion arranged to cover said second flange and to form said auxiliary flange; and
a transverse slit provided in said lining at a transition between said main portion and said extension portion, through which transverse slit, said second flange extends.

5,384,937

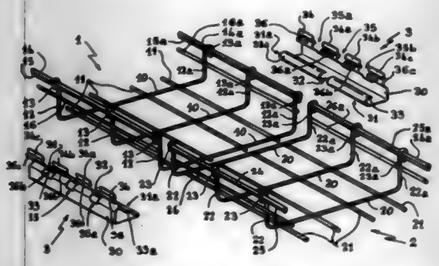
FISHPLATES FOR TREILLISWORK COMPOSED OF WELDED WIRE

Bernard Simon, Calnire, France, assignor to Mavil, a french Societe Anoayme, Liernais, France

Filed Feb. 5, 1993, Ser. No. 14,236
Claims priority, application France, Feb. 11, 1992, 92 01722
Int. Cl.[6] F16B *2/24*
U.S. Cl. 24—295 7 Claims

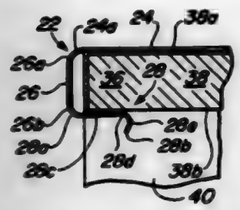
1. A fishplate for assembling portions of cableway constituted in particular by trellisworks of welded metal wires, the fishplate comprising, an angle member having a first arm having two segments of the same dimensions which are separated by an open space, each of said segments defining a clip, said angle member having a second arm having four tongues, each of said tongues being undulated to form a reccessed passage,

the said tongues being separated from one another by second open spaces so that said open space between said segments is



opposite one of said second open spaces separating two of said tongues.

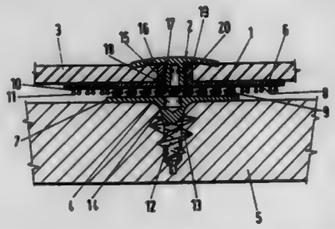
5,384,938
DINNERWARE SECUREMENT ASSEMBLY
Darrel L. Frederick, 13303 Mt. Baldy, Reno, Nev. 89506
Filed Mar. 8, 1993, Ser. No. 27,700
Int. Cl.[6] A44B *21/00*; A47G *19/00*
U.S. Cl. 24—306 7 Claims



1. Dinnerware securement assembly, comprising:
(a) a clip made of a continuous strip of resiliently flexible flat stock and having an elongated base member, an attachment member and an auxiliary clip member for removable insertion on the top and bottom surfaces of an edge portion of a table top;
(b) an article of dinnerware having a bottom surface; and
(c) means for releasably attaching said base member of said clip to said bottom surface of said article of dinnerware to anchor said article of dinnerware on the top surface of the table top, said releasable attaching means including a pair of complementary detachable fastening elements being patches of loop and hook fastening materials, one of said respective patches being attached on a terminal end portion of a top surface of said base member of said clip, the other of said respective patches being attached on said bottom surface of said article of dinnerware.

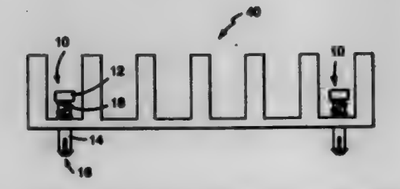
5,384,939
FIXING ELEMENT FOR HOLDING A MAT
Wilfried Weber, Schopfloch-Unteriflingen, Germany, assignor to fischerwerke Artur Fischer GmbH & Co. KG, Tumlingen, Germany
Filed Feb. 5, 1993, Ser. No. 14,386
Claims priority, application Germany, Feb. 14, 1992, 4204410
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—306 11 Claims

1. Fixing element consisting of a bottom part anchorable to a mat support to which a mat is to be secured and a top part provided with a clamping device for securing the top part to the mat,
wherein said top part and said bottom part each have a disk-shaped flange with a coupling face and a plurality of identical pins projecting beyond the coupling face, each of said pins have a radially extending round head, and said coupling faces of said disk-shaped flanges face each other



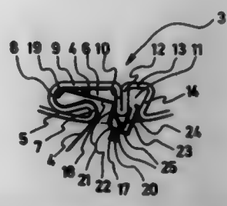
so that the identical pins on the opposing coupling faces cooperate by interlocking when the top part engages the bottom part to secure the mat to the mat support.

5,384,940
SELF-LOCKING HEAT SINKS FOR SURFACE MOUNT DEVICES
Christopher A. Soule, Concord, and Gary F. Kuzmin, Gilford, both of N.H., assignors to Aavid Engineering, Inc., Laconia, N.H.
Continuation of Ser. No. 131,025, Oct. 1, 1993, abandoned, which is a continuation of Ser. No. 4,196, Jan. 13, 1993, abandoned, which is a continuation of Ser. No. 843,462, Feb. 28, 1992, abandoned. This application Jul. 27, 1994, Ser. No. 281,257
Int. Cl.[6] H05K *7/20*; B60N *3/02*
U.S. Cl. 24—453 3 Claims



1. A device for connecting a heat sink to an electronic device mounted on a printed circuit board or other connector comprising:
a shaft,
said shaft being cylindrical and having an expanded top at one end, which top has a greater diameter than said shaft, said shaft having a cone disposed at an end opposite said top, said cone having a base disposed adjacent to said shaft and a tip disposed opposite said shaft, said base having a greater diameter than said shaft,
said cone and at least a portion of said shaft adjacent to said cone having a slot therethrough so as to form on said cone a first prong and a second prong,
biasing means comprising a cylindrical spring surrounding said shaft and having a smaller diameter than said top and said base of said cone,
whereby when said device is in use, said device is connected to the heat sink or other connector by inserting said cone into a hole on the heat sink or other connector so that said first and said second prongs flex towards each other, the flexure of which serves to reduce the effective diameter of said cone, and after said cone has passed through the hole unflexing so as to hold the device to the heat sink or other connector, and said biasing means adapted to engage the heat sink or other connector when said device is in place so as to in cooperation with said expanded top of said shaft hold said base of said cone against the heat sink or other connector.

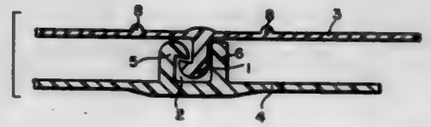
5,384,941
CANVAS-BLIND TUBE
Wolfgang Weiser, Ybbsitz, Austria, assignor to Josef Weiser oHG et al., Ybbsitz, Austria
PCT No. PCT/EP91/01220, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO92/00436, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 28, 1991, Ser. No. 962,431
Claims priority, application Germany, Jun. 28, 1990, 9007180[U]
Int. Cl.[6] E06B *9/171*
U.S. Cl. 24—462 9 Claims



1. A canvas-blind tube comprising a cold-rolled profile tube whose outer surface has formed therein at least one recess (6), which extends in the longitudinal direction of the profile tube (1) and which is defined by a wall (5) of said profile tube, an end of a length of canvas-blind material (4) and at least one rod (17) for fastening said length of canvas-blind material being adapted to be inserted into said recess (6), characterized in that, for forming an essentially tangentially extending first recess (6), the wall (5) of the profile tube is first folded inwards onto itself to form a double folded wall and is then bent back in an L-shape, a long L-leg portion (9) extending in parallel spaced relationship with the double folded wall and a shorter L-leg portion (10) extending towards an outer surface of the profile tube (1) and delimiting an opening of said first recess (6), and that, for forming an essentially radially extending second recess (11), the wall following said shorter L-leg portion (10) is bent inwards in a U-shape having two legs (12,14), one of the two legs (12) of said U-shape extending parallel to the shorter L-leg portion (10), whereas the other leg (14) extends in spaced relationship therewith and merges at an end (15) thereof with a cylindrical portion of the tube wall (5), said rod being constructed as a strip of plastic material (17) comprising a tongue extending into said first recess (6) and a foot section (23,24) following said tongue and extending into said second recess (11).

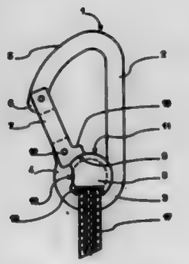
5,384,942
CLOSURE DEVICE FOR BAGS AND A METHOD AND A TOOL FOR PRODUCING SAME
Karl-Heinz Siegel, Nurnberg, Germany, assignor to Minigrip, Inc., Orangeburg, N.Y.
Continuation of Ser. No. 969,527, Oct. 30, 1992, abandoned, which is a continuation of Ser. No. 609,978, Nov. 6, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 148,173
Claims priority, application Germany, Nov. 7, 1989, 3937088
Int. Cl.[6] B65D *33/16*
U.S. Cl. 24—587 16 Claims

1. A closure device for storage bags and the like, comprising a male section and a female section which are connected to a film-like member which forms the bag and are adapted to be detachably connected with each other, said male section of said closure device including at least two continuous projections on its side facing away from said female section, said projections projecting above said film-like member and being spaced apart to form a depression extending between said projections so that a user's finger or thumb can be run across the film-like member between said projections to guide the closing action of said closure device, wherein at least a portion



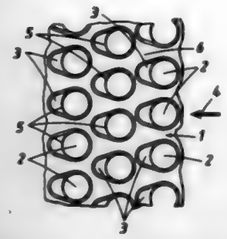
of said film-like member between said projections is of a thickness equal to that of said film-like member forming the bag.

5,384,943
SNAP-HOOK WITH SELF-LOCKING ROLLER
Patrick LeFebvre, and Ladger Simond, both of Chamonix Mont Blanc, France, assignors to Etablissements Ladger Simond, S.A., Chamonix Mont Blanc, France
Filed Jul. 27, 1993, Ser. No. 97,224
Claims priority, application France, Jul. 29, 1992, 92 09673
Int. Cl.[6] A44B *13/00*
U.S. Cl. 24—600.1 8 Claims



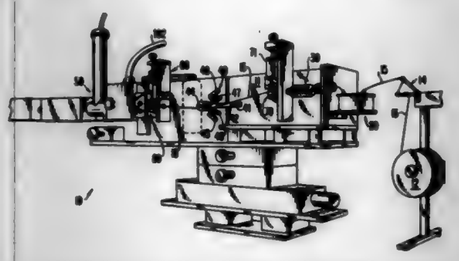
1. Snap-hook having the general shape of a closed ring, comprising:
a curved body in the form of a rod and having a generally C-shaped profile forming a longitudinal branch between a first curved area ending at a first body end and a second curved area ending at an opposite, second body end,
a closure finger articulated to said first body end and able to pivot between a closing position in which said finger spans said first and second ends of said body and an open position in which said finger is pivoted away from said second end of said body,
a roller rotatably mounted in said first curved area of said body and cooperating with said finger to prevent opening of said finger in all angular positions of said roller except for an unlocking position in which said roller enables opening of said finger, and
means for forcibly turning said roller away from its unlocking position in normal operation so that opening of said finger requires rotation of said roller into said unlocking position beforehand,
wherein said roller comprises a peripheral groove partially enveloping the interior surface of said first curved area of said body so that said first curved area of said body guides rotation of said roller.

5,384,944
NEEDLING PLATE WITH RECESSES ON DOWNSTREAM EDGES OF THE THROUGH HOLES
Klaus Mitterhofer, Linz, Austria, assignor to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria
Filed Nov. 1, 1993, Ser. No. 146,694
Claims priority, application Austria, Nov. 9, 1992, A 2199/92
Int. Cl.[6] D04H *18/00*
U.S. Cl. 28—115 2 Claims



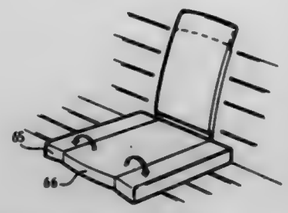
1. A supporting plate for use in needling a nonwoven web in contact with a planar surface of the plate and pulled in a direction of travel from an upstream to a downstream end of the plate,
(a) the supporting plate having a multiplicity of through holes having downstream edge portions, and
(b) the planar plate surface at least adjacent the upstream plate end defining recesses eccentrically adjoining only the downstream edge portions of the through holes and extending therefrom in the downstream direction,
(1) the recesses gently rising from the downstream edge portions of the through holes to the planar surface.

5,384,945
DEVICE FOR FORMING DRILLED NEEDLE BLANKS
Rolf A. Spingler, Jestetten, Germany, assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Apr. 21, 1993, Ser. No. 51,456
Int. Cl.[6] B23P *23/00*; B21G *1/00*
U.S. Cl. 29—33 R 7 Claims



1. An apparatus for preparing drilled needle blanks comprising:
drilling means for forming a suture attachment portion at an undrilled terminal end of a stock wire;
means for presenting the undrilled terminal end of the stock wire to said drilling means, said presenting means comprising means for transporting the stock wire from a supply thereof to said drilling means;
sensing means for monitoring the position of the stock wire and adjusting the rate of operation of said transport means; and
means for cutting the drilled stock wire to form a drilled needle blank.

5,384,946
EXPANDABLE, STOWABLE VEHICLE SEAT FOR CHILDREN
Per Sundstedt, Gothenburg, and Bengt Ode, Harestad, both of Sweden, assignors to AB Volvo, Sweden
PCT No. PCT/SE91/00562, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/03306, PCT Pub. Date Apr. 5, 1992
PCT Filed Aug. 23, 1991, Ser. No. 969,255
Claims priority, application Sweden, Aug. 23, 1990, 9002772-5
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—238 20 Claims



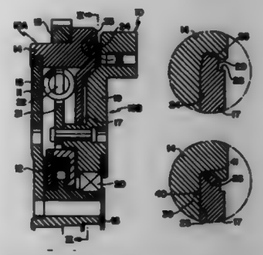
1. A vehicle seat assembly comprising:
a first seat including a fixed base portion defining a base surface extending generally along a horizontal plane, and a back portion defining a surface extending substantially perpendicular to said base surface, said back portion having a recess therein;
a second seat including a stowable base portion and a stowable back portion, said second seat being pivotally connected to said first seat along a pivot axis and being movable between a stowed position in which both said stowable base portion and said stowable back portion extend substantially parallel to each other and substantially perpendicular to said base surface and are at least substantially arranged within said recess, and a use position in which at least said stowable base portion is arranged substantially outside of said recess extending generally parallel to said base surface, said stowable base portion having side edges and an initial width measured between said side edges wherein each of said side edges define a longitudinal axis which intersects said pivot axis and including widening means for selectively adjusting said initial width so that an adjusted width is created, said adjusted width being greater than said initial width whereby children of various sizes can comfortably sit on said second seat when it is arranged in said use position.

5,384,947
CARTRIDGE-FREE STACKS OF SLIDE ELEMENTS
Maurice A. Kildal, Webster, N.Y.; Frank A. Richardson, Charlotte, N.C., and Claude E. Monsees, Fort Mill, S.C., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 810,229, Dec. 19, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 37,176
Int. Cl.[6] B32B *31/12*, *33/00*
U.S. Cl. 29—407 5 Claims

1. A method of providing and using a bar-coded group of slide-like test elements for use in an analyzer without encasing them within a cartridge that needs to be discarded when empty, comprising the steps of:
a) collecting together a plurality of slide-like test elements comprising a heat-fusible plastic frame and at least one reagent effective to test a patient liquid in an analyzer, some of said test elements having am least a portion of a side edge of the frame bearing a black colorant in amounts sufficient to provide said portion with a black color prior to assembly of said test elements,
b) arranging said collected test elements into a stack by stacking them sequentially so that said black color of said side edge of said some of said test elements creates black stripes of a bar code on a side face of said stack,
c) temporarily uniting said test elements so stacked sequentially, by heat-fusing at least a portion of at least one side edge of said frame of each element of the stack to at least one side edge of said frame of each adjacent element along at least one side face of said stack, and
d) inserting said stack of temporarily united test elements into an analyzer, wherein step d) is done in the absence of any cartridge surrounding said stack.

providing sealing means for sealing the assembly of said transverse plate and said crown ring,
wherein said continuous groove comprises a base and two flanks, at least one of said flanks being oblique whereby the material of said transverse plate is displaced toward the groove during the working operation.

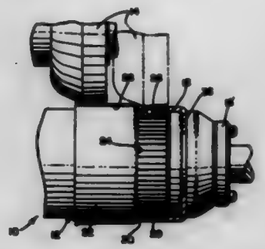
5,384,948
METHOD OF ASSEMBLING A TRANSVERSE PLATE WITH A CROWN RING OF A TORSION DAMPER
Ciriaco Bonfilio, Clichy, and Dieter Röhrle, Montmorency, both of France, assignors to Valeo, Paris, France
Filed Sep. 13, 1993, Ser. No. 119,834
Claims priority, application France, Sep. 15, 1992, 92 10938
Int. Cl.[6] B23P *11/02*, *19/02*; F16F *7/02*
U.S. Cl. 29—520 7 Claims



1. A method of assembling a transverse plate with an axially elongated crown ring of a torsion damper, said transverse plate and said crown ring being coaxially mounted on a common axis, said crown ring having an annular shoulder which is disposed generally radially with respect to said common axis, said transverse plate having an outer peripheral portion of larger diameter than the shoulder, said outer peripheral portion abutting said transverse plate and being secured to the crown ring both axially and circumferentially, wherein said method comprises the steps of:
preforming on the crown ring a continuous circumferential groove adjacent the outer periphery of the annular shoulder of said crown ring, said groove being open radially inwardly toward said common axis;
applying the transverse plate against said annular shoulder of said ring;
working said transverse plate by application of an axial force on said transverse plate, along said common axis, against said crown ring, thereby causing the material of said transverse plate to radially invade at least part of said continuous circumferential groove in plastic flow, thereby

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5,384,949
TORQUE TRANSMITTING STRUCTURE AND METHOD OF MANUFACTURE
Helmut A. H. Wodrich, Canton, Mich., and Mario S. Zanet, Windsor, Canada, assignors to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 766, Jan. 5, 1993, abandoned. This application Dec. 17, 1993, Ser. No. 168,335
Int. Cl.[6] B21D *22/18*
U.S. Cl. 29—557 2 Claims



1. A method of manufacturing a torque transmitting housing, comprising the steps of:
providing a roller forming apparatus including at least one roller and a mandrel, the mandrel having a splined cylindrical portion of a first diameter, a smooth cylindrical portion of a second diameter greater than said first diameter, and a transition portion joining said splined cylindrical portion to said smooth cylindrical portion;
providing a cup shaped blank;
mounting said cup shaped blank on said mandrel adjacent said splined cylindrical portion; then
rotating said at least one roller and said mandrel relative to each other about a longitudinal axis of said mandrel, while rotating said at least one roller about its longitudinal axis; then
contacting said cup shaped blank with said at least one roller, while performing said rotating steps, and translating said at least one roller along said splined cylindrical portion with said at least one roller being radially spaced from said splined cylindrical portion a first distance, thereby forming said cup shaped blank into a first portion having a splined inner circumferential portion, a smooth outer circumfereatial portion, and a wall thickness corresponding to said first distance, while lengthening said cup shaped blank;
maintaining contact between said at least one roller and said cup shaped blank while continually performing said rotating steps, and translating said at least one roller along said transition portion while increasing the radial spacing between said at least one roller and said transition portion to a second distance greater than said first distance, thereby forming said cup shaped blank into a second portion contiguous the first portion, having a smooth outer circumferential portion and a gradually thickening wall portion corresponding to said second distance while continually lengthening said cup shaped blank;
maintaining contact between said at least one roller and said cup shaped blank while continually performing said rotation steps, and translating said at least one roller along pan of said smooth cylindrical portion with said at least one roller being radially spaced from said smooth cylindrical portion a third distance less than said first distance,

thereby forming said cup shaped blank into a third portion, contiguous the second portion, having a smooth outer circumferential portion, a wall thickness corresponding to said third distance, and an outer diameter substantially equal to a terminus outer diameter of said second portion while continually lengthening said cup shaped blank;

maintaining contact between said at least one roller and said cup shaped blank while continually performing said rotating steps, and translating said at least one roller along a second pan of said smooth cylindrical portion while increasing the radial spacing between said at least one roller and said smooth cylindrical portion to a fourth distance, thereby forming said cup shaped blank into a fourth portion, contiguous said third portion, having a smooth outer circumferential portion and gradually thickening wall portion corresponding to said fourth distance, while continually lengthening said cup shaped blank; then

removing said at least one roller from contact with said cup shaped blank;

removing the formed cup shaped blank from said mandrel; and

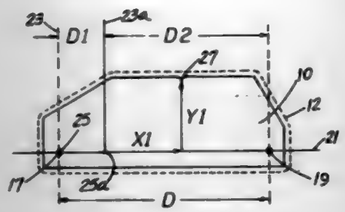
forming axially extending drive tabs in said fourth portion.

5,384,950

METHOD FOR MACHINING A COMPONENT

Harvey J. Kalkunberger, Wind Lake, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed May 12, 1994, Ser. No. 241,553
Int. Cl.[6] B23F *1/00*; B23D *15/00*; B23C *1/00*
U.S. Cl. 29—558 **10 Claims**



1. A method for machining a component using a CNC or NC machine and including the steps of:

mounting the component at a location on the machine;

providing a pair of datum points on the component;

defining a first base line extending through the datum points;

defining a second base line intersecting the first base line at an intersection; and

while retaining the component at the location, machining the component using dimensions measured from the base line intersection.

5,384,951

METHOD OF MAKING ANISOTROPICALLY LOADED HELIX ASSEMBLY FOR A TRAVELING-WAVE TUBE

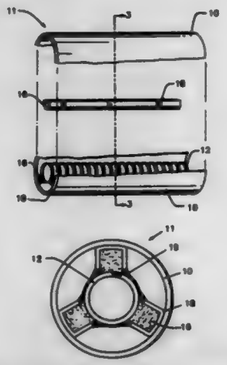
Kenneth S. Kersten, Jr., Bethlehem, and Richard C. Wertman, Allentown, both of Pa., assignors to ITT Corporation, New York, N.Y.

Division of Ser. No. 939,305, Sep. 2, 1992. This application Nov. 10, 1993, Ser. No. 150,224
Int. Cl.[6] H01P *11/00*
U.S. Cl. 29—600 **11 Claims**

1. A method of manufacturing an anisotropically loaded helix assembly for use within a traveling-wave tube, comprising the steps of:

selectively depositing conductive material onto a plurality of dielectric support members in predetermined configurations, creating a desired anisotropic load;

attaching said dielectric support members to a helix circuit forming a subassembly of a predetermined configuration; and



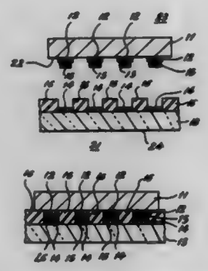
inserting said subassembly into a conductive cylindrical housing such that said conductive material is selectively coupled to said cylindrical housing.

5,384,952

METHOD OF CONNECTING AN INTEGRATED CIRCUIT CHIP TO A SURSTRATE

Koji Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 26, 1991, Ser. No. 814,115
Claims priority, application Japan, Dec. 26, 1990, 2-414289
Int. Cl.[6] H04K *3/34*
U.S. Cl. 29—840 **10 Claims**



1. A method of connecting a semiconductor chip and a wiring substrate, comprising the steps of:

coating a major surface of said wiring substrate together with a plurality of connecting portions formed on said major surface of said wiring substrate with a photothermosetting resin film;

selectively removing said photothermosetting resin film by photolithography to form a plurality of holes therein wherein the resin film is removed in the holes, each of said holes exposing an associated one of said connecting portions;

registering, in position, said wiring substrate and said semiconductor chip having a plurality of connecting pads and a plurality of metal bumps each formed on an associated one of said connecting pads such that each of said metal bumps of said semiconductor chip faces an associated one of said connecting portions of said wiring substrate; and

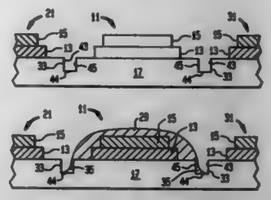
heating, while maintaining each of said metal bumps and each of said connecting portions in contact with each other through an associated one of said holes, to connect said wiring substrate and said semiconductor chip with each other through said photothermosetting resin film and to connect said metal bumps of said semiconductor chip and said connecting portions of said wiring substrate respectively with one another.

5,384,953

STRUCTURE AND A METHOD FOR REPAIRING ELECTRICAL LINES

Laertis Economikos, Wappingers Falls, and Richard P. Surprenant, Red Hook, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 21, 1993, Ser. No. 94,633
Int. Cl.[6] H05K *3/02*
U.S. Cl. 29—846 **19 Claims**



1. A method for repairing electrical lines on a substrate comprising the following steps:

a. locating said electrical line that needs to be repaired, and site dressing said location,

b. forming at least one trench on said substrate adjacent to said site dressed location such that at least a portion of said at least one trench is close to at least a portion of said site dressed location and said electrical line,

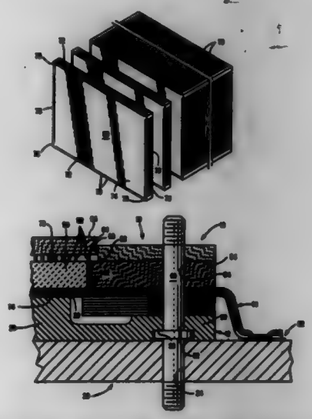
c. depositing electrically conductive material in said site dressed location to restore electrical continuity to said electrical line while allowing an excess portion of said deposited material to flow into at least a portion of said at least one trench.

5,384,954

METHOD OF MANUFACTURE OF A CONTACT GUIDE

Dimitry G. Grabbe, Middletown, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 42,962, Apr. 5, 1993, abandoned, which is a division of Ser. No. 833,284, Feb. 10, 1992, Pat. No. 5,252,079. This application Jan. 19, 1994, Ser. No. 184,412
Int. Cl.[6] H01R *43/20*; B23P *19/00*
U.S. Cl. 29—876 **8 Claims**



1. The method of forming a contact guide plate of wear resistant material for positioning contact pins that interconnect first and second substrates sandwiched about the plate where the contact pins are positioned within through holes in the plate; the method comprising the steps of:

creating a frame of wear resistant material having internal sidewalls that define an opening therethrough;

forming a guide plate of wear resistant material to be received within the opening of the frame with grooves across side edges of the guide plate; and

inserting the guide plate into the opening of the frame with the side edges of the guide plate abutting the internal sidewalls of the frame such that the grooves of the guide plate extend along the internal sidewalls of the frame;

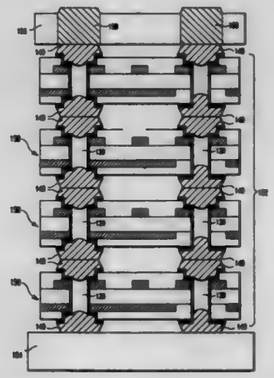
whereby, the internal sidewalls of the opening of the frame cooperate with the grooves to peripherally surround the grooves, thereby defining through holes within the plate through which the contact pins are positioned.

5,384,955

METHOD FOR REPLACING IC CHIP PACKAGE INTERPOSER

Richard B. Booth, Wappingers Falls; Robert H. Gephard, Poughkeepsie; Bradley S. Gremban, Lake Katrine, all of N.Y.; Janet E. Poetzinger, Rochester, Minn., and David T. M. Shen, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 953,427, Sep. 29, 1992, abandoned. This application Jan. 5, 1994, Ser. No. 179,832
Int. Cl.[6] H05K *3/36*; B23P *6/00*
U.S. Cl. 29—830 **2 Claims**



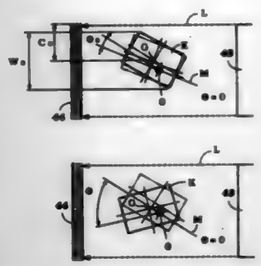
1. A method of altering integrated circuit (IC) chip package wiring, said package having an interposer, said method comprising the steps of:

a) removing an interposer from an IC chip package, said interposer having a plurality of interposer layers, said plurality of interposer layers being laminated to one another with adhesive material;

b) replacing at least one of said interposer layer with a corrected interposer layer thereby producing a replacement interposer; and

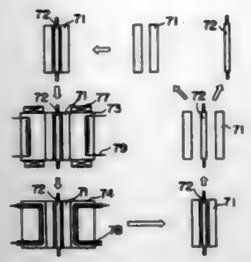
c) remounting said replacement interposer in said IC chip package

5,384,956
METHOD FOR MOUNTING COMPONENTS
Hiroshi Sakurai; Hitoshi Onodera, and Hiroyuki Ohta, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Jun. 8, 1993, Ser. No. 73,741
Claims priority, application Japan, Jul. 1, 1992, 4-173571
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—834 **22 Claims**



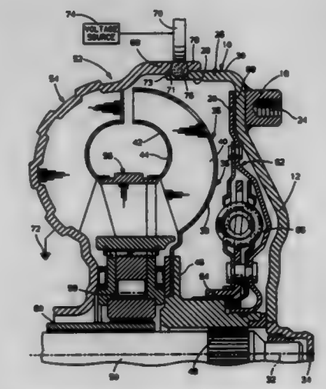
1. The method of determining the point where a component is picked up by a gripping device rotatable about an axis so that the component can be accurately placed by the gripping device, said method comprising the steps of measuring the projected length of the component in a plane parallel to the axis when the component is in a first angular position, rotating the component to second angular position, measuring the projected length of the component in its second position in said plane, measuring the angle of rotation of the component between the first and second positions, and calculating the place where by the component has been picked up from the length and angle measurements.

5,384,957
METHOD FOR PRODUCING A MAGNET ROLL
Fumihito Mohri; Hideko Arai, both of Shiga, and Yoshio Sakata, Kanagawa, all of Japan, assignors to Kasegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Dec. 21, 1992, Ser. No. 994,596
Claims priority, application Japan, Dec. 25, 1991, 3-357864; Feb. 28, 1992, 4-079217; Mar. 12, 1992, 4-089979; Mar. 24, 1992, 4-098642; Apr. 9, 1992, 4-117919
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—895.32 **6 Claims**



1. A method of producing a magnet roll comprising the steps of:
pressing resin bonded magnet material obtained by dispersing and mixing ferromagnetic material powder having magnetic anisotropy into synthetic resin into a die by an extruding machine while the resin bonded magnet material is heated and melted, thereby performing a molding in the presence of magnetic field;
storing an extruded matter discharged from the die into a sizing metal mold having a magnetic circuit structure and moving the extruded matter together with the sizing metal mold in a delivery direction of the extrusion while the extruded matter is stored in the sizing metal mold;
cutting out the extruded matter by a predetermined length and separating the cut-out extruded matter from the sizing metal mold;
returning the sizing metal mold to a stand-by position thereof while cooling the sizing metal mold after the extruded matter is separated; and
repeating a series of the pressing step, the storing step, the moving step, the cutting step and the returning step.

5,384,958
METHOD OF MAKING A TORQUE CONVERTER ASSEMBLY
Gregory F. O'Daniel, Farmington Hills, and Dennis M. Provenzano, Plymouth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 26, 1993, Ser. No. 23,415
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.5 **2 Claims**

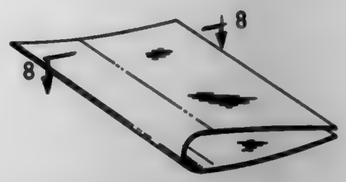


1. A method of forming a torque converter end cover, comprising the steps of:
forming an annular flat blank with material removed to provide a center pilot aperture;
stamping annular stiffening ribs in said blank intermediate the pilot aperture and an outer periphery of the blank;
securing attaching lugs to the blank on a forward face thereof intermediate the ribs and the outer periphery;
forming a smooth clutch engaging surface annularly outwardly of the stiffening ribs; and
spin forming a portion of the blank adjacent the outer periphery to an axially extending attachment surface.

5,384,959
METHOD OF MAKING A SPF/DB HOLLOW CORE FAN BLADE
Alexander Velicki, Garden Grove, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.
Division of Ser. No. 738,270, Jul. 31, 1991, Pat. No. 5,240,376. This application Jun. 1, 1993, Ser. No. 69,389
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.72 **7 Claims**

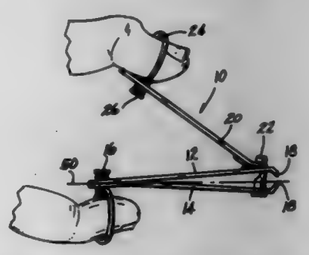
1. A method of fabricating a rotor blade for a turbine engine, comprising the steps of:
a) preparing a core sheet assembly;
b) preparing a face sheet having a first end and a second end, including the step of bending said face sheet at its centerline approximately 180 degrees, such that said first and second ends are aligned;

c) inserting said core sheet assembly inside said prepared face sheet, thereby forming a Ti-Pack
d) inserting said Ti-Pack into a cavity within a die; and



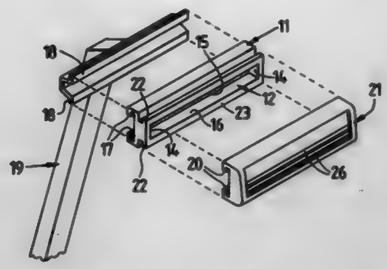
e) superplastically forming a rotor blade having predetermined design characteristics by heating said die and selectively pressurizing a plurality of pressure-tight cells in said Ti-Pack, said plurality of cells including at least two core cells and at least one face sheet cell.

5,384,960
NAIL CLIPPER
John E. Tottenham, 72 Walnut St., Seymour, Conn. 06483
Filed Mar. 18, 1994, Ser. No. 214,461
Int. Cl.[6] A45D *29/00*
U.S. Cl. 30—28 **9 Claims**



9. An improved nail clipper for cutting nails on a human being, said nail clipper comprising:
first and second members joined together at one end by a first pin member and each having a jaw portion at a second end, said jaw portions having a normal position wherein they are spaced apart;
an operating lever contacting one of said first and second members for moving the jaw portion of said one member from said normal position to a cutting position;
said operating lever being rotatable about a bolt which passes through both said first and second members;
a first ring member affixed to said operating lever by a rotatable second pin member, said first ring member being movable between an operational position wherein at least one of a first finger and a thumb may be inserted within said first ring member and a retracted position wherein said first ring member lies adjacent a surface of said operating lever; and
a second ring member affixed to said first and second members by said first pin member, said second ring member being rotatable relative to said first and second members and being movable between an operational position wherein at least one of a second finger and said thumb may be inserted within said second ring member and a locking position wherein said second ring member overlies said first and second members and said operating lever.

5,384,961
APPARATUS FOR SHAVING
Harbert S. Gregory, 26 Country Club Park, Covington, La. 70433
Continuation-in-part of Ser. No. 874,963, Apr. 27, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 75,376
Int. Cl.[6] B26B *21/44*
U.S. Cl. 30—41.5 **12 Claims**

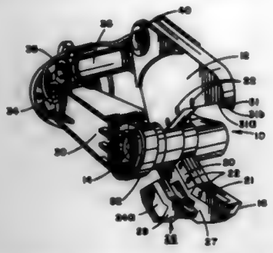


10. An article to be used with disposable shaving razors having a handle, a disposable blade carrying head and means for detachably and reattachably connecting said blade carrying head to said handle, for supplying a controllable quantity of water adjacent to one or more blades fixedly carried by said head, said article comprising:
(a) an elongated dispenser defining a plurality of reservoirs therein each defined by internal transverse walls, each reservoir having fixed openings through a selected face of said dispenser, wherein said fixed openings are integral with each reservoir such that said reservoirs may be interactively filled with a quantity of water by placing said reservoirs under a water faucet, whereupon said water passes through said fixed openings to fill said integral reservoirs and is retained within said reservoirs solely by surface tension of said water, and without any mechanical vacuum or other mechanical water retention system, until said reservoirs are tilted to a selected angle when said one or more fixed blades are urged across user's face to allow said quantity of water to flow through said openings from said reservoirs onto said blades and said face;
(b) first means connected to said dispenser for detachably and re-attachably connecting said dispenser to said handle; and
(c) second means connected to said dispenser adjacently to said selected face for detachably and re-attachably connecting said dispenser to said fixed blade carrying head, such that said selected face having said openings therethrough is positioned adjacent to said blade carrying head.

5,384,962
APPARATUS FOR SHEARING A MATERIAL MASS
Walter B. Pemberton, Fern Park, Fla., assignor to Pemberton, Inc., Longwood, Fla.
Continuation-in-part of Ser. No. 871,023, Apr. 20, 1992, Pat. No. 5,224,268. This application Jul. 6, 1993, Ser. No. 88,043
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[6] B25F *3/00*
U.S. Cl. 30—134 **9 Claims**

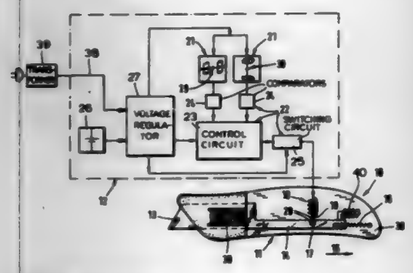
1. An apparatus for severing a material mass comprising:
a fixed shear blade having a surface defining a shearing edge and further having a receiving cavity formed in said blade spaced from said shearing edge;
a movable shear blade having a surface defining a shearing edge and pivotally coupled to said fixed shear blade to sever the material mass with said fixed shear; and
an outrigger for supporting a portion of the material mass during severing of the material mass, said outrigger having a support member extending transverse of said fixed

shear blade, a first end of said support member extending into said receiving cavity for attachment to said fixed shear blade, said member extending across the path of travel of said movable shear blade, and having a second end connected to a material mass support plate, a top surface of said support plate being arranged in a predeter-



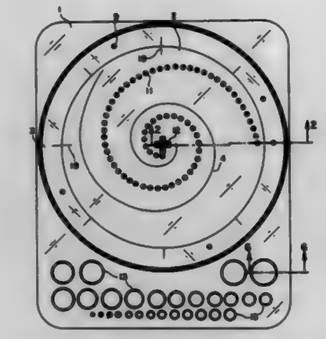
mined angularly spaced relationship with respect to the shearing edge of said fixed shear blade, the material mass reacting against said support plate to exert a torque during severing onto said outrigger in a direction to create a torque on said fixed shear blade to urge said shearing edge of said fixed shear blade toward said shearing edge of said movable shear blade.

5,384,963
RAZOR KNIFE WITH AUTORETRACTING BLADE
Ewald H. Beermann, Solingen, Germany, assignor to Martor-Argentax E. H. Beermann KG, Solingen, Germany
Filed Mar. 18, 1994, Ser. No. 215,119
Int. Cl.[6] B26B *1/08*
U.S. Cl. 30—162 **12 Claims**



1. A knife comprising:
a hollow grip body;
a blade movable longitudinally in the body between an extended position projecting from the body and a retracted position substantially wholly contained within the body;
biasing means in the body for urging the blade into the retracted position;
latch means in the body transversely engageable with the blade in a latched position for holding the blade in the extended position and out of engagement with the blade in a release position permitting the biasing means to draw the blade into the retracted position;
circuit means in the body including a microelectronic accelerometer for generating an output when the body is subjected to an acceleration exceeding a predetermined acceleration threshold; and
actuating means between the circuit means and the latch means for putting the latch means in the release position when the accelerometer generates the output.

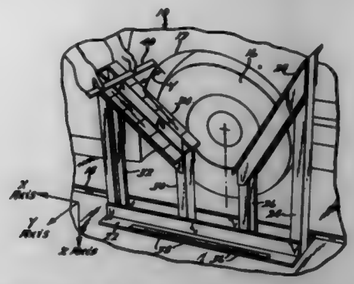
5,384,964
ROTARY CIRCLE TEMPLATE
Dennis E. McKay, 239 Victoria Park Ave., Toronto, Ontario, Canada M4E 3S4
Filed Oct. 5, 1992, Ser. No. 956,412
Int. Cl.[6] B43L *9/04*
U.S. Cl. 33—27.03 **20 Claims**



1. A circle drawing instrument comprising a flat noncircular shaped support having a circular opening therein that encompasses a ball race in said opening; a plurality of spherical rotatable ball means equally spaced by circumjacent placement around said ball race; a rotative circle template encompassed peripherally by a ball race and positioned in said support opening by said ball means locating into the template ball race; said template having an outside diameter dimension slightly less than said support opening for reception therein and within said ball means; said ball means surrounding and engaging the peripheral ball race of said template; said ball means further peripherally engaging said support opening ball race so as to negate lateral template movement, but allow for unhindered circular rotation of said template; the drawing instrument further comprising means to draw concentric, consecutively touching circles between the smallest and largest circle capability on said template which comprises: said rotative template having a plurality of eyelet sized holes, symmetrically curving outwardly from said rotative template axis; said holes being no further apart from their neighbouring holes, so as to allow drawing means entered into one eyelet hole after another and rotating the rotative template each time, to draw concentrical circles, each circle just touching said neighbouring circle; the drawing instrument further comprising means to quickly draw varying sizes of semi-circles that will blend from one line into a converging right-angled line, thereby producing a rounded junction, which comprises: said rotative template with a symmetrical line on bottom face of said rotative template and curving outwardly from said rotative template axis; said line reproducing the exact curved configuration of said positioned eyelet holes in said rotative template; said curved line positioned 90 degrees counterclockwise from said curved configuration of said eyelet holes.

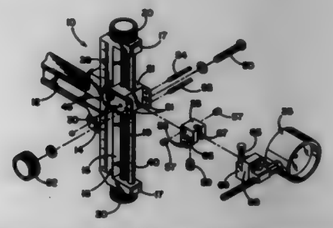
5,384,965
VEHICLE TIRE-TO-BODY COVERAGE CHECKING FIXTURE AND METHOD OF USING SAME
Elden E. Schaeck, Troy, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 30, 1993, Ser. No. 113,120
Int. Cl.[6] G01B *5/14*
U.S. Cl. 33—203 **5 Claims**

1. A tire to body coverage checking fixture for a tire in its design position, comprising a base, a first checking plate mounted on said base at a first selected angle off vertical, a second checking plate mounted on said base at a second selected angle off vertical, first markings on said base beneath said first checking plate having a scale proportioned horizontally to heights of respective points along said first selected angle plate, and second markings on said base beneath said



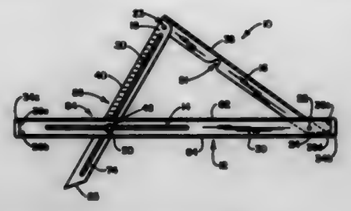
second checking plate having a scale proportioned horizontally to heights of respective points along said second checking plate, wherein said first and second selected angles off vertical are 30° and 50°, respectively.

5,384,966
BOW SIGHT
Charles S. Gibbs, Roscoe, Ill., assignor to C. S. Gibbs Corp., Roscoe, Ill.
Filed Jan. 8, 1993, Ser. No. 73,315
Int. Cl.[6] F41G *1/467*
U.S. Cl. 33—265 **22 Claims**



1. A sight for an archery bow, said sight comprising an elongated support element attachable to the bow and extending outwardly from the bow in the general direction of a target, a generally vertically extending frame attached to said support element, a generally vertically extending lead screw supported by said frame, an elevation block embracing said lead screw, a member mounted to slide in said block and transversely of said screw between active and inactive positions, a hole in said member receiving said screw, said hole having edges shaped to engage said screw and threadably couple said block to said screw when said member is in said active position, said edges being shaped to release said screw and permit said block to slide along said screw when said member is in said inactive position, spring-loaded detent means for selectively holding said member both in said active position and in said inactive position, and a sighting device movable with said block.

5,384,967
COLLAPSIBLE RAFTER SQUARE
William E. Helmuth, 6215 Kulbury Huber Rd., Plain City, Ohio 43068
Filed Jun. 18, 1993, Ser. No. 79,463
Int. Cl.[6] B43L *7/10*
U.S. Cl. 33—456 **8 Claims**

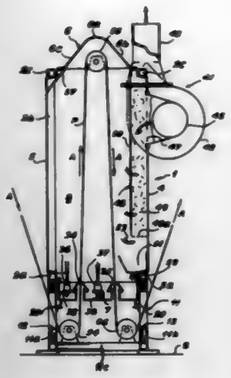


1. A measuring square comprising:
an elongate base formed as a pair of laterally spaced-apart, elongate members, each of said elongate members extending between a proximal end and a distal end, and having a first elongate slot extending longitudinally therethrough intermediate said distal end and said proximal end;
a first elongate arm having a proximal end, and a distal end pivotally mounted to said proximal end of said base intermediate said elongate members;
a second elongate arm having a proximal end, a distal end pivotally attached to said proximal end of said first elongate arm, and second elongate arm for intersection with said first slot, said second elongate arm slideably movable along said first slot for its positioning at a select angle with respect to said first elongate arm and slideably moveable along said second slot for positioning said first elongate arm at a select angle with respect to said elongate base; and
an assembly for maintaining said second elongate arm at a select position along said first slot and said second slot,
said first slot and said second slot each having lengthwise extents allowing said first elongate arm and said second elongate arm to be disposed between said elongate members substantially parallel to said elongate base, and said second elongate arm and said base each bearing on at least one side thereof a set of indicia marks calibrated such that said second elongate arm is oriented at a predetermined angle with respect to said first elongate arm when corresponding said indicia marks on said second elongate arm and said base are aligned, and scaled to orient said first elongate arm at select angles with respect to said base when said corresponding said indicia marks are aligned.

5,384,968
PAPER REMOISTENING APPARATUS
Alain J. Grandjean, Evry, France, assignor to Materiels Equipments Graphics, S.A., Lisses-Evry, France
Filed May 5, 1993, Ser. No. 58,538
Claims priority, application France, May 6, 1992, 92 05566
Int. Cl.[6] F26B *21/06*
U.S. Cl. 34—79 **10 Claims**

1. A paper remoistening apparatus of the type comprising means (54, 55, 56) for driving a strip of paper (P) along a predetermined path within a sealed enclosure (8), into which nozzles (36, 37) for spraying a moistening mist open, said enclosure (8) communicating at a place remote from the spray

nozzles (36, 37) with the inlet of a suction device (41) having its outlet (43) opening outside the enclosure, characterized in that



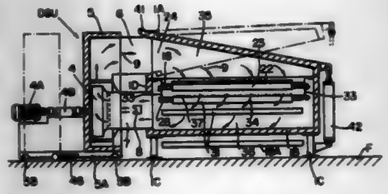
the inlet of the suction device (41) communicates with the enclosure (8) through a droplet separator (48).

5,384,969

APPARATUS FOR DRYING BULK MATERIAL WITH A FILTER FOR A DRYING GAS FLOWING THROUTH THE BULK MATERIAL

Gerhard Trostacher, and Anton Hecht, Lindau, both of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Germany

Filed Jun. 8, 1993, Ser. No. 73,174
Claims priority, application Germany, Jun. 9, 1992, 4218699
Int. Cl.[6] F26B *3/02*
U.S. Cl. 34—82 20 Claims



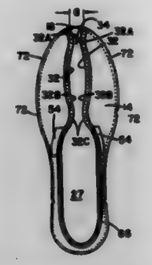
1. An apparatus for drying bulk materials, comprising at least one drying unit including a sealed dryer housing having an inlet for moist bulk material and an outlet for dried bulk material, and at least one drying gas supply unit for each drying unit, said drying gas supply unit including a fan for circulating drying gas through said bulk material, drive means for said fan and a fan housing for mounting said fan and its drive means, said apparatus further comprising in said dryer housing bulk material endless conveyor means including an air permeable endless bulk conveyor belt having an upper run for transporting bulk material through said dryer housing from said inlet to said outlet, and a lower return run, at least one endless moving filter conveyor for removing dust from said drying gas, said endless moving filter conveyor being positioned in said dryer housing in parallel to and below said upper run of said endless bulk conveyor belt for intercepting dust in said drying gas directly after said drying gas has passed from above downwardly through said bulk material on said upper run of said endless bulk conveyor belt, and at least one filter conveyor cleaning device arranged for cleaning said endless moving filter conveyor with a cleaning gas flow from below upwardly through said filter conveyor for a continuous bulk material drying operation.

5,384,970

ADJUSTABLE FIT FOOTWEAR

Florence Melton, Columbus, Ohio, assignor to R. G. Barry Corporation, Pickerington, Ohio

Continuation-in-part of Ser. No. 780,922, Oct. 22, 1991, abandoned. This application Sep. 28, 1993, Ser. No. 127,486
Int. Cl.[6] A43B *7/14, 3/26, 1/02*
U.S. Cl. 36—88 5 Claims



1. An article of footwear comprising:
a sole extending from a toe end to a heel end, said sole terminating at said toe end at a substantially flat sole surface;
an upper having a lower edge secured to said sole, said upper formed of a flexible material shaped to conform to a foot of a wearer, said upper including right and left side portions having right and left, respectively, upper edges with opposing surfaces to define an ankle opening and said upper edges further defining a slot extending from said toe end to said ankle opening, said upper edges curving towards one another, then curving away from one another and then curving towards one another as they extend from said toe end to said ankle opening, thereby enabling said upper to adjustably conform to a foot of a wearer,
said right and left side portions terminating at right and left, respectively, forward ends secured to said toe end of said sole at right and left, respectively, points of attachment, said right and left points of attachment spaced apart for said slot to extend from said sole to said ankle opening;
a flap secured to said sole and sized to cover said slot;
adhering means for releasably adhering said flap to said upper; and
said flap including a raised end at said toe portion.

5,384,971

BOOTS FOR OUTDOOR USE BY SPORTS PERSONS

James E. Ferry, 51 Amsden St., Malone, N.Y. 12953

Filed Dec. 10, 1993, Ser. No. 164,760
Int. Cl.[6] A43B *11/00*
U.S. Cl. 36—105 1 Claim



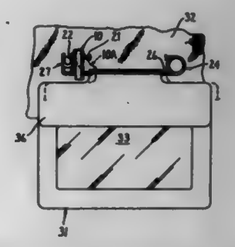
1. A new and improved boot for outdoor use by sports persons comprising, in combination:
an upper formed of an instep section formed of a conformable leather material, a separate back ankle section formed of a conformable leather material, a separate lower forward peripheral section formed of a rubber material and with an opening along the upper front with a tongue within the opening, the back ankle section overlying a rearward portion of the instep section and the lower forward peripheral section;
a plurality of eyelets formed along the upper front opening including apertures therebelow and metallic rings thereabove with lacings extending through the eyelets and rings above the tongue for enclosing the opening during use;
a plurality of metallic rings extending in vertical lines adjacent the back ankle section along the length thereof with lacings extending through the rings for providing additional support there adjacent;
a sole having an intermediate layer as an extension of the upper with a layer of flexible material thereabove and a sponge rubber sole therebelow in the forward portion and a rubber heel therebelow in the rear portion, the rubber heel being formed with a peripheral ridge and linear projections extending forwardly and rearwardly thereof along the length of the heel;
a soft conformable inner pad within the upper and sole for contact with the wearer's foot and stocking thereover with a layer of insulation material located in the rear region;
a periphery of a padded construction at the upper extent of the upper; and
a pull tab at the upper extent at the rear of the upper.

5,384,972

PIN LOCK

Stanley L. Arnt, Watervliet, Mich., assignor to Michigan Outdoor Products, Inc., Watervliet, Mich.

Filed Mar. 17, 1993, Ser. No. 33,295
Int. Cl.[6] A44B *9/02*
U.S. Cl. 40—1.6 6 Claims



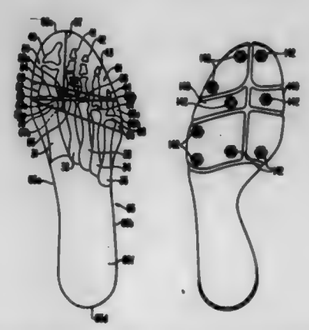
1. A pin locking device, comprising:
a pin having a strand bent back on itself to define spaced first and second strands and to form a spring therebetween, said pin having a pointed end section on said first strand and a clasp mechanism mutually adjacent said pin on said second strand, said clasp mechanism retaining said pointed end section in a clasped condition against an urging of the spring and when said first and second strands are generally parallel to one another;
an elongated flexible and noncompressible lock member having a body of finite length and means defining first and second spaced and parallel holes extending transversely through said body, said spacing between said holes being generally equal to said spacing between said first and second strands when they are generally parallel to one another, and means defining an axially outwardly opening slot extending entirely across one end face of said lock member and opening into said first transversely extending hole adjacent thereto, said one strand having said pointed end section of said pin thereon extending through said second hole, said body of said locking member being flexible about a longitudinal axis thereof to shorten an effective spacing between said second hole and said one end face so as to allow said first hole to receive therein said second strand of said pin between said clasp mechanism and the spring through said axially outwardly opening and aligned slot while said pointed end section is held by said clasp mechanism to thereafter prevent, following a return of said lock member to a nonflexed condition, the pointed end section of the pin from being able to involuntarily move toward said second strand of said pin between said clasp mechanism and the spring in order to effect an unclasping of said pointed end section from said clasp mechanism.

5,384,973

SOLE WITH ARTICULATED FOREFOOT

Robert M. Lyden, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Dec. 11, 1992, Ser. No. 992,894
Int. Cl.[6] A43B *13/14, 5/00*
U.S. Cl. 36—25 R 14 Claims

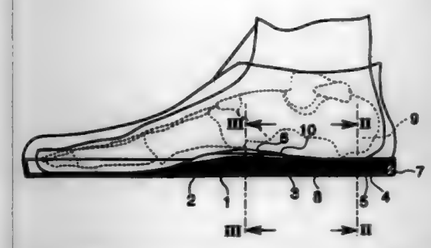


1. Footwear for receiving and supporting a foot of a wearer having a front end, a rear end, a medial side and a lateral side, said footwear further including an upper and a sole, said upper and said sole defining a cavity for receiving the foot, said cavity being continuously open from said medial side to said lateral side proximate said front end of said footwear whereby the toes of the wearer's foot are not subdivided within the cavity relative to each other, said sole comprising a first flex joint and a second flex joint, said first flex joint extending rearwardly in a generally longitudinal direction from said front end, said first flex joint being located to extend between the hallux and the second toe of the wearer's foot, said second flex joint extending in a generally transverse direction between said medial and lateral sides, said second flex joint being positioned generally between the metatarsal heads of the wearer's foot and the pads of a plurality of toes including at least the hallux and the second and third toes of the wearer's foot, said second flex joint intersecting said first flex joint to define a first supporting section receiving and supporting only the hallux and a second supporting section receiving and supporting only collectively a plurality of other toes including at least said second and third toes, said first and second supporting sections being subdivided from the remainder of said sole by said first and second flex joints whereby the hallux supported by said first supporting section is easily and relatively independently moved by the wearer with respect to the other toes and said toes collectively supported by said second supporting section can be easily and relatively independently moved as a collective group by the wearer with respect to the hallux, said sole further including a third flex joint extending transversely across said sole generally along the first two metatarsal heads of the wearer's foot and a fourth flex joint extending along a path generally parallel to a line intersecting the third, fourth and fifth metatarsal heads of the foot such that said third and

fourth flex joints converge toward said medial side of said sole, said first flex joint extending rearward beyond said third flex joint to intersect with said fourth flex joint.

5,384,974
ORTHOPEDIC SHOE INSERT WITH A YIELDING ELEMENT IN THE HEEL

Gloutella Massimo, Via dei Bardi 58, 50125 Firenze, Italy
Continuation of Ser. No. 907,306, Jul. 1, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 122,642
Claims priority, application Italy, Jan. 24, 1992, FI/92/A/19
Int. Cl.[6] A43B *13/28*
U.S. Cl. 36—27 8 Claims

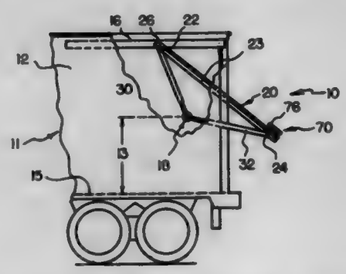


1. An orthopedic shoe insert for absorbing energy during ambulation, the insert comprising:
an elastic silicone material having a plantar insole surface positionable adjacent a foot and extending from a heel of the foot to a forward end of a plantar arch of the foot, said silicone material has a bottom side spaced from said plantar insole surface at the heel of the foot, said plantar insole surface and said bottom side extending from the heel of the foot and combining at the forward end of the plantar arch, said silicone material forming an outer circumference of an annular cavity adjacent the heel of the foot, said annular cavity being open through said plantar insole surface;
yielding means positioned substantially coaxially with said annular cavity and forming an inner circumference of said annular cavity, said yielding means for deforming in response to pressure from a calcaneum of the foot, said yielding means being formed as an integral part of said silicone material and having a truncated cone shape, one end of said yielding means being circular and positioned in substantially a same plane as said plantar insole surface, said yielding means having another end positioned at a bottom of said annular cavity and joining said silicone material, said another end of said yielding means being smaller than said one end of said yielding means;
an annular projection integrally formed with said silicone material and extending from said outer circumference of said annular cavity, said annular projection being spaced from said yielding means when said yielding means is in an undeformed state, and said annular projection contacting and deforming in response to said yielding means when said yielding means is severely deformed by the calcaneum of the foot.

5,384,975
OVERHEAD DOOR APPARATUS

Joseph J. Yuran, 300 W. Park St., Hermitage, Pa. 16148
Filed Mar. 30, 1994, Ser. No. 220,194
Int. Cl.[6] E05D *15/40*
U.S. Cl. 49—203 12 Claims

1. A new and improved overhead door apparatus for a structure which has a pair of sidewalls spaced from each other by a predetermined distance and which has a floor located between the pair of sidewalls, comprising:
a pair of guide channel assemblies connected to the pair of sidewalls of the structure a predetermined distance from the floor of the structure,
a pair of central pivot assemblies connected to the pair of sidewalls of the structure, wherein said central pivot assemblies are located on the pair of sidewalls at locations between said pair of guide channel assemblies and the floor of the structure,
a rigid unitary door panel assembly which includes a pair of top corners, a pair of bottom corners, and a pair of sides separating said pair of top corners from said pair of bottom corners, wherein said pair of top corners of said door panel assembly include a pair of roller assemblies adapted to roll along said pair of guide channel assemblies,
a pair of first extensible and retractable assemblies connected between said pair of top corners of said door panel assembly and said pair of central pivot assemblies,
a pair of first pivot assemblies for pivotally connecting said pair of first extensible and retractable assemblies to said pair of top corners of said door panel assembly,



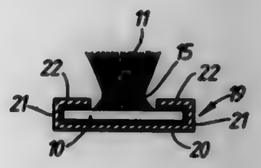
a pair of second extensible and retractable assemblies connected between said pair of bottom corners of said door panel assembly and said pair of central pivot assemblies, and
a pair of second pivot assemblies for pivotally connecting said pair of second extensible and retractable assemblies to said pair of bottom corners of said door panel assembly,
wherein a side of said pair of door panel sides, a first extensible and retractable assembly of said pair of first extensible and retractable assemblies, and a second extensible and retractable assembly of said pair of second extensible and retractable assemblies form three sides of a triangular structure, and
wherein a first pivot assembly of said pair of first pivot assemblies, a second pivot assembly of said pair of second pivot assemblies, and a central pivot assembly of said pair of central pivot assemblies form apexes of the triangular structure.

5,384,976
PILE WEATHERSTRIP

Alfred B. Hall, Shildon, England, assignor to Linear Limited, England
Filed Apr. 5, 1993, Ser. No. 969,160
Claims priority, application United Kingdom, Jan. 13, 1991, 9112780
Int. Cl.[6] E06B *7/16*
U.S. Cl. 49—489.1 16 Claims

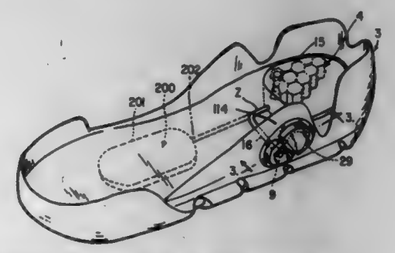
1. A pile weatherstrip comprising an elongate base strip having a first pair of side edges and carrying a pile of thermoplastic fibres, the fibres extending across the base strip and along a length of the base strip and to a height above the base strip, with the pile having a second pair of side edges spaced inwardly of the first pair of side edges of the base strip, at least the fibres at the second pair of side edges being fused together along the length of the base strip and only for a portion of the height of the fibres which is spaced above the base strip such

that each fibre at the second pair of side edges is separate from its neighbours at the base strip and is then fused to its neighbours for the portion of the height of the fibres which is spaced above the base strip.



5,384,977
SPORTS FOOTWEAR

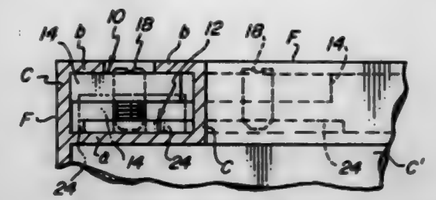
Wong K. Chee, Kowloon, Hong Kong, assignor to Global Sports Technologies Inc., Tortola, Virgin Islands (Br.)
Filed Jun. 25, 1993, Ser. No. 81,151
Int. Cl.[6] A43B *13/18*
U.S. Cl. 36—28 8 Claims



1. Improved sports footwear which comprises:
a shoe having a least one insert positioned at least in a heel region of the shoe, said insert comprising an air-impermeable casing of flexible material;
an elastically deformable member contained within said casing;
a pump mechanism; and
a tube mounted at least partially in the sole for communicating said pump mechanism with said casing for varying air pressure within said casing, so as to modifying the elastic characteristics of the insert, said pump mechanism including an intake valve, a delivery valve for increasing said pressure through said tube, and a bleed mechanism for decreasing said pressure by passing air from said casing through said tube;
said pump mechanism having a bellows located on an exterior portion of the shoe and having a first and second opening, said intake valve being positioned in said first opening and said delivery valve being positioned in said second opening;
said delivery valve including a block member located outside said bellows and having a chamber connected to said bellows wherein said bleed mechanism is connected to said chamber of said block downstream of said delivery valve; wherein said air-impermeable casing including at least two parts, each part comprising an integral appendix wherein, when joined together, the appendix of each part forms a tube for passage of air from and to the insert; wherein said two parts of said casing comprise, in coinciding positions, hollow projections which are directed towards the interior of the casing and are connected together at inner ends of the projections.

5,384,978
CORNER CLAMP ASSEMBLY

Alan R. Peters, Stratford, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.
Filed Mar. 22, 1993, Ser. No. 35,237
Int. Cl.[6] F16B *7/04*
U.S. Cl. 40—155 11 Claims



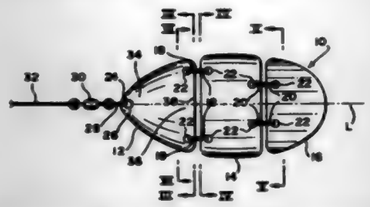
1. A clamp assembly for joining adjacent parts, each part having lateral and transverse wall elements defining an interior space, comprising:
a first plate having at least two opposite lateral edges extending therealong in a common plane, said plate having at least one recess formation therein with an entrance located on an axis lying between said edges and extending substantially normal to said plane;
a separate second plate having at least two opposite lateral edges extending therealong in a common plane and disposed for substantial registry with said edges of said first plate when said second plate is superposed therewith, said second plate having at least one threaded aperture located on an axis lying between said edges of said second plate and extending substantially normal to said plane of said second plate; and
at least one jacking screw threadably engaged in said aperture of said second plate, said screw having a tip formation at one end and means for turning at the other end, at least one of said tip and recess formations being defined by a bevelled camming surface; said recess formation and said aperture being disposed such in spatial relationships to said edges of said respective plates as to cause said axes to be mutually offset when said plates are in superposed relationship with said edges of said plate in such registry, and said spatial relationships also causing a surface element of said other formation to be so disposed as to engage said camming surface of said one formation in said superposed plate relationship, advancement of said screw against said camming surface effecting transverse separation as well as shifting of said plates relative to one another in said common planes to offset said edges of said first plate relative to said edges of said second plate whereby, when said assembly is contained within the interior spaces of adjacent parts having lateral and transverse wall elements defining those spaces, advancement of said screw will cause said plates to exert clamping forces upon both the transverse and also the lateral wall elements of the parts, to join them to one another.

5,384,979
FISHING LURE

Jack Davis, Crescent City, Fla., assignor to Mann's Bait Company, Eufaula, Ala.
Filed Jan. 14, 1994, Ser. No. 181,435
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.18 8 Claims

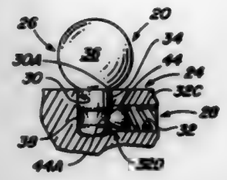
1. A fish lure comprising:
at least three sections formed from relatively rigid sheet material, said sections extending axially along the longitudinal central lure axis in closely spaced relationship and comprising a front, middle and rear section;
laterally spaced apertures in each section located near op-

posed edges of said adjacent sections, said apertures in adjacent sections being generally axially aligned when the sections are generally axially aligned;
connectors extending through the apertures for pivotally connecting adjacent sections of the lure to each other;
said front section having a rear edge portion adjacent a front



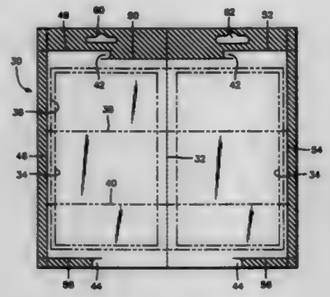
edge portion of the middle section, said rear edge portion being substantially planar across its width;
said middle and rear sections each having front edge portions, with at least the front edge portion of the middle section being transversely bent to generally form a section of a cylinder having its axis of curvature extending longitudinally above and along the lure.

5,384,980
GUN-AIMING DEVICE
Robert J. Johnson, 49588 McMahon Ck. Rd., and Jeff A. Johnson, Rte. 2, 70541 Maynard Rd., both of St. Clairsville, Ohio 43950
Filed Mar. 18, 1993, Ser. No. 33,486
Int. Cl.[6] F41G *1/02*
U.S. Cl. 42—100 **26 Claims**



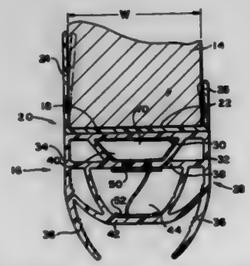
1. A gun-aiming device, comprising:
(a) a base mount for attaching to a gun barrel, said base mount having first and second cylindrical passages arranged in an intersecting relation with one another, said first cylindrical passage having a longitudinal axis;
(b) a sighting element having a head portion and a stem portion, said head portion attached to one end of said stem portion, said stem portion having a cylindrical shape adapting said stem portion to fit within said first passage of said base mount with said cylindrical stem portion rotated to any angular position about said longitudinal axis of said first passage, said cylindrical stem portion including an annular groove being concave-shaped in cross-section and extending circumferentially about said cylindrical stem portion and being spaced between opposite ends of said cylindrical stem portion, said cylindrical stem portion being removably mounted in said first passage of said base mount such that said head portion extends above said base mount for use in aiming the gun; and
(c) a yieldable biasing means disposed in said second passage of said base mount and extendable into said first passage so as to releasably engage said annular groove of said cylindrical stem portion of said sighting element at any circumferential location about said cylindrical stem portion so as to provide a quick release snap-fit type of latching of said cylindrical stem portion of said sighting element in said first passage of said base mount.

5,384,981
GLUE BOARD
Leon R. Cohen, Ephrata, Pa., assignor to Woodstream Corporation, Lititz, Pa.
Filed Jun. 17, 1993, Ser. No. 77,457
Int. Cl.[6] A01M *1/14*
U.S. Cl. 43—114 **12 Claims**



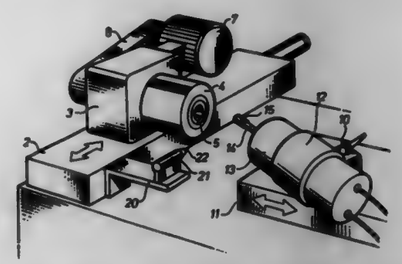
1. A package for forming into a pair of glue traps to catch rodents and vermin comprising a sheet folded into two halves, each half having an inner surface, an outer surface, and a layer of rodent-catching adhesive on the inner surface the layers of adhesive facing each other and being separated by release paper, the package further comprising a tear-away border portion formed by opposite edge portions of the sheet around said layers of adhesive which edge portions are defined by perforations formed in the sheet and which are adhered together whereby the border portion must be torn away from the package in order to unfold the sheet and expose the release paper-covered layers of adhesive.

5,384,982
SENSING DEVICE HAVING UNIVERSAL INTERFACE FOR COOPERATION WITH PLURALITY OF DOOR ACTUATORS
Anatoly Galperin, Philadelphia, Pa., assignor to Miller Edge, Inc., Concordville, Pa.
Filed Apr. 29, 1993, Ser. No. 54,580
Int. Cl.[6] E05F *15/02*
U.S. Cl. 49—27 **15 Claims**



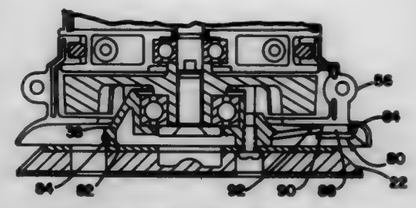
1. A sensing device for use with a door, movable in a first direction by an actuator to stop or reverse the direction of movement of the door upon a force being applied to the sensing device by an object in a path of movement of the door, the sensing device comprising:
a sensing edge for being secured to the door, the sensing edge including a generally flexible elongated sheath and a pair of generally parallel, spaced contact members disposed within the sheath, the contact members being electrically connected to the actuator; and
a termination circuit electrically connected to the contact members for generally continuously generating a predetermined output signal which is applied through the contact members to the actuator to enable operation of the actuator for movement of the door in the first direction whereby, upon the application of a force to the sensing edge, the contact members contact each other to prevent the output signal from the termination circuit from being applied to the actuator thereby causing the actuator to stop or reverse the direction of movement of the door, the termination circuit including a selector means operable by an installer to permit the installer to select the output signal to be either a generally continuous output voltage at a single predetermined voltage level or a generally continuous pulse train formed of a plurality of voltage pulses, each pulse having a predetermined maximum voltage level, a predetermined minimum voltage level and a predetermined pulse width.

5,384,983
METHOD AND GRINDING MACHINE FOR THE INTERNAL GRINDING OF BORES
Lars E. Siggelin, Rönninge, Sweden, assignor to AB UVA, Bromma, Sweden
Continuation of Ser. No. 917,107, Aug. 7, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 183,899
Claims priority, application Sweden, Feb. 16, 1990, 90 00563-8
Int. Cl.[6] B24B *49/00, 51/00, 1/00*
U.S. Cl. 451—65 **10 Claims**



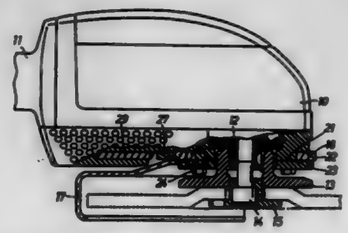
7. A grinding machine for internally grinding a workpiece bore with full abutment between a generatrix of a grinding wheel and a generatrix of the bore, both in rough grinding and fine grinding phases, said grinding machine including:
a) a chuck spindle (3) mounted on a feed slide (2) and supporting a workpiece (5) having a bore (6) formed therein;
b) a table slide (11) mounting a grinding spindle (13) provided with a flexible grinding spindle extension (14), and a conical grinding wheel (15) mounted on a free end of said extension;
c) means (10) for positionally adjusting and fixing the grinding spindle such that a rotational axis thereof defines a predetermined angle (α) in relation to a rotational axis (3α) of the workpiece bore;
d) means for regulating a feed pressure of the workpiece during the grinding operation;
e) a grinding wheel sharpening tool (22); and
f) a computer for controlling the grinding process, wherein:
g) the conical grinding wheel (15) tapers conically inwardly from the free end of the grinding spindle extension (14) at said predetermined angle;
h) the sharpening tool (22) is adapted to engage the grinding wheel along a generatrix which is substantially diametrically opposite a grinding wheel generatrix when said wheel is in rough grinding engagement with the bore (6); and
i) rough grinding engagement takes place at a feed pressure which bends the flexible spindle extension to about twice the predetermined angle (2α) generatrix and the grinding wheel generatrix substantially coincide.

5,384,984
RANDOM ORBIT SANDER WITH BRAKE
John C. Smith, Jackson, Tenn., assignor to Porter-Cable Corporation, Jackson, Tenn.
Continuation-in-part of Ser. No. 9,309, Jan. 22, 1993. This application Sep. 21, 1993, Ser. No. 124,930
Int. Cl.[6] B24B *23/00*
U.S. Cl. 451—357 **23 Claims**



1. A random orbit sander, comprising:
a. sanding means for providing a random orbit sanding function, the sanding means comprising a sander body, a pad for supporting sandpaper, a motor housed by the sander body, and random orbit coupling means for coupling the motor to the pad in order to impart a random orbit sanding motion to the pad when the motor is running and the sander in use on a workpiece surface, the coupling means comprising pad support means for providing support to the pad, the pad support means being coupled to the motor through a bearing system, at least one of the pad support means and the pad defining a first groove;
b. a member attached to the sander body, the member defining a second groove; and
c. an elastic belt stretched between the two grooves.

5,384,985
PNEUMATIC ROTATION GRINDER
Rolf A. Jacobson, Saltsjö-Boo, Sweden, assignor to Atlas Copco Tools AB, Nacka, Sweden
Continuation of Ser. No. 73,769, Jun. 8, 1993, abandoned. This application Jun. 6, 1994, Ser. No. 254,497
Claims priority, application Sweden, Jun. 29, 1992, 9201990
Int. Cl.[6] B24B *23/00, 55/04*
U.S. Cl. 451—344 **6 Claims**



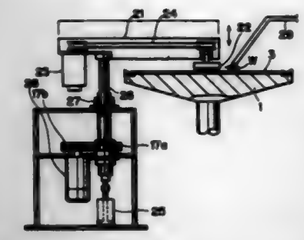
1. Pneumatic rotation grinder, comprising:
a housing (10) having a pressure air inlet passage and a manually operable throttle valve,
a rotation motor,
an output shaft (12) driven by said motor and arranged to carry a grinding tool,
a safety guard (17, 18) adjustably supported on said housing (10) in a coaxial disposition relative to said output shaft (12), and
lock means located between said safety guard (17) and said housing (10) and arranged to arrest said safety guard (17, 18) in desired angular positions relative to said housing (10),
said lock means (26–28, 33–38) comprising a pressure air

operated clamping means (33–36) for frictional coupling of said safety guard (17, 18) to said housing (10).

5,384,986
POLISHING APPARATUS

Masayoshi Hirose; Seiji Ishikawa; Norio Kimura; Kiyotaka Kawashima, and Yoo Ishii, all of Tokyo, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 124,648
Claims priority, application Japan, Sep. 24, 1992, 4-279343; Sep. 25, 1992, 4-280491
Int. Cl.[6] B41J *11/62*
U.S. Cl. 451—444 11 Claims



7. A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable with an abrasive cloth mounted on an upper surface thereof;

a top ring positioned above said turntable for supporting the workpiece to be polished and pressing the workpiece against said abrasive cloth;

a rotatable brush facing said abrasive cloth;

first actuating means for rotating said rotatable brush about an axis substantially perpendicular to the plane of said abrasive cloth;

second actuating means for reciprocally moving said rotatable brush substantially radially between radially inner and outer positions over said abrasive cloth;

a nozzle for supplying a cleaning solution onto said abrsaive cloth; and

a bank provided on said turntable along an outer circumferential edge thereof for preventing a protective solution, which is supplied to said abrasive cloth to keep the abrasive cloth from drying when said turntable is held at rest, from flowing off said turntable, said bank having a slanted surface inclined downwardly in a radially inward direction of said turntable for allowing the protective solution to be scattered away from said turntable over said slanted surface under centrifugal forces when said turntable is rotated.

5,384,987
METHOD AND APPARATUS FOR COMPENSATING FOR LENS BLANK MATERIAL DIFFERENTIAL IN OPHTHALMIC BEVEL EDGING PROCESS

Ronald C. Wiand, 1494 Wattlewood Dr., Troy, Mich. 48098

Filed Oct. 14, 1992, Ser. No. 960,956
Int. Cl.[5] B24B *1/00*
U.S. Cl. 451—41 16 Claims

1. A method for accommodating for differential in an ophthalmic lens grinding operation utilizing a bevel edger machine including a lens former assembly comprising the steps of:

a) adapting said lens former assembly by providing a means for adjusting a physical dimension of a portion of said lens former assembly to provide a first profile for increasing the differential profile of the lens former assembly for a first lens blank material and allowing for providing a second differential for the lens former assembly for providing a proper differential for a second lens blank material;

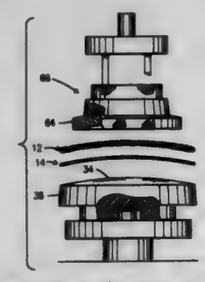


b) whereby bevel edging of a plurality of lens blank materials requiring different differentials can be accomplished without internal adjustment of the bevel edging machine.

5,384,988
LENS SURFACING ASSEMBLY

William D. Hernandez, Tarpon Springs, Fla., assignor to Practical Systems, Inc., Tarpon Springs, Fla.

Filed Feb. 5, 1993, Ser. No. 14,393
Int. Cl.[6] B24B *13/02*
U.S. Cl. 451—42 26 Claims



14. A method for grinding, fining and polishing lens blanks, said method for use with a typical lens grinding machine and a rigid lapping tool, comprising the steps of:

attaching a first adhesive surface of an adhesive member to an arcuate surface of lapping tool, said lapping tool being mounted within said lens grinding machine, said adhesive member having an opposed second adhesive surface;

attaching a lens surfacing pad to said second adhesive surface of said adhesive member, said lens surfacing pad having a first abrasive coated surface and an opposed second abrasive coated surface, said first abrasive coated surface of said pad being coarser than said second surface of said pad, said second abrasive coated surface of said pad being removably attached to said second adhesive surface of said adhesive member;

grinding a lens blank with said first abrasive coated surface of said lens surfacing pad to a predetermined curvature;

removing said surfacing pad from said adhesive member, such that said adhesive member remains attached to said lapping tool;

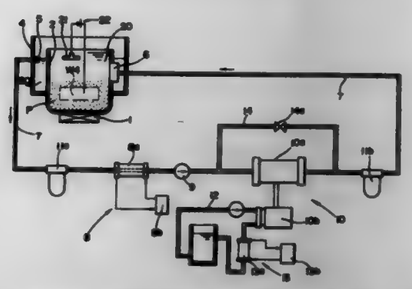
attaching said first abrasive coated surface of said lens surfacing pad to said adhesive member, whereby said lens surfacing pad is attached to said lapping tool; and

fining said lens blank, with said second abrasive coated surface of said lens surfacing pad, to a predetermined curvature.

5,384,989
METHOD OF ULTRASONICALLY GRINDING WORKPIECE

Yoshihide Shibano, 1629-1-12, Oyama-cho, Machida-shi, Tokyo, Japan

Filed Apr. 12, 1993, Ser. No. 44,609
Int. Cl.[6] B24B *31/06*
U.S. Cl. 451—36 10 Claims



1. A method of ultrasonically grinding a workpiece, comprising the steps of:

immersing a workpiece and an electrode as an anode and a cathode, respectively, in an electrolytic processing solution, the electrolytic solution being contained in an ultrasonic processing tank equipped with an ultrasonic vibrator;

applying a voltage between said workpiece and said electrode;

simultaneously radiating ultrasonic energy from said ultrasonic vibrator into said electrolytic solution to electrolytically grind surfaces of the workpiece;

drawing the electrolytic solution from said ultrasonic processing tank;

cooling the electrolytic solution to a temperature lower than a boiling point thereof;

deaerating the electrolytic solution; and

thereafter circulating and returning the electrolytic solution to said ultrasonic processing tank.

5,384,990
WATER BLASTING PROCESS

William E. Spears, Jr., Houston, Tex., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Aug. 12, 1993, Ser. No. 105,406
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—38 21 Claims

1. A process for blast cleaning comprising; subjecting a work surface to a composite blast stream of a carrier liquid and a particulate abrasive material which is soluble in said carrier liquid, said carrier liquid comprising a saturated solution so as to minimize dissolution of said particulate abrasive therein.

5,384,991
METHOD AND APPARATUS FOR GRINDING AND SLOTTING FRICTION PRODUCTS

John T. Lee, N. Charleston, S.C., assignor to Leinweber Maschinen GmbH & Co. KG, Wiener Neustadt, Austria

Filed Mar. 17, 1993, Ser. No. 32,123
Int. Cl.[5] B24B *1/00*
U.S. Cl. 451—57 11 Claims

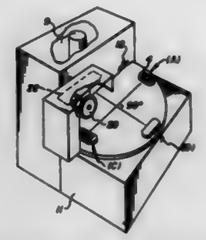
8. A method for grinding and slotting molded friction products, which comprises:

a) loading a friction product to be ground to a finished thickness and to be provided with a linear slot across a friction surface thereof on a rotary indexing table at a first indexing position;

b) indexing the rotary indexing table by one indexing position such that the friction product is transported from the first indexing position to a second indexing position;

c) grinding a planar friction surface and providing the friction product with a finished thickness at the second indexing position;

d) indexing the rotary indexing table by one indexing position such that the friction product is transported from the second indexing position to a third indexing position;



e) cutting a substantially linear slot across the planar friction surface of the friction product in a radial direction with regard to a rotary axis of the rotary indexing table at the third indexing position;

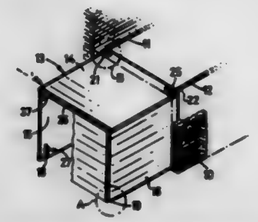
f) indexing the rotary indexing table by one indexing position such that the friction product is transported from the third indexing position to a fourth indexing position; and

g) unloading the friction product from the rotary indexing table at the fourth indexing position.

5,384,992
APPARATUS FOR EXTENDING AN ENCLOSURE

Ian Roberton, Merrweather House, Searle Road, Farnham, Surrey, England GU9 8LJ

PCT No. PCT/GB90/01531, § 371 Date May 6, 1992, § 102(e) Date May 6, 1992, PCT Pub. No. WO91/05117, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 5, 1990, Ser. No. 855,035
Claims priority, application United Kingdom, Oct. 6, 1989, 8922597
Int. Cl.[6] E04B *1/343*
U.S. Cl. 52—67 10 Claims



1. Apparatus for temporarily extending an enclosure comprising:

a movable structure forming a roof portion and sidewalls depending from said roof portion and a wheel adjacent the bottom of each sidewall for running on the ground as the movable structure is moved into and out of the enclosure, said movable structure being guided for substantially rectilinear movement into and out of the enclosure by interengagement of pivotally mounted means and straight guide track means, said guide track means being horizontally and statically mountable adjacent to the enclosure, and said pivotally mounted means including a fixed base being mounted on said roof portion of said movable structure at a location thereon relative to the location of said wheels such that the attitude of said movable structure is

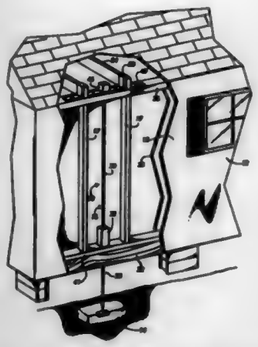
pivotally adjustable automatically relative to the horizontal and to said guide track means in response to movement of said movable structure into and out of the enclosure with the pivotally mounted means being movable parallel along said guide track means thereby enabling the movable structure to follow a carriageway having a slope in front of the enclosure.

5,384,993

TIE DOWN FOR BUILDING STRUCTURES

Belton R. Phillips, Rte. 1, Box 1876, Fred King Rd., Hartwell, Ga. 30643

Filed Nov. 15, 1993, Ser. No. 152,425
Int. Cl.[6] E04H *9/14*; E02D *27/50*
U.S. Cl. 52—92.2 **13 Claims**



1. A tie down assembly for a building structure having a floor structure suspended above the ground and a roof structure including rafters suspended over the floor structure, said tie down assembly comprising:

anchor means for mounting in the ground beneath the floor structure,

a tie down rod assembly mounted at a lower end thereof to said anchor means for extending upwardly from said anchor means past the floor structure and to the roof structure,

said tie down rod assembly including a floor connector for positioning substantially above the floor structure and engaging and holding the floor structure downwardly against lifting forces and a roof connector for engaging and holding the roof structure downwardly against lifting forces.

5,384,994

ENERGY PAY BACK BUILDING

Paul A. Borba, 311 E. Glen Cove, Mesa, Ariz. 85201

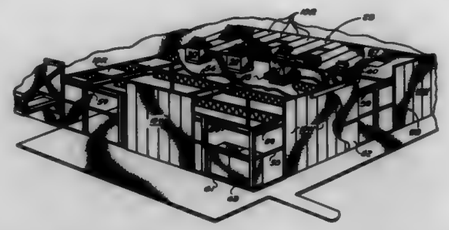
Filed Mar. 16, 1993, Ser. No. 33,275
Int. Cl.[6] E04B *5/48*
U.S. Cl. 52—261 **19 Claims**

1. A building construction for enclosing an interior space, said building construction comprising:

a structural framework;

an exterior curtain wall including stressed-skin insulated core wall panels, said panels coupled to an outer perimeter of said structural framework;

a roof including a plurality of stressed-skin insulated core roof panels coupled atop said structural framework; and



said interior space is enclosed by said curtain wall and said roof substantially preventing venting of interior atmosphere with ambient outer atmosphere.

5,384,995

SPACER FOR WINDSHIELD BRACKET

Heinz Kunert, Cologne; Gerd Cornils, Merzenich-Girbelrath, and Heinrich Schaltter, Simmerath, all of Germany, assignors to St. Gobain Vitrage International, Courbevoie, France

Continuation-in-part of Ser. No. 242,387, Sep. 7, 1988, Pat. No. 4,938,521, and a continuation-in-part of Ser. No. 436,280, Nov. 14, 1989, Pat. No. 5,057,265. This application Dec. 13, 1989, Ser. No. 450,345
Claims priority, application Germany, Sep. 12, 1989, 3930414
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[6] B60J *1/02*; E06B *3/54*
U.S. Cl. 52—394 **31 Claims**



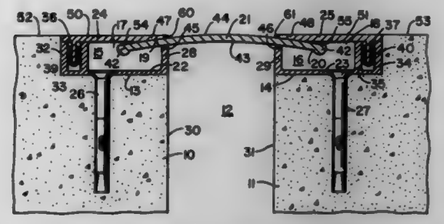
1. A window comprising a glazing having a periphery; a sheet metal bracket oriented parallel to an edge of the glazing; and a spacer attached to substantially the entire periphery of the glazing adjacent the bracket for supporting the glazing and for maintaining the periphery of the glazing at a predetermined uniform distance from said bracket, said spacer provided with means for centering the glazing upon the bracket including at least one peripheral portion having a cross sectional configuration and a lip portion which is initially oriented essentially parallel to the glazing surface and extending beyond the edge of said glazing and a support surface for contacting said bracket to provide a force for centering said glazing thereon.

5,384,996

ARCHITECTURAL JOINT SYSTEM WITH ARCHED COVER PLATE

John D. Nicholas, Lawrenceville, Ga., assignor to Pawling Corporation, Pawling, N.Y.

Continuation of Ser. No. 919,594, Jul. 24, 1992, abandoned. This application Nov. 18, 1993, Ser. No. 154,999
Int. Cl.[6] E04B *1/68*
U.S. Cl. 52—468 **1 Claim**



1. An arched plate cover assembly for an architectural joint, particularly for joining floor surfaces of a pair of relatively movable adjacent structural units separated by a space and providing a smooth continuity between said floor surfaces, which comprises

(a) spaced apart first and second housing assemblies mounted on each of said structural units,

(b) each of said housing assemblies including a base member, secured rigidly to its structural unit, and a cover member,

(c) said base and cover members forming hollow enclosures,

(d) each said base member including an outer flange wall projecting upwardly toward the cover member and defining a predetermined gap between an upper end of said flange wall and a free end region of said cover member,

(e) said outer flange walls being spaced apart and defining an open space between them,

(f) an arcuately arched cover plate of predetermined width, formed of rigid material, having an exposed and unsupported center portion spanning the open space between said flange walls and having opposite side edge margins closely movably received at each side in said gaps and slideably projecting at opposite sides into each of said enclosures whereby the exposed and unsupported center portion of said arched cover plate is caused to rise slightly when said structural units separate and to lower slightly when said structural units move toward each other,

(g) said arched cover plate being of upwardly convex, generally arcuate and relatively shallow cross sectional contour conforming substantially to a long radius arc, with the radius of said arc being at least about two times the width of said cover plate,

(h) the cover members of said first and second housing assemblies being of predetermined thickness and having upper and lower principal surfaces,

(i) the upper principal surface of each cover member being generally flat and generally coextensive with an outer surface of the structural unit in which it is mounted,

(j) the lower principal surface of each cover member being inclined upwardly and outwardly toward said upper principal surface in said free end region to form an upwardly convergently tapered free end region,

(k) the tapered free end region of each cover member directly overlying the upper ends of said outer flange walls to define said gaps,

(l) said tapered free end regions extending over a distance constituting a multiple of at least two times the thickness of the cover member at a point adjacent to its free end region and being tapered by an amount greater than half the thickness of the cover member adjacent to said free end region,

(m) said arched cover plate having its outer surface closely conforming to outwardly tapering contours of said lower principal surface portions in said free end region and having its inner surface supported on upper end edges of said outer flange walls,

(n) said arched cover plate being supported substantially exclusively by the upper ends of said outer flange walls,

(o) the upwardly convergently tapered free end regions of said cover members extending inwardly from said flange walls to a point substantially removed therefrom,

(p) said convergently tapered free end regions having relatively thin end extremities, and

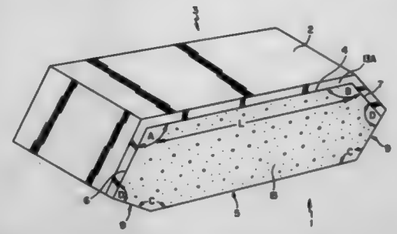
(q) said end extremities being directly supported by the rigid material of underlying portions of said arched cover plate, to provide minimum departure from a flat surface.

5,384,997

COLUMN AND CORNER COMPOSITE, MOLD AND METHOD FOR PRODUCING GLAZED UNIT FOR SUCH

John McClinton, Hanover, Md., assignor to The Burns & Russell Company, Baltimore, Md.

Filed May 18, 1992, Ser. No. 884,200
Int. Cl.[6] E04C *1/00*
U.S. Cl. 52—596 **34 Claims**



1. A glazed angled masonry building unit comprising a front face, a back face, a top face, a bottom face and two side faces wherein said front face is glazed with a resinous composition and is intended to be exposed and comprises a planar portion that is opposite to said back face; a first angled segment that intersects said planar portion at one end thereof to thereby form an obtuse angle, and a second segment that intersects said planar portion at the other end thereof to thereby form an obtuse angle; each of the two side faces being angled and intersecting a respective one of said first angled segment and said second angled segment to form a right, acute or obtuse angle therewith, and intersecting said back face to form an obtuse angle or right angle with said back face.

5,384,998

CURVED PANEL

Mamoru Tanaka, and Shinichi Kaneda, both of Nara, Japan, assignors to Kokuyo Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/00001, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO92/12378, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 4, 1991, Ser. No. 924,062
Int. Cl.[6] E04C *2/38*
U.S. Cl. 52—630 **14 Claims**

1. A curved panel having a predetermined curvature and comprising:

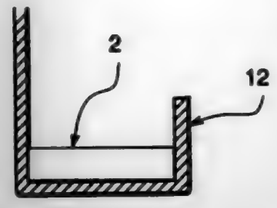
a panel body comprising a resiliently deformable material having a range of elasticity such that, when said panel body is flexed out of a planar condition while remaining within said range of elasticity, a planar restorative force biases said panel back toward said planar condition, said panel body having oppositely facing surfaces and terminating at a first pair of spaced apart edges and a second pair of spaced apart edges;

each of said first pair of edges having a reinforcing bent

portion means attached thereto for maintaining a substantially straight condition of said panel along each edge of said first pair of edges;

each of said second pair of edges having a deformable bent portion means for allowing curving of said panel along each edge of said second pair of edges;

a pair of reinforcing members each of which is formed from an elongately curved member having a curvature greater than said predetermined curvature and which, when



flexed from said greater curvature to a lesser curvature, provides a curvature restorative force biasing said reinforcing member back toward said greater curvature;

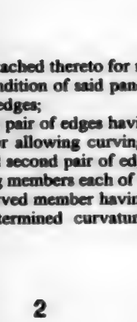
said reinforcing members each being attached to a corresponding deformable bent portion means and flexed toward said lesser curvature by said planar restorative force, with said curvature restorative force of said reinforcing members being balanced by said planar restorative force of said panel body at said predetermined curvature of said panel.

5,384,999

DISPLAY PANEL HAVING DUAL SECUREMENT MEANS

Bonnie Roche, 17 W. 54th St., New York, N.Y. 10019, and Samuel Farber, New York, N.Y., assignors to Bonnie Roche, New York, N.Y.

Division of Ser. No. 491,661, Nov. 22, 1989. This application Sep. 27, 1993, Ser. No. 126,923
Int. Cl.[6] E04B *1/61*
U.S. Cl. 52—764 **33 Claims**



1. A wall panel suitable for displaying items thereon comprising:

a penetrating object permeable panel; and

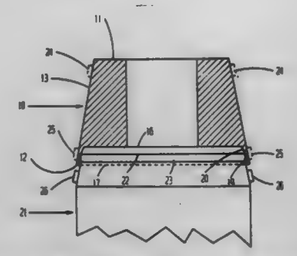
a magnet attractive apertured mesh material disposed on a surface of said permeable panel, said apertured material being exposed to view and being adapted to receive magnetic means for securing an item to be displayed on the wall panel and further having an aperture size such that the permeable panel is adapted to receive a penetrating object for securing an item to be displayed on the wall panel through an aperture of the apertured material, said apertured material being such that a penetrating object will be directed into an aperture of the apertured material regardless of the position of said penetrating object over the apertured material.

5,385,000

MANUAL CONTAINER CARRIER APPLICATOR

Farshid Bakhtyari, 174 Allerton Rd., Newton, Mass. 02161

Filed Aug. 13, 1993, Ser. No. 106,370
Int. Cl.[6] B65B *27/04, 61/14*
U.S. Cl. 53—48.3 **2 Claims**



1. An applicator for applying a container carrier comprised of stretchable or elastic material having at least one container accommodating opening, said applicator comprising:

a rigid body having a top, bottom, and side surface portion, said top portion having a dimension for insertion into the container accommodating opening, said bottom portion having a dimension larger than the dimension of the top of a container, and said side surface portion extends between said top and said bottom portions; and

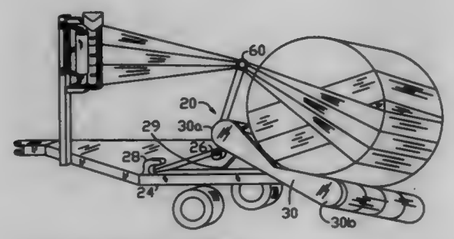
a recess in said bottom including a recess top, a recess bottom, and a recess side, said recess bottom having a dimension to enclose the top of a container within said recess, said recess top having a dimension less than said recess bottom, and said recess side includes a first recess side portion having a dimension equal to the dimension of said recess bottom, and a second recess side portion converging to the dimension of said recess top.

5,385,001

ROLL-OFF TABLE APPARATUS AND METHOD

William E. Ramer, R.D. #1, Box 189, Kittanning, Pa. 16201

Filed Jul. 26, 1993, Ser. No. 97,440
Int. Cl.[6] B65B *11/04*
U.S. Cl. 53—399 **16 Claims**



1. A bale wrapper, comprising:

a. a turnable wrapping table having a bale platform or holder for supporting a bale of silage;

b. a chassis for supporting said turnable wrapping table;

c. means for tilting said turnable wrapping table adapted to discharge said bale from said turnable wrapping table at a specified tilting discharge angle from the vertical of about 47 degrees, plus or minus about 5 degrees; and

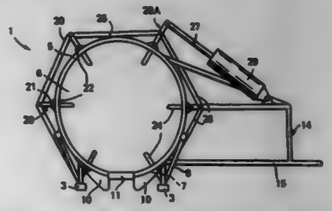
d. means for lowering the height of said turnable wrapping table bale platform or holder as it is tilted such that bale discharge can be performed at a reduced bale discharge height low enough to discharge said bale gently to the ground.

5,385,002

SHEATHING APPARATUS

David J. Cundall, Doncaster, Great Britain, assignor to Ag-Bag Corporation, Warrenton, Oreg.

PCT No. PCT/GB90/01820, § 371 Date Nov. 29, 1991, § 102(e) Date Nov. 29, 1991, PCT Pub. No. WO91/07867, PCT Pub. Date Jun. 13, 1991
Continuation of Ser. No. 730,776, Nov. 29, 1991, abandoned. This PCT application Nov. 23, 1990, Ser. No. 127,443
Int. Cl.[6] B65B *43/26*
U.S. Cl. 53—441 **8 Claims**



1. A method of storing sheathed bales of agricultural crop material on the ground, said bales each being of large size and heavy weight and having varying cross sectional configurations within a determined range of cross sectional dimensions, said method comprising:

providing an elastic tubular bag having an opening therethrough dimensioned in a relaxed state to be no greater than the smallest cross section of said bales, and in an elastically expanded state to be substantially greater than the largest cross section of said bales;

providing a mobile sheathing machine movable along the ground in a defined forward direction, a ring like frame mounted on said machine defining an opening therethrough with an axis through the opening directed along the line of movement of said machine, elongated support rods movably mounted to the frame for radially directed movement inwardly and outwardly from said axis, and a power source for powered movement of said support rods between inner and outer positions, said support rods extended rearward of said ring like frame and collectively defining an opening at their inner position that is smaller than the opening of said bag in its relaxed state and defining an opening in their outer position that is larger than the cross sectional dimension of the largest bale to be stored; and

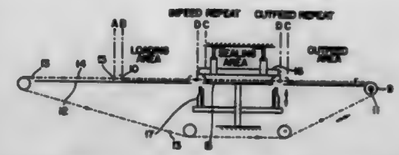
gathering the tubular bag lengthwise to fit onto the length of the elongated support rods, moving the support rods to the inner position, mounting the tubular bag onto the support rods with the rearward most end of the bag being closed, moving the support rods to their outer position and in the process expanding the opening through the bag, inserting the bales in sequence through the frame, through the defined opening of the support rods and into the bag opening for deposit thereof onto the ground rearward of the machine, and in the process pulling a portion of the bag off the support rods which portion contracts around the bale, and in the process moving said machine forward to achieve contiguous and stationary depositing of the bales onto the ground.

5,385,003

METHOD AND APPARATUS FOR MOVING AND CLOSING PACKAGING TRAYS

Henry M. Nixon, Jr., Wayne; Frank Schell, Towaco, both of N.J., and Keith MacDonald, New York, N.Y., assignors to Makaffy & Harder Engineering Co., Fairfield, N.J.

Filed Sep. 8, 1993, Ser. No. 118,414
Int. Cl.[6] B65B *43/52, 43/48, 65/02*
U.S. Cl. 53—471 **3 Claims**



1. In a packing machine for moving filled packages into a sealing station where the filled packages are sealed comprising

a conveyer having a series of evenly spaced tray pushers between which rigid trays are positioned for the movement of said trays through said machine,

a filling area for the loading of said trays,

a sealing station for sealingly covering said loaded trays,

an indexing chain pair drive means coupled to said spaced tray pushers,

motor drive means coupled to said indexing chain pair drive means for controlling the movement of said spaced tray pushers,

a motor controller coupled to said motor,

an incremental position encoder coupled to said spaced tray pushers for determining the position of said tray pushers,

a digital electronic indexer programmed for the controlled movement of said tray pushers with respect to acceleration rate and time, velocity, deceleration rate and time and index distance,

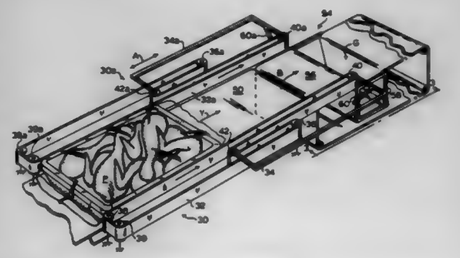
means for coupling said digital electronics indexer between said encoder and said motor controller for precisely controlling the movement, including both the acceleration and deceleration rates of said pushers, thereby preventing jamming, damaging trays, and spilling of the contents of the trays prior to sealing.

5,385,004

PACKAGING MACHINE HAVING A CONVEYOR OF CONTROLLABLE LENGTH

Sidney S. Tolson, Scotland Neck, N.C., assignor to Ossid Corporation, Rocky Mount, N.C. and Ibaraki Seiki Machinery Company, Ibaraki, Japan

Continuation-in-part of Ser. No. 967,403, Oct. 28, 1992, abandoned. This application Apr. 12, 1993, Ser. No. 46,012
Int. Cl.[6] B65B *51/30*
U.S. Cl. 53—548 **16 Claims**



1. A packaging machine comprising:

(a) a first horizontal belt conveyor positioned and adapted to receive products, support and convey said products in a

direction of travel enabling said products to be conveyed from an upstream to a downstream position and at such downstream position to transfer said products to a second belt conveyor apparatus associated with packaging of said products; and

(b) a second belt conveyor apparatus adapted for receiving said products from said first horizontal belt conveyor and conveying said products in the same said direction of travel during the course of completing the packaging thereof, comprising;

(i) a pair of opposed vertically disposed continuous conveyor belts having fixed upstream and positionable downstream ends, said fixed upstream ends being disposed along opposite sides of said first horizontal belt conveyor at said first horizontal belt conveyor's downstream position, each said vertically disposed belt having a defined length and width and at least one side located between its said upstream and downstream ends formed for engaging and moving said products along a defined path corresponding to a run of the said vertically disposed belt, said vertically disposed belts being positioned such that said products are directed from said first horizontal belt conveyor at its said downstream position into the said upstream ends of said vertically disposed belts and are gripped between said pair of vertically disposed belts while being further conveyed thereby in said same direction of travel;

(ii) reciprocable belt guiding and frame means mounting said vertically disposed belts for substantially slack free travel and in a manner to form substantially the entire length of each said vertically disposed belt into a plurality of non-coplanar runs some of which extending in a downstream direction from said first horizontal belt conveyor are positioned for engaging said products and are permitted to vary in length and position dependent on reciprocation of said belt guiding and frame means;

(iii) means operatively associated with said vertically disposed belts for simultaneously driving said vertically disposed belts continuously in the same said direction of travel as that of said first horizontal belt conveyor; and

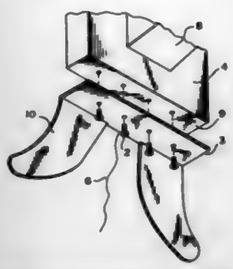
(iv) means operable independent of actuation by the operator of said packaging machine for cyclically reciprocating said belt guiding and frame means to vary the said length and position of those vertically disposed belt runs extending downstream of said first horizontal belt conveyor which engage the products and which are permitted to vary while driving said vertically disposed belts including those runs permitted to vary in length in said same said direction of travel and at a selected speed.

5,385,005

LAWN TRIMMER/EDGE ATTACHMENT

Stephen C. Ash, 130 E. Iris, McAllen, Tex. 78501

Filed Jul. 12, 1993, Ser. No. 96,699
Int. Cl.[6] A01D *34/84*
U.S. Cl. 56—12.7 3 Claims



1. In a lawn trimmer of the type having a cutting cord extending outwardly a predetermined distance from a trimmer housing, an edger guider for converting the lawn trimmer into a lawn edger, said edger guider comprising:

a mounting plate having a length, a width, and first and second ends;

a first substantially L-shaped planar wing extending along part of said length of said mounting bracket and projecting outwardly from said mounting bracket in a direction perpendicular to both said length and said width;

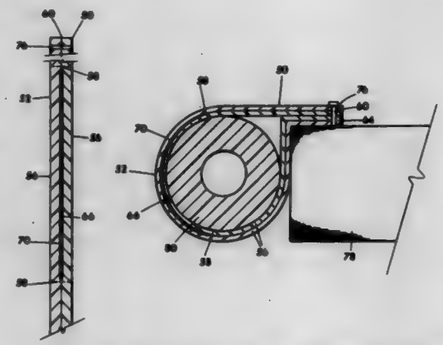
a second substantially L-shaped wing projecting outwardly from said mounting bracket, said second wing being substantially coplanar with said first wing and spaced from said first wing along the length of said mounting bracket.

5,385,006

SLIP MEMBER FOR THE HEAD OF A TREE SHAKING HARVESTER

Ira Compton, 2434 Dayton Rd., Chico, Calif. 95928

Filed Dec. 17, 1993, Ser. No. 169,150
Int. Cl.[6] A01D *46/26*; B32B *1/06*
U.S. Cl. 56—340.100 2 Claims



1. A generally rectangular panel sling member for retaining a generally cylindrical and resilient main shaker pad on an end of a vibratory shaker arm of a tree trunk shaking harvester, said sling member being sufficiently long and flexible for wrapping around the main shaker pad, said sling member including means for allowing removable attachment to the shaker arm with said sling member wrapped around the main shaker pad so that the attachment of said sling member to the shaker arm retains the main shaker pad on the shaker arm;

said sling member having a first layer and a second layer, said sling member including means for substantially preventing movement in said first layer of said sling member positioned nearest the main shaker pad from translating into tree injurious movement in said second layer of said sling member positioned outward of said first layer and nearer a tree during shaking; said means for substantially preventing movement in said first layer from translating into tree injurious movement in said second layer of said sling member including said first layer and said second layer of said sling member affixed to one another by means for defining a sealed chamber between the first and second layers, said sealed chamber being sufficiently sealed to prevent the entrance of foreign matter and dirt into said sealed chamber and into friction reducing material contained within said sealed chamber for providing low frictional adhesion between juxtaposed surfaces of said first and second layers within said sealed chamber; flexible means incorporated into said sling member for functioning in conjunction with the low frictional adhesion between said juxtaposed surfaces so that during vibratory movement of the shaker arm and said main shaker pad, movement within said first layer of said sling member against the moving main shaker pad is substantially prevented from translating into tree damaging movement in said second layer of said sling member, said flexible means providing a degree of flexibility allowing movement of said first layer independent of said second layer at least equal to movement range in the shaker arm vibratory movement of tree shaking,

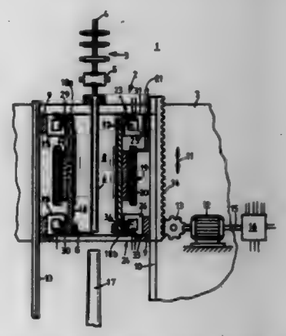
said sling member readily separable from the main shaker pad via said means for removable attachment for separate replacement of said sling member and the main shaker pad upon excessive wear from use during tree shaking.

5,385,007

POT-SPINNING DEVICE HAVING MAGNETIC BEARING PROVIDING RADIAL AND AXIAL SUPPORT

Robert Hartel, Aachen, and Karl-Josef Brockmanns, Willich, both of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Mar. 15, 1993, Ser. No. 31,613
Claims priority, application Germany, Mar. 13, 1992, 4208039
Int. Cl.[6] D01H *7/74*, *1/08*
U.S. Cl. 57—76 16 Claims



1. A pot-spinning device for spinning textile yarn, comprising:

(a) a spinning pot having an inner wall;

(b) means for rotating said spinning pot;

(c) a yarn guide positioned within said spinning pot for guiding yarn for winding on said wall of said spinning pot;

(d) a frame; and

(e) magnetic bearing means supporting said spinning pot on said frame.

5,385,008

YARN BREAK DETECTING DEVICE FOR SPINNING MACHINE

Syozaburo Makino; Isao Takahashi, both of Kanagawa, and Masanori Kishigami, Tokyo, all of Japan, assignors to Nippon Seiko Co., Ltd., Kanagawa, Japan

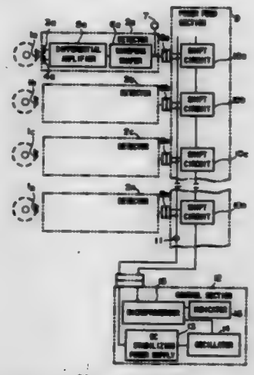
Continuation of Ser. No. 943,330, Sep. 10, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,630
Claims priority, application Japan, Sep. 20, 1991, 3-270010
Int. Cl.[6] D01H *13/16*; B65H *57/00*
U.S. Cl. 57—81 1 Claim

1. A yarn break detecting device for a ring spinning machine of the type including snail wires and lappets, said yarn break detecting device comprising a plurality of detectors, a power supply means, and a control section, wherein:

each of said plurality of said detectors comprises a pair of electrodes of plate-like conductors said plate-like conductors having a same area, said plate-like conductors being installed on insulating substrate faces and arranged in correspondence to respective yarn balloons, said yarn electrostatically including static electric charge in said plate-like conductors and being run in a shape of balloon in said snail wires, a differential amplifier of high input impedance value for differentially amplifying a signal induced in said pair of electrodes, a waveform shaper for comparing an output signal of said differential amplifier and a signal of a standard value in order to perform a waveform shaping, an indicator lamp turned on by an output signal of said waveform shaper,

a plurality of casings made of a conductive plastic material having static electrically shield effect and each of said plurality of casings having installed therein each of said plurality of said detectors,

each of said plurality of said casings is attached to each of said lappets by means of mounting holes formed through each of said snail wires attached to each if said lappets installed in the ring spinning machine and mounting pins made of elastic material,



said power supply means is connected to said each of said plurality of detectors through connectors and includes shift circuit means for selecting an output signal from each of said plurality of detectors and for supplying electric power to each of said plurality of detectors through electricity supply lines, and

said control section is connected to terminals of said power supply means and includes a stabilized direct current electricity power source for supplying a direct current power source to said electricity supply lines, an oscillator for driving respective shift circuit means, a microprocessor operated in synchronism with said oscillator for processing the output signals from each of said plurality of detectors selected by the shift circuit means, and an indicator means for indicating the number of yarn breaks determined by the microprocessor based upon the output signal from each of said plurality of detectors.

5,385,009

PROCESS FOR PIECING AND CLEANING IN AN OPEN-END SPINNING DEVICE

Edmund Schuller, Ingolstadt, Germany, assignor to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

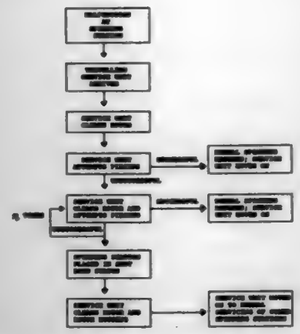
Filed Aug. 6, 1993, Ser. No. 102,734
Claims priority, application Germany, Aug. 7, 1992, 4226195
Int. Cl.[6] D01H *13/26*
U.S. Cl. 57—263 6 Claims

1. A process for responding to a malfunction at an open-end spinning station of an open-end spinning machine and for preventing imbalance and excessive wear of a spinning rotor of the spinning station, the open-end spinning machine being configured with a travelling service unit which travels alongside adjacently disposed spinning stations for servicing the spinning stations, said process comprising the steps of:

summoning the travelling service unit to the malfunctioning spinning station;

attempting piecing at the spinning station with the travelling service unit for a predetermined number of piecing attempts, including cleansing the spinning rotor of the spinning station of fiber and debris before each piecing attempt;

if piecing is unsuccessful after said predetermined number of piecing attempts, cleaning the spinning rotor a final time without attempting subsequent piecing so that the spinning rotor is left in a clean condition, designating the



spinning station as being in a shut down status, and commanding the travelling service unit to leave the spinning station and to continue its normal servicing of other spinning stations without again attempting piecing and causing fibers to be fed to the cleaned spinning rotor until an operator has corrected whatever malfunction existed at the spinning station, the clean spinning rotor continuing to spin at operational speeds in its shut down status but without fiber and debris within the spinning rotor causing imbalance and excessive wear of the spinning rotor.

5,385,010

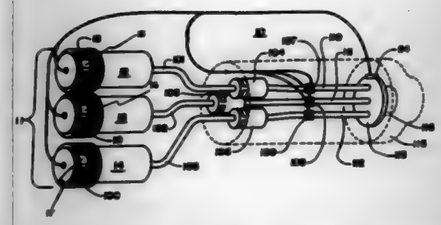
CRYOGENIC COOLER SYSTEM

Stuart B. Hora, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 14, 1993, Ser. No. 166,192

Int. Cl.[6] F25B 9/00

U.S. Cl. 62—6 **1 Claim**



1. A cryogenic cooler system for providing substantially continuous and uninterrupted cryogenic cooling regardless of individual compressor functional failure including:

at least two cryogenic compressors, each including a compressor gas port and power coupling, where at any one time one of the compressors is active to provide a working gas pressure modulated by piston action of the working compressor to the compressor gas port;

an expander associated with each compressor, each expander including an expander gas port and a cooling surface, where working gas pressure expansion from the active compressor is expanded within the expander so as to cool the cooling surface thereon;

a first conduit means coupling each compressor gas port to each respective expander gas port to provide working gas connection between each compressor and associated expander;

a second conduit means coupled at one end to each expander cooling surface for the transfer of a coolant fluid therewithin so as to transfer cooling away from the expander cooling surface;

a means coupled to the other end of all second conduit means to provide a cooling load;

a temperature sensing means coupled to the means to provide a cooling load for sensing the temperature of the means to provide a cooling load;

a thermal switch means coupled to each of the second conduit means for controlling the coolant fluid flow therein;

a means for coupling all thermal switch means and power couplings to the temperature sensing means such that upon sensing a temperature threshold level by the temperature sensing means the currently operating compressor is no longer powered, and another compressor is simultaneously powered and its associated thermal switch activated, also the associated thermal switch of the previous compressor is closed whereby substantially continuous and uninterrupted cryogenic cooling to the means to provide a cooling load.

5,385,011

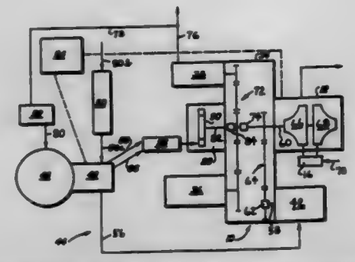
MULTIFUNCTION INTEGRATED POWER UNIT

Donald B. Stewart, Jr., Phoenix, Ariz., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 202,723, Jun. 3, 1988, Pat. No. 5,309,708. This application Jan. 10, 1990, Ser. No. 463,088

Int. Cl.[6] F02C 7/26

U.S. Cl. 60—39.02 **1 Claim**



1. A method of providing power to an aircraft in flight, said method comprising the steps of:

providing a first combustion turbine engine having a first compressor inducting ambient air, a first combustor and a first turbine driving both said first compressor and a first rotatable power output shaft, said first combustion engine only operable below a predetermined altitude;

providing a second combustion turbine engine including a storage source of pressurized air, a source of pressurized fuel, a second combustor receiving pressurized air and pressurized fuel from said sources, and a second turbine driving a second rotatable power output shaft, said second combustion turbine engine operable at all altitudes;

coupling said second power output shaft to a gear train having a plurality of accessory devices drivingly mounted thereto.

starting and operating said second engine to drive said accessory devices;

starting said first engine when said aircraft flies below said predetermined altitude;

decoupling said second power output shaft while coupling said first power output shaft to said gear train when said first engine attains a speed close to but less than the driving speed of said second engine; and

shutting said second engine down.

5,385,012

BLEED VALVE CONTROL

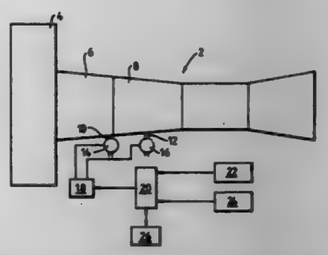
Arthur L. Rowe, Derby, England, assignor to Rolls-Royce, plc, London, England

Filed Nov. 22, 1993, Ser. No. 155,640

Claims priority, application United Kingdom, Dec. 12, 1992, 9225977

Int. Cl.[6] F02C 9/18

U.S. Cl. 60—39.02 **10 Claims**



1. A method of controlling a compressor bleed valve in a gas turbine engine for a flow of gas from a high pressure region of the compressor to counter compressor surge, said method comprising monitoring one or more properties of the gas flow as an engine condition parameter to obtain a measure of heat soakage effects produced in the compressor by adjustment of relative temperatures between the gas flow and the compressor parts during deceleration of the engine, and the detection of values of said parameter outside a predetermined limit causing said bleed valve to open by opening the bleed valve in response to detected values of said parameter outside a predetermined limit.

5,385,013

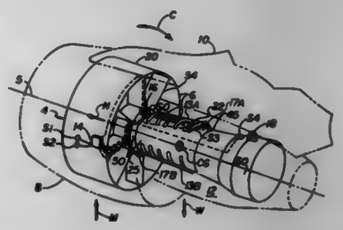
AIRCRAFT GAS TURBINE ENGINE BACKBONE DEFLECTION THERMAL CONTROL

Michael L. Barron, Loveland; James W. Brantley, Fairfield, both of Ohio, and Thomas G. Wakeman, Lawrenceburg, Ind., assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 25,452, Mar. 3, 1993, abandoned. This application Nov. 30, 1993, Ser. No. 159,917

Int. Cl.[6] F02G 3/00

U.S. Cl. 60—39.02 **14 Claims**



1. In an aircraft gas turbine engine having an annular backbone disposed between and structurally connecting a forward and an aft annular frame wherein said backbone experiences deflection during takeoff loading, a method of controlling said backbone deflection comprising the steps of:

applying backbone temperature control air to said backbone to establish a circumferentially uneven temperature distribution around at least an axially extending portion of said backbone for generating thermal deflection forces countering said takeoff induced deflection, and

controlling the application of said backbone temperature control air for controlling said thermally induced counter-deflection forces.

5,385,014

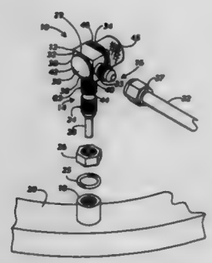
VALVE AND METHOD OF VALVE USE WHILE WASHING A COMPRESSOR IN AN AIRCRAFT ENGINE

Richard T. Rathbun, Piney Flats, Tenn., assignor to Aeronautical Accessories, Inc., Bristol, Tenn.

Continuation-in-part of Ser. No. 943,915, Sep. 11, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 126,993

Int. Cl.[6] B08B 9/00

U.S. Cl. 60—39.02 **3 Claims**



1. A method of isolating pneumatic circuitry in an engine fuel system from wash fluid contamination during cleaning of the compressor of the engine, comprising:

moving a knob of a valve

from a first open position where a raised surface of the knob rests in a detent, the open position for communicating compressed air from an intake tube connected to a scroll of the engine through the valve to an outlet tube, to a second closed position, the second position for blocking communication there between;

the detent or the knob comprising a shock and vibration absorbing material;

whereby wash fluids and materials dislodged from the compressor and carried in an air flow through the scroll are blocked from entering the engine fuel system.

5,385,015

AUGMENTOR BURNER

Thomas R. Clements, Palm City, and Charles B. Graves, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 2, 1993, Ser. No. 87,543

Int. Cl.[6] F02K 3/10

U.S. Cl. 60—261 **9 Claims**

1. For an augmentor of a gas turbine engine,

a source of fuel,

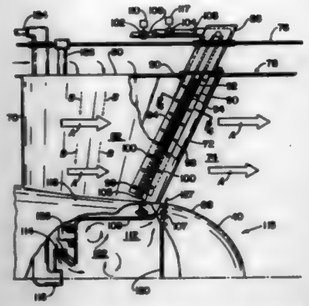
said engine includes a compressor section and a turbine exhaust section defining a gas path and including a turbine exhaust case having a plurality of circumferentially spaced struts,

a tail cone axially extending from said turbine exhaust case into said augmentor,

a pilot combustor for generating products of combustion defined by said tail cone having means for injecting said products of combustion substantially radially into said gas path,

a fairing extending from said exhaust case encapsulating said struts and defining at least one cavity adjacent at least one of said struts, passage means in said at least one cavity having radially spaced apertures communicating with said gas path,

means for admitting fuel and compressor air in said passage means to discharge through some of said radially spaced apertures to mix and means for igniting said pilot combustor whereby the products of combustion in said pilot combustor flow radially outward adjacent said passage means to ignite the fuel/air mixture egressing from said apertures.

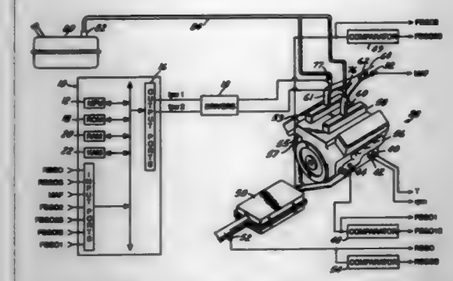


5,385,016

AIR/FUEL CONTROL SYSTEM RESPONSIVE TO DUO UPSTREAM EGO SENSORS WITH CONVERTER MONITORING

Glenn A. Zinlich, Dearborn Heights; Daniel V. Orzel, Westland, and Tri T. Truong, Inkster, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 173,007
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 16 Claims



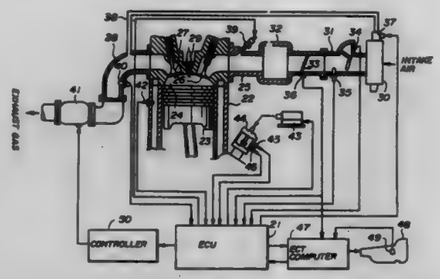
1. A method for controlling air/fuel ratio of an engine having exhaust manifolds from first and second cylinder banks coupled to a single catalytic converter, comprising the steps of:
adjusting fuel delivered to the cylinders of the first cylinder bank in response to a first upstream exhaust gas oxygen sensor coupled to the first exhaust manifold and a downstream exhaust gas oxygen sensor positioned downstream of the catalytic converter;
adjusting fuel delivered to the cylinders of the second cylinder bank in response to a second upstream exhaust gas oxygen sensor coupled to the second exhaust manifold and said downstream exhaust gas oxygen sensor;
creating an inferred signal by combining output signals from said first and second sensors which is an inference of an output from a hypothetical exhaust gas oxygen sensor exposed to a hypothetical blended mixture of exhaust gases from the first and second exhaust manifolds; and
indicating converter efficiency in response to a ratio of a count in transitions between output states of said downstream sensor to a count in transitions between output states of said inferred signal.

5,385,017

APPARATUS FOR CONTROLLING HEATING OF A CATALYTIC CONVERTER OF AN INTERNAL COMBUSTION ENGINE

Kenichi Harada, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 8, 1993, Ser. No. 133,293
Claims priority, application Japan, Oct. 15, 1992, 4-277528
Int. Cl.[6] F01N *3/36*
U.S. Cl. 60—284 11 Claims



1. An apparatus for controlling heating of a catalytic converter of an internal combustion engine, comprising:
a catalytic converter arranged in an exhaust passage of the engine;
heating means for heating a catalyst of said catalytic converter after the engine has started operating, so as to promote catalytic conversion of exhaust gas from the engine;
detecting means for sensing a temperature of engine coolant at the start of operation of the engine;
calculating means for determining a releasing condition based on the engine coolant temperature sensed by said detecting means at the start of the engine operation; and
stopping means for stopping the heating means from heating the catalyst when said releasing condition is met.

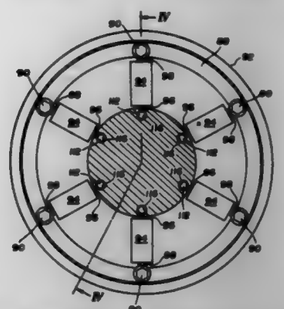
5,385,018

DEVICE FOR TRANSMITTING AUTOMOTIVE ENGINE DRIVING TORQUE FOR AUTOMATIC POWER TRANSMISSION WITH FEATURE OF ABSORPTION OF TORSIONAL VIBRATION

Satoshi Kohno; Tatsuya Morishita, and Shouichi Tsuchiya, all of Kanagawa, Japan, assignors to Unisia Jecs Corporation, Japan

Continuation-in-part of Ser. No. 658,701, Feb. 21, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 52,299
Claims priority, application Japan, Feb. 28, 1990, 2-47741; Jan. 17, 1991, 3-003552
Int. Cl.[6] F16D *33/00*
U.S. Cl. 60—338 6 Claims

1. In a torque transmission arrangement:
an engine having an engine output shaft rotatable about an axis;
a torque converter coaxially arranged with said engine output shaft and rotatable about said axis, said torque converter including a converter cover adjacent said engine output shaft;
an annular drive plate connected to said torque converter for unitary rotation therewith;
hydraulic fluid means operatively disposed between said engine output shaft and said drive plate for hydraulically opposing relative angular displacement between said engine output shaft and said drive plate thereby to transmit torque therebetween,
said hydraulic fluid means including a plurality of hydraulic dampers, each having a radially inner end portion connected to said engine output shaft and a radially outer end portion connected to said drive plate, said plurality of hydraulic dampers each extending along a line which is exclusively radial with respect to said axis, from said engine output shaft to said annular drive plate.

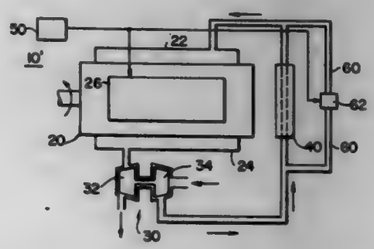


5,385,019

COMPRESSION RELEASE ENGINE BRAKING METHODS AND APPARATUS FOR USE WITH TURBOCHARGED ENGINES HAVING INTERCOOLERS

Frank M. Kulig, and Paul J. Spacek, both of Bloomfield, Conn., assignors to Jacobs Brake Technology Corporation, Wilmington, Del.

Filed Feb. 8, 1994, Ser. No. 193,699
Int. Cl.[6] F02B *29/04*
U.S. Cl. 60—599 4 Claims



1. Compression release engine braking apparatus for an internal combustion engine equipped with a turbocharger and an intercooler, the turbocharger compressing the air supplied to an intake manifold of the engine and the intercooler reducing the temperature of the compressed air before it is supplied to the intake manifold, comprising:
means for diverting at least some of the air compressed by the turbocharger around the intercooler to the intake manifold to reduce the amount by which the intercooler reduces the temperature of the compressed air supplied to the intake manifold when engine braking is in operation.

5,385,020

THERMOELECTRIC AIR COOLING METHOD WITH INDIVIDUAL CONTROL OF MULTIPLE THERMOLECTRIC DEVICES

Scott B. Gwilliam, Salt Lake City; Richard A. Pell, Ogden, and Aaron V. Farr, North Ogden, all of Utah, assignors to Pneumo Abex Corporation, Hampton, N.H.

Continuation of Ser. No. 982,351, Nov. 27, 1992, abandoned. This application Jan. 25, 1994, Ser. No. 187,180
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.7 13 Claims



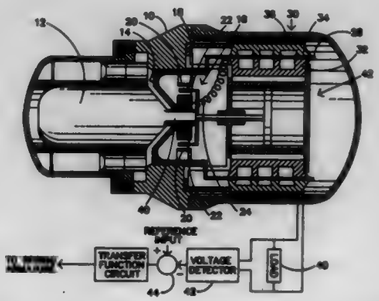
13. A method of operating a thermoelectric unit for heating or cooling, said thermoelectric unit including a first fluid passageway, a second fluid passageway, a plurality of thermoelectric modules each of which is operatively connected between said first and second passageways so as to transfer heat from one of said passageways to the other of said passageways, said method comprising:
passing air through said first passageway;
passing air through said second passageway;
supplying power to each of said plurality of thermoelectric modules; and
individually regulating the power to each of said plurality of thermoelectric modules.

5,385,021

FREE PISTON STIRLING MACHINE HAVING VARIABLE SPRING BETWEEN DISPLACER AND PISTON FOR POWER CONTROL AND STROKE LIMITING

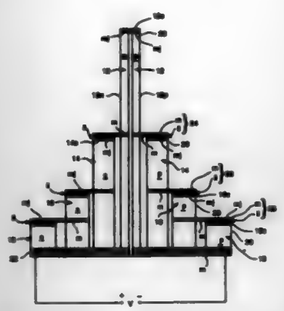
William T. Beale, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Aug. 20, 1992, Ser. No. 932,686
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—6 9 Claims



1. An improved Stirling cycle thermomechanical transducer having a displacer piston and a power piston reciprocating within a housing, the improvement comprising a spring having a variable spring constant and mechanically coupling the displacer piston to the power piston.

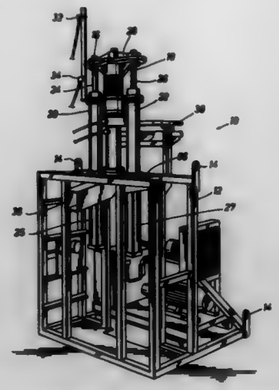
5,385,022
APPARATUS AND METHOD FOR DEEP THERMOELECTRIC REFRIGERATION
Levy Kornblit, Hamoshshrerim 27 Apt. 5, Beer-Sheva, Israel 84299
Filed Sep. 9, 1993, Ser. No. 119,363
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.2 36 Claims



19. A method for cooling a thermoelectric unit comprising the steps of:
providing a plurality of thermoelectric couples each including a p-leg and an n-leg connected at their respective first ends to form respective cold junctions, and electrically connected at their respective second ends to produce Peltier cooling at the cold junctions and Joule heating between the first and second ends;
arranging groups of one or more of said thermoelectric couples into a primary cooling hierarchy and at least one auxiliary cooling hierarchy, said step of arranging including:
sizing said thermoelectric couples in said at least one auxiliary cooling hierarchy to substantially remove Joule heat which travels toward said first ends; and
thermally connecting at least one auxiliary cooling hierarchy generally at its cold junction in parallel with said primary cooling hierarchy at a discrete position between said first and second ends of said primary cooling hierarchy for substantial removal of Joule heat traveling towards said first ends; and
operating said thermoelectric couples to produce Peltier cooling at their respective cold junctions and substantially removing with at least one auxiliary cooling hierarchy that portion of Joule heat from the primary hierarchy which otherwise travels toward the cold junction thereof, thereby increasing cooling at the cold junction of the primary cooling hierarchy.

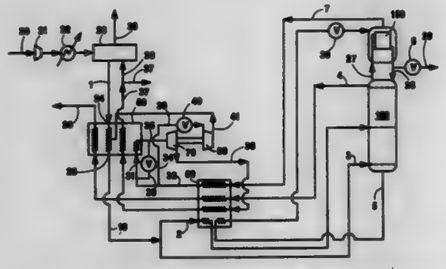
5,385,023
DRY ICE PELLETIZER
Arthur A. Montemayor, 17002 Hillview La., Spring, Tex. 77379, and Karl H. Werr, 9404 Magic Falls, Garden Ridge, Tex. 78266
Filed Jul. 28, 1993, Ser. No. 98,470
Int. Cl.[6] F25J *1/00*
U.S. Cl. 62—10 20 Claims

1. A food-grade dry ice pelletizer, comprising:
a. vertically oriented snow chamber;
b. a supply line coupled to the snow chamber to provide liquid CO_2 intermittently to the snow chamber;
c. an axially movable ram within the snow chamber and separated from the snow chamber by an annular clearance space;
d. actuators mechanically coupled to the ram to impart motive force to the ram; and



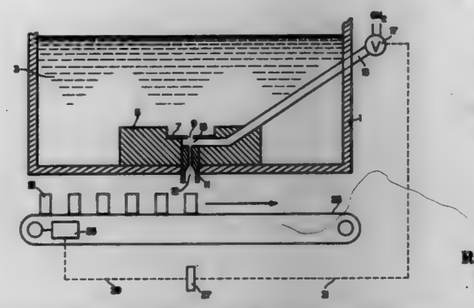
e. a die beneath the snow chamber to form dry ice pellets upon actuation of the ram by the actuators.

5,385,024
CRYOGENIC RECTIFICATION SYSTEM WITH IMPROVED RECOVERY
Mark J. Roberts, Grand Island, and Harry Cheung, Williamsville, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.
Filed Sep. 29, 1993, Ser. No. 128,177
Int. Cl.[6] F25J *3/02*
U.S. Cl. 62—25 8 Claims



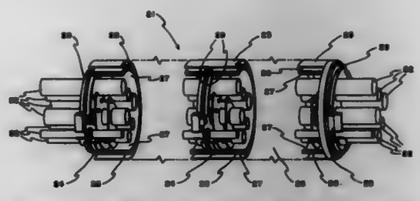
1. A cryogenic rectification method for the production of nitrogen comprising:
(A) cooling feed air from a first temperature to a second temperature;
(B) passing cooled feed air into a cryogenic rectification plant and producing nitrogen-enriched fluid and oxygen-enriched fluid within the cryogenic rectification plant;
(C) withdrawing oxygen-enriched fluid from the cryogenic rectification plant, compressing the withdrawn oxygen-enriched fluid, and combining the compressed oxygen-enriched fluid with feed air at a point where the feed air is at a temperature between said first and second temperatures;
(D) passing oxygen-enriched fluid into the cryogenic rectification plant with the feed air; and
(E) recovering nitrogen-enriched fluid from the cryogenic rectification plant as product nitrogen.

5,385,025
APPARATUS AND METHOD FOR DISPENSING DROPLETS OF A CRYOGENIC LIQUID
Stephen G. Kellett, Chesterfield, Mo., assignor to MG Industries, Malvern, Pa.
Filed Mar. 4, 1994, Ser. No. 205,371
Int. Cl.[6] F17C *7/02*
U.S. Cl. 62—50.1 20 Claims



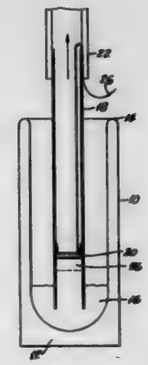
17. A method for producing droplets of a cryogenic liquid, the method comprising the steps of:
a) providing a container of cryogenic liquid, and a hole and an orifice which together define a path for the cryogenic liquid out of the container, the hole and the orifice being spaced-apart by a predetermined distance, wherein there is a space between the hole and the orifice, the space having a predetermined volume,
b) adjusting the distance between the hole and the orifice and thereby varying the volume of said space, and
c) controllably directing gas into said space, wherein the presence of gas in the space tends to prevent liquid from flowing out of the container, and wherein the absence of gas in the space tends to allow liquid to flow out of the container.

5,385,026
APPARATUS FOR SUPPORTING A CRYOGENIC FLUID CONTAINMENT SYSTEM WITHIN AN ENCLOSURE
Burt X. Zhang, Lancaster; Venkatarao Ganni, Dequto, and Kirk E. Stifle, Lancaster, all of Tex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 4, 1993, Ser. No. 27,063
Int. Cl.[6] F17C *13/00*
U.S. Cl. 62—50.7 11 Claims



1. An apparatus for supporting and aligning a plurality of cryogenic delivery tubes of a plurality of temperatures within an outer enclosure comprising:
first supporting means adapted to support at least one of said plurality of cryogenic delivery tubes;
second supporting means adapted to support the remaining said plurality of cryogenic delivery tubes not supported by the first supporting means;
said first supporting means being configured so as to be in spaced relation to the cryogenic delivery tubes supported by the second supporting means and selected to support only the cryogenic delivery tubes of essentially the same temperature;
said second supporting means being configured so as to be in spaced relation to the cryogenic delivery tubes supported by the first supporting means and selected to support only the cryogenic delivery tubes of essentially the same temperature;
lateral connecting means rigidly interconnecting said first and second supporting means in laterally spaced relation and being sized to retard heat transfer between said supporting means and positioned so as to extend the heat conduction path between the cryogenic delivery tubes and the outer enclosure; and
positioning means attached to the first supporting means to align and retain said first supporting means within the outer enclosure.

5,385,027
CONTINUOUS FLOW CRYOGEN SUBLIMATION COOLER
Ralph C. Longsworth, and Ajay N. Khatri, both of Allentown, Pa., assignors to APD Cryogenics, Inc., Allentown, Pa.
Filed Aug. 19, 1993, Ser. No. 109,390
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 21 Claims



1. A cryogen cooler for providing continuous refrigeration at a temperature below the triple point of the cryogen comprising:
an insulated housing;
a porous plug within the housing;
means for continuously supplying a liquid cryogen to the porous plug at a pressure greater than the triple point of the cryogen; and
means for providing an exhaust from the porous plug at a pressure below the triple point of the cryogen.

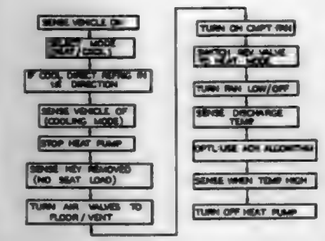
5,385,028
METHOD OF ODOR ELIMINATION ON A/C HEAT PUMP SYSTEMS
Michael A. Gevink, Buffalo, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 4, 1994, Ser. No. 222,054
Int. Cl.[6] F25D *21/00*
U.S. Cl. 62—81 3 Claims

1. A method of moisture rejection in a heat pump system of a vehicle of the type including a compressor operatively connected to a reversing valve and a compartment heat exchanger for controlling temperature in a passenger compartment, the method including the steps of:
directing the refrigerant through the heat pump system in a

first direction for cooling by the compartment heat exchanger of the passenger compartment,

discontinuing flow of refrigerant in response to discontinuation of vehicle operation,

reversing the reversing valve while the vehicle remains inoperative,



directing the refrigerant through the heat pump system in a second direction opposite to the first direction for heating of the compartment heat exchanger for moisture rejection therein.

5,385,029

METHOD AND APPARATUS FOR CALCULATING TORQUE OF VARIABLE CAPACITY TYPE COMPRESSOR

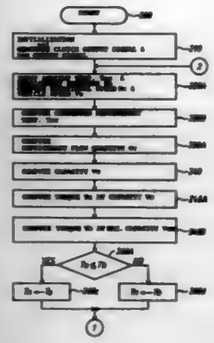
Yasushi Yamanaka, Nakashima; Nobuharu Kakehashi, Anjo; Shigeo Numazawa, Nagoya; Yasuyuki Nishi, Kariya; Hiroshi Kishita, Kariya, and Hideki Suzuki, Chita, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 864,771, Apr. 7, 1992, Pat. No. 5,285,649. This application Oct. 13, 1993, Ser. No. 135,728

Claims priority, application Japan, Oct. 9, 1991, 3-261936; Oct. 9, 1991, 3-261949; Oct. 9, 1991, 3-261955; Oct. 9, 1991, 3-261956; Oct. 9, 1991, 3-261958

Int. Cl.[6] F25B *27/00*

U.S. Cl. 62—133 **3 Claims**



1. An apparatus for calculating torque for a variable capacity type compressor provided in a refrigeration circuit equipped with a condenser and an evaporator in an automotive vehicle that has an engine, said compressor compressing and discharging refrigerant circulated through said refrigeration circuit, said apparatus comprising:

capacity detecting means for detecting a capacity of said compressor;

pressure detecting means for detecting a first refrigerant pressure of refrigerant in a high-pressure side of said refrigeration circuit in accordance with pressure of condensed refrigerant in said condenser;

first torque calculation means for calculating a first torque for said compressor based on said detected capacity and said detected first refrigerant pressure;

second torque calculation means for calculating a second torque for said compressor based on a predetermined capacity representing a maximum capacity of said compressor and said detected first refrigerant pressure;

torque selection means for selecting a smaller one of said first and second torque as a selected torque for said compressor; and

means for controlling a parameter of said engine based on said selected torque.

5,385,030

AIR CONDITIONER

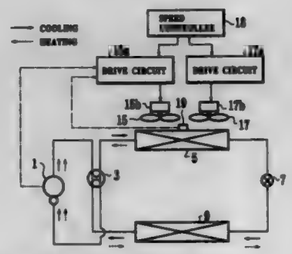
Koichi Kitagawa; Kazuo Saito, both of Kanagawa; Toshio Otaka, Tokyo; Toshihiro Yamamoto, and Yoshihiro Ito, both of Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 10, 1994, Ser. No. 208,223

Claims priority, application Japan, Mar. 29, 1993, 5-069715

Int. Cl.[6] F25B *39/00*

U.S. Cl. 62—160 **7 Claims**



1. An air conditioner comprising:

(a) a refrigerating cycle involving a compressor, an outdoor heat exchanger, an indoor heat exchanger, an expansion mechanism, and a non-azeotropic coolant mixture serving as a working fluid sealed in the refrigerating cycle;

(b) a plurality of blowers provided for the outdoor heat exchanger along a flow of the coolant;

(c) air quantity changing means for changing a ratio of air quantities provided by said blowers; and

(d) said air quantity changing means achieving a first mode for reducing an air quantity to part of the outdoor heat exchanger located on the upstream side of the flow of the coolant smaller than an air quantity to part of the outdoor heat exchanger located on the downstream side of the flow of the coolant, and a second mode to increase the air quantity to the upstream side of the outdoor heat exchanger larger than the air quantity to the downstream side of the outdoor heat exchanger.

5,385,031

AIR CONDITIONER WITH FAN SPEED CONTROLLED BY OSCILLATING LOUVER POSITION

Yoshihiro Kisaws; Toshimitsu Fukushima; Hiroyoshi Katsuyama; Isamu Makino, and Toshiyuki Yamada, all of Kusatsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 912,998, Jul. 14, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 136,988

Claims priority, application Japan, Jul. 17, 1991, 3-176332

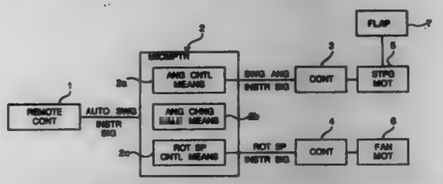
Int. Cl.[6] F25D *17/04*

U.S. Cl. 62—186 **3 Claims**

1. An air conditioner, having a stepping motor for driving a flap, a fan motor for feeding heat-exchanged air and angle control means for controlling an angle of the flap via the stepping motor, the air conditioner comprising:

angle change calculation means for calculating a direction and amount of a change in the angle of the flap upon receiving a signal from the angle control means; and

rotational speed control means for, upon receiving calculation result of the angle change calculation means, maintaining a rotational speed of the fan at a preset one when the angle of the flap is a maximum air-flow angle at which an amount of the heat-exchanged air flowing around the flap is at a maximum, increasing the rotational speed of the fan by a specified value when the angle of the flap has changed by a specified angle in a direction away from a



position of the maximum air-flow angle, and decreasing the rotational speed of the fan by a specified value when the angle of the flap has changed by a specified angle in a direction toward the position of the maximum air-flow angle, the rotational speed control means incrementally changing the rotational speed of the fan when the flap moves by at least the specified angle and maintaining the rotational speed of the fan when the flap moves less than the specified angle or the flap is stationary, the specified angle being greater than zero.

5,385,032

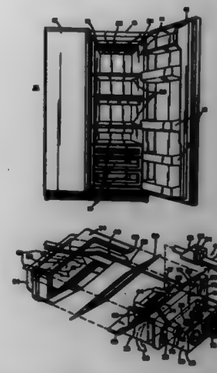
REFRIGERATOR AIR FLOW CONTROL MECHANISM

Jerry C. Martin, Corydon, Ind.; Martin M. Zentner, and Robert T. Mills, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 4, 1994, Ser. No. 207,379

Int. Cl.[6] F25D *17/04*

U.S. Cl. 62—187 **13 Claims**



1. In a refrigerator with a freezer compartment and a freah food compartment separated by a mullion with an opening therethrough, a mechanism for controlling the flow of air between the compartments, including:

an air flow tube including an elongated peripheral wall having a longitudinal axis and defining a central air passage therethrough, said wall including one end received in the opening in the mullion and another end positioned in one of the compartments, said other end of said peripheral wall being formed with a planar end surface angled with respect to the longitudinal axis of said tube;

an air flow control including a housing defining an air flow passage therethrough and having a planar flange surrounding one end of said housing passage; said flange being a shaped and angled complimentarily to said planar end surface of said air flow tube,

said air flow tube and said air control housing being connected with said tube end surface and said housing flange juxtaposed so that said air flow tube passage and said housing passage form a continuous passageway between the refrigerator compartments; and

a planar gasket, having a shape complimentary to said air flow tube end surface and to said housing flange, received between said end surface and said flange, whereby said junction between said air flow tube end surface and said housing flange is provided with a simple and effective seal.

5,385,033

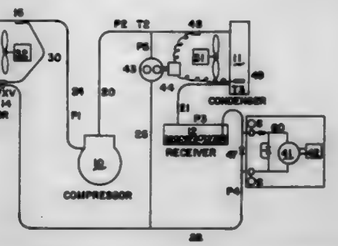
APPARATUS FOR MAXIMIZING AIR CONDITIONING AND/OR REFRIGERATION SYSTEM EFFICIENCY

Marc D. Sandofsky, Natick, and David F. Ward, Framingham, both of Mass., assignors to JDM, Ltd., Marlborough, Mass.

Filed Sep. 28, 1993, Ser. No. 127,976

Int. Cl.[6] F25B *41/00*

U.S. Cl. 62—197 **13 Claims**



4. A vapor-compression heat transfer system having fluid refrigerant, a compressor, a condenser, an expansion valve, an evaporator, a refrigerant conduit between the condenser and the expansion valve, and a refrigerant pump in the conduit adapted to increase the pressure of the refrigerant between the condenser and the expansion valve,

the improvement comprising

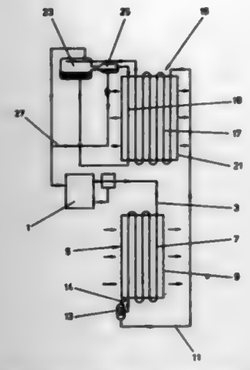
(a) the fact that the said pump is a positive displacement pump, and

(b) a first bypass conduit is provided in parallel around the pump, said first bypass conduit including a differential pressure regulating valve which imposes an upper limit on the pressure increase caused by the pump, and

(c) a second bypass conduit is provided in parallel around the pump, said second bypass conduit including a check valve adapted to stop flow of refrigerant through the said second bypass conduit from the expansion valve to the condenser, but to allow flow of refrigerant through the said second bypass conduit from the condenser to the expansion valve, and

(d) said pump, and bypass conduits being adapted to increase the said pressure of the refrigerant sufficiently to avoid the formation of refrigerant flash gas on the said conduit between the pump and the expansion valve, while still allowing flow of refrigerant from the condenser to the expansion valve if the pump fails to operate.

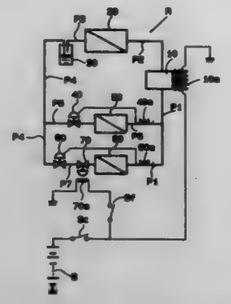
5,385,034
VAPOR COMPRESSION SYSTEMS
Geoffrey G. Haselden, Leeds, England, assignor to The University of Leeds, Leeds, England
Filed Apr. 2, 1993, Ser. No. 50,303
Claims priority, application United Kingdom, Apr. 10, 1990, 9021611
Int. Cl.[6] F25B *41/04*
U.S. Cl. 62—218 17 Claims



1. A vapour compression system in which a quantity of a refrigerant circulates between at least two pressure levels in a condenser and a two-section evaporator respectively, comprising:
(a) a compressor for increasing the pressure of refrigerant vapour;
(b) the condenser for high pressure refrigerant vapour received from the compressor;
(c) an expansion device, which comprises a valve across which a pressure differential between the condenser and the two-section evaporator is maintained, to control the withdrawal of liquid refrigerant from the condenser, the device being arranged to move at least part way towards its fully open position as the quantity of condensed liquid refrigerant supplied to the expansion device increases above a pre-determined level, the force required to move the device being substantially independent of the pressure drop across it; and
(d) the two-section evaporator for liquid refrigerant, which comprises:
(i) a reservoir for liquid refrigerant, from which low pressure refrigerant vapour is supplied to the compressor,
(ii) a first evaporator section which receives refrigerant from the condenser through the expansion device and which partially evaporates it, discharging two-phase refrigerant into the reservoir for collection of liquid refrigerant, and
(iii) a second evaporator section which receives liquid refrigerant from the reservoir and evaporates it at least partially.

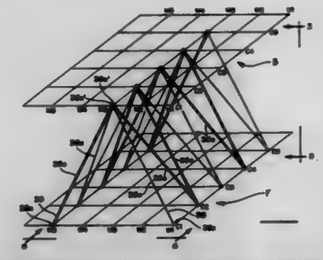
5,385,035
REFRIGERANT CYCLE CONTROL SYSTEM
Shin Nishida, Aajo, and Hiroshi Inatsu, Setagaya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 19, 1994, Ser. No. 184,134
Claims priority, application Japan, Jan. 19, 1993, 5-006617
Int. Cl.[5] F25B *39/02*
U.S. Cl. 62—525 4 Claims

1. An refrigerant cycle control system comprising:
a compressor for circulating refrigerant in the system;
a condenser connected to the compressor in series;
a first and a second pressure reducing means arranged in parallel each other and respectively connected to the condenser in series;
a first evaporator connected to the first pressure reducing means in series at the downstream thereof;
a second evaporator connected to the second pressure reducing means in series at the downstream thereof and constructing a parallel circuit with the second pressure reducing means to a circuit including the first pressure reducing means and the first evaporator;



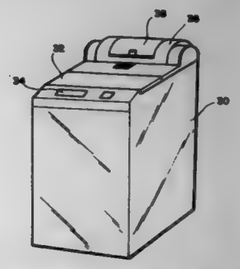
a solenoid valve connected one of between the first pressure reducing means and the first evaporator, and between the second pressure reducing means and the second evaporator in series; and
a control means for controlling the solenoid valve to be closed when a cooling operation is switched to operate only one evaporator which is non-connected to the solenoid valve in series, from the cooling operation operating two evaporators with the solenoid valve in open-state.

5,385,036
WARP KNITTED TEXTILE SPACER FABRIC, METHOD OF PRODUCING SAME, AND PRODUCTS PRODUCED THEREFROM
Robert T. Spillane, Greensboro, N.C., and Mike S. Kowalski, Derbyshire, United Kingdom, assignors to Guilford Mills, Inc., Greensboro, N.C.
Filed May 24, 1993, Ser. No. 67,208
Int. Cl.[6] D04B *1/00*; A41D *13/08*
U.S. Cl. 66—87 68 Claims



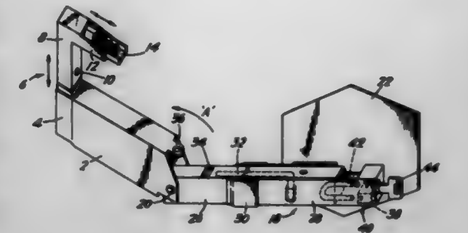
1. A warp knitted textile spacer fabric of the double needle bar Raschel pile type having characteristics of stretchability, compressibility and resiliency simulative of resilient plastic foam materials and having characteristics of air and moisture permeability substantially enhanced over said foam materials, said spacer fabric comprising front and back stretchable fabric substructures and a pile substructure integrated with and extending between the front and back fabric substructures for maintaining the front and back fabric substructures in spaced parallel relation and being resiliently yieldable for compressibility of the front and back fabric substructures together and subsequent recovery thereof to spaced parallel relation, said spacer fabric being of an at least six-bar warp knitted Raschel construction wherein each said fabric substructure comprises at least a set of ground yarns and a set of stretchable yarns interknitted with one another in a stretchable resilient stitch construction having needle loops of said ground and stretchable yarns arranged in longitudinal wales and transverse courses and said pile substructure comprises at least two sets of monofilament pile yarns interknitted with each said fabric substructure in a stitch construction forming pile segments which extend transversely between said fabric substructures in differing angular orientations relative thereto for permitting resilient compressibility of said fabric substructures while resisting relative shear movement of said fabric substructures in directions parallel thereto, each pile yarn of at least one of said two sets of pile yarns being formed in successive needle loops which alternate every course between non-corresponding wales of said front and back fabric substructures including alternating needle loops formed alternatingly in spaced wales of successive courses of one of said front and back fabric substructures and intervening needle loops formed in a common wale of successive courses of the other of said front and back fabric substructures.

5,385,037
FULLY-AUTOMATED WASHING MACHINE
Sang-Chul Bae, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon City, Rep. of Korea
Filed Jun. 24, 1993, Ser. No. 80,874
Claims priority, application Rep. of Korea, Jun. 24, 1992, 92-11003; Jun. 29, 1992, 92-11480
Int. Cl.[6] D06F *31/00*
U.S. Cl. 68—16 8 Claims



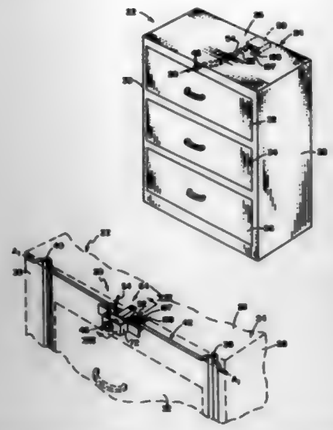
1. An automatic clothes washing machine, comprising:
a body including a top side and a main access door formed in said top side;
a main clothes washing means comprising a main tub disposed in said body for washing and spin-drying clothes, said main tub arranged to be accessed by said main access door;
an auxiliary clothes washing means mounted to said body in spaced relationship to said main tub and including water supply and draining means and heating means for heating water supplied to said auxiliary washing means for washing clothes in boiled water, said auxiliary washing means disposed on said top side of said body at a location spaced from said main access door and including an auxiliary tub mounted to said body and having an access door, a drum mounted for rotation in said auxiliary tub about a substantially horizontal axis, said drum including an access door, said drum including a radially inwardly projecting element extending lengthwise of said drum for raising clothes as said drum rotates; and
drive means for driving said main and auxiliary clothes washing machines independently of one another.

5,385,038
VEHICLE WHEEL CLAMP
James A. Walker, Stockton on Tees, England, assignor to John A. Malabre, New York, N.Y.
Filed Jun. 8, 1993, Ser. No. 73,935
Claims priority, application United Kingdom, Jun. 18, 1992, 9212901
Int. Cl.[6] E05B *73/00*; B62H *5/14*
U.S. Cl. 70—14 12 Claims



1. A wheel clamp assembly to be applied on a road wheel of a vehicle to prevent unauthorized operation of the vehicle, the wheel including a circular rim of a certain width in the axial direction of the rim, the rim defining a front face perpendicular to the rim axis and having an inner circumferential wall that forms a wheel well opening rearwardly of said front face, the wheel clamp assembly comprising:
a first elongate arm member;
a catch member at one end of said first arm member, the catch member projecting transversely of the first arm member;
a second elongate arm member and support means joined to bottom ends of the first and the second arm members for supporting the arm members in spaced apart relationship so that the width of said road wheel can be accommodated between said arm members;
mounting means for joining the bottom end of said second arm member to an end of said support means to enable the second arm member to be movable relative to the first arm member between an inoperative position spaced from the first arm member an amount sufficient to permit said catch member to be located into and out of said wheel well opening, and an operative position wherein the second arm member is substantially parallel to the first arm member and extends transversely of the front face of said wheel;
selectively releasable locking means for retaining the second arm member in said operative position;
a plate member mounted on said second arm member, the plate member being of sufficient size and shape to overlie substantially the front face of said wheel; and
hinge means fixed to said plate member and to said second arm member, said hinge means having a hinge axis extending along a longitudinal edge of the second arm member so that the plate member can be swung relative to the second arm member about said hinge axis between a stored position wherein the plate member lies in a plane parallel with a plane including the first and the second arm members, and an operative position displaced about 90° from the stored position wherein the plate member overlies the front face of the vehicle wheel;
wherein the wheel clamp is applied to the wheel with said catch member engaging an inner rim of the wheel in the region of said wheel well opening, the catch member projects inwardly of said well opening, said second arm member moves into its operative position extending transversely of the front face of said wheel, and said locking means is actuated to retain the second arm member in said operative position.

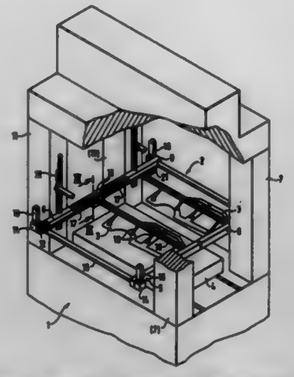
5,385,039
ELECTRONIC LOCK
Thomas G. Feldpausch, Hastings; Joseph R. Brunc, Grand Rapids, and Robert B. Lablunkas, Hastings, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Jan. 21, 1993, Ser. No. 6,742
Int. Cl.[6] E05B *65/46*
U.S. Cl. 70—78 28 Claims



12. An adaptor for an office furniture unit including a locking bar for selectively securing a closure member against movement, comprising:
a housing;
an electronic controller;
a plunger in said housing adapted to engage the locking bar in a locked position and release the locking bar to an unlocked position; and
a key reader on said plunger coupled to said controller for receiving an electrical control signal and transmitting said control signal to said controller.

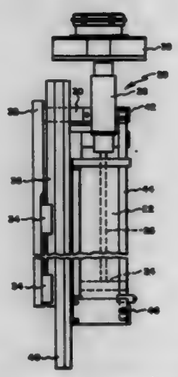
5,385,040
PRESS COMPRISING A TRANSFER DEVICE FOR SHEET METAL PARTS
Wolfgang Michael, Göppingen; Karl Thadiun, Wüschenbeuren; Hans Hofele; Walter Rieger, both of Göppingen; Peter Klemm, Stuttgart, and Burkhardt Schumann, Ottenbach, all of Germany, assignors to L. Schuler GmbH, Germany
Filed Nov. 5, 1993, Ser. No. 147,289
Claims priority, application Germany, Nov. 5, 1992, 4237315
Int. Cl.[6] B21D *43/05*
U.S. Cl. 72—405 14 Claims

1. A forming facility comprising:
at least one press slide for the forming of sheet metal parts in machining stages and is movable up and down while interacting with tools;
a first transfer device with holding devices which hold and transfer the sheet metal parts, the first transfer device having first driving devices for the lifting and lowering of the holding devices and second driving devices for moving the holding devices in a passage direction through one of the machining stages; and
a second transfer device with holding devices for a sheet metal part, the holding devices of the second transfer device being liftable and lowerable and movable horizontally in and against the passage direction, the second transfer device being connected at least one of in front of and behind the first transfer device, the second transfer device at least one of inserting the sheet metal parts and removing the sheet metal parts in and out of one of the machining stages for conveyance of the sheet metal parts in the passage direction;
wherein the second transfer device includes: guide strips in which the holding devices are disposed in a displaceable manner, the guide strips being arranged in parallel and at a distance from one another and extending along the passage direction and in front of and behind a workpiece passage; vertical guides on a side of the press, the guide strips being disposed in the vertical guides, each of the



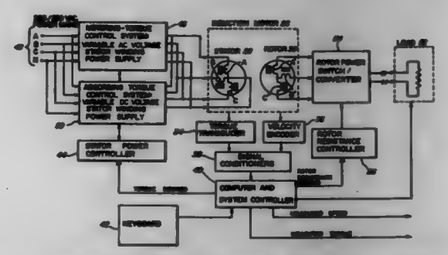
guide strips, for the receiving and bearing of at least one transport device extending in the passage direction, having structural members permitting movements of the transport device; a first adjusting device coupled to the guide strips to lift and lower the guide strips in the vertical guides; and a second adjusting device coupled to each of the transport devices to move the transport devices along the passage direction, the holding devices being fastened to the transport devices.

5,385,041
PISTON ROD STABILIZING DEVICE FOR A RIVETING APPARATUS RAM ASSEMBLY
Mark J. Andrews, Niagara Falls, N.Y., assignor to Gemcor Engineering Corporation, Buffalo, N.Y.
Filed Aug. 12, 1992, Ser. No. 928,807
Int. Cl.[6] B21J *15/16*
U.S. Cl. 72—453.14 2 Claims



1. A riveting apparatus ram assembly comprising a cylinder, a piston within said cylinder, means including a piston rod attached to said piston for applying a riveting force, and means for stabilizing the travel of said piston rod for application of said riveting force, said piston rod stabilizing means comprising an elongate member, linear bearing means for orienting movement of said elongate member, and means for rigidly connecting said elongate member to said piston rod for movement with said piston rod, said linear bearing means comprising an elongate mounting plate which is mounted alongside said cylinder and a pair of linear bearings which are mounted to said mounting plate for movement along the length thereof and which are attached to said elongate member to control the orientation of said elongate member to in turn control the orientation of said piston rod as riveting force is applied, said elongate member and said linear bearing means extending alongside said cylinder.

5,385,042
DYNAMOMETER AND METHOD FOR SIMULATING VEHICLE ROAD LOAD AND/OR INERTIAL FORCES WHILE PROVIDING COMPENSATION FOR THE PARASITIC LOSSES OF THE DYNAMOMETER
John T. La Belle, Long Beach, Calif., assignor to Clayton Industries, El Monte, Calif.
Filed Aug. 21, 1992, Ser. No. 932,958
Int. Cl.[6] G01L *5/13*
U.S. Cl. 73—117 31 Claims



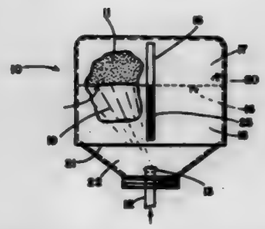
1. A dynamometer for simulating the road load and/or inertial forces for motor vehicles having an engine for driving at least one driven wheel comprising:
an induction motor having a stator and a rotor;
means for coupling the induction motor to the engine or driven wheel of the vehicle;
speed sensing means for providing a measured speed signal representative of the engine or wheel speed;
force sensing means for providing a measured force signal representative of the force applied to or received from the engine or driven wheel of the vehicle by the motor minus the force attributable to any dynamometer parasitic losses;
means responsive to the measured speed and/or measured force signal for providing a first desired torque signal representative of the torque desired to be applied to or received from the engine by the induction motor to simulate the road load and/or inertial forces which will be encountered by the vehicle during actual operation and to compensate for forces attributable to the parasitic losses of the dynamometer;
a source of variable magnitude a.c. voltage;
a source of variable magnitude d.c. voltage;
control means connected between the stator and the a.c. and d.c. voltage sources and responsive to the first desired torque signal for applying d.c. voltage to the stator and for controlling the magnitude of the voltage to brake the motor and cause the roll to absorb power from the engine or driven wheel when the first desired torque has a negative value and for applying a.c. voltage to the stator and for controlling the magnitude of the voltage to cause the motor to supply power to the roll when the first desired torque has a positive value in accordance with the value of the first desired torque signal; and
means for providing a second desired torque signal representative of at least one speed at which the roll is to be driven for the measurement of the dynamometer parasitic losses and wherein the control means is further responsive to the second desired torque signal for applying a.c. voltage to the roll and controlling the magnitude of the voltage to cause the motor to supply power to the roll and drive the wheel at said at least one speed.

5,385,043
CONTAMINATION MEASUREMENT APPARATUS
James C. Fitch, and Zhan Wu, both of Tulsa, Okla., assignors to Diagnetics, Inc., Tulsa, Okla.
Filed Oct. 15, 1993, Ser. No. 137,609
Int. Cl.[6] G01N *15/06*
U.S. Cl. 73—61.73 14 Claims



1. A contamination measurement apparatus for determining a level of particulate contamination in a fluid, which apparatus comprises:
a filter and means for passing a fluid through the filter;
means to determine flow decay characteristics of said fluid in response to the volume of said fluid passing through said filter; and
a back flush piston arranged to return said fluid back through said filter, said back flush piston being, in a first mode, engagable with said means to determine flow decay characteristics and, in a second mode, disengagable from said means to determine flow decay characteristics.

5,385,044
METHOD OF USING A THERMO-CHROMATIC DETERGENT LEVEL INDICATOR
John E. Thomas, River Falls, Wis.; Jody A. Toetschinger, Crystal, and John E. McCall, Jr., St. Paul, both of Minn., assignors to Ecolab Inc., St. Paul, Minn.
Filed Aug. 25, 1993, Ser. No. 112,579
Int. Cl.[6] G01F *23/22*
U.S. Cl. 73—295 3 Claims



1. A method of monitoring the level of a solid block of chemical which is positioned within an upper portion of an opaque container and which includes an eroding surface within said container, said container being made of a plastic material and having an internal surface and an external surface, said container including a thermo-chromatic substance, said thermo-chromatic substance being an additive to the plastic

material from which said container is formed, the method comprising the steps of:

(a) spraying warm water within said container onto said eroding surface of said solid block of chemical and onto said internal surface, said thermo-chromatic substance being selected so as to exhibit a color change of said container at the level of said eroding surface responsive to said step of spraying with warm water; and

(b) observing said color change of said container to determine the level of said eroding surface and thereby determine when said container is substantially empty.

5,385,045

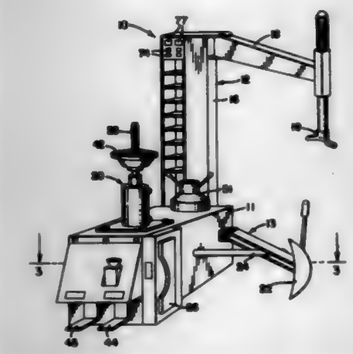
TIRE CHANGING AND BALANCING MACHINE

Bryce L. Mansen, and Steve Rogers, both of Conway, Ark., assignors to FMC Corporation, Chicago, Ill.

Filed Jul. 15, 1992, Ser. No. 914,362

Int. Cl.[6] G01M *1/22*

U.S. Cl. 73—462 **9 Claims**



1. An apparatus for changing and balancing a tire on a wheel assembly with a central hole, comprising:

a mounting shaft with a central axis along the length of the mounting shaft;

an encoder for measuring the angular rotation of the mounting shaft around the central axis;

a first transducer mounted adjacent to a first location on the mounting shaft;

a second transducer mounted adjacent to a second location on the mounting shaft;

means for collapsing the tire on the wheel assembly;

means for mounting the wheel assembly on the mounting shaft, wherein the mounting shaft passes through the central hole of the wheel assembly;

means for demounting a tire from the wheel assembly and mounting a tire on the wheel assembly while the wheel assembly is mounted on the mounting shaft;

means for spinning the wheel assembly while mounted on the mounting shaft; and

means for receiving signals from the encoder, the first transducer, and the second transducer and computing the balance of the wheel assembly.

5,385,046

GAS FLOW TYPE ANGULAR VELOCITY SENSOR

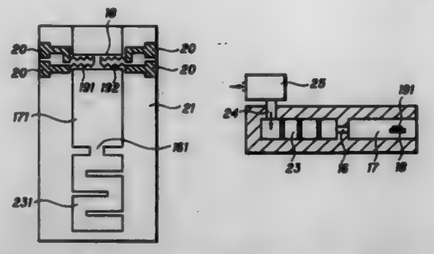
Hiroshi Yamakawa; Masayuki Ikegami, and Tsuyoshi Hano, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,937

Claims priority, application Japan, Apr. 10, 1992, 4-135536; Apr. 20, 1992, 4-144731

Int. Cl.[6] G01P *9/00*

U.S. Cl. 73—516 LM **15 Claims**



1. A gas flow type angular velocity sensor of the type wherein a flow of gas forced into a gas path in a sensor body through a nozzle and directed toward a pair of thermosensitive resistance elements provided in the gas path is deflected when an angular velocity is acting thereon and deflection of the gas flow is detected by the pair of thermosensitive resistance elements, characterized in that the gas path is thermostatically-controlled by a thermostatically-controlled wall which extends substantially along the entire length of a portion of the gas path up stream of the nozzle, is quickly heated by a heater, and is maintained at a constant temperature during operation of the sensor.

5,385,047

ANGULAR SPEED MEASURING DEVICE

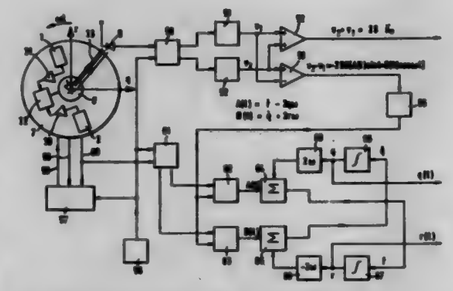
Roland Cochard, and Pierre Jeanneau, both of Morges, Switzerland, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 11, 1993, Ser. No. 75,768

Claims priority, application Germany, Jul. 16, 1992, 4223349

Int. Cl.[6] G01P *15/08, 9/04*

U.S. Cl. 73—517 A **13 Claims**



1. Angular speed measuring device comprising

a rigid planar plate rotatable about a first rotation axis;

at least one acceleration sensor mounted on said rigid planar plate so as to be movable on a circular path about said first rotation axis by rotation of said planar plate, said at least one acceleration sensor being at least partially made of silicon and including means for generating a signal depending on a Coriolis force experienced by said at least one acceleration sensor is sensor when said at least one acceleration sensor is rotated about two other rotation axes, said two other rotation axes and said first rotation axis being orthogonal to each other;

transmitting means for transmitting said signal off of said planar plate in a contactless manner, said transmitting means being mounted on said planar plate and connected to said at least one acceleration sensor for contactless transmission of said signal generated in said at least one acceleration sensor from said planar plate;

receiver means for receiving said signal transmitted from said transmitting means, said receiver means being located off said planar plate; and

means for processing said signal received by said receiver means to obtain said angular speed, said means for processing said signal received by said receiver means being connected to said receiver means and being located off said planar plate.

5,385,048

ACCELERATION SENSOR

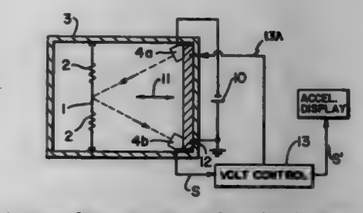
Tilo Karisch, Frankfurt am Main, and Wolfgang Porth, Frankfurt/M., both of Germany, assignors to VDO Adolf Schindling AG, Frankfurt, Germany

Division of Ser. No. 766,582, Sep. 27, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 77,157

Claims priority, application Germany, Oct. 14, 1990, 4033766; Oct. 24, 1990, 4033765

Int. Cl.[6] G01P *15/08*

U.S. Cl. 73—517 R **13 Claims**



1. A sensor for measurement of accelerations comprising

a housing and a substantially one-dimensionally deflectable mass component spring mounted in the housing;

a distance measurement device with a transmitter and a receiver which operate in contactless fashion;

a path compensator;

wherein the mass component comprises a reflecting plate which is perpendicular to a direction of measurement; and

the transmitter and the receiver are located in the housing upon the path compensator to enable rays coming from the transmitter to be reflected by the plate onto the receiver.

5,385,049

PIPELINE PIG AND METHOD OF PIPELINE INSPECTION

Hugh E. M. Hunt, Trinity College, Cambridge CB2 1TQ, and Uwe G. Kluhs, Emmanuel College, Cambridge CB2 3AP, both of England

PCT No. PCT/GB91/02070, § 371 Date May 18, 1993, § 102(e) Date May 18, 1993, PCT Pub. No. WO92/09847, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 22, 1991, Ser. No. 64,155

Claims priority, application United Kingdom, Nov. 22, 1990, 9025394

Int. Cl.[6] F17D *5/00; G01M 7/00; E21B 47/022*

U.S. Cl. 73—592 **12 Claims**

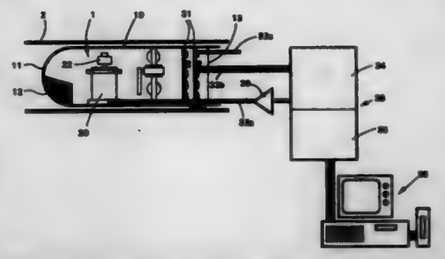
1. A method of monitoring the structural condition of a pipeline and its support, the method including the steps of:

traversing the interior of the pipeline with a pig;

causing the pig to vibrate in at least one of the vertical, longitudinal, lateral, bending and torsional senses;

transmitting the vibrations into the wall of the pipeline;

measuring the vibration response of the pipeline by detecting at least one of the vertical, longitudinal, lateral, bending and torsional motions of the pig; and



displaying and/or recording the measured data in a form which can be used to identify variations in the structural condition of the pipeline and its support.

5,385,050

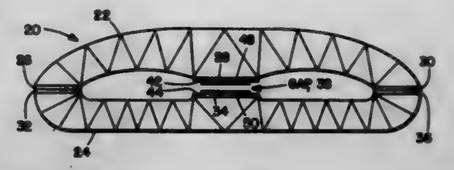
GAP MEASUREMENT FOR SHIM MANUFACTURE

William E. Roberts, Rolling Hills Estates, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 7, 1992, Ser. No. 864,976

Int. Cl.[6] G01S *11/14*

U.S. Cl. 73—597 **26 Claims**



1. Apparatus for measuring a gap between a first structural member and a second structural member of a mechanical structure, said gap being defined by a first interfacing surface of said first structural member and a second interfacing surface of said second structural member, comprising:

first transducer means, removably secured to said first interfacing surface, for transmitting at least one acoustic ranging signal across said gap, said first transducer means comprising

a first piezoelectric film having a first front surface and a first back surface, said first front surface facing said second interfacing surface, said first back surface facing said first interfacing surface,

a first array of electrodes disposed on said first front surface, each electrode of said first array of electrodes being disposed at an associated transmitting coordinate position of said first transducer means, and

a first electrode structure disposed on said first back surface;

second transducer means, removably secured to said second interfacing surface, for receiving said at least one transmitted acoustic ranging signal, said second transducer means comprising

a second piezoelectric film having a second front surface and a second back surface, said second front surface facing said first interfacing surface, said second back surface facing said second interfacing surface,

a second array of electrodes disposed on said second front surface, said second array of electrodes being disposed as a mirror image of said first array of electrodes, each electrode of said second array of electrodes facing a corresponding electrode of said first array of electrodes, each said electrode of said second array of electrodes being

disposed at an associated receiving coordinate position of said second transducer means corresponding to said transmitting coordinate position of said corresponding electrode of said first array of electrodes, and

a second electrode structure disposed on said second back surface;

an acoustically transmissive medium disposed between said first and second transducer means;

means, connected to said first and second arrays of electrodes, for determining a transit time for each of said at least one acoustic ranging signals transmitted across said gap, said means for determining said transit time outputting an output signal representative of said transit time for each said determined transit time;

means, connected to said means for determining said transit time, for receiving each said output signal, said means for receiving each said output signal determining a gap width measurement for each said received output signal, said means for receiving each said output signal outputting a gap width measurement signal for each said determined gap width measurement; and,

means, connected to said means for receiving each said output signal, for receiving each said gap width measurement signal, said means for receiving each said gap width measurement signal storing each said received gap width measurement signal in association with one of said transmitting coordinate positions of said electrodes of said first array of electrodes.

5,385,051

ULTRASONIC TEST MACHINE WITH A ROTOR THAT HAS SEVERAL PROBES AND A TRANSMISSION DEVICE FOR CONNECTING THE PROBES TO A STATIONARY ELECTRONIC DEVICE

Reinhard Prause, St. Augustin, Germany, assignor to Krautkramer GmbH & Co., Hurth, Germany

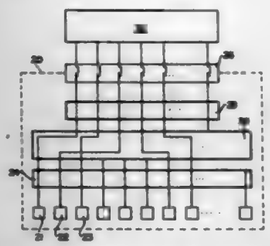
PCT No. PCT/DE91/00134, § 371 Date Sep. 24, 1992, § 102(e) Date Sep. 24, 1992, PCT Pub. No. WO91/14175, PCT Pub. Date Sep. 19, 1991

PCT Filed Feb. 21, 1991, Ser. No. 934,461

Claims priority, application Germany, Mar. 9, 9002789[U]

Int. Cl.[6] G01N *9/24, 29/00, 29/04*

U.S. Cl. 73—640 **4 Claims**



1. Ultrasonic test machine, especially for round stock, such as rods and tubes, which has a rotor (20), in which several probes (21 to 23) are mounted, and a transmission device (26) with several channels for connecting the probes (21 to 23) to a stationary electronic control and analysis unit (32), characterized by the fact that the rotor (20) contains more probes (21 to 23) than there are channels in the transmission device (26), that all of the probes (21 to 23) are electrically connected to a first multipoint connector (24), while all of the transmission channels are electrically connected to a second multipoint connector (28), and that there is at least one interchangeable counter-connector (30) corresponding to these two multipoint connectors, in which connections are formed between contacts that are assigned to selected ones of the channels of the transmission device (26) and contacts of connections of selected ones of the probes (21 to 23).

5,385,052

INERTIAL SENSOR

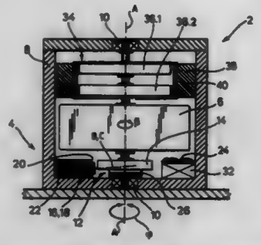
Fritz Hofmann, Munich, Germany, assignor to Deutsche Aerospace AG, Germany

Filed Oct. 19, 1992, Ser. No. 962,727

Claims priority, application Germany, Oct. 17, 1991, 4134311

Int. Cl.[6] G01P *15/08*

U.S. Cl. 73—517 A **16 Claims**



1. An inertial sensor for measuring rapid changes in rotational motion in a rotational plane, comprising:

a sensor support subjected to the rotational motion;

a flywheel adapted to rotate relative to said sensor support in the rotational plane;

torque coupling means for torque transmission between said sensor support and said flywheel;

angular position detecting means for sensing a rotational displacement of the flywheel relative to said sensor support and providing output signals; and

signal processing means for determining said changes in rotational motion in dependence on said output signals of the detecting means;

wherein said torque coupling means has a torque transmitting characteristic which is linearly proportional to a relative angular velocity of the flywheel and the sensor support so as to provide the inertial sensor with a linear rotational angle transfer function.

5,385,053

FIBER OPTIC PRESSURE SENSOR SYSTEMS

Marek T. Wlodarczyk, Birmingham, and Daniel Vokovich, Ann Arbor, both of Mich., assignors to FiberOptic Sensor Technologies, Ann Arbor, Mich.

Division of Ser. No. 748,082, Aug. 21, 1991, Pat. No. 5,275,053. This application Oct. 6, 1993, Ser. No. 132,718

Int. Cl.[6] G01L *9/00*

U.S. Cl. 73—705 **10 Claims**

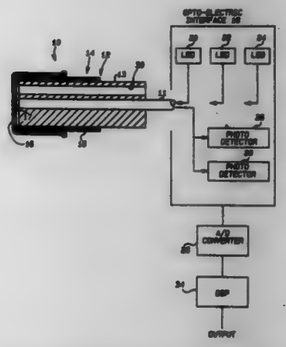
1. A fiber optic pressure sensor system comprising:

an optical fiber having a sensing tip at a first end with a pressure sensitive element, said pressure sensitive element modulating a pressure sensing light signal injected into the opposite second end of said optical fiber,

optical means for generating said pressure sensing light signal and a reference light signal, said light signals having different wavelengths,

filter means at said fiber first end for allowing transmission of said pressure sensing light signal and reflecting a portion of the energy of said reference light signal allowing a transmitted portion of said reference light signal to be modulated by said pressure sensitive element, and

signal processing means for generating an output related to pressure at said sensing tip and where the amplitude of both returned reference and pressure sensing light signals



are used to generate an output related to pressure at said sensing tip.

5,385,054

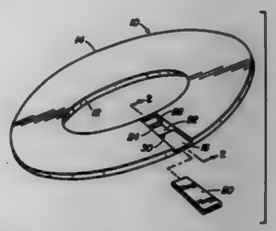
FASTENER TENSION MONITOR

Hy Kramer, 50 Carter Dr., Stanford, Conn. 06902

Filed Aug. 16, 1993, Ser. No. 107,283

Int. Cl.[6] F16B *31/02*

U.S. Cl. 73—761 **29 Claims**



1. A device to monitor tension in the members of a fastener assembly such as a stationary bolt and a moveable nut for securing structural elements or the like there between, said device comprising a washer for location in the assembly between the nut and the elements or between the bolt head and the elements; a slot in the surface of the washer extending radially outwardly from the inner periphery thereof; a recess in the bottom of the slot forming at least one fulcrum point in the slot between the bottom of the recess and the bottom of the slot; and a monitor strip located in the slot such that a portion of the length of the strip is located under a member of said fastener assembly and over said at least on fulcrum point so that, under predetermined tension from one of the fastener assembly members and the presence of said at least one fulcrum point, the distal end of the strip rises from the slot to provide a visual and measurable monitor of tension in the assembly.

5,385,055

ELECTROMAGNETIC FLOWMETER

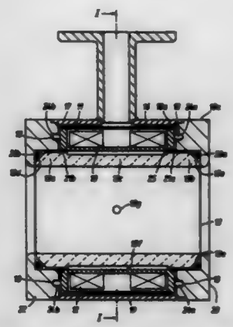
Yousuke Kubota, Tokyo; Toshikazu Hatake, Kanagawa, and Takuya Iijima, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 28, 1993, Ser. No. 10,323

Claims priority, application Japan, Jan. 31, 1992, 4-016257; Dec. 9, 1992, 4-329551

Int. Cl.[6] G01F *1/58*

U.S. Cl. 73—861.12 **22 Claims**



1. An electromagnetic flowmeter comprising:

a conduit having opposite end portions and a middle portion, and defining a path along a central axis for a fluid, the rate of flow of which is to be measured;

a pair of electrodes positioned at opposite sides of the conduit;

magnetic field generating means for generating a magnetic field in the conduit;

a cylindrical case positioned coaxially around the conduit, and including flanges having extended bosses; and

a cylindrical housing positioned coaxially around the case, housing the conduit, the case, and the magnetic field generating means, the bosses being inserted into the housing to position the magnetic field generating means, whereby the fluid flowing through the conduit induces a signal in the electrodes indicative of the flow rate.

5,385,056

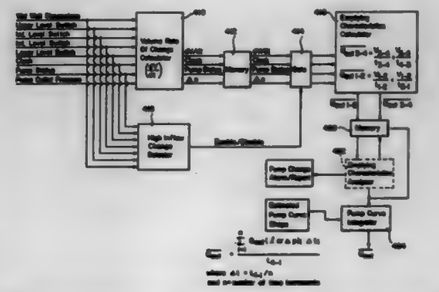
PUMP STATION FLOWMETER

Lawrence B. Marsh, Buckeystown, and John D. Wright, Gaithersburg, both of Md., assignors to Marsh-McBirney, Inc., Frederick, Md.

Division of Ser. No. 815,756, Jan. 2, 1992, Pat. No. 5,313,842. This application Jan. 19, 1994, Ser. No. 183,312

Int. Cl.[6] G01F *3/38*

U.S. Cl. 73—861 **4 Claims**



1. Apparatus for determining the emptying characteristics of a wet well (4), including a source of liquid (2) discharging into

the wet well to fill the same, pump means (8) for pumping liquid out of the wet well, said pump means having a characteristic pump flow curve (FIG. 9), a source of pump status signals, means for generating a clock signal, means for detecting the levels at which the pump means turn on (l_4) and turn off (l_1), and at least one intermediate level detecting means (l_2) for producing an intermediate level signal comprising:

(a) means including a volume rate of change calculator (410) responsive to the dimensions of the wet well, said level detecting means, and said clock signals for providing first and second volume rate of change pump on signals and first and second volume rate of change pump off signals (dV/dt) that are functions of the rate of change of the volumes with respect to time of liquid defined in said wet well by said level detecting means, respectively;

(b) emptying characteristic calculator means (418) for calculating from at least one of said pump on signals and at least one of said pump off signals at least one outflow value for a corresponding level value in accordance with the formula:

$$Q_{out} = V_A / t_A + V_A / t_B$$

where V_A is the volume defined by two of the said level detecting means, t_A is the fill time for said volume, and t_B is the emptying time for said volume, thereby to define at least one point on the characteristic pump flow curve;

(c) first memory means (420) for storing said emptying characteristics;

(d) means including said emptying characteristic calculator means (418) for independently averaging said outflows over a plurality of wet well cycles, thereby to develop the pump emptying characteristic; and

(e) pump curve integrator means (454) for incorporating the averaged outflows on at least one point of the pump curve of an associated pump, and for calculating an average outflow in accordance with the equation:

$$Q_{out} = \frac{n}{i=1} (Q_{out}(\Delta t)_i * \Delta t)/t_{4-1}$$

where:

n=number of time increments of the emptying time (t_{4-1}) of the wet well, and $\Delta t = t_{4-1}/n$.

5,385,057

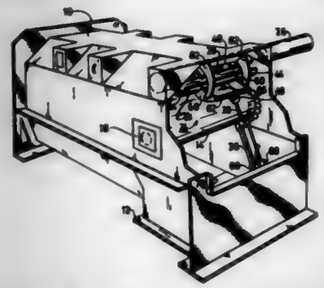
Patent Not Issued For This Number

5,385,058

METHOD AND APPARATUS FOR SAMPLING PARTICULATE MATERIAL FALLING FROM A BELT CONVEYOR

Kenneth J. Krauss, North Olmsted, Ohio, assignor to General Signal Corporation, Stamford, Conn.

Filed Sep. 8, 1992, Ser. No. 941,585
Int. Cl.[6] G01F *1/20, 1/66*
U.S. Cl. 73—864.32 **20 Claims**



1. A method for sampling particulate material which is flowing in a downwardly falling stream through a transition zone at the upper end of the downwardly falling stream to which the material is carried by a belt, and delivering said material to a fixed delivery channel having a downwardly facing opening through which the material can fall unless said opening is closed, which method comprises the steps of moving a scoop having a closed bottom and an open top through the transition zone of said stream with the bottom of said scoop facing downwardly and without receiving material in said scoop while so moving downwardly to a position clear of said stream where the open end of said scoop faces generally downwardly, then moving said scoop upwardly through said transition zone of said stream with said top facing upwardly to pick up a sample of said material, and delivering said material to said channel with said scoop closing said opening when said delivering step is being carried out.

5,385,059

SLUDGE SAMPLER

Theodore Varouxis, 814 N. Henry St., Alexandria, Va. 22314

Filed Feb. 26, 1993, Ser. No. 22,903
Int. Cl.[6] E21B *49/02, 49/08*
U.S. Cl. 73—864.66 **8 Claims**



1. A sludge sampler apparatus comprising an insertion pipe having markings for indicating length and depth, a frame connected to a bottom end of the pipe, an insertion cone connected to a bottom of the frame, a container tiltably mounted in the frame between the cone and the bottom end of the pipe, a rod mounted for sliding in the pipe, a bottom end of the rod extending below the bottom end of the pipe, a stopper connected to the bottom end of the rod for opening and closing a top of the container, a handle connected to a top of the pipe, a lifter connected to a top of the rod for lifting the rod and the stopper, and a clamp connected to the top of the rod for holding the rod and the stopper downward.

5,385,060

DEVICE FOR THE ASSEMBLY OR DISASSEMBLY OF PROBES IN PROCESS PIPES, TANKS, ETC.

Kjetil Wang, Wessels gt. 19, N-7043 Trondheim, Norway

PCT No. PCT/NO91/00150, § 371 Date Mar. 22, 1993, § 102(e) Date Mar. 22, 1993, PCT Pub. No. WO92/09723, PCT Pub. Date Jun. 11, 1992
PCT Filed Dec. 3, 1991, Ser. No. 910,028
Claims priority, application Norway, Dec. 3, 1990, 905216
Int. Cl.[6] G01M *19/00;* B23P *19/04*
U.S. Cl. 73—866.5 **5 Claims**

1. A retrieving device for the assembly and disassembly of probes in process pipes, tanks, etc., comprising a nipple mounted to a wall of the pipe or tank, a ball valve mounted to the nipple and a hydraulically activated cylinder which is operated by using a pump after the cylinder is mounted to the ball valve, said cylinder which has an internal cylinder wall is provided with a piston means attached to the pump through a first attachment for the inflow and outflow of hydraulic fluid to said cylinder for balancing the pressure of the piston means within the cylinder so that the probe may be inserted into or out of the nipple through the ball valve and into the retrieving

device, said piston means includes a piston rod, said device is characterized in that the piston means further includes a first piston which is slidably and telescopically mounted within a second piston and a first cavity is created between the first piston and the second piston, a second cavity is formed between the second piston and the wall of the cylinder, said first



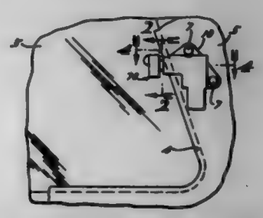
and second pistons are hydraulically connected through an opening therebetween, whereby the cylinder can have a relatively short length while the total combined distance traveled by the first and second pistons and the attached piston rod is sufficient to insert and withdraw the probe from within the process pipe or tank.

5,385,061

POWER WINDOW ACTUATOR

Curtis T. Moy, Grand Blanc, and Orest Iwasiuk, Farmington Hills, both of Mich., assignors to MascoTech Controls, Oxford, Mich.

Continuation-in-part of Ser. No. 709,956, Jun. 4, 1991, Pat. No. 5,161,419. This application Mar. 24, 1992, Ser. No. 856,591
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[6] F16H *21/16*
U.S. Cl. 74—42 **9 Claims**



1. A vehicle window system including direct drive powered actuator for pivotally moving a vehicle window, which window is pivotally mounted in a vehicle body structure, between open and closed positions comprising:

actuator housing;

reversible driving means comprising a reversible electric motor disposed in said housing containing an output shaft containing a worm rotatable with said output shaft;

power transmission means operably engaged with said driving means comprising a sequential gear train disposed in said housing containing a plurality of gears having teeth wherein the teeth of each gear are engaged with the teeth of only one other gear including a worm gear having a rim containing substantially radially projecting teeth operably engaged with said worm, a first gear having teeth coaxial and rotatable with said worm gear, a second gear having teeth, the teeth of said second gear engaged with the teeth of said first gear, and a third gear having teeth coaxial and rotatable with said second gear;

a rotary shaft having a longitudinal axis rotatably disposed, at least partially, in said housing and including an output gear having teeth operably engaged with the teeth of said third gear of said power transmission means so that operation of said power transmission means rotates said rotary shaft about its longitudinal axis; and

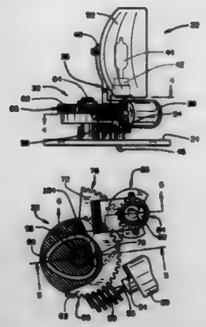
linkage means intermediate said rotary shaft and said window operably engaged with said window and operably engaged with said rotary shaft for converting the rotation of said rotary shaft into an opening and closing movement of said window, said linkage means comprising a first link attached to said rotary shaft, and a second link pivotally attached to said first link and pivotally attached to an attaching means mounted on said window.

5,385,062

SIGNAL LIGHT OSCILLATING MECHANISM

W. Kenneth Meaike, Glendale, Mo., assignor to The Ahrens-Fox Fire Engine Company, Webster Groves, Mo.

Filed Jan. 21, 1993, Ser. No. 6,615
Int. Cl.[6] F16H *25/08;* F21V *21/30*
U.S. Cl. 74—54 **30 Claims**



1. An oscillating signal light mechanism producing signal light oscillations of substantially constant angular velocity throughout an entire arc segment of movement of the signal light, the mechanism comprising:

a base;

at least one signal light assembly mounted on the base for rotation of the light assembly relative to the base;

a source of motive power including an output shaft rotated at a constant velocity in a single direction of rotation;

means mechanically connected between the output shaft and the signal light assembly for converting the constant velocity single direction rotation of the output shaft to cycling movements of the signal light assembly through arc segment oscillations at substantially constant angular velocity;

the means for converting the rotation of the output shaft to cycling movements of the light assembly includes a first gear mounted on the base for rotation of the gear relative to the base about a center axis of the gear, the gear being driven by the output shaft to rotate in a single direction at a constant velocity; a cam provided on the gear; and a link member mounted on the base for oscillating movement of the link member through an arc segment relative to the base, the link member being connected to both the first gear and the light assembly for causing the light assembly to move through arc segment oscillations in response to single direction rotation of the gear; the link member is mounted to the base by pivot shaft for oscillating movement of the link member through an arc segment about a center axis of the pivot shaft, the link member has a cam

follower that connects the link member to the first gear by engaging with the cam on the gear where the engagement of the cam follower with the cam causes the gear rotating in one complete rotation about its center axis;

the link member is a second gear having a plurality of gear teeth formed thereon, the cam follower is mounted on the second gear and the second gear is mounted on the base by the pivot shaft for oscillating movement of the second gear relative to the base;

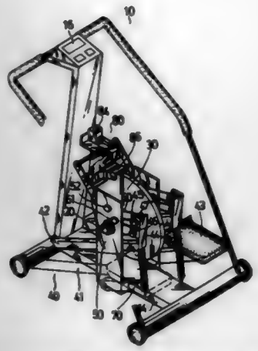
the light assembly includes a plurality of gear teeth in mesh with the gear teeth of the second gear, whereby the engagement of the cam follower with the cam causes the second gear to cycle through one complete arc segment oscillation about the pivot shaft in response to each complete rotation of the first gear about its center axis, and the light assembly is oscillated relative to the base in response to the second gear cycling through the arc segment oscillation.

5,385,063

TRANSMISSION MECHANISM FOR MAGNETIC DAMPING TYPE STEP MACHINE

Leao Wang, Taichung Hsien, Taiwan, Prov. of China, assignor to Greenmaster Industrial Corp., Taichung Hsien, Taiwan, Prov. of China

Filed May 13, 1993, Ser. No. 60,920
Int. Cl.[6] A63B *23/04*
U.S. Cl. 74—89.22 4 Claims



1. A transmission mechanism for a magnetic damping type step machine comprising:

a) a machine base including a rear crossbar and a bottom beam, the machine base having mounted thereon a main shaft, a spool, a flywheel, two pedal assemblies, two supporting plates, two transmission wires, two springs and means for imparting magnetic damping resistance to the flywheel;

b) each pedal assembly including a pedal rod, and a linking rod disposed in parallel with the pedal rod, the pedal rod and linking rod each being pivotally connected at a first end to the rear crossbar, the linking rod including a second end terminating in an upwardly extending right angled locating plate, the locating plate including a first axle disposed at a higher elevation and a second axle disposed at a lower elevation, a first pulley mounted on the first axle and a second pulley mounted on the second axle;

c) the supporting plates are secured to opposite sides of the bottom beam, with each supporting plate being disposed between the pedal rod and linking rod of each pedal assembly and including a first axle at a higher elevation and a second axle at a lower elevation, and a pulley mounted on the second axle;

d) the main shaft being secured between the supporting plates, the spool being mounted on the main shaft and including two annular grooves, the flywheel being coaxially mounted on the main shaft between the annular grooves of the spool; and

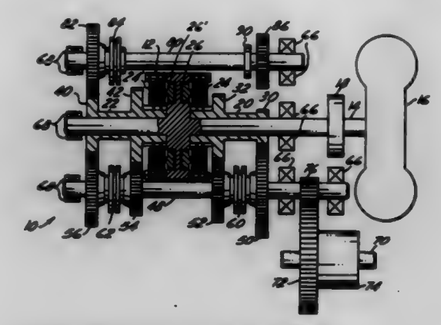
e) each transmission wire having a first end thereof secured to the spool and wound around one of the an annular grooves, the wires being wound in opposite directions, and each wire thereafter being successively engaged around the second pulley on the second axle of the locating plate, the pulley on the second axle of the supporting plate, and the first pulley on the first axle of the locating plates, and each wire terminating in one of the second end secured to the first axle of a supporting plate.

5,385,064

DUAL CLUTCH COUNTERSHAFT AUTOMATIC TRANSMISSION

John W. Reece, Ithaca, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Oct. 23, 1992, Ser. No. 965,508
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—331 5 Claims



1. An automatic transmission comprising:

a transmission housing;

a main shaft rotatably mounted in said housing;

a countershaft in said housing spaced from and parallel to said main shaft;

first gearing mounted on said main shaft;

second gearing mounted on said main shaft;

first clutch means and second clutch means mounted on said main shaft for respectively connecting selectively said first gearing and said second gearing to said main shaft, said first and second clutch means being disposed between said first and second gearing and being located respectively adjacent said first gearing and said second gearing;

third gearing and fourth gearing mounted on said countershaft in engagement with said first gearing;

fifth gearing and sixth gearing mounted on said countershaft in engagement with said second gearing;

said transmission comprising further first synchronizer clutch means on said countershaft for synchronously connecting said third gearing and said fourth gearing to said countershaft and second synchronizer clutch means on said countershaft for synchronously connecting said fifth gearing and said sixth gearing to said countershaft;

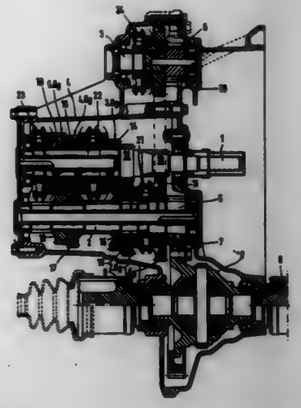
a lay shaft arranged in parallel disposition with respect to said main shaft and a first reverse gear on said lay shaft engaging said first gearing.

5,385,065

MULTISPEED MANUAL TRANSMISSION FOR MOTOR VEHICLES

Harald Hofmann, Cologne, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 12, 1993, Ser. No. 30,972
Claims priority, application Germany, Mar. 13, 1992, 4204969
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—331 8 Claims



1. A multiple speed transmission for automotive vehicles, comprising:

an input shaft rotatable supporting first and second pinions fixed to said shaft, third and fourth pinions journaled on said shaft;

first synchronizer means for selectively, driveably connecting the third and fourth pinions to the input shaft;

a first driven shaft disposed parallel to the input shaft, rotatably supporting first and second gears journaled thereon and meshing with the first and second pinions, respectively, third and fourth gears fixed to said first driven shaft and meshing with the third and fourth pinions, respectively, and a first final drive pinion;

second synchronizer means for selectively, driveably connecting the first and second gears to the first driven shaft;

a second driven shaft disposed parallel to the input shaft, rotatably supporting a reverse gear meshing with the first gear, and a second final drive pinion;

third synchronizer means for selectively, driveably connecting the reverse gear to the second driven shaft; and

a final drive gear meshing with the first and second final drive pinions.

5,385,066

MULTIPLE RATIO TRANSMISSION

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 1, 1993, Ser. No. 86,149
Int. Cl.[6] F16H *3/02*
U.S. Cl. 74—331 19 Claims

1. A multiple ratio transmission for transferring torque from an input shaft to an output shaft, the transmission comprising:

an intermediate shaft disposed between the input and output shafts;

a main countershaft;

a torque input splitter gear coaxial with and rotatable relative to said input shaft;

a second splitter gear coaxial with said input and intermediate shafts and rotatable relative to said intermediate shaft;

a plurality of intermediate shaft drive gears mounted rotatably on said intermediate shaft;

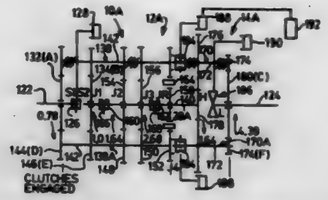
a plurality of main countershaft gears fixed for rotation with said main countershaft;

said splitter gears and intermediate shaft drive gears being selectively clutchable and in continuous meshing engagement with said main countershaft gears;

an intermediate shaft output gear fixed for rotation with said intermediate shaft;

an output shaft range gear coaxial with and rotatable relative to the output shaft;

a two-way synchronizer coupling means fixed for rotation with the output shaft and operable for coupling said intermediate shaft output gear and for coupling said output shaft range gear to said output shaft;



an auxiliary countershaft assembly comprising an auxiliary countershaft, a first auxiliary countershaft gear fixed for rotation on said auxiliary countershaft and constantly meshed with said output shaft range gear, and a second auxiliary countershaft gear rotationally fixed to said auxiliary countershaft and constantly meshed with said intermediate shaft output gear; and

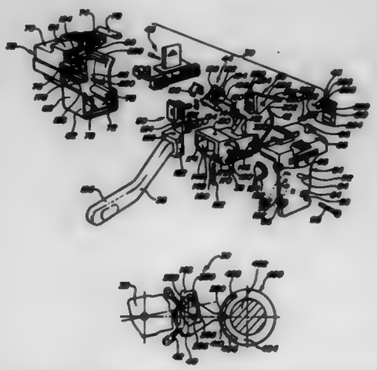
a clutch assembly fixed for rotation on said auxiliary countershaft and having a position for coupling said auxiliary countershaft to said main countershaft.

5,385,067

TURN SIGNAL CANCELLATION MECHANISM

Jeffrey K. Wiersing, Farmington Hills; LeRoy A. Poleschuk, White Lake, and David Guerra, Rockwood, all of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Sep. 13, 1993, Ser. No. 120,676
Int. Cl.[6] H01H *3/16*
U.S. Cl. 74—484 R 25 Claims



1. A turn signal cancellation mechanism for interfacing with an automotive vehicle steering shaft assembly, said turn signal cancellation mechanism comprising:

a handle;

an actuator having an engagement segment extending therefrom, said engagement segment having a modified T-

shaped slot formed therein defined by an inner edge thereabout with said modified T-shaped slot having a pair of oppositely extending upper legs and a center leg protruding substantially perpendicular therefrom, said pair of upper legs being orientated transversely across said engagement segment and said center leg being orientated toward said handle, said handle being affixed to said actuator;

a pawl having a base and an arm projecting therefrom and also having a channel running transversely thereacross, said arm further having a post mounted perpendicular thereto and an interface member proximate with a distal end thereof, said pawl being positioned with a predetermined portion of said arm having said engagement segment slidably adjacent thereagainst such that said post of said pawl engagably extends through said modified T-shaped slot of said actuator; and

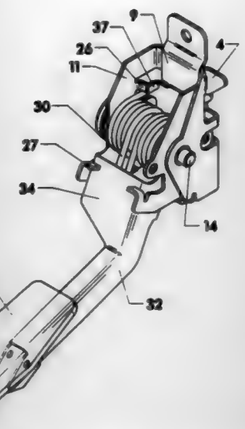
a biasing means for urging said pawl into movable engagement with preselected portions along said legs of said modified T-shaped slot of said actuator, said biasing means being partially juxtapositioned within said channel of said pawl.

5,385,068

ELECTRONIC ACCELERATOR PEDAL ASSEMBLY WITH PEDAL FORCE SENSOR

James E. White, Warsaw, and John Zdanys, Jr., Elkhart, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Dec. 18, 1992, Ser. No. 993,141
Int. Cl.[6] G05G *1/14*
U.S. Cl. 74—512 7 Claims



1. A bracket assembly carrying an actuator means comprising:

a means for supporting a moving bracket means and locating a rotational axis, said moving bracket means occupying a first position relative to said supporting means when no force is applied to said actuator means;

a connecting means connecting said actuator means to said moving bracket means, said connecting means operative upon application of a first force to said actuator means to move said moving bracket means relative to said support to a second position without relative movement between said actuator and said moving bracket means, and upon application of a second force greater in magnitude than said first force to said actuator to rotate said moving bracket to said second position without relative movement between said actuator and said moving bracket means, and to subsequently move said actuator means relative to said moving bracket means;

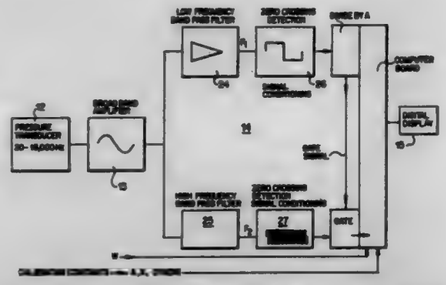
said moving bracket means and said supporting means spaced from each other by a spring means.

5,385,069

DEVICE FOR DETERMINING THE VOLUME OF OBJECTS USING A CHAMBER WITH TWO RESONATORS TO COMPENSATE FOR TEMPERATURE AND HUMIDITY EFFECTS

Virgil E. Johnson, Jr., Gaithersburg, Md., assignor to Hydroacoustics Research, Inc., Fulton, Md.

Filed Aug. 6, 1992, Ser. No. 925,198
Int. Cl.[6] G01M *7/00*; G01N *29/00*; G01F *17/00*
U.S. Cl. 73—571 9 Claims



1. A device for measuring the volume of an object comprising:

a chamber having an opening and configured to accommodate the object whose volume is to measured;

a first resonator positioned within said chamber for producing a first resonant acoustic wave having a frequency, f_b, which is characteristic of said first resonator and independent of the volume of said chamber;

a second resonator for producing a second resonant acoustic wave having a frequency, f_t, lower than the frequency of said first wave and characteristic of the volume, V_o, in said chamber;

means for determining the respective resonant frequencies, f_b and f_t, of said first and second acoustic waves and for producing signals characteristic of said respective resonant frequencies; and

an information processor for receiving and analyzing said signals in accordance with the equation:

$$V_b = V_o\left[1 - K\left(\frac{f_t}{f_b}\right)^2\right],$$

where,

f_t is the frequency of said second resonant wave,

f_b is the frequency of said first resonant wave,

V_o is the empty volume of said chamber,

V_b is the volume of said object and,

K is a constant whose value is calculated from said equation using known values of f_t and f_b for known volumes V_b and V_o,

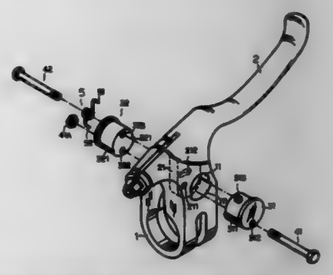
whereby the volume, V_b, of said object in said chamber is determined independently of the influence of humidity and temperature within the chamber.

5,385,070

BRAKE HANDLE

Shih-Ming Tseng, No. 18-12, Lane 503, Sec. 2, Chung Cheng Road, Changhua, Taiwan, Prov. of China

Filed Jul. 1, 1993, Ser. No. 87,101
Int. Cl.[6] F16C *1/10*; G05G *11/00*
U.S. Cl. 74—502.2 8 Claims



1. A brake handle apparatus, comprising:

a positioning stand defining an axle center hole including an arc gutter at a portion of a rim of the axle center hole,

a brake handle including a front part received within said positioning stand, said front part having an arc hole and a first round hole defined therein;

an upper rotating axle bush inserted in a first end of the axle center hole, the upper rotating axle bush having a first penetrating hole, a bolt hole, and a first protuberant rim which rests inside the arc gutter;

a bottom rotating axle bush inserted in an opposite end of the axle center hole, the bottom rotating axle bush having a second penetrating hole, a second round hole, and a second protuberant rim which rests inside the arc gutter;

a first bolt passing through the first penetrating hole of the upper rotating axle bush, the first round hole of the front part of the brake handle, and the second penetrating hole of the bottom rotating axle bush; and

a second bolt passing through the second round hole of the bottom rotating axle bush and the arc hole of the front part of the brake handle, and into the bolt hole of the upper rotating axle bush.

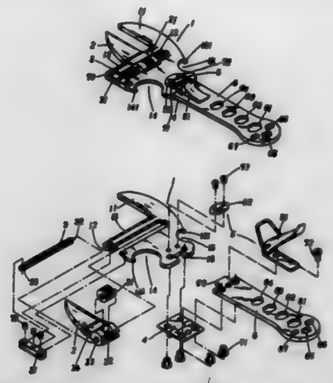
5,385,071

UNIVERSAL HAND TOOL FOR A BICYCLE

Jeru-Shoug Her, Changhua, Taiwan, Prov. of China, assignor to Yu Chou Enterprise Corporation, Changhua, Taiwan, Prov. of China

Filed Dec. 27, 1993, Ser. No. 172,815
Int. Cl.[6] B25B *23/16*
U.S. Cl. 81—177.7 4 Claims

1. A universal hand tool for a bicycle, comprising a head section having a movable clamping arm and a fixed clamping arm defining a clamping slot for tightening/untightening various nuts with different sizes, and a handle section formed with multiple hexagonal holes for tightening/untightening general hexagonal nuts of the bicycle, said movable clamping arm being movable by means of rotating a thread sleeve fitted on a thread rod of said head section so as to vary the dimension of said clamping slot, a scale ruler being disposed above said thread rod for measuring the sizes of the nuts, said head portion being formed with large and small recesses and cooperative first and second projections under said thread rod for tightening/untightening slotted nut, a hinge member being secured on one side of said head section and said handle section to pivotally connect said head section and handle section, said head section further having a rectangular recess and said handle section having a corresponding rectangular projection, a fastening hook being secured on the other side of said head section and a fastening loop being secured on the other side of said handle section, whereby said fastening loop is suitable to unlockably lock said fastening hook with said rectangular recess fitted with said rectangular projection so as to firmly connect said head section and handle section in a straight state, and when said fastening loop and fastening hook are detached,



said hand tool is permitted to be folded up by means of said hinge member so as to reduce occupied room for facilitate storage and carriage of said hand tool.

5,385,072

ADJUSTABLE GRIPPING AND LOCKING TOOL

Ted Neff, 24701 Raymond Way, #115, Lake Forest, Calif. 92630

Filed Jul. 22, 1993, Ser. No. 96,509
Int. Cl.[6] B25B *7/04*
U.S. Cl. 81—405 15 Claims



1. An adjustable gripping and locking hand tool comprising:

a body pivotably attached to an elongated handle, a pivoting handle attached to said body, both of said handles being U-shaped in cross section, a fixed jaw on said elongated handle, an adjustable jaw on said body, a fulcrum bar disposed between said elongated handle and said pivoting handle, means for mounting said adjustable jaw on said body, and means for adjusting said adjustable jaw toward and away from said fixed jaw.

5,385,073

APPARATUS FOR PERFORATING CORRUGATED TUBING AT HIGH SPEEDS

Dale Tracsmer, Pigeon, and Richard Boomsa, Bad Axe, both of Mich.

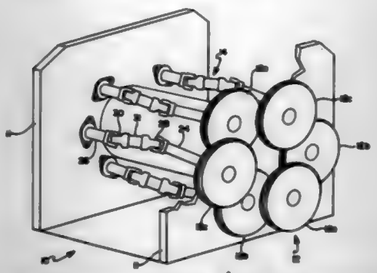
Continuation-in-part of Ser. No. 831,690, Feb. 5, 1992. This application Feb. 18, 1993, Ser. No. 19,026
Int. Cl.[6] B26D *1/28*
U.S. Cl. 83—322 5 Claims

1. An apparatus for cutting perforations in corrugated tubing as the tubing is passed along an axial path thereof, the apparatus comprising:

(a) at least one pair of feeder-cutter wheels, each wheel comprising a worm, a threading disposed upon the worm, and a plurality of cutters disposed within the threading.

each wheel being adapted to continuously interaect the corrugation of the tubing;

(b) at least one pair of drive shafts, each drive shaft having a forward portion, a rearward portion, and at least one U-joint interconnecting the forward portion and the rearward portion, each drive shaft having one wheel axially



mounted thereon, each drive shaft being deployed at an angle relative to the axial path of the tubing to apply pressure to the tubing as it is moved past the wheels;

means for rotating the drive shafts; and

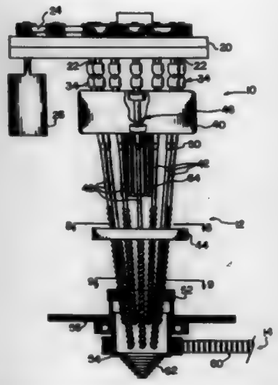
wherein the feeder-cutter wheels are operable to drive the tube along the axial path through the apparatus and to cut perforations in the corrugations of the tubing.

5,385,074

APPARATUS AND METHOD FOR CUTTING HELICALLY SHAPED POTATO PIECES

Russell E. Burch, Jr., Summerside, Canada, assignor to Cavendish Farms Limited, Prince Edward Island, Canada

Filed Feb. 23, 1993, Ser. No. 21,122
Int. Cl.[6] B26D *3/11*
U.S. Cl. 83—865 9 Claims



1. A method for cutting helically shaped potato pieces comprising:

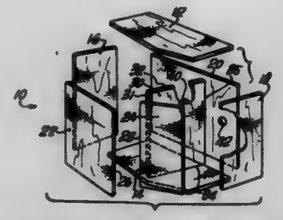
feeding potatoes successively along a central axis by rotating a plurality of rods positioned around said central axis, each of said rods having a spiral screw-like outer surface and being resiliently biased inwardly towards said central axis to grip said potatoes, pushing said potatoes into a cutting member of hollow conical form with a plurality of spaced channels on an inner surface each ending in an aperture forming cutting edges by further rotating said rods, and rotating said cutting member about said central axis to cut helically shaped pieces from said potatoes.

5,385,075

PERCUSSION INSTRUMENT

Ben Carnes, 5661 Oso Ave., Woodland Hills, Calif. 91367, and Alex Necioup-Acuña, 6934 Wish Ave., Van Nuys, Calif. 91406

Filed Mar. 22, 1994, Ser. No. 216,637
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—411 R 24 Claims



10. A percussion instrument comprising

panels, including side panels, joined together to generate a closed compartment,

two playing heads in contiguous relation to each other in the instrument but not necessarily in planar relation to one another,

a panel member having a pair of apertures each in its own portion of said panel member corresponding to its one of said two playing heads, said panel member in generally opposing and spaced relationship to said playing heads, and

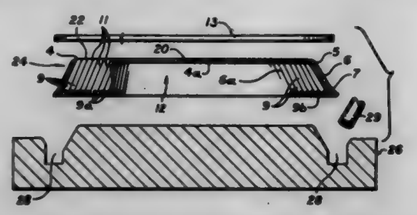
an interiorly mounted panel forming a pair of resonating chambers in said compartment for corresponding ones of said playing heads and their apertures.

5,385,076

REINFORCED DRUMHEAD

Remo D. Belli, North Hollywood, Calif., assignor to Remo, Inc., North Hollywood, Calif.

Filed Jun. 20, 1994, Ser. No. 262,590
Int. Cl.[6] G01D *13/02*
U.S. Cl. 84—414 14 Claims



1. A drumhead for use in conjunction with a drum shell wherein an annular hoop is employed in stressed relation with said drumhead for use in attaching and fixedly securing said drumhead to said drum shell and tensioning the drumhead to an appropriate tonality, comprising:

a material for constituting a drumming surface,

a peripheral wall member, said peripheral wall member being integrally formed circumferentially with said drumming surface and adapted to be bent downwardly with an orientation generally oblique relative to the horizontal plane of said drumming surface and having a plurality of individual strips separated by alits with each of said strips having a first end portion and an opening formed at or near said first end portion,

a first means cured from a liquid to a rigid state comprising in said rigid state an annular shoulder disposed circumferentially and generally in abutting seal-tight relation against said peripheral wall member, said annular shoulder including means integrally formed therewith for fixedly anchoring said shoulder to said peripheral wall member to enable said shoulder to withstand the stress forces resulting from the tensioned engagement with said annular hoop, and

a hoop-like shank adapted to be set within said first means cured from a liquid to a rigid state and disposed circumferentially about said peripheral wall member.

5,385,077

BRAID AND BRAIDING METHOD

Yasuo Akiyama, Kyoto; Zenichiro Maekawa, Amagasaki; Hiroyuki Hamada, Kyoto; Atsushi Yokoyama, Kyoto; Yasushi Uratani, Ohtsu, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 694,385, May 1, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,059
Claims priority, application Japan, May 11, 1990, 2-049371; Aug. 29, 1990, 2-227079
Int. Cl.[6] D04C *1/00*
U.S. Cl. 87—8 8 Claims



1. A braiding machine having a track along which bobbin carriers are moved, the braiding machine comprising:

a substantially linear transfer section having a first end and a second end,

two substantially semicircular sections connected to the first end of the transfer section,

two substantially semicircular sections connected to the second end of the transfer section, and

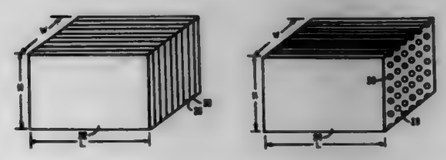
collision prevention means for preventing collision of bobbin carriers travelling in substantially opposite directions in the transfer section, the collision prevention means comprising a substantially circular sidetrack connected to the transfer section onto which sidetrack the bobbin carriers are shuntable.

5,385,078

CONDUCTING PHASE CHANGE MATERIAL ARMATURE FOR AN ELECTROMAGNETIC LAUNCHER SYSTEM

Van P. Carey, Albany, and Minh D. Lee, San Jose, both of Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1989, Ser. No. 451,397
Int. Cl.[6] F41B *6/00*
U.S. Cl. 89—8 3 Claims



1. An electromagnetic projectile launching system comprising:

at least two parallel conductive rails;

a power source connected to said conductive rails, said power source operable to supply a current to said rails;

a phase change material armature, said phase change material armature having lamina of electrically conducting phase change and primary conductive material, said phase change material armature cooperatively associated with said conductive rails,

said electrically conducting phase change material armature including at least one layer of an electrically conductive phase change material, said electrically conductive phase change material operable to change from a solid state to a liquid state when exposed to an increase in temperature, said electrically conductive phase change material retaining its electrical conductivity in said solid and said liquid state;

at least two layers of an electrically conductive primary armature material, said electrically conductive primary armature material being cooperatively associated with said layer of electrically conductive phase change material to facilitate heat transfer;

said electrically conductive phase change material being a lamina layered between said layers of said electrically conductive primary armature material;

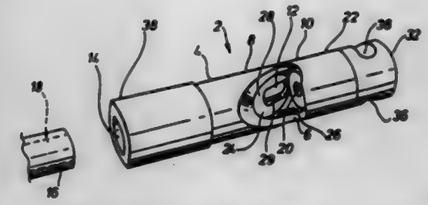
a projectile contacting said armature and operable to be moved along and between said rails when said armature contacts said rails and is supplied with said current.

5,385,079

VORTICES-ACTIVATED MUZZLE STABILIZER FOR A GUN

Richard G. Cave, Wimborne, United Kingdom, assignor to Datestyle Limited, London, England

PCT No. PCT/GB92/00511, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993, PCT Pub. No. WO92/16812, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 20, 1992, Ser. No. 119,179
Claims priority, application United Kingdom, Mar. 22, 1991, 9106153
Int. Cl.[6] F41A *21/34, 21/36*
U.S. Cl. 89—14.3 9 Claims



1. A vortices-activated muzzle stabiliser for a gun, which muzzle stabiliser comprises a cylindrical body having:

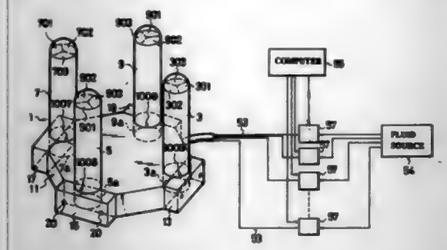
(i) a single main vet: alot, which defines a main gas deflection area by extending inwardly at an angle of less than 90 degrees to the longitudinal axis of the body from a peripheral portion of the body to a central portion of the body, and which deflects the gases in the form of gas vortices;

(ii) a balancing slot which extends at 90 degrees to the longitudinal axis of the body and which is positioned opposite the main vent slot;

(iii) a barrel connecting bore for affording a connecting passage between the muzzle stabiliser and the barrel of the gun; and

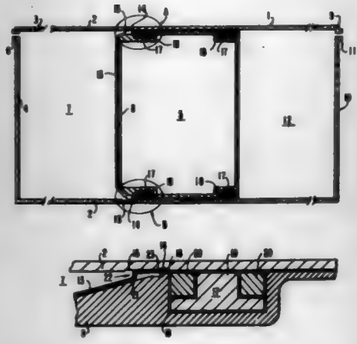
(iv) a gas exhaust aperture which is positioned at a downstream end of the body.

5,385,080
ACTUATOR WITH FLEXIBLE CYLINDERS
Kohichi Sazanori, Kanazawa, Japan, assignor to Kabushiki Kaisha Tochiba, Kawasaki, Japan
Continuation of Ser. No. 945,267, Sep. 15, 1992, abandoned, which is a continuation of Ser. No. 631,812, Dec. 20, 1990, Pat. No. 5,156,081. This application Oct. 28, 1993, Ser. No. 142,122
Claims priority, application Japan, Dec. 20, 1989, 1-328435
Int. Cl.[6] F01B *19/04*; F15B *11/20*
U.S. Cl. 92—171.1 22 Claims



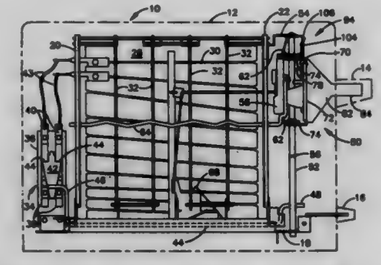
1. An actuator comprising:
a base to which support members are fastened; and
at least two flexible cylinders, each comprising:
a tubular elastic body having anisotropic elasticity;
an elastic partition wall dividing the tubular elastic body into a plurality of individual pressure chambers; and
a base portion made of elastic material, the base portion having a thickness greater than the thickness of the tubular elastic body, the base portion designating an end of the flexible cylinder, the base portion being held by and between the base and one of the support members, the flexible cylinders being thereby supported in a predetermined positional relationship.

5,385,081
FLUID STORAGE TANK EMPLOYING A SHEAR SEAL
Kirk Sneddon, Sayville, N.Y., assignor to Arde Incorporated, Norwood, N.J.
Filed Sep. 9, 1993, Ser. No. 118,952
Int. Cl.[6] F16J *9/00*; F02K *9/50*; B67D *5/42*
U.S. Cl. 92—192 20 Claims



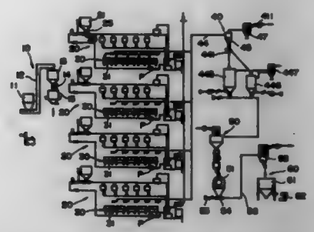
1. A cylindrical tank for storing fluid comprising:
a cylindrical body (2) forming a wall of the tank, said cylindrical body having an inner surface in which is formed a circumferential wall recess (15);
an exit endpiece (4) fixedly attached to an exit end (3) of said cylindrical body (2) by a fluid tight seal;
an inlet endpiece (10) fixedly attached to an inlet end (10) of said cylindrical body (2) by a fluid tight seal;
a piston (5) slidably mounted within said cylindrical body (2) between said exit endpiece (4) and said inlet endpiece (10);
an annular seal (17) mounted on said piston (5) so that said annular seal (17) tightly contacts the inner surface of said cylindrical body (2) to provide a fluid tight seal between stud piston (5) and said cylindrical body (2); and
a shear seal member (13) mounted within said cylindrical body (2) between said piston (5) and said exit endpiece (4) and fixedly attached by a fluid tight seal to the inner surface of said cylindrical body (2) within said circumferential wall recess (15), said shear seal member (13) forming a fluid tight storage chamber (7) within said cylindrical body (2) between said shear seal member (13) and said exit endpiece (4) in which to store fluid, said shear seal member (13) having a circumferential notch (22) located proximate to an outer periphery of said shear seal member (13), the circumferential notch (22) reducing the thickness of said shear seal member (13) so that when said piston (5) is pressurized said shear seal member (13) ruptures along said circumferential notch (22).

5,385,082
TOASTER WITH SAFETY SHUT-OFF
Peter Huggler, Columbia, and Charles Martin, Macon, both of Mo., assignors to Toastmaster Inc., Columbia, Mo.
Filed Apr. 8, 1994, Ser. No. 225,046
Int. Cl.[6] A47J *37/08*; H05B *1/02*
U.S. Cl. 99—328 10 Claims



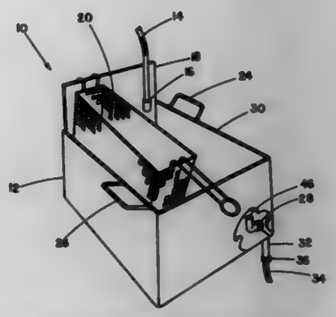
1. A toaster with automatic shut-off, comprising:
a bottom frame and at least one wall, together defining an open-ended cavity adapted to receive an item to be toasted, said wall mounting at least one heating element;
a switch mounted to said bottom frame and connected to said heating element for selective activation of said heating element;
a carriage mechanism mounted to said bottom frame, said carriage mechanism including:
a bread support extending into said cavity and adapted to support the item to be toasted, said bread support movable between an up and a down position;
a switch abutment portion movable between an up and a down position, said portion activating said switch when said portion is in said down position, said portion being movable with respect to said bread support through a limited degree of travel when said bread support is in said down position, with movement of said portion through said limited degree of travel from said down position being sufficient to deactivate said switch;
means for releasably locking said portion in said down position; and
means biasing said portion toward said up position and through said limited degree of travel; and
means permitting release of said locking means, whereby release of said locking means permits said biasing means to cause motion of said portion with respect to said bread support, deactivating said switch even when said bread support remains in said down position.

5,385,063
PRODUCTION PLANT FOR CEREAL POWDER
Yasuhiro Toyokura, Kanagawa, Japan, assignor to Kurarich Co. Ltd., Kanagawa, Japan
Filed May 10, 1994, Ser. No. 240,315
Claims priority, application Japan, May 17, 1993, 5-114438
Int. Cl.[6] B02B *5/00*; B02C *4/00*, *4/06*
U.S. Cl. 99—355 22 Claims



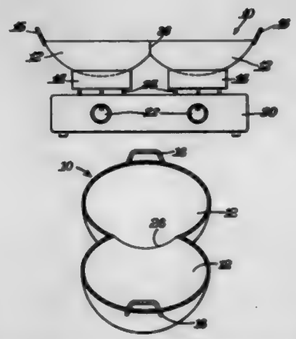
1. A cereal powder production plant comprising:
means for washing and measuring cereal material;
means for roasting the cereal material passed through said washing and measuring means;
means for separating and screening from the roasted cereal a carbonized substance generated during the roasting process in said roasting means;
means for connecting said roasting means to said separating and screening means for feeding the roasted cereal material;
means for crushing the cereal material separated and screened by said separating and screening means; and
means for connecting said separating and screening means to said crushing means for feeding the roasted material from which the carbonized substance is removed.

5,385,084
VARIABLE FLOW APPARATUS FOR COOKING FOOD
Alan Lafleur, 41 N. Griffing Blvd., Asheville, N.C. 28804
Filed Apr. 14, 1992, Ser. No. 868,533
Int. Cl.[6] A47J *37/12*
U.S. Cl. 99—411 12 Claims



1. A portable pasta cooking apparatus comprising:
a cooking container; said cooking container having a bottom wall and at least one side wall rising vertically from said bottom wall; said cooking container for holding an amount of water for cooking foods when heated; said bottom wall for making contact with a source of heat to transfer the heat from the outside to the inside of said cooking container;
a drain pipe for draining water from said cooking container; a substantial portion of said drain pipe located inside of said cooking container; an opening in at least one of said side walls in said cooking container; said drain pipe communicating with said opening; said drain pipe including an open end; said drain pipe being rotatable whereby the elevation of said open end with respect to the level of the water in said cooking container may be varied;
a mechanism for selectively holding said drain pipe in a plurality of predetermined positions whereby the rate that the water is drained from the cooking container may be varied;
means to enable said cooking apparatus to be readily transported; said cooking container being devoid of a heat source.

5,385,085
MULTIPLE UNIT WOK APPARATUS
Robert A. Plane, Sr., Wilmington, Del., assignor to Plane Equipment, Inc., Wilmington, Del.
Continuation of Ser. No. 484,898, Feb. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 408,772, Sep. 18, 1989, abandoned. This application Dec. 22, 1993, Ser. No. 172,612
Int. Cl.[6] A47J *27/00*, *37/1*
U.S. Cl. 99—422 4 Claims



1. Multiple unit wok apparatus comprising two similar wok bowls affixed together at an intersecting joint therebetween, wherein said intersecting joint lies in the plane of connection between said bowls, said intersecting joint being arcuate downwardly, said apparatus having a cut-out portion formed in a rim of each bowl adjacent said intersecting joint and forming said arcuate downwardly extending intersecting joint when said apparatus is in the cooking position, and said cut-out in each bowl mates to form said joint, thereby allowing cooked or partially cooked foods and juices to be shifted easily from one wok to the other through said joint by the cook, using a spoon, spatula or other appropriate tool, with substantially no spillage.

5,385,086
ELECTROSTATIC ASSISTED DRY INGREDIENT DEPOSITION APPARATUS
Burns, San Clemente, Calif., and Darren L. Duggan, Waxahachie, Tex., assignors to Par-Way Group, Irvine, Calif.
Filed Jun. 21, 1994, Ser. No. 263,038
Int. Cl.[6] A47J *44/00*; B05C *19/00*; H05F *3/00*
U.S. Cl. 99—451 19 Claims

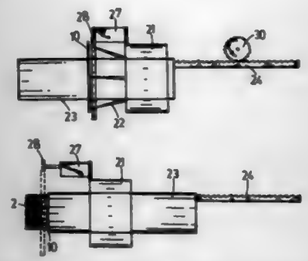
1. A dry ingredient distributor comprising,
an auger for moving powdered or granular food material from a storage bin for application to a solid food product;
a distribution tube surrounding said auger;
said distribution tube having a plurality of spaced openings for discharging said powdered or granular food material

in a curtain of falling powdered or granular food material along at least one half the length of said distribution tube;
electrostatic field generation means to generate a substantially uniform electric field at a preselected distance from said distribution tube;



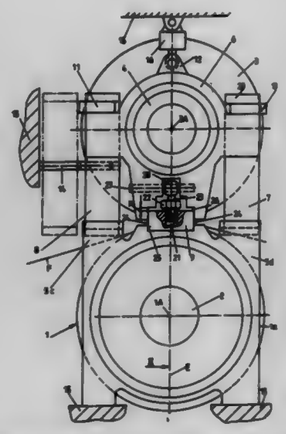
said uniform electrostatic field extending horizontally along substantially the entire length of said distribution tube and along the curtain of falling powdered or granular food material.

5,385,087
MECHANISM FOR BINDING NAILS
Chun-I Yao, 58, Ma Yuan West St., Taichung, Taiwan, Prov. of China
Filed May 23, 1994, Ser. No. 246,729
Int. Cl.[6] B65B *13/30*
U.S. Cl. 100—9 **2 Claims**



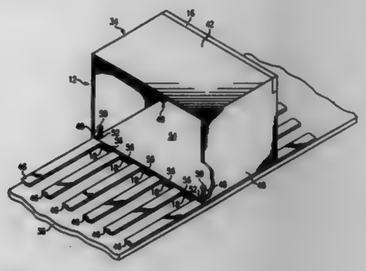
1. A mechanism for binding nails comprising means for moving a rubber tube to be cut, means for cutting said rubber tube into a rubber band, hook means disposed below said cutting means for hooking said rubber band, a sleeve including a center bore and including one end having a plurality of blades pivotally coupled thereto, a rod slidably engaged in said center bore of said sleeve, means for moving said rod toward said blades for expanding said blades, an electro-magnetic means disposed in said rod for attracting nails when said rod moves beyond said blades, means for moving said hook means toward said blades for engaging said rubber band with said blades and for allowing expanding of said rubber band by said blades, a ring disposed beside said blades close to said blades, means for moving said ring toward or away from said blades for moving said rubber band away from said blades in order to bind said nails when said nails move within said ring.

5,385,088
PRESS HAVING GUIDE FOR BEARING BRACKETS
Joachim Grabscheid, Heuchlingen, Germany, assignor to J.M. Voith GmbH, Heidenheim, Germany
PCT No. PCT/DE92/01030, § 371 Date Aug. 9, 1993, § 102(e) Date Aug. 9, 1993, PCT Pub. No. WO93/12290, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 10, 1992, Ser. No. 98,364
Claims priority, application Germany, Dec. 11, 1991, 4140876
Int. Cl.[6] B30B *3/04*; D21F *3/02*
U.S. Cl. 100—168 **20 Claims**



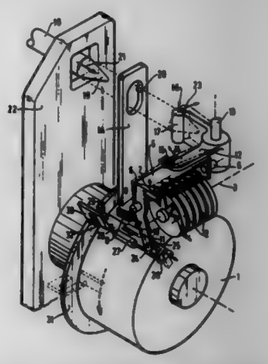
1. A press for the treatment of a traveling paper web, the press comprising:
a first press unit having a first axis and a second press unit having a second axis, the first and second axes lying in a pressing plane, the first and second press units being placed with respect to each other for defining a press nip through which the web travels;
the first press unit including a stationary support member, a traveling press element supported on and traveling around the support member for defining a jacket for cooperating in the press nip with the second press unit; an internal pressing device located at the support member movable for causing such radial movement of the traveling press element as to create the press nip and to produce a pressing force that acts on the web in the press nip;
each of the first and second press units having opposite ends;
respective first bearing brackets at the ends of the first press unit and respective second bearing brackets at the ends of the second press unit;
detachable tension bars at the ends of the press units including a respective tension bar coupling the first and second bearing bracket at each end of the press unit, the tension bar serving for transmitting pressing force between the bearing brackets; the tension bars being pretensioned to at most a fraction of the maximum pressing force in the event of the occurrence of a zero pressing force;
the first bearing brackets being rigidly supported on a press frame for supporting the first press unit and for supporting at least part of the weight of the second press unit;
at least one of the second bearing brackets is movable relative to at least one of the first bearing brackets along the pressing plane, both the at least one first bearing bracket and the at least one second bearing bracket located at the same end of the press, and in the loaded condition of the press, the at least one second bearing bracket is moved away from the at least one first bearing bracket to provide a spacing distance between the at least one first and at least one second bearing brackets, the at least one second bearing bracket having a guide surface;
guiding means for guiding the bearing brackets of the first and second press units to move relative to each other along a path parallel to the pressing plane, the guiding means including a guide surface which lies parallel to the pressing plane for engaging the guide surface of the at least one second bearing bracket for guiding the movement of the at least one first and at least one second bearing brackets parallel to the pressing plane and a removable guide piece disposed between the at least one first and the at least one second bearing brackets, the guide peice having the guide surface of the guide means at one side thereof oriented to extend parallel to the pressing plane.

5,385,089
APPARATUS FOR REPLACING WEAR COMPONENTS IN A RAM BALER
Horace R. Newsom, Waco, Tex., assignor to Harris Waste Management Group, Inc., Peachtree City, Ga.
Filed Aug. 30, 1993, Ser. No. 114,324
Int. Cl.[6] B30B *15/04*
U.S. Cl. 100—179 **8 Claims**



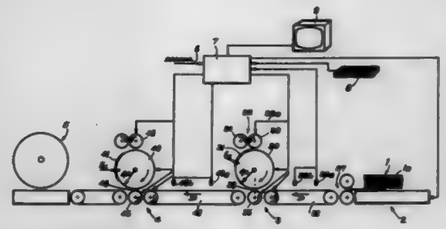
1. In a ram baler having:
a passageway;
a compacting chamber coupled to the passageway;
a main platen, the main platen reciprocal in at least one direction in the passageway and compacting chamber;
a floor for bearing the weight of the main platen;
at least one guide strip coupled to the floor; and
at least one wear shoe associated with the main platen, the wear shoe positioned between the main platen and the floor;
wherein the improvement comprises:
a jack means coupled to the main platen for selectively moving the main platen to allow replacement of the wear shoe without requiring removal of the main platen from the passageway.

5,385,090
DEVICE FOR LOCKING THE PRINTWHEELS OF A POSTAGE METER
Francis Coret, Neuilly Plaisance, and Michel Gravillon, Sucy en Brie, both of France, assignors to Neopost Industrie, Bagneux, France
Filed Dec. 22, 1993, Ser. No. 171,666
Claims priority, application France, Dec. 22, 1992, 92 15497
Int. Cl.[6] B41J *1/60*
U.S. Cl. 101—110 **2 Claims**



1. A device for locking adjustable printwheels, which are carried in alignment on a common axis by a rotary drum fitted in a postage meter, comprising:
a prim drum having a generator line;
a fixed frame including a collar, said collar being coaxial with said prim drum;
a plurality of printwheels having an axis of rotation and mounted in said print drum;
a coaxial toothed wheel secured to each of said plurality of printwheels;
a shaft mounted on said print drum on an axis parallel to said axis of rotation of said plurality of printwheels;
a bail tiltably mounted on said shaft, said bail including at least as many locking teeth as said plurality of printwheels, said bail further including an abutment and an arm;
at least one return spring fixed to said print drum for urging said bail towards a printwheel-locking position, each of said plurality of teeth engaging a respective one of said toothed wheels when said bail is in the printwheel-locking position;
a crank lever pivotally mounted on an axis orthogonal to the axis of said shaft and having a first free end and a second free end, said first free end engaging said abutment of said bail to cause said bail to be tilted against the force of said return spring into a position in which it unlocks said plurality of printwheels;
an unlocking control member located external to said print drum and engaging said second free end of said crank lever to pivot said crank lever and thus unlock said plurality of printwheels; and
a locking security pull rod slidably mounted on said generator line; said pull rod including a notch and an upside-down U-shaped yoke at an end thereof, said arm of said bail being permanently engaged in said notch, said upside-down U-shaped yoke straddling said collar of said fixed frame without rubbing thereagainst; said yoke preventing said pull rod from sliding and consequently preventing said bail from unlocking of said printwheels;
said collar including an opening for enabling said pull rod to slide and said bail to unlock said printwheels when said opening is aligned with said yoke.

5,385,091
SHEET-FED PRINT INSTALLATION AND A CORRESPONDING PRINT LINE
Jean-Pierre Cuir, 36 avenue de Brigode, and Gérard Cuir, 23 allée des Grands Champs, both of 59650 Villeneuve D'Ascq, France
Filed Mar. 23, 1994, Ser. No. 217,308
Claims priority, application France, Mar. 26, 1993, 93 03707
Int. Cl.[6] B41F *7/02, 13/24*
U.S. Cl. 101—217 **11 Claims**



1. A sheet feed print installation comprising:
a plate-carrier cylinder having a plate of thickness E_c fixed to the periphery thereof;
a backing system, optionally constituted by a backing cylinder;
a screened cylinder; and
a transfer system having an inlet into which the sheets are inserted one by one and which bring each sheet in succession to the pinch line between the plate-carrier cylinder

and the backing cylinder; the installation further comprising:

a) three or four motors which are mechanically independent, the first rotating the plate-carrier cylinder, the second rotating the screened cylinder, the third rotating the transfer system, and optionally the fourth rotating the backing cylinder; and

b) an electronic circuit connected to the second, third, and optionally fourth motors, that receives an input reference signal and that includes means for inputting operating parameters, including at least the thickness E_c of the plates and the print rate;

wherein the first motor rotates the plate-carrier cylinder synchronously with the reference signal in such a manner that the plate-carrier cylinder rotates through 360° at constant speed during the time interval that corresponds to the print rate; and

wherein the electronic circuit automatically controls rotation of the second, third, and optionally fourth motors on the basis of the reference signal and as a function of the thickness E_c in such a manner firstly that the peripheral linear speed of the screened cylinder is equal to the linear speed of the plate on the plate-carrier cylinder, and secondly that the linear speed of the transfer system and optionally the peripheral linear speed of the backing cylinder are equal to the linear speed of the plate on the plate-carrier cylinder at least during the time interval T_1 during which the plate is printing.

5,385,092

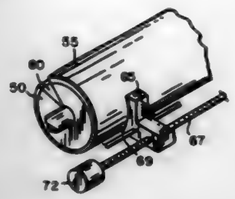
LASER-DRIVEN METHOD AND APPARATUS FOR LITHOGRAPHIC IMAGING

Thomas E. Lewis; Richard A. Williams, both of Hampstead; Frank G. Pennavecchia, Hudson; John F. Kline, and John P. Gardiner, both of Londonderry, all of N.H., assignors to Presstek, Inc., Hudson, N.H.

Continuation of Ser. No. 917,481, Jul. 20, 1993, abandoned. This application Nov. 29, 1993, Ser. No. 159,955

Int. Cl.[6] B41N *1/14*; B41C *1/10*; B41M *5/24*

U.S. Cl. 101—467 **32 Claims**



1. Printing apparatus comprising:

a. a printing member having a printing surface and including a solid oleophobic layer and a solid oleophilic layer underlying the oleophobic layer, one of said layers being characterized by ablative absorption of imaging radiation;

b. means for supporting the printing member;

c. at least one laser source that produces an imaging output;

d. means for guiding the output of the at least one laser to focus on the printing surface;

e. means for causing relative movement between the guiding means and support means to effect a scan of the printing surface by the laser output; and

f. means for selectably actuating, in a pattern representing an image, the laser source so as to ablate the absorptive layer, thereby removing or facilitating removal of the oleophobic layer and directly producing on the member an array of image features.

5,385,093

INKING UNIT HAVING A CANTILEVERED INKING ROLLER, AS WELL AS A CANTILEVERED PLATE CYLINDER

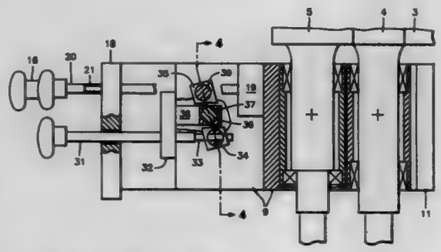
Gunter Rogge, Lienen, and Uwe Rogge, Lengerich, all of Germany, assignors to Windmoeller & Hoelscher, Lengerich-/Westf., Germany

Filed Jun. 15, 1993, Ser. No. 76,897

Claims priority, application Germany, Jun. 15, 1992, 9208023[U]; Jun. 24, 1992, 9208449[U]

Int. Cl.[6] B41F *13/30*, *13/32*

U.S. Cl. 101—247 **8 Claims**



1. An inking unit comprising:

an inking roller,

a plate cylinder,

a bracket plate,

a plate cylinder block displaceable on said bracket plate, one end of said plate cylinder being cantileverly mounted on said plate cylinder block,

a plate rigidly connected to said plate cylinder block and extending perpendicular to said plate cylinder block,

a bearing housing connected to said bracket plate,

a lead screw rotatably mounted in said bearing housing for displacing said plate cylinder for horizontal displacement of said plate cylinder in a direction towards and in a direction away from said inking roller,

a lever having two ends,

a second lead screw engaging one end of said lever, the other end of said lever being pivotally mounted in said plate cylinder block and including in a central zone, a pin projecting into a longitudinal groove of said bracket plate for pivotally moving said plate cylinder with respect to said ink roller.

5,385,094

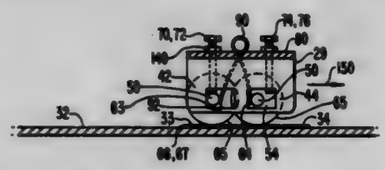
CREDIT CARD IMPRINTER

Randall J. Kennedy, Kitchener, Canada, assignor to SBN Systems, Inc., Ontario, Canada

Filed Apr. 29, 1993, Ser. No. 53,669

Int. Cl.[6] B41F *3/04*

U.S. Cl. 101—269 **34 Claims**



1. An imprinter comprising:

a base having a flatbed for receiving at least one character bearing element having characters to be imprinted on a print receiving element;

a carriage having a plurality of wheels joined to opposed sides of the carriage which rotatably support the carriage in first and second directions of motion of the carriage along the flatbed and which limit movement of the carriage orthogonal to the flatbed during movement in the first and second directions and opposed downwardly extending members;

a first rolling platen having an axle supported in the carriage in the opposed downwardly extending members of the carriage;

a first axle retaining means comprising a first pair of openings disposed respectively in the opposed downwardly extending members for retaining the axle of the first rolling platen during movement of the carriage in the first and second directions with each opening having a height in a direction orthogonal to the flatbed greater than a diameter of the axle of the first rolling platen with the axle of the first rolling platen moving orthogonally away from the flatbed during imprinting when an outside periphery of the first rolling platen contacts characters of the at least one character bearing element disposed on the flatbed during movement in the first and second directions; and

means comprising first and second stops mounted in the carriage which extend toward the flatbed for limiting travel of the axle of the first rolling platen orthogonally away from the flatbed during imprinting when the outside periphery of the first rolling platen contacts characters of the at least one character bearing element to establish a position of the first rolling platen during imprinting relative to the flatbed, the first stop engaging the axle of the first rolling platen during imprinting at a position axially displaced from a first side of the first rolling platen and the second stop engaging the axle of the first rolling platen during imprinting at a position axially displaced from a second side of the first rolling platen opposed to the first side.

5,385,095

CLEANING APPARATUS FOR A CYLINDER OF A ROTARY PRINTING MACHINE

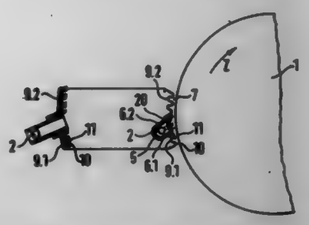
Franz Waizmann, Gessertshausen, Germany, assignor to Baldwin-Gegenheimer GmbH, Augsburg, Germany

Filed Mar. 1, 1993, Ser. No. 25,042

Claims priority, application Germany, Feb. 28, 1992, 4206181

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—424 **10 Claims**



1. A cleaning apparatus for a cylinder of a rotary printing machine, especially for an impression cylinder or a blanket cylinder, comprising:

a distributor (2) for spraying a jet of cleaning fluid on the cylinder (1);

at least two guide elements (6.1, 6.2) extending adjacent to the spray jet (20) from the distributor (2) to the cylinder (1), each of said guide elements positioned adjacent said cylinder (1) to form a narrow gap therewith, one of said guide elements forming a rear gap (7.1) being the first gap along the direction of rotation of the cylinder (1), the other of said guide elements forming a front gap (7.2) being the second gap along the direction of rotation of the cylinder (1);

wherein the guide elements (6.1, 6.2) are disposed directly adjacent said spray jet such that said spray jet is conducted from said distributor to said cylinder substantially without additional air;

wherein the guide elements (6.1, 6.2) extend approximately parallel to the direction of the spray jet (20);

wherein a flow labyrinth (9.2, 9.3) is provided at the forward gap (7.2) and the rearward gap (7.1) to separate off a mist of said cleaning fluid.

5,385,096

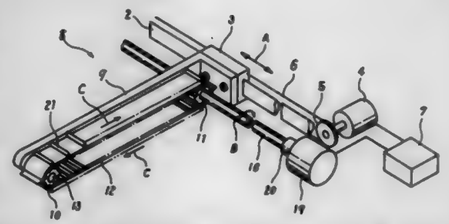
PRINTING PLATE CONTAMINANT REMOVING DEVICE POR PRINTING PRESS

Hisaya Suzuki, Ebina, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 136,548

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—425 **14 Claims**



1. A printing plate contaminant removing device for removing contaminants frown a printing cylinder rotatable about a cylinder axis, the device comprising:

a guide member extending substantially parallel to the cylinder axis;

a holder disposed on and movable along the guide member;

a rotatable belt with a plurality of contaminant removal blades disposed at intervals along the belt at a predetermined pitch;

first drive means for driving the rotatable belt;

a pair of pulleys journaled to the holder and rotatably engaged to the rotatable belt, wherein the first drive means positions one of the contaminant removal blades adjacent to and in contact with the printing cylinder to remove contaminants from the printing cylinder, and the first drive means positions the contaminant removal blades away from the printing cylinder wherein none of the contaminant removal blades contact the printing cylinder when contaminants are not being removed from the printing cylinder.

5,385,097

ELECTROEXPLOSIVE DEVICE

Christopher D. Hruska, Blue Springs, Mo.; Todd M. McGinn, Olathe, Kans., and Wayne A. Smith, Liberty, Mo., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 16, 1993, Ser. No. 92,648

Int. Cl.[6] F42C *19/12*

U.S. Cl. 102—202.5 **5 Claims**



1. A device including an exploaive mixture and a semiconductor igniter chip adjacent to said mixture, said chip comprising:

a semiconductor substrate of a first conductivity type, and having a pair of major surfaces, an ignition region at one

of said surfaces in an area adjacent to the mixture, and an edge region;

a first region of opposite conductivity type formed in the major surface adjacent to the mixture and extending a substantial lateral distance across the surface, the lateral disgrace being substantially larger than the ignition region;

a dielectric layer formed over said major surface adjacent to the mixture so as to cover completely the region of opposite conductivity type, the dielectric layer including an opening therein exposing the semiconductor surface at the ignition region of the chip; and

a single metal formed over the dielectric layer and said opening so as to make electrical contact to the ignition region of the chip, the dielectric layer covering the first region to prevent contact therewith by the metal layer.

5,385,098

INITIATING ELEMENT FOR NON-PRIMARY EXPLOSIVE DETONATORS

Vidar Lindqvist, Gärdesvägen; Lars-Gunnar Löfgren, Rävbergsvägen, and Tord Olsson, Hällefors vägen, all of Sweden, assignors to Nitro Nobel AB, Nora, Sweden

Continuation of Ser. No. 420,512, Oct. 12, 1989, abandoned. This application Mar. 15, 1993, Ser. No. 32,193
Claims priority, application Sweden, Oct. 17, 1989, 88 03683-5
Int. Cl.[6] B30B *7/00*
U.S. Cl. 102—205 25 Claims

1. A non-primary explosive detonator comprising a hollow tube with a secondary explosive base charge in one end, an opposite end provided with heat generating igniting means, and an initiating element comprising a confinement containing secondary explosive material, said initiating element having

(a) a first end which faces the igniting means and which contains secondary explosive material and is adapted for ignition of the secondary explosive material by the igniting means,;

(b) a second end facing the base charge and being adapted for delivering a detonation impulse; and

(c) an intermediate portion comprising a deflagration section adjacent said first end and a detonation section adjacent said second and in which the secondary explosive material of the element, upon ignition, is adapted to undergo a deflagration to detonation transition;

wherein at least the secondary explosive material located in said first end and in said deflagration section of the initiating element is in the form of a porous granulated material, the granules thereof having a weight average particle size between 10 and 2000 microns, and made up of a plurality of primary crystals having a weight average particle size between 0.1 and 100 microns, the crystals being held together in clusters.

5,385,099

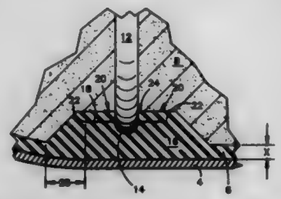
STRESS RELIEF SYSTEM FOR SLOTTED PROPELLANT MOTORS

Charles A. Chase, Monte Sereno, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 15, 1993, Ser. No. 31,516
Int. Cl.[6] C06B *45/00*
U.S. Cl. 102—289 12 Claims

1. A stress relief system for relieving stress in a thermally insulated, solid propellant rocket motor having one or more secondary slots having outer edges comprising:

one or more articulated members said articulated members having a distal end and a proximal end wherein said distal end is affixed to the layer of the thermal insulation and the



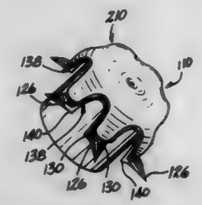
proximal end is free to relieve the stresses developed at the outer edge of the secondary slot.

5,385,100

UPSET JACKETED BULLET

Alan J. Corzine, Marine; Jack D. Dippold, Edwardsville, both of Ill., and David K. Schluckebier, Cabot, Ark., assignors to Olin Corporation, East Alton, Ill.

Continuation of Ser. No. 906,187, Jun. 29, 1992, abandoned, which is a division of Ser. No. 863,647, Apr. 2, 1992, Pat. No. 5,208,424, which is a continuation-in-part of Ser. No. 679,475, Apr. 2, 1991, Pat. No. 5,101,732. This application Nov. 19, 1993, Ser. No. 157,353
Int. Cl.[6] F42B *12/34*
U.S. Cl. 102—507 7 Claims



1. An upset jacketed bullet, comprising:

a body generally symmetrical about a central axis having a mushroomed head; and

a plurality of jacket petals folded back from said body behind said mushroomed head, each of said petals terminating in a generally radially outwardly pointing curved prong extending from a hardened transition region wherein each of said prongs has at least one fillet at said hardened transition region extending between said petal and said prong, said prongs defining a diameter larger than a diameter of said mushroomed head.

5,385,101

HUNTING BULLET WITH REINFORCED CORE

Alan J. Corzine, Marine, and Gerald E. Eberhart, Bethalto, both of Ill., assignors to Olin Corporation, East Alton, Ill.

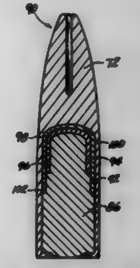
Continuation-in-part of Ser. No. 56,146, Apr. 30, 1993. This application Nov. 1, 1993, Ser. No. 143,712
Int. Cl.[6] F42B *12/34*
U.S. Cl. 102—509 29 Claims

17. A bullet, comprising:

a unitary metal body having an ogival nose portion, a generally cylindrical heel portion behind said nose portion and an integral partition therebetween along a central axis

therethrough, said heel portion having a rearwardly open cavity therein;

a dense core filling said heel portion cavity; and



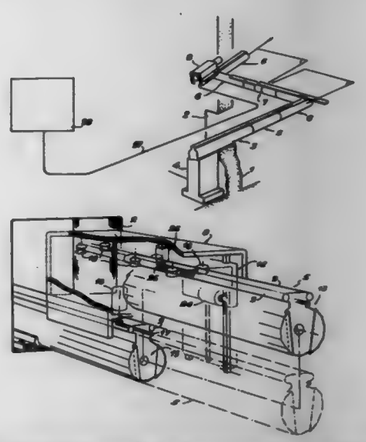
a plurality of tubular metal inserts of higher tensile strength than said metal body located in said rear cavity.

5,385,102

VEHICLE FOR THE AUTOMATIC LAYING OF A TRACK BY A VEHICLE TRAVELLING ON SAID TRACK AND TRACK DESIGNED FOR INSTALLATION BY SUCH A VEHICLE

Eric Villedieu, Saint Michel Surorge, and Daniel Francois, Vendome, both of France, assignors to Commissariat a l'Energie Atomique, France

Division of Ser. No. 979,827, Nov. 20, 1992, Pat. No. 5,331,896. This application Jan. 10, 1994, Ser. No. 179,307
Claims priority, application France, Nov. 29, 1991, 91 14829
Int. Cl.[6] E01B *29/00*
U.S. Cl. 104—2 22 Claims



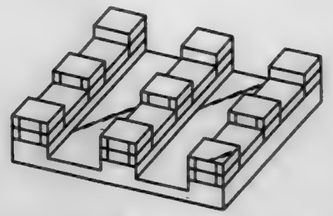
1. A track and a vehicle, said track being comprised of track elements and said vehicle being operable to lay said track elements and being guided and advanced on said track, said vehicle comprising a chassis provided with guiding and advancing means engaged on said track elements and a carriage for transporting a carried track element and positioning said carried track element at a free end of said track so as to interlock said carried track element with said track, each of said track elements having front and rear ends and a rail system, said track elements being joined at said front and rear ends such that said rail system extends generally continuously along said track, said front and rear ends of said track elements providing faces defining substantially complimentary, vertically abutting, sliding couplings for interlocking engagement of the track elements, said rail system being engagable with said guiding and advancing means to guide said vehicle along said track elements, said track elements being engagable with said guiding and advancing means to advance said vehicle along the track elements.

5,385,103

ADAPTOR FOR FOUR-WAY PAPER CARGO PALLET

Harry C. Juvik-Woods, San Rafael, Calif., assignor to Damage Prevention Products, Inc., Benecia, Calif.

Filed Jun. 14, 1993, Ser. No. 76,733
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 12 Claims



7. A four-way entry pallet comprising in combination:

a two-way entry cargo pallet having a first set of slots to accept tines of a forklift and multiple longitudinal runners, each said runner having a bottom and sides and each said runner being situated beneath and supporting a cargo deck,

an adaptor associated with and adhering to each said runner, each said adaptor comprising multiple support blocks and a single lower facing sheet, wherein said

a) multiple support blocks each having a top, sides, and a bottom and separated from each other and the bottom of each adhesively attached to said single lower facing sheet and to longitudinal pallet runner, and

b) said single lower facing sheet for each said adaptor comprising a corrugated sheet adherent to the multiple support blocks and folded to cover the bottoms of each of the support blocks and to extend upwardly from the bottoms of said. support blocks and to cover the sides of the support blocks and is there folded to extend between adjacent support blocks and to allow adhesive attachment to said cargo pallet longitudinal runner bottom between the multiple support blocks.

5,385,104

METHOD AND APPARATUS FOR INCINERATING DIFFERENT KINDS OF SOLID AND POSSIBLY LIQUID WASTE MATERIAL

Siegfried Bimer, Hellerup, Denmark, assignor to Volund Ecology Systems A/S, Broedby, Denmark

Continuation of Ser. No. 971,907, Jan. 4, 1993. This application Dec. 15, 1993, Ser. No. 168,278
Claims priority, application Denmark, Jul. 3, 1990, 1600/90
Int. Cl.[6] F23J *3/00*
U.S. Cl. 110—246 14 Claims

1. An apparatus for incinerating waste comprising:

a furnace having a grate,

means for supplying waste products onto the grate in said furnace,

means for heating the waste products in said furnace to partially combust said waste products,

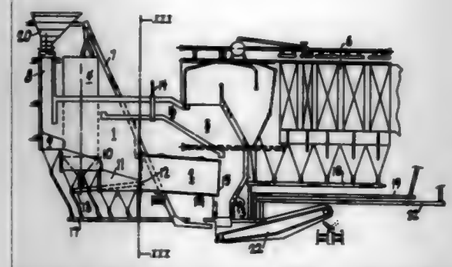
a rotary kiln having an inlet for receiving the partially combusted waste products from said furnace,

means for heating said kiln by further combusting the waste products in said rotary kiln and produce a liquid slag,

a collector connected to said furnace to receive therefrom waste products passing through said grate,

means for supplying to said collector ash products separated

from flue gases produced during combustion of the waste products, and



means for conveying the products collected in said collector to the inlet of said rotary kiln to encapsulated and fuse said products in the liquid slag to form a glass-like product at an outlet end of the rotary kiln.

5,385,105

BURNABLE WASTES COLLECTOR WITH LIQUID ABSORBER AND IDENTIFIER

L. Andrew Withers, Jr., Atlanta, and David W. Hughes, Chamblee, both of Ga., assignors to McDonald, Withers & Hughes, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 890,022, May 28, 1992, Pat. No. 5,323,719, which is a continuation-in-part of Ser. No. 699,915, May 14, 1991, Pat. No. 5,167,193, and a continuation-in-part of Ser. No. 737,427, Jul. 29, 1991, Pat. No. 5,163,373, which is a continuation-in-part of Ser. No. 26,853, Mar. 5, 1993, which is a division of Ser. No. 757,132, Sep. 10, 1991, Pat. No. 5,259,501. This application May 23, 1994, Ser. No. 247,620

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—346 34 Claims



1. A disposable combustible collector for receiving and incinerating used hypodermic needle syringes and other contaminated medical wastes comprising:

a housing having a sidewall structure and end walls and defining a holding chamber with an opening in an end wall in communication with said holding chamber for the receipt of hypodermic needle syringes;

at least said side wall structure of said housing being formed of liquid leak resistant, hypodermic needle puncture resistant, combustible material;

a liquid absorption pack fabricated of liquid absorbent material contained in said housing for absorbing liquid emitted from the syringes placed in said housing;

said absorption pack being of a size greater than the effective breadth of said opening so that the absorption pack cannot pass through said opening; and

the side walls of said housing including indicia which identify the housing as containing used hypodermic needle syringes;

whereby when the housing is placed in and upright attitude with the opening of the end wall facing upwardly, the liquid absorption pack rests on the lower end wall and used hypodermic needle syringes are moved through the opening and downwardly into the holding chamber, and liquids emitted from the syringes and which contact the liquid absorption pack are absorbed by the absorbent material and not leaked from the housing, and the housing and its contents are burned without opening the housing and the material of the collector burns and aids in the incineration of the syringes.

5,385,106

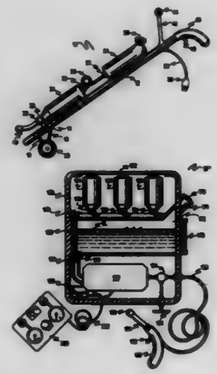
HOT WATER/STEAM WEED KILLING SYSTEM

Eric Langshaw, P.O. Box 91, Field, British Columbia, Canada V0A 1G0

Filed Aug. 24, 1992, Ser. No. 934,195

Int. Cl.[6] A01C *23/00*, *15/00*

U.S. Cl. 111—127 19 Claims



1. A portable backpack weed killing system, comprising:

a water supply source;

a gas powered heater for heating water from said supply source;

an application nozzle including a manually operable valve for selectively distributing heated water or steam from said heater on weeds;

a control mechanism for regulating said distribution of heated water or steam; and

said control mechanism including a sensor for detecting temperature of water in said heater and an electrically actuated valve disposed upstream from said manually operable valve and operably connected to said sensor to allow water flow from said heater to said application nozzle only when temperature of water in said heater exceeds a predetermined level, regardless of the position of said manually operable valve.

5,385,107

DEVICE FOR GUIDING A STRIP OF FABRIC TO PROXIMITY TO THE NEEDLE OF A SEWING MACHINE TO FORM A BORDER

Jean-Claude Borgne, 7 bis, Chemin de Maraye Les Vergers, 10120 Saint Andre, France

PCT No. PCT/FR91/00463, § 371 Date Dec. 9, 1992, § 102(e) Date Dec. 9, 1992, PCT Pub. No. WO91/19847, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 11, 1991, Ser. No. 949,814

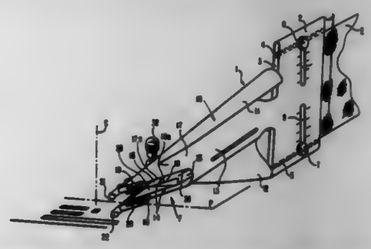
Claims priority, application France, Jun. 12, 1990, 90/07289

Int. Cl.[6] D05B *35/06*

U.S. Cl. 112—138 22 Claims

1. An apparatus for forming a border from a fabric, said apparatus comprising:

a body having guide means for guiding said fabric, and shaping means connected to said guide means and being arranged to receive said fabric from said guide means for folding said fabric so that said border can be formed, said shaping means including a plurality of wings, at least two of said plurality of wings being spaced from each other and being arranged to converge from a receiving end disposed to receive said fabric from said guide means to a remote end spaced from said receiving end so that said fabric is caused to fold as it is drawn from said receiving end to said remote end of said plurality of wings, said shaping means further including a U-shaped channel arranged to receive said fabric from said remote end of said



wings and to cause said fabric to obtain a U-shaped configuration, said U-shaped channel including an outside wall and an inside wall extending generally parallel to said outside wall, said outside wall and said inside wall being relatively movable with respect to each other for selective adjustment of said U-shaped channel, and tuck forming means arranged adjacent said U-shaped channel for causing at least one end of said fabric to become folded within said U-shaped configuration so that said folded fabric can subsequently be sewn to a further fabric to form a border thereon.

5,385,108

AUTOMATIC TRANSOM SCUPPER VALVE

David M. Thompson, 802 Mantoloking Rd., Brick Town, N.J. 08723

Filed Jan. 4, 1994, Ser. No. 177,520

Int. Cl.[6] B63B *13/00*

U.S. Cl. 114—183 R 2 Claims



1. A transom drain for the bilge of a power boat comprising:

a hollow tubular section having an inner end and an outer end;

a transom having a hole through its bottom at the level of said bilge, said hole being large enough and said transom being thick enough to accommodate said hollow tubular section;

means for securing said hollow tubular section within said transom, in a watertight manner, in line with said hole in said transom, with said tubular section in a substantially horizontal position, to provide an outlet for bilge water;

means for sealing said hollow tubular section against sea water entering said bilge comprising a cap of a size and shape to cover and seal said outer end of said hollow tubular section;

means for hinging the top of said cap to the top of said outer end, said outer end being sloped, and said cap having enough weight outside of said means for hinging to be held against said outer end by the force of gravity;

whereby said gravity-seated cap will hold out sea water but can open to drain bilge water when the sea water recedes from said transom with minimal exposure to external damage inside or outside of said transom.

5,385,109

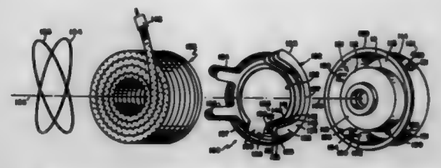
DISPENSER FOR DEPLOYING ELONGATED FLEXIBLE ARTICLES

Frank M. Hrycin, Fall River; David A. Abdow, Somerset, both of Mass., and John D. Babb, Bristol, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1993, Ser. No. 42,219

Int. Cl.[6] F41F *3/08*

U.S. Cl. 114—238 30 Claims



1. A dispenser for deploying an elongated, flexible article generally along a deployment axis, said dispenser comprising:

open-ended receptacle means for storing the article in a multiple-turn, multiple-layer configuration about the deployment axis in a storage volume;

partitioning means in said storage volume for defining portions of individual channels for containing individual article turns, said partitioning means including a plurality of sets of radially deflectable, axially extending, transversely and circumferentially spaced fingers that are radially spaced by a distance determined by the article; and

flexible restraining means attached to said receptacle means and traversing said storage volume for enabling the article to deploy from, while retaining remaining article turns within their respective channels.

5,385,110

BOAT TRIM CONTROL AND MONITOR SYSTEM

Blake J. Bennett, Boca Raton, Fla., and David A. Hagstrom, Endicott, N.Y., assignors to Bennett Marine, Incorporated of Deerfield Beach, Deerfield Beach, Fla.

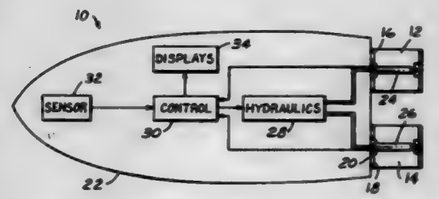
Filed Sep. 7, 1990, Ser. No. 579,400

Int. Cl.[6] B63H *5/12*

U.S. Cl. 114—285 53 Claims

MICROFICHE APPENDIX INCLUDED

(49 Microfiche, 1 Pages)



1. A boat trim control system that includes a boat having a hull, sensor means for mounting on said hull to provide electrical sensor signal as a function of actual boat attitude, and means coupled to said sensor means and reaponsive to said sensor signal for determining attitude of said boat hull, charscterized in that said sensor means comprises:

a housing containing a dielectric fluid, and means for mounting said housing to said boat hull,

a plurality of capacitance probe means positioned within said housing in a planar parallel array of diagonally spaced pairs, each of said capacitance probe means comprising a pair of spaced electrodes immersed in said fluid that such level of fluid between said electrodes and electrical capacitance between said electrodes vary as a function of attitude of said housing and said hull, and

means coupled to said electrodes and responsive to variation in electrical capacitance between said electrodes for determining attitude of said housing as a function of relative capacitance among said plurality of capacitance probe means.

5,385,111

ARRANGEMENT FOR THE DRIVE OF A WATERCRAFT, IN PARTICULAR FOR AN INFLATABLE BOAT

Manfred Schulze, Melle, Germany, assignor to Jetmarine AG, ZUG, Switzerland

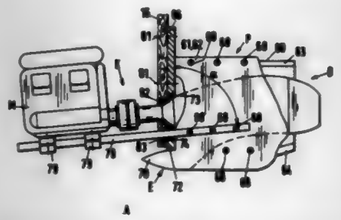
PCT No. PCT/EP92/02853, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO93/11994, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 10, 1992, Ser. No. 90,069

Claims priority, application Germany, Dec. 18, 1991, 4141815

Int. Cl.[6] B63B *7/08*

U.S. Cl. 114—345 **12 Claims**



1. A water jet propulsion arrangement comprising:

a motor unit;

a pump unit for generating a water jet, said pump unit being coupled to said motor unit by a drive connection;

a housing, said housing comprising a front side adapted to detachably mount said water jet propulsion arrangement to a transom of a flexible body watercraft, said housing at least partially enclosing said pump unit; and

a supporting member directly connected to said housing for supporting said motor unit and adapted to stabilize the flexible body watercraft;

said front side being positioned between said motor unit and said pump unit and having through holes for receiving said drive connection and said supporting member.

5,385,112

REAR ACCESS STEP CONFIGURATION FOR PONTOON BOATS

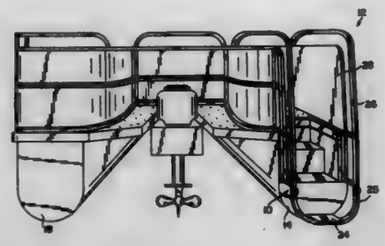
Jimmie D. Dorris, Lebanon, Mo., assignor to Richland Diversified Industries, Inc., Richland, Mo.

Filed Dec. 17, 1993, Ser. No. 169,435

Int. Cl.[6] B63B *17/00*

U.S. Cl. 114—362 **17 Claims**

1. In a pontoon boat comprising a platform mounted on a pair of hollow tubular hulls, the improvement comprising a rear access step configuration, said step configuration being formed in an end of one of said hulls, said step configuration being bounded at its sides by a wall of said hull, whereby access upon said boat by a person in the water can be gained from an end of said boat, an auxiliary step member for said step configuration being provided at and being supported against a lower portion of said hull end in which said step configuration



is formed to assist a person in the water to climb upon said step configuration.

5,385,113

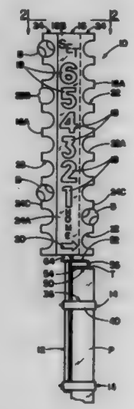
TENNIS SCORE KEEPER AND DISPLAY DEVICE

Leonard L. Hierath, Denver, Colo., assignor to VR Company, Denver, Colo.

Filed Nov. 5, 1993, Ser. No. 148,095

Int. Cl.[6] G08B *5/00*

U.S. Cl. 116—222 **20 Claims**



1. A tennis score keeper and display device, comprising:

(a) an elongated support pole;

(b) means for securing said support pole to and alongside a tennis net support post;

(c) a score display mast mounted to an upper end of said support pole, said mast having a pair of opposite vertical end portions and a pair of opposite vertical side portions extending between and interconnecting said opposite end portions;

(d) means defining a row of vertically spaced numbers on each of said opposite vertical side portions of said score display mast, said opposite vertical side portions and said respective rows of vertically spaced numbers thereon facing in opposite directions away from one another; and

(e) means defining a row of vertically spaced pockets on each of said opposite vertical end portions of said score display mast, said pockets in said row thereof on one of said opposite vertical end portions of said mast being substantially horizontally aligned with said pockets in said row thereof on the other of said opposite vertical end portions of said mast and with said numbers in said rows thereof on said opposite vertical side portions of said mast, said opposite vertical end portions and said respective rows of vertically spaced pockets defined thereon facing in opposite directions away from one another.

5,385,114

PHOTONIC BAND GAP MATERIALS AND METHOD OF PREPARATION THEREOF

Joseph B. Milstein, 134 Foster St., Brighton, Mass. 02135, and Ronald G. Roy, 15 Guile Ave., Tewksbury, Mass. 01876

Filed Dec. 4, 1992, Ser. No. 986,848

Int. Cl.[6] H01L *21/20*

U.S. Cl. 117—1 **9 Claims**



1. A photonic band gap material comprising: one or more periodic reticulated mesh physical structures which have periodic reticulation with pore size in the range of 0.1 microns to 500 microns; said material operating to exclude electromagnetic radiation in one or more bands of wavelengths in a portion of the wavelength range of 0.2 microns to 1000 microns, at least one of said excluded electromagnetic radiation wavelength bands being selected by the dimensions of the reticulation; said material modulating or converting impinging electromagnetic radiation having a first wavelength range, a first direction and a first phase to emitted electromagnetic radiation having a second wavelength range, a second direction, and a second phase, at least one of said first wavelength range, said first direction and said first phase different from one of said second wavelength range, said second direction and said second phase, respectively; and wherein said material is fabricated from one or more substances selected from the group consisting of:

a. polycrystalline aluminum oxide and single crystalline aluminum oxide,

b. other oxides including chromium-doped aluminum oxide, titanium-doped aluminum oxide, yttrium aluminum garnet, other synthetic garnets, perovskites, spinels, and the like,

c. elemental materials such as silicon, germanium and the like,

d. compounds formed from elements in columns III and V of the periodic table such as gallium arsenide, indium phosphide, and similar compounds or ternary or higher order alloys of these compounds, such as gallium aluminum arsenide,

e. compounds formed from elements in columns II and VI of the periodic table such as zinc selenide, zinc sulphide, cadmium telluride, mercury telluride and similar compounds or ternary or higher order alloys of these compounds, such as mercury cadmium telluride,

f. rare-earth doped oxide glass,

g. and materials having high dielectric constant which can be infiltrated into a porous body and then solidified, such as epoxies and plastics.

5,385,115

SEMICONDUCTOR WAFER HEAT TREATMENT METHOD

Junsuke Tomioka; Tetsuro Akagi, both of Hiratsuka, and Shiro Yoshino, Sagamihara, all of Japan, assignors to Komatsu Electronic Metals Co., Ltd., Japan

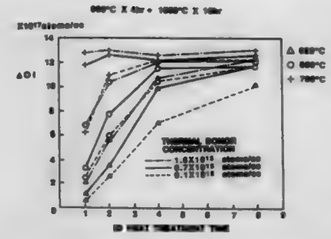
PCT No. PCT/JP91/01259, § 371 Date Mar. 17, 1993, § 102(e) Date Mar. 17, 1993, PCT Pub. No. WO92/05579, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 20, 1991, Ser. No. 30,356

Claims priority, application Japan, Sep. 21, 1990, 2-250226

Int. Cl.[6] C30B *1/02*

U.S. Cl. 117—2 **7 Claims**



1. A method of performing heat treatment on a semiconductor wafer obtained by slicing a semiconductor single crystal grown from a melt contained in a quartz crucible by a pulling method, comprising the step of:

controlling the heat treatment on the semiconductor wafer by controlling conditions determined according to a thermal donor concentration in the semiconductor single crystal after being pulled said conditions including an interstitial oxygen concentration (Oi) such that a change (ΔOi) of the interstitial oxygen concentration (Oi) before and after heat treatment in device manufacturing process falls within a range so as to generate an oxygen precipitation nucleus in the wafer.

5,385,116

METHOD FOR PRODUCING ORGANIC CRYSTAL FILM

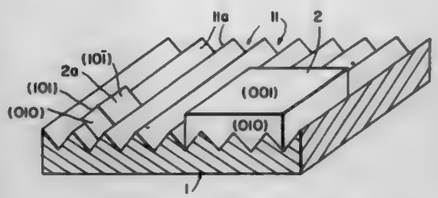
Yasuhiro Hattori; Akira Misoguchi, and Michiru Kubota, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 23, 1993, Ser. No. 35,704

Claims priority, application Japan, Mar. 24, 1992, 4-066164; Nov. 9, 1992, 4-298818

Int. Cl.[6] C30B *29/54*

U.S. Cl. 117—5 **10 Claims**

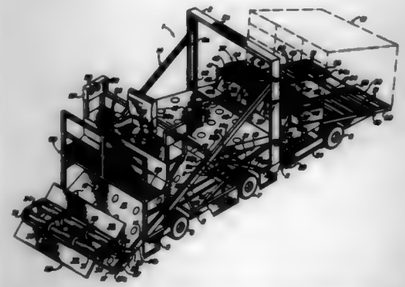


1. A method for producing a crystal film of an organic compound comprising the steps of:

contacting a molten liquid or a solution of an organic compound with a substrate or introducing said molten liquid or said solution between a pair of substrates, wherein said substrate or at least one of said pair of substrates has on part of its surface a three-dimensional geometrical structure and on the other part has a smooth surface, wherein said geometrical part is capable of controlling the direction of crystal growth of said organic compound,

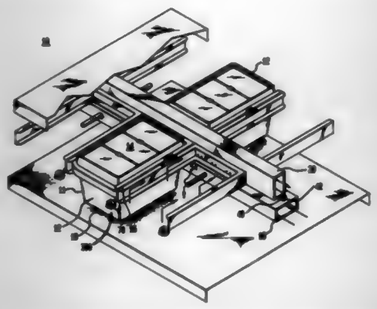
growing a crystal film from said molten liquid or said solution of said organic compound in contact with the surface of said geometrical part of said substrate in a direction toward said smooth part of said substrate, and
extending the growth of said crystal film over said smooth part of said substrate.

5,385,117
POULTRY COLLECTION DEVICE
Calvin L. Hollis, Rte. 1 Box 12, Spearsville, La. 71277, and William K. Carr, 136 Jacks Dr., El Dorado, Ark. 71730
Filed Dec. 2, 1993, Ser. No. 162,527
Int. Cl.[6] A01K *37/00, 29/00*
U.S. Cl. 119—846 **23 Claims**



1. A poultry collection device for collecting poultry and delivering the poultry to a carrying cage having tiers, comprising a wheeled frame; poultry-engaging means mounted on one end of said wheeled frame for engaging the poultry; conveyor means adjustably carried by said wheeled frame for receiving the poultry from said poultry-engaging means; lift means slidably carried by said frame; and at least one holding cage means carried by said lift means adjacent to the carrying cage, whereby poultry are collected by said poultry-engaging means and delivered to said conveyor means and said holding cage means for further delivery to selected tiers of the carrying cage, responsive to operation of said lift means.

5,385,118
ASSEMBLY FOR ANIMALS WITH POSITIVE DISCONNECT FROM A WATERING SYSTEM
Michael A. Coiro, Sr., Jacobstown, and Dale R. Murray, Burlington Township, Burlington County, both of N.J., assignors to Allentown Caging Equipment Co., Inc., Allentown, N.J.
Filed Dec. 21, 1993, Ser. No. 173,402
Int. Cl.[6] A01K *31/00*
U.S. Cl. 119—18 **13 Claims**



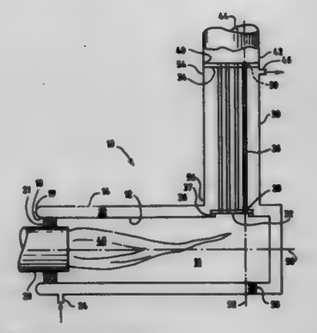
1. A water disconnect assembly for an animal cage rack system, said cage rack system including a cage having at least one wall and an aperture in said at least one wall, said system comprising:
removable water supply means coupled to an inner surface of said wall of said cage for supplying water to said animal; and
positive disconnect means for disconnecting said cage from said water supply means,
wherein a barrier condition is maintained in said cage after disconnection of said cage from said water supply.

5,385,119
X-RAY POSITIONER AND RESTRAINING DEVICE
Joseph R. Tarulli, 6325 Eaton St., Hollywood, Fla. 33024
Filed Apr. 27, 1993, Ser. No. 54,076
Int. Cl.[6] A61D *3/00*
U.S. Cl. 119—755 **8 Claims**



1. An animal restraining device for restraining an animal on a support having a substantially flat surface and lateral surfaces, comprising:
elongated bar members extending substantially parallel to the flat surface, said bar members having ends;
clamp means attached to said ends of said bar members for clamping said elongated bar members in a rigidly stationary relationship with the flat surface, said clamp means including a support surface to be placed on the flat surface for supporting said bar members in a spaced relationship from the flat surface and a clamping surface for clamping against a lateral surface of the support;
adjusting means for adjusting a length of said bar members and a distance between said clamping surface of one of said clamp means from said clamping surface of oppositely disposed clamp means; and
strap means for fastening limbs of an animal to said bar members, and attachment means disposed on said bar members for allowing attachment of said strap means thereto.

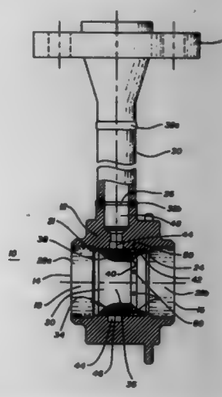
5,385,120
FLUID HEATER
Edward F. Keuper, La Crosse, Wis., and William J. Pizak, La Crescent, Minn., assignors to Gas Research Institute, Chicago, Ill.
Filed Aug. 12, 1993, Ser. No. 106,052
Int. Cl.[6] F22B *7/00*
U.S. Cl. 122—136 R **15 Claims**



1. A fluid heater comprising:

A. an inner shell defining a combustion chamber;
B. an outer shell surrounding at least a portion of said inner shell and having an aperture;
C. a reservoir defined at least in part by said inner shell and said outer shell for containing a fluid to be heated; and
D. at least one thermally expandable flue tube having an inlet, an outlet, and an axis passing through said inlet and said outlet and defining a direction of thermal expansion of said flue tube, the inlet of said flue tube being connected to said inner shell and communicating with said combustion chamber, and the outlet of said flue tube being connected to said outer shell and communicating through the aperture in said outer shell, wherein said flue tube is positioned to deflect said inner shell with respect to said outer shell along said axis as a result of a thermal expansion of said flue tube.

5,385,121
STEAM DESUPERHEATER
Roy L. Feiss, Southampton, Pa., assignor to Keystone International Holdings Corp., Wilmington, Del.
Filed Jan. 19, 1993, Ser. No. 5,795
Int. Cl.[6] F04F *5/46*; G21C *17/028*
U.S. Cl. 122—459 **20 Claims**



1. A devise for desuperheating steam, comprising:
a steam inlet;
a steam outlet;
a passage connecting said inlet to said outlet;
an acceleration orifice for creating a region of accelerated low pressure steam within said passage; and
nozzle means for spraying cooling water into said region of accelerated low pressure steam, said nozzle means comprising an inclined elliptical discharge orifice positioned in said acceleration orifice.

5,385,122
DEVICE FOR ADJUSTING A SUPPLY WATER FLOWRATE IN A STEAM GENERATOR TUBE
Gérard Stalport; Benoît Giraud, and Valérie Andujar, all of Lyons, France, assignors to Framatome, Courbevoie, France
Filed Jul. 16, 1993, Ser. No. 92,419
Claims priority, application France, Jul. 22, 1992, 92 09055
Int. Cl.[6] F22B *37/06*
U.S. Cl. 122—511 **8 Claims**

1. In a steam generator comprising a tube plate, a plurality of openings passing through the tube plate and opening out into a water-box for supplying the steam generator, and a plurality of tubes each having an end fixed to a face of the tube plate in alignment with a said through opening, the improvement comprising a device for adjusting a supply water flow rate in at least one tube including a flow rate restricting orifice plate

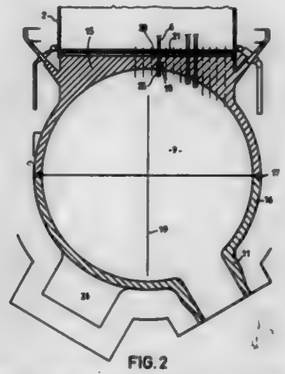
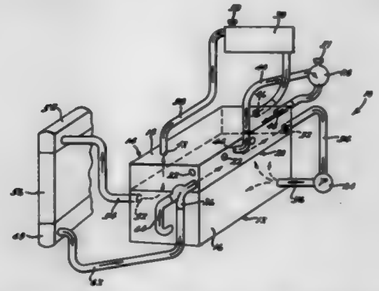


FIG. 2

inserted into a said through opening of said tube plate and means for fixing said orifice plate into said tube plate.

5,385,123
SEGREGATED COOLING CHAMBERS FOR AQUEOUS REVERSE-FLOW ENGINE COOLING SYSTEMS
John W. Evans, 253 Rte. 41 N., Sharon, Conn. 06069
Filed Oct. 8, 1993, Ser. No. 134,212
Int. Cl.[6] F01P *9/02*
U.S. Cl. 123—41.21 **9 Claims**



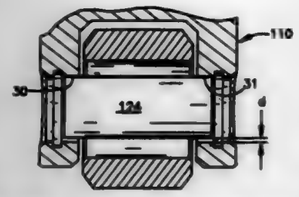
1. A process for reducing gases in a reverse-flow cooling system of an internal combustion engine having a heat exchanger, a coolant pump and discrete cooling chambers for the engine cylinder head combustion chamber and engine cylinder block comprising the steps of:
pumping a substantially aqueous, boilable liquid coolant, having a saturation temperature at least equal to water from said pump to the engine cylinder block coolant chamber;
pumping coolant from the cylinder block coolant chamber to a heat exchanger;
pumping coolant from said heat exchanger to the cylinder head coolant chamber;
pumping a first portion of coolant from the cylinder head coolant chamber through a first outlet to a vapor condenser, thence back to a lower coolant pressure area of the cylinder head coolant chamber established by the action of the coolant pump;
returning a second portion of coolant from said cylinder head coolant chamber directly to said pump so as to bypass said vapor condenser, whereby primarily coolant vapor and noncondensible gases residing within the coolant in the combustion chamber coolant chamber are dis-

charged to said vapor condenser and primarily coolant is discharged directly to said pump so as to maintain the volume of coolant vapor and other noncondensible gases as a minor fraction of the total coolant volume in the cylinder head combustion chamber coolant chamber.

5,385,124
ROLLER FOLLOWER AXLE

George A. Hillebrand, Hickory Corners, and Bryan K. Blowers, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 31, 1994, Ser. No. 251,766
Int. Cl.[6] F01L *1/14, 1/24*
U.S. Cl. 123—90.5 5 Claims

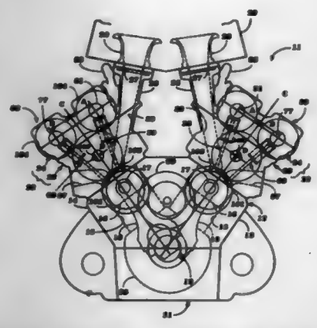


1. A roller follower hydraulic tappet for the valve train of an internal combustion engine comprising a cylindrical body; a hydraulic element received within said body and operable to take up slack in said valve train; and a cam contacting roller assembly received within said body, said roller assembly comprising first and second aligned bores formed perpendicular to the longitudinal axis of said body, an axle received within said bores, a roller supported on said axle, and means to axially retain said axle within said bores; the improvement comprising said body being formed of hardenable iron, said axle being formed of hardened steel, and said axle being received in floating relationship to the interior diameter of said first and second bores.

5,385,125
FOUR CYCLE ENGINE

Takeshi Oyaizu, and Masahiko Ikura, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 3, 1991, Ser. No. 753,710
Claims priority, application Japan, Sep. 4, 1990, 2-235268; Sep. 26, 1990, 2-257877
Int. Cl.[6] F01L *1/02*
U.S. Cl. 123—90.27 43 Claims

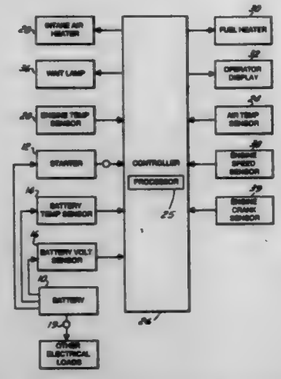


1. A cylinder head arrangement for a multi-valve internal combustion engine, said cylinder head having a lower surface defining in part a combustion chamber with an associated cylinder bore, a plurality of exhaust poppet valves supported on one side of said cylinder head for reciprocation about an acute angle relative to a central plane containing the axis of said cylinder bore, a plurality of intake poppet valves supported on the other side of said cylinder head for reciprocation about acute angles relative to said central plane, coil spring means surrounding the stems of said poppet valves and engaged with a respective upper surfaces of said cylinder head for urging each of said poppet valves to its closed position, a cooling jacket formed in said cylinder head for receiving a liquid coolant, the cylinder head upper surface engaged by the coil spring means associated with said exhaust valves being spaced further from said cylinder head lower surface than the upper surface of said cylinder head engaged by the coil springs associated with said intake valves for providing a greater volume of cooling jacket on the exhaust of said cylinder head than on the intake side of said cylinder head.

5,385,126
ENGINE STARTING SYSTEM WITH ENERGY MANAGEMENT SUBSYSTEM

Jacob Matthews, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1993, Ser. No. 67,898
Int. Cl.[6] F02N *17/04*
U.S. Cl. 123—179.21 2 Claims

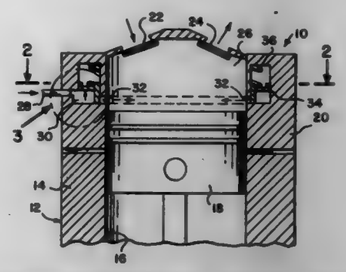


1. A system for starting an internal combustion engine, comprising:
an electrical energy storage device;
a cranking motor connected with said storage device;
an electrically powered fuel heater for warming fuel flowing to an engine, with the fuel heater being powered by said electrical energy storage device; and
energy management means for estimating the energy delivery capability of said storage device as a function of at least one variable having a value determined during a previous episode of engine operation with said energy management means further comprising means for determining the amount of time during which said fuel heater should be operated, based upon at least one sensed temperature, and means for notifying the operator of the engine in the event that the estimated energy delivery capability of the energy storage device is not sufficient to operate said fuel heater for the desired time interval.

5,385,127
SURROUND INJECTION POINT FOR DIESEL ENGINE

Miroslav A. Karas, 848 68th St., Brooklyn, N.Y. 11220, and George Spector, New York, N.Y., assignors to Miroslav A. Karas

Filed Jan. 24, 1994, Ser. No. 185,200
Int. Cl.[6] F02B *3/00*
U.S. Cl. 123—299 4 Claims



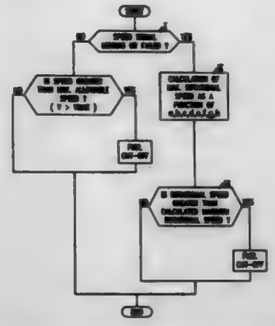
1. An improved fuel injection system for a diesel engine having a cylinder block with a cylinder therein for a piston to ride up and down, a cylinder head thereon with an air inlet valve and an exhaust outlet valve above a combustion chamber and a fuel line connected to an annular fuel chamber, said system comprising:
a) the cylinder head having a plurality of angularly positioned small injection holes between the fuel chamber and the combustion chamber;
b) a ring valve within the fuel chamber to move up and down therein; and
c) a spring within the fuel chamber to normally bias said ring valve down to close off said injection holes, so that when the fuel is forced through the fuel line by a high pressure fuel pump said ring valve will move up to overcome said spring, when the fuel pressure in the fuel chamber reaches a predetermined pressure force, simultaneously opening all of said injection holes causing an agitated motion of the fuel when entering the combustion chamber for a better combustion of the fuel, thereby increasing the RPM of the engine and making the engine more efficient.

5,385,128
METHOD AND DEVICE FOR LIMITING VEHICLE SPEED

Alfred Kratt, and Claus-Dieter Nusser, both of Schwieberdingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 2, 1993, Ser. No. 147,173
Claims priority, application Germany, Nov. 28, 1992, 4240117
Int. Cl.[6] F02P *9/00*
U.S. Cl. 123—335 10 Claims

1. A method for limiting the rotational speed of an engine of a motor vehicle, comprising the steps of:
a) determining a rotational speed threshold as a function of one or more engine operating parameters selected from the group consisting of:
i) a rotational speed gradient (dn/dt),
ii) a throttle-valve angle (α),
iii) a throttle-valve angular velocity (ω) ($d\alpha/dt$),
iv) a throttle-valve change angle ($\Delta\alpha$) over a predetermined time interval,
v) an air-mass flow rate of change (dm/dt),
vi) an air-mass flow change value (Δm),
vii) a rate of pressure change (dp/dt),
viii) a pressure change value (Δp),
ix) an air-quantity rate of change (dQ/dt), and
x) an air-quantity change value (ΔQ);
b) measuring the actual rotational speed of the engine;
c) comparing the actual rotational speed of the engine to the rotational speed threshold; and

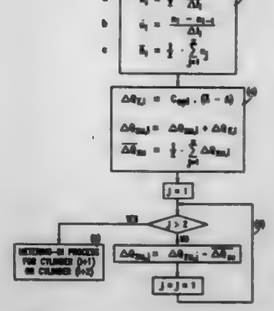


d) cutting-off the engine if the actual rotational speed of the engine is at least as great as the rotational speed threshold.

5,385,129
SYSTEM AND METHOD FOR EQUALIZING FUEL-INJECTION QUANTITIES AMONG CYLINDERS OF AN INTERNAL COMBUSTION ENGINE

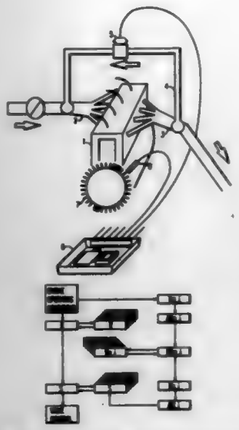
Wilhelm Eyberg, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 893,115, Jun. 3, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,729
Claims priority, application Germany, Jul. 4, 1991, 4122139
Int. Cl.[6] F02M *7/00*
U.S. Cl. 123—436 20 Claims



1. A system for equalizing fuel-injection quantities among cylinders of an internal combustion engine of a vehicle, comprising:
a fuel metering device for injecting a quantity of fuel into each cylinder of the engine;
a controller coupled to the fuel metering device;
the controller determining an angular acceleration of at least one of a crankshaft and camshaft of the vehicle during a combustion process at each cylinder;
the controller comparing the determined angular accelerations to detect a deviation between at least two determined angular accelerations; and
the controller controlling the fuel metering device to alter the quantity of fuel injected into one or more of the cylinders of the engine in order to compensate for a deviation, if such a deviation is detected.

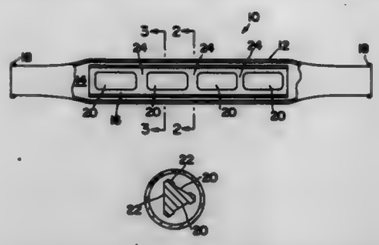
5,385,130
PROCESS FOR CONTROLLING THE EXHAUST GAS RECIRCULATION SYSTEM OF AN INTERNAL COMBUSTION ENGINE
Jean-Marc Hornewer, Cergy-le-Haut, and Daniel Cosler, Maurecourt, both of France, assignors to Societe Anonyme Dite Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Nov. 24, 1993, Ser. No. 156,684
Claims priority, application France, Nov. 24, 1992, 92 14071
Int. Cl.[6] F02D *41/04*; F02M *25/07*
U.S. Cl. 123—436 **16 Claims**



1. Process for controlling the exhaust gas recirculation system of an internal combustion engine (1) of the type comprising a pipe (4) assuring the connection between the exhaust manifold (3) and the intake manifold (2), said pipe being equipped with an E.G.R. valve (5) controlled from the electronic system (6) for engine control to assure the recirculation of a given rate of exhaust gas, said engine control system being equipped with means for calculating the values Tm_i of a representative magnitude of the torque produced by each of the combustions of the engine, characterized in that it comprises the following operations:
control the E.G.R. valve from the operating conditions of the engine to obtain a predetermined exhaust gas recirculation rate R;
then calculate from each representative value Tm_i of the torque, a representative statistical magnitude ATm_i of the average of the values Tm_i;
calculate the deviation DTm_i of the value Tm_i from the average ATm_i;
associate with each value DTm_i, and depending on the operating conditions of the engine, a value Ra_i corresponding to the rate of exhaust gas actually recirculated;
compare the value Ra_i with the value R of the rate of recirculation initially controlled and deduce from it, in case of difference, a malfunction of the E.G.R. valve.

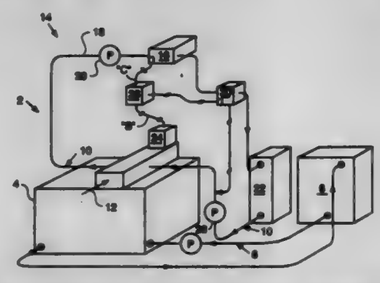
5,385,131
EMISSION CONTROL ASSEMBLY
Carolyn B. Macon, 29 Sunnyfield Ter., Neptune, N.J. 07754
Continuation-in-part of Ser. No. 019,176, Feb. 16, 1993, abandoned. This application Jan. 10, 1994, Ser. No. 179,358
Int. Cl.[6] F02M *27/00*
U.S. Cl. 123—536 **2 Claims**

1. An emission control assembly, which comprises:
a tubular housing member formed of copper and defining a chamber and having end flange portions; and
a triangularly-shaped elongated member disposed in said chamber of said tubular housing member, said triangularly-shaped elongated member being formed with elliptically-shaped depressions elongated in an axial direction of said elongated member, said elongated member being formed of an aluminum alloy comprised of aluminum, carbon and bronze, carbon being present in an amount of less than about 5 weight percent and bronze being present



in an amount of less than 0.75 weight percent, said triangularly-shaped elongated member being disposed in loosely fitting relationship within said chamber of said tubular housing member, said end flange portions of said tubular housing member being formed by swagging technique after positioning said triangularly-shaped elongated member within said chamber of said tubular housing member.

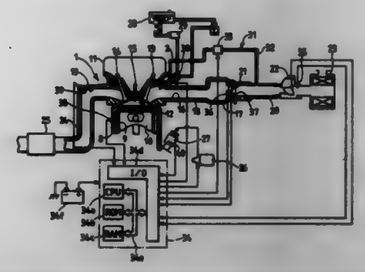
5,385,132
ENGINE FLUID SYSTEM
Martin A. Lehman, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Dec. 14, 1993, Ser. No. 165,873
Int. Cl.[6] F02M *31/00*
U.S. Cl. 123—542 **5 Claims**



1. In a fluid system for an engine having a combustion zone, said fluid system having a liquid coolant radiator, first and second liquid coolant pathways, and an inlet air pathway in communication with the engine combustion zone, said first liquid coolant pathway extending from the radiator to and in heat exchange relationship with the engine and back to the radiator, said second liquid coolant pathway being in heat exchange relationship with the inlet air pathway, and a liquid coolant by-pass system in communication with the second liquid coolant pathway at a location downstream of the inlet air pathway, said by-pass system having a heater for heating liquid passing through the by-pass from the second liquid coolant pathway and a pump for moving liquid coolant from the second liquid coolant pathway and through the by-pass system, the improvement comprising:
a second radiator isolated from the first radiator and being connected to the second fluid pathway at a location upstream of the inlet air pathway; and
a controlling valve having an inlet end connected to the heater, a first outlet end connected to the second radiator and a second outlet connected to the second fluid pathway

at a location between the inlet air pathway and the second radiator.

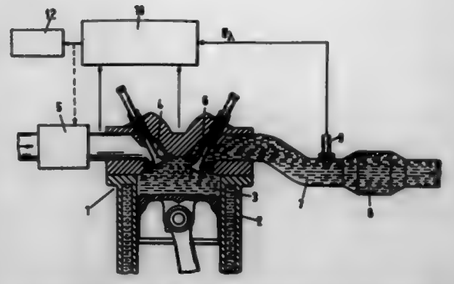
5,385,133
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE
Kenji Ikuta, Rolling Hills Estates, Calif.; Shigenori Isomura, Kariya, and Toshihiro Suzumura, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Dec. 14, 1993, Ser. No. 166,380
Int. Cl.[6] F02M *69/00*
U.S. Cl. 123—585 **8 Claims**



1. A fuel injection system for a multi-cylinder internal combustion engine comprising:
a plurality of fuel injection valves each arranged to inject fuel into an intake port of each cylinder of the engine;
an air passage connected to a portion of an air intake passage leading to the intake ports;
a plurality of branch air passages each communicating with a preselected portion around an injection nozzle of each fuel injection valve;
air control valve means, connecting between said air passage and said plurality of branch air passages, for selectively introducing a portion of intake air in the air intake passage to the preselected portions around the injection nozzles of the fuel injection valves, said air control valve means being arranged to selectively assume first and second valve positions, the first valve position being to establish communications between said air passage and the branch air passages in sequence according to rotation of the engine, the second valve position being to establish communication between said air passage and all the branch air passages; and
controlling means for providing a control signal to said air control valve means to switch from the first valve position to the second valve position when a preselected fuel injecting condition is encountered.

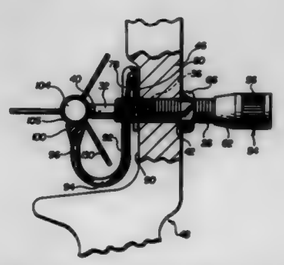
5,385,134
SYSTEM FOR MONITORING LEAKAGE INTO EXHAUST LINES
Harald Krohn, Bochum; Ludger Holscher, Ludenscheid, and Andreas Nithammer, Neumarkt, all of Germany, assignors to AFT Atlas Fahrzeugtechnik GmbH, Werdohl, Germany
Filed Jan. 11, 1993, Ser. No. 75,760
Claims priority, application Germany, Jan. 13, 1992, 4219452
Int. Cl.[6] F02D *41/14, 41/22*
U.S. Cl. 123—676 **6 Claims**

1. In a method for monitoring the air/fuel mixture of an internal combustion engine having an exhaust gas path and arranged for air/fuel mixture fed engine operation including intermittent reduced pressure phases of the engine, during operation, in which the path undergoes periods of reduced pressure relative to the atmospheric pressure of external air, and using a lambda probe in the path for sensing the oxygen concentration in the exhaust gas and for issuing an output signal having a reduced pressure phase pulsation frequency component of reduced pressure phase amplitude indicative of the oxygen concentration during the reduced pressure phases, for controlling the engine operation by controlling the ratio of the air/fuel mixture fed to the engine, the improvement, comprising:



monitoring the amplitude of the pulsation frequency component of the probe output signal, and generating an error signal upon said amplitude exceeding a predetermined threshold level indicative of atmospheric pressure external air suction leakage into the path during such reduced pressure phases of engine operation.

5,385,135
ARROW REST AND PRESSURE BUTTON ASSEMBLY
Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.
Filed May 6, 1993, Ser. No. 57,561
Int. Cl.[6] F41B *5/00*
U.S. Cl. 124—44.5 **14 Claims**



1. An assembly comprising, in combination, an adjustably-positionable, resiliently-reciprocally-displacable, pressure button and an arrow rest, and means for securing said assembly at a sidewall of an archery bow in a window zone thereof,
said assembly further comprising threaded support shaft means for extending through a transverse bore formed in the bow side wall at the window zone of the bow,
attachment means for securing said pressure button to said threaded support shaft means to extend coaxially therefrom and to project into the window zone of the bow,
said arrow rest including coupler means for lockingly mounting said arrow rest on said support shaft means, at selectable longitudinally-displaced positions therealong,
said coupler means including a pair of arm-like plates disposed so as generally to parallel the sidewall of the bow, including an inwardly displaced plate and an outwardly displaced plate, one of said displaced plates having a portion extending downwardly and including a reversely looped extension projecting upwardly to constitute a support base for an arrow shaft, said support base invading said window zone and being laterally outwardly of and

below a horizontally-projecting end of said pressure button, and

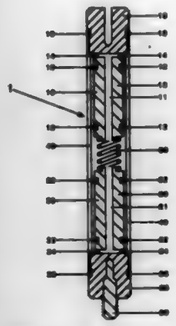
locking means for adjustably securing said shaft means in selectable laterally displaced positions transversely of the sidewall of the archery bow.

5,385,136

IMPULSE STABALIZER CAPABLE OF ASYMMETRICAL RESPONSE

Bruce A. Thomas, Swartz Creek, Mich., assignor to Archery Dynamics, Inc., Swartz Creek, Mich.

Filed Aug. 16, 1993, Ser. No. 107,985
Int. Cl.[6] F41B 5/20
U.S. Cl. 124—89 4 Claims



1. An impulse stabilizer comprising:

a sealed, elongated housing with a first end and a second end;

a first mass loosely and slidably received within said housing and adjacent to said first end;

a second mass, dissimilar from said first mass, loosely and slidably received within said housing and adjacent to said second end; and

a spring means interposed between said first mass and said second mass for urging said masses against their adjacent housing-ends when the stabilizer is at rest and for opposing the displacement of a said mass when the stabilizer is subjected to an impulse.

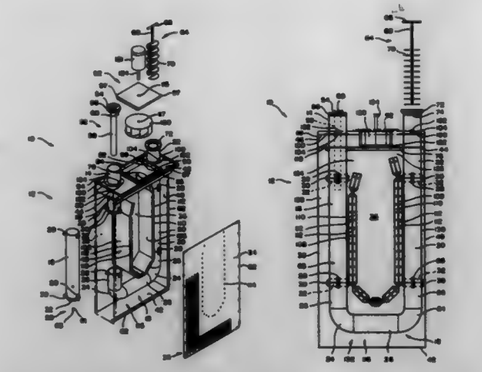
5,385,137

U-TUBE HEAT EXCHANGER FOR BAKERY OVENS

George M. Christensen, and Donald D. Weyer, both of Sumner, Wash., assignors to The Lucks Company, Seattle, Wash.

Filed Oct. 21, 1993, Ser. No. 141,262
Int. Cl.[6] F24C 15/32
U.S. Cl. 126—21 R 16 Claims

4. A heat exchanger comprising: at least one heat exchanger for use with a cooking or baking oven tube; and a heat exchanger tube housing means for defining a heater cavity, and for housing at least a portion of said heat exchanger tube within said heater cavity; wherein said housing means further comprises air inlet means for permitting air to enter said heater cavity; air outlet means for permitting air to exit from said heater cavity; and blower means for circulating air into said heater cavity through said air inlet means, around said portion of said heat exchanger tube within said heater cavity, and out through said air outlet means; wherein said air inlet means are located over a hottest part of said heat exchanger tube; wherein said heat exchanger further comprises means for connecting said heat exchanger to said baking or cooking oven; wherein said heat exchanger tube experiences repeated thermal cycles during use of said heat exchanger; wherein each of said thermal cycles causes expansion of said heat exchanger tube as it heats up, and contraction of said heat exchanger tube as it cools down; wherein said heat exchanger further comprises heat exchanger tube support means for supporting said at least one heat exchanger tube with respect to said heat exchanger tube housing means; and wherein said heat exchanger tube support means are also for permitting said heat exchanger tube to freely move with respect to said heat exchanger tube housing means during said expansion and contraction of said heat exchanger tube during said thermal cycles, to help prevent stress cracking of said heat exchanger tube which might otherwise be caused by said expansion and contraction of said heat exchanger tube during said thermal cycles.

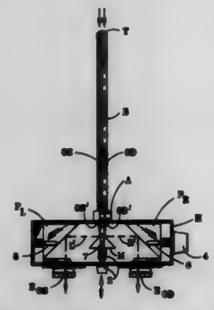


5,385,138

STEREO ENDOSCOPE FOR INSERTING INTO BODY CAVITIES

Yale Berry, 134 Clinton St., Brookline, Mass. 02146

Continuation of Ser. No. 823,528, Jan. 21, 1992, abandoned. This application Jan. 10, 1994, Ser. No. 179,777
Int. Cl.[6] A61B 1/00
U.S. Cl. 128—6 4 Claims



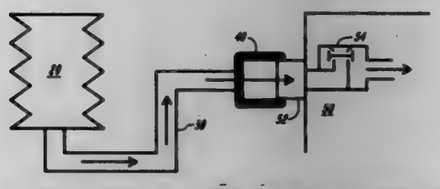
1. An endoscope for stereoscopic viewing within body cavities having, in combination, a longitudinally extending hollow barrel containing a pair of side-by-side longitudinally coextending hollow tubular scopes each defining an unfilled hollow tubular space of length substantially the same as the barrel and containing only optical lens means, a coextensive externally illuminated fiber optic cable and a coextensive suction tube, each disposed adjacent but externally of the hollow tubular scopes within the barrel and extending the length of the barrel, and the terminal end of which barrel is adapted for insertion into a body cavity with the illumination carried by the fiber optic cable illuminating the same to reflect light back along the hollow space of each of the tubular scopes,..and the suction tube aspirating the cavity; means for connecting the proximal end of the barrel to a viewing housing containing a pair of eyepieces for left and right eye viewing; and an optical system within the housing comprising a central prismatic mirror means for directing the light reflected back along the pair of tubular scopes laterally to the left and to the right sides and respective prism means associated with the respective left and right eye pieces for directing the reflected light thereto and to enable stereoscopic viewing of the illuminated cavity, and in which means is provided for adjusting each of the mirror and prism means, the mirror means forwardly and backwardly along the axis of the barrel, and the prism means laterally of the housing and eyepieces.

5,385,139

METHOD AND APPARATUS FOR TESTING ANETHESIA MACHINE VALVES

Stephen B. Corn, 566 Commonwealth Ave., Apt. 1009, Boston, Mass. 02215

Filed May 24, 1993, Ser. No. 66,719
Int. Cl.[6] G01M 3/02
U.S. Cl. 128—200.24 22 Claims



1. Apparatus for testing the valves of an anesthesia machine said valves having respective ports comprising

pump means for generating a source of positive and negative gas pressure; and

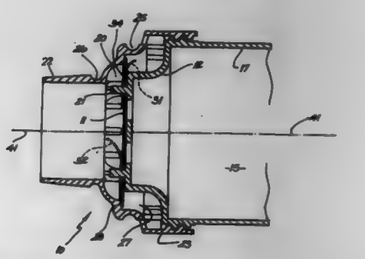
connection means for individually and selectively connecting said pump means to said respective port of at least one valve of an anesthesia machine in order to evaluate the opening and closure of said valve in response to the pressure exerted by the pump means.

5,385,140

AEROSOL INHALATION DEVICE

Collin M. Smith, New South Wales, Australia, assignor to Lindrew Pty Limited, Hamilton, Australia

Continuation of Ser. No. 882,342, May 13, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,226
Claims priority, application Australia, May 14, 1991, PK6139
Int. Cl.[6] A61M 11/00
U.S. Cl. 128—200.23 9 Claims



1. Apparatus comprising:

a housing adapted to cooperate with, attached to, or formed integrally with a chamber to define a major fluid passage comprising an upstream zone within the chamber and a downstream zone;

a major fluid exit provided in the downstream zone;

a back-flow fluid exit in selective fluid communication with the downstream zone, said back-flow fluid exit comprising an annular passage surrounding said major fluid passage, said annular passage comprising an annular sealing ledge; and

a diaphragm, mounted within the housing, comprising:

a central region, comprising crossed slits defining a plurality of flaps interfacing the upstream and downstream zones and being operable to allow fluid flow therethrough from the upstream zone to the downstream zone and through the major fluid exit, and

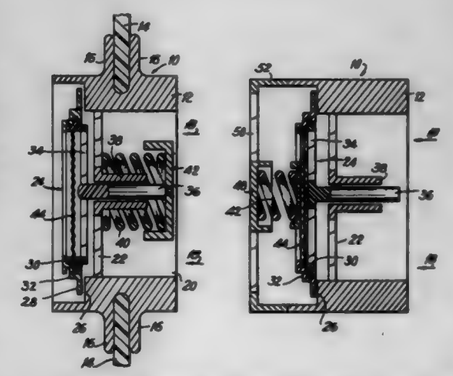
a continuous peripheral region across the back-flow fluid exit being closeable by resting against said annular sealing ledge when the major valve means is opened and operable upon deflection at the periphery away from said sealing ledge when the central region is closed and when fluid pressure in the downstream zone is higher than ambient pressure so as to allow escape of fluid from the downstream zone to atmosphere via the back-flow fluid exit.

5,385,141

SPEECH DIAPHRAGM AND EXHALATION VALVE

Nino M. Granatiero, Warwick, R.I., assignor to Siebe North, Inc., Charleston, S.C.

Filed Apr. 16, 1992, Ser. No. 869,802
Int. Cl.[6] A62B 18/02, 18/10, 9/02
U.S. Cl. 128—201.19 8 Claims



1. A combined speech diaphragm and exhalation valve for a respirator mask, including:

a valve body having a central aperture providing an air passage communicating an inside of a respirator mask with an outside thereof;

a valve seat provided by said valve body;

a speech diaphragm, an exhalation valve, and a support member for said speech diaphragm and exhalation valve, said speech diaphragm, exhalation valve and support member forming a unitary sub-assembly;

means for supporting said sub-assembly for movement relative to said valve body and relative to said valve seat between a first position in which said exhalation valve is seated on said valve seat, and a second position in which said exhalation valve is spaced from said valve seat and exhaled air passes from said inside of a respirator mask to said outside thereof; and,

resilient means for imposing a biasing force on said speech diaphragm, exhalation valve and support member subassembly and for moving said exhalation valve into seated relationship with said valve seat;

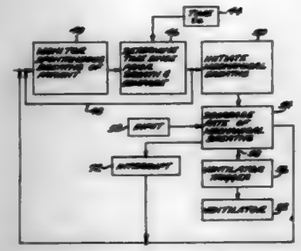
said speech diaphragm, exhalation valve, and support member forming said sub-assembly moving in unison against said biasing force responsive to pressure modulations in air

under pressure exiting said valve body past said exhalation valve.

5,385,142
APNEA-RESPONSIVE VENTILATOR SYSTEM AND METHOD

Michael Brady, La Mesa, and Damon Lawson, Santee, both of Calif., assignors to Infrasonics, Inc., San Diego, Calif.

Filed Apr. 17, 1992, Ser. No. 870,519
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.23 15 Claims

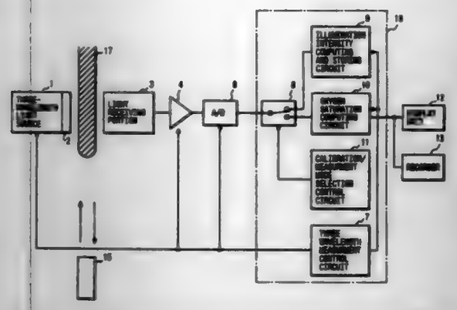


1. A ventilator system operable to initiate mechanical breaths if a patient has not breathed for a first period of time, and thereafter reducing the rate of mechanical breaths over a second period of time, the ventilator system comprising:
means for controllably supplying mechanical breaths to a patient;
means for detecting a spontaneous breath by the patient;
means for initiating a series of mechanical breaths to the patient by the means for controllably supplying in the event that the means for detecting has not detected a spontaneous breath for the first period of time; and
means for reducing the rate of the breaths in the series of mechanical breaths over the second period of time.

5,385,143
APPARATUS FOR MEASURING PREDETERMINED DATA OF LIVING TISSUE

Takao Aoyagi, Tokyo, Japan, assignor to Nihon Kohden Corporation, Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,269
Claims priority, application Japan, Feb. 6, 1992, 4-021204; Mar. 19, 1992, 4-063307; Mar. 19, 1992, 4-063308
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633 10 Claims

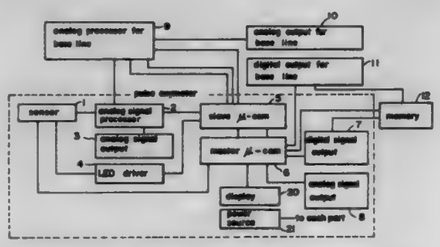


1. An apparatus for measuring a predetermined data of living tissue comprising:
a means for illuminating said living tissue with light emitting at at least three wavelengths;
a photoelectric transducing means for receiving light transmitted through said tissue and for converting said light transmitted through said tissue to electric signals;
a memory means for storing data of said illuminating light emitting at the three wavelengths, said illuminating light not transmitted through said living tissue; and
a computing means for calculating said predetermined data of living tissue on the basis of the output from said photoelectric transducing device, representing light transmitted through said living tissue, and said data of illuminating light stored in said memory device, representing light not transmitted through said living tissue;
wherein said computing means calculates ratios between intensities of illuminating light emitting at the three wavelengths on the basis of the data stored in said memory means.

5,385,144
RESPIRATION DIAGNOSIS APPARATUS

Akio Yamanishi, Hyogo, and Kenji Hamaguri, Osaka, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jul. 21, 1993, Ser. No. 95,296
Claims priority, application Japan, Jul. 23, 1992, 4-197085
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—633 11 Claims



1. A respiration diagnosis apparatus, comprising:
a means for emitting light;
a means for receiving the light emitted from the light emitting means and passing through or reflected by living tissue, and for detecting a pulse wave based on the received light;
a means for generating a pulse wave signal in accordance with the detected pulse wave; and
a means for extracting a change component of the base line of the generated pulse wave signal.

5,385,145
INVASIVE BLOOD PARAMETER PROBE TO BE INTRODUCED INTO A CATHETER

Martin Guenther, Wildberg, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 45,622, Apr. 9, 1993, abandoned. This application Jan. 13, 1994, Ser. No. 181,389
Claims priority, application European Pat. Off., Apr. 11, 1992, 92106320
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—634 6 Claims

1. Invasive blood parameter probe, compriaing:
(4.1) a non-sterile portion and a sterile probe portion attached to the non-sterile portion,
(4.2) a container closed by locking means, (4.2.1) wherein a proximal portion of said sterile probe portion is projectable into said container, and
(4.2) flexible and stretchable tubing surrounding said sterile portion and attached to said locking means and said non-sterile probe portion, said tubing being sufficiently stretchable to permit said proximal portion of said sterile probe portion to slip into said tubing when said tubing is in a

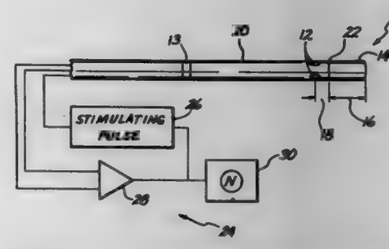


stretched position, said proximal portion slipping out of said tubing when said tubing is in an unstretched position.

5,385,146
ORTHOGONAL SENSING FOR USE IN CLINICAL ELECTROPHYSIOLOGY

Bruce N. Goldreyer, 30311 Palos Verdes Dr. East, Rancho Palos Verdes, Calif. 90274

Filed Jan. 8, 1993, Ser. No. 1,980
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—642 8 Claims



1. A method for mapping electrophysiologic activation in a heart notwithstanding the presence of high intensity swamping signals for other purposes comprising the steps of:
disposing a catheter within said heart at a predetermined position;
sensing only localized cardiac signals from myocardium within 1 to 3 millimeters from said predetermined position by sensing said cardiac signals on at least a pair orthogonal electrodes disposed on said catheter within 1 to 3 millimeters of a position on said catheter near said predetermined position in said heart while said swamping signals are introduced into said heart; and
repeating said steps of disposing and sensing only said localized cardiac signals from a plurality of different predetermined positions within said heart while said swamping signals are introduced into said heart, so that accurate and discrete mapping of electrophysiologic activation within said heart is achieved,
wherein said step of sensing said cardiac signals on said orthogonal electrodes comprises the step of differencing cardiac signals received on each of said orthogonal electrodes to generate a differential signal therebetween, said differential signal being indicative of said localized cardiac activity.

5,385,147
METHOD OF ULTRASONIC IMAGING OF THE GASTROINTESTINAL TRACT AND UPPER ABDOMINAL ORGANS USING AN ORALLY ADMINISTERED NEGATIVE CONTRAST MEDIUM

Leslie D. Anderson, Encinitas; Janeth M. Bartlett; Diane M. Szaflarski, both of San Diego, and Kenneth J. Widder, Rancho Santa Fe, all of Calif., assignors to Molecular Biosystems, Inc., San Diego, Calif.

Filed Sep. 22, 1993, Ser. No. 125,621
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.02 19 Claims



1. (Amended) A method of ultrasonic imaging of tissue defining the gastrointestinal tract and organs in the upper abdominal region comprising:
a) introducing a sufficient amount of a chemically defined essentially sonolucent and nonechogenic ultrasound contrast agent solution that is stable under gastric conditions and has a gastric emptying time of at least about twenty minutes into the stomach to substantially fill the stomach and remove gas by displacement, dispersion and absorption from the imaging field;
b) applying ultrasonic energy to the stomach and upper abdominal region while said solution is present in the gastrointestinal tract, said energy passing through the solution and being reflected by said tissue and said organs; and
c) forming an image from the reflected energy.

5,385,148
CARDIAC IMAGING AND ABLATION CATHETER

Michael D. Lesh, Mill Valley; Patrick M. Owens, Cupertino, and Jerome Jackson, Sunnyvale, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jul. 30, 1993, Ser. No. 99,995
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.06 4 Claims



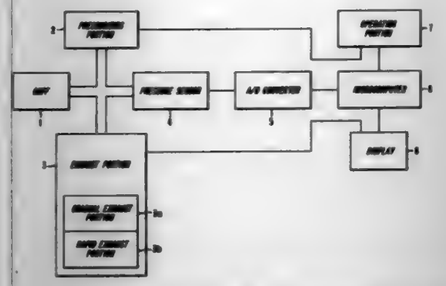
1. A method for ablation of arrythmogenic cardiac tissue comprising:
selecting a catheter comprising:
an elongated flexible body having a proximal end and a distal end,
an ultrasound assembly having a transducer located at the distal end of the body, and
a tissue ablation means;
introducing the distal end of the catheter into a cardiac chamber comprising the arrythmogenic cardiac tissue to be ablated;
using the ultrasound assembly to position the tissue ablation

means within an effective range of the arrythmogenic cardiac tissue to be ablated; and
activating the tissue ablation means.

5,385,149
MAXIMUM PULSE WAVE AMPLITUDE CALCULATING SYSTEM AND OPERATION METHOD FOR AN ELECTRONIC BLOOD PRESSURE MEASURING DEVICE

Kyung S. Chang, Suwon, and Sang B. Nam, Euiwang, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 23, 1993, Ser. No. 125,176
Claims priority, application Rep. of Korea, Sep. 23, 1992, 92-17333
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—680 **6 Claims**



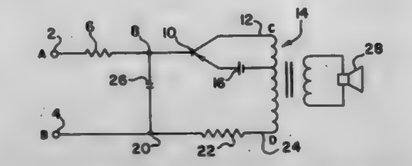
1. A maximum pulse wave amplitude calculating system for an electronic blood pressure measuring device comprising:
a cuff;
pressurizing means for pressurizing air within the cuff to a certain predetermined level;
exhaust means for exhausting the air from the cuff;
pressure sensor means for detecting pressures necessary for determining a patient's blood pressure;
A/D converter means for converting analog signals detected by said pressure sensor means into digital signals;
microcomputer means for separately detecting pulse wave amplitudes and cuff pressure, and calculating a maximum and a minimum blood pressure by utilizing said detected signals;
operating means for operating an electric power supply, initiating blood pressure measurement, and setting a cuff pressure level; and
display means for displaying the calculated pressures,
wherein said microcomputer means includes arithmetic means which determines a maximum pulse wave amplitude by comparing sizes of values obtained by totalling each pulse wave amplitude with its preceding and subsequent pulse wave amplitudes, and determines whether said maximum pulse wave amplitude is an actual maximum pulse wave amplitude by evaluating, for each pulse wave amplitude which occurs after said maximum pulse wave amplitude, whether each value obtained by subtracting each subsequent pulse wave amplitude from each preceding pulse wave amplitude is a negative value.

5,385,150
ACUPUNCTURE DEVICE

Keihachi Ishikawa, P.O. Box 4611, Stn. E, Ottawa, Canada K1S 5H8

Continuation of Ser. No. 768,601, Oct. 1, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 142,964
Int. Cl.[6] A61H *39/02*
U.S. Cl. 128—735 **6 Claims**

1. An apparatus for determining cutinous points within an animal body, comprising a housing, first and second electrically conductive terminals external to said housing adapted to make contact with the skin of said animal body, an electrical circuit within said housing connected to said terminals by way of extension leads, and an electrical current source connected to said circuit, said electrical circuit adapted to discharge current in discrete pulses through said first terminal and comprising:
a) resistor connected to said first terminal;
b) a transistor having first, second and third electrodes, said transistor being adapted to generate a discrete pulse current by the on/off switching thereof, said first electrode connected to said first terminal through said resistor;



c) a transformer having a primary winding having first and second ends and an intermediary tapping point, the first end of said primary winding being connected to said second electrode and the second end of said primary winding being connected to said second terminal, said intermediary tapping point being connected to said third electrode through said electrical source;
d) a capacitor connected between said first electrode and said second terminal, said capacitor adapted to discharge at an increased rate as the electrical resistivity of the skin drops, thereby generating an increased pulse rate in said pulse current; and
e) an indicator means to indicate said pulse current.

5,385,151
COAXIAL BONE MARROW BIOPSY NEEDLE ASSEMBLY

Frank A. Scarfone, Boca Raton, and David Turkel, Miami, both of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 942,427, Sep. 9, 1992, Pat. No. 5,257,632. This application Nov. 1, 1993, Ser. No. 145,793
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—754 **20 Claims**



1. A bone marrow biopsy needle assembly, comprising:
a) a cannula assembly having a hollow cannula with a distal tip, and a first handle which receives and surrounds a proximal portion of said hollow cannula at a proximal portion thereof; and
b) a trocar assembly having a trocar having a distal tip, and a second handle which receives a proximal portion of said trocar, said second handle being proximal said first handle, said trocar extending substantially coaxially through said hollow aspiration cannula with said distal tip of said trocar extending distally past said distal tip of said hollow cannula, said trocar being removable from said hollow cannula, wherein
said first handle has first mating means for mating with said second handle and said second handle has second mating means for mating with said first handle, and
one of said first mating means and said second mating means includes a spring biased latch means for latching, and the other of said first mating means and said second mating means includes a latch engaging catch means for receiving said spring biased latch means.

5,385,152
GUIDEWIRE FOR CROSSING OCCLUSIONS IN BLOOD VESSELS

John E. Abele, Concord, Mass.; Kevin R. Heath, Providence, R.I.; Mark S. Landman, Sharon, and Paul D. McLaughlin, Scituate, both of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 611,296, Nov. 9, 1990, abandoned. This application May 14, 1993, Ser. No. 62,058
Int. Cl.[6] A61M *23/00*
U.S. Cl. 128—772 **16 Claims**

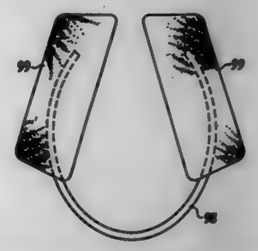


16. A steerable guidewire for gently penetrating an occlusion within a vessel comprising:
an elongated solid main guidewire body having selected stiffness characteristics along its length to allow the guidewire to be urged through a narrow, tortuous body lumen by application of forces at a proximal end, and
an enlarged distal end portion including a soft polymeric element having a substantial thickness compared to portions of the guidewire proximal thereof and a permanently deflected portion to enable steering of said guidewire.

5,385,153
INFANT ENVIRONMENTAL TRANSITION SYSTEM AND METHOD

John W. Jamieson, Alamo, and James D. Gatts, San Jose, both of Calif., assignors to Infant Advantage, Inc., Milpitas, Calif.

Filed Aug. 12, 1992, Ser. No. 928,911
Int. Cl.[6] A61G *15/00*; A47C *20/02*; A61B *19/00*
U.S. Cl. 128—845 **15 Claims**

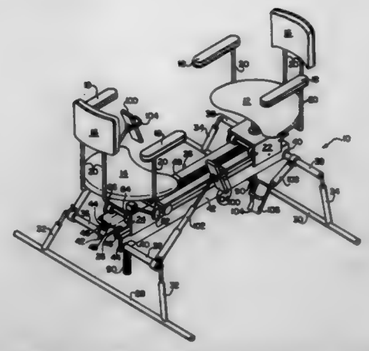


1. A bolster system for an infant comprising a U-shaped spring member, having arms which coextend in a substantially common direction, and bolsters substantially covering said arms for positioning about an infant on a substantially horizontal surface to apply pressure to the infant to restrain the movement of the infant.

5,385,154
COUPLE'S INTIMACY RECIPROCATING AND PIVOTING TWO SEAT ASSEMBLY

Andrew M. Fuhrman, and Roxanne S. Fuhrman, both of 119 Edgewater Dr., Edgewater, Md. 21037

Filed Nov. 4, 1993, Ser. No. 147,842
Int. Cl.[6] A61G *15/00*; A47C *3/00*; A61F *5/00*
U.S. Cl. 128—845 **25 Claims**



1. An intimacy chair assembly to assist a human male and female couple to engage in sexual intercourse with reduced effect of gravity or the reduced expenditure of substantial energy comprising:
a seat for each of said female and male of said couple operatively associated with said assembly,
said male and female seats positioned to substantially face each other,
means positioned on said assembly for reciprocating movement of each seat independently of the other seat and selectively continually toward and away from the other seat in a substantially longitudinal direction,
means positioned on said assembly and connected to each of said seats for independently and selectively continually pivoting each seat about a horizontal axis relative to the other seat,
whereby said couple seated upon said seats may control their engagement in sexual intercourse while substantially supported by the seats thereby reducing the amount of energy required or the body control necessary.

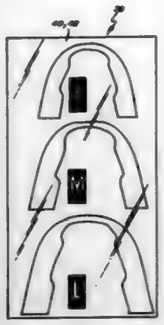
5,385,155
MOUTHGUARD SIZING KIT

Jon D. Kittelsen, Fridley; Paul C. Belvedere, Edina, and Anne M. Kittelsen, Roseville, all of Minn., assignors to E-Z Gard Industries, Inc., Minneapolis, Minn.

Filed Sep. 28, 1993, Ser. No. 127,759
Int. Cl.[6] A61C *5/14*
U.S. Cl. 128—861 **15 Claims**

1. A mouthguard sizing kit for selecting a correctly sized small to large mouthguard for proper fitting over an upper dentition of a mouthguard user's mouth extending from one molar side around bicuspids, canine, incisors, canine and bicuspids and to the other molar side, the kit comprising:
a) a dentition impression plate for placement into the mouth to receive a dentition imprint when forced against the upper dentition suitably by a lower jaw; and

b) mouthguard sizing chart with small to large plan views of mouthguards for comparison with the dentition impression for selection of the correctly sized small to large mouthguard for the user.



5,385,156
DIAGNOSTIC AND TREATMENT METHOD FOR CARDIAC RUPTURE AND APPARATUS FOR PERFORMING THE SAME
Philip B. Olivo, Boulder, Colo., assignor to Rose Health Care Systems, Denver, Colo.
Filed Aug. 27, 1993, Ser. No. 113,293
Int. Cl.[6] A61B 65/02
U.S. Cl. 128—898 9 Claims



1. A medical treatment method for a myocardium enclosed in a pericardial sac, comprising: determining whether a patient who has experienced an acute infarction of the myocardium has at least one of pericarditis, repetitive unprovoked emesis, restlessness or agitation, a ST segment elevation or T wave pattern in an electrocardiogram that is different than normal postinfarction pattern, or abrupt hypotension and bradycardia; correlating said determination with the likelihood of a patient developing cardiac rupture; and applying and adhering a patch to the myocardium to prevent said cardiac rupture; wherein inserting the patch through a first instrument channel in a flexible endoscope from outside the patient to inside the pericardial sac.

5,385,157
CIGARETTE SNUFFING AND STORING DEVICE
Kenneth Smith, and Adam Pliska, both of 1266 San Lucia Ave., Porterville, Calif. 93257
Filed Jul. 23, 1993, Ser. No. 97,280
Int. Cl.[6] A24F 13/18
U.S. Cl. 131—256 3 Claims

1. A device for extinguishing and storing a cylindrical smoking material comprising:
a cylindrical body having open ends and an interior diameter, one open end for receiving the cylindrical smoking material;
a cylindrical cap having an open end adapted to snugly receive the one open end of the cylindrical body therewithin for capping the one open end of the cylindrical body in a substantially airtight manner;
a hollow cylindrical plug having an open end for providing access to an interior cavity of the plug and a dome shaped flexible screen adapted to encompass the open end of the plug, the screen having a diameter such as to require a forceful fit within the cylindrical body, the screen being adapted to compress for fitting within the cylindrical body and for exerting outward directed force on the cylindrical body for holding the plug in position, the screen thereby frictionally holding the plug in position in the body.

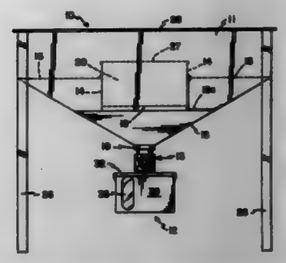


5,385,158
WRAPPER FOR SMOKING ARTICLE, SMOKING ARTICLE, AND METHOD OF MAKING SAME
William F. Owens, Jr., 12 Orchid Heights Dr., Pisgah Forest, N.C. 28768
Filed Sep. 9, 1991, Ser. No. 756,543
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[6] A24D 1/02
U.S. Cl. 131—365 27 Claims

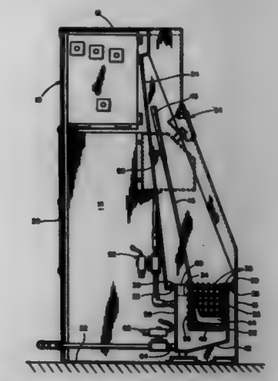
1. A wrapper for smoking articles comprising a cellulosic fiber sheet containing inorganic fillers and activated carbon, the activated carbon having adsorbed thereon volatile organic acids prior to its incorporation into the cellulosic fiber sheet so that said volatile acids are no longer free to migrate to other parts of a smoking article during storage.

5,385,159
PARTS WASHER
Rodney D. Mead, 17819 670th Ave., Hutchinson, Minn. 55350
Filed Aug. 11, 1993, Ser. No. 105,030
Int. Cl.[6] B08B 3/02
U.S. Cl. 134—104.4 17 Claims

1. A parts washer comprising:
(a) an upper tank having a sloped bottom portion that slopes downward to an exit aperture;
(b) a submersible pump located inside the upper tank for pumping a solvent to a solvent spraying means;
(c) a valve assembly having valve means and first and second end portions, the first end portion being attached to the exit aperture such that there is a fluid-tight seal between the valve assembly and upper tank; and
(d) a lower tank having a cover, a detachable lower portion, attachment means for attaching and detaching the lower portion from the cover and sealing means for providing a fluid-tight seal between the cover and lower portion, the cover being attached to the second end portion of the valve assembly such that there is a fluid-tight seal between the cover and valve assembly.



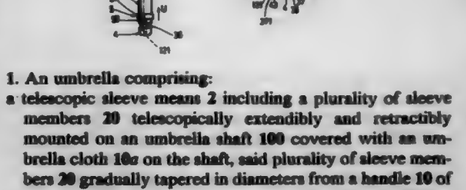
5,385,160
GOLF CLUB CLEANER
John D. Brinkman, 1268 Holly Dr., Springfield, Ohio 45504
Filed Jul. 19, 1993, Ser. No. 92,879
Int. Cl.[6] B08B 3/12
U.S. Cl. 134—186 7 Claims



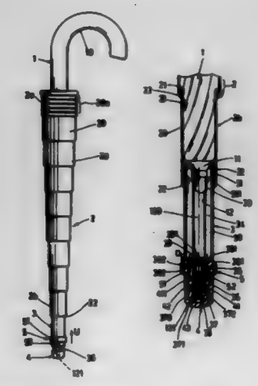
1. The golf club cleaner comprising an open topped tank containing a quantity of cleaning solution, means introducing ultrasonic wave energy into said solution, and means in said tank for supporting a portion of a golf club immersed in the cleaning solution and means extending above the tank for supporting a portion of the golf club being cleaned, said means supporting a portion of the golf club including a basket of mesh material positioned in the tank, said tank and basket of mesh material being open topped with the basket including a laterally extending top flange Supported from the open top of the tank, said basket having a vertical depth less than the vertical depth of the tank to support golf club heads above the bottom of the tank but below the level of cleaning solution in the tank with the golf club heads immersed in the solution and the golf club shafts extending above the cleaning solution.

5,385,161
UMBRELLA SUPPORT
Keith G. Loker, P.O. Box 26, Chaptico, Md. 20621, and James B. Bland, III, 640 Willow Rd., Lusby, Md. 20657
Filed May 16, 1994, Ser. No. 242,883
Int. Cl.[6] A45B 11/00
U.S. Cl. 135—15.1 16 Claims

16. An umbrella including a foldable canopy connected with a shaft having a longitudinal axis, and a carrying handle at one end of the shaft and spaced from the canopy, said carrying handle comprising:
a. a hand grip member mounted to the shaft for carrying the umbrella upright when the canopy is in an opened condition, the hand grip member including an outermost end spaced axially from the shaft;
b. a mounting panel connected with the hand grip member and offset laterally from the shaft longitudinal axis, the mounting panel including a contact surface for engagement with a surface to which the mounting panel is to be attached and disposed at an acute angle relative to the umbrella shaft axis, the acute angle having its apex adjacent the outermost end of the hand grip member, wherein the mounting panel carries attachment means for removably attaching the hand grip member to a surface.



5,385,162
UMBRELLA HAVING AUTOMATICALLY CLOSED WATER COLLECTOR
Tsun-Zong Wu, P. O. Box 55-1670, Taipei,
Filed Nov. 8, 1993, Ser. No. 148,564
Int. Cl.[6] A45B 25/28
U.S. Cl. 135—48 10 Claims



1. An umbrella comprising:
a telescopic sleeve means 2 including a plurality of sleeve members 20 telescopically extendibly and retractibly mounted on an umbrella shaft 100 covered with an umbrella cloth 10a on the shaft, said plurality of sleeve members 20 gradually tapered in diameters from a handle 10 of the umbrella shaft towards a tip portion 12 of said umbrella shaft for shielding the umbrella cloth 10a when extended;
a water collector 3 secured on said tip portion 12 of said umbrella shaft 100;
a drain valve 5 slidably held on said water collector 3 for sealing a plurality of drain holes 36 formed in a lower portion of said water collector 3 when facing the tip portion 12 downwardly towards a ground surface, said

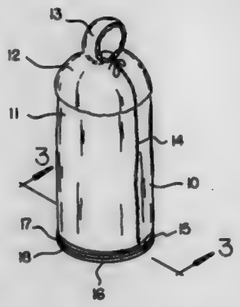
drain valve 5 operatively pushed towards a tip end portion 121 of said umbrella shaft by said telescopic sleeve means 2 to automatically close the drain holes 36 in said water collector 3 when retracting said sleeve members 20 of said telescopic sleeve means 2 towards the tip portion 12 of the umbrella ready for opening an umbrella for a next use; and an end cap 4 capping a bottom portion of said water collector 3 and said tip portion 12 of said umbrella 1.

5,385,163
STEP CANES
Barbara S. Fairchild, R.D. #1, Box 284, Brockport, Pa. 15823
Filed Dec. 21, 1993, Ser. No. 170,758
Int. Cl.[6] A45B *1/00*
U.S. Cl. 135—65 4 Claims



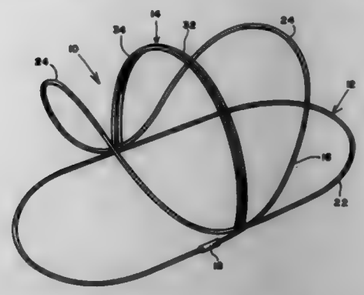
1. A new and improved step cane for assisting a person in walking up and down stairs comprising, in combination:
a rigid and hollow cane for supporting the attitude of a user, the cane having a tip end, a handle end, and a downwardly extending intermediate portion therebetween, the tip end to contact a walking surface, the handle end to provide a user a firm grip, and the intermediate portion having a releasing aperture, a lifting aperture, a coupling aperture, and an extending aperture disposed thereon, the releasing aperture disposed near the handle end, the lifting aperture disposed below the releasing aperture, the coupling aperture disposed below the lifting aperture and further including a clip spring coupled thereto, and the extending aperture disposed below the coupling aperture;
a platform rotatably coupled to the cane between the tip end and the extending aperture, the platform operable in an extended position to allow a user to walk up and down stairs and in a retracted position to allow a user to walk on a generally level surface, the platform further comprising:
a rigid and essentially rectangular plate having an upper surface and a lower surface, the plate oriented horizontally when in the extended position and oriented vertically when in the retracted position;
a first support leg and a second support leg attached to the lower surface of the plate and extending downward to contact the walking surface when the plate is in the extended position, with the tip end of the cane and the two support legs defining a tripod for supporting the plate;
a first hinge and a second hinge, the first hinge connected between the first support leg and tip end of the cane, the second hinge connected between the second support leg and tip end of the cane, the hinges operable in unison to position the plate in either the extended or retracted position; and
a mounting bracket coupled to the plate, the bracket having a hole disposed thereon to receive a cable;
a control mechanism coupled between the cane and platform to place the platform in either the extended or retracted position, the control mechanism further comprising:
an elongated lift lever having a first end, second end, and intermediate portion therebetween, the first end rotatably coupled to the cane above the lifting aperture, the second end having a handle formed thereon, and the intermediate portion having a hole disposed thereon adapted to receive a cable;
a lifting cable placed within the intermediate portion of the cane and having one end disposed through the extending aperture and coupled to the hole of the mounting bracket and the other end disposed through the lifting aperture and coupled to the hole of the lift lever, whereby rotating the handle of the lift lever upwards moves the platform to the retracted position and rotating the handle downwards moves the platform to the extended position;
an elongated release lever having a first end, a second end, and intermediate portion therebetween, the first end having a hole formed thereon and disposed within the cane, the intermediate portion extending from the first end through the releasing aperture to the second end, the second end having a handle formed thereon;
a release detent having a first end, a second end, and an intermediate portion therebetween, the first end having a hole formed thereon and disposed within the cane, the intermediate portion coupled to the lifting cable and extending from the first end through the coupling aperture to the second end, the second end having a hook formed thereon; and
a releasing cable placed within the intermediate portion of the cane and having one end coupled to the hole of the release detent and the other end coupled to the hole of the release lever, whereby when the platform is in the extended position, rotating the handle of the release lever downward engages the hook with the clip spring to lock platform in place, and rotating the handle downwards disengages the hook with the clip spring to unlock the platform, thus enabling the platform to be placed in the retracted position with the lift lever.

5,385,164
COLD WEATHER PERSONAL SHELTER DEVICE
Herman J. Sauter, 290 Mill Ave., Myerstown, Pa. 17067
Filed Apr. 4, 1994, Ser. No. 222,432
Int. Cl.[6] E04H *15/00*
U.S. Cl. 135—87 4 Claims



1. A cold weather personal shelter device which will allow a user to stand or sit with feet on the ground in comfort which comprises: a loose, flexible, insulated body covering including an attached shoulder cape and open-faced head hood; a zippered opening providing access to the interior of said body covering; and a rigid insulating platform affixed to the lower end of said body covering.

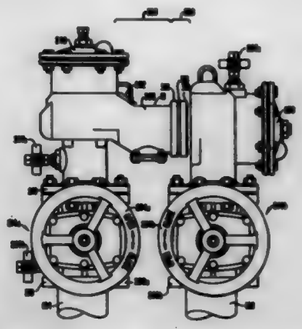
5,385,165
HUNTING BLIND
Daniel P. Hazinski, 4481 SW. 34th Ter., Ft. Lauderdale, Fla. 33312, and Sidney Samole, 6755 SW. 152nd St., Miami, Fla. 33157
Filed Feb. 3, 1965, Ser. No. 191,365
Int. Cl.[6] E04H *15/40*
U.S. Cl. 135—126 10 Claims



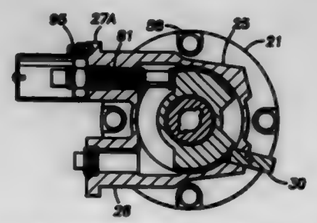
1. A self erecting hunting blind comprising
one or more first elastic rod means joined at ends thereof by one or more connectors for forming a frame comprising a first lower loop and a second upper loop, said second loop arranged transverse to said first loop,
a fabric covering configured to fit over said frame,
one or more first sleeve means provided in said fabric covering for fitting therein said one or more first rod means and for constraining said rod means into said lower and upper loop configurations and whereby said one or more first elastic rod means and said one or more first sleeve means form said fabric into a taut, self erecting, hunting blind structure,
the fabric of said transverse loop being divided into two longitudinal halves, and
means for releasably attaching together said two halves.

5,385,166
BACKFLOW PREVENTOR WITH ADJUSTABLE OUTFLOW DIRECTION
Charles W. Dunmire; Dennis G. Whitelaw, and Richard D. Fields, all of Fresno, Calif., assignors to CMB Industries, Fresno, Calif.
Continuation of Ser. No. 848,574, Mar. 9, 1992, Pat. No. 5,226,441, which is a continuation-in-part of Ser. No. 650,799, Feb. 5, 1991, Pat. No. 5,107,888, which is a continuation-in-part of Ser. No. 435,870, Nov. 13, 1989, Pat. No. 4,989,635. This application Apr. 12, 1993, Ser. No. 46,337
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[6] F16K *15/03*
U.S. Cl. 137—15 25 Claims

15. A method for adjusting flow directions in a backflow preventor assembly, comprising:
providing at least one backflow prevention valve;
encompassing said backflow prevention valve in a housing such that said valve automatically closes if flow through said housing drops below a predetermined value, said housing including an inlet opening defining an inlet flow direction, and an outlet opening defining an outlet flow direction;
moving at least a first portion of said housing with respect to a second portion of said housing, said first and second portions of said housing being in a non-screw-threaded relationship, to cause a change in said outlet flow direction with respect to said inlet flow direction to any of an infinite number of outlet flow directions in a substantially leak-free manner.



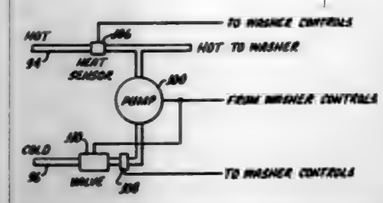
5,385,167
VALUE TESTING DEVICE
Charles D. Owen, Houston; Michael E. Rembert, Cypress, and Albert S. Davis, Richmond, all of Tex., assignors to Bettis Corporation, Waller, Tex.
Division of Ser. No. 968,364, Oct. 29, 1992, Pat. No. 5,329,959. This application Mar. 17, 1994, Ser. No. 210,164
Int. Cl.[6] F16K *51/00*
U.S. Cl. 137—315 2 Claims



1. A device for testing the operability of a valve, which valve is movable between an open and a closed position and is controlled by a valve actuator, said testing device comprising:
housing member releasably secured to both said valve and said actuator, said housing member being bored for oscillatably receiving a hub member;
oscillatable hub member having engagement means engageable with both said actuator and said valve's stem for translating actuator motion into valve motion between said open and closed positions;
lug means depending from said hub member, and movable therewith, said lug means presenting a plurality of stop surfaces engageable with a test member;
said housing member further including an opposed pair of test member receiving aperture means through said housing in communicating relationship with said housing bore, said pair of test member receiving aperture means being positioned on opposite sides of a plane through the axis of said hub, and in non-parallel relationship with said plane;
at least one test member being removably receivable by said test member receiving aperture means; and
said test member including means for laterally engaging at least one of said lug means' stop surfaces and being adapted to, when fully received by its associated aperture means, block oscillation in one direction by said hub member after said hub rotates an incremental amount from either of its associated valve open and valve closed posi-

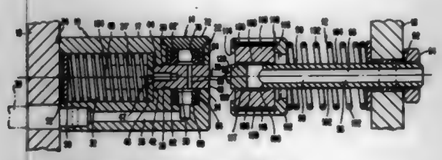
tion whereby the operability of a valve is verified by its being cracked from either of its open and closed position.

5,385,168
HOT WATER DEMAND APPLIANCE AND SYTEM
William J. Lund, Stockton, Calif., assignor to ACT Distribution, Inc., Newport Beach, Calif.
Continuation-in-part of Ser. No. 695,609, May 3, 1991, Pat. No. 5,277,219. This application Oct. 5, 1993, Ser. No. 135,723
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[6] F16K *49/00*
U.S. Cl. 137—337 **11 Claims**



1. A hot water appliance with accelerated hot water delivery system comprising:
an appliance utilizing hot water and having fittings for both hot and cold water;
pump means, interconnected between said hot and cold water fittings at a point remote from hot water source and disposed within said appliance, for circulation of water from the hot water fitting into the cold water fitting;
control means for causing the pump to circulate water from the hot water fitting into the cold water fitting and back to a hot water source when a hot water valve in said appliance is turned on; and
temperature sensor means, connected to said control means, for causing said control means to stop the pump means to prevent heated water from being circulated into the cold water fitting.

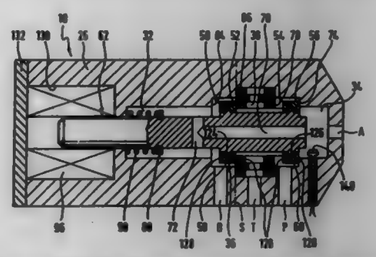
5,385,169
SUBSEA FLUID COUPLING EMPLOYING METAL-TO-METAL SEALING
Larry D. Odelius, Houston, Tex., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Apr. 4, 1994, Ser. No. 222,588
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.03 **13 Claims**



1. A subsea fluid coupling, comprising:
a female part including:
a housing defining a first end face,
an aperture extending longitudinally into said housing through said first end face, said aperture being of non-circular cross-sectional shape and including first and second walls disposed on opposite lateral sides of a longitudinal axis of said aperture,
a first fluid-conducting passage formed in said housing and intersecting said first wall of said aperture to form therewith a first port, and
a gate longitudinally slidably disposed in said aperture and including laterally spaced first and second outer surfaces facing said first and second walls, respectively, said gate being biased longitudinally toward said first end face to a port-blocking position, said gate including a hole extending laterally therethrough for communicating said first port with said second outer surface when said gate is in said port-blocking position;
a male part including:
a conduit body of non-circular cross-sectional shape corresponding to said shape of said aperture and having third and fourth outer surfaces disposed on opposite lateral sides of a longitudinal axis of said conduit body, said conduit body defining a second end face positionable in facing relationship to said aperture of said housing, said conduit body including a second fluid conducting passage therein, said second passage including a first portion extending toward said second end face, and a lateral portion intersecting said third and fourth outer surfaces, respectively, to form therewith second and third aligned ports, said conduit body being sized to enter said aperture through said first end face when said male and female parts are brought together, to push said gate out of its port-blocking position and bring said second and third ports into alignment with said first port, and
a slide mounted on said conduit body for sliding movement longitudinally therealong and being biased to a port-blocking position, said slide including laterally spaced third and fourth generally planar walls arranged to be in alignment with said second and third ports, respectively, when said slide is in its port-blocking position; and
seal means, comprising:
first and second annular metal seals disposed in laterally aligned relationship on said female part, said first seal disposed between said first wall of said aperture and said first outer surface of said gate, said second seal disposed between said second wall of said aperture and said second outer surface of said gate, said first seal arranged in surrounding relationship to said first port and to one end of said hole when said gate is in its port-blocking position, said second seal arranged in surrounding relationship to another end of said hole when said gate is in its port-blocking position,
third and fourth annular metal seals disposed in laterally aligned relationship on said male part, said third seal disposed between said third wall of said slide and said third outer surface of said conduit body, said fourth seal disposed between said fourth wall of said slide and said fourth outer surface of said conduit body, said third and fourth seals being in surrounding relationship to said third and fourth ports, respectively, when said slide is in its port-blocking position,
said hole conducting fluid pressure to said opposite lateral surfaces of said gate for laterally pressure balancing said gate when said hole is aligned with said first port, said lateral portion of said second passage conducting fluid pressure to said outer surfaces of said gate for laterally pressure balancing said gate when said gate is disposed in said aperture.

5,385,170
MULTIWAY VALVE
Wilhelm Teuhlsser, Winterbach; Günter Kellermann, Remseck, and Frank Thoma, Stuttgart, all of Germany, assignors to Mercedes-Benz AG, Germany
Division of Ser. No. 942,170, Sep. 8, 1992, Pat. No. 5,275,207. This application Aug. 3, 1993, Ser. No. 100,999
Claims priority, application Germany, Sep. 7, 1991, 4129828
Int. Cl.[6] F16K *11/04*
U.S. Cl. 137—625.43 **9 Claims**

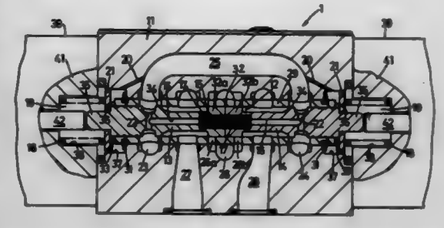
1. A multiway valve with two valve positions with permanent pairwise connections so as to be able to change pairwise association of the connections by switching over from one valve position to a respective other valve position, comprising a valve housing with an axial hole which has a plurality of steps forming serially arranged seat elements, and first and second end chambers with an intermediate space therebetween into which one of the connections opens; a spool-type drive pin carrying at least two closing elements located in the axinl hole, the drive pin being guided so as to seal in the region of a first of the two chambers, one of the connections also opening at least into the second end chamber; at least one radial hole connecting an inner longitudinal passage provided in the drive pin to the first end chamber at one end, a lower longitudinal passage opening at the other end into the second chamber on the associated end surface of the drive pin, and the closing elements interacting at least partially elastically and flexibly with the seat elements and each being of one of a sleeve-shaped and annular configuration, wherein the seat elements comprise at least four seat elements located in series and the intermediate



spaces comprise at least two intermediate spaces located between the first and second end chambers, the drive pin is radially supported in a region of its end close to the second end chamber by radial protrusions provided on an outer periphery thereof between the closing elements, the closing elements include two oppositely directed sealing surfaces arranged to be laid on a seat element of the associated seat element pair, depending on valve position, and a first of the closing elements directly adjoins the radial protrusions in a direction of the second end chamber, wherein the intermediate spaces comprise at least three intermediate spaces, the first closing element being located in the intermediate space adjacent to the second end chamber and the second closing element being located in the intermediate space adjoining the first end chamber, and the first end chamber is continually connected exclusively via the inner longitudinal passage in the drive pin and the second chamber to one of the connections formed by the one connection opening into the second end chamber.

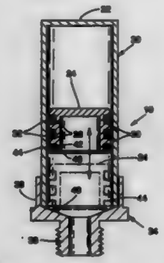
5,385,171
TWO-STAGE HYDRAULIC VALVES
Kenneth G. Cleasby, Chichester, England, assignor to Trinova Limited, Sussex, England
Filed Jun. 3, 1993, Ser. No. 71,522
Claims priority, application United Kingdom, Jun. 5, 1992, 9211898
Int. Cl.[6] F15B *13/043*
U.S. Cl. 137—625.64 **6 Claims**

1. An electrically operated, two-stage hydraulic spool valve comprising a main stage having a main spool centering springs acting on the main spool, a pilot stage having a pilot spool, and two solenoids acting on respective ends of the pilot spool to control the operating position of the latter, the solenoids being opposed by return springs also acting on respective ends of the pilot spool, the pilot stage comprising tank port means, supply port means, and two service ports, and the pilot spool comprising two portions, both said solenoids being continuously engaged during normal operation to push the two portions of said spool into contact with one another to obtain a specific lap condition, a spring interposed between the two portions and operable to urge the two portions apart in a direction axially of the pilot spool so that on de-energization of the solenoids, the portions of the pilot spool separate under the action of the spring to provide an interconnection between the pilot service ports and the tank port means, wherein the tank port means comprise two tank ports between which the two service ports are disposed, and in that the supply port means comprises two supply ports disposed between the service ports, said central



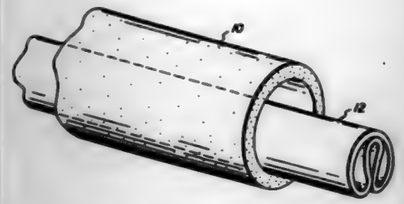
port means, tank port means and said service ports being constructed and arranged with respect to the pilot spool and spaced apart by an amount such that, at least in normal operation of the pilot valve, neither supply port sees the ends of the two portions of the pilot spool which are maintained in contact by the operation of the solenoids.

5,385,172
PING-FREE WATER HAMMER ARRESTER
Charles H. Perrott, Portland, Oreg., and Suzuki Kouichi, Tokyo, Japan, assignors to Precision Plumbing Products, Inc., Portland, Oreg. and Venn Co., Ltd., Tokyo, Japan
Filed Jan. 3, 1994, Ser. No. 176,948
Int. Cl.[6] F16L *55/04*
U.S. Cl. 138—31 **3 Claims**



2. A ping-free water hammer arrester comprising:
a) a hollow cylindrical body closed at one end and open at the other,
b) a piston freely slidable within the body and forming in the closed end thereof a hermetically sealed gas chamber,
c) a hollow, cylindrical connector open at both ends and secured to the open end of the body for connection to a conduit conveying fluid under pressure, thereby placing the body in open communication with the conduit, and the fluid in the conduit in pressure contact with the piston, whereby to reciprocate the piston with fluctuations in fluid pressure between a retracted position and an advanced position,
d) an abutment on the connector positioned opposite the piston and in its path of travel,
e) resilient shock-absorbing bumper means, and
f) bumper means mounting means positioning the bumper means between the piston and the abutment for impact by the piston,
g) the bumper means comprising a resilient 0-ring and O-ring mounting means mounting the O-ring on the piston.

5,385,173
PIPE LINER COMPOSITION
Joseph L. Gargiulo, Colts Neck, N.J., assignor to American Pipe & Plastics, Inc., Binghamton, N.Y.
Continuation-in-part of Ser. No. 753,797, Sep. 3, 1991, abandoned. This application May 28, 1993, Ser. No. 69,570
Int. Cl.[6] F16L *55/165*
U.S. Cl. 138—98 3 Claims

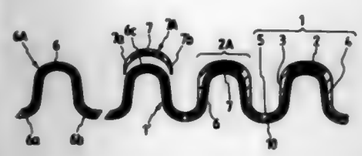


1. An elongated cylindrical liner for a degraded underground pipe which is adapted to be installed in a collapsed form and expanded to intimately engage an inside surface of the degraded pipe, said liner having an outside diameter in the range from about 4.0 to 15.0 inches and having the following composition:

	Parts by Weight
PVC	100
Stabilizer	0.5–3.5
Plasticizer	20–27
Internal Lubricant	0.4–2.0
External Lubricant	0.4–2.0

with said pipe liner being semi-rigid and having a flexural modules in the range of about 130,000–260,000 psi.

5,385,174
PRESSURE-RESISTANT HELICAL CORRUGATED PIPE
Shiro Kanao, No. 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan
Continuation of Ser. No. 887,661, May 26, 1992, abandoned, which is a continuation of Ser. No. 454,562, Dec. 21, 1989, abandoned. This application Dec. 22, 1993, Ser. No. 171,773
Claims priority, application Japan, Dec. 27, 1988, 63-333133
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[6] F16L *11/112*
U.S. Cl. 138—122 10 Claims

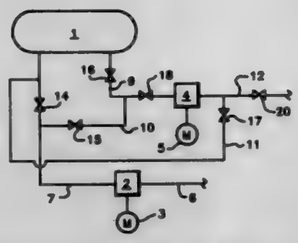


1. A pressure-resistant pipe having a helical corrugated outer surface, comprising:
a continuous helical corrugated pipe wall including a first helically-wound metal belt plate so as to reinforce the pipe;
a second metal belt plate spaced from and overlapping at least a top portion of said first metal plate in a direction of thickness of said pipe wall so as to reinforce the pipe; and
a connecting material for integrally connecting said first and second metal belt plates at the overlapping portion, said pipe wall and said connecting material being a synthetic resin material, said first and second metal belt plates being disposed so as to define said corrugated outer surface, said second metal belt plate being embedded in said synthetic resin material, and an outer surface and an inner surface of said first metal belt plate being directly covered by said synthetic resin material.

5,385,175
CONDUIT HAVING HYDROPHILIC AND OLEOPHOBIC INNER SURFACES FOR OIL TRANSPORTATION
Mayela Rivero; Valmore Rodriquez, both of Caracas, Venezuela; Dan Joseph, Minneapolis, Minn.; Emilio Guevara, and Nelson Carabaño, both of Caracas, Venezuela, assignors to Inteven, S.A., Caracas, Venezuela
Filed Nov. 1, 1993, Ser. No. 144,008
Int. Cl.[6] F16L *9/16*; F17D *1/16*
U.S. Cl. 138—145 19 Claims

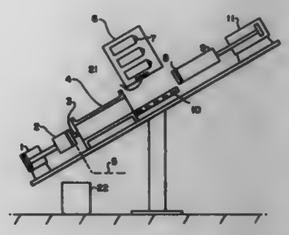
1. A conduit for transporting an oil and water mixture, wherein the conduit has an inner surface, said inner surface being formed from a hydrophilic and oleophobic material, said hydrophilic and oleophobic material being characterized by a water absorption capacity of greater than or equal to about 8% by weight of said hydrophilic and oleophobic material, and by a contact angle with oil of greater than or equal to about 120°, whereby adhesion of oil to said inner surface is substantially inhibited.

5,385,176
NATURAL GAS DISPENSING
Billy F. Price, Houston, Tex., assignor to Price Compressor Company, Inc., Houston, Tex.
Filed Jul. 19, 1993, Ser. No. 94,494
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—1 10 Claims



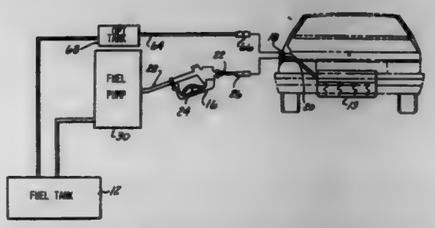
1. An energy conserving process for filling a storage tank with compressed natural gas and dispensing compressed natural gas from the storage tank to receiving tanks, comprising the steps of:
receiving gas from a source into a suction end of a first compressor;
compressing the gas by means of the first compressor to a first pressure level;
further compressing compressed gas from the first compressor with a second compressor, of lower horsepower than the first compressor, to a second pressure level, greater than the first pressure level, into the storage tank; and
on demand removing compressed gas from the storage tank using the second compressor to a receiving tank at a fueling rate.

5,385,177
AEROSOL CAN RECYCLING SYSTEM
Paul J. O'Neil, P.O. Box 4253, Incline Village, Nev. 89450
Division of Ser. No. 758,793, Sep. 12, 1991, Pat. No. 5,722,093.
This application Nov. 22, 1993, Ser. No. 155,486
Int. Cl.[6] B65B *3/04*
U.S. Cl. 141—1 6 Claims



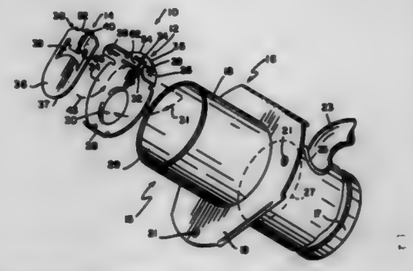
1. A method of recovering propellant and residual product from aerosol cans comprising the steps of piercing said cans,
flowing the gaseous contents of said cans into a separation tank having a head space,
drawing gas from the headspace of said separation tank,
cooling and compressing said gas drawn from separation tank,
and collecting said now compressed gas in a propellant collection tank.

5,385,178
SELF-CONTAINED FUEL FILLER SYSTEM
Ram D. Bedi, Birmingham, Mich., assignor to K.J. Manufacturing Co., Wixom, Mich.
Division of Ser. No. 17,653, Feb. 12, 1993, Pat. No. 5,295,521.
This application Dec. 28, 1993, Ser. No. 174,422
Int. Cl.[6] B67D *5/54*
U.S. Cl. 141—59 9 Claims



1. An apparatus for introducing fluid having a volatile component from a fluid storage vessel into a fluid receiving vessel, the fluid introduction occurring with reduced discharge of volatile vapors and liquid fluid into the surrounding atmosphere, the apparatus comprising:
means for receiving fluid into the fluid receiving vessel, the fluid receiving means comprising:
a fluid receiving opening disposed on the fluid receiving vessel;
a filler cap sealingly overlaying the fluid receiving opening;
an essentially flat planar surface member disposed on the filler cap, the surface member having an inner face, an opposed outer face, at least one fluid receiving aperture extending therethrough, and at least one fitting for effecting positive closure of the fluid receiving aperture between fluid introduction operations, permanently positioned in the flat planar surface member of the fluid filler cap; and
means for dispensing fluid from the fluid storage vessel into the fluid receiving vessel, the fluid dispensing means comprising:
a fluid filler nozzle device releasably engageable with the fluid receiving aperture fitting of the fluid filler cap, the fluid filler nozzle device comprising:
a fluid directing conduit, comprising:
a fluid inlet orifice;
an opposed fluid outlet orifice;
a fitting for effecting positive closure of the fluid outlet orifice between fluid introduction operations, the fitting mounted on the fluid directing conduit of the fluid filler nozzle proximate to the fluid outlet orifice, the fitting having means for releasably mating with the fitting located in the fluid aperture located in the fluid filler cap and establishing closed loop communication between the fluid dispensing means and the fluid receiving means of the fluid receiving vessel; and
means for regulating and interrupting fluid flow through the fluid directing conduit;
means for conveying fluid from the fluid storage vessel to the fluid inlet orifice of the fluid filler nozzle;
means, located in proximity to the fluid filler nozzle device, for preventing uncontrolled escape of fluid vapors displaced from the fluid receiving vessel during fluid transfer operations into the surrounding atmosphere; and
a fitting, located in a second vapor-conveying aperture extending through the flat planar surface member of the fluid filler cap, matingly engageable with the means for preventing uncontrolled escape of fluid vapors, wherein the means for preventing the uncontrolled escape of fluid vapors displaced from the fluid receiving vessel comprising:
a vapor conveying conduit having a first end in communication with a vapor collection site remote from the fluid dispensing nozzle, and a second end distal to the first end; and
a fitting positioned on the second end of the vapor conveying conduit, the fitting being capable of mating communication with the vapor-conveying fitting located in the second vapor-conveying aperture in the fluid filler cap, wherein the means for preventing the uncontrolled escape of fluid vapors does not impede delivery of fuel to the fluid receiving vessel.

5,385,179
NOZZLE RESTRICTOR ASSEMBLY
Dale Bates, Columbus; Daniel N. Smith, North Vernon, and Richard F. Little, Columbus, all of Ind., assignors to Pilot Industries, Inc., Dexter, Mich.
Division of Ser. No. 754,531, Sep. 4, 1991, Pat. No. 5,212,864.
This application May 3, 1993, Ser. No. 56,835
Int. Cl.[6] B67C *3/34*
U.S. Cl. 141—312 70 Claims



1. A restrictor assembly for a fuel filler tube, the restrictor assembly comprising:
a restrictor plate sized for insertion into the fuel filler tube having an outer end configured to receive a fuel cap and

an opposite inner end, the restrictor plate being formed to include aperture means for allowing passage of a fuel filler nozzle therethrough during refueling and a first slot, a first side facing said outer end of said fuel filler tube and an opposite second side, and

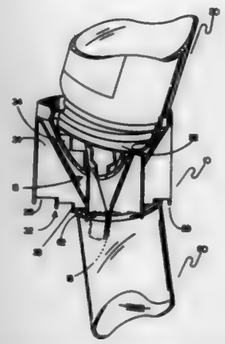
means for closing the aperture means upon withdrawal of the fuel filler nozzle said closing means having a first and second end portion residing between said second side of said restrictor plate and said inner end of said fuel filler tube, and a middle portion residing between said first side of said restrictor plate and said outer end of said fuel filler tube, wherein said second end portion is wider than said first end portion, and said second end portion further is sized for insertion through the first slot.

5,385,180

LIQUID SAVER FUNNEL SYSTEM

Boyd Wittman, Colorado Springs, Colo., assignor to Enpak, Inc., Chanhassen, Minn.

Filed Jun. 9, 1994, Ser. No. 257,533
Int. Cl.[6] B67C *11/00*
U.S. Cl. 141—340 **4 Claims**



1. A funnel system for the prevention of excess liquid spillage when pouring liquids from a pouring container having an open end, into a receiving container haning an open end comprising:

(a) a tapered annular body having an open wide top end, an open narrow bottom end, an outer surface and an inner surface;

(b) a spout forming said open narrow bottom end;

(c) an external support means for firmly positioning the funnel such that said spout may be offset with respect to the open end of the receiving container; wherein said external support means comprises a plurality of fins extending outwardly from said outer surface of said tapered annular body, each of said fins having bottom offset horizontal surfaces forming steps such that said steps supports said funnel such that said spout is aligned with the open end of the receiving container, wherein some of said steps of said plurality of fins form a relatively annular planar surface relative to each of said steps; and

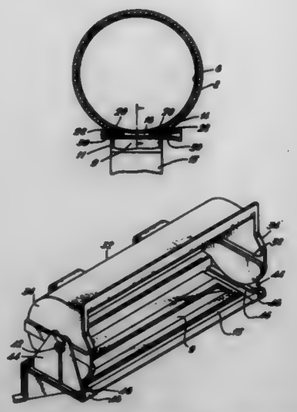
(d) an internal support means for firmly positioning an inverted pouring container relative to said spout of the funnel; said internal support means comprises a plurality of blades extending inward from said inner surface of said tapered annular body, each of said blades having offset horizontal surfaces forming internal steps, such that said internal steps supports the pouring container.

5,385,181

DISPENSING CARTRIDGE

Anil Bhagwat, Hemel Hempstead, and Alan Howard, Westoning, both of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1993, Ser. No. 82,709
Claims priority, application United Kingdom, Jul. 17, 1992, 9215263
Int. Cl.[6] G03G *15/00*
U.S. Cl. 141—364 **6 Claims**



1. A dispensing cartridge adapted to discharge material therefrom to a receiving member during a dispensing operation comprising:

an inner tubular member having an inner surface and an outer surface, and defining an inner port therein;

an outer tubular member having an inner surface with a curved contour of constant diameter and an outer surface, and defining an outer port therein, said inner tubular member being mounted rotatably within said outer member and in sliding contact therewith; and

a cover, coupled to said inner tubular member, adapted to rotate said inner tubular member in response to movement of said cover from a first position, wherein the inner port and the outer port are aligned with one another to define an exit aperture for discharging material from the cartridge to the receiving member, to a second position, wherein the inner port and the outer port are misaligned from one another to define a closed position preventing discharge of material from the cartridge, wherein said outer tubular member further comprises a substantially wedge shaped portion immediately adjacent the outer port, the wedge shaped portion having a surface to conform to the inner surface of said outer tubular member and which extends the curved contour of the inner surface, said wedge shaped portion having a sharp edge defining the outer port in said outer tubular member.

5,385,182

FUEL NOZZLE RETAINER SAFETY BREAKAWAY DEVICE

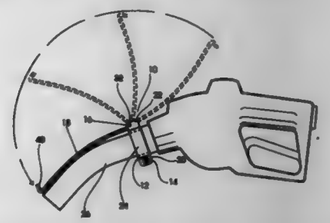
Bobby R. Dyer, 50 Sunny Ridge La., Dayton, Ohio 45429

Filed May 11, 1994, Ser. No. 241,400
Int. Cl.[6] B67C *3/00*
U.S. Cl. 141—392 **11 Claims**

1. A fuel nozzle retainer breakaway safety device for use on a fuel nozzle connected to a fuel dispenser, comprising:

a clamp clamped to the nozzle;

a latch pivotally connected to said clamp; and



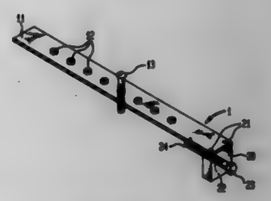
means for disconnecting said latch from said clamp at a predetermined force less than that required to break the nozzle from the dispenser.

5,385,183

TOOL FOR PRODUCING STRAIGHT EDGE

Thomas Ferranti, 5 Hamilton Rd., Whitehouse Station, N.J. 08889

Filed Mar. 15, 1993, Ser. No. 31,690
Int. Cl.[6] B27C *5/00*
U.S. Cl. 144—144.5 R **5 Claims**



1. A tool for use in producing a straight edge on a piece of raw material, said piece having a first piece edge and a second piece edge opposite said first piece edge, said tool comprising:

(a) a bar having a bar straight edge and a bar long axis;

(b) clamping means to detachably clamp said piece between said first and second piece edges, said clamping means comprising penetrating means to penetrate at least one of said first and second piece edges, said clamping means being integral to said bar;

(c) said clamping means located within said bar other than along said bar straight edge; and

(d) said clamping means further comprises first and second clamping portions; said first clamping portion comprising a first opening in said bar and a first bolt inserted through said first opening; said second clamp portion comprising a second opening in said bar and a second bolt inserted through said second opening.

5,385,184

VACUUM HOLDING DEVICE FOR A VENEER SLICER

David Mellor, Lockport, N.Y., assignor to Merritt Plywood Machinery, Inc., Lockport, N.Y. and M. Böhlke Veneer Corp., Fairfield, Ohio

Filed Jan. 18, 1994, Ser. No. 182,748
Int. Cl.[6] B27L *5/06*; B25B *11/00*
U.S. Cl. 144—178 **18 Claims**

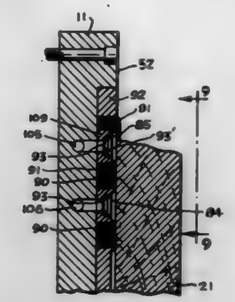
5. A vacuum holding device for a veneer slicer, comprising:

a vacuum source;

a platen having a flat surface comprising a plurality of vacuum compartments, wherein each compartment contains at least one port connected through a vacuum line to said vacuum source;

sealing means within each compartment, wherein said sealing means surrounds each compartment and also extends outwardly from said compartment beyond said flat surface of said platen such that a flitch to be sliced contacts said sealing means when said flitch is moved proximate said platen, wherein said compartment, sealing means and flitch create a vacuum chamber which holds said flitch in place during slicing;

a ball valve connected in each vacuum line between each port and said vacuum source, wherein each ball valve is



operatively arranged to open to create a vacuum to exist in its respective compartment; and,

means for sensing when said flitch covers a respective compartment; and,

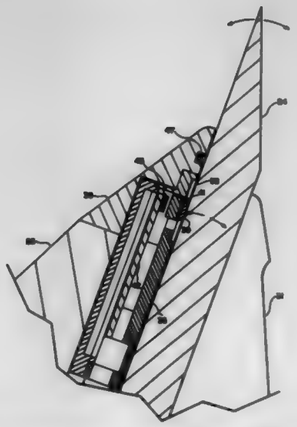
means for activating a respective ball valve in a vacuum line connected with said covered compartment, when said sensing means senses that said compartment is covered, to establish a vacuum in said covered compartment.

5,385,185

ROUND UP CONTROL SYSTEM FOR VENEER LATHE

Harry Calvert, New Smyrna Beach, Fla., assignor to Calvert Manufacturing, Inc., Longwood, Fla.

Filed Aug. 30, 1993, Ser. No. 114,766
Int. Cl.[6] B27L *5/02*; B27B *1/00*
U.S. Cl. 144—212 **20 Claims**

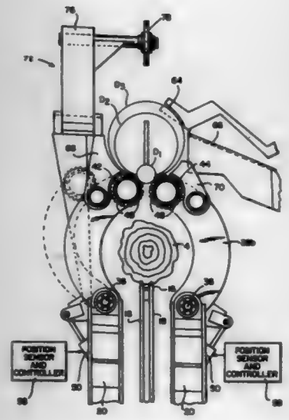


7. A round-up control system for a veneer lathe having a knife support frame with a knife mounted thereon for peeling a veneer, said lathe initially producing trash veneer, comprising:

(a) means defining at least one laterally unsupported portion of said knife, intermediate the ends thereof;

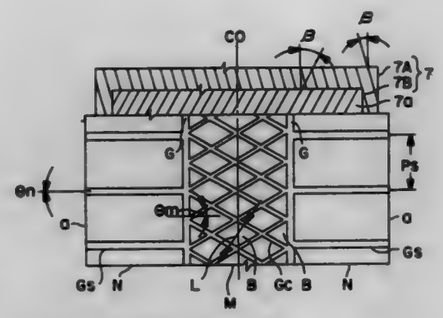
(b) sensor means disposed lateral the unsupported portion of the knife for sensing lateral displacement thereof;
(c) means, connected to said sensor means, for generating a signal proportional to the lateral displacement of the knife; and
(d) means for applying the signal generated from said sensor means to detect production of a usable veneer according to preselected parameters.

5,385,186
SHARP CHAIN CHARGER
George W. Head, Jr., Snellville, and Reginald R. Landers, Monroe, both of Ga., assignors to Forest Products Machinery, Inc.
Filed Nov. 12, 1993, Ser. No. 151,013
Int. Cl.[6] B27C *1/12*
U.S. Cl. 144—245 A 12 Claims



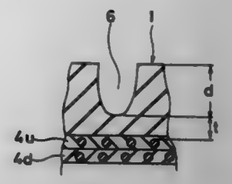
1. Apparatus for feeding logs to a sawing machine, comprising:
(a) means for receiving, supporting, and aligning a log with respect to a longitudinal infeed axis of a sawing machine;
(b) means connected with said aligning means for axially rotating the log to a selected rotary position for optimal sawing by the sawing machine;
(c) means connected with said aligning means for displacing said aligning means downwardly and longitudinally in the direction of the sawing means; and
(d) drive means arranged beneath said aligning means for receiving the log as said aligning means are displaced downwardly beyond said drive means, said drive means longitudinally transporting the log, while in the desired aligned and rotary positions, to the sawing machine, thereby to obtain maximum yield from the log.

5,385,187
PNEUMATIC RADIAL TIRE WITH TREAD OF THREE EQUAL PORTIONS
Shinzo Kajiwara; Yoshio Kouli, and Minao Yanase, all of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Division of Ser. No. 695,324, May 3, 1991, abandoned, which is a division of Ser. No. 441,973, Nov. 28, 1989, abandoned. This application Apr. 21, 1992, Ser. No. 871,333
Claims priority, application Japan, Nov. 30, 1988, 63-302983; Nov. 30, 1988, 63-302984; Nov. 30, 1988, 63-302985; Nov. 30, 1988, 63-302988; Nov. 30, 1988, 63-302990
Int. Cl.[6] B60C *11/11, 9/18*
U.S. Cl. 152—209 R 6 Claims



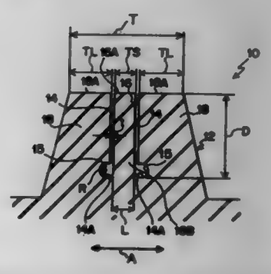
1. A pneumatic radial tire comprising;
a pair of bead portions, a bead core disposed in each of said bead portions,
a carcass extending between the pair of bead portions and turned up around each of the bead cores,
a tread portion disposed radially outside the carcass and having a pair of tread edges, and
a belt comprising at least two plies of steel cords disposed radially outside the carcass and inside the tread portion, each of said at least two belt plies having a cord quantity NS larger than 18.0 mm^2 wherein the cord quantity NS is defined as the total cross-sectional area of the steel belt cords S(mm^2) per 10 centimeters width of belt ply, and the angle of the steel cords to the tire equator is 18 degrees or less,
wherein;
the tread portion includes only two straight circumferential grooves extending continuously in the direction of the tire equator to divide the tread portion into approximately three equal parts, a middle part including the tire equator and a pair of outside parts that extend to the tread edges from each side of the middle part, the middle part including a first plurality of straight lateral grooves and a second plurality of straight lateral grooves, each extending continuously across the middle part, said first plurality of straight lateral grooves having an inclination with respect to the tire equator and said second plurality of straight lateral grooves having an inclination with respect to the tire equator reverse to said inclination of said first plurality of straight lateral grooves so that the first plurality of straight lateral grooves cross the second plurality of straight lateral grooves to form a plurality of quadrilateral unitary blocks therein; and
the maximum length of each of said blocks in a right-angled direction to said lateral grooves is 10 mm or less; and
each of said outside parts includes a third plurality of grooves.

5,385,188
PNEUMATIC RADIAL TIRE FOR PASSENGER CARS
Tomohiko Kogure, Minami-oshigara, and Yasuku Miyazaki, Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Apr. 29, 1992, Ser. No. 875,783
The portion of the term of this patent subsequent to Dec. 20, 2011, has been disclaimed.
Int. Cl.[6] B60C *9/18, 11/04*
U.S. Cl. 152—209 R 8 Claims



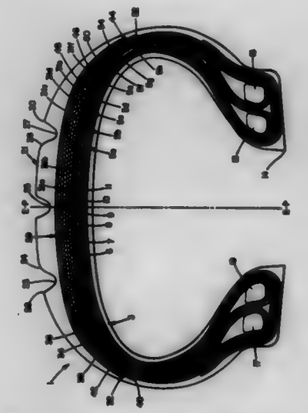
1. A new pneumatic radial tire for passenger cars having a plurality of grooves formed in the tread and extending at least circumferentially of the tire, the tread being provided with two belt plies therein in such a manner that their belt cords extend in a criss-cross pattern, said grooves having a depth in the range of 6.0 to 8.5 mm, with the thickness of the under-groove rubber layer from the bottom of the grooves to the surface of the cords of the outer belt ply being fixed within the range of 0.5 to 2.0 mm, said belt plies being placed one over another with both edge portions left unfolded, said belt plies forming an angle of from 5 to 40 degree with respect to the circumferential direction of the tire, at least one of said belt plies being made from aramid fiber cords, at least the both edge portions of said belt plies being covered with at least one belt cover ply which has a cord angle of about 0 degree with respect to the circumferential direction of the tire, said at least one belt cover ply being made of organic fiber cords no larger than 0.7 mm in diameter at a picking density of 50 to 90 percent.

5,385,189
PNEUMATIC TIRE WITH PAIRED SIDES IN THE TREAD
Naoito Aoki, Kokubunji; Yasufumi Ichiki, and Chishiro Tanabe, both of Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Oct. 27, 1992, Ser. No. 967,281
Claims priority, application Japan, Nov. 1, 1991, 3-287689; Nov. 1, 1991, 3-288017; Nov. 11, 1991, 3-294338; Nov. 11, 1991, 3-294339; Nov. 11, 1991, 3-294340; Nov. 11, 1991, 3-294341; Jun. 4, 1992, 4-144591; Jun. 4, 1992, 4-144614
Int. Cl.[6] B60C *11/12*
U.S. Cl. 152—209 R 13 Claims



1. A pneumatic tire comprising a plurality of blocks, each block being located on a ground facing surface of the tire and having at least one set of two sipes extending substantially in a transverse direction of the tire, said at least one set of two sipes defining a first area therebetween and second areas on opposite sides of said first area in a circumferential direction of the tire, the first area being a narrow area having a width TS in a circumferential direction of the tire less than a width TL of each second area in the circumferential direction of the tire, the second areas being wide areas, each sipe having a depth in a radial direction of the tire and a groove width in the circumferential direction of the tire, the groove width of each sipe adjacent a radially innermost bottom portion of the sipe being larger than the groove width of each sipe adjacent a radially outermost top portion of the sipe to define expanded portions at the bottom portion of the sipes, a ratio L/TS of a shortest distance L between the expanded portions of the sipes to an average length TS of the first area in the circumferential direction of the satisfying $0.7 \leqq L/TS \leqq 1.5$, the bottom portions of the sipes being expanded in convex shapes extending in opposite directions towards the wide areas of the block in the circumferential direction of the tire.

5,385,190
BIASED PNEUMATIC TIRE HAVING A BELT STRUCTURE WITH SIX ANNULAR LAYERS
Mahmoud C. Assaad, Uniontown, and David C. Wagner, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 790,886, Nov. 12, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 49,236
Int. Cl.[6] B60C *11/04, 9/06, 9/18*
U.S. Cl. 152—209 R 4 Claims



1. A pneumatic bias aircraft tire comprising (a) a toroidal carcass having a plurality of plies each containing reinforcing cords which extend diagonally across the tire at about a 26° to 33° angle with respect to the equatorial plane of the tire, (b) a plurality of beads ranging from 4 to 8 which are each wrapped by at least one reinforcing cord, (c) a tread being integral with the carcass and wherein the number of grooves consist of three and the outer two grooves are asymmetric with the inside edge of each groove having a layer radius of curvature compared to the outside edge of said grooves, (d) a belt structure located above the plurality of plies in the toroidal carcass and below said tread, said belt structure having six annular layers of parallel cord underlying the tread, unanchored to the bead, and having both left and right cord angles in a range from 21° to 26° with respect to the equatorial plane of the tire and wherein the terminal end of each annular layer is staggered relative to the terminal ends of the remaining five annular layers and the terminal ends of the uppermost annular layer closest to the tread only overlap the terminal ends of the next four underlying annular layers.

5,385,191

BINARY INNER TUBE FOR TIRE

Allen Aflague, 5445 E. Crescent, Mesa, Ariz. 85206, and Mark Talbot, 358 S. 24th St., Mesa, Ariz. 85204

Filed Nov. 26, 1993, Ser. No. 158,169
Int. Cl.[6] B60C *5/04, 5/20, 5/22*
U.S. Cl. 152—340.1 2 Claims



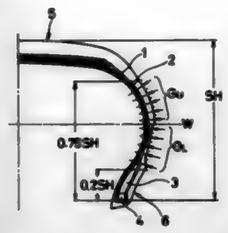
1. An inner tube for a tire comprising:
two annular compartments that have a common annular axis when inflated, the two annular compartments further comprising;
a primary compartment having a valve for inflating the primary compartment disposed on a surface of the primary compartment and a secondary compartment having a valve for inflating the secondary compartment disposed on a surface of the secondary compartment;
wherein the secondary compartment is disposed inside the primary compartment, the primary compartment has an aperture through which the valve on the secondary compartment projects, and the valve on the secondary compartment projects through the aperture of the primary compartment; and
the valve on the primary compartment is of a different color than the valve on the secondary compartment.

5,385,192

PNEUMATIC TIRE WITH DIFFERENT SIDE WALL THICKNESS IN TREAD-SIDE AND BEAD-SIDE REGIONS

Yoshiaki Hashimura, Isehara; Masakazu Okihara, Hiratsuka; Yasuku Miyazaki, Hiratsuka; Zenichiro Shida, Hiratsuka, and Tomohiko Kogure, Minami Ashigara, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1993, Ser. No. 2,343
Claims priority, application Japan, Jan. 22, 1992, 4-009220
Int. Cl.[6] B60C *3/00, 13/00, 13/02*
U.S. Cl. 152—454 5 Claims



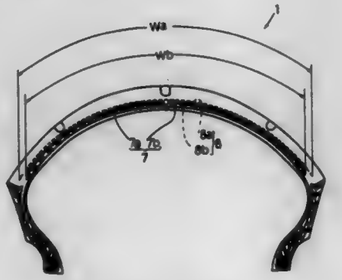
1. A pneumatic tire comprising a tread, side walls continuing from the left and right sides of said tread, and bead portions continuing from both ends of said side walls, an average tread-side region thickness G_U of the region of each of said side walls which extends from a position corresponding to a widest portion of said tire toward said tread and an average bead-side region thickness G_L of the region of said side walls which extends from said position toward a bead being set different from each other, said average tread-side region thickness G_U and said average bead-side region thickness G_L being determined by dividing the radial extent of both the tread-side region and the bead side region into ten equal parts, measuring the thickness of rubber or each divisional part along a line which passes a circumferentially intermediate point in each divisional part and reaches the surface of a composite member thereunder, and arithmetically averaging the thickness of rubber of the fiber points in the tread-side region to calculate the average tread-side region thickness G_U and arithmetically averaging the five points in the bead-side region to calculate the average bead-side region thickness G_L, said average tread-side region thickness G_U of said tread-side region being set to not less than 2.5 mm with said average bead-side region thickness G_L of said bead-side region set to less than 2.5 mm and not less than 1.0 mm, wherein a stepped portion is provided between said tread-side and bead-side regions of said side walls, a recess continuing from said stepped portion being formed in said bead-side region.

5,385,193

MOTORCYCLE RADIAL TIRE HAVING A SPIRALLY WOUND BELT

Shigehiko Suzuki, Amagasaki, and Itsuo Yasui, Nishinomiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 775,109, Oct. 11, 1991, abandoned.
This application Jan. 12, 1994, Ser. No. 180,500
Claims priority, application Japan, Oct. 29, 1990, 2-292528; Sep. 26, 1991, 3-276943
Int. Cl.[6] B60C *9/18, 9/20, 13/00, 15/06*
U.S. Cl. 152—525 3 Claims



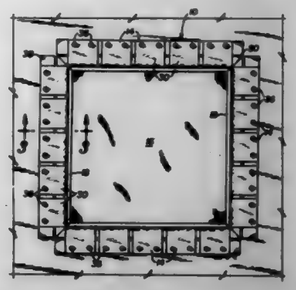
1. A motorcycle radial tire comprising:
a tread curved so that the maximum cross sectional width of the tire lies between the edges of the tread;
a pair of bead cores one disposed in each bead;
a carcass having at least one ply of radially arranged organic fiber cords extending between the beads and turned up around the bead cores to form two turned up portions and one main portion of the carcass,
the radial height (Ht) of the radially outer edge of the carcass turned up portions from the bead base line being more than 0.6 times and less than 1.2 times the radial height (Hs) of tread edges from the bead base line;
a first belt disposed radially outside the carcass and comprising one cord or a plurality of parallel cords wound spirally so that the windings thereof are laid at small angles with respect to the tire equator,
the cords of the first belt having an elastic modulus of not less than 600 kgf/mm^2,
said first belt comprising two axially divided pieces one disposed on each side of the tire equator,
said two axially divided pieces extending to near the tire equator from the axially outer edges of the belt,
the windings of one piece laid at an inclination being angularly the same but directionally opposite the other piece with respect to the tire equator;
a second belt disposed radially outside the first belt and comprising one ply of parallel organic fiber cords laid at an angle of 10 to 30 degrees with respect to the tire equator, wherein the width (WB) of the first belt measured therealong is more than 0.7 times and less than 1.0 times the width (Wt) of the tread measured between the tread edges along the tread face, and the width of the second belt is 2 to 5 mm larger than the width (WB) of the first belt;
a bead apex disposed between the main portion and each turned up portion of the carcass and extending radially outwardly from the bead core,
the bead apex made of rubber having a JIS(A) hardness of 65 to 75,
the radial height (Ha) of the radially outer edge of the bead apex from the bead base line being more than 0.5 times and less than 1.2 times the radial height (Hs) of the tread edges; and
a pair of sidewalls disposed axially outside the carcass and extending between the beads and the tread edges,
each said sidewall having a double-layered structure comprising an axially inner sidewall made of hard rubber and an axially outer sidewall made of softer rubber.

5,385,194

FABRIC PANEL CLEAN CHANGE-OUT FRAME

Ronald M. Brown, 1757 Dorset Ave., Pocatello, Id. 83201

Filed Mar. 18, 1993, Ser. No. 33,473
Int. Cl.[6] A47H *23/00*
U.S. Cl. 160—354 15 Claims



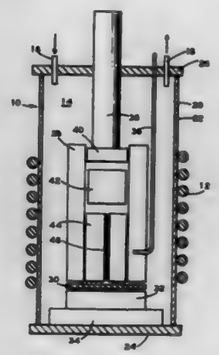
1. In a containment for hazardous materials, having a rigid walled base structure and an opening through a wall thereof, the improvement comprising a fabric panel clean changed-out frame having:
a closure panel of predetermined shape, including a central portion formed of flexible sheet material and a flexible perimeter frame joined to said central portion, wherein said perimeter frame tapers in thickness toward its outside edge; and
a compressing means mountable, in use, on the base structure in the approximate shape of said closure panel, for retaining said perimeter frame under pressure.

5,385,195

NICKEL COATED CARBON PREFORMS

James A. E. Bell, Oakville, and Thomas F. Stephenson, Toronto, both of Canada, assignors to Inco Limited, Toronto, Canada

Continuation of Ser. No. 896,207, Jun. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 781,758, Oct. 23, 1991, abandoned. This application Sep. 16, 1993, Ser. No. 122,726
Int. Cl.[6] B22D *19/14*
U.S. Cl. 164—66.1 13 Claims



1. A method of fabricating a metal matrix composite comprising the steps of:
a) providing a mold to cast a light metal into a shape, said light metal being selected from the group consisting of aluminum, aluminum-base alloys, zinc and zinc-base alloys;
b) introducing a nickel coated carbon phase structure into a portion of said mold and preheating said nickel coated carbon phase structure in an inert atmosphere in said mold, said nickel coated carbon phase structure being coated with about 0.065 to 0.85 micrometers of nickel and said nickel being about 15 to 60 weight percent of said nickel coated carbon phase structure;
c) squeeze casting said light metal into said mold around said nickel coated carbon phase structure to wet an interface between said light metal and said nickel coated carbon phase structure;
d) forming a nickel-containing intermetallic phase precipitate within said light metal within 1 millimeter of said nickel coated carbon phase structure by reacting nickel from said nickel coated carbon phase structure with said light metal alloy to increase hardness of said light metal alloy proximate the carbon phase and to provide increased wear resistance; and
e) solidifying said light metal casting to form the metal matrix composite.

5,385,196

SPRAY METHOD OF PERMANENT MOLD CASTING POWDERY MOLD COATING AGENT

Takashi Hasano, Kobe, Japan, assignor to Hanano Corporation, Hyogo, Japan

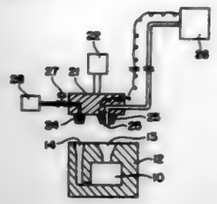
Filed Oct. 7, 1993, Ser. No. 132,914
Claims priority, application Japan, Nov. 27, 1992, 4-318635
Int. Cl.[6] B05D *1/06*
U.S. Cl. 164—72 3 Claims

1. A method for spraying a powdery mold coating agent onto inside surfaces of a movable metal mold member and a stationary metal mold member of a permanent mold casting device, the movable mold member and the stationary mold member having inside surfaces defining a mold cavity, a feeding port in fluid communication with the cavity and a riser port in fluid communication with the cavity,

the coating agent being supplied from an apparatus which comprises a spray head provided with an electrostatic spray gun to which the powdery mold coating agent is supplied by a feeding device and a suction head connected to a suction pump, the method comprising:

fitting the spray head to the feeding port so as to close the feeding port tightly;

fitting the suction head to the riser port so as to close the riser port tightly;



evacuating the mold cavity with the suction pump so as to produce a pressure differential between the inside and outside of the cavity; and

supplying powdery mold coating agent to the electrostatic spray gun and discharging the coating agent from the spray gun so as to be electrostatically adsorbed onto the inside surfaces of the movable mold member and the stationary mold member.

5,385,197

METHOD AND APPARATUS FOR FEEDING A RECESSED SAND MOLD WITH MOLTEN METAL UNDER LOW PRESSURE

Pascal Sourlier, Maxeville, France, assignor to Peat-A-Mousse, Nancy, France

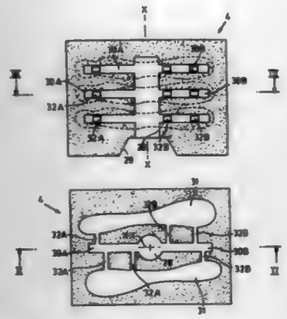
Continuation of Ser. No. 718,702, Jun. 21, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 984,730

Claims priority, application France, Jun. 27, 1990, 9007862

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[6] B22D *17/06*

U.S. Cl. 164—119 **8 Claims**



1. A method for low-pressure metal casting comprising the step of providing molten metal for feeding an apparatus,

wherein said apparatus comprises (i) a vertical chamber, (ii) at least two intermediate ducts extending horizontally outwardly therefrom and in communication with said vertical chamber, (iii) a plurality of ingates in communication with each of the at least two intermediate ducts, and (iv) at least two impressions,

wherein all the ingates of a single intermediate duct are in communication via the ingates with the same impression; and wherein each intermediate duct is positioned as a function of the metal-feed requirements of the single impression with which said each intermediate duct is in communication;

passing the molten metal sequentially into the vertical chamber, to the at least two intermediate ducts, to the pluralities of ingates, and to the at least two impressions;

wherein the impressions are asymmetrical with respect to each other and each has a larger end and a smaller end and wherein there is a single ingate in communication with the smaller end of each of said impressions and two ingates in communication with the larger end of each of said impressions.

4. An apparatus for low-pressure metal casting, comprising,

a sand mold defining at least two impressions adapted to be fed with molten metal from a vertical chamber,

at least two intermediate ducts extending horizontally outwardly from and in communication with the vertical chamber,

and ingates extending between and in communication with the intermediate ducts and the impressions,

wherein all the ingates of a single intermediate duct are in communication via the ingates with the same impression;

wherein each intermediate duct is positioned as a function of the metal-feed requirements of the impression with which said each intermediate duct is in communication; and

wherein the impressions are asymmetrical with respect to each other and each has a larger end and a smaller end and there is a single ingate in communication with the smaller end of each of said impressions and two ingates in communication with the larger end of each of said impressions.

5,385,198

VACUUM CASTING APPARATUS

Atsushi Ota, Toyota; Minoru Uozumi, Aichi, and Hirokazu Onishi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota

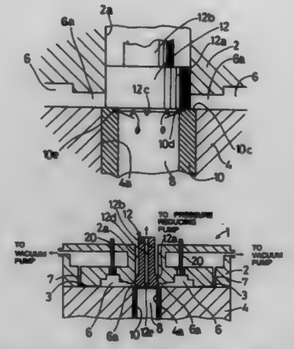
PCT No. PCT/JP92/01644, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO93/11895, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 16, 1992, Ser. No. 104,043

Claims priority, application Japan, Dec. 19, 1991, 3-354845

Int. Cl.[6] B22D *18/06*

U.S. Cl. 164—254 **4 Claims**



1. A vacuum casting apparatus comprising a cavity formed in a casting die, a molten metal passage for communicating with the cavity, a gate for opening and closing the cavity to molten metal in the molten metal passage, and means reducing the pressure in the cavity, where said gate includes a gate piston and an annular surface which said gate piston abuts to form a sealing portion of said gate, and including

a clearance space formed in said gate at a location opposite the cavity, said clearance space extending to said sealing portion, wherein said molten metal will fill said clearance space and any minor clearance that exists in the sealing portion between the abutment of said gate piston and the annular surface, and solidify therein.

5,385,199

MOLTEN METAL SURFACE PROTECTIVE COVER FOR A CONTINUOUS CASTING APPARATUS HAVING MOVING MOLD WALLS

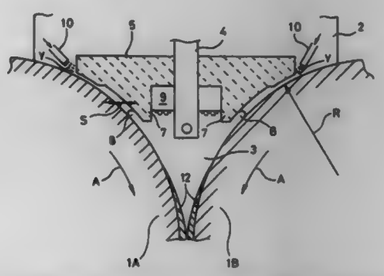
Haruo Sakaguchi, Osaka, Japan, assignor to Hitachi Zosen Corporation, Osaka, Japan

Continuation of Ser. No. 14,788, Feb. 8, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 252,070

Claims priority, application Japan, Mar. 13, 1992, 4-84042

Int. Cl.[6] B22D *11/06, 11/10*

U.S. Cl. 164—428 **2 Claims**



1. A continuous casting apparatus comprising a pair of moving mold walls between which is formed a molten metal reservoir, an insulating member disposed in said molten metal reservoir, said insulating member having a lower portion covering the surface of molten metal, said insulating member having opposite side portions formed adjacent said moving mold walls, and immersion walls projecting from the respective side portions toward the direction of movement of the mold walls for immersion into the molten metal.

5,385,200

CONTINUOUS DIFFERENTIAL-PRESSURE CASTING METHOD WHEREIN MOLTEN METAL TEMPERATURE IS ESTIMATED FROM CONSUMPTION AMOUNT OF POURING TUBE DUE TO IMMERSION IN MOLTEN METAL

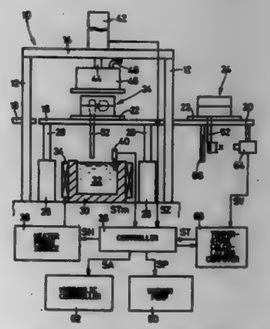
Isamu Yuki, Toyota, and Minoru Uozumi, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jun. 17, 1993, Ser. No. 77,540

Claims priority, application Japan, Oct. 12, 1992, 4-300410

Int. Cl.[6] B22D *11/18, 18/04*

U.S. Cl. 164—457 **37 Claims**



1. A continuous differential-pressure casting method wherein a plurality of casting cycles are continuously performed with respective molds and a common mass of molten metal accommodated in a container, such that in each casting cycle, a cavity formed in the corresponding mold is filled with the molten metal through a pouring tube which is connected at one end thereof to a sprue hole of the mold and immersed at the other end thereof in said common mass of molten metal, said molten metal being introduced into said cavity due to a difference between pressures to which each of said molds and said container are exposed, respectively, to cast an article having a shape corresponding to that of said cavity, said method comprising the steps of:

detecting a degree of consumption of the pouring tube which occurs at said other end and which changes with an actual temperature of said mass of molten metal in said container, after a predetermined number of casting cycles are completed;

obtaining an estimated temperature of said mass of molten metal, on the basis of the detected degree of consumption of said pouring tube, and according to a predetermined relationship between said degree of consumption and said estimated temperature; and

regulating said actual temperature of said mass of molten metal, on the basis of a difference between the obtained estimated temperature and a predetermined desired temperature of said mass of molten metal.

5,385,201

SIDEWALL CONTAINMENT OF LIQUID METAL WITH HORIZONTAL ALTERNATING MAGNETIC FIELDS

Walter F. Praeg, Palos Park, Ill., assignor to ARCH Development Corporation, Chicago, Ill.

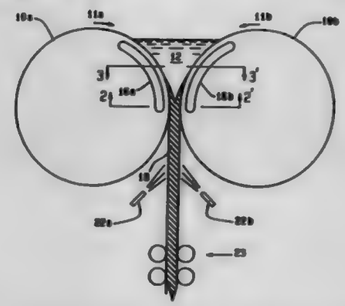
PCT No. PCT/US90/03243, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO91/18696, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 7, 1990, Ser. No. 952,519

The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.

Int. Cl.[6] B22D *11/06, 27/02*

U.S. Cl. 164—467 **17 Claims**



1. A method of continuous casting of sheets of metal comprised of the steps of:

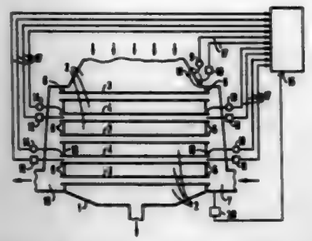
forcing a molten metal between counter rotating rollers; and confining the molten metal at the edges of said counter rotating rollers with the electromagnetic force produced by a horizontal alternating magnetic field which induces currents comprising substantially vertically-oriented loops in the molten metal, whereby a solid sheet of metal can be cast from said rollers.

5,385,202

METHOD AND APPARATUS FOR OPERATIONAL MONITORING OF A CONDENSER WITH TUBES, BY MEASUREMENTS AT SELECTED TUBES

Armin Dreschnick, Essen, and Walter Zörner, Baiersdorf-Igelsdorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 6, 1993, Ser. No. 58,296
Claims priority, application Germany, Nov. 6, 1990, 4035242
Int. Cl.[6] F28B *11/00*; G01K *17/12*
U.S. Cl. 165—1 15 Claims



1. A method for operational monitoring of a condenser including a steam chamber through which steam to be condensed flows, at least one configuration in the steam chamber having a multiplicity of tubes, each of the tubes conducting a flow of a coolant fluid through it from an inlet end to an outlet end, and the multiplicity of tubes having a plurality of selected tubes, which comprises:

a) obtaining an inlet temperature of the coolant fluid at the inlet end, an outlet temperature of the coolant fluid at the outlet end, an ambient temperature defined as a temperature of the steam immediately flowing around the selected tube, and a mass throughput of the coolant fluid flowing through the selected tube, for each of the selected tubes;

b) measuring at least one of the steam pressure and the steam temperature of the steam at least at one measurement point in the steam chamber;

c) calculating the temperature of the steam immediately flowing around each of the selected tubes from one of the steam pressure and the steam temperature as well as a previously ascertained form of a distribution of at least one of the pressure and the temperature in the steam chamber;

d) determining a heat transfer coefficient from a product of the mass throughput and a logarithm of a quotient of differences between the ambient temperature and the inlet temperature as well as between the ambient temperature and the outlet temperature, for each of the selected tubes; and

e) subsequently comparing the heat transfer coefficients of all of the selected tubes with a set-point value, and issuing a warning if at least one of the heat transfer coefficients deviates substantially from the set-point value.

5,385,203

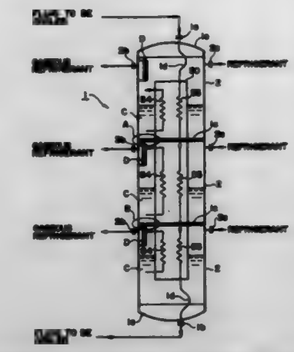
PLATE FIN HEAT EXCHANGER BUILT-IN TYPE MULTI-STAGE THERMOSIPHON

Ken-ichiro Mitsuhashi; Koichi Ueno, both of Takasago, and Shin-ichiro Kashihara, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 11, 1994, Ser. No. 179,690
Claims priority, application Japan, Jan. 11, 1993, 5-002672
Int. Cl.[6] F25J *5/00*
U.S. Cl. 165—110 3 Claims

1. A plate fin heat exchanger built-in type multi-stage thermosiphon including:

a cooling cylinder having on one end side thereof an inlet port for the admission of a fluid to be cooled and on an opposite end side thereof an outlet port for the discharge of the fluid, the interior of said cooling cylinder being partitioned by partition walls disposed between said inlet port and said outlet port to form a plurality of independent refrigerant tanks each having a refrigerant supply port and a refrigerant suction port; and



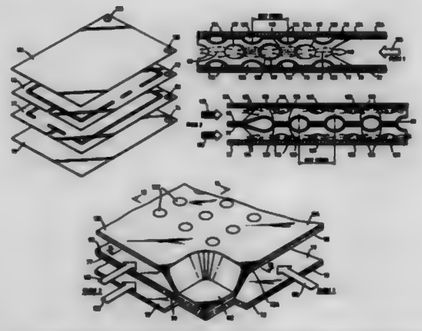
a plate fin type heat exchanger extending hermetically sealably through said partition walls and having a to-be-cooled fluid flow path for allowing the fluid to be cooled to flow from said inlet port to said outlet port and also having refrigerant circulation paths for circulating a refrigerant inside said refrigerant tanks.

5,385,204

HEAT EXCHANGER AND METHODS OF MANUFACTURE THEREOF

James F. Boardman, and John O. Fowler, both of Lancashire, England, assignors to Rolls-Royce plc, London, England

Continuation-in-part of Ser. No. 766,788, Sep. 27, 1991, abandoned, which is a division of Ser. No. 657,377, Feb. 19, 1991, Pat. No. 5,070,607, which is a continuation of Ser. No. 570,414, Aug. 21, 1990, abandoned. This application Sep. 8, 1993, Ser. No. 118,089
Int. Cl.[6] F28F *3/14*
U.S. Cl. 165—170 4 Claims



1. A heat exchanger panel having an interior structure comprising:

a plurality of main heat exchanger passages for heat exchange fluid flow with said passages extending along selected paths, and

other passage means extending along paths different from said selected paths of the main heat exchanger passages and connected thereto for flow of heat exchange fluid therethrough;

said panel comprising an integral stack of at least two confronting sheets of metal joined together by diffusion bonding at a plurality of sites, at least one of the sheets being capable of superplastic extension and having been superplastically extended away from the at least one other sheet at a further plurality of sites where said confronting sheets are not diffusion bonded together, said interior structure being completely defined by said sites of diffusion bonding and superplastic extension,

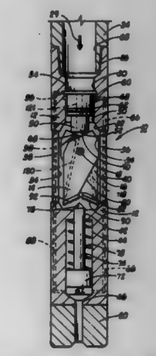
said integral stack comprising at least three sheets diffusion bonded together, at least one inner sheet of the stack having at least one aperture therethrough, the at least one aperture being positioned so as to coincide with a site of superplastic extension.

5,385,205

DUAL MODE ROTARY CUTTING TOOL

Charles D. Halley, 11628 Burning Oaks, Oklahoma City, Okla. 73150

Filed Oct. 4, 1993, Ser. No. 131,472
Int. Cl.[6] E21B *10/32, 29/06*
U.S. Cl. 166—55.8 11 Claims



1. A downhole rotary cutting tool, comprising:

an elongate body member having upper and lower ends and including a slot defined laterally therethrough;

a source of high pressure fluid applied to the elongate body member upper end;

a cutting assembly pivotally retained within said body member slot, said cutting assembly including a top edge and internal port communicating between the top edge and a generally laterally directed jet orifice; and

first piston means having an axial port and being disposed above said cutting assembly and actuatable to contact said top edge and force said cutting assembly radially outward into operative position while directing high pressure fluid down through said axial port and into the cutting assembly internal port to energize said jet orifice in a lateral direction.

5,385,206

ITERATED FOAM PROCESS AND COMPOSITION FOR WELL TREATMENT

Todd R. Thomas, Coraopolis, Pa., assignor to Clearwater, Inc., Pittsburgh, Pa.

Filed Jan. 21, 1993, Ser. No. 6,791
Int. Cl.[6] E21B *21/14, 37/00, 43/40*
U.S. Cl. 166—269 22 Claims

1. Method of removing particulates from a wellbore comprising injecting into the wellbore a gas and an aqueous solution comprising an amphoteric foaming agent and an anionic surfactant, said solution having a pH of at least about 9.5, thereby forming a foam which lifts particulates to the top of the wellbore, reducing the pH of said foam containing particulates at the top of the wellbore to below about 4, thereby causing the foam to collapse to form an aqueous suspension, and separating particulates therefrom to form a reformed aqueous solution.

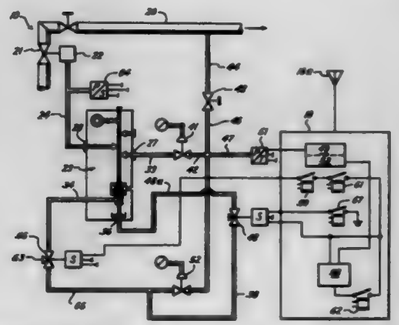
19. Process for foam drilling of a wellbore comprising circulating in said wellbore a solution which will form a stable foam at one pH and collapse said foam at another pH, and regulating the pH therein to alternately (1) create foam for carrying particulates and (2) collapse said foam for separating particulates therefrom.

5,385,207

OFFSHORE WELL REMOTE START-UP SYSTEM

Fred R. Cook, Sr., Pearl River, La., assignor to Texaco, Inc., White Plains, N.Y.

Filed Jun. 28, 1993, Ser. No. 82,637
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[6] E71B *34/04*
U.S. Cl. 166—363 16 Claims



1. Well control apparatus responsive to receiving a remotely transmitted radio signal to commence flow of fluid from a previously closed-in well, into a conduit **20** wherein said conduit has a main flow control valve **21** operable between open and closed positions to regulate fluid flow through said conduit, pressure sensing means **44** for detecting instantaneous pressure in said conduit, and a pressure discriminator valve communicated with said conduit **20** for opening said main flow control valve to initiate fluid flow into said conduit, the improvement in said apparatus comprising,

comparator means **49** for electronically generating a first signal representative of the pressure differential between an instantaneous conduit pressure, and a predetermined range of acceptable conduit operating pressure, and

valve means communicating said pressure-sensing means with said pressure discriminator valve for continuing said instantaneous conduit pressure whereby to sustain fluid flow into the conduit when said first signal indicates that the conduct instantaneous pressure falls within the range of the acceptable conduit operating pressures.

5,385,208

AIRBORNE FIRE SUPPRESSANT FOAM DELIVERY APPARATUS

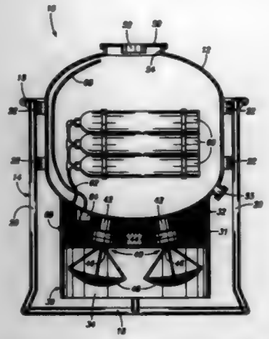
R. Arnold Baker, Rte. 1, Box 408, Manson, Wash. 98831, and John L. Baker, 461 S. Miller, Wenatchee, Wash. 98801

Filed Apr. 13, 1993, Ser. No. 47,105
Int. Cl.[6] A62C *31/00*
U.S. Cl. 169—46 28 Claims

1. An airborne foam delivery apparatus for operation beneath an aircraft to deliver a high volume of fire suppressant foam, the foam delivery apparatus comprising:

a liquid tank having an interior for holding a foamable liquid, the liquid tank being capable of withstanding a positive

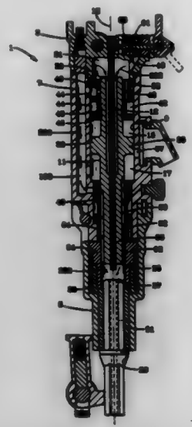
internal pressure, the liquid tank being adapted to be carried by the aircraft;
a nozzle which is directed downwardly from the liquid tank;
a liquid valve operably interposed between the liquid tank and the nozzle, the liquid valve being operable between open and closed positions to allow passage of the foamable liquid through the nozzle;
a gas container which is chargeable with compressed gas;
a pressure regulator connected to receive the compressed gas from the gas container, the pressure regulator having



an output which is in fluid communication with the liquid tank interior to controllably discharge the compressed gas from the gas container into the liquid tank, the pressure regulator maintaining a positive regulated pressure within the liquid tank to expel the foamable liquid through the nozzle when the liquid valve is in its open position; and
protective apron extending downwardly from the liquid tank and encircling the nozzle, the protective apron having an upper portion which is formed by a screen to allow air to pass therethrough.

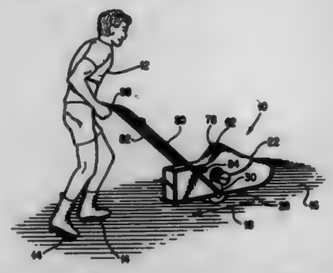
5,385,209
THROTTLE LEVER SYSTEM FOR A PERCUSSIVE, FLUID-ACTIVATED APPARATUS
Steven W. Bodell, and Robert R. Kimberlin, both of Troutville, Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Continuation of Ser. No. 78,362, Jan. 16, 1993, abandoned, which is a division of Ser. No. 955,585, Oct. 2, 1992, Pat. No. 5,259,463. This application Mar. 28, 1994, Ser. No. 218,981
Int. Cl.[6] B25D *17/04*
U.S. Cl. 173—62 **5 Claims**

1. A throttle lever system for a percussive, fluid-activated apparatus, said apparatus having a backhead at a top end, a fronthead at a bottom end and a housing therebetween forming a central bore, said central bore having therein a front piston chamber for receiving and exhausting a flushing fluid, said throttle lever system comprising:
a. a percussive fluid inlet port in said backhead;
b. first passageway means in said apparatus for fluid communication between said inlet port and said front piston chamber, said first passageway means being fluidly operable on said piston to start, stop and reciprocate said piston;
c. first accumulator chamber means in said first passageway means for fluid communication with said inlet port;
d. first seal actuator means in said first passageway means for opening and closing said first passageway means between said inlet port and said first accumulator chamber means;
e. second passageway means in said apparatus for fluid communication between said inlet port and said front piston chamber, said second passageway means being fluidly operable on said apparatus for passing flushing fluid from said inlet port through said front piston chamber, said second passageway means being separate and independent from said first passageway means;
f. second accumulator chamber means in said second passageway means for fluid communication with said inlet port;
g. second seal actuator means in said second passageway



means for opening and closing said second passageway means between said inlet port and said second accumulator chamber means;
h. first throttle means on said backhead for actuating said first seal actuator means; and
i. second throttle means on said backhead for actuating said second seal actuator means.

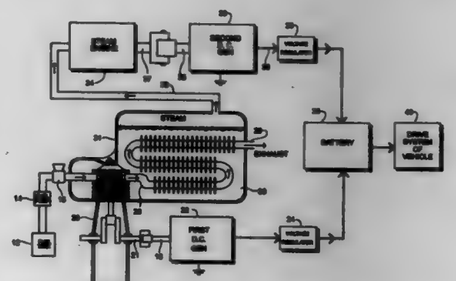
5,385,210
TOW VEHICLE SYSTEM
William B. Harvey, 4232 Stafford Rd., Olney, Md. 20832
Filed Feb. 1, 1994, Ser. No. 189,716
Int. Cl.[6] B62D *63/02*
U.S. Cl. 180—11 **16 Claims**



1. A tow vehicle for displaceably transporting a wheeled user on a base surface comprising:
(a) a vehicle chassis extending in a longitudinal direction;
(b) wheel means fixedly secured to a drive axle extending in a transverse direction and rotatably mounted to said vehicle chassis for frictionally engaging said base surface;
(c) handle bar means coupled to said vehicle chassis on opposing transverse sides thereof for releasably coupling said user to said vehicle chassis, said handle bar means including (1) a pair of extended handle rod members respectively pivotally mounted on said opposing transverse sides of said vehicle chassis, each of said handle rod members having a distal end pivotally coupled to a respective

opposing end of said drive axle, and (2) means for positionally adjusting said pair of handle rod members with respect to said vehicle chassis; and,
(d) power actuating means for rotatably driving said wheel means, said power actuating means being mounted on said vehicle chassis on opposing longitudinal sides of said drive axle for substantially locating a center of gravity of said vehicle chassis in close proximity to said drive axle, said power actuating means including (1) vehicle drive means coupled to said drive axle for rotationally displacing said wheel means, and (2) means for controlling a rotational speed of said vehicle drive means coupled thereto.

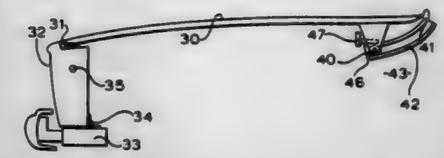
5,385,211
ELECTRIC POWER PLANT FOR VEHICLES
Robert D. Carroll, P.O. Box 602, Pismo Beach, Calif. 93448
Filed May 12, 1993, Ser. No. 60,001
Int. Cl.[6] B60K *6/00*
U.S. Cl. 180—65.2 **1 Claim**



1. An electric power plant for a type of vehicle in which a drive wheel is driven by an electric motor that draws power from a battery, the electric power plant comprising:
a battery;
a first D.C. generator electrically connected to the battery for charging the battery;
a second D.C. generator electrically connected to the battery for charging the battery;
an internal combustion engine mechanically connected to said first D.C. generator for turning said first D.C. generator, said internal combustion engine including a cylinder;
a steam engine mechanically connected to said second D.C. generator for turning said second D.C. generator;
said steam engine including a boiler that envelops and surrounds the cylinder of said internal combustion engine, said boiler heated by waste heat from said internal combustion engine.

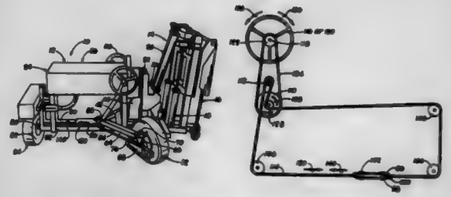
5,385,212
VEHICLE BONNETS
John B. Cady, Hampton In Arden; Mark S. Howard, Whitley; Stephen A. Fisher, Pinner; Robert C. W. Lloyd, Earlsdon, and Alan V. Thomas, Shepshed, all of United Kingdom, assignors to Jaguar Cars Limited, United Kingdom
Division of Ser. No. 869,021, Apr. 15, 1992, Pat. No. 5,263,546. This application Aug. 18, 1993, Ser. No. 108,486
Claims priority, application United Kingdom, Apr. 16, 1991, 9108068
Int. Cl.[6] B62D *25/12*
U.S. Cl. 180—69.21 **6 Claims**

1. A vehicle including a bonnet and a modular front end assembly on which are mounted components located adjacent the front of the vehicle within the width of the bonnet, the bonnet being hinged adjacent its leading edge to an upper edge of the modular front end assembly for pivotal movement about a first transverse axis of the vehicle, the front end assembly being hinged along a lower edge to the vehicle for pivotal movement about a second transverse axis of the vehicle, so that the front end assembly is capable of pivoting rearwardly in response to an impact load being applied to the front end assembly or leading edge of the bonnet, pivoting of the front



end assembly causing the bonnet to move rearwardly, means being provided adjacent the trailing edge of the bonnet to cause the trailing edge of the bonnet to move upwardly upon rearward movement of the bonnet.

5,385,213
STEERING ASSEMBLY FOR MACHINE WITH WORKING IMPLEMENT
Leon Hake, Rte. 2, Box 176, Perry, Okla. 73077
Filed Aug. 6, 1993, Ser. No. 102,876
Int. Cl.[6] B62D *3/02*
U.S. Cl. 180—210 **12 Claims**



1. An apparatus, comprising:
a frame having a front end, a rear end, a first side and a second side;
a working implement assembly connected to the frame;
a first wheel assembly pivotally connected to the frame proximate the front end and the first side of the frame so as to be rotatable about a first vertical axis in a first direction and in an opposite second direction;
a second wheel assembly pivotally connected to the frame proximate the front end and the second side of the frame so as to be rotatable about a second vertical axis in a first direction corresponding to the first direction of rotation of the first wheel assembly and an opposite second direction corresponding to the second direction of rotation of the first wheel assembly, the second wheel assembly alignable with the first wheel assembly;
a third wheel assembly connected to the frame proximate the rear end of the frame such that the first, second, and third wheel assemblies cooperate to support the frame; and
steering means connected to the first and the second wheel assemblies for simultaneously rotating the first wheel assembly about the first vertical axis in the first direction and the second wheel assembly about the second vertical axis in the second direction and for simultaneously rotating the first wheel assembly about the first vertical axis in the second direction and the second wheel assembly about the second vertical axis in the first direction, the steering means comprising:
a first steering rod having a first end and a second end, the first end of the first steering rod being pivotally connected to the first wheel assembly;

a second steering rod having a first end and a second end, the first end of the second steering rod being pivotally connected to the second wheel assembly;

a steering plate mounted on the frame so that the steering plate is linearly movable in a first direction and an opposite second direction, the second end of the first steering rod and the second end of the second steering rod each being pivotally connected to the steering plate such that linear movement of the steering plate in the first direction causes the first wheel assembly to rotate about the first vertical axis in one of the first and second directions and the second wheel assembly to simultaneously rotate about the second vertical axis opposite the direction the first wheel assembly is rotated and such that linear movement of the steering plate in the second direction causes the first wheel assembly to rotate about the first vertical axis in the opposite direction which the first wheel assembly rotates when the steering plate is moved in the first direction and the second wheel assembly to simultaneously rotate about the second vertical axis opposite the direction of the first wheel assembly;

steering wheel means rotatably supported on the frame for rotation in a first direction and an opposite second direction; and

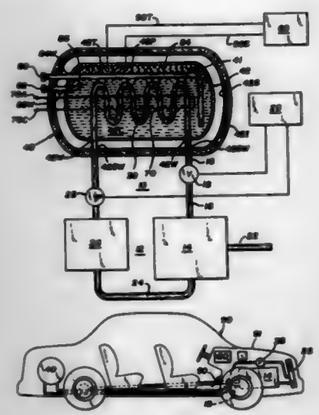
non-fluidic link means connected to the steering wheel means and to the steering plate for non-fluidically transmitting rotational motion imparted on the steering wheel means to the steering plate whereby rotation of the steering wheel means in the first direction moves the steering plate in the first direction and rotation of the steering wheel means in the second direction moves the steering plate in the second direction.

5,385,214

HEAT STORAGE SYSTEM UTILIZED IN HEAT ENGINE DRIVE SYSTEM

John E. Spurgeon, 204 Judith Ct., Novato, Calif. 94949-5473

Filed Nov. 30, 1992, Ser. No. 982,777
Int. Cl.[6] B60K *3/04*
U.S. Cl. 180—304 14 Claims



1. The combination of a heat engine operatively connected to a heat battery device so as to be run off of heat extracted from said heat battery device, which heat battery device comprises:

a vessel for holding a predetermined quantity of water, said vessel constituting means for and being constructed for maintaining water contained therein at 221 bar pressure and 374 degrees Centigrade;

means coupled to said vessel and said heat engine for extracting heat from water in said vessel and for transfer of such extracted heat to said heat engine; and

a predetermined quantity of water in said vessel, which water is at approximately the following temperature and pressure:

374 degrees Centigrade

221 bar

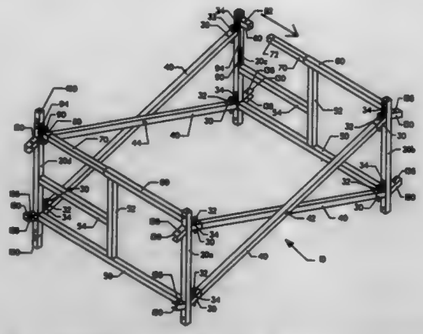
and which water contains a quantity of stored supercritical heat.

5,385,215

SCAFFOLDING JACK SYSTEM

James L. Williams, 19534 Lost River Rd., Seminole, Ala. 36574, and Gene Phillips, P.O. Box 726, Gonzalez, Fla. 32560

Filed Apr. 1, 1994, Ser. No. 219,251
Int. Cl.[6] E04G *1/14*
U.S. Cl. 182—179 8 Claims



1. An improved jack system in the form of a rectangular scaffolding structure comprising

a first vertical post, a second vertical post, a third vertical post, and a fourth vertical post wherein each vertical post defines a corner of said rectangular and is disposed horizontally;

a first cross brace diagonally connects the bottom of said first vertical post to the top of said second vertical post and a second cross brace diagonally connects said top of said first vertical post to the bottom of said second vertical post wherein the two cross braces cross over and are attached to each other at their respective middles by a first attachment means;

a third cross brace diagonally connects the bottom of said third vertical post to the top of said fourth vertical post and a fourth cross brace diagonally connects the top of said third vertical post to the bottom of said fourth vertical post wherein the two cross braces cross over and are attached to each other at their respective middles by a second attachment means;

wherein each cross brace is attached to its respective vertical posts by a connection means;

a first bottom bar horizontally connects the bottom of said first vertical post to the bottom of said fourth vertical post and is welded to each of the two vertical posts;

a second bottom bar horizontally connects the bottom of said second vertical post to the bottom of said third vertical post and is welded to each of the two vertical posts;

a first center post is welded to the midpoint of the first bottom bar and extends upwardly and a second center post is welded to the midpoint of the second bottom bar and extends upwardly;

a first plank rest bar horizontally connects the midpoint of said first center post to the midpoint of said fourth vertical post and is welded to said first center post and said fourth vertical post and a second plank rest bar horizontally connects the midpoint of said second center post to the midpoint of said third vertical post and is welded to said second center post and said third vertical post;

a first top bar is connected to said first vertical post extending horizontally outward toward said fourth vertical post and is welded to said first vertical post;

said first top bar rests on top of and is welded to said first center post;

a second top bar is connected to said second vertical post extending horizontally outward toward said third vertical post and is weld to said second vertical post;

said second top bar rests on top of and is welded to said second center post;

said first top bar and said second top bar are tubes each having a hollow inside section;

a first gate generally having the same geometric shape as said inside hollow section of said first top bar is slidably disposed within said first top bar;

a second gate generally having the same geometric shape as said inside hollow section of said second top bar is slidably disposed within said second top bar;

a first receiver is welded to said fourth vertical post and face said first vertical post wherein said first receiver is a short tube having a hollow inner section generally having the same geometric shape of said first sliding gate and wherein said first receiver receives said first gate when said first gate is slide outwardly from said first top bar;

a first latching means secures said first gate within said first receiver;

a second receiver is welded to said third vertical post and faces said second vertical post wherein said second receiver is a short tube having a hollow inner section generally having the same geometric shape of said second sliding gate and wherein said second receiver receives said second gate when said second gate is slide outwardly from said second top bar; and

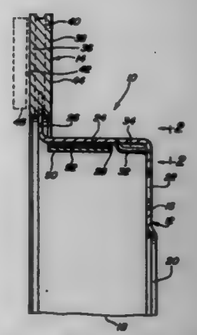
a second latching means secures said second gate within said second receiver.

5,385,216

COMPOSITE REAR BRAKE DISC AND DRUM

Stanley Kulczycki, Sterling Heights, Mich., assignor to The Budd Company, Troy, Mich.

Filed Jun. 4, 1993, Ser. No. 72,141
Int. Cl.[6] F16D *63/00*
U.S. Cl. 188—70 R 9 Claims



8. A composite brake disc and drum assembly for a motor vehicle having a rear disc brake system and a parking brake system, said assembly comprising:

a unitarily formed body of a first material and adapted for rotation about an axis of rotation, said body including a generally annular mounting web extending in a direction transverse to said axis of rotation, said mounting web having means for mounting said assembly to said motor vehicle, said body also including a skirt extending from a radially outward perimeter of said mounting web, said skirt having an inner cylindrical surface defining a braking frictional surface coaxial with said axis of rotation and adapted for engagement with the brake shoe, said body further including a flange extending radially outward from said skirt;

at least one generally annular braking plate of a second material, said braking plate extending substantially along a plane perpendicular to said axis of rotation and being supported by said flange, said braking plate including portions defining a face having an annular braking fiction surface adapted for engagement with the disc brake system;

a brake shoe associated with the parking brake system and adapted to engage said braking frictional surface; and

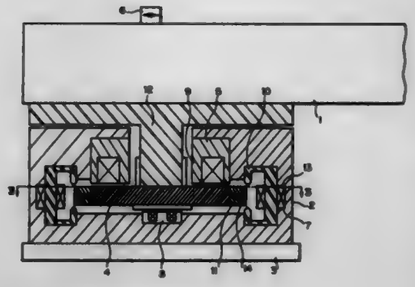
limiting means for limiting outboard axial movement of said brake shoe during dynamic engagement of said brake shoe with said braking frictional surface, said limiting means including a portion of said brake shoe engageable with a portion of said body other than said mounting web and said braking frictional surface.

5,385,217

VIBRATION ELIMINATING APPARATUS FOR ELMINATING VIBRATION OF AN INSTALLATION FLOOR

Katsuhide Watanabe; Yoichi Kanemitu, both of Kanagawa, and Yukio Ikeda, Tokyo, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,451
Claims priority, application Japan, May 20, 1991, 3-143904; Dec. 18, 1991, 3-353813
Int. Cl.[6] F16F *15/03;* B25H *1/02*
U.S. Cl. 188—267 10 Claims



1. An apparatus, comprising:

a first floor;

a magnetic member fixed to said first floor;

a second floor;

electromagnetic means for suspending said magnetic member, said electromagnetic means comprising a supporting electromagnet fixed to said second floor, and said magnetic member being suspended by force provided only through said supporting electromagnet;

a magnetic pole disposed around said magnetic member, said magnetic pole and said magnetic member having a non-magnetic member therebetween; and

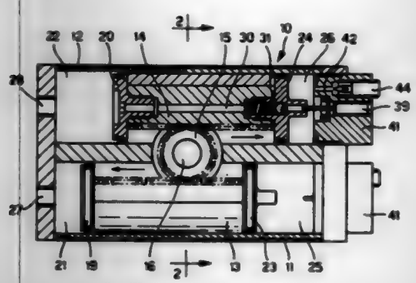
a control electromagnet having a yoke located in proximity to said magnetic member.

5,385,218

RACK AND PINION PNEUMATIC ACTUATOR WITH COUNTER-PRESSURE CONTROL AND DAMPING DEVICE

Luciano Migliori, Milan, Italy, assignor to Univer S.p.A., Milan, Italy

Filed Jan. 29, 1993, Ser. No. 64,373
Claims priority, application Italy, Feb. 5, 1992, MI92A000222
Int. Cl.[6] F16F *9/28, 5/00*
U.S. Cl. 188—303 9 Claims



1. A pneumatic rotary actuator comprising:

a hollow body (10) defining first and second piston chambers (11, 12) having their longitudinal axes arranged parallel in the hollow body, and also having an air pressure inlet port (27, 28) arranged at one end of each of the piston chambers;

a single acting rack and piston assembly reciprocable in each of the piston chambers, each of the assemblies having a rack (13, 14) provided with piston members (20, 24; 19, 23) at opposite ends thereof;

an output shaft (16) having a gear pinion (15) meshing with the rack and pinion assemblies;

an air pressure-actuated cushioning means including:

a flow restricting control valve (42, 44) offset from a longitudinal axis of each of the piston chambers; and

a counter-pressure actuated dampening means (30, 31, 36, 48) including:

tightly closable counter-pressure chamber means (25, 26) at another end of each of the piston chambers, said another end being opposite to the air-pressure inlet port;

duct means (30) axially extending between the opposite ends of each rack and piston assembly, to communicate between both sides of each piston chamber, one end of said duct means opening to and being in direct communication with the air pressure inlet port of the piston chamber; and

a check valve (31) to keep normally another end of the duct means closed with respect to the piston chamber;

interacting sealing means (36, 48) coaxially arranged at the other end of the duct means and at the other end of the piston chamber, respectively, to close communication of the duct means with each of the piston chambers defining the counter-pressure means when the rack and piston assemblies approach one end of their strokes; and

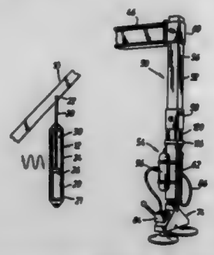
check valve actuating means (36) coaxially arranged with respect to each of the piston chambers and the interacting sealing means, said check valve actuating means having a thrust pin member (36) protruding into each of the piston chambers and into the duct means through said interacting sealing means; said thrust pin member acting to open the check valve to communicate rapidly with and bring both sides of each piston chamber to equal air pressures shortly before the sealing means interact to close the duct means and before venting the counter-pressure chamber means through the flow restricting control valve.

5,385,219

VIBRATION ABSORBING STRUCTURES FOR HEAVY CONSTRUCTION PURPOSES

Michael B. Snell, Bournemouth, Great Britain, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom and Northern Ireland, United Kingdom

PCT No. PCT/GB91/01541, § 371 Date Oct. 19, 1993, § 102(e) Date Oct. 19, 1993, PCT Pub. No. WO93/05314, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 10, 1991, Ser. No. 137,047
Claims priority, application United Kingdom, Apr. 25, 1990, 9009320; May 13, 1991, 9110287
Int. Cl.[6] F16F *7/10*; E01D *15/12*
U.S. Cl. 188—378 16 Claims



1. A structure for heavy construction purposes, adapted to function when in a stable erected state and including a first structural element (10) and a second structural element (12) juxtaposed to, and of substantially smaller mass than, the first element (10), wherein the first and second elements are adapted for direct transfer of structural loads between them in the erected state only, characterised in that the structure includes a joint (22) between the said elements whereby the second element (12) is supported from only the first element (10) when the structure is in a structurally deficient state, and wherein the second element (12) includes a resilient coupling (24), secured to the joint (22) and being of such stiffness that, in the deficient state, the second element (12) constitutes a dynamic absorber for damping forced vibrations of the first element (10).

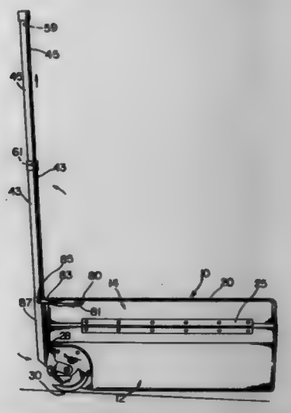
5,385,220

CARRY-ON CASE HAVING WHEELS AND AN EXTENDABLE HANDLE

Cecil E. Pond, Palm City, Fla., and Gary E. Pond, South Bend, Ind., assignors to Porter Case, Inc., South Bend, Ind.

Filed Oct. 23, 1992, Ser. No. 966,138
Int. Cl.[6] A45C *5/14, 9/00, 13/26*
U.S. Cl. 190—18 A 5 Claims

1. A carrying case comprising a base and a lid, a hinge member connecting said lid to said base for shiftable movement between an open position exposing the interior of said base and a secured closed position overlying the base, wheels rotatively connected to said base adjacent one end of said base, handle means pivotally connected to said lid and being shiftable between a lowered position overlying the lid and a raised position extending upwardly from the lid, said handle means for tilting said base with said lid in its closed position upwardly about said wheels when the handle means is in its raised position, securing means for releasably locking said handle in its raised position, said lid forming means for supporting articles thereon with the lid is closed and said handle means is in its raised and secured position, said handle means for tilting said base with said lid in its closed position upwardly about said wheels when the handle means is in its lowered position to tow the base and lid, securing means for releasably locking said handle in its lowered position, said handle including spaced side rails straddling said lid and a link means pivotally connecting each rail to said lid, each link means for guiding its said connected rail from a horizontal position over said lid when said handle is in its lowered position to a generally vertical position behind said base when said handle is in its raised position.

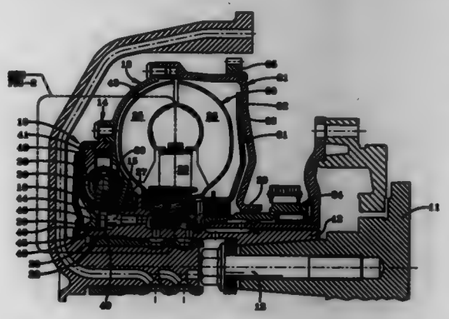


5,385,221

CRANKING CLUTCH ASSEMBLY FOR USE IN CONJUNCTION WITH AN INPUT ISOLATOR FOR A VEHICULAR DRIVETRAIN

Keith D. Van Maanen, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1993, Ser. No. 162,505
Int. Cl.[6] F16H *45/00*; F16D *3/66, 13/44*
U.S. Cl. 192—3.21 9 Claims



1. A vehicular drivetrain comprising:

an input shaft means;

a fluid torque converter having a cover, an impeller and a turbine;

a coupling;

said coupling interconnecting said input shaft means and impeller with said torque converter cover;

said coupling having first and second inertia masses;

said first inertia mass continuously rotatable with said input shaft means;

said second inertia mass continuously rotatable with said cover;

isolator means disposed between said first and second inertia masses for permitting relative movement therebetween; and,

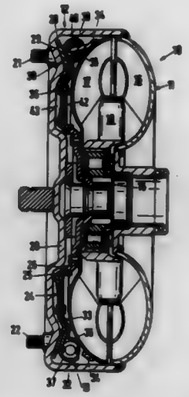
a cranking clutch assembly having a driveplate carried on said input shaft means and biasing means to bias said driveplate into driving engagement with said torque converter cover during selected phases in the operation of said input shaft means.

5,385,222

COUPLING FOR A HYDRODYNAMIC FLOW CONVERTER

Dieter Otto, Oberchern, and Thomas Pfund, Lauf, both of Germany, assignors to Luk Getriebe-Systeme GmbH, Bühl-/Baden, Germany

Filed Aug. 19, 1993, Ser. No. 109,079
Claims priority, application Germany, Aug. 21, 1992, 4227671
Int. Cl.[6] F16H *45/02*
U.S. Cl. 192—3.29 9 Claims



1. A lock-up clutch in a hydrodynamic flow converter, the converter includes a converter cover, a pump wheel, a turbine wheel in fluid communication with the pump wheel and having a radial outer area, a ring piston located between the converter cover and the turbine wheel and being connected to the turbine wheel, and a ring shaped annular damper unit connected between said ring piston and said turbine wheel, said lock-up clutch comprising:

a first conical friction surface on an inner surface of said converter cover, said first conical friction surface opening away from said turbine wheel,

a second conical friction surface on said piston ring to mate with said first friction surface, said second conical friction surface opening away from said turbine wheel, said first and second conical frictions surfaces forming a wedge shaped space with the radial outer area of the turbine wheel, and

said ring shaped damper unit on said ring piston being located in the wedge shaped space between the radial outer area of the turbine wheel and the first and the second conical friction surfaces of the ring piston and the converter cover.

5,385,223

SHIFT CONTROL MECHANISM FOR A MULTI-SPEED COUNTERSHAFT TRANSMISSION

Cesar F. Certeza, Sterling Heights, Mich., assignor to Saturn Corporation, Troy, Mich.

Filed Feb. 16, 1994, Ser. No. 197,037
Int. Cl.[6] B60K *41/06*
U.S. Cl. 192—4 C 3 Claims

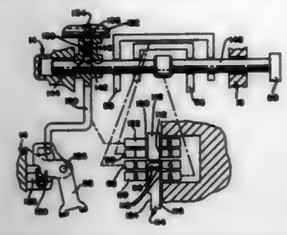
1. In combination, a transmission and a reverse brake actuator for retarding rotation of an input shaft during shift maneuver from neutral to reverse comprising:

forward shift control means for controlling the establishment of a plurality of forward speed ratios comprising a

rod member slidably disposed in a housing and a forward ratio shift fork secured for movement with the rod member;

forward synchronizer clutch means operatively connected with the forward ratio shift fork for synchronizing two of the forward ratios;

reverse shift control means for selectively establishing a reverse drive including a support shaft secured in the housing and a control member slidably disposed on both said support shaft and said rod member; and



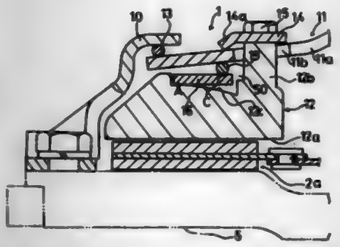
detent means disposed between the forward and reverse shift control means for imposing a reaction force on the forward shift control means when the reverse shift control means is actuated for partially actuating said forward synchronizer means during a neutral to reverse shift maneuver including a pair of spring loaded detent members mounted in the control member and having a spring means therebetween for enforcing resilient engagement between detent members and respective grooves on each of the support shaft and rod member.

5,385,224

CLUTCH COVER ASSEMBLY

Hiroshi Uehara, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Apr. 5, 1993, Ser. No. 42,873
Claims priority, application Japan, Apr. 6, 1992, 4-020677[U]
Int. Cl.[6] F16D *13/50, 13/58*
U.S. Cl. 192—52 **6 Claims**



1. A clutch cover assembly functioning to clamp a clutch disc between a component of the assembly and an input plate member, comprising:

a dish-shaped clutch cover for connection to said input plate member;

a pressure-facing surfaced pressure plate disposed within said clutch cover, for pressing said clutch disc against said input plate member, an end surface of said pressure plate opposite of said pressure-facing surface is so recessed annularly as to form a channel having a bottom curving axially away from one of annular fulcra;

a diaphragm spring supported by said clutch cover, for impelling said pressure plate toward said input plate member;

a spring washer, disposed between said pressure plate and said diaphragm spring, which elastically deforms in transmitting impelling force of said diaphragm spring to said pressure plate, opposite sides of said spring washer are surfaces having radially constant slope; and

a ring element disposed between said spring washer and said diaphragm spring, as said one of said annular fulcra; wherein,

radially inner and outer margins of said spring washer are supported on opposite sides thereof by said pressure plate and said diaphragm spring on respective annular fulcra which in clutch disengagement are staggered laterally of said spring washer and remote from each other;

in the deformation of said spring washer, a locus of fulcrum contact shifts such that distance between the fulcra decreases;

said one of said annular fulcra is radially inward, and a remaining of said annular fulcra is radially outward, of said spring washer; and

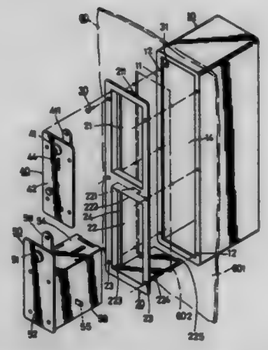
a radially outward margin of said diaphragm spring is supported by said clutch cover, and a radially middle portion of said diaphragm spring presses said spring washer through said ring element along said radially inward annular fulcrum.

5,385,225

APPARATUS FOR PREVENTING A COIN DROP MECHANISM AND A COIN BOX FROM BURGLARY

Chung-Ho Chen, and Hsin-Te Chen, both of No. 33, Alley 3, Lane 168, Hsin-Ho St., Nan Dist., Taichung City, Taiwan, Prov. of China

Filed Feb. 10, 1994, Ser. No. 194,484
Int. Cl.[6] G07F *9/06, 9/10*
U.S. Cl. 194—350 **3 Claims**



1. An apparatus for preventing a coin drop mechanism and a coin box from burglary, said coin drop mechanism having a plate member with a coin insertion slot which is mounted to a front panel of a coin operated machine, said coin box having a front wall mounted to said front panel, said apparatus comprising:

a metal hollow casing having a planar wall, an opening formed in said planar wall of said hollow casing;

a metal mounting plate having a first hole and a second hole, said plate member of said coin drop mechanism and said front wall of said coin box being lockably installed to said first and second holes of said mounting plate, said first and second holes of said mounting plate being arranged such that said coin box is located right below said coin drop mechanism when said plate member of said coin drop mechanism and said front wall of said coin box are installed to said mounting plate; and

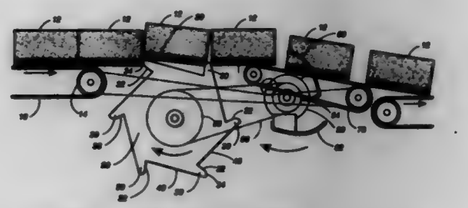
a plurality of carriage bolts passing through said mounting plate, said front panel and said planar wall of said hollow casing in sequence and engaging a plurality of corresponding nuts, so that said mounting plate and said hollow casing can be connected to a front face and a rear face of said front panel and said coin drop mechanism and said coin box can be received within said hollow casing.

5,385,226

APPARATUS FOR FORMING A PLURALITY OF ROWS OF ARTICLES FROM A SINGLE ROW OF ARTICLES DURING CONVEYING OF THE ARTICLES

Lawrence E. Weinert, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

Filed Aug. 3, 1994, Ser. No. 285,833
Int. Cl.[6] B65G *29/00*
U.S. Cl. 198—441 **8 Claims**



1. Apparatus comprising, in combination:

an infeed conveyer for conveying a single row of articles from a first location to a second location;

a starwheel rotatably mounted at said second location for serial engagement by the articles in the single row of articles conveyed by said infeed conveyor, said starwheel having a plurality of starwheel projections and each article conveyed by said infeed conveyor contacting a starwheel projection and causing rotation of said starwheel under urging of said infeed conveyor;

an outfeed conveyor spaced from said infeed conveyor;

intermediate conveyor means disposed between said infeed conveyor and said outfeed conveyor and including a first intermediate conveyor and a second intermediate conveyor, said first and second intermediate conveyors being spaced from one another and each of the first and second intermediate conveyors having a discharge end adjacent to said outfeed conveyor;

diverter means located adjacent to said starwheel including a rotatable diverter member for receiving articles from said starwheel and diverting said articles to said first intermediate conveyor and said second intermediate conveyor after said articles have disengaged from said starwheel to form a plurality of rows of said articles, said first intermediate conveyor and said second intermediate conveyor conveying said plurality of rows of articles to said outfeed conveyor; and

transmission means interconnecting said starwheel and said diverter means to rotate said rotatable diverter member responsive to rotation of said starwheel.

5,385,227

ELEVATING CONVEYOR FOR SMALL ARTICLES

Robert A. Marsh, 4151 Shimerville Rd., Emmaus, Pa. 18049

Filed Jul. 29, 1993, Ser. No. 98,061
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—773 **10 Claims**

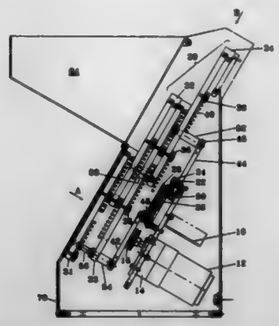
1. An elevating conveyor for small articles comprising

a stack of at least one pair of article supporting members, independently reciprocable along parallel paths, and

means for driving the members out of phase with one another in such a way that articles can roll or slide from one member to another, wherein the driving means comprises

a centerless crankwheel supported only at its periphery, and

a pair of pitman arms connected out of phase with one another to opposite sides of the crankwheel, each of the



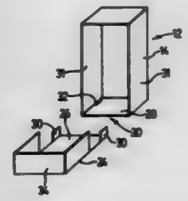
pitman arms also being connected to a respective one of said members.

5,385,228

CONVERTIBLE CONTAINER

Daniel P. Vidoni, Toronto, and James Morison, Oshawa, both of Canada, assignors to Gerrie Advertising Management Limited, Mississauga, Canada

Filed Dec. 1, 1993, Ser. No. 160,305
Claims priority, application Canada, Dec. 1, 1992, 2084365
Int. Cl.[6] B65D *75/58, 5/50*
U.S. Cl. 206—44.12 **12 Claims**



1. A container for shipping and dispensing a product, comprising:

a hollow body for containing said product, said body being convertible from a shipping configuration, where said body encases said product for shipping, to a dispensing configuration, where a portion of said body is removed to define an aperture for dispensing said product, said body having a bottom surface upon which said body rests when in said dispensing configuration:

an opening defined in said bottom surface for receiving a tab extending from a dispensing tray, said dispensing tray being attachable to said body to receive product from said aperture when said body is in said dispensing configuration; and

a weakened seam extending along the surface of said body to define the perimeter of said removable portion and to permit easy removal of said portion;

wherein said removable portion is severed from said body along said weakened seam to convert said body from said shipping configuration to said dispensing configuration.

5,385,229

CONTAINER FOR THE PACKAGING OF A HOLLOW ENDOPROSTHESIS

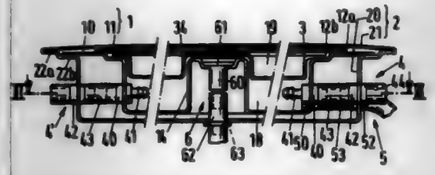
Peter Bittmann, Zürich; Fredy Tanner, Wil, and Müller-Glauser, Wiesendangen, all of Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterthur, Switzerland

Filed Nov. 5, 1993, Ser. No. 147,760

Claims priority, application European Pat. Off., Dec. 4, 1992, 92810959

Int. Cl.[6] A61F *2/00*

U.S. Cl. 206—210 **14 Claims**



1. A container for packing a prosthesis comprising:

a sterile inner wrapping surrounding a chamber shaped for receiving the prosthesis, the inner wrapping having a fluid-tight wall with at least one gas-permeable region;

a sterile outer wrapping substantially enclosing the inner wrapping and having at least one gas-permeable region; and

first and second inner ports in the inner wrapping fluidly coupled to first and second outer ports, respectively, in the outer wrapping for providing fluid access to the chamber.

5,385,230

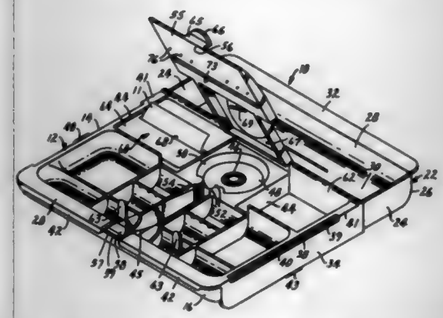
ADJUSTABLE TRAY ASSEMBLY FOR USE IN DESK DRAWERS

James C. Nygard, Maplewood; Dorman N. Thompson, Woodbury; William H. Sheeler, Minneapolis; Alden R. Miles, Burnsville; David C. Windorski, Woodbury; Bruce W. Carlson, Minneapolis, all of Minn., and Dennis L. Crawford, Roberts, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 11, 1991, Ser. No. 640,030

Int. Cl.[6] B43M *17/00*; B65D *85/671, 85/28*; A45C *11/34*

U.S. Cl. 206—214 **16 Claims**



1. An adjustable tray assembly adaptable for use in desk drawers of the types having side walls with parallel upper edge surfaces spaced at various distances, said tray assembly having a generally planar top surface and comprising:

a first portion comprising walls forming a main part of said first portion comprising a plurality of receptacles having openings adjacent said top surface, and a first support lip adjacent said top surface projecting away from said main part generally parallel to said top surface adapted to be supported on the upper edge surface of one of the side walls of the desk drawer;

a second portion comprising two spaced parallel side walls having top and bottom edges and first and second ends with said side walls being elongate between said first and second ends, an end wall extending between the first ends of said side walls and having top and bottom edges, a bottom wall joined to and extending between said side and end walls adjacent the bottom edges of said side and end walls, said side and bottom walls having adjacent inner surfaces; and a second support lip projecting from adjacent the top surface of said end wall on the side of said end wall opposite said side walls and adapted to be supported on the upper edge surface of one of the side walls of the desk drawer; and

means in engagement between said first and second portions for positioning at least a portion of said main part along the inner surfaces of the side and bottom walls of said second portion, for affording relative movement of said first and second portions in a direction parallel to the longitudinal direction of said side walls to change the spacing between the end wall of the second portion and the main part of said first portion and thereby the spacing between said first and second support lips so that said spacing may be manually adjusted to position said first and second support lips on the upper edge surfaces of the side walls of the drawers of different widths with the first and second portions bridging therebetween;

said means in engagement between said first and second portions comprising said walls of said first portion defining elongate spaces adapted to closely receive the side walls of said second portion with said main part along the inner surfaces of said side and bottom walls, said spaces and side walls of said first portion being adapted to afford longitudinal movement of said side walls of said second portion along said spaces to change the spacing between said first and second support lips, and means for retaining said side walls of said second portion within the spaces defined in said first portion in opposition to the separating forces therebetween caused by the weight of said first and second portions when said tray assembly is supported only by and bridges between said support lips;

said walls of said first portion include outer guide walls defining sides of said spaces opposite said main part and having top surface portions, said walls of said first portion have slots communicating with said spaces and partially defined by said top surface portions, and each of said side walls of said second portion has a lug projecting through the adjacent slot with an end portion of the lug positioned to bear against the top surface portion of the adjacent guide wall to provide a portion of said means for retaining said side walls within the spaces defined in said first portion in opposition to the separating forces therebetween caused by the weight of said first and second portions when said tray assembly is supported only by and bridges between said lips; and

said walls of said first portion include walls defining a dispenser for tape of the type comprising a backing having first and second major surfaces, opposite longitudinal edges spaced by a dimension W, and a coating of pressure sensitive adhesive along the second surface of the backing, which tape is helically wound about the peripheral surface of a core having a diametrical dimension D and opposite side surfaces spaced by about said dimension W to form a roll having opposite side surfaces defined by the edge surfaces of the backing and side surfaces of the core with the first major surface of the backing being disposed radially outwardly from the second major surface of the tape in the roll, said walls defining the dispenser for tape including:

cavity defininy walls defining a cavity including a bottom wall having a normally horizontally extending support surface supporting one side surface of the roll of tape, said walls having abutment surfaces adapted to be contacted by the periphery of the roll of tape projecting generally normal to said support surface and spaced by a dimension less than the diametrical dimension of the core to define an exit opening between said abutment surfaces through which the tape may be withdrawn from the roll;

passageway defining walls defining an exit passageway extending in a direction generally parallel with said support surface and communicating with said exit opening, one of said passageway defining walls defining a guide edge surface generally parallel to said support surface on the side of the passageway opposite said support surface, defining the end of the exit passageway opposite the exit opening, and adapted to be engaged by the first surface of the backing with the guide edge surface extending generally transverse of the backing, said guide edge surface being spaced from said exit opening by at least about 2 times W to afford longitudinal twisting of said tape along said passageway by about 90 degrees between said exit opening and said guide edge surface to position the first surface of the backing along said guide edge surface, and being spaced normal to a plane coplanar with said support surface by a distance in the range of about 0.5 times W to about 1.25 times W;

tape end portion positioning walls defining a land surface adapted to have the pressure sensitive adhesive coating on the tape releasably adhered thereto, a space between said land surface and said guide edge surface affording positioning a users finger along the adhesive coated surface of the tape between said guide surface and said land surface and pealing of the tape from the land surface and subsequently withdraw tape from the roll by the user; and

a cutter blade mounted at the end of said land surface opposite said guide surface and adapted for severing a length of tape withdrawn from the roll.

5,385,231

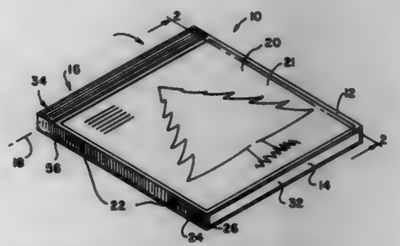
PACKAGE FOR COMPACT DISK

Robert C. Nowotny, Calhoun, Ga., assignor to Don Evans, Inc., DeForest, Wis.

Filed Feb. 22, 1994, Ser. No. 200,112

Int. Cl.[6] B65D *17/50, 85/57*

U.S. Cl. 206—309 **7 Claims**



1. A storage box for compact disks comprising:

a base having a recess for receiving the compact disk;

a lid fitting over the base in a closed position to enclose the compact disk between the base and the lid;

a hinge joining the base and lid to permit the lid to swing away from the base in an open position providing access to the compact disk;

a detent operating between the base and lid to retain the lid and base in the closed position against the application of a first opening force; and

a catch operating between the base and lid to retain the lid and base in the closed position against the application of a second opening force substantially greater than the first opening force.

5,385,232

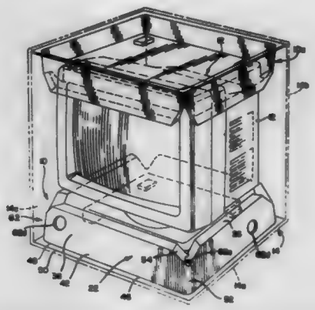
PACKAGING FOR FRAGILE ARTICLES HAVING CONTROLLED COLLAPSIBILITY

Douglas E. Foos, Barrington Hills, Ill., and Fred Schindler, Santa Cruz, Calif., assignors to Plastofilm Industries Inc., Wheaton, Ill.

Filed Jan. 24, 1994, Ser. No. 185,491

Int. Cl.[6] B65D *81/02*

U.S. Cl. 206—320 **23 Claims**



1. A unitary packaging structure for a shock sensitive article, comprising:

a platform portion adapted to support at least a portion of the article and having a peripheral portion;

a sidewall structure forming an enclosure around at least a portion of said platform portion, said sidewall structure including an inner wall being joined to said peripheral portion, and an outer wall peripherally spaced from said inner wall, said inner wall being relatively shorter than said outer wall so that said platform portion is held a specified cushion distance above a lower edge of said outer wall; and

at least one collapsibility control means selectively releasing air compressed beneath said package when said package is subjected to shock loading while disposed in a shipping containers said collapsibility control means being located in said sidewall structure.

5,385,233

PORTABLE BULK STORAGE CONTAINER

Richard D. McKibben, Clarkston; Patrick M. McGraw, Flint; Charles Simpson, Holly, all of Mich.; Kenneth D. McKibben, Defiance, Ohio, and Daniel D. Minor, Au Gres, Mich., assignors to CMI International, Inc., Southfield, Mich.

Filed Dec. 1, 1993, Ser. No. 160,603

Int. Cl.[6] B65D *19/00*

U.S. Cl. 206—386 **4 Claims**

1. A portable container (10) for containing liquids, said container (10) comprising:

a top wall portion (12), an exterior bottom wall portion (14), and a side wall portion (16) extending vertically between said top wall portion (12) and said exterior bottom wall portion (14);

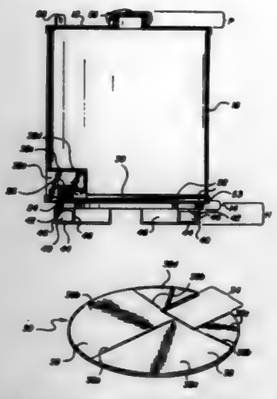
a plurality of forklift tubes (18) attached to said exterior bottom wall portion (14) for receiving the forks (20) of a forklift vehicle (22) whereby the forklift vehicle (22) is used to transport said portable container (10);

said side wall portion (16) having a drain opening (24) and a valve (26) disposed therein for draining the liquids from said container (10);

an interior false bottom portion (30) abutting said side wall portion (16) and sloping downwardly toward the drain opening (24) for causing complete drainage of the liquids contained within said container (10);

said side wall portion (16) having an indentation (32) for enclosing said drain opening (24) and said valve (26);

said interior false bottom portion (30) having a cut-out section (34) for receiving said indentation (32); and characterized by



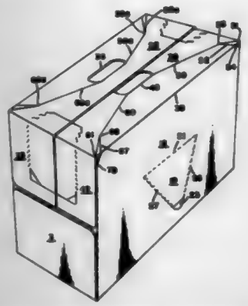
said interior false bottom portion (30) having at least one crease line (36) extending from said side wall portion (16) to said cut-out section (34) and intersecting said drain opening (24).

5,385,234

HEAVY DUTY ARTICLE CARRIER

James T. Stout, Ellijay, and James B. Demaio, Marietta, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Sep. 3, 1993, Ser. No. 115,697
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—427 3 Claims



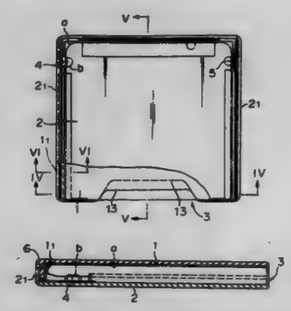
1. An article carrier for packaging a plurality of articles and comprising a bottom wall having opposed side and end edges, a bottom end flap foldably joined to each end edge of said bottom wall, side walls having opposed end edges and having top and bottom edges in which each bottom edge is foldably joined to a side edge of said bottom wall, an end wall panel foldably joined along a side edge thereof to each end edge of each of said side walls, a composite top wall having opposed side and end edges foldably joined along its side edges to the top edges of said side walls respectively, a top end flap foldably joined to each end edge of said top wall and secured in flat face contacting relation to each adjacent end wall panel, a pair of finger receiving apertures formed in said top wall, a primary score line formed in said top wall and extending from each end of each of said apertures to the adjacent corner of said composite top wall, and a supplementary score line of similar construction to said primary score lines and extending from a point of intersection with each of said primary score lines at an acute angle thereto and across a side edge of said composite top wall, said primary score line comprising a first part which extends from the associated aperture to said point of intersection and a second part which extends from said point of intersection to the adjacent corner of said composite top wall and said first and said second parts being disposed at an obtuse angle to each other.

5,385,235

CASING FOR HOUSING A CARTRIDGE

Masaru Ikebe, Saku; Haruo Shiba, Komoro, and Yukio Miyazaki, Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 83,533
Claims priority, application Japan, Jul. 6, 1992, 4-052731[U]
Int. Cl.[6] B65D *85/30*
U.S. Cl. 206—308.1 8 Claims



2. A casing for housing a cartridge which has a recessed portion formed therein, which comprises:

an upper half and a lower half which are formed in two parts and are assembled together so as to be slidably coupled with respect to one another and to house a cartridge in the casing which is inserted in a first direction into the casing, the cartridge having a recessed portion and the casing having an opening on one side thereof for allowing the cartridge to be inserted into the casing in said first direction and to be withdrawn therefrom, and

a holding portion mounted on one of said upper and lower half at an end of said casing opposite said opening wherein said holding portion is elastically engageable with said recessed portion in said cartridge wherein said one of said upper half and lower half has a sidewall and the holding portion comprises a projection which protrudes from an inner surface of said sidewall in a direction substantially orthogonal to the direction of insertion so as to engage the cartridge recessed portion and wherein the projection is located at an end of said side wall which is opposite that of said opening.

5,385,236

ARTICULATED EDGE GUARD PROTECTOR

John D. Cowan, 2436 Brixton Rd., Columbus, Ohio 43221, and Roger A. Bleim, 2957 N. Island Cir., Port Clinton, Ohio 43452

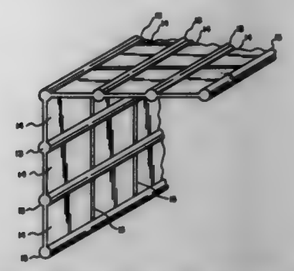
Filed Jun. 6, 1994, Ser. No. 254,341
Int. Cl.[6] B65D *81/02, 85/30*
U.S. Cl. 206—453 6 Claims

1. An articulated edge guard protector comprising

two planar members, each of said planar members being made from a relatively rigid thermoplastic material,

said planar members being joined together and forming essentially a right angle with each other at the joint formed by joining said planar members together,

a substantially cylindrical member made from a softer thermoplastic material than the material from which said planar members are made and attached to and extending along and constituting a part of said joint formed by joining said planar members together,



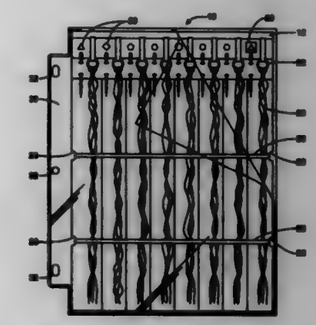
said cylindrical member being of a diameter such that a portion of said cylindrical member extends above the surface of said planar members.

5,385,237

NEEDLEWORK THREAD ORGANIZER

Margaret R. Mathews, St. Dominic Retirement Center 2401 Holcombe Blvd., Houston, Tex. 77021

Filed Feb. 10, 1992, Ser. No. 832,900
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—574 8 Claims



1. An apparatus for organizing needlework threads, said apparatus comprising:

a flat, generally rectilinear body;

a plurality of elongated, flexible thread attachment means on said body, each said thread attachment means having one end attached to said body and having at its other end means adapted for releasably attaching a plurality of needlework threads of an individual color;

means on said body for releasably attaching a plurality of needles to said body, said needle attachment means providing means for releasably attaching an individual needle to said body in proximity to each said thread attachment means; and

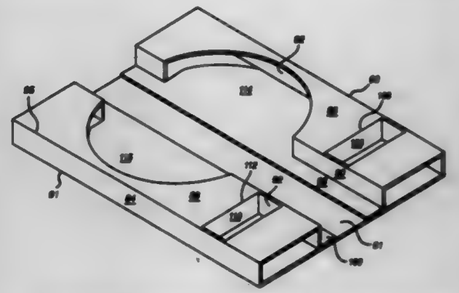
a transparent sleeve for releasably receiving said body.

5,385,238

CUSHION FOR USE IN A SHIPPING CONTAINER

Gary D. Lancaster, Lewisberg, Tenn., and Greg A. Hutcheson, Conyers, Ga., assignors to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 907,073, Jul. 1, 1992, Pat. No. 5,197,606. This application Mar. 29, 1993, Ser. No. 38,361
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[6] B65D *81/02*
U.S. Cl. 206—594 23 Claims



1. A cushioning member for placement into a shipping container, comprising:

a bottom panel having first and second opposite side edges;

a first side panel foldably joined to said first side edge of said bottom panel and extending to an upper end;

a first top panel foldably Joined to said upper end of said side panel and extending to a terminal end, said top panel being disposed in a spaced parallel relation to said bottom panel;

a first support panel foldably Joined to said terminal end of said top panel and extending to a lower end, said support panel being disposed in a spaced parallel relation to said side panel, said lower end being positioned between said first and second side edges of said bottom panel;

a first anchor flap foldably joined to said lower end of said support panel and secured to said bottom panel in a flat face contacting relation, said anchor flap extending from said lower end of said support panel toward said second side edge of said bottom panel whereby said cushioning member may be collapsed such that said top panel, said support panel and said anchor flap are disposed in the same plane; and

retaining means for holding said cushioning member in a set-up condition in which said side, top and support panels and at least a portion of said bottom panel in cooperation form a squared tubular structure.

5,385,239

LOW BRIGHTNESS FUNCTIONAL PIGMENT FROM PROCESS BY-PRODUCT

Albert C. Kunkle; Robert E. Hardy, both of Macon, and Bobby R. Skipper, Cochran, all of Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 643,885, Jan. 18, 1991, Pat. No. 5,154,767. This application Apr. 27, 1992, Ser. No. 875,792
Int. Cl.[6] B03B *1/04, 5/62, 7/00*; C09C *1/24*
U.S. Cl. 209—164 4 Claims

1. A method for producing a low brightness, high yellow index kaolin pigment slurry from a kaolin clay containing iron-stained TiO_2, the method comprising:

dispersing the kaolin clay in water to form a kaolin dispersion;

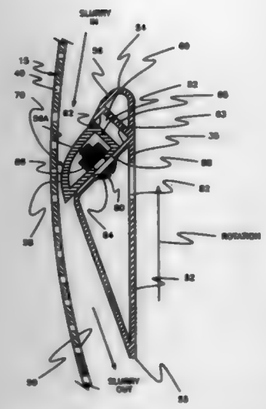
separating the kaolin dispersion into an aqueous high brightness fraction and an aqueous lower brightness fraction, the lower brightness fraction having a TiO_2 content substantially between 5–12 % by weight dry clay and an Fe_2O_3

content substantially between 0.5–2.5% by weight dry clay;
concentrating the lower brightness fraction to form a kaolin suspension containing kaolin particles and iron-stained TiO_2 particles;
wherein the step of concentrating includes
flocculating at least a portion of the iron-stained TiO_2 particles and the kaolin particles from the lower brightness fraction with a flocculating agent; and
recovering the flocculent containing the TiO_2 and kaolin particles by hydroseparation to form a recovered kaolin suspension; and
washing the recovered kaolin suspension to remove excess salts to form said kaolin pigment slurry; and wherein the washing step includes,
dispersing the recovered kaolin suspension with a dispersion agent;
diluting the dispersed kaolin suspension;
flocculating the diluted suspension; and
filtering the flocculated suspension to form a filter cake thereby removing excess salts and dispersing the filter cake with a dispersing agent to form the kaolin pigment slurry.

5,385,240
SCREENING APPARATUS WITH ADJUSTABLE HYDROFOIL PORTION

John J. Egan, III, Centerville; James R. Jamieson, Loveland; David E. Saics, Cincinati, and Gary S. Williamson, Middletown, all of Ohio, assignors to The Black Clawson Company, Middletown, Ohio

Filed Apr. 30, 1993, Ser. No. 55,732
Int. Cl.[6] B07B *1/04*
U.S. Cl. 209—273 8 Claims

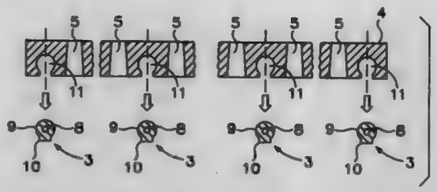


1. Apparatus for the screening of papermaking stock comprising:
a stationary screen,
a hydrofoil member having a curved surface,
means mounting said hydrofoil member for movement in proximity to said screen,
means on said member defining a discrete part thereof movable with respect to the remainder of said member, said discrete portion forming at least a portion of said curved surface, and
means supporting said discrete part on said hydrofoil member in an adjusted position with respect to said screen.

5,385,241
TENSION SCREEN

Anton Bokor, Stutensee, Germany, assignor to Western Wire Works Inc., Portland, Oreg.

Filed May 25, 1993, Ser. No. 67,468
Claims priority, application Germany, Jan. 8, 1993, 4300303
Int. Cl.[6] B07B *1/49*
U.S. Cl. 209—399 26 Claims

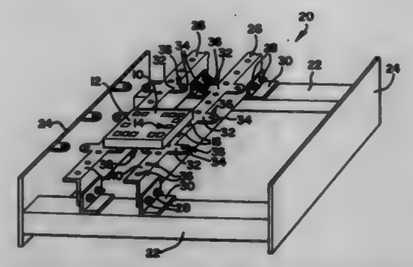


1. A tension screening apparatus for a screening machine comprising a screening surface formed of screen elements on reinforcing members, said screen elements having an outer wear-resistant surface layer; screen passages and tension cables disposed across the reinforcing members and braced on the screening machine by means of connecting elements at their ends; the tension cables and the wear-resistant layer being formed as structurally distinct elements, the tension cables including an outer protective sheathing, the wear-resistant layer being detachably joined to the tension cables, and the outer protective sheathing having a base which is flush with the underneath side of said wear-resistant layer thereby sealing said wear-resistant layer.

5,385,242
SCREENING ARRANGEMENT

Manfred F. A. Freisale, 15 Oak Ave., Oakdene, Johannesburg, Transvaal Province, South Africa

Filed Feb. 16, 1994, Ser. No. 197,314
Claims priority, application South Africa, Feb. 17, 1993, 93/1105; Nov. 4, 1993, 93/8247
Int. Cl.[6] B07B *1/46*
U.S. Cl. 209—399 2 Claims

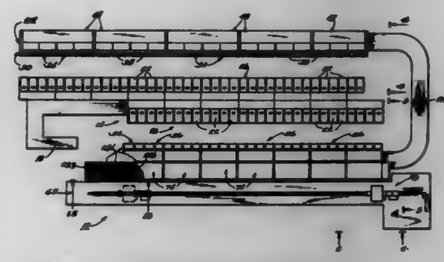


1. A screen support frame which includes at least two screen support members, each support member including at least one securing formation which is removably inter-engageable with a complementary securing formation on a screening panel, and at least one lug extending transversely from the support member and including at least one securing formation which is removably inter-engageable with a complementary securing formation on a screening panel, the support member being adapted to support a screening panel along one peripheral side of the screening panel, and the lug being adapted to support the screening panel along a part of a transversely extending peripheral side of the screening panel, the support members being positioned alongside each other and spaced from each other so that the lug of one support member is aligned with and opposite the lug on the other support member and so that a screening panel can be positioned on the support members with one peripheral side of the panel being positioned on one support member and another peripheral side of the panel being positioned on the other support member, and a transversely extending peripheral side of the panel being positioned partly over the lug of one support member and partly over the lug of the other support member(s).

5,385,243
MODULAR SYSTEM FOR AUTOMATICALLY STAGING LETTERS IN CONNECTION WITH A LETTER SORTING MACHINE

Billy R. Jackson, North Salt Lake; James P. Hrica, Sandy, both of Utah; Dennis G. Hueman, New Berlin, Wis., and Rodney O. Kirby, Bountiful, Utah, assignors to Harnischfeger Engineers, Inc., Brookfield, Wis.

Filed May 20, 1992, Ser. No. 886,133
Int. Cl.[6] B07C *5/00*
U.S. Cl. 209—509 26 Claims



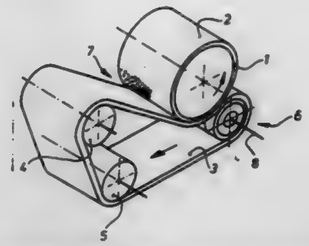
1. A letter sorting apparatus comprising
a letter sorting machine including means for receiving letters to be sorted, means for sorting letters, and means for dispensing sorted letters which are subsequently placed in letter trays, and
means separate from said letter sorting machine for automatically staging the letter trays, said staging means including an automatic storage and retrieval system including means defining a plurality of storage locations, and a storage and retrieval machine which is positioned to receive letter trays from said dispensing means and which is operable to store letter trays in and retrieve letter trays from said storage locations.

5,385,244
SEPARATING MACHINE

Helmut Kunig, Bad Schwartau, and Wolfgang Wagner, Reinfeld, both of Germany, assignors to Nordischer Maschinenbau Rud. Baader GmbH & Co KG, Lubeck, Germany

Filed May 2, 1994, Ser. No. 236,135
Claims priority, application Germany, May 4, 1993, 9306718
Int. Cl.[6] B07C *9/00*
U.S. Cl. 209—699 21 Claims

1. An apparatus for separating a mixture of materials of different flowability, in particular for preparing foodstuffs, comprising an endless presser belt and
a rotationally driven hollow drum having a perforated circumferential surface, said endless presser belt being pressed against said hollow drum, to which end said presser belt is disposed to wrap around a portion of said circumference of said hollow drum and to form a compression zone and a draw-in wedge for the material to be separated; and
pressing means for achieving the pressing of said presser belt against said hollow drum, said pressing means being rotationally driven and adjustable with respect to the distance from said hollow drum,
said pressing means further comprising
a hub body,
a tubular cylindrical body connected with said hub body to be rotationally fixed to the same, said cylindrical body forming a circumferential surface of said pressing means, and

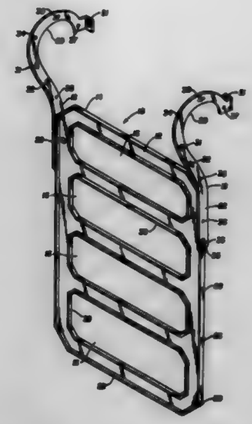


spherical supporting means, arranged between said hub body and a middle portion of said tubular cylindrical body, for supporting said middle portion of said tubular cylindrical body.

5,385,245
BELT RACK

Darrell J. Waters, 9955 S. Cottoncreek Dr., Highlands Ranch, Colo. 80126

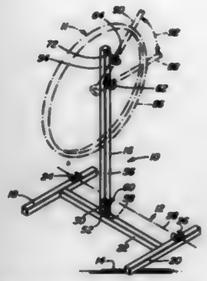
Filed Aug. 24, 1993, Ser. No. 111,216
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—13 15 Claims



1. A rack for storing and displaying coiled apparel belts, comprising:
a generally vertically disposed carrier frame having opposite faces and perimetrically bounded by an outside edge along its top, bottom, and opposite sides, and defining at least one belt-receiving opening therethrough positioned, in use, with space on both sides of said opening for carrying a substantial portion of a coiled belt;
a frame support means, at least a part of which defines a generally hook-shaped portion, connected to said carrier frame for supporting the carrier frame, in use, with respect to an external surface, in a preselected one of a plurality of relative orientations, wherein, in at least a first relative orientation between the carrier frame and said frame support means, said hook-shaped portion is non-coplanar with the face of the frame and extends transversely to at

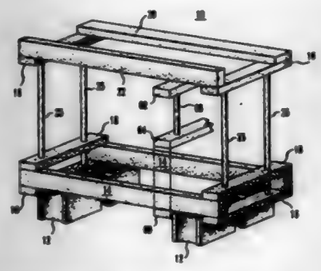
least one side of the frame, supporting the frame by contacting, in use, an external surface either below the bottom edge or the carrier frame or offset from a face of the carrier frame.

5,385,246
COLLAPSIBLE BICYCLE STAND
David Groenwickle, 301 - 1166 West 6th Avenue, Vancouver, British Columbia, Canada V6H 1A4
Filed Sep. 9, 1993, Ser. No. 118,222
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—22 5 Claims



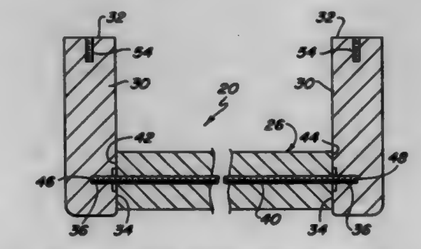
1. A collapsible bicycle stand apparatus comprising:
a) a base operable to rest on a generally horizontal surface, the base including spaced apart horizontal support members and a cross member extending therebetween;
b) a straight, elongated support member removably securable to the base such that the support member extends upward relative to the horizontal surface, the support member having an outwardly facing portion lying in a first generally vertical plane when the support member is secured to the base; and
c) first and second bicycle holders secured to the support member for holding a bicycle, the first and second bicycle holders having first and second bicycle contacting surfaces respectively, the first and second bicycle contacting surfaces being disposed in a contacting surface plane extending perpendicular to the first plane and disposed at an angle relative to the horizontal surface when the support member is secured to the base.

5,385,247
FIREWOOD RACK
Ralph T. Owens, 11 Sheffield Ave., Spotswood, N.J. 08884
Filed Aug. 4, 1993, Ser. No. 101,747
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—49.1 13 Claims



1. A firewood rack comprising.:
a bottom base structure;
a top cover structure;
sets of left and right-side cross supports for said bottom and top structures; and
a plurality of tubings snugly fit into said side cross supports to restrict outward bowing of said rack under the weight of stored firewood; and
wherein said top cover structure includes a first portion constructed of greater height than a back portion of said top cover structure; and
an openable cover across said top cover structure and extending downwardly therefrom between said left and right-side cross supports.

5,385,248
DECORATIVE MULTI-COMPONENT HARDWARE ITEMS AND METHOD OF ASSEMBLING THE SAME
Frederick H. Klein, Jr., P.O. Box 411, Oley, Pa. 19547
Filed Jun. 6, 1994, Ser. No. 254,347
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—105.1 14 Claims

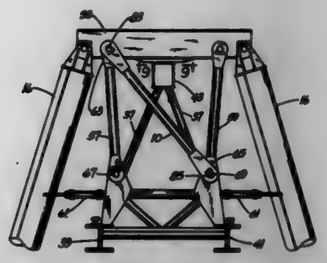


1. An item of decorative hardware for securement to a panel, said item comprising an assembly of a pair of posts, a cross member, and an externally threaded rod, said cross member having a decorative exterior surface, a pair of ends, and an internally threaded passageway extending longitudinally through said member between said ends, each of said posts having an under surface and a decorative exterior surface including a side portion, each of said side portions including an internally threaded bore, said posts being arranged for fixed securement to said panel so that said under surfaces abut said panel and said side portions face each other with said bores being axially aligned, said externally threaded rod being threadedly received within said passageway of said cross member so that opposite end portions of said externally threaded rod extend out of said ends of said cross member and are threadedly received within respective bores in said posts, whereupon said side portions of said posts abut respective ends of said cross member to complete said assembly.

5,385,249
MATERIAL HANDLING MACHINE WITH FORCE-ISOLATING SUPPORT LINK
Herbert D. Long, Jr., West Allis, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.
Filed Jul. 27, 1993, Ser. No. 98,122
Int. Cl.[6] B66C 19/00
U.S. Cl. 212—218 9 Claims

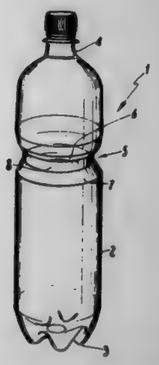
1. In a mobile material handling machine having an elongate generally triangular lattice girder suspended from a girder beam which is generally lateral to the lattice girder, the lattice girder being suspended by first and second support links, each of which has an upper end and a lower end and at least one support link is pivotally pinned at an end, and wherein the girder beam is supported at an elevation by a pair of legs each having a wheel assembly, the improvement comprising:
a force transfer link extending between the support links, the force transfer link having an upper end and a lower end

and wherein at least one of the ends of the force transfer link is pivotally pinned to one of said support links,



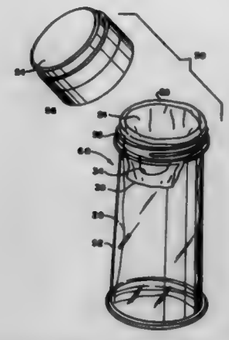
whereby forces transferred between the girder beam and either leg are isolated from the lattice girder.

5,385,250
PLASTIC BOTTLE PARTICULARLY FOR CONTAINING BEVERAGES AND HAVING A GRIPPING RECESS
Lino Pasquale, Cittadella, Italy, assignor to Societ&Gestione Acque Minerali, San Giorgio in Bosco, Italy
Continuation of Ser. No. 669,551, Mar. 14, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 984,664
Claims priority, application Italy, Mar. 22, 1990, 41566 A/90
Int. Cl.[6] B65D 1/02, 23/10
U.S. Cl. 215—1 C 11 Claims



1. A blow-molded plastic bottle comprising:
a cylindrical body (2); and
means for gripping said cylindrical body by a user's hands;
said means for gripping said cylindrical body by a user's hands comprising a deep annular groove (5) provided circumferentially in said cylindrical body, said groove having a quadrangular cross section comprising two conically shaped annular bands (6,7) and an inner cylindrical band which is mutually interconnected between said annular bands, said inner cylindrical band having a diameter which is smaller than the diameter of said cylindrical body at its other parts which do not include said annular groove, said cylindrical band having a thickness which is greater than the thickness of said cylindrical body at its said other parts which do not include said annular groove.

5,385,251
DISPOSABLE BOTTLE BAGS FOR USE WITH INFANT NURSING SYSTEM
Steven B. Dunn, Beverly Hills, Calif., assignor to Munchkin Bottling Inc., Van Nuys, Calif.
Continuation of Ser. No. 60,233, May 11, 1993, abandoned. This application May 18, 1994, Ser. No. 245,528
Int. Cl.[6] A61J 9/00, 9/06; B65D 23/02, 33/24
U.S. Cl. 215—11.3 9 Claims



8. An improved system for nursing an infant, comprising:
an elongated holder having a space defined therein and an opening defined at at least one end communicating with said space;
a collapsible bag that is sized and shaped to fit within said space in said elongated holder when in an expanded condition, said collapsible bag having an open end, said collapsible bag further having a permeability that is suitable for storing liquid nourishment for an infant therein, said collapsible bag further being removable from said holder;
a pair of oppositely facing sealing members provided at said open end of said collapsible bag, said sealing members comprising cooperating projecting members that, when pressed together, seal said open end of said collapsible bag for convenient storage of the liquid nourishment contained therein when said collapsible bag is removed from said holder, said sealing members further serving to help retain said collapsible bag on said holder when said open end of said collapsible bag is folded back over said one end of said holder having said opening; and
nipple means for mounting to said elongated holder and communicating with said collapsible bag during feeding.

5,385,252
CLOSURE
Walter E. Hidding, 367A Woodrock Rd., Barrington Hills; Douglas J. Hidding, 801 E. Lake Shore Dr., Barrington, both of Ill. 60010, and Robert D. Hidding, 925 Harper Dr., Algonquin, Ill. 60102
Filed Jan. 26, 1992, Ser. No. 902,170
Int. Cl.[6] B65D 41/00
U.S. Cl. 215—230 5 Claims

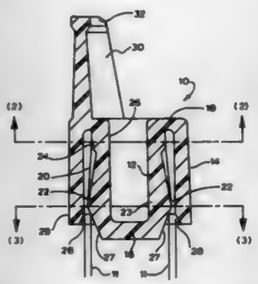
1. A closure comprising a cover, a skirt depending from the periphery of said cover, said skirt having means formed on its interior surface for retaining said closure to a container, a plug extending downwardly from the underside of said cover, said plug being a circumferentially continuous formation having a generally tapered outer surface disposed about a central axis of said closure, said surface for sealingly engaging an inwardly extending flange of a container neck finish, an auxiliary sealing ring adjacent to said plug, said auxiliary sealing ring being flexible and circumferentially continuous, said closure including a tamper-evidencing ring removably connected to said skirt, said ring having starting means comprising a section of said ring with reduced thickness for facilitating breakage and

removal of said ring, indicating means on an outside surface of said skirt for indicating the location of said starting means on said ring, said closure having threads formed on an inside surface of said skirt, and said removable retaining means being a ratchet ring, and said starting means being a pull-tab, said skirt having surface grasping means on an outside surface of



said skirt, said indicating means comprising an interruption in said surface grasping means, said surface grasping means being comprised of a series of vertical, closely spaced ribs forming knurling, said interruption being disposed adjacent to and above said pull-tab, said interruption being both visible and capable of being felt.

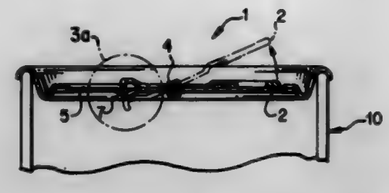
5,385,253
PORT CLOSURE
Michael W. Scharf; Joseph N. Veillon, Jr., both of McHenry, Ill., and Thomas Yatsko, Royersford, Pa., assignors to Baxter International Inc., Deerfield, Ill.
Filed Sep. 2, 1992, Ser. No. 939,348
Int. Cl.[6] B65D *39/00*
U.S. Cl. 215—296 25 Claims



1. A closure for a tubular administration port, the closure comprising:

inner and outer concentrically disposed tubular members, the inner and outer members being joined at an upper end thereof, the inner tubular member having a sealed lower end extending a greater length than the outer tubular member and forming a plug that is so constructed and arranged to be received within an interior of a port, the outer tubular member configured to fit about an exterior of the tubular port in an interference fit relationship, the inner tubular member including radially outwardly extending ribs that are peripherally spaced and engage against the interior of the tubular port providing an interference fit against the interior of the administration port.

5,385,254
EASY LIFT CONTAINER OPENING
Charles N. Hannon, 27 Sargent Rd., Scarsdale, N.Y. 10583
Filed Aug. 9, 1993, Ser. No. 104,357
Int. Cl.[6] B65D *17/32*
U.S. Cl. 220—269 9 Claims

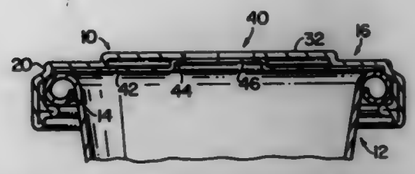


1. A container comprising a container top and a lift tab non-detachably connected to the container top, wherein said container top has a dished section, of sufficient dimension to accommodate said lift tab therein, said dished section having a flat surface on which said lift tab is positioned in adjacent contact therewith, whereby the lift tab comprises a lifting end and a pushing end, with the lift tab being connected to the container top, between said pushing and lifting ends, whereby lifting of the lifting end causes fulcruming movement of the pushing end into pushing contact with a weakened section of the container top, within the dished section, and opening of the weakened section for access to the container contents, and wherein said pushing end and said lifting end each have lower flat portions which are aligned with each other in a common plane and wherein the lower flat portions of the pushing end and lifting end are each in adjacent contact with the flat surface, with the flat surface also being aligned in said plane, whereby access to and lifting of the lifting end is impeded prior to the opening of the weakened section; the improvement comprising a channel being formed in the container top, directly adjacent said pushing end, with said pushing and being aligned in said plane, and with said channel being positioned and configured such that, upon initial lifting of the lifting end, the pushing end enters into the channel, without impedance, thereby delaying said pushing contact for a distance sufficient to enable the lifting end to be raised, with reduced resistance, to enable finger insertion thereunder for continued lifting and opening of the weakened section, wherein said channel is positioned substantially perpendicularly across a longitudinal axis extending through said lift tab and wherein said channel is congruent with said pushing end, and whereby said channel extends sufficiently away from said axis whereby said pushing end fits into said channel, without impedance, and wherein said channel has a base, with said pushing end coming into substantially complete pushing contact with said base, wherein said channel comprises two opposing walls, with one of said walls being closely adjacent to said tab; and wherein said wall closely adjacent to said tab is formed with a reduced edge with the flat portion to permit said pushing end to enter into the channel without impedance thereby.

5,385,255
SNAP-ON LID
Richard F. Varano, Forestville, and Donald Kramer, Kensington, both of Conn., assignors to Sherwood Tool, Inc., Kensington, Conn.
Filed Nov. 23, 1993, Ser. No. 156,294
Int. Cl.[6] B65D *41/16*
U.S. Cl. 220—306 22 Claims

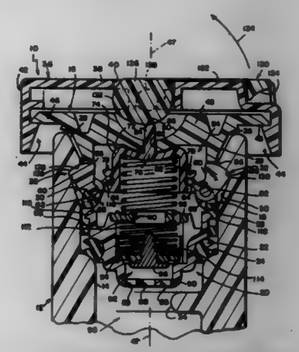
1. A snap-on lid for a annular walled paper container having an open upper end and an outwardly extending annular rim around the open upper end, said lid having a top wall and a depending annular skirt having an outer-ply including inner and outer faces and constituting a continuation of said top wall, said outer ply having a first portion extending downwardly

from said top wall and a second portion extending downwardly and outwardly from the lower end of said first portion, said outer ply having a third portion extending downwardly from the lower end of said second portion, said skirt having an inner ply constituting an upward continuation of said third portion and turned inwardly and upwardly from the lower end of said third portion, said inner ply extending upwardly along said inner face of said third portion and defining a downwardly



open lower end of said skirt, said inner ply defining an inwardly directed annular retaining portion of said skirt formed by a part of said inner ply turned inwardly and then outwardly onto itself and disposed within said third portion and spaced upwardly from said lower end of said skirt, said annular retaining portion defining an opening sized for resilient snap-over engagement with the annular rim for releasably retaining said lid on the container to form a closure for the open upper end.

5,385,256
FILLER NECK CLOSURE CAP
David M. Brown, Oregon, Ill., assignor to Stant Manufacturing Inc., Connersville, Ind.
Filed Jan. 14, 1993, Ser. No. 4,686
Int. Cl.[6] B65D *45/28*
U.S. Cl. 220—323 42 Claims



1. A cap for use in a filler neck of a tank, the filler neck being formed to include an outer mouth, a fill passageway communicating with the outer mouth, a cap-retention cavity opening into the fill passageway, and a seal-receiving seat lying in the fill passageway in spaced-apart relation to the outer mouth, the cap comprising

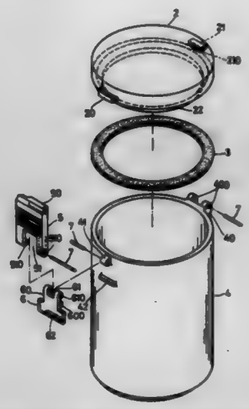
a housing sized to fit into the fill passageway, the housing having an axially inner end and an axially outer end,

closure means for closing the filler neck, the closure means being coupled to the axially inner end of the housing,

means for pushing the housing and closure means into the fill passageway to seat the closure means on the seal-receiving seat, the pushing means being attached to the axially outer end of the housing, and

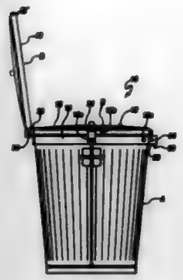
means for retaining the housing and the closure means in a filler neck-closing position in the fill passageway so that the closure means sealingly engages the seal-receiving seat to close the fill passageway, the retaining means including at least one retaining lug, means for pivotably coupling each retaining lug to the housing for pivoting movement between a projected position fitting into the cap-retention cavity and a retracted position lying outside the cap-retention cavity during movement of the housing into and out of the fill passageway, and spring means for yieldably biasing each retaining lug toward its projected position so that it snaps automatically from its retracted position into the cap-retention cavity to retain the housing and closure means in the filler neck-closing position during installation of the cap on the filler neck.

5,385,257
POT WITH IMPROVED CONFIGURATION
Chi-Tsan Hung, 207, Alley 270, Lane 36, Section 4, An-Ho Road, Tainan, Taiwan, Prov. of China
Filed Jan. 4, 1994, Ser. No. 177,754
Int. Cl.[6] A47J *27/00, 27/08, 27/09;* B65D *51/16*
U.S. Cl. 220—324 1 Claim



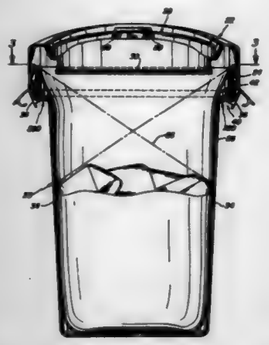
1. A pot with improved configuration comprising a lid, a pot body, a sealing ring, a positioning plate and clipping plate which are all made from plastic material, a projected flange portion being disposed at the underside of the lid for receiving said sealing ring and consequently forming an air-tight engagement between said lid and said pot, said lid having a positioning block at one end and a retaining block at the other end, a receiving support being disposed at the top portion of the pot body, said retaining block of the lid being pivoted to the receiving support by a pin member, said pot body further comprising a pivoting block and stopping plate at the circumference, said positioning plate and clipping plate being pivoted to the pot body by a pair of pins, a retaining block being provided at the top of the positioning plate with respect to the shape of the positioning block, a cutout being provided at the underside of the retaining block, said cutout further including a pair of pivoting holes thereof, a tab member being provided at the front portion of the clipping plate with respect to the cutout of the retaining block, a through hole being provided at the underside of the tab with respect to the pivoting hole of the retaining plate, a cutout being provided at the top position with respect to the pivoting block, said cutout having a hole thereof, an actuating clip being disposed at the clipping plate, said actuating clip being firmly received by the stopping plate of the pot body for retaining or releasing the lid to or from the pot body.

5,385,258
ANIMAL RESISTANT TRASH CONTAINER AND METHOD
David A. Sutherlin, 110 W. Nippino Trail, Nokomis, Fla. 34275
Filed Oct. 4, 1993, Ser. No. 131,482
Int. Cl.[6] B65D *45/00*
U.S. Cl. 220—334 12 Claims



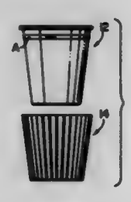
1. An improved animal resistant trash container constructed using a conventional trash container having a bottom and a side wall extending from said bottom to define an open end generally parallel to and spaced from said bottom, said conventional container including a separate lid which closably engages over said opening, the improvement comprising:
a first annular band clampably connectable around a transverse circumference of said container immediately adjacent said open end;
a second annular band clampably connectable around a perimeter of said lid;
a hinge pivotally connecting a common point of said first and second bands;
latch means for automatically releasably locking said lid after falling to its closed position.

5,385,259
DIAPER PAIL
Michael S. Bernstein, Natick; Brian C. Sandberg, Stoughton, both of Mass., and David W. Crossley, Woonsocket, R.I., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Jan. 28, 1994, Ser. No. 188,081
Int. Cl.[6] B65D *43/00*
U.S. Cl. 220—404 21 Claims



1. A diaper pail assembly for receiving a trash bag liner which is to be twisted closed before removal comprising
a pail having a closed bottom and open top for receiving a trash bag placed in it,
a ring rotatably supported on the top of the pail for rotation relative to the pail, said ring intended to support the top of a trash bag liner inserted into the pail through the open top,
a cover pivotally supported on the ring for movement between a closed position wherein it engages the ring for gripping the upper portion of a trash bag liner against the ring, and for rotating the ring when the cover is manually turned on the pail to twist the top of the liner closed while in the pail, and an open position wherein it pivots upwardly and disengages the top of the trash bag so that the trash bag liner may be inserted in or removed from the container.

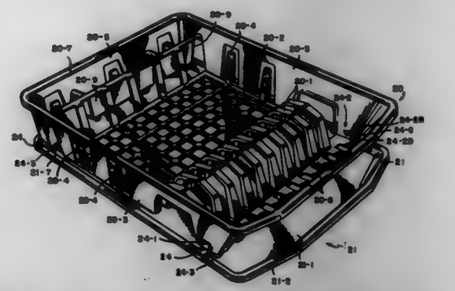
5,385,260
DISPOSABLE CUP ASSEMBLY SYSTEM AND METHOD
James Gatcomb, Simsbury, Conn., assignor to Sherwood Industries, Inc., Kensington, Conn.
Filed Jan. 19, 1994, Ser. No. 183,670
Int. Cl.[6] B65D *3/22*
U.S. Cl. 220—415 20 Claims



9. An article of manufacture comprising a disposable cold cup formed from sheet material for containing cold liquid and having a frustoconical sidewall, a radially disposed annular rim at the upper end of said sidewall defining an opening at said upper end and a radially disposed bottom wall, and means for converting said disposable cold cup into a disposable insulated hot cup at the time of use for containing a hot liquid and including a frustoconical insulating sleeve made from sheet material for coaxially receiving said disposable cold cup in assembled condition therein, and retaining means for instantaneously securing said insulating sleeve in permanent assembly with said disposable cold cup when said disposable cold cup and said insulating sleeve are brought together in said assembled condition and including first means carried by said disposable cold cup and second means carried by said insulating sleeve for instantaneously cooperating in permanent holding engagement with said first means in said assembled condition whereby said insulating sleeve may be assembled with said disposable cold cup by the user of said disposable insulated hot cup and at the time of use.

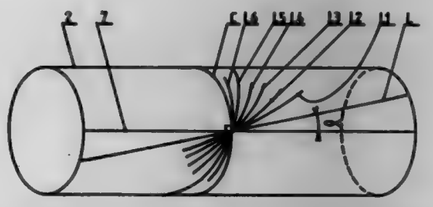
5,385,261
DISH DRAINER
Hangwind F. Lippisch, Fitchburg, and Cory J. Kruger, Winchendon, both of Mass., assignors to Sterilite Corporation, Townsend, Mass.
Filed Jul. 2, 1991, Ser. No. 724,705
Int. Cl.[6] B65D *21/00*
U.S. Cl. 220—572 3 Claims

1. A dish drainer comprising a plastic basket and a plastic pan, a plurality of first strap means integral with and a part of said pan for connecting said pan to said basket, said basket having a plurality of receptacle means for connecting to said first strap means, wherein said basket is coupled to said pan by said first strap means coupled to said receptacles, and in which said pan has a rim and in which each of said first strap means



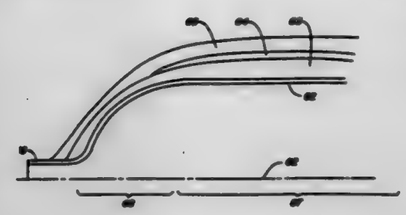
extends from said rim and is of the same plastic material as the pan.

5,385,262
VESSEL FOR STORING FLUID UNDER PRESSURE ABLE TO UNDERGO RUPTURE WITHOUT FRAGMENTATION
Pascal D. Coquet, Merignac, and Pierre Schaeffner, Le Haillan, both of France, assignors to Societe Anonyme Dite Aerospatiale Societe Nationale Industrielle, Paris Cedex, France
Filed Jul. 19, 1993, Ser. No. 92,994
Claims priority, application France, Jul. 23, 1992, 92 09323
Int. Cl.[6] B61D *8/08*
U.S. Cl. 220—589 18 Claims



1. A vessel for storing fluid under pressure, comprising:
an internal casing comprising a central cylindrical portion, a first extremity portion, and a second extremity portion, one of said first extremity portion and said second extremity portion protruding to a terminal boss, and said terminal boss is centered with respect to a longitudinal axis of said internal casing;
an outer hooping of reinforcing fibers coated with a thermoplastic or thermosetting binder surrounding said internal casing comprising:
at least one layer of circumferential fibers placed circumferentially about said internal casing to have a winding angle of substantially 90° with respect to said longitudinal axis of said internal casing;
at least one layer of longitudinal fibers placed in a planar manner with a winding angle α as close as possible to being substantially parallel to said longitudinal axis of said internal casing without overlapping said terminal boss; and
at least one layer of fibers placed with a winding angle α_n with respect to said longitudinal axis of said internal casing, between said winding angle α of said at least one layer of longitudinal fibers and 90°.

5,385,263
COMPRESSED GAS MOBILE STORAGE MODULE AND LIGHTWEIGHT COMPOSITE CYLINDERS
Kenneth G. Kirk, Placerville; Leonard Schoesman, Citrus Heights; Kris E. Baxter, and John B. Mouritsen, both of El Dorado Hills, all of Calif., assignors to Aerojet-General Corporation, Rancho Cordova, Calif.
Filed May 2, 1994, Ser. No. 236,735
Int. Cl.[6] B65D *8/08*
U.S. Cl. 220—589 16 Claims



1. A compressed gas cylinder module comprising:
(a) front and rear bulkheads mounted in upright position to a wheeled base frame;
(b) a plurality of cylindrical containers for containment of compressed gas, each said cylindrical container being at least about ten feet in length and weighing less than about 100 pounds per foot of length with a wall comprising wound fiber material to provide axial strength and hoop strength to said cylinder, each said cylindrical container having first and second ends, said first end mounted to said front bulkhead, and said second end mounted to said rear bulkhead; and
(c) a manifold of piping at said front bulkhead joining said cylindrical containers to a plurality of outlet valves such that each said outlet valve is fed by compressed gas from selected combinations of said cylindrical containers;
said module adapted for removable placement on a transport truck bed.

5,385,264
BEVERAGE CONTAINER
Richard H. Kaufman, Chappaqua; Theodore J. Kovacic, Bedford, both of N.Y.; Hideyoshi Okita, Huntington Beach, Calif.; Martin M. Bostwick, Norwalk, Conn.; Andrew T. Kostanecki, Darien, Conn.; Robert H. Brainard, Danbury, Conn., and Patrick B. Nolan, Norwalk, Conn., assignors to Kraft General Foods, Inc., Northfield, Ill.
Continuation-in-part of Ser. No. 776,444, Oct. 17, 1991, abandoned. This application Jun. 12, 1992, Ser. No. 898,114
Int. Cl.[6] B65D *25/46*
U.S. Cl. 220—710 15 Claims

1. A unitary, blow-molded beverage container comprising:
a main body defining a container volume in which a beverage is contained, said main body including a top and a bottom;
a flexible straw having a proximal end which is fluidly connected with the container volume adjacent said bottom of said main body and a distal end having an aperture therein which is located adjacent said top of said main body; and
an attaching means for removable attaching said distal end of said flexible straw to said top of said main body and for closing said aperture of said distal end of said flexible straw, said attaching means including a hollow chamber attached to said top and a short hollow bridge extending from said distal end of said flexible straw and about said aperture to said hollow chamber, wherein said hollow chamber includes a solid connection to said top of said container such that said hollow chamber is in fluid communication with said container volume only through said flexible straw, whereby said hollow bridge is broken dur-

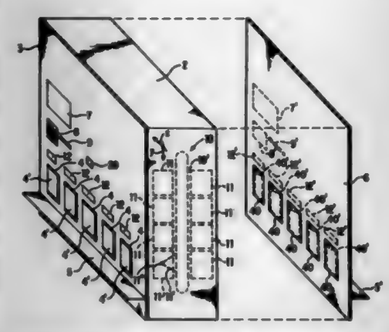
ing removal of said distal end of said flexible straw from said top and said aperture of said flexible straw is uncovered prior to use, and whereby opening the container in this manner creates no loose parts.



5,385,265
VENDING DEVICE

Hans Schlamp, Munich, Germany, assignor to Accumulata Verwaltungsgesellschaft mBH, Munich, Germany

Filed Jan. 29, 1993, Ser. No. 10,934
Claims priority, application Germany, Jan. 31, 1992, 4202801
Int. Cl.[6] G07F 11/00
U.S. Cl. 221—7 19 Claims

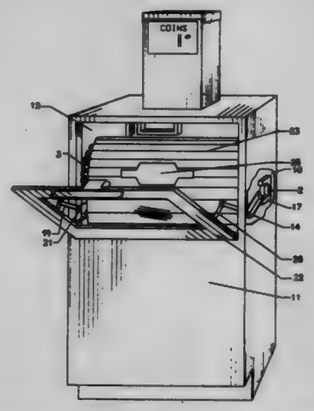


1. Vending system with a storage unit having storage and customer openings on respective storage and customer walls and receiving compartments that serve as receptacles for goods, comprising:
a computing unit with a memory,
a display unit connected to said computing unit, and
an input device connected to said computing unit,
wherein one compartment of the compartments is assigned to a merchant by the computing unit to load the goods into said one compartment after the merchant has entered an identifying merchant code into the input device,
wherein the computing unit makes the withdrawal of the goods from the one compartment loaded with goods by releasing the one compartment after a customer has entered an identification code into the input device,
wherein the storage unit further includes a transport device which, under control of the computing unit, transports the one compartment into the storage opening that can be locked, or removes the one compartment and transports the one compartment into the customer opening that can be locked, and the storage opening can be released by the computing unit in order to load the one compartment with the goods after the identifying merchant code of the merchant has been entered, and in order for the customer to withdraw the goods from the one compartment after the identification code of the customer has been entered,
wherein the customer accesses the customer opening in the customer wall positioned in a first room and the merchant accesses the storage opening in the storage wall positioned in a second room, wherein display element is assigned to each storage and customer's opening and controlled by the computing unit to display a released storage or customer opening.

5,385,266
ANTI-THEFT DEVICE FOR COIN OPERATED NEWSPAPER DISPENSER

Ronald Pate, 3700 Carlisle Close Apt. #883, Mobile, Ala. 36609

Filed Nov. 30, 1993, Ser. No. 159,383
Int. Cl.[6] G07F 11/00
U.S. Cl. 221—76 25 Claims

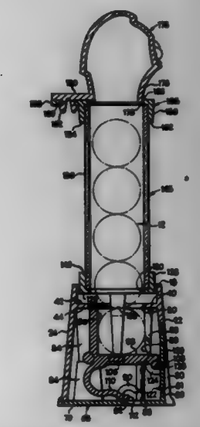


1. A newspaper vending machine for distributing papers comprising:
(a) a display means having a central axis for holding a plurality of papers and for allowing retrieval of at least one of the plurality of papers at a time, said display means being rotatable about its axis wherein the display means further comprises;
(i) a barrel means for holding a plurality of papers defining an internal space and having an axis located centrally to the internal space;
(ii) a plurality of platforms intersecting approximately at the axis separating the internal space of the barrel means into paper trays and wherein the axis of the barrel means further comprises a central spindle
(iii) a tube means for selectively holding papers and releasing papers within the central space;
(b) an actuator means for controlling the rotation of the display means so that a paper is displayed in response to an action by the user;
(c) a holding means for holding the display means rotatable about the axis and in contact with the actuator means;
and (d) further comprising a coin operated lock means for controlling access to the holding means and wherein the action of the user comprises the feeding, of at least one coin into the coin operated lock and wherein the tube means further comprises a tulle spindle having a tube axis and wherein the tube axis is disposed about the same centerline as the barrel axis so as to turn independently of the barrel axis.

5,385,267
PORTABLE DISPENSER FOR GENERALLY SPHERICAL CONFECTIONERIES

Sidney Diamond, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to Sidney Diamond/Imaginings 3, Inc., Niles, Ill.

Filed Oct. 18, 1993, Ser. No. 138,593
Int. Cl.[6] B65G 59/00
U.S. Cl. 221—248 28 Claims

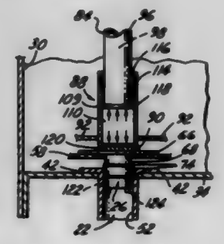


1. A portable dispenser for generally spherical confectioneries comprising in combination:
a reservoir capable of containing a number of generally spherical pieces of confectionery;
the reservoir having a top and a bottom:
an opening adjacent the top of the reservoir permitting passage of the confectionery pieces;
an opening adjacent the bottom of the reservoir permitting passage of the confectionery pieces;
a movable cap carried adjacent the top of the reservoir and being positionable in register with the opening adjacent the top of the reservoir to prohibit passage of the confectionery pieces through the opening adjacent the top of the reservoir;
a base member having a substantially hollow interior;
the base member having a bottom and a top;
an opening adjacent the top of the base member permitting passage of the confectionery pieces;
a cover member adjacent the bottom of the base member;
means for mounting the bottom of the reservoir adjacent the top of the base member with the opening adjacent the bottom of the reservoir in register with the opening adjacent the top of the base member to permit confectionery piece passage between the reservoir and the hollow interior of the base member;
the base member having a peripheral wall extending between the bottom and the top of the base member;
an opening in the peripheral wall of the base member permitting passage of the confectionery pieces for dispensing;
means for closing the opening in the peripheral wall of the base member mounted for movement between a closed position prohibiting the passage of the confectionery pieces through the opening in the peripheral wall of the base member and an open position permitting the passage of the confectionery pieces through the opening in the peripheral wall of the base member; the reservoir being movable with respect to the base;
means for biasing the reservoir away from the base; and
means for moving the means for closing the opening in the peripheral wall of the base member from the closed position to the open position in response to movement of the reservoir toward the base in opposition to the means for biasing the reservoir away from the base.

5,385,268
LINER OUTLET SEAL AND TOOL

Arthur E. LaFleur, and Lee LaFleur, both of Manistee, Mich., assignors to Custom Packaging Systems, Inc., Manistee, Mich.

Filed May 25, 1993, Ser. No. 67,702
Int. Cl.[6] B65D 35/56
U.S. Cl. 222—105 3 Claims



1. For use in a bulk container having sidewalls, rigid end walls and a discharge outlet tube, and wherein a bag can be received in and supported by the container, a bag comprising:
(a) a collapsible container liner of a flexible material having a bottom wall and a sidewall, and a discharge outlet opening in one of said walls;
(b) a self supporting rigid spout having a generally cylindrical discharge tube extending through said liner discharge outlet opening and being open at opposite ends thereof, one of said tube ends being disposed interiorly of said one liner wall and the other of said tube ends being disposed exteriorly of said one liner wall, said spout also having an external rigid flange adjacent said one interiorly disposed tube end extending radially outwardly in encircling relation to said tube, said spout being permanently affixed and sealed at said one end to said collapsible container liner by a circumferentially continuous seal formed between a surface of said flange facing toward said other tube end and an interior surface of said liner and encompassing said discharge outlet opening of said liner thereof, said tube being constructed and arranged to be telescopically forcibly driven into and received within the discharge outlet tube of the generally rigid bulk container;
(c) at least two discrete axially spaced apart circumferentially continuous and radially outwardly extending annular elastomeric flexible seals carried on said tube and dimensioned to have a sliding, sealing friction force fit engagement against a radially inner peripheral surface in the container discharge outlet tube when said spout tube is inserted into the container outlet to provide a fluid-tight seal between a radially outer peripheral surface of said tube and the container discharge outlet and to firmly releasably secure the spout to the discharge outlet to anchor the bag liner within the container, and
(d) said tube having at least two discrete circumferentially continuous grooves axially spaced apart in said outer peripheral surface thereof, each of said grooves individually receiving one of said at least two seals therein.

5,385,269

LIQUID CONTAINER SYSTEM

Simon J. Richter, Marietta, and Gary V. Paisley, Lilburn, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 803,241, Dec. 5, 1991, Pat. No. 5,242,085, which is a continuation-in-part of Ser. No. 628,819, Dec. 17, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 115,390

Int. Cl.[6] B65D *35/28, 83/00;* B67D *1/00*

U.S. Cl. 222—105 11 Claims



1. An article comprising:

(a) a liquid container including a wall, a container opening for filling and evacuating said container surrounded by a container neck, and a permanently open air vent extending partway through said wall;

(b) said wall including an outer PET layer and a delaminatable inner PET layer, such that said inner layer separate from and delaminates from said outer layer when suction is applied to said container opening and liquid is evacuated by suction from said container and air flows in through said permanently open air vent;

(c) said air vent extending completely through said outer layer and terminating at said inner layer, such that air flows through said permanently open air vent and in between said inner and outer PET layers as liquid is withdrawn by suction from said container;

(d) said container including a closure connected to said container neck and sealing said container opening closed;

(e) means for non-removably connecting said closure to said container; and

(f) said closure including a liquid opening therethrough, and means for closing said closure opening prior to connecting a coupling thereto, means for preventing said inner layer from sealing off said closure openings prior to complete liquid evacuation.

5,385,270

SELECTABLE RATIO DISPENSING APPARATUS

Ralph J. Catanese, 1169 E. 21st St., Brooklyn, N.Y. 11210, and Robert J. Tannenbaum, 13 Coventry Dr., Freehold, N.J. 07728

Filed Jun. 29, 1993, Ser. No. 84,844

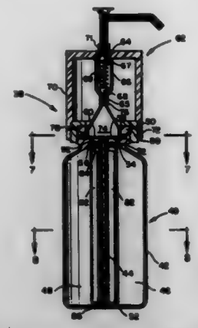
Int. Cl.[6] B67D *5/60*

U.S. Cl. 222—134 19 Claims

6. An apparatus for dispensing two flowable substances in a user selectable ratio comprising:

(a) a container having a generally continuous outer wall and an inner partition member separating the container into two generally equal chambers, each chamber for receiving a different flowable substance, the container having a generally closed end and a dispensing end, each chamber having an end generally open proximate the dispensing end of the container;

(b) a selector member disposed between the open ends of the chambers and the dispensing end of the container, the selector member having a single opening extending therethrough and being operable to adjustably restrict a flow of the flowable substances from each chamber through the



opening in the selector member to dispense a selected ratio of the flowable substances; and

(c) a pump having an inlet in fluid communication with the selector member opening and a dispensing outlet, whereby upon activation of the pump, the selected ratio of flowable substances is delivered from the chambers through the selector member and is dispensed from the dispensing outlet of the pump.

5,385,271

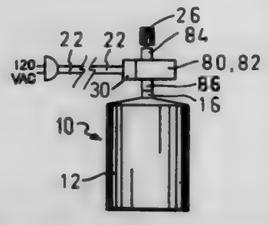
UTILITY-POWER OPERATED AEROSOL SPRAY CAN

Steven J. Bierend, 530 Parkview North, Santa Maria, Calif. 93455; Clyde L. Tichenor, 905 N. Oak Ave., Fillmore, Calif. 93015, and Irwin Ginsburgh, 24125 Clearbank La., Newhall, Calif. 91321

Filed Jul. 23, 1993, Ser. No. 95,851

Int. Cl.[6] B67B *5/00*

U.S. Cl. 222—153 20 Claims



1. A utility-power operated aerosol spray can comprising:

a) an aerosol spray can having a valve attachment port attached to its upper section,

b) a standard aerosol-can spray head,

c) an a–c power cord, and

d) a valve means having an upper fluid port within which is attached the spray head and a lower fluid port that is attached by an attachment means to the valve attachment port of said spray can, where said valve is operated by a–c utility power supplied through said power cord, so that when the power is not applied the valve is positioned to prevent the fluid in the can from being sprayed, and conversely, when the power is applied the valve is repositioned to allow the fluid in the can to be sprayed when the spray head is depressed.

5,385,272

BOTTOM DISPENSING DISPENSER

Michel M. Aoun, 156 Pleasant St., Attleboro, Mass. 02703

Filed Mar. 18, 1993, Ser. No. 33,531

Int. Cl.[6] B05B *9/04*

U.S. Cl. 222—185 3 Claims



1. A bottom dispensing free standing hand held dispenser for viscid liquids, such as lotions and shampoos, comprising:

a manually squeezable reservoir generally made of a resilient plastic to preclude deformation of its original shape after manipulation, and having a side wall converging upwardly to a curved top portion, and a bottom portion ending in an aperture for the passage of liquid therethrough;

a discharge element for said reservoir having a top and bottom portions, said top portion having annular attachment means for securing said discharge element to said reservoir aperture in transverse arrangement thereacross in a liquid tight seal, said bottom portion terminating in a downwardly and forewardly projecting tubing, terminating in an outlet aperture;

a dispensing valve disposed and adapted to open and close said discharge element, normally in a first closed position and movable away to a second dispensing position;

a stand for said reservoir to allow free standing of the dispenser, having walls aligned with and supporting said reservoir side wall, said stand having anchoring means to secure said reservoir to the stand, said stand also incorporating an opening for accommodating said discharge element outlet aperture;

a mechanical linkage disposed and adapted to transmit movement of said reservoir side wall to said dispensing valve, said mechanical linkage having pivot means mounted on said stand and comprising a top portion engaged with said reservoir side wall and a bottom portion coupled with said dispensing valve, said mechanical linkage is so disposed to constrain said dispensing valve to synchronouly move with said reservoir side wall, said dispensing valve being movable to said second dispensing position when said reservoir side wall is moved inward due to hand pressure acting on said reservoir side wall and said mechanical linkage top portion simultaneously, and to said first closed position urged by the rebounding movement of said reservoir side wall after relief of hand pressure, so that said dispensing valve closes only when said reservoir is back to its original shape.

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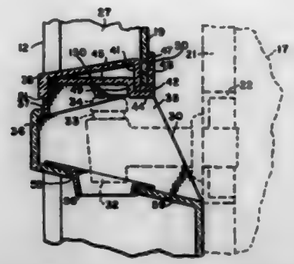
HOUSING FOR LIQUID DISPENSING APPARATUS

John W. Eddy, Riverside, and Kelley S. Needham, Yorba Linda, both of Calif., assignors to Sunroc Corporation, Media, Pa.

Filed Apr. 19, 1993, Ser. No. 47,916

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—185 8 Claims



1. A housing for a liquid dispenser, which dispenser has a frame and liquid dispensing means including at least one spigot carried by said frame, said spigot having a valve member moveable endwise for controlling the flow of liquid through the spigot, said housing comprising:

a panel having an opening therein for receiving at least a part of said spigot,

means for mounting said panel on the frame, and

presser means pivotally supportable by said panel so as to overlie said valve member whereby depression thereof actuates said valve member,

said presser means including a lever member adapted to reduce the amount of force required to move said valve member,

wherein said panel includes a compartment surrounding said opening and adapted to enclose at least a part of said at least one spigot, said compartment having an aperture therein to receive said presser means, and

wherein said presser means is formed of flexible material adapted to flex when it is depressed.

5,385,274

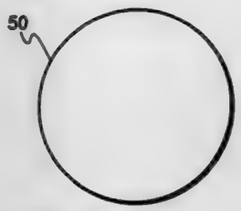
MORTAR COMPOSITION AND EXTRUSION GUN

Guy L. Twyman, 1228 Gaylord St., Denver, Colo. 80206

Filed Jul. 28, 1992, Ser. No. 920,760

Int. Cl.[6] B65D *88/54*

U.S. Cl. 222—327 19 Claims



1. A mortar extrusion gun, comprising:

a supply tube for holding a quantity of mortar to be dispensed, said supply tube including a mortar ejection aperture;

a spout including an outlet aperture for dispensing mortar;

means for, only upon at least partial filling of said supply tube with mortar, retaining and supporting said spout in fluid sealed relation with said supply tube upon insertion of said spout into said supply tube and at least partially through said mortar ejection aperture;

a packing disk dimensioned for insertion into an open end of said tube opposite said spout; and

means for axially translating said packing disk within said supply tube to dispense mortar from said outlet aperture of said spout.

5,385,275

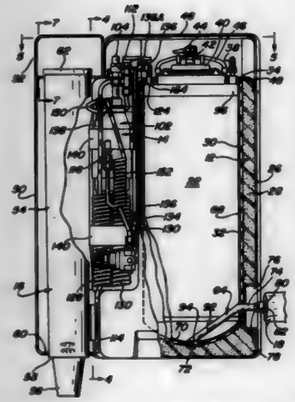
PORTABLE BEVERAGE DISPENSER WITH ANTI-FOAMING TANK

Robert L. Billet, North Wales, Pa., assignor to Robert Billet Promotions, Inc., Ambler, Pa.

Filed Oct. 27, 1993, Ser. No. 144,176

Int. Cl.[6] B67D *5/00*

U.S. Cl. 222—399 **10 Claims**



1. A portable beverage dispenser for use by a vendor, said dispenser comprising:

(a) a tank having an internal chamber for receiving a carbonated beverage to be dispensed, said chamber having a longitudinal axis and comprising a concave bottom wall having a concave recess at its nadir and centered on said axis, said concave recess having a substantially smaller radius of curvature and volumetric capacity than said bottom wall;

(b) conduit means extending into said chamber at an acute angle to said axis, said conduit means having a port centered on said axis and disposed immediately adjacent said concave recess, said conduit means being arranged to carry said carbonated beverage therethrough and out of said port into said chamber, whereupon said carbonated beverage enters said recess and quickly fills it with minimal foaming and so that the level of said carbonated beverage in said chamber is above said port, whereupon further filling of said chamber with said carbonated beverage is accomplished with minimal foaming; and

(c) pressurizing means for pressurizing said chamber with a gas above the level of said carbonated beverage in said chamber to dispense a portion of said carbonated beverage from said chamber.

5,385,276

LIQUID DISPENSER FOR PET BOTTLES

Lin Yen-Tang, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Apr. 18, 1994, Ser. No. 229,209

Int. Cl.[6] B65D *83/14*

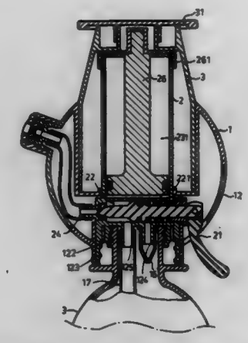
U.S. Cl. 222—400.8 **2 Claims**

1. A liquid dispenser for a PET bottle comprising:

an upper cover formed with an opening;

a lower cover engaged with said upper cover and having a slot, said lower cover further having a first downwardly depending neck adapted to engage a PET bottle and a second downwardly depending neck adapted to engage a larger PET bottle;

a cylinder inserted through the opening of said upper cover and fixedly mounted on said lower cover, said cylinder having an upper chamber, a recess communicated with said upper chamber and a nozzle communicated with said recess, said cylinder being formed at a bottom with a first tubular member adapted to engage a check valve and a second tubular member adapted to engage a pipe extending downwardly to a bottom of said PET bottle;



a piston disposed within the upper chamber of said cylinder and fixedly connected with a lid;

a spring-loaded slide member movably fitted within the recess of said cylinder and pivotally connected with a handle extending out of the slot of said lower cover; and

a mouth plate pivotally connected with said lower cover and having an outlet connected with the nozzle of said cylinder via a pipe.

5,385,277

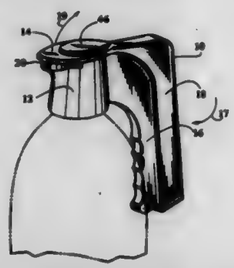
CARBONATED BEVERAGE BOTTLE HANDLE, POUR AND STORAGE DEVICE

Robert E. Drew, Kenilworth; David M. Drew, Glenview, and Steve Kraus, Chicago, all of Ill., assignors to Innovative Consumer Products, Inc., Highland Park, Ill.

Filed Jul. 14, 1993, Ser. No. 91,592

Int. Cl.[6] A47G *19/12*; B65D *23/10*

U.S. Cl. 222—474 **2 Claims**



1. In a closure and handle device comprising a bottle top portion, a flapper portion, a handle portion, and an actuator portion, the bottle top portion defining a spout and having female threads configured to be screwed to a screw-top bottle, the handle portion fixed to the bottle top portion, and having a grip lever to be gripped for holding a bottle to which the device is attached, the actuator portion mounted to the handle portion to be squeezable toward the handle portion, the flapper portion joined to the actuator portion and positioned over the spout to be lifted to and from the bottle top portion, to allow liquid to be poured from the spout of the bottle top portion,

a stopper means for sealing the top of the bottle to which the device is attached, the stopper means including a stopper attached to the flapper portion such that lifting of the flapper portion lifts the stopper, opening the top of the attached bottle,

the top of the bottle being annular and circular in cross section and defining a bottle top centerline, the stopper having a centerline which is substantially co-linear with the bottle top centerline,

the stopper including a dome and an annular outer wall, and defining an interior within the annular outer wall, the dome spanning across the interior of the outer wall and presenting a domed surface to the interior of a bottle to which the device is attached,

the dome being symmetrical about the stopper centerline, and the outer wall being symmetrical about the stopper centerline,

the outer wall also being annular about the stopper centerline, and the dome extending generally in a plane transverse to the stopper centerline,

the dome and all of the stopper being formed of material which is flexible in the range of pressures exerted by carbonated beverages,

the periphery of the dome being directly connected and integrated into the outer wall,

as a result of composition and configuration, the dome flexing under action of beverage pressure, itself exerting outward pressure on the stopper outer wall,

the outer wall having an exterior diameter having a clearance fit within the top of an attached bottle,

the outer wall, under action of outward pressure on the outer wall, exerted by the dome under pressure of a beverage, flexing and exerting outward pressure within the top of the attached bottle, thereby increasing the effectiveness of the stopper within the top of the beverage bottle.

5,385,278

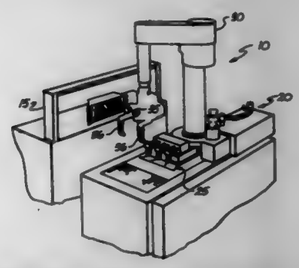
AUTOMATED TURNING AND PRESSING APPARATUS AND METHOD

Frank W. Paul, Seneca, S.C.; Shlomo Avigdor, Carmiel, Israel, and Kishore Subba-Rao, Hickory, N.C., assignors to Clemson University, Clemson, S.C.

Division of Ser. No. 972,028, Nov. 5, 1992. This application Oct. 28, 1993, Ser. No. 144,742

Int. Cl.[6] A41H *43/00*; D06C *15/00*

U.S. Cl. 223—2 **1 Claim**



1. An automated apparel component inverting and pressing workstation, said apparel components each comprising a plurality of superimposed plies seamed along all but one adjacent edge, said workstation comprising:

a) an apparatus for inverting apparel components, said apparatus including a support base and means for receiving an apparel component to be inverted, said means for receiving being adapted to receive said component so that at least two of said unseamed edges of said component are maintained in spaced apart relation;

said apparatus further including means for inverting said apparel component, said means for inverting comprising first and second turning units attached to said support base and adapted to invert the entire apparel component in one movement;

b) means for placing said apparel components on said inverting apparatus;

c) means for moving the apparel components after inverting to an automated pressing apparatus;

d) an apparatus for automated pressing said apparel components, said apparatus including a frame, said frame including a support table for supporting an apparel component thereon;

said apparatus for automated pressing further including a creaser blade mechanism movably mounted on said frame, said creaser blade mechanism adapted to move into said apparel component between two of said plurality of superimposed plies, and means for aligning the superimposed plies of said apparel component so that when said apparel component is pressed, a properly located crease will be formed.

5,385,279

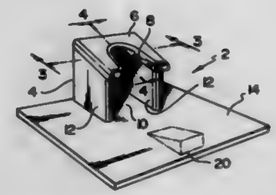
BOOT JACK

Tony Dawson, 24 Lansfield Way, Nepean, Ontario K2G 3V8, Canada

Filed Sep. 20, 1993, Ser. No. 123,251

Int. Cl.[6] A47G *25/80*

U.S. Cl. 223—114 **12 Claims**



1. A boot jack for gripping a boot to assist a user in removal of the user's foot therefrom, the jack comprising a frame and a plate secured to the frame, the plate having a U-shaped notch for receiving and gripping the boot above the user's heel, the improvement characterized in that the plate is supported on the frame in a downwardly inclined orientation forwardly, towards the notch the frame being supported on a horizontal base, and the plate being supported at a sufficient height above the base for permitting the user's toes and the front of the boot to press against the base as a fulcrum to facilitate removal of the user's foot by means of plantar flexion from the boot when the boot is gripped in the U-shaped notch.

5,385,280

ADJUSTABLE BICYCLE CLAMP SUPPORT

Mike Littlepage, 2809 Woodbridge Ct., Modesto, Calif. 95355; Orville L. Keller, 28331 E. Lemon Ave., Escalon, Calif. 95320, and Mary Conley, 6200 Snedigar Rd., Oakdale, Calif. 95361

Continuation of Ser. No. 59,064, May 10, 1993, abandoned. This application Jun. 22, 1994, Ser. No. 263,943

Int. Cl.[6] B60R *9/00*

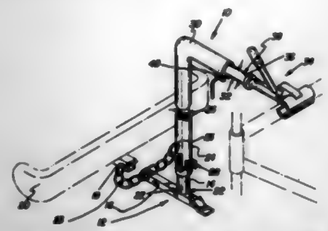
U.S. Cl. 224—42.45 R **9 Claims**

1. A new and improved adjustable bicycle clamp support apparatus, comprising:

base member which includes a vertically projecting base member portion and a horizontally projecting base member portion that projects from said vertically projecting base member portion, and that is adapted to connect to a fixed support, wherein said vertically projecting base member portion includes a cylindrical structure defining a first vertical axis;

a riser member, adjustably connected to said vertically projecting base member portion for height adjustment between said base member and said riser member, wherein said riser member includes a cylindrical structure defining a second vertical axis, said riser member being telescopically fitted to said vertically projecting base member portion such that said first axis is coaxial with respect to said second axis and said riser member is adapted to be both slidably and rotatably displaced relative to said vertically projecting base member portion and is both height-adjustable and rotation-adjustable with respect to said vertically projecting base member;

means for fixing a predetermined height adjustment and a predetermined rotation adjustment between said base member and said riser member;



a clamp-support member projecting horizontally from said riser member, wherein said clamp-support member includes a cylindrical structure defining a third axis;

a tubing clamp, rotatably connected to said clamp-support member, wherein said tubing clamp includes a cylindrical tubing clamp base, defining a fourth axis said tubing clamp base being telescopically fitted to said horizontally projecting clamp-support member portion such that said third axis is coaxial with respect to said fourth axis and said tubing clamp base is adapted to be both slidably and rotatably displaced relative to said horizontally projecting clamp-support member and is both length-adjustable and rotation-adjustable with respect to said clamp-support member; and

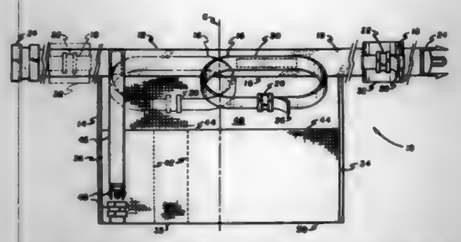
means for fixing a predetermined length adjustment and a predetermined angle of rotation between said clamp-support member and said tubing clamp base.

5,385,281

PAINTER'S UTILITY BELT

Charles L. Byrd, 260 Millhouse Rd., Bell Buckle, Tenn. 37020

Filed Apr. 25, 1994, Ser. No. 231,786
Int. Cl.[6] A45F *3/16*; A41D *13/04*
U.S. Cl. 224—148 17 Claims



1. A painter's utility belt providing for the carriage of painter's tools and articles and at least one paint can having a bail and opposite bail attachment lugs, said belt comprising:

a planar belt portion having an inner surface, an outer surface, an upper edge and an opposite lower edge, a transverse centerline, and opposite first and second ends including mating attachment means equidistantly spaced from said transverse centerline, with said outer surface having a first loop and a second loop secured thereto, said first loop and said second loop each being openable and adjustably closeable;

said belt portion further having an apron portion connected to and depending therefrom with said apron portion having an inner surface, an outer surface, and a bottom edge, with a plurality of pockets formed on said outer surface of said apron portion and said pockets each having an open upper edge providing access thereto, and;

said first loop and said second loop both being displaced to one side of said transverse centerline of said belt portion and being located intermediate said upper and lower edges and said apron portion being centered relative to said transverse centerline of said belt portion, whereby;

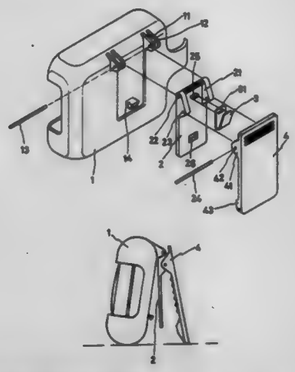
said painter's utility belt is adapted to be secured about the waist of a painter with said apron portion disposed to the front of the painter and said attachment means of said belt portion disposed to the back of the painter, said first loop is adapted to be secured about a paint can below the bail attachment lugs to provide support thereby for the can such that said can overlaps said apron portion and other painter's tools and articles are adapted to be placed within said pockets of said apron portion and said second loop to provide for ease of access thereto by the painter.

5,385,282

BEEPER HOLDER

Pao-Chin Chen, 4F, No. 292, Sec. 2, Chien Kuo S. Rd., Taipei, Taiwan, Prov. of China

Filed Feb. 28, 1994, Ser. No. 202,798
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—252 4 Claims



1. A beeper holder comprising:

a casing for holding the beeper having two unitary lugs and a unitary hook respectively raised from a back side thereof at different elevations, and a first pivot pin connected between said lugs;

a flat back plate, having two flat, triangular mounting flanges bilaterally and perpendicularly disposed near a top side thereof and turned about said first pivot pin, a second pivot pin connected between the mounting flanges of said back plate, a projecting strip disposed between said two mounting flanges and spaced below the second pivot pin on said mounting flanges, and a retaining hole equally spaced from said mounting flanges and said projecting strip and disposed near a bottom side thereof for receiving said hook of said casing;

a flat clamping plate having two flat, triangular mounting flanges bilaterally and perpendicularly disposed near a top side thereof and turned about said second pivot pin, and two retainer flanges bilaterally and perpendicularly disposed near a bottom side thereof; and

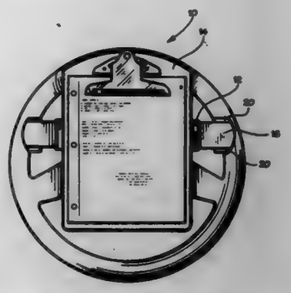
a substantially V-shaped spring plate having one end fastened to said projecting strip of said back plate and an opposite end stopped against said clamping plate causing the retainer flanges of said clamping plate moved to the bottom side of said back plate.

5,385,283

DEVICE ATTACHED TO A STEERING WHEEL FOR SUPPORTING OBJECTS THEREON

Yoshihiko Shioda, 4603 South Blvd., Charlotte, N.C. 28209

Filed Aug. 10, 1993, Ser. No. 104,669
Int. Cl.[6] B60R *11/00*
U.S. Cl. 224—276 12 Claims



1. A device attached to a steering wheel for supporting objects thereon, comprising:

a relatively rigid housing with opposite ends;

securing portions at opposite ends of said housing for attaching said housing to an inner rim of the steering wheel, said securing portions being telescoped within said housing; and

means for engaging attachment of said securing portions to the inner rim of the steering wheel.

5,385,284

VEHICLE ARTICLE CARRIER

John A. Bott, Grosse Pointe Shores, Mich., assignor to JAC Products, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 905,307, Jun. 29, 1992, abandoned, which is a continuation of Ser. No. 592,606, Oct. 4, 1990, Pat. No. 5,158,425, which is a continuation of Ser. No. 407,635, Sep. 15, 1989, abandoned, which is a continuation of Ser. No. 213,899, Jun. 30, 1988, Pat. No. 4,877,168, which is a continuation of Ser. No. 3,134, Jan. 14, 1987, Pat. No. 4,754,905, which is a continuation of Ser. No. 778,385, Sep. 20, 1985, Pat. No. 4,684,048. This application Dec. 14, 1992, Ser. No. 990,552
The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.
Int. Cl.[5] B60R *9/04*
U.S. Cl. 224—321 3 Claims

1. An article carrier adapted to be secured to a motor vehicle adjacent a generally horizontally extending outer body surface on the vehicle, comprising:

a pair of elongated support members adapted to be secured to the vehicle surface, each said support member having a bottom portion adapted to be disposed in generally facing relation toward the vehicle body outer surface and to rest generally flush against said surface, and an upper and outer side portion curving gradually upwardly and inwardly in diverging relation to said bottom portion and in converging relation to each other, an inner side portion, a locking portion extending outwardly adjacent said inner side portion and an elongated, generally vertically oriented channel extending longitudinally along said support member, said support member having a longitudinal centerline and said channel being offset from said longitudinal centerline of said support member;

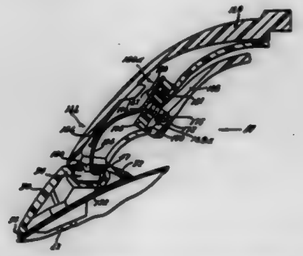
at least one cross member having two opposing end portions and disposed generally perpendicularly between said support members and extending above and generally parallel to said outer body surface of said vehicle; and

a pair of locking members secured to said opposing end portions of said cross member and disposed one on each said support member for locking said cross member at a selected position along each said support member;

each said locking member including:

a generally linearly extendable and retractable locking element projecting into engagement with its associated locking portion and engageable with its associated locking portion for releasably securing said cross member at a selected position along its associated support member;

an actuating element for urging said locking element generally linearly towards and away from said locking portion such that said locking element cooperates with said locking portion to thereby secure said cross member at said selected position;



an intermediate coupling element for coupling said actuating element with said locking element, said intermediate coupling element being operable to enable said locking element to be moved between locked and unlocked positions relative to said locking portion in response to manual movement of said actuating element;

said actuating element being associated at a first point with said intermediate coupling element and with a housing of said locking means;

said intermediate coupling element being pivotally associated at a second point spaced apart from said first point with said locking element such that manual movement of said actuating element relative to said housing of said locking member causes said intermediate coupling element to urge said locking element generally linearly towards and away from said locking portion; and

a guide portion which protrudes at least partially into said channel when said locking member is disposed on said support member to guide said locking member and said cross member longitudinally along said support member when longitudinally positioning said cross member and without first removing each said locking member from its associated support member.

5,385,285

VEHICLE ARTICLE CARRIER

John S. Cucheran, Lake Orion, and Jeffrey M. Aftanas, Sterling Heights, both of Mich., assignors to JAC Products, Inc., Ann Arbor, Mich.

Filed Dec. 7, 1993, Ser. No. 163,287
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—321 18 Claims

1. A vehicle article carrier for supporting objects above an external surface of a vehicle, said vehicle article carrier comprising:

at least one slat extending longitudinally along said exterior body surface;

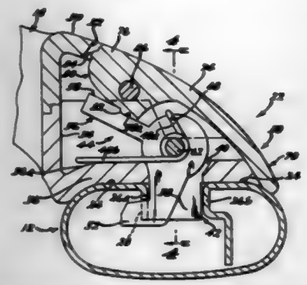
a cross bar adapted to be supported elevationally above said exterior body surface;

bracket means for supporting at least one end of said cross bar above said exterior body surface on said slat, said bracket means including:

a pivot rod;

an inner bottom wall;

locking means movable rotatably into a locked position for securing said bracket means fixedly relative to said slat, said locking means further being rotatable into an unlocked position wherein said bracket means can be moved slidably longitudinally along said slat to allow



adjustable positioning of said cross bar along the length of said slat, said locking means further including a longitudinally extending bore through which said pivot rod extends to enable rotational movement of said locking means;

actuating means for urging said locking means rotatably into said locked and said unlocked positions; and

a spring disposed over said pivot rod which engages said inner bottom wall and a portion of said locking means for biasing said locking means into said locked position such that said locking means is biased into a normally locked position.

5,385,286

ADJUSTABLE DEPTH CONTROL FOR USE WITH A FASTENER DRIVING TOOL

Paul L. Johnson, Jr., Fayetteville, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Jan. 7, 1994, Ser. No. 178,539

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—8 **8 Claims**

1. An adjustable depth control for use with a fastener driving tool having a trigger and a workpiece contacting element shiftable between an unactuated position where the element is not in contact with a workpiece and an actuated position where the element is pressed against the workpiece with sufficient force to allow the tool to operate when the trigger is activated, comprising:

a cylindrical coupling, having an upper section containing an axial bore and a lower section containing a threaded axial bore, said lower section having a bottom cam surface;

an upper rod, containing an annular groove at its lowermost end, which is rigidly affixed within said axial bore in said upper section of said coupling;

a lower rod, having an externally threaded upper portion which is affixed within said threaded axial bore of said lower section of said coupling;

locking means having an upper cam surface for engaging said cam surface of said coupling; a first spring for biasing said coupling against said locking means;

and a second spring for biasing said locking means against said coupling;

whereby when said coupling is shifted toward said first spring and out of engagement with said locking means,



said coupling may be rotated to shift said lower rod to a different position relative to said upper rod.

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SHEET-STAPLING DEVICE

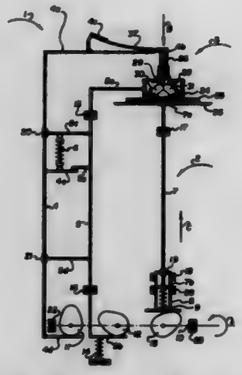
Peter Scheuten, Wolfschlugen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 14, 1994, Ser. No. 181,933

Claims priority, application Germany, Feb. 6, 1993, 4303503

Int. Cl.[6] B27F *7/19*

U.S. Cl. 227—155 **8 Claims**



1. Stapling device for stapling sheets arranged in stacks, said device comprising a driver unit for driving a staple into the sheet stack from one side and a clincher unit for clinching the ends of the staple on another side of the sheet stack, said clincher unit includes two similarly designed, pivotally mounted and oppositely movable bending elements which are arranged symmetrically with respect to said staple as well as in a longitudinal direction of said staple and having surfaces facing away from the staple ends which are engaged by a common actuator which is movable rectilinearly as well as perpendicularly to a plane of the sheet stack, the bending elements being pivotally mounted at first ends situated longitudinally outside the staple position and the actuator engaging second free ends of the bending elements which face each other and are arranged above the staple, characterized in that each of the surfaces (30*b*, 31*b*) of the bending elements (30, 31), which faces away from the staple ends, is engaged by a respective roller (28, 29) and in that said rollers (28, 29) are mounted for rotation on said common actuator which is a rectilinearly movable pushrod (26, 27), said stapling device further comprising a backstop (39) for engaging said rollers (28, 29) such that each of said rollers can be rotated in one direction only.

5,385,288

BONDING APPARATUS

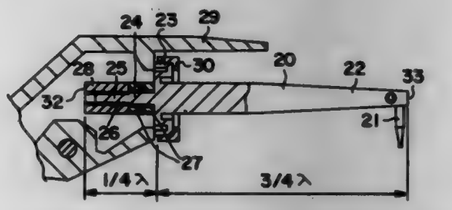
Ryuichi Kyomasu, Tokyo; Mitsuaki Sakakura, Saitama; Minoru Kawagishi, and Tadashi Akiike, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 172,041

Claims priority, application Japan, Dec. 24, 1992, 4-357386

Int. Cl.[6] B23K *1/06*

U.S. Cl. 228—1.1 **6 Claims**



1. A bonding apparatus including an ultrasonic horn which is mounted to a bonding arm of said bonding apparatus and provided with a bonding tool at one end of said ultrasonic horn and a vibration-generating source at another end of said ultrasonic horn, wherein said ultrasonic horn is further provided with a horn support which is used to mount said ultrasonic horn to said bonding arm, and respective values of vibrational wavelengths of said ultrasonic horn on both sides of said horn support are set so that the value on the bonding tool side of said horn support is 7 or greater relative to a value of 3 on the opposite side of the horn support from said bonding tool.

5,385,289

EMBEDDED FEATURES FOR REGISTRATION MEASUREMENT IN ELECTRONICS MANUFACTURING

Carl J. Bloch, Wayland; Philip E. McKinley, Westford, both of Mass., and Ramaswamy Ranganathan, Cupertino, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 8, 1994, Ser. No. 193,309

Int. Cl.[6] H05K *3/34*

U.S. Cl. 228—103 **22 Claims**



1. A method of fabricating a layered circuit structure, comprising the steps of:

forming a first layer having a first set of circuit-defining elements and a first row of alignment elements, said first-row alignment elements being of uniform width and pitch, said first layer being formed to have a marker adjacent to said first row of alignment elements to mark a predetermined location thereon;

forming a second layer upon said first layer, said second layer having a second set of circuit-defining elements to cooperate with said first set of circuit-defining elements to achieve a predetermined circuit configuration therebetween, said second set of circuit-defining elements being located on said second layer such that corresponding circuit-defining elements from each of said sets are aligned with each other when said second layer has been properly registered with respect to said first layer, said second layer also having a second row of alignment elements to cooperate with said first row of alignment elements to determine the relative alignment of said first and second layers, said second-row alignment elements being of uniform pitch and width, the width of said second-row alignment elements being at least as great as the width of the spaces between said first-row alignment elements, and the pitch of said second-row alignment elements being slightly different than that of said first-row alignment elements, said second row of alignment elements being formed with respect to said second set of circuit-defining elements such that when said second layer has been properly registered with respect to said first layer, said second row of alignment elements is aligned with said first row of alignment elements such that an interference pattern of spaces created thereby is centered on said marker; and

examining said interference pattern to determine the relative alignment of said first and second layers, precise alignment being indicated when said interference pattern of spaces is substantially centered on said marker, and misalignment being indicated otherwise, the amount of misalignment being equal to the product of a pitch difference and an offset number, said pitch difference being equal to the difference between the pitch of said first-row alignment elements and that of said second-row alignment elements, and said offset number being equal to the number of said first-row alignment elements by which the center of said interference pattern is separated from said marker.

5,385,290

SOLDERING MATERIAL AND PROCEDURE

Yinon Degani, Highland Park, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Nov. 24, 1993, Ser. No. 158,131

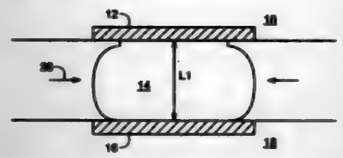
Int. Cl.[6] B23K *31/02*

U.S. Cl. 228—180.22 **5 Claims**



1. A method for soldering two bodies at at least one contact position using a volume of solder paste, V_{dep}, at said contact position wherein said solder paste comprises solder particles and a vehicle, said particles being 35 to 65 volume % of said paste characterized in that at least 34% but less than 100% of the total volume of said particles is made up of small particles with the remainder being big particles wherein said big particles are solder particles having an effective diameter within 20% of a diameter, D_{big}, in the range $h > D_{big} > 60\%$ h where h is the height of the deposited volume V_{dep}.

5,385,291
METHOD EMPLOYING AN ELEVATING OF ATMOSPHERIC PRESSURE DURING THE HEATING AND/OR COOLING PHASES OF BALL GRID ARRAY (BGA) SOLDERING OF AN IC DEVICE TO A PCB
Richard W. Latta, Boise, Id., assignor to Micron Custom Manufacturing Services, Inc., Boise, Id.
Filed Jan. 10, 1994, Ser. No. 179,396
Int. Cl.[6] H05K 3/34
U.S. Cl. 228—180.22 4 Claims



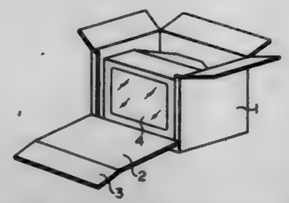
1. A method of bonding Ball Grid Array (BGA) soldered ICs, comprising the steps of:
a) providing a BGA soldered IC;
b) providing an appropriate PCB;
c) pressing the IC, at an appropriate location, onto the PCB;
d) heating the PCB and IC arrangement;
e) applying an atmospheric pressure above standard atmospheric pressure;
f) pulling the IC away from the PCB a distance greater than 0.025 inches; and
g) solidifying the solder bond between the IC and PCB.

5,385,292
PIZZA BOX HAVING MOISTURE ABSORBENT MATERIAL
Giuseppe Labianca, Brewster; Richard L. Rosenberg, White Plains, and Barry J. Jacobson, New York, all of N.Y., assignors to Me & The Boys Pizza Emporium Inc., Yew York, N.Y.
Filed May 20, 1993, Ser. No. 65,240
Int. Cl.[6] B65D 81/26
U.S. Cl. 229—120 6 Claims



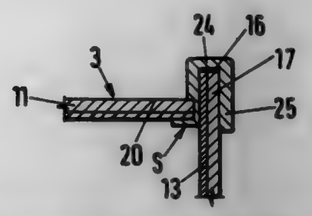
1. In a package for transporting heated carry-out food that releases steam and has crispy portions, said package comprising a box having side walls, a bottom panel and a closure panel, said side walls being attached to said bottom panel along the periphery of said bottom panel, said bottom panel and said side walls defining an interior compartment, the improvement comprising:
a support member made of wood in sheet form and positioned within said interior compartment for supporting said heated food, said support member having both a flat upper surface which directly supports said heated food, and a lower surface, said support member being elevated above said bottom panel and being substantially equal to the size of said bottom panel;
means separate from said support member for elevating said support member above said bottom panel, said elevating means creating a space defined by and located between said bottom panel and said lower surface of said support member; and
at least one opening located within said bottom panel;
said wood being sufficiently naturally steam permeable such that the wooden sheet support member absorbs steam released from the hot food and allows the steam to permeate through the support member and pass to said space below the support member and away from the heated food where it can condense on said lower surface of said support member which is cooler than said upper surface;
said at least one opening in said bottom panel being sufficient to allow evaporation of excess condensed moisture that has passed through the wooden support member to said space below.

5,385,293
CORRUGATED FIBERBOARD BOX FOR PACKAGING LARGE TELEVISION RECEIVER
Narumi Hirota, Ibaraki; Toshiharu Hikida, Kyoto; Ryuzo Kurita, Osaka, and Toshihide Inada, Ibaragi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
PCT No. PCT/JP91/01169, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO92/04240, PCT Pub. Date Mar. 19, 1992
Continuation of Ser. No. 847,997, Apr. 21, 1992, abandoned. This PCT application Sep. 2, 1991, Ser. No. 80,095
Claims priority, application Japan, Sep. 3, 1990, 2-230587
Int. Cl.[6] B65D 88/58
U.S. Cl. 229—122 5 Claims



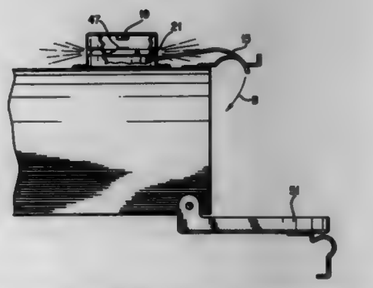
1. A box for packaging a product, said box being generally in the form of a rectangular parallelepiped, said box comprising:
a top wall, a bottom wall and side walls;
a pair of longitudinally extending flaps forming lateral parts of a first one of said side walls and integrally connected to second and third ones of the side walls through first and second continuous seamless edge lines, a width of said flaps being so determined as to allow said product packaged in the box to be taken out from the box through a space between said flaps; and
an openable and closable wall forming a part of said first one of said side walls and closing said space between said flaps, said openable and closable wall also forming a part of said top wall;
said openable and closable wall having a first foldable line which constitutes an edge line connecting said first one of said side walls and said part of said top wall, and a second foldable line extending substantially parallel to a third continuous seamless edge line through which said first one of said side walls and said bottom wall are integrally connected, said second foldable line being spaced a small distance from said third continuous seamless edge line, said openable and closable wall having a portion located between said second foldable line and said third continuous seamless edge line and secured to said flaps.

5,385,294
LIQUID PACKAGE WITH ASEPTIC PROPERTIES AND A METHOD OF PRODUCING SUCH A PACKAGE
Par Andersson, Lutry, and Werner Raetschi, Villaz-St-Pierre, both of Switzerland, assignors to Tetra Pak Holdings S.A., Pully, Switzerland
Continuation of Ser. No. 787,815, Nov. 4, 1991, abandoned, which is a division of Ser. No. 458,139, Dec. 28, 1989, Pat. No. 5,074,099. This application Dec. 16, 1993, Ser. No. 168,929
Claims priority, application Switzerland, Feb. 22, 1989, 629/89
Int. Cl.[6] B65D 43/04
U.S. Cl. 229—125.17 6 Claims



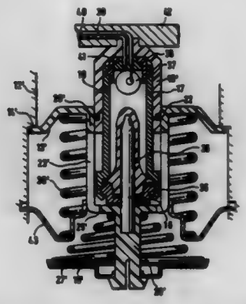
1. A package for liquids having side walls (5) connected to form a tube (1) via a longitudinal sealing seam (4), a substantially flat bottom (3) and a top (2) comprising a pourer orifice (6), the tube (1) comprising a metal interlining connected to a carrier material, the bottom (3) having at least one partial edge (15) welded to the tube (1) via a cross-sectionally at least substantially L-shaped synthetic plastic rim (21) so that a flat main area (14) is at a distance (A) from an outer end edge (16) of the tube (1), characterized in that the rim (21) is injection molded to the bottom (3) and serves as a permanent connecting piece between the tube (1) and the bottom (3), which bottom (3) comprises, separate from the tube (1), a main area (14) which consists of paper which is coated with synthetic plastic material (12) and is provided with a metal interlining (13), and further comprises plastic reinforcing webs (29) attached thereto, the reinforcing webs (29) being integrally formed with the rim (21).

5,385,295
SIGNALLING DEVICE
Rhett McNair, Rte. 13, Box 398, Lake City, Fla. 32055
Filed Sep. 21, 1993, Ser. No. 124,037
Int. Cl.[6] B65D 91/00
U.S. Cl. 232—35 18 Claims



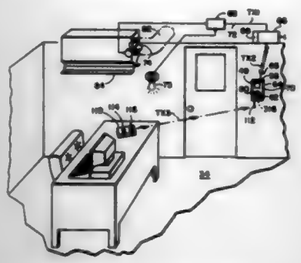
1. A signalling device for use with a mailbox including a swingable door, comprising:
a housing including a light transparent top wall, and a sidewall having a light transparent portion and opaque, portions adjacent thereto;
a movable light fluorescing material enclosed within said housing; and
activating means for moving said light fluorescing material to an exteriorly observable position within said housing adjacent to said light transparent portion in response to the door being opened so as to signal that mail has been deposited in the mailbox.

5,385,296
ELECTRICALLY HEATABLE THERMOSTATIC VALVE FOR A COOLANT CIRCULATING SYSTEM OF AN INTERNAL-COMBUSTION ENGINE
Manfred Kurz, Ditzingen, and Roland Saur, Stuttgart, both of Germany, assignors to Wilhelm & Duester, Stuttgart, Germany
Filed Oct. 8, 1993, Ser. No. 133,368
Claims priority, application Germany, Oct. 8, 1992, 4233913
Int. Cl.[6] F01P 7/16
U.S. Cl. 236—34.5 11 Claims



1. An electrically heatable thermostatic valve for a coolant circulating system of an internal-combustion engine, comprising:
a valve gear housing with stationary valve counterparts;
a main valve which is closed when coolant in the system is cold, and has a movable valve element cooperating with one of the stationary valve counterparts;
a bypass valve which is open when coolant in the system is cold, and has a valve element cooperating with another of the stationary counterparts;
a thermostatic working element which has a housing which is provided with an electric heating element and which contains an expansion material having a volume that is a function of the temperature of the expansion material and a working piston whose position corresponds to the volume of the expansion material;
wherein the housing of said working element is stationarily arranged in the valve gear housing and the working piston of said working element is connected with the valve element of the bypass valve and the valve element of the main valve;
wherein the valve element of the main valve surrounds the housing of the working element to thereby form a sealing point with said housing;
further comprising an open cage connecting the valve element of the main valve to the working piston of the thermostatic working element, said open cage exposing the housing of the working element to a stream of coolant passing through the bypass valve when coolant in the system is cold.

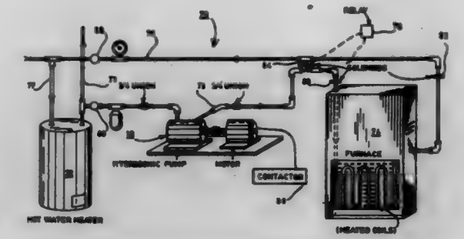
5,385,297
PERSONAL COMFORT SYSTEM
Alan D. Reiu, Shoreview, Minn., and David M. Foye, La Crosse, Wis., assignors to American Standard Inc., Piscataway, N.J.
Division of Ser. No. 770,055, Oct. 1, 1991. This application May 21, 1993, Ser. No. 64,387
Int. Cl.[6] F24F *7/00*
U.S. Cl. 236—49.3 **31 Claims**



1. A hierarchical control system comprising:
a first central receiver;
a first communications medium operably connecting the first central receiver to at least one controller;
a controller operably connected to the first central receiver by the first communications medium;
first means for sensing conditions;
a second communication medium;
means for transmitting the sensed conditions from the first sensing means to the first central receiver via the second communications medium, the first central receiver including means for receiving transmissions on the second communications medium and means for retransmitting the transmissions on the first communications medium;
a third communications medium;
third means for sensing conditions, the third means including means for transmitting the sensed conditions on the third communications medium;
wherein the first sensing means includes means for receiving sensed conditions transmitted on the third communications medium, and means for retransmitting transmissions from the third communications medium on the second transmissions medium.

5,385,298
APPARATUS FOR HEATING FLUIDS
James L. Griggs, Cartersville, Ga., assignor to Hydro Dynamics, Inc., Cartersville, Calif.
Continuation-in-part of Ser. No. 682,003, Apr. 8, 1991, Pat. No. 5,188,090. This application Feb. 10, 1993, Ser. No. 15,809
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[6] F24C *9/00*
U.S. Cl. 237—1 R **16 Claims**

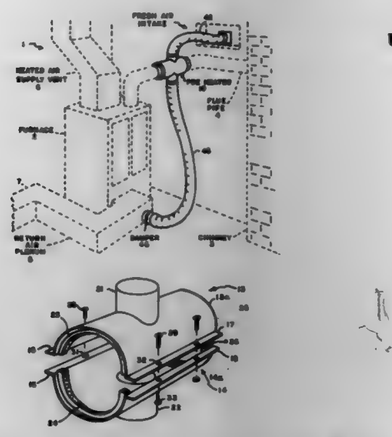
1. A system for the heating of a fluid, said system comprising:
a storage vessel for receiving heated fluid, said vessel having an inlet and an outlet;
a mechanical conversion device for heating fluid, said conversion device having
a) a housing defining a cylindrical cavity, said cavity formed by a body having opposite ends and a cylindrical inner wall and a pair of substantially flat end plates abutting and releasibly sealed to said opposite ends of said body with fasteners, each of said end plates provided with centrally disposed openings, said end plates defining interior and exterior surfaces,
b) seal members mounted in said openings of said end plates,
c) a bearing assembly releasably mounted on said exterior surface of said end plates and aligned with said openings,
d) a shaft passing through an axis of said cavity and journalled in said bearing assemblies and seal members, said shaft connected to motive means to rotate said shaft,
e) a rotor mounted on said shaft within said cavity so as to rotate with said shaft, said rotor dimensioned to be closely received within said inner wall of said body and said interior surfaces of said end plates, said rotor having a surface toward said side wall provided with uniformly-spaced inwardly-directed bores oriented at a selected angle to said surface, said bores producing turbulence heating of fluid within a space between said



rotor and an inner surface of said cavity during rotation of said rotor,
f) an inlet port for the introduction of fluid to be heated into said space between said rotor and said inner surface of said cavity, and
g) an outlet port for the removal of heated fluid from said space between said rotor and said inner surface of said cavity;
a first fluid connection connected to said inlet port of said conversion device for introduction of fluid to be heated into said conversion device; and
a second fluid connection connected between said outlet port of said conversion device and said input of said storage vessel.

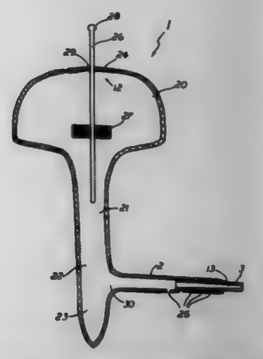
5,385,299
FRESH AIR INTAKE SYSTEM FOR A DWELLING HAVING CENTRAL FORCED WARM AIR HEATING
Michael E. Zawada, 593 Peakham Rd., Sudbury, Mass. 01776
Filed Mar. 2, 1992, Ser. No. 844,789
Int. Cl.[6] F24B *7/00, 7/02, 7/04*
U.S. Cl. 237—55 **10 Claims**

1. In a dwelling forced warm air type central heating system in which the source of heat is the hot gas products of combustion in a furnace and that hot gas is carried from the furnace by a flue pipe to the ambient atmosphere outside the dwelling while the warm air is carried by ducts between the furnace and the rooms of the dwelling, a structure for attachment to said flue pipe and said ducts for improving the quality of air in the dwelling including a flue gas to air heat exchanger attached to said furnace flue pipe, a relatively low temperature fresh air passage through said heat exchanger having an input and an output, an input fresh air flow duct connecting said input to the outside ambient air and an output fresh air flow duct connecting said output to said central heating forced warm air system, so that outside ambient fresh air flowing through said heat exchanger is entrained with said forced warm air system and so flows into and mixes with said warm air for distribution throughout said dwelling by said forced warm air heating system, the improvement comprising,
(a) said flue gas to air heat exchanger is provided by an enclosure that is formed in two parts so that it fits around and encloses the outside surface of a section of said furnace flue pipe,
(b) said enclosure defines an annular space between the outside surface of said flue pipe section and said enclosure,
(c) said annular space forms said heat exchanger low temperature air passage and
(d) a resilient air sealing material of substantially the same cross-section as said annular space is provided for closing said annular space between the outside of said furnace flue



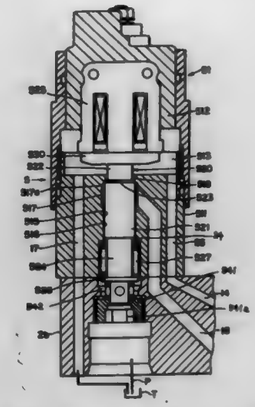
pipe section and said heat exchanger enclosure and spaces said enclosure from said flue pipe section, evenly around said flue pipe section,
(e) whereby said ambient fresh air flow into said heat exchanger leaves said heat exchanger through said output thereof.

5,385,300
PLANT WATERING DEVICE
Earnest Sims, Jr., 46 Brunswick Rd., Depew, N.Y. 14043
Filed Jul. 27, 1992, Ser. No. 919,870
Int. Cl.[6] B05B *1/20*
U.S. Cl. 239—74 **18 Claims**



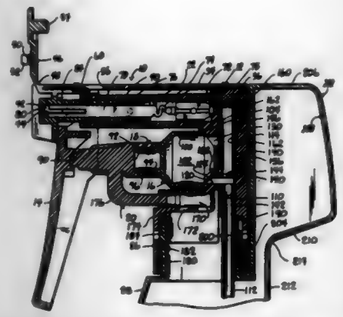
14. A remote plant feeder member comprising a fluid transmission inlet and a plant feeder fluid outlet; said fluid transmission inlet having an interior surface configured to engage the exterior surface of an end portion of a tube; said plant feeder member comprising an interior opening in fluid communication with said plant feeder outlet, which is arranged such that axial insertion of said end portion of said tube into said fluid transmission inlet engages said opening, and the volume of fluid flowing through said plant feeder outlet from said opening varies with the distance said end portion of said tube is axially inserted into said fluid transmission inlet.

5,385,301
FUEL INJECTOR WITH SPILL OFF FOR TERMINATING INJECTION
Atsushi Ueda, Higashimatsuyama, Japan, assignor to Zexel Corporation, Tokyo, Japan
Filed Oct. 21, 1993, Ser. No. 139,154
Claims priority, application Japan, Oct. 28, 1992, 4-311156
Int. Cl.[6] F02M *55/02, 57/02*
U.S. Cl. 239—88 **7 Claims**



1. A fuel injector comprising a fuel pressurization section having a fuel pressure chamber and a pump plunger disposed in the fuel pressure chamber for pressurizing fuel supplied from fuel pump means, a fuel injection section for spraying fuel pressurized by the fuel pressurization section, and a solenoid valve section which is connected with the fuel pump means via fuel passage means for fuel supply and return and which at a prescribed time during the period that the pump plunger pressurizes fuel in the fuel pressure chamber spills pressurized fuel in the fuel pressure chamber to the fuel passage means for terminating fuel spraying by the fuel injection section, the solenoid valve section comprising:
a housing,
a solenoid section attached to the housing,
an armature chamber for housing an armature cooperative with the solenoid section, said armature chamber communicating with the fuel passage means,
a guide hole formed in communication with the armature chamber,
a valve rod having one end connected with the armature, said valve rod being formed with a valve head tapered to increase in diameter with increasing distance from the armature and being guided by the guide hole for reciprocal motion relative to the armature chamber,
a fuel reservoir formed by enlarging a portion of the guide hole so as to surround the valve head,
a passage external to the valve rod for communicating the fuel reservoir with the armature chamber,
communicating means for communicating the fuel reservoir with the fuel pressure chamber,
a tapered portion for seating an increased diameter portion of the valve head when the solenoid is energized, said tapered portion being formed in a wall of the fuel reservoir to decrease in diameter in the direction of the armature chamber and to face inward toward the reservoir such that movement of the valve rod away from the armature chamber causes the valve head to move into the fuel reservoir away from the tapered portion, and
spring means for urging the valve head away from the tapered portion.

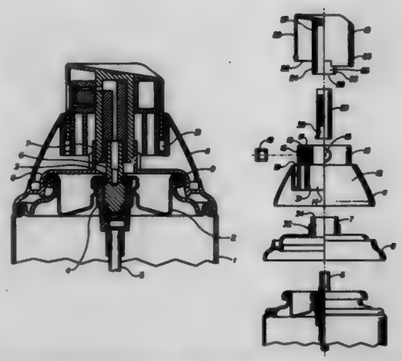
5,385,302
LOW COST TRIGGER SPRAYER
Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico, St. Louis, Mo.
Continuation-in-part of Ser. No. 603,281, Oct. 25, 1990, Pat. No. 5,234,166. This application Oct. 21, 1992, Ser. No. 964,158
Int. Cl.[6] B05B *9/043*
U.S. Cl. 239—333 17 Claims



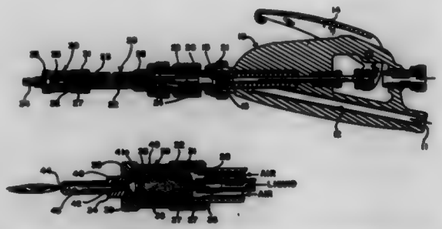
1. A trigger sprayer assembly for dispensing liquid from a container, said assembly comprising:
a housing having a liquid passage therein;
a nozzle at the front end of said passage, said nozzle having an orifice through which liquid is dispensed;
a trigger secured to said housing for actuation thereof relative to said housing;
a pump element secured to said housing and which is operable in response to actuation of said trigger for pumping liquid from the container and through said liquid passage and said orifice;
a connector portion secured to the housing for connecting the housing to the container;
said housing having front and rear sections with the rear sections having a saddle portion for ergonomically receiving the web of the hand between the thumb and first finger upon operation of the assembly, the rear section of the housing being connected to the front section of the housing by a hinge for pivotal movement from an open position for molding the housing to a closed position for operation of the trigger sprayer assembly; and
means for locking the rear section of the housing in the closed position; the entire housing, including the rear section and hinge, being integrally formed.

5,385,303
ADJUSTABLE AEROSOL SPRAY PACKAGE
Peter G. Gosselin, Cincinnati, Ohio, and William D. Benge, Covington, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 12, 1993, Ser. No. 135,236
Int. Cl.[6] B05B *1/16*; B65D *83/28*
U.S. Cl. 239—394 3 Claims

1. An aerosol spray package capable of being manipulated by a user in order to obtain a spray having specific characteristics, said package comprising:
a) a sealable container capable of being pressurized with a gas, said container having an interior;
b) a valve cup attached to said container, said valve cup having a central aperture;
c) an aerosol valve extending from said interior of said container through said central aperture of said valve cup, said aerosol valve having a top and a valve stem extending from said top of said aerosol valve;
d) an adapter comprising a rigid tubular piece affixed to said container, said rigid tubular piece extending upward from said valve cup, so that said valve stem resides within said rigid tubular piece;
e) a sprays selector fitting over said rigid tubular piece and in communication with said valve cup, said spray selector comprising a means for selecting an individual spray nozzle from a plurality of spray nozzles, wherein each of said nozzles is capable of producing a unique spray pattern and particle size, said spray selector also comprising a means for adjusting a flow rate from said aerosol valve to said individual spray nozzle, said spray selector also being in communication with a top of said container, said spray selector comprising a lower portion and an upper portion joined together to move in unison relative to each other, and a vertical opening extending completely through a central axis of said spray selector; and
f) an actuation means for completely opening and closing said aerosol valve, said actuation means providing fluid communication between said individual spray nozzle and said container.

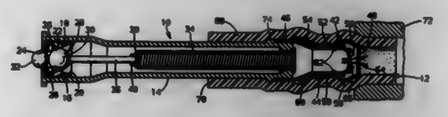


5,385,304
AIR ASSISTED ATOMIZING SPRAY NOZZLE
James Haruch, Naperville, Ill., assignor to Spraying Systems Co., Wheaton, Ill.
Continuation of Ser. No. 871,833, Apr. 20, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,889
Int. Cl.[6] B05B *7/04*
U.S. Cl. 239—431 19 Claims



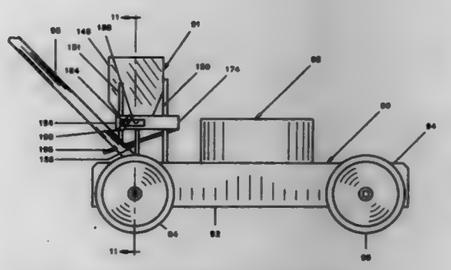
1. An air assisted atomizing spray nozzle assembly comprising
(a) a housing formed with a pressurized air inlet and a pressurized liquid inlet;
(b) a spray tip at a discharge end of said nozzle assembly;
(c) an atomizing member;
(d) means supporting said atomizing member in said housing upstream of said spray tip; and
(e) said atomizing member defining (i) a mixing chamber having a longitudinal axis, (ii) a liquid injection port in axial communication with said mixing chamber for injecting a liquid stream axially into said mixing chamber, said mixing chamber being formed with a cylindrical portion having a diameter which is at least six times greater than the diameter of said liquid injection port and a tapered portion communicating between a down-stream end of said injection port and said cylindrical portion, and (iii) a plurality of air injection ports in radial communication through a cylindrical side wall of said mixing chamber cylindrical portion for injecting a plurality of air streams into said mixing chamber in substantially perpendicular relation to said liquid stream injected into said chamber for imparting shearing action on the liquid stream, turbulence and atomization of said liquid into fine droplets prior to discharge through said spray tip such that a fine liquid droplet spray pattern may be discharged from said spray tip without subsequent further pressurized air atomization.

5,385,305
FUEL INJECTION NOZZLE
Jeffrey A. Rock, West Henrietta, and Corrine A. Volo, Webster, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 17, 1993, Ser. No. 168,315
Int. Cl.[6] F02M *55/00*
U.S. Cl. 239—533.9 2 Claims



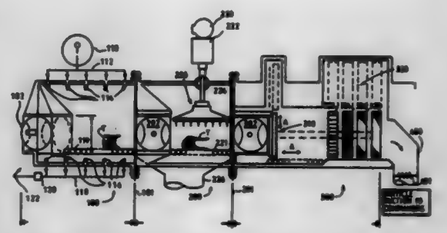
1. A fuel injection nozzle comprising a tubular body having inlet and outlet means, said inlet means adapted to receive fuel from a source, fuel restriction means disposed upstream of said outlet in communication with said inlet, said restriction means comprising a first minimum flow orifice, a second maximum flow orifice and a third variable flow orifice, said first orifice operable to define a minimum fuel flow into said tubular body, said second orifice operable to define a maximum fuel flow into said tubular body and said third, variable orifice adjustable to define a desired fuel flow into said tubular body between said minimum flow rate and said maximum flow rate.

5,385,306
FERTILIZER SPREADER ATTACHABLE TO A LAWN MOWER
Joseph Cervenka, 1528 Pine Tree Ct., Lisle, Ill. 60532
Continuation-in-part of Ser. No. 75,308, Jun. 14, 1993, abandoned. This application Dec. 10, 1993, Ser. No. 164,562
Int. Cl.[6] A01C *17/00*, *19/02*
U.S. Cl. 239—663 8 Claims



7. A lawn mower comprising in combination:
a housing;
a motor;
a plurality of wheels attached to said housing for transporting said lawn mower across a surface;
means for drivingly connecting said motor to a cutting blade,
a first shaft journalled for rotation in said housing,
means for engaging said first shaft to said motor;
a fertilizer spreader removably attached to said housing,
first drive means mounted to said first shaft for driving a second shaft in said fertilizer spreader, wherein the position at which said first drive means is mounted to said first shaft is in said housing; and
a one-way clutch for directing rotational movement to said second shaft when said first shaft is rotated in a first direction.

5,385,307
CRYOGENIC TIRE RECYCLING SYSTEM
Esam T. Azar, 5523 Orr Rd., Monroe, N.C. 28110
Filed Dec. 27, 1993, Ser. No. 173,124
Int. Cl.[6] B02C *18/26*, *23/18*, *23/40*, *21/00*
U.S. Cl. 241—41 10 Claims



1. An apparatus for reclaiming the rubber, fiber, and steel materials of a discarded tire carcass comprising;
means for cutting the tire carcass into a number of segments of equal volume;
means for freezing said segments to the point of embrittlement;
a robot arm capable of rotation, tranalation, and reciprocation;
a head on said robot arm for fracturing the rubber in said embrittled tire segments to produce said fractured rubber particles;
means for separating the fiber and steel from said rubber particles in said composite;
press means for sizing said rubber particles to a uniform size; and
suction means for transporting said uniform size particles to containers.

5,385,308
CHIPPER-SHREDDER
Thomas W. Gearing, Wauwatosa; Andrew A. Haver, West Bend, and Gerald M. Holnacki, Germantown, all of Wis., assignors to H. G. Products, Inc., Wauwatosa, Wis.
Filed Jul. 23, 1993, Ser. No. 97,174
Int. Cl.[6] B02C *19/18*, *18/24*
U.S. Cl. 241—101.7 13 Claims

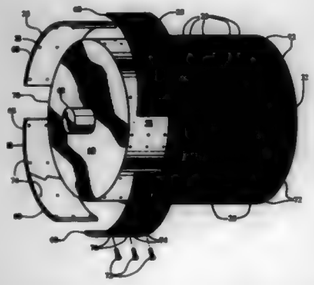
12. In a machine for comminuting lawn refuse and including (a) a grinding chamber having an inlet port, and (b) a refuse-receiving hopper with an upper rim, the improvement comprising:
a vacuum adapter attached to the hopper and positioned within the hopper intermediate the upper rim and the inlet port;
a collar on the adapter for removably receiving a vacuum hose in air flow communication with the hopper;

a comminuting and fan assembly having a chipper plate with at least one chipping aperture therethrough;
a chipping knife mounted on the plate adjacent to the aperture;
and wherein:



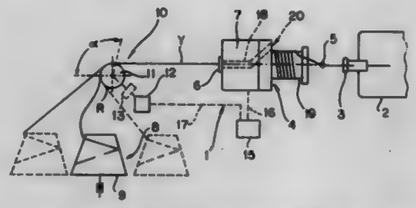
the chipper plate is generally planar and has generally parallel first and second surfaces;
the chipping knife is received in a pocket upset-formed in the first surface; and
the second surface bulges outward away from the first surface.

5,385,309
SEGMENTED WOOD CHIP CRACKING ROLL
Joseph B. Bielagus, Tualatin, Oreg., assignor to Beloit Technologies, Inc., Wilmington, Del.
Filed Nov. 16, 1993, Ser. No. 153,251
Int. Cl.[6] B02C *1/08*; B27M *1/02*
U.S. Cl. 241—235 **5 Claims**



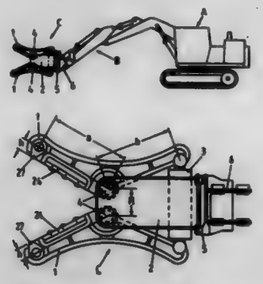
1. An apparatus for destructuring wood chips comprising:
a frame;
a first roll mounted to the frame for rotation about a first axis, wherein the first roll has an inner shell, and a plurality of semicylindrical segments having an outer contoured surface are connected to the inner shell, and wherein a resilient material is positioned between the segments and the inner shell; and
a second roll mounted to the frame for rotation about an axis parallel to the first axis, wherein the first and second rolls are spaced from each other a pre-selected distance for applying compressive force to wood chips passing therebetween, and wherein the first roll contoured roll surface is formed by a matrix of outwardly extending projections which define an aggressively contoured roll surface, causing the chips to be cracked primarily in a direction parallel to the chip fibers as compressive force is applied thereto when the chips pass between the first and second rolls.

5,385,310
THREAD FEED DEVICE
Lars H. G. Tholander, Ulricehamn, Sweden, assignor to Iro AB, Ulricehamn, Sweden
Filed Jun. 28, 1991, Ser. No. 721,430
Claims priority, application Sweden, Dec. 31, 1988, 8900006
Int. Cl.[6] B65H *51/20*
U.S. Cl. 242—47.01 **18 Claims**



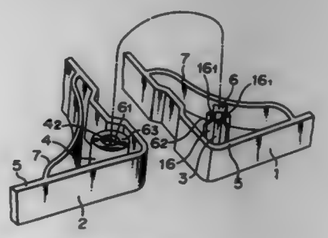
1. In a thread feeding system for a textile machine, such as an airjet weaving machine, the feeding system including a thread storage and feed device positioned between a thread supply device and a picking device of the textile machine, and an assistant device positioned in the thread path extending from the thread supply device to the thread storage and feed device, comprising the improvement wherein the assistant device includes a drivable slip friction roller having a peripheral surface on which thread running from the thread supply device to the thread storage and feed device is deflected and conveyed by a friction force directed circumferentially along said peripheral surface with a modulable slip-effect.

5,385,311
BREAKING EQUIPMENT
Sumio Morikawa, Sakai; Toshiji Ohga, Moriguchi; Hiroyuki Satone, Mino, and Nobuyuki Zakohji, Toyonaka, all of Japan, assignors to Ohyodo Komatsu Co., Ltd., Neyagawa, Japan
Filed Dec. 13, 1993, Ser. No. 165,090
Claims priority, application Japan, Jan. 26, 1993, 5-010368
Int. Cl.[6] B02C *1/06*
U.S. Cl. 241—266 **8 Claims**



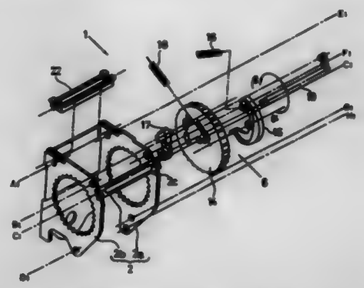
1. A breaking equipment comprising:
a mounting bracket attached to an arm of a power shovel main body at the forward end thereof for vertically pivotable movement;
a holder frame mounted to the mounting bracket for swivel movement;
a hydraulic motor attached to the mounting bracket for rotatably and reversibly driving the holder frame;
a pair of pivot arms of a symmetrically L-shaped configuration pivotably attached, at their respective substantially mid-points, to said holder frame by means of separate pivot axes for open-close pivotable movement, said pivot axes being spaced apart a predetermined distance H from one another so as to satisfy the equations; a=<b and H=<2h, wherein, a is a distance from the pivot point to the forward end of each of said pivot arms, b is a distance from the pivot point to the rearward end of each of said pivot arms, and h is a distance from the bald edge vertically to the line connecting the pivot point and the forward point of application, wherein the forward point of the application is the point at which a forward end attachment is connected to the pivot arm;
a hydraulic cylinder connected between said pair of pivot arms at the rearward ends thereof for opening/closing said pivot arms;
a blade base for a long cutter and a blade base for a short cutter removably attached to each of said pivot arms in the opposite inner surfaces thereof at a point forwardly of said mid-point; and
a coarse breaking attachment and a fine breaking attachment removably attached to each of said pivot arms in the forward, opposite inner surfaces thereof.

5,385,312
TAPE CASSETTE
Hiroshi Kaneda, Saku; Masatoshi Okamura, and Hisao Katoh, all of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Jun. 17, 1993, Ser. No. 77,442
Claims priority, application Japan, Jun. 26, 1992, 4-051008[U]
Int. Cl.[6] B32B *31/16*
U.S. Cl. 242—347 **2 Claims**



1. A tape cassette comprising:
a casing for housing a tape medium, which is made of synthetic resin;
the casing including an upper half casing and a lower half casing, which are connected together at connecting portions as one unit;
a cylindrical projection which is formed on either one of the upper half casing and the lower half casing, and which has a hollow recess and a receiving recess formed therein to be apart from each other by a partition wall;
a boss which is formed on the other half casing to project therefrom, and which has an engagement rib and a supporting rib, the engagement rib being adapted to be inserted into the receiving recess of the cylindrical projection, and the supporting rib being adapted to support an abutting surface of the cylindrical projection;
the supporting rib having an abutting surface formed thereon to receive the abutting surface of the cylindrical projection and to form a gap between melt-bonding surfaces of the cylindrical projection and the boss when the engagement rib of the boss is inserted into the receiving recess of the cylindrical projection during assemblage; and
both melt-bonding surfaces being spot-melt-bonded as one unit by inserting a melt-bonding horn from the hollow recess, wherein the supporting rib and the engagement rib are formed on an outer periphery of the boss to radially project therefrom.

5,385,313
SEAT BELT RETRACTOR
Yoshiichi Fujimura, Shiga, and Shizutaka Matsuura, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan
Filed Jan. 25, 1993, Ser. No. 8,309
Claims priority, application Japan, Jan. 30, 1992, 4-015383
Int. Cl.[6] B60R *22/38, 22/40*
U.S. Cl. 242—377 **3 Claims**

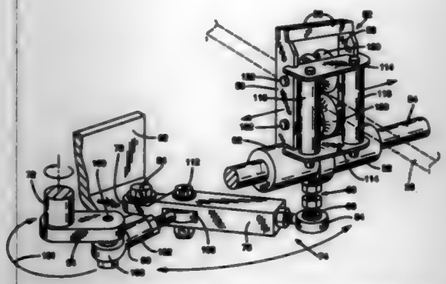


1. A seat belt retractor for a vehicle including a reel shaft for winding up a webbing, a frame formed in a U-shape with a pair of left and right side walls rotatably supporting both ends of said reel shaft, lock means disposed in between said frame and said reel shaft and arranged to allow rotation of said reel shaft under normal circumstances and to be activated, when need arises, so as to prevent rotation of said reel shaft in at least a direction in which said webbing is unwound, deceleration sensing means operating when deceleration exceeding a predetermined value acts on the vehicle, and means for activating said lock means in response to the operation of said deceleration sensing means, wherein the improvement comprises elongated guide holes formed in said left and right side walls, respectively, of said frame, a webbing guide having an elongated opening for guided passage of said webbing, and pin means on said webbing guide at opposite ends thereof slidable received in said elongated guide holes for mounting said webbing guide on said frame so as to maintain said opening substantially parallel to said reel shaft and linearly movable in accordance with a change of position at which said webbing extends outwardly from said frame and which changes in accordance with changes in the reel diameter of said webbing taken up on said reel shaft.

5,385,314
CABLE REEL LEVEL WIND MECHANISM
Daniel L. Hughes, Portland, Oreg., assignor to Wagner Mining and Construction Equipment Co., Portland, Oreg.
Filed Aug. 18, 1992, Ser. No. 932,328
Int. Cl.[6] B65H *57/28, 75/42*
U.S. Cl. 242—397.3 **26 Claims**

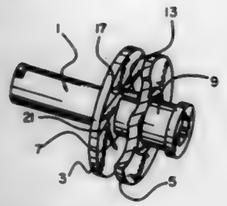
1. A mechanism for evenly winding cable onto a reel comprising:
a take-up reel rotatable about a reel axis;
a cable guide movable on a stationary guide shaft through a range of motion along a linear path substantially parallel to the reel axis relative to the reel for guiding the cable evenly onto the reel;
an eccentric drive for rotating a drive point in a circular path; and
a drive linkage operably connecting the drive point of the

eccentric drive to a fixed point on the cable guide so that the range of linear motion of the cable guide on the guide



shaft is greater than the diameter of the circular path of the drive point.

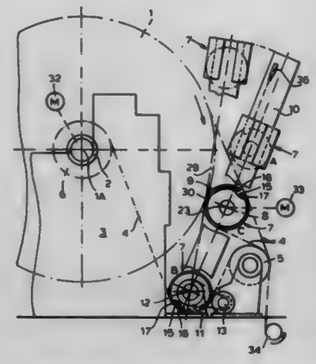
5,385,315
TAPE-SPOOL RETENTION MEMBER
Edward T. Rude, Columbia, Md., and Robert L. Mozdzer, Stamford, Conn., assignors to General Clutch Corporation, Stamford, Conn.
Filed Mar. 26, 1993, Ser. No. 37,491
Int. Cl.[6] B65H *75/28*
U.S. Cl. 242—586 10 Claims



1. A tape spool assembly comprising:
a length of tape having a first end;
an integrally molded spool comprising a rotatable core adapted for winding said length of tape thereabout having a surface along which said tape first end is disposed prior to tape winding and means adapted for urging said tape end toward said core surface in order to substantially avoid tape distortion during the winding of said tape; wherein said urging means comprises a pin having first and second ends extending between and connected to a pair of flanges, and located above the surface of said core prior to winding said type for defining a gap therebetween in order to receive said tape end.

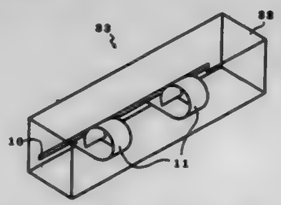
5,385,316
SPLICING APPARATUS FOR PAPER PLANT
Manfred Weis, Duesseldorf, Germany, assignor to Jagenberg Aktiengesellschaft, Duesseldorf, Germany
Filed Jul. 12, 1993, Ser. No. 90,424
Claims priority, application Germany, Jul. 11, 1992, 4222880
Int. Cl.[6] B65H *19/18*
U.S. Cl. 242—552 5 Claims

1. In combination with:
a support for a roll of a web; and
means for withdrawing the web from the roll and moving the web along a path as it is withdrawn from the roll, a splicing apparatus comprising:
a drum rotatable about a drum axis adjacent the roll and having a generally cylindrical outer surface centered on the drum axis;
a pair of suction bars on the drum defining thereon between them an axially extending and radially outwardly open slot, each bar having an outer surface and being pivotal about an axis generally parallel to the drum axis between a rest position with its surface forming a respective part of the outer surface of the drum and a holding position with its surface pressed angularly against the other bar,



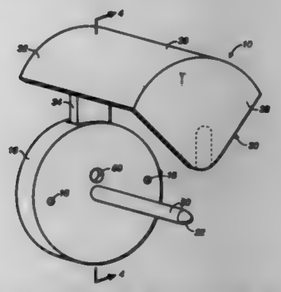
whereby in the holding position a web end can be clamped between the bars;
means for aspirating air through the surfaces of the bars and thereby adhering the web thereto; and
control means connected to the drum for rotating same about the drum axis and for displacing the drum into engagement with the web.

5,385,317
LONG FILM RECEPTACLE
Takaharu Yamamoto, and Masahiro Sugimura, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed Jun. 26, 1992, Ser. No. 904,821
Claims priority, application Japan, Jun. 28, 1991, 3-185672
Int. Cl.[6] B65H *18/08*
U.S. Cl. 242—595 9 Claims



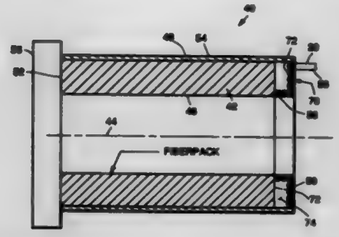
1. A film receptacle for winding and holding a long length of film, comprising:
a film box having an entrance for admitting the film; and
a winding member provided in the film box including a holding portion for winding the film entering the film box into a curled roll and for holding the wound roll of film, the holding portion having a radius of curvature and a resilience such that as the long length of film is wound into the roll, the holding portion and the radius of curvature expand as the size of the roll increases, and the increase in the radius of curvature of the holding portion when the film is wound one turn is equal to or greater than a thickness of the film; wherein the holding portion has a flexural rigidity ($E_p I_p$) and an initial radius of curvature r_o, and the film has a flexural rigidity ($E_f I_f$), such that when $r_o/(E_p \cdot I_p) > t/(E_f I_f)$, no slip occurs within the film roll when the film is fed into the holding portion and wound onto the wound roll of film, where E_p is the elastic modulus, I_p is the second moment of area of the holding portion, E_f is the elastic modulus, I_f is the second moment of area of the film, and t is the thickness of the film.

5,385,318
APPARATUS FOR DISPENSING SHEET MATERIAL
Jack A. Rizzuto, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.
Filed Jul. 14, 1993, Ser. No. 92,443
Int. Cl.[6] B65H *16/04*
U.S. Cl. 242—597.8 8 Claims



1. Apparatus for dispensing sheet material from a roll of sheet material, said roll of sheet material having a central aperture extending from one end of the roll of sheet material to an opposed end along a longitudinal axis, said apparatus comprising, in combination:
a base member;
a mandrel connected to said base member and projecting therefrom, said mandrel having a distal end spaced from the base member, and said mandrel insertable into the central aperture a roll of sheet material along the longitudinal axis of the roll of sheet material to rotatably support the roll of sheet material and permit unwinding of the roll of sheet material about the longitudinal axis of the roll of sheet material upon application of outside forces to the roll of sheet material;
shield means movably mounted relative to said base member along a path of movement transverse to the longitudinal axis of the roll of sheet material and selectively movable between a first location wherein said shield means covers at least a portion of a roll of sheet material supported by the mandrel and restricts end-wise movement of said roll of sheet material on the mandrel in the direction of the longitudinal axis thereof to maintain the roll of sheet material on said mandrel and a second location wherein the shield means will not restrict end-wise movement of a roll of sheet material on the mandrel;
lock means operatively associated with said shield means to lock said shield means at said first location; and
manually operable actuator means operatively associated with said lock means to unlock said lock means and allow movement of said shield means to said second location, said actuator means being blocked from manual access until a roll of sheet material on said mandrel has been at least partially depleted, said shield means including a cover element and a support element attached to said cover element, said support element being mounted for slidable engagement with said base member along said path of movement, and said cover element including a first cover wall extending in the direction of the longitudinal axis of the roll of sheet material and a second cover wall, said second cover wall being attached to said first cover wall and extending in a direction transverse to the longitudinal axis of the roll of sheet material, said second cover wall being of a size and configuration to be closely adjacent to and in at least partial registration with said mandrel distal end when said shield means is at said first location and said first cover wall being closer to the longitudinal axis of the roll when said shield means is in said first location than when said shield means is in said second location.

5,385,319
MISSILE WITH INSIDE PAYOUT OPTICAL FIBER CANISTER
Daniel K. Schotter, Tucson, Ariz., assignor to Hughes Missile Systems Company, Los Angeles, Calif.
Filed Nov. 22, 1993, Ser. No. 155,270
Int. Cl.[6] F41G *7/32*
U.S. Cl. 244—3.12 14 Claims

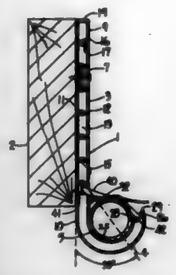


1. A missile, comprising
a missile body having a missile body axis; and
an optical fiber canister fixed within the body of the missile, the optical fiber canister comprising:
a cylindrically symmetric, annular optical fiber pack comprising a plurality of layers of optical fiber, the annular optical fiber pack having an inner annular surface, an outer annular surface, and a first longitudinal end, the annular optical fiber pack further being defined as having a fiber pack cylindrical axis of symmetry,
an initial payout region of the optical fiber extending from the inside annular surface of the optical fiber pack,
a reinforcing leader overlying and fixed to the initial payout region of the optical fiber to form a leader composite structure, and
an outwardly spiraling coil of the leader composite structure lying adjacent to the first longitudinal end of the optical fiber pack.

5,385,320
HOOK SHAPED PIPE HANGER
Joseph P. Imbert, Kansas City, and Frank J. Julian, Cleveland, both of Mo., assignors to Chieftain Corporation, Peculiar, Mo.
Filed Sep. 16, 1993, Ser. No. 122,781
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—62 24 Claims

1. A pipe hanger comprising:
a) an elongate stem joined to a lower hook portion of a cradle shape, said stem having holes therethrough for nailing to a support and having an upper end and with a lower end joining said hook portion at a hook juncture;
b) said hook portion being sized to substantially cradle a pipe of selected radius to be retained by said hook portion, thereby providing said hook portion with a diameter;
c) said hook portion terminating in a hook tip; and
d) a tooth extending outwardly from said stem adjacent said stem lower end and tapering to a narrow tooth end terminating in a position above an area encompassed by said hook portion, said tooth being separate from said hook portion and with an open gap between said tooth tip and said hook juncture, said tooth end and a portion of said hook tip contacting said pipe being spaced a distance less

than the diameter of said pipe so that there is a snap fit between said tooth end and said hook tip portion as said

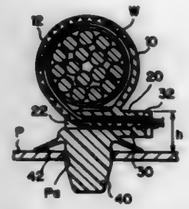


pipe is urged therebetween and into a retained, cradling relation in said hook portion.

5,385,321
BELT CLAMP

Kiyotaka Kume, Aichi, and Takuya Tanaka, Mie, both of Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi and Daiwa Kasei Industry Co., Ltd., Okazaki, both of Japan

Filed Feb. 12, 1993, Ser. No. 16,926
Claims priority, application Japan, Mar. 5, 1992, 4-020736[U]
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—74.3 1 Claim



1. A belt clamp comprising a buckle portion having a base plate and an upper plate spaced from and connected to said base plate by a pair of spaced apart side plates to define a thorough hole, said base plate having a pair of spaced slits in one end thereof defining a tongue having at least one pawl thereon projecting into said hole and a belt portion secured at one end to said buckle portion and having a plurality of cogs adjacent an opposite end for cooperation with said at least one pawl upon insertion of said opposite end of said belt portion into said hole.

5,385,322
ERGONOMIC ELBOW REST

Kwan Kim, Garden Grove, and Victor S. Packham, Costa Mesa, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Oct. 1, 1993, Ser. No. 130,216
Int. Cl.[6] B63G *5/00*
U.S. Cl. 248—118 20 Claims

1. An ergonomic elbow support comprising:
a clamp member supportingly engageable with a table top adjacent a forward edge thereof, the clamp member carrying a generally horizontally extending elongate first support member extending forwardly generally perpendicularly to the table top forward edge;
a clamp structure of two parts carried movably on said first support member, a first of said two parts of said clamp structure selectively adjustably engaging said first support member both for pivotal movement about the axis thereof and for sliding longitudinal movement along the length of said first support member toward and away from said forward table top edge, a second of said two parts of said clamp structure being pivotally carried by said first part of said clamp structure for pivotal movement about an axis perpendicular to said first support member;
an elongate second support member carried by said second part of said clamp structure and extending generally vertically, said second support member being selectively adjustably engaged by said second clamp structure part both

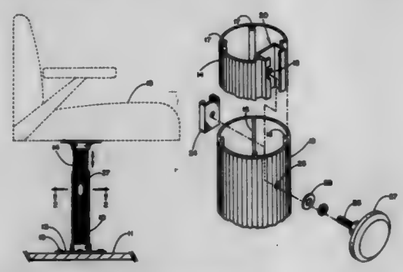


for relative pivotal movement and for relative longitudinal movement along the axis of said second elongate support member (substantially vertically relative to the table top surface), said clamp structure including selectively adjustable securing means for simultaneously locking all of said pivotal and longitudinal relative movements of said clamp structure parts both relative to one another and relative to said first and second support members;
at an upper end thereof said elongate second support member carrying a generally planar cushioned ergonomic elbow pad member.

5,385,323
TELESCOPED TUBULAR SUPPORT MEMBERS

Richard J. Garelick, 3324 Edmund Blvd., Minneapolis, Minn. 55406

Filed Oct. 14, 1993, Ser. No. 136,018
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—161 10 Claims

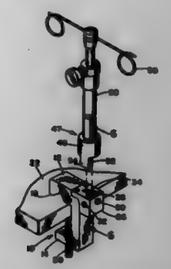


1. A support assembly, comprising:
a first rigid tubular member having a plurality of elongated spaced-apart grooves parallel to its axis:
a second rigid tubular member having a plurality of elongated spaced-apart ribs parallel to its axis:
said first and second tubular members telescoped together with said ribs slidably engaged in said grooves; and
means for releasably applying a radial force to one of said tubular members to bring said ribs into tight frictional contact within associated grooves to frictionally lock said tubular members together.

5,385,324
QUICK CLAMPING SYSTEM

Jeffery W. Pryor, Vista, and Jack W. Ratcliff, Carlsbad, both of Calif., assignors to Pryor Products; Oceanside, Calif.

Continuation of Ser. No. 995,768, Dec. 23, 1992, Pat. No. 5,326,059. This application Feb. 22, 1994, Ser. No. 199,518
Int. Cl.[6] E04G *5/06*
U.S. Cl. 248—231.7 7 Claims

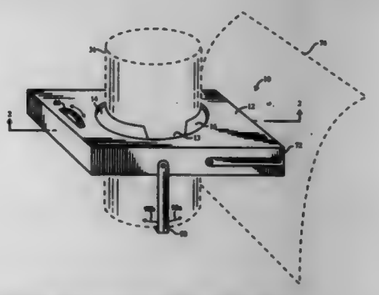


1. An apparatus for mounting objects to be supported on a selected support, comprising:
a flat mounting plate for securing to an object to be supported;
a pin block projecting outwardly from one face of said mounting plate, and a pin projecting downwardly from said pin block in a direction parallel to the plane of said mounting plate for engagement in a corresponding hole on a selected support said mounting plate comprising means for bearing against a surface of said support to prevent rotation of said pin in said hole.

5,385,325
ADJUSTABLE CONTAINER HOLDER

Kenneth D. Rigsby, 7911 Dunbarton Ave., Los Angeles, Calif. 90045

Filed Jul. 6, 1993, Ser. No. 88,223
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—313 12 Claims



1. An adjustable container holder comprising:
a) a housing having an opening therethrough;
b) movable first and second jaws within the housing, the jaws having mutually opposed arcuate surfaces that define an adjustable aperture, the aperture substantially aligned with the opening in the housing; and
c) an adjusting knob movably mounted in the housing, the knob engaging the first and second jaws, wherein adjustment of the knob in one direction causes the first and second jaws to simultaneously move toward one another, and adjustment of the knob in the opposing direction causes the first and second jaws to simultaneously move apart from one another, so that the adjustable aperture defined by the arcuate jaw surfaces can be adjusted to grasp containers of differing sizes.

5,385,326
OBJECT CONFIGURATION FOR UNIQUELY STACKING SAME

Christopher C. Bidwell, Dunwoody, Ga., assignor to Circle R Central, Inc., Norcross, Ga.

Filed Jul. 8, 1993, Ser. No. 88,796
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—346.1 22 Claims



1. A set of stackable coasters comprising:
a top coaster having a shaped bottom surface;
a bottom coaster having a shaped top surface;
at least one intermediate coaster disposed between said top coaster and said bottom coaster including a shaped top surface and a shaped bottom surface opposite said shaped top surface; and
each said surface including stacking means allowing stacking of said coasters in only one predetermined sequence and for allowing adjacent coasters to be stacked in only one single predetermined radial position with respect to each other.

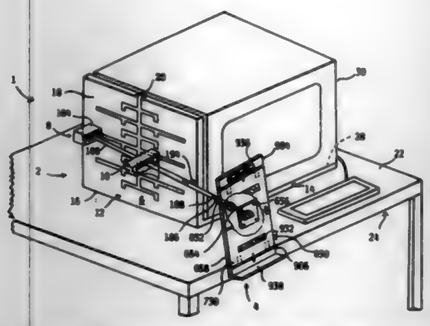
5,385,327
UNIVERSAL DOCUMENT SUPPORT MONITOR STAND

David Hegarty, 36 Wyatt Rd., Garden City, N.Y. 11530, and Michael Terc, Wantagh, N.Y., assignors to David Hegarty, Garden City, N.Y.

Continuation of Ser. No. 854,999, Apr. 22, 1992, abandoned. This application May 16, 1994, Ser. No. 243,658
Int. Cl.[6] B41J *11/02*
U.S. Cl. 248—442.2 48 Claims

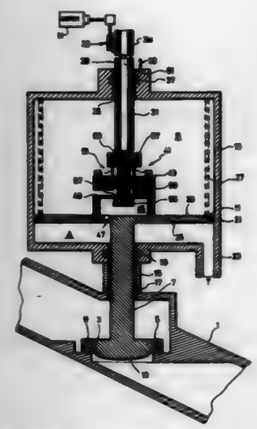
1. A video display monitor for removably mounting a relocatable projecting arm member thereon, which comprises:
a video display monitor, the monitor including a main support body having a casing, a first member relocating side, the member relocating side residing in the monitor casing; and
means for removably mounting a relocatable arm member on the monitor, the arm member mounting means being situated on the monitor at the relocating side thereof to allow the arm member to be mounted on the relocating side;

the arm member mounting means including means for engagably relocating and fixedly supporting a projecting arm



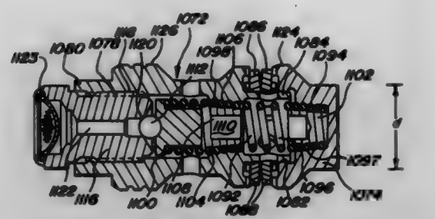
member at a plurality of fixed supportive locations on the member relocating side of the monitor.

5,385,328
CONTROL VALVE
Ludwig Hofmann, Munich, Germany, assignor to MMM Muenchener Medizin Mechanik GmbH, Munich, Germany
Continuation of Ser. No. 818,109, Jan. 8, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 74,997
Claims priority, application Germany, Jul. 12, 1991, 9108617[U]
Int. Cl.[6] F16K *31/124*
U.S. Cl. 251—30.04 **25 Claims**



1. A control valve for rapidly opening and/or closing a valve opening to control flow of a controlled fluid in response to pressure of an operating fluid separate from the controlled fluid, comprising a valve closure member (5) for closing and/or opening a valve opening in a controlled fluid duct, said valve closure member (5) being provided with a valve head (9) and a rod (7) and being adapted to be moved between an open and a closed position by a drive means provided with an adjustable positioning means which predetermines the open position in the valve closure member, a control element provided between the positioning means and the valve drive means, said control element stopping the valve drive means, when the predetermined position has been reached, said drive means being connected to a separate operating fluid which receives pressurized operating fluid which is isolated from the fluid in the controlled fluid duct, to operate the drive means and move the valve closure member independently of the pressure in the controlled fluid duct.

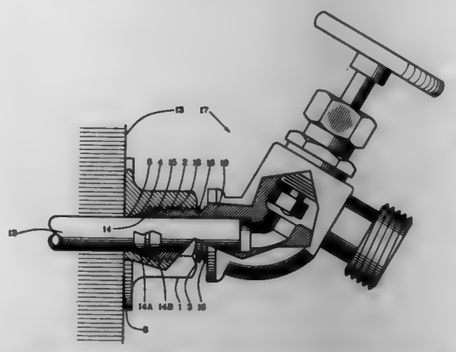
5,385,329
METHOD AND APPARATUS FOR ENHANCING STABILITY IN HYDRAULIC FLOW CONTROL
Edward H. Phillips, Troy, Mich., assignor to Techco Corporation, Troy, Mich.
Continuation-in-part of Ser. No. 17,283, Feb. 16, 1993, and a continuation-in-part of Ser. No. 28,252, Mar. 9, 1993. This application Jun. 30, 1993, Ser. No. 85,349
Int. Cl.[6] G05D *7/01*
U.S. Cl. 251—77 **8 Claims**



1. A bifurcated piston sub-assembly for use in a flow control device, said bifurcated piston subassembly comprising:
- a piston having a first circumferential portion for sealingly locating said piston laterally in a cylinder, and a first substantially concentric internal threaded portion;
- a valve element having an outer circumference for sealingly locating said valve element laterally in an extended portion of said cylinder, said valve element being slidingly mounted to said piston, and a second substantially concentric internal threaded portion;
- means for biasing said valve element with reference to said piston;
- tension spring means threadingly engaged with both first and second substantially concentric internal threaded portions;
- means for anchoring said tension spring means to said first substantially concentric internal threaded portion; and
- means for anchoring said tension spring means to said second substantially concentric internal threaded portion.

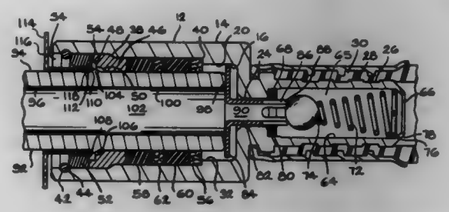
5,385,330
COMPRESSION SILL COCK FLANGE
Mickey W. Joseph, 268 Devon St., Port Orange, Fla. 32127
Filed Jan. 24, 1994, Ser. No. 185,128
Int. Cl.[6] F16L *5/00*
U.S. Cl. 251—148 **21 Claims**

1. A compression sill-cock flange comprising:
- a pipe coupling having straight internal machine threads with a constant inside diameter extended from proximate an attachment end of the pipe coupling to proximate a circumferential sealing wall on a circumferential inside periphery of the pipe coupling;
- the circumferential sealing wall being extended inward circumferentially and tapered conically in a direction towards a seal end of the pipe coupling from a major diameter of the circumferential sealing wall proximate a seal end of the straight internal machine threads to a minor diameter of the sealing wall proximate a circumferential coupling base;
- the circumferential coupling base having a circumferential inside periphery sized for sliding contact with designed tightness on a circumferential outside periphery of a pipe to which the pipe coupling is attachable;
- the circumferential coupling base being extended to a design position in relation to the seal end of the pipe coupling; and



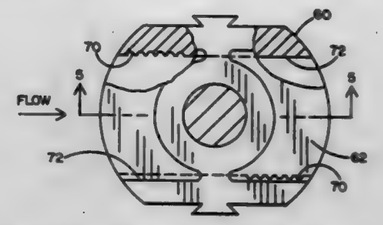
- a flange extended a design distance outward radially from a design circumferential position proximate the seal end of the pipe coupling.

5,385,331
VALVE ASSEMBLY
Alan R. Allread, Armada, and Jon A. Jensen, New Baltimore, both of Mich., assignors to Aeroquip Corporation, Maumee, Ohio
Filed Mar. 15, 1994, Ser. No. 213,440
Int. Cl.[6] F16L *37/28*
U.S. Cl. 251—149.1 **14 Claims**



1. A valve assembly for use in the coupling of two members, comprising, in combination:
- a first member having an exterior surface and an interior surface, said interior surface defining a coupling sleeve consisting of an annular wall having an open end and an opposed fluid passageway end and a valve sleeve, a fluid passageway positioned between said coupling sleeve and said valve sleeve, said annular wall defining a first annular shoulder, a second annular shoulder spaced from said first annular shoulder and a first annular groove positioned between said open end and said first shoulder, an annular ring positioned in said first annular groove, an annular lock assisting member positioned adjacent to said first annular shoulder, an annular chamfer member having a chamfer positioned between said annular ring and said lock assisting member and an annular pusher support ring positioned adjacent to said second shoulder;
- a valve positioned in said valve sleeve, said valve being biased toward said fluid passageway by resilient means;
- a valve pusher having a first end and a second end, said first end positioned in said coupling sleeve, said second end positioned in said fluid passageway;
- a second member having an outer surface, an inner surface and a terminal portion, whereby when said second member is inserted in said coupling sleeve, said terminal portion engages said first end of said pusher causing said second end of said pusher to engage said valve to unseat said valve, thereby allowing fluid flow between said first member and said second member.

5,385,332
FLOW STABILIZED, RETRACTABLE SEAL, DOUBLE-BLOCK AND BLEED PLUG VALVE
Gordon M. Smith, Brookshire, Tex., assignor to Johnston Pump/General Valve, Inc., Brookshire, Tex.
Filed Jan. 28, 1994, Ser. No. 187,892
Int. Cl.[6] F16K *39/06*
U.S. Cl. 251—283 **10 Claims**

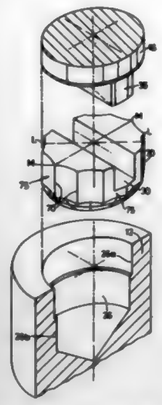


1. An improved plug for a plug-valve, the plug being rotatable about a rotation axis and having an exterior and an interior, the interior being formed by a flow passageway between opposing surfaces on the exterior to carry fluid through the plug when the plug is oriented in a valve body to align the flow passageway with the flow of the fluid into the valve, the plug blocking the fluid when the plug is oriented in a valve body to align the flow passageway substantially perpendicular to the flow of the fluid into the valve; the improvement comprising:
- means in said flow passageway for altering the fluid pressure at a selected area therein;
- said fluid pressure altering means being positioned on a pair of diagonally opposite surfaces of said interior relative to said rotation axis to create a torque in response to fluid flow through said passageway.

5,385,333
METHOD OF MAKING VALVE DISC AND DRIVE SHAFT ASSEMBLY
Michael P. Morris, Birmingham, and Phillip J. Haseley, Newport, both of England, assignors to BTR plc, United Kingdom
Division of Ser. No. 736, Jan. 5, 1993, Pat. No. 5,297,778. This application Feb. 7, 1994, Ser. No. 192,813
Claims priority, application United Kingdom, Jan. 8, 1992, 9200339
Int. Cl.[6] F16K *1/22*
U.S. Cl. 251—308 **8 Claims**

1. A method of manufacturing an assembly comprising a valve disc, a drive shaft and a member wherein the valve disc has a periphery and a blind bore of circular cross-section is formed to extend radially inwardly of the periphery, said method comprising
- forming the member with a polygonal cross-section with a plurality of alternate edges and sides, and with a non-circular cross-section aperture,
- locating the member non-rotatably within the blind bore,
- forming the shaft with a circular cross-section and with an end of non-circular cross-section corresponding to the non-circular cross-section of the aperture in the member,
- locating the shaft in the bore so that the circular cross-sec-

tion is received in the bore and the non-circular cross-section end is received in the aperture in the member, the



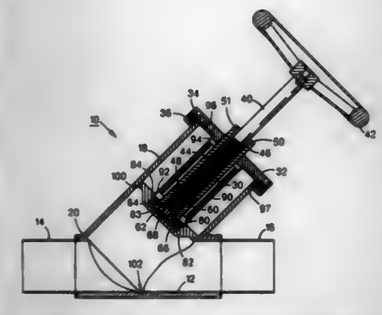
assembly being such that a torque applied to the shaft is transmitted to the member and thence to the disc.

5,385,334

FLUID FLOW VALVE

Peter J. Greenwood, Danbury; Benedict J. Aliano, Oxford; Taecon Lee, and Martin M. Barolli, both of Waterbury, all of Conn., assignors to Carten Controls Inc., Middlebury, Conn.

Filed Jul. 16, 1993, Ser. No. 92,709
Int. Cl.[6] F16K *31/00*
U.S. Cl. 251—335.3 15 Claims



1. In a fluid flow valve having a body and having a movable member with a lower face, said movable member being movable between a position spaced from a sealing position in said body when said valve is in an open position and movable to said sealing position when said valve is in a closed position, the improvement comprising:

(a) an annular sealing member disposed in the outer periphery of said lower face of said movable member to sealingly engage a portion of said body when said valve is in said closed position;

(b) wherein said sealing member is disposed in a flange section of said movable member formed around said movable member;

(c) wherein said lower face of said movable member includes a flat central section and an intermediate section intersecting and joining said flat section with said flange section; and

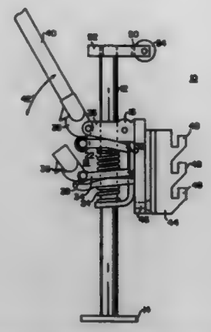
(d) wherein the intersection of said central and intermediate sections is smooth and rounded.

5,385,335

METHOD FOR LIFTING MODULAR FURNITURE

Kirk Wurdack, Leading, N.J., assignor to Renovisions, Inc., Edgemont, Pa.

Division of Ser. No. 8,386, Jan. 25, 1993, Pat. No. 5,261,643, which is a continuation of Ser. No. 842,054, Feb. 26, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 152,848
Int. Cl.[6] B66F *3/00*
U.S. Cl. 254—1 3 Claims



1. A method of raising a furniture panel including accessory hanging tracks, wherein each of said tracks includes a plurality of slots therein spaced along a vertical line, comprising:

placing a jacking mechanism alongside said furniture panel proximate said accessory hanging tracks, said jacking mechanism including a stationary foot and a moveable jig having a plurality of hooks spaced along a vertical line;

engaging said plurality of slots in said accessory hanging tracks with said plurality of hooks of said jig; and

raising said jig and said engaged accessory hanging tracks and furniture panel.

5,385,336

METHOD AND APPARATUS FOR TORCH WORKING MATERIALS

Alexander V. Gurinov; Vladimir N. Kostritsa; Igor' V. Petrov, and Valeryi F. Sukhostavets, all of Dmitrov, Russian Federation, assignors to Narwhal Ltd., Dmitrov, Russian Federation

Filed Dec. 15, 1993, Ser. No. 167,750
Int. Cl.[6] B23K *7/00*
U.S. Cl. 266—74 30 Claims



1. Torch apparatus for working a material using a high energy high temperature gaseous jet, comprising

a cutting head including means for mixing a fuel and an oxidizer flows delivered to said cutting head into a propellant, said mixing means having a first housing with top, side and bottom walls, defining a substantially cylindrical inner space thereof, with an outlet formed in said bottom wall; torch means for combusting said propellant, said torch means having a second housing defining a combustion chamber therein, said combustion chamber being connected with an ambient medium through a nozzle formed in said second housing and subtending said outlet, said inner space being connected with said combustion chamber through said outlet; and controlling means for affecting said combusting, said controlling means including a central body axially installed in said inner space and sealingly secured in an opening in said mixer housing top wall, to thereby affect thermodynamic parameters of said fuel, oxidizer and propellant flow and modify said jet;

means for delivering said fuel to said cutting head; and

means for delivering said oxidizer to said cutting head;

said inner space being connected with said fuel delivery means and said oxidizer delivery means through first and second openings in said mixer housing respectively, said first opening being formed in said side wall of said mixer housing and located downstream with respect to said second opening;

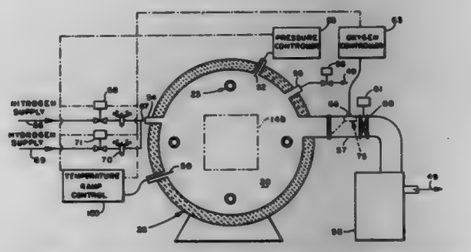
the ratio of the hydraulic diameter $d_{h\text{-}fo}$ at the outlet of said first opening into said inner space to the hydraulic diameter $d_{h\text{-}mix}$ of a flow section of said inner space at the level of the introduction of said fuel into said inner space being within the range of 0.03 to 0.5, where the hydraulic diameter d_h is defined as $d_h=4S/P$, where S is flow section area of a passage, and P is a wetted circumference thereof.

5,385,337

CONTROL SYSTEM FOR A SOFT VACUUM FURNACE

Thomas J. Schultz, Maumee, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Division of Ser. No. 816,604, Dec. 31, 1991, Pat. No. 5,261,976. This application Apr. 19, 1993, Ser. No. 48,680
Int. Cl.[6] C21D *1/773*
U.S. Cl. 266—81 7 Claims



4. A hot wall standard atmosphere furnace for heat treating work during a heat treat cycle in which the work is subjected to a vacuum for a portion of said cycle, said furnace including a furnace enclosure; means to supply a heat treating gas to said furnace enclosure and forming a furnace atmosphere therein; means to heat said work within said furnace enclosure; a vacuum pump for drawing a vacuum within said furnace enclosure; a vacuum duct between and in fluid communication with said pump and said furnace enclosure; control means for regulating the vacuum drawn within said furnace enclosure by said vacuum pump, the improvement comprising:

a.) an insulated enclosure within said vacuum duct having an inlet and an outlet;

b.) a funnel shaped baffle within said duct connected to said inlet for directing a portion of said atmosphere within said duct under vacuum into said insulated enclosure;

c.) a heater within said enclosure;

d.) temperature sensing means within said enclosure controlling said heater; and

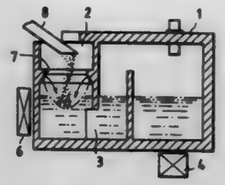
e.) an oxygen sensor probe within said insulated enclosure.

5,385,338

APPARATUS FOR MELTING ALUMINUM ALLOY SCRAPS

Yasushi Sato, Toyama, and Toshiharu Watanabe, Kanagawa, both of Japan, assignors to Miyamoto Kogyosho Co., Ltd., Toyama and Fuji Electric Co., Ltd., Kanagawa, both of Japan

Filed Apr. 15, 1993, Ser. No. 46,315
Claims priority, application Japan, Apr. 24, 1992, 4-131681; Mar. 1, 1993, 5-066017
Int. Cl.[6] C22B *9/187*
U.S. Cl. 266—234 4 Claims



1. An apparatus for melting aluminum alloy scraps, comprising:

a furnace body having a bottom wall and at least one side wall defining a first chamber for containing molten metal;

an introduction portion of the furnace body for accepting input of aluminum alloy scraps, the introduction portion having a vertically oriented, cylindrical wall incorporated in the side wall of the furnace body to define a second chamber in molten metal flow communication with the first chamber;

magnetic field generating means, of semi-cylindrical shape, externally positioned in proximate relation to an exterior portion of the cylindrical wall for exerting horizontal rotational forces on the molten metal to produce a vortex flow of the molten metal in the second chamber; and

at least one element positioned in the second chamber for controlling the molten metal therein.

5,385,339

SET-UP JIG FOR TRUSS TABLE

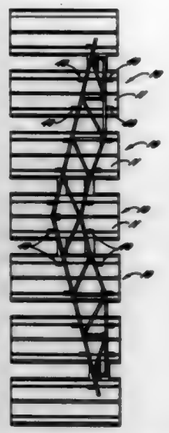
Thomas H. Williams, Edenton, N.C., assignor to Tee-Lok Corporation, Edenton, N.C.

Filed Jun. 1, 1993, Ser. No. 70,556
Int. Cl.[6] B25B *1/20*
U.S. Cl. 269—37 18 Claims

1. A set-up jig for assisting in the formation of trusses comprising:

(a) a body portion having a top surface and a substantially planar lower surface, said lower surface being divided into two substantially coplanar lateral portions having a recessed channel positioned therebetween said channel being configured to receive and slide upon a rail, said body portion further including an aperture configured to

receive means for securing said jig in a predetermined position on a truss table; and



(b) stop means attached to said body portion and adapted for restricting the movement of truss planks.

5,385,340

SHEET POST-PROCESSING APPARATUS

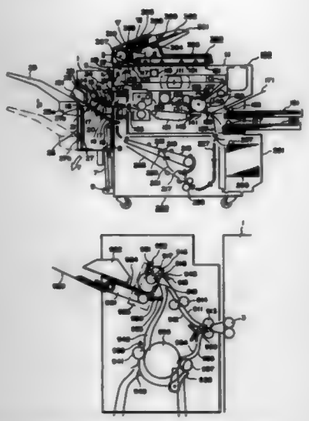
Masakazu Hiroi, Yokohama; Mitsuhiro Mukasa, Kawasaki; Nobutaka Uto, Kanagawa; Masaaki Sato, Yokohama, and Takeshi Houjo, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 33,974, Mar. 19, 1993, abandoned, which is a continuation of Ser. No. 772,131, Oct. 9, 1991, abandoned, which is a continuation of Ser. No. 364,476, Jun. 12, 1989, abandoned. This application Mar. 14, 1994, Ser. No. 209,379

Claims priority, application Japan, Jun. 14, 1988, 63-146094; Jul. 11, 1988, 63-172279; Jul. 19, 1988, 63-181153

Int. Cl.[6] B31B *1/68*; B65H *31/10*

U.S. Cl. 270—53 **21 Claims**



1. A sheet-processing apparatus, comprising:

means for discharging sheets;

stacking means for stacking the sheets discharged by said discharging means, said stacking means including a first tray adjacent said discharging means for supporting trailing portions of the sheets discharged by said discharging means and a second tray for supporting leading portions of the sheets having the trailing portions supported by the first tray, said second tray movable substantially in the vertical direction and disposed downstream of said first tray with respect to a sheet discharge direction, wherein said stacking means is inclined so that the sheets stacked bridging between said first tray and said second tray slide by their own weight;

binding means for binding the sheets stacked on the first tray of said stacking means; and

moving means for moving the sheets bound by said binding means toward said second tray.

5,385,341

AUTOMATIC DOCUMENT CONVEYING APPARATUS

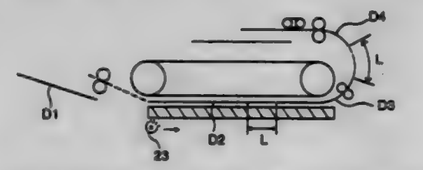
Yasushi Yamada; Tetsuo Hirata, both of Hachioji; Tadashi Uematsu, Oizumi, and Hiroyuki Hara, Kamifukuoka, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 25, 1993, Ser. No. 83,026

Claims priority, application Japan, Jul. 14, 1992, 4-187161

Int. Cl.[6] B65H *7/02*

U.S. Cl. 271—265 **9 Claims**



1. An automatic document conveying apparatus comprising:

(a) a stacker on which a stack of documents is stacked;

(b) a feeder for separating and feeding said documents, one by one, from said stacker;

(c) at least. one pair of conveyance rollers positioned in a downstream feeding direction, downstream of said feeder, for conveying a separated one of said documents;

(d) a reading position provided in said downstream feeding direction, downstream of said at least one pair of conveyance rollers, at which image information on said separated one of said documents is read by a reader;

(e) conveyance means for conveying said separated one of said documents to said reading position;

(f) discharging means for discharging said separated one of said documents conveyed downstream of said reading position;

(g) a conveyance path on which a plurality of documents are sequentially disposed in said downstream feeding direction, said conveyance path being positioned between said feeder and said reading position;

(h) detecting means disposed between said at least one pair of conveyance rollers and said conveyance means, for detecting a document therebetween;

(i) an encoder for generating a pulse signal corresponding to a rotation of said conveyance means;

(j) a plurality of pulse counters, each of said plurality of pulse counters counting a number of pulses generated by said encoder, each of said plurality of pulse counters starting a counting of said pulses when an edge portion of a document which corresponds to one of said plurality of pulse counters is detected by said detecting means; and

(k) control means, for controlling a conveyance of each document conveyed by said conveyance means along said conveyance path to said reading position, according to each of the counted number of pulses counted by each of said plurality of pulse counters based on a timing of an output of said detecting means;

wherein said control means controls a conveyance of each of the documents disposed between said detecting means and said reading position according to said counted number of pulses corresponding to a respective movement of each of the documents which are moved at the same time along said conveyance path.

5,385,342

SHEET FEEDER FOR A SHEET-FED PRINTING PRESS AND METHOD OF FEEDING SHEETS THEREWITH

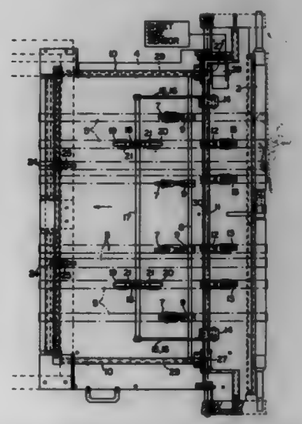
Rudolf Leib, Nussloch, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Apr. 20, 1993, Ser. No. 49,928

Claims priority, application Germany, Apr. 21, 1992, 4213017

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—274 **15 Claims**



9. Apparatus for feeding sheets of printing stock from a source for providing printing stock to a printing press, said apparatus defining a path of travel from said source for providing to said printing press, the printing press being configured for printing on printing stock having a range of sizes from a first size to a second size in a direction of travel of the printing stock, the second size being substantially larger than the first size in a direction of travel of the printing stock, the path of travel defining a plurality of consecutive positions along the path of travel from the printing stock source to the printing press, said apparatus being configured to perform a method comprising the steps of: configuring a plurality of engagement means to engage at least one of the plurality of engagement means with at least one sheet of the printing stock at each of said plurality of positions along the path of travel for a sheet of printing stock having a size between said first size and said second substantially larger size; transporting the at least one sheet from the source to the printing press along the path of travel; and engaging at least one of said plurality of engagement means with at least one sheet of the printing stock at each of said plurality of positions along said path of travel for a sheet of printing stock having a size in said range from said first size to said second size; said apparatus comprising:

a first end disposed adjacent the printing stock source;

a second end disposed towards the printing press;

transporting means for transporting at least one sheet of the printing stock through each of said plurality of positions along the path of travel from the printing stock source to the printing press;

a plurality of engagement means configured for holding at least one sheet of the printing stock in engagement with said transporting means and maintaining alignment of the at least one sheet of printing stock along said path of travel;

means for positioning said plurality of engagement means to engage at least one of said plurality of engagement means with at least one sheet of the printing stock at each of said plurality of positions along said path of travel;

said plurality of engagement means comprising at least a first engagement means disposed towards the second end of said sheet feeder, said at least a first engagement means for engaging a sheet of printing stock at least adjacent the second end of said sheet feeder, and said at least a first engagement means being spaced a variable first distance from the second end and defining a second distance to the first end;

said means for positioning comprising means for adjusting a position of said at least a first engagement means with respect to the second end to vary the first distance to corresponds to the size of a sheet of printing stock being transported;

said plurality of engagement means further comprising at least a second engagement means for being engaged with at least one sheet of printing stock, at a position between said engaged first engagement means and the first end Of said sheet feeder means when the second distance is greater than a size of a sheet of printing stock; and

said means for positioning comprising means for engaging and disengaging said at least a second engagement means with at least one sheet of the printing stock, said means for engaging and disengaging comprising:

means for engaging said at least a second engagement means when the second distance is less than a size of a sheet of printing stock; and

means for disengaging said at least a second engagement means when the second distance is less than a size of a sheet of printing stock.

5,385,343

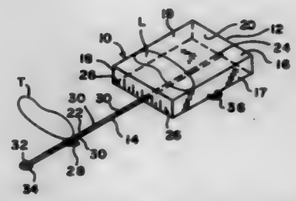
BATTING TRAINER SYSTEM

John M. Davis, Sr., 17015 Hillswind Cir., Spring, Tex. 77379

Filed Nov. 17, 1993, Ser. No. 153,683

Int. Cl.[6] A63B *69/00*

U.S. Cl. 273—26 R **12 Claims**



1. A batting trainer for training a batter, the batter having two feet including a first lead foot and a second trailing foot, the trainer comprising

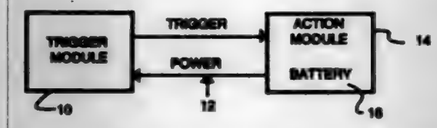
an elevation member for removable emplacement thereon of the batter's lead foot, the elevation member elevating the batter's lead foot above ground on which the trainer is placed, the elevation member removably securable to the ground,

location apparatus for locating the batter's trailing foot on the ground with respect to the elevation member, the elevation member removably securable to the ground,

the location apparatus including a movable member removably securable to the ground, and

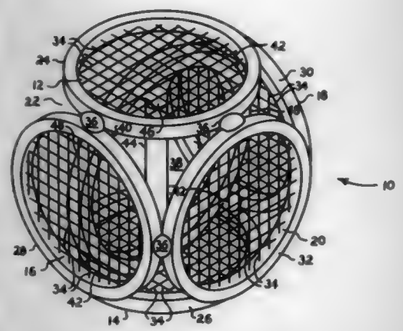
stop member means secured to a top of the elevation member for abutting the batter's lead foot, the stop member means removably securable to the elevation member.

5,385,344
MODULAR DEVICE FOR PLAYING PRANKS
Kenneth C. Miller, Mountain View, and J. Courtenay Hester, Cupertino, both of Calif., assignors to Mr. Fun Guy, Inc., Mountain View, Calif.
Filed Nov. 24, 1992, Ser. No. 980,763
Int. Cl.[6] A63H *5/00*
U.S. Cl. 273—460 **16 Claims**



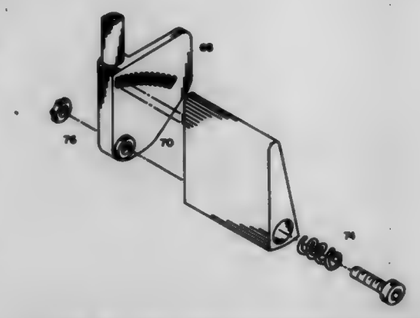
1. A remotely actuated amusement system for playing pranks comprising:
at least two trigger modules each including means for detecting the occurrence of a different activating event and means for generating a common trigger signal in response thereto;
at least two action modules each housed apart from the trigger modules and including means for performing a prank in response to the trigger signal, each action module further including a battery for providing power to the action module means and to a cable, wherein different action modules include means for performing different pranks; and
a cable electrically interconnecting a selected one of the trigger modules and a selected one of the action modules.

5,385,345
MULTIFACETED RACQUET
Joseph Azure, 21 Tilden St., States Island, N.Y. 10301
Filed Oct. 28, 1993, Ser. No. 142,126
Int. Cl.[6] A63B *59/00*
U.S. Cl. 273—67 B **18 Claims**



1. A multifaceted racquet comprising:
a plurality of projectile contact faces disposed in a non-coplanar array in at least three intersecting planes and forming a substantially polyhedral exterior shape enclosing an interior, each of said contact faces including a periphery, wherein adjacent contact faces are attached at joints along said periphery;
handle means disposed centrally within said interior; and
means for securing said handle means to at least one of said joints of said plurality of projectile contact faces;
said plurality of projectile contact faces includes a first surface, a second surface, a third surface, a fourth surface, and a fifth surface;
said first face disposed opposite said second face, and said third face disposed opposite said fourth face;
said third face and said fourth face joined to said first face and said second face at each said periphery thereof;
said fifth face joined to said first face, said second face, said third face and said fourth face at each said periphery thereof;
said handle means including a circular outer periphery having a diameter less than the diameter of said periphery of said fifth face, wherein said handle periphery is disposed substantially parallel to said, fifth face;
wherein said joints at the periphery of said first face, said second face, said third face and said fourth face include support means connected to said periphery of said handle means for supporting said handle means within said interior.

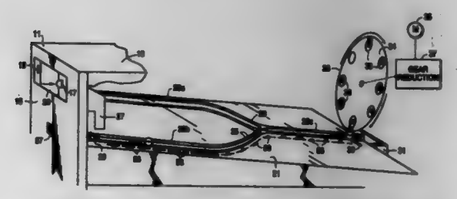
5,385,346
GOLF CLUBS WITH ADJUSTABLE CLUB FACES AND SHAFTS
Wilbert E. Carroll, and Kathlyn A. Carroll, both of 8201 16th St., Apt. 526, Silver Spring, Md. 20910
Filed Dec. 2, 1993, Ser. No. 160,664
Int. Cl.[6] A63B *53/06*
U.S. Cl. 273—79 **1 Claim**



1. A golf club with adjustment capabilities comprising, in combination:
a head formed of a support plate in a generally V-shaped configuration having a hosel at an upper end for receiving a shaft and having a horizontal aperture adjacent to a lower end for use in coupling with a face plate;
a face plate having a striking surface with an aperture parallel with the striking surface at a lower extent thereof positionable in axial alignment with the horizontal aperture in the support plate and a bolt extending through both said apertures to couple the face plate at any one of a plurality of angles with respect to the support plate with means on the support plate adjacent to the adjacent edge of an face plate to indicate the angle of the face plate;
a shaft having an upper end with a handle and a lower end coupled to the hosel, the shaft having an upper portion with an upper end and a lower end and having a lower portion with an upper end and a lower end, the upper end of the lower portion positionable within the lower end of the upper portion and secured means therebetween comprising a collar having threads mateable with external threads at the lower end of the upper portion and a compression washer located between the collar and the lower end of the upper portion whereby tightening of the collar will securely couple the lower portion in a predetermined orientation and further including indicia on the lower portion adjacent to the collar to indicate the length of the club;
projections extending outwardly from the support surface and a projection on the adjacent edge of the face plate whereby when coupled together rotational movement

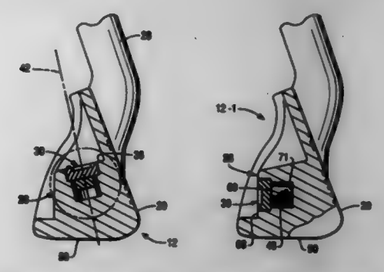
therebetween is precluded and further including a coil spring and associated washer resiliently urging together the face plate to the support plate; and
an opening located in the upper portion of the shaft adapted to receive therein a rolled up score pad and pencil with tees positioned thereadjacent to the opening with a grip located over the handle of the shaft to close the opening.

5,385,347
COIN OPERATED AMUSEMENT DEVICE
Ronald D. Halliburton, Delray Beach, Fla., assignor to Benchmark L.C., Pompano Beach, Fla.
Filed Mar. 15, 1994, Ser. No. 213,054
Int. Cl.[6] A63F *7/02, 9/24*
U.S. Cl. 273—142 R **10 Claims**



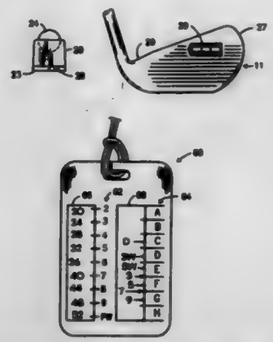
1. A coin operated amusement device comprising means defining a coin track to guide a rolling coin in a predetermined path, a payoff wheel positioned adjacent to said path and defining at least one payoff position at an angular position on said wheel, means to rotate said wheel on the axis of said wheel, and means to determine when a coin rolling in said path passes said wheel opposite said payoff position.

5,385,348
METHOD AND SYSTEM FOR PROVIDING CUSTOM DESIGNED GOLF CLUBS HAVING REPLACEABLE SWING WEIGHT INSERTS
Elmer Wargo, 10080 Mallett Dr., Spring Valley, Ohio 45370
Filed Nov. 15, 1993, Ser. No. 151,943
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—171 **13 Claims**



2. A golf club having a grip, a shaft, and a club head;
said club head having at least one receiving area thereon for receiving a replaceable insert therein;
a group of replaceable inserts having predetermined varied weights; and
at least one replaceable insert selected from said group of replaceable inserts having predetermined varied weights and inserted in said at least one receiving area to provide a predetermined swing weight for the club when said at least one replaceable insert is inserted in said at least one receiving area;
said at least one replaceable insert having:
a head portion having a head diameter having external threads thereon;
a cylindrical portion having an external diameter smaller than said head diameter; and
a predetermined amount of weighty material located on said cylindrical portion; to enable said at least one replaceable insert to provide one of said predetermined varied weights from said group of replaceable inserts;
said receiving area having threads therein to threadedly receive said head portion;
said weighty material being in the form of a layer;
said cylindrical portion having areas which have mask material thereon to prevent said layer of weighty material from adhering thereto to thereby control the amount and location of weighty material attached to said at least one replaceable insert.

5,385,349
METHOD FOR USING LIE, SHAFT POSITION, AND LOFT INDICATOR
Perry C. Marshall, 103 Granada Ct. North, Plant City, Fla. 33566
Filed Jan. 25, 1994, Ser. No. 186,209
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—187.4 **2 Claims**



1. A method for using a lie detector and a shaft position indicator comprising the steps of:
releasably attaching to a golf clubhead face a lie detector having a bubble tube and a bubble therein;
releasably attaching to a golf club shaft a shaft position indicator having an arcuate bubble tube with a bubble disposed therein, and a plurality of indicia members imprinted onto an arcuate surface adjacent said arcuate bubble tube;
positioning the golf clubhead such that the bubble in the lie detector indicates a correct positioning of said clubhead;
providing a record member having preprinted indicia thereon corresponding to indicia on said shaft position indicator;
recording a reading provided by said shaft position indicator on said record member when a golf club shaft is held in its correct position as indicated by said shaft position indicator, said reading being the position of the bubble in the arcuate bubble tube in relationship to an indicia means on said arcuate surface; and
holding the golf club shaft in a position where the position of the bubble in the arcuate bubble tube matches the position of the bubble as recorded in said record member for the particular club in use;
whereby future use of a preselected golf club does not require further use of the lie indicator and experimentation with various shaft positions because the user observes the recorded correct position of the club as indicated by the

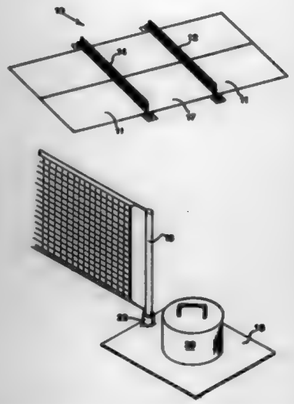
recorded relative positioning of said bubble and said arcuate surface and holds the club so that the bubble in the arcuate bubble tube matches the recorded position.

5,385,350

NET ARRANGEMENT FOR A COURT FOR GAMES

Neville M. Norman, 90 Sandyhurst Lane, Ashford Kent, United Kingdom

Filed Jan. 6, 1992, Ser. No. 817,351
Claims priority, application United Kingdom, Jan. 4, 1991, 9100153
Int. Cl.[6] A63B *61/00*
U.S. Cl. 273—29B **3 Claims**



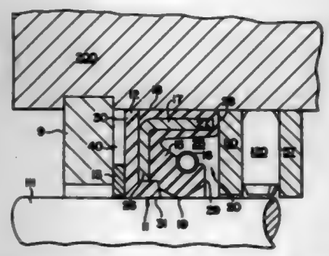
1. A shuttlecock court for playing a shuttlecock game with a shuttlecock, the court having a length of 12 m–15 m and a width of 6 m–9 m on which players move around and wherein the shuttlecock does not touch the court during the playing of a point, and a pair of spaced apart transverse nets having a height about 0.75 m to about 1.2 m extending across the court and separating two playing areas by a penalty zone between the nets.

5,385,351

REMOVABLE SHAFT SEAL

Hollis N. White, Hopkinsville, Ky., assignor to White Hydraulics, Inc., Hopkinsville, Ky.

Continuation-in-part of Ser. No. 847,850, Mar. 9, 1992, Pat. No. 5,213,343, which is a continuation of Ser. No. 305,376, Feb. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 217,307, Jul. 11, 1988, abandoned. This application Dec. 10, 1992, Ser. No. 988,869
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—12 **10 Claims**



1. A seal combination for a hydraulic device shaft having axial pressure thereon located in a bore in a housing, said combination comprising the shaft having an outer diameter, the bore having an inner diameter,

a shoulder, said shoulder being connected to the shaft extending outwardly therefrom,

a thrust bearing, said thrust bearing being located on the shaft next to said shoulder, said thrust bearing being spaced from a solid interconnection to the housing on the opposite side of said thrust bearing from said shoulder,

a seal, said seal being located on the shaft next to said thrust bearing on the opposite side from said shoulder, said seal having an outer diameter, said outer diameter of said seal being substantially equal to the inner diameter of the bore, said seal having an inner diameter, said inner diameter of said seal being substantially equal to the outer diameter of the shaft,

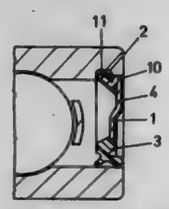
a ring, said ring being located surrounding the shaft next to said seal on the opposite side from said thrust bearing, said ring having an inner diameter, said inner diameter of said ring being less than said outer diameter of said seal and means to connect said ring to said housing whereby the axial pressures on the shaft are passed from said shoulder through said thrust bearing and said seal to said ring and housing.

5,385,352

SEALING SYSTEM FOR BEARINGS, PARTICULARLY RADIAL-TYPE BEARINGS

Isao Kurose, Okayama, Japan, assignor to Uchiyama Manufacturing Corp., Okayama, Japan

Division of Ser. No. 109,468, Aug. 20, 1993, Pat. No. 5,332,232. This application Dec. 30, 1993, Ser. No. 176,077
Claims priority, application Japan, Nov. 7, 1990, 2-117540
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—37 **6 Claims**



1. A sealing device for use in sealing a bearing assembly having an inner race, an outer race and an annular groove formed in one of the inner and outer races, said sealing device comprising:

a metal ring;

a resilient seal formed about said metal ring;

wherein said metal ring includes a radially inner portion, a marginal outer end portion, and a U-shaped intermediate portion with a curved base section and first and second leg sections extending in a radially inward direction away from said curved base section, said first leg section being integrally connected to an outer part of said radially inner portion and said marginal outer end portion being integrally connected to said second leg section and extending away therefrom at an angle so as to define an elbow between said second leg section of said U-shaped portion and said marginal outer end portion;

wherein said marginal outer end portion defines an engaging and sealing means for automatically engaging said sealing device in the annular groove of the bearing assembly and forming a sealing relation with the bearing assembly when said sealing device is pressed into the bearing assembly; and

wherein said U-shaped portion defines a means for allowing said marginal outer end portion to be expanded in diameter when said sealing device is pressed into the bearing

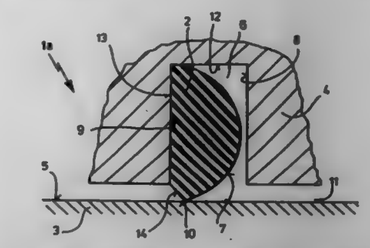
assembly while preventing significant deformation of said radially inner portion.

5,385,353

SEALING ARRANGEMENT

Roy Edlund, Echterdingen, Germany, assignor to Busak and Luyken GmbH & Co., Germany

Continuation of Ser. No. 924,021, Aug. 20, 1993. This application May 11, 1994, Ser. No. 241,068
Claims priority, application Germany, Feb. 28, 1990, 4006258
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—188 R **10 Claims**



1. A sealing arrangement for sealing a gap between two concentric machine elements which can relatively move with respect to each other, said sealing arrangement comprising:

a first of the two machine elements having a contact surface;

a second of the two machine elements having a profiled section;

the profiled section facing the contact surface of the first machine element and comprising a first flank, a second flank and a groove bottom, said groove bottom linking the first with the second flank;

a sealing ring being axially fixed in regard to the second machine element by means of the profiled section and seats at the contact surface of the first machine element;

said sealing ring having a substantially semicircular cross-section and comprising a curved peripheral surface, a radial surface, and a diagonal surface between said radial surface and said curved peripheral surface, said diagonal surface extending away from said second flank towards said contact surface to form a sealing edge between said diagonal surface and said curved peripheral surface at said contact surface.

5,385,354

METAL GASKET

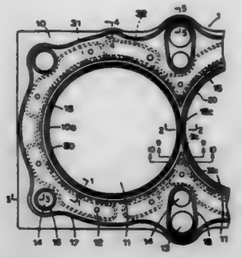
Yoshiyuki Hagiwara, Okazaki; Osamu Jinno, Nagoya; Takeshi Kitamura, Toyota; Akio Kuramoto, Okazaki; Yukio Kawai; Kenichi Yamaguchi, both of Toyota, and Hirotaka Kakuta, Toyoake, all of Japan, assignors to Taiho Kogyo Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Toyota, Japan

Division of Ser. No. 156,948, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 736,323, Jul. 26, 1991, abandoned. This application May 25, 1994, Ser. No. 249,379
Claims priority, application Japan, Jul. 26, 1990, 2-198183; Jul. 31, 1990, 2-202999; Aug. 3, 1990, 2-206026
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—235 B **1 Claim**

1. A metal gasket disposed between a cylinder head and a cylinder block of an internal combustion engine comprising a metallic base plate defining a plurality of openings including at least one combustion opening, and having a bead formed around said combustion opening,

said base plate being disposed such that a protruding, tip end of said bead faces one of said cylinder head and said cylinder block,

wherein said base plate further includes a plurality of auxiliary beads formed around said plurality of openings with the exception of said combustion opening, and a peripheral bead formed around substantially the entire outer periphery of said base plate, and wherein a spring constant of a portion of said peripheral bead spaced from said



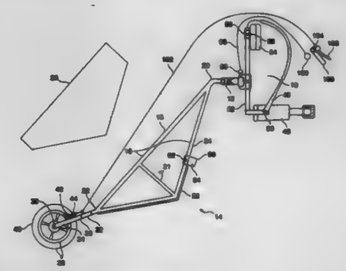
auxiliary beads, by a predetermined distance, is smaller than the spring constant of a portion of said peripheral bead located more distant from said auxiliary beads than said predetermined distance.

5,385,355

MONOWHEEL TRAVOIS

James V. Hoffman, 363 Foothill Blvd., San Luis Obispo, Calif. 93405, assignor to James V. Hoffman, San Luis Obispo, Calif.

Filed Sep. 7, 1993, Ser. No. 117,953
Int. Cl.[6] B62D *51/04*
U.S. Cl. 280—1.5 **10 Claims**



1. A travois assembly, comprising:

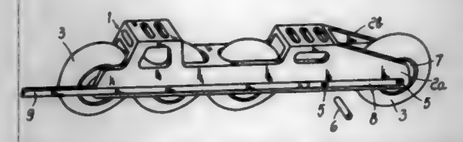
a load-carrying frame having a lower end and an upper end;

a single wheel rotatably mounted on said lower end of said load carrying frame;

a user harness having a single vertical frame member attached to a horizontal frame member at a lower end thereof, a back pad attached to said vertical frame member at an upper end thereof, a belt circumferentially attached to said horizontal frame member, a pair of shoulder straps each having a first end attached to said back pad and a second end attached to said horizontal frame member; and

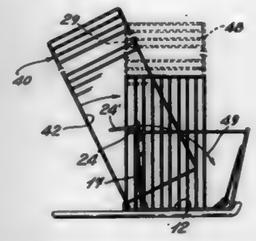
a universal joint having a first end attached to said upper end of said load carrying frame and a second end detachably coupled to said vertical frame member of said user harness at a coupling point thereof.

5,385,356
SUPPORTING FRAME PARTICULARLY FOR ALIGNED WHEELS OF SKATES
Gino Coata, Caerano S. Marco, Italy, assignor to Roces S.r.l., Italy
Filed Feb. 10, 1994, Ser. No. 196,282
Claims priority, application Italy, Mar. 24, 1993, TV93 A 000035
Int. Cl.[6] A63C *17/06*
U.S. Cl. 280—11.22 9 Claims



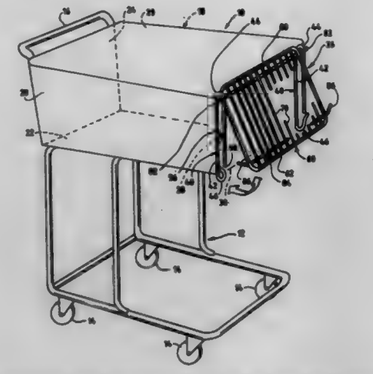
1. A supporting frame assembly for aligned wheels of a roller skate, comprising:
a pair of substantially parallel wing elements connected to one another, said wing elements each having an outer surface facing away from the other of said wing elements, one of said wing elements being provided with a plurality of first holes, another of said wing elements being provided with a plurality of second holes coaxially aligned with respective ones of said first holes, said first holes each having an outer portion defined by a first diameter and an inner portion, facing said another of said wing elements, defined by a second diameter larger than said first diameter, whereby said first holes are partially closed;
a plurality of wheel-supporting pivot pins each having a length less than a distance between the outer surfaces of said wing elements, said pivot pins being inserted through respective ones of said second holes and into associated ones of said first holes so that said pins are located between the outer surfaces of said wing elements; and
means separate from said pivot pins for temporarily covering said second holes at the outer surface of said another wing element upon insertion of said pivot pins through respective ones of said second holes and into associated ones of said first holes and for thereby preventing removal of said pivot pins from said first holes and said second holes.

5,385,357
REAR FOLDING BACKREST FOR SEAT COMPARTMENT OF AN OVER-THE-COUNTER SHOPPING CART
Antoine Trubiano, Montreal, Canada, assignor to Technibilt, Ltd., Newton, N.C.
Filed Feb. 25, 1994, Ser. No. 202,278
Int. Cl.[6] B62B *3/00*
U.S. Cl. 280—33.993 10 Claims



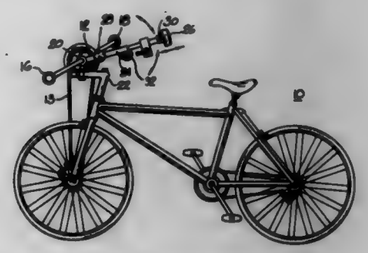
1. An over-the-counter shopping cart comprising a frame supported on wheels, said frame having an elevated basket support section, a main merchandise-carrying basket secured forwardly over said support section, a baby seat compartment secured to a rear portion of said support section, and handle means to displace said shopping cart; said main merchandise-carrying basket having a bottom wall, side walls, a front wall, and an open rear end; said baby seat compartment having a bottom wall, side walls, a rear wall with leg holes therein, an open front end, and a hinged backrest; said hinged backrest being hinged at a lower edge a predetermined distance from said open front end whereby said backrest can be swung down over said bottom wall of said baby seat compartment towards said rear wall to a storage position, arresting means to prevent said hinged backrest from hinging forwardly through said open front end and for maintaining said backrest at an elevated position of use, protrusion means secured to said backrest and extending forwardly through said open front end into said main basket when said backrest is at said position of use, said main merchandise-carrying basket bottom wall having a hinge connection at said open rear end adjacent said open front end of said baby seat compartment; said merchandise-carrying basket being wider than said baby seat compartment, and said merchandise-carrying basket, when displaced to a substantially vertical storage position on said hinge connection with its bottom wall lying against a substantially vertical plane of said open front end of said baby seat compartment, being engageable with said protrusion means to push against said protrusion means of said backrest, when in said position of use, to move said backrest to said storage position.

5,385,358
SHOPPING CART HAVING BASKET WITH IMPROVED FRONT GATE
Mark Adamson, Broken Arrow, Okla., assignor to UNR Industries, Inc., Chicago, Ill.
Filed May 6, 1993, Ser. No. 58,566
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—33.995 11 Claims



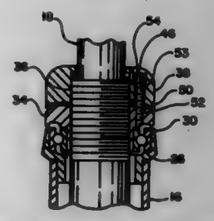
1. A shopping cart basket having a front gate, the front gate comprising two stanchions, a gate panel having an upper edge, and means for mounting the gate panel to the stanchions so as to permit the gate panel to have a limited range of generally vertical movement relative to the stanchions and to swing outwardly and upwardly about an axis near the upper edge when raised to an upper position in said range but not when lowered to a lower position in said range.

5,385,359
STABILIZATION DEVICE FOR FRONT WHEEL DRIVE BICYCLES
James J. Ehrbar, 730 N. Racine Cir., Mesa, Ariz. 85205
Continuation of Ser. No. 874,822, Apr. 28, 1992, abandoned.
This application Nov. 22, 1993, Ser. No. 156,389
Int. Cl.[6] B62M *1/12, 3/16*
U.S. Cl. 280—234 10 Claims



1. A front wheel drive bicycle comprising:
a main frame;
a rear wheel rotatably coupled to the main frame;
pedal drive means for driving the rear wheel;
a front wheel steering column journaled to the main frame having a longitudinal axis such that the steering column may be turned with respect to the main frame about said axis for steering the bicycle;
a front wheel rotatably coupled to the front wheel steering column;
a hand crank drive mechanism attached to the front wheel steering column and coupled to the front wheel for enabling the rider to steer the front wheel and to apply driving power thereto, the hand crank drive mechanism including a bearing frame mounted forward of the longitudinal axis about which said steering column may be turned, said bearing frame supporting a pair of hand cranks and an associated drive rotation, said hand cranks being arcuately spaced 180 degrees apart from each other with respect to said drive sprocket; and
a stabilizer bar connected to the bearing frame and extending rearward from the hand crank drive mechanism, the stabilizer bar having a chest pad adjustably mounted at a distal end thereof for receiving a forward force applied by the rider's chest to thereby counteract torsional forces produced by reciprocating motion of the rider's arms while operating the hand crank drive mechanism.

5,385,360
HEADSET LOCKING MECHANISM
William B. Shook, Tampa, Fla., assignor to Thurston, Inc., Columbus, Ohio
Filed Sep. 17, 1993, Ser. No. 123,515
Int. Cl.[6] B62K *21/12*
U.S. Cl. 280—279 8 Claims



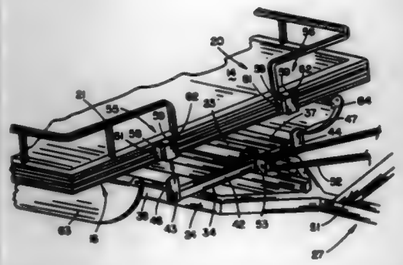
1. A wheel and steering support apparatus for a bicycle having an axle comprising,
a fork having a downwardly extending arm with an end for engaging said axle of said bicycle, said arm including a transversely extending bridge remote from said axle engaging end,
a threaded body having an axis projecting upwardly from said bridge, a cylindrical sleeve having an axis, said sleeve coaxially encircling said body,
said body and sleeve being configured to rotate independently about their axes,
both an upper and a lower cone circumscribing said body and each cone engaging a separate thrust bearing mounted in a separate cup, each cup being mounted at one end of said sleeve and radially spaced from said body, said upper cone threadedly engaging the threaded body to lock said body and sleeve against relative axial movement,
a lock nut threadedly engaging said body and spaced from said upper cone,
at least one screw having an axis threadedly engaging one of said upper cone and lock nut and applying force along said screw axis to the other of said upper cone and lock nut.

5,385,361
SHOCK ABSORBER DEVICE PLACED IN THE REAR PART OF A BICYCLE
Claudio De Bei, Vicolo Bonamigo, 7, Bassano Del Grappa (Vicenza), Italy
Filed Oct. 21, 1992, Ser. No. 964,414
Claims priority, application Italy, Oct. 23, 1991, VI91 A 000161
Int. Cl.[6] B62K *25/28*
U.S. Cl. 280—284 3 Claims



1. A bicycle which has a frame said frame having a front part (9) and a rear part, a saddle, a sleeve supporting said saddle, a fork (8) in said rear part of the frame, a tubular member (1) supporting said sleeve, said front part of said frame (9) having a lower extremity, said fork (8) having a front part, a rear part (11) and two arms, said arms having an intermediate part, a shock absorber device (2), having a shaft (3), said shaft having a lower part, said shock absorber device (2) being placed within said tubular member (1) which supports said sleeve, said fork (8) being pivoted at a point corresponding to its front part to said lower extremity of said front part (9) of said frame by means of a first pin (10), said intermediate part of said arms being pivoted to a second pin (6), said second pin being fixed to said lower part of said shaft (3) of said shock absorber, two slits (4) being formed corresponding to said lower part of said shaft (3), said slits having an interior and being counterplaced in said tubular member (1) whereby said second pin (6) goes through said slits, said second pin (6) sliding in said interior of said slits in response to the irregularities of the ground upon which said rear wheel of the bicycle travels; said fork (8) being free of connection with the pedal.

5,385,362
LOCKING MECHANISM FOR PONTOON BOAT TRAILER
Malcolm Sohm, 1243 Conrad St., Oshkosh, Wis. 54904
Filed Nov. 7, 1991, Ser. No. 788,920
Int. Cl.[6] B60P *3/10*
U.S. Cl. 280—414.1 **5 Claims**



1. In a pontoon boat trailer having a wheeled main frame with a tongue and hitch unit at a front end thereof, a subframe pivotally mounted on the main frame for supporting a pontoon boat, a pontoon boat having a front end, a winch assembly operably connected between the tongue and hitch unit and the subframe at a front end thereof; the improvement comprising a stop unit mounted on the subframe front end, and bracket means for mounting on the front end of the pontoon boat for releasable locking engagement with the stop unit for preventing longitudinal movement of the pontoon boat while supported on the subframe.

5,385,363
TRAILER HITCH
James A. Morey, 1103 W. Central, Bentonville, Ark. 72712
Filed Jul. 31, 1992, Ser. No. 923,264
Int. Cl.[6] B60D *1/06, 1/26*
U.S. Cl. 280—511 **2 Claims**

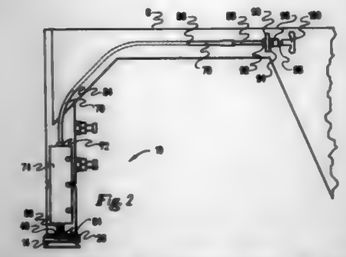
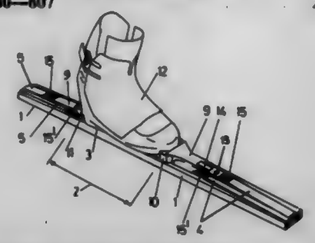


Fig. 2

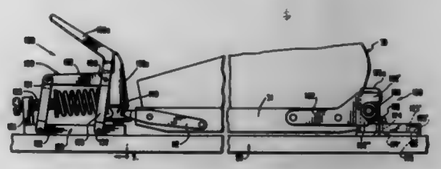
1. In a trailer hitch for securing a trailer to a hitch ball mounted on a towing vehicle, said trailer hitch including a column secured to said trailer, a holding plate mounted at a distal end of said column, said holding plate including a first aperture dimensioned to receive said hitch ball, a latch plate possessing a second aperture dimensioned to receive said hitch ball, the improvement comprising:
a pivot member mounting said latch plate for limited reciprocal pivotal movement relative to said holding plate between a locked position in which said first and second apertures are misaligned to prevent passage of said hitch ball and an unlocked position in which first and second apertures are aligned to allow passage of said hitch ball;
a conically tapering cup-shaped guide member secured to said latch plate substantially disposed in coaxial alignment with said second aperture for aligning said hitch ball with said second aperture and for directing said hitch ball against an edge portion of said first aperture such that insertion of said hitch ball into said guide means and said first aperture automatically cams said latch plate to said unlocked position to allow passage of said hitch ball through said first aperture;
a tension spring possessing a first end secured to said latch plate and an opposite end secured to said holding plate, said tension spring biasing said latch plate to said locked position such that said latch plate automatically returns to said locked position upon complete insertion or withdrawal of said hitch ball from said first and second apertures;
a retaining pin mounted for movement between a retracted position and an extended position through a first hole in said holding plate and a second hole in said latch plate, said first and second holes disposed in coaxial alignment in said locked position;
a compression spring biasing said retaining pin to said extended position;
a cable secured to said retaining pin to allow remote actuation of said retaining pin; and
means for selectively locking said cable in a selected position to selectively secure said retaining pin in said retracted position.

5,385,364
SKI WITH SKI BINDING
Wolfgang Nussbaumer, Dornbirn, Austria, assignor to Kastle Aktiengesellschaft, Austria
PCT No. PCT/AT91/00053, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO91/16111, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 11, 1991, Ser. No. 927,439
Claims priority, application Austria, Apr. 12, 1990, A 878/90
Int. Cl.[6] A63C *9/00*
U.S. Cl. 280—607 **21 Claims**



1. A ski with a ski binding, comprising:
a ski shaped body having a boot support surface, a binding fixing region, and at least one raised portion integral with said ski shaped body and extending upwardly above said boot support surface;
wherein said binding fixing region includes a front and a back region, where each said raised portion is disposed on said ski shaped body so as to be proximate to at least one of said binding fixing region front and back regions;
wherein each said raised portion has at least two guide surfaces, each said guide surface extending parallel to a longitudinal axis of said ski body and being disposed so as to be at least in part above said boot support surface;
wherein the ski binding comprises a binding member having a component adapted to be guided longitudinally by said guide surfaces;
wherein said at least two guide surfaces are disposed in said raised portion so that there is an angle between said at least two guide surfaces; and
wherein one of said at least two guide surfaces is disposed in said raised portion so this said one of said at least two guide surfaces secures said component from being lifted off said ski body.

5,385,365
SAFETY SKI BINDING
James M. Edmund, 260 Pawnee Dr., Boulder, Colo. 80303
Filed May 17, 1993, Ser. No. 61,266
Int. Cl.[6] A63C *9/086*
U.S. Cl. 280—627 **20 Claims**



1. A safety ski binding for a ski in which the sole of a ski boot is held out of contact with the ski surface, comprising a toe structure and a heel structure, means releasably retaining the ski boot in the toe structure and in the heel structure in such a manner that at least the entire forward portion of the underside of the sole of the ski boot is spaced from the surface of the ski including toe and heel lug means projecting, respectively, forwardly and rearwardly from the boot sole, and toe and heel support means on the ski each including anti-friction roller means supported thereon for engagement with the respective lug means to provide a suspension of the ski boot from said surface, one of said support means including spring means for spring-loading the binding to normally clamp the boot to the ski while enabling release in case of a predetermined force, and the toe support means including a support part for the anti-friction means and linkage means operable to keep the support part at a substantially constant angle.

5,385,366
AIR BAG DEFLECTION SHIELD
Frederick W. Frank, Tipp City, Ohio, and Benjamin M. Herr, IV, Clinton Township, Macomb Co., Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 7, 1993, Ser. No. 116,200
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728 B **12 Claims**

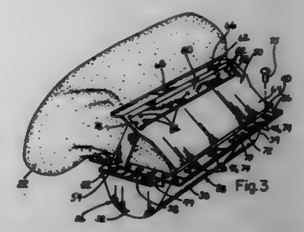
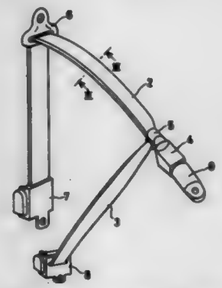


Fig. 3

1. In a vehicle having an air bag module mounted beneath an opening in a vehicle panel, the module including an inflatable air bag for deployment through the opening, and a cover door closing the opening and hingedly connected to the vehicle panel for pivotal movement away from the opening, the improvement comprising:
an air bag deflection shield underlying and separate from the cover door and overlying the air bag and module, the deflection shield having a forward edge hingedly connected to the module to enable the inflating air bag to pivot the deflection shield away from the module so that the deflection shield engages and moves the cover door away from the opening, the deflection shield having a rearward edge being upwardly rolled to form a U-shaped cross-section for creating a strong, smooth rearward edge on the deflection shield for directing the inflating air bag, and means for limiting the pivotal movement of the deflection shield to a predetermined position forming a rearwardly opening angle to direct deployment of the inflating air bag,
whereby upon air bag deployment the deflection shield directs the inflating air bag rearwardly and downwardly towards a vehicle occupant and shields the cover door from contact by the inflating air bag.

5,385,367
INFLATABLE SEATBELT SYSTEM
Toshihiko Tanaka, Tokyo, and Tsuneo Chikaraishi, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan
Filed Jul. 30, 1993, Ser. No. 99,479
Claims priority, application Japan, Aug. 6, 1992, 4-210355
Int. Cl.[6] B60R *21/18*
U.S. Cl. 280—733 **17 Claims**

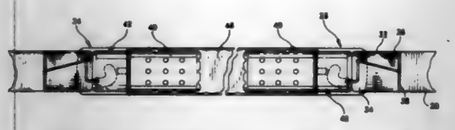


1. An inflatable seat belt system for a vehicle, which comprises:
gas generating means for generating a gas when deceleration acting on the vehicle in an emergency exceeds a first set deceleration, which indicates collision of the vehicle;
webbing having a portion brought into contact with an occupant's body, at least a part of said contact portion being formed as a bag-shaped portion; said bag-shaped portion being completely formed of a knitted fabric; said webbing being arranged in such manner that when no gas is generated from said gas generating means, said webbing is maintained in the shape of a strap with a predetermined width, and when a gas is generated from said gas generating means, said bag-shaped portion is inflated by the gas;
a tongue connected to said webbing;
a buckle device provided with said gas generating means on one end thereof and removable engaged with said tongue; and
a retractor operating in such manner that when the deceleration on the vehicle is not higher than a second set deceleration, which is lower than said first set deceleration, said retractor allows said webbing to be freely wound up and unwound, and when the deceleration on the vehicle exceeds said second set deceleration, said retractor prevents unwinding of said webbing.

5,385,368
SELF CONTAINED, PORTABLE, PROTECTIVE SAFETY AIR BAG
Herbert H. Bridge, c/o Hitching Post Resort, 100 Barefoot Williams Rd., Naples, Fla. 33962
Filed Dec. 20, 1993, Ser. No. 125,304
Int. Cl.[6] B60R *21/18*
U.S. Cl. 280—733 **7 Claims**

1. A vehicle safety device for attachment to a vehicle having fixed upper and lower attachment points, said device comprising a longitudinally oriented jacket having opposed ends and an interior space and having opposed ends and a longitudinally oriented inflatable airbag having opposed ends disposed in end to end relation within said interior jacket space, upper and lower belt portions each having opposed ends with one of each

of said opposed ends adapted for respective connection to said upper and lower attachment points and the other ends of each of said belt portions connected to said jacket opposed ends with said jacket disposed intermediate said other ends of said belt portions, at least one of said jacket and belt portion end connections including a longitudinally extendible elastic connector disposed between said at least one jacket and belt portion ends, said at least one jacket end including expansion



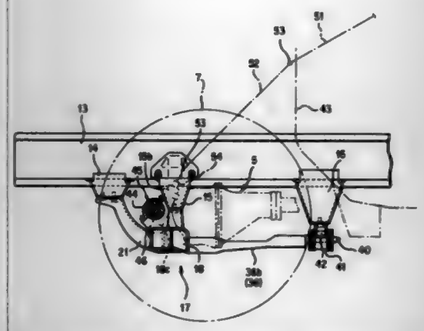
means operatively connected to said airbag for inflating said airbag, activation means for activating said expansion means, said actuation means in part including a non-elastic activation member supported by said elastic connector and longitudinally movable therewith such that when said elastic connector is longitudinally extended a predetermined distance wherein the accompanying longitudinal movement of said activation member activates said expansion means to inflate said airbag.

5,385,369

VEHICLE HAVING STRUCTURE FOR FITTING SUSPENSION TO VEHICLE BODY

Yoshiaki Mukai; Yoji Tokiwa, and Seiji Miyamoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 10, 1993, Ser. No. 58,738
Claims priority, application Japan, May 9, 1992, 4-037683[U]
Int. Cl.[6] B62D *21/00*
U.S. Cl. 280—788 20 Claims



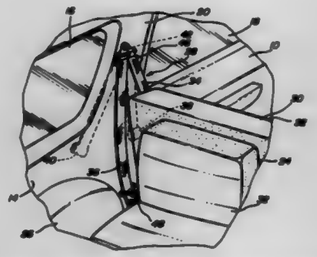
1. In a structure, for fitting a suspension device to a body frame of the vehicle body, which includes a cross member extending between left and right side frame members, each of which extends in a lengthwise direction of said vehicle body from the front to the back, and forms part of said body frame, and further includes fitting bracket means, secured to each said side frame member, for fitting both of said cross member and suspension arms of the suspension device to each said side frame member, the improvement comprising that each said fitting bracket means includes a plurality of fitting brackets arranged in the lengthwise direction at predetermined lengthwise separations, each one of said plurality of said fitting brackets being formed to have a structural rigidity lower than the adjacent one to the rear.

5,385,370

OCCUPANT RESTRAINT SYSTEM WITH IMPROVED MOUNTING MECHANISM

Francis J. Wickenheiser, Carleton; Timothy J. Sterling, Swartz Creek, and Tom T. Ngo, Madison Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 172,798
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—808 16 Claims



1. An occupant restraint system for an automotive vehicle, comprising:
- a vertically extending vehicle body pillar;
- a pair of longitudinally spaced seats carried in the vehicle in back-to-back relationship, a front seat facing forwardly and a rear seat facing rearwardly, the backs of the seats being positioned in longitudinal registration with the pillar;
- a front seatbelt;
- a rear seatbelt;
- a front retractor mounted on the vehicle adjacent the front seat and operative to control protractive and retractive movement of the front seatbelt;
- a rear retractor mounted on the vehicle and operative to control protractive and retractive movement of the rear seatbelt;
- a front D-ring having an elongated slot for guiding and receiving the front seatbelt from the front retractor and guiding the seatbelt toward the front seat;
- a rear D-ring having an elongated slot for guiding and receiving the rear seatbelt from the rear retractor and guiding the rear seatbelt toward the rear seat; and

means for mounting both the front and rear D-rings on the vehicle body pillar for pivotal movement with respect thereto.

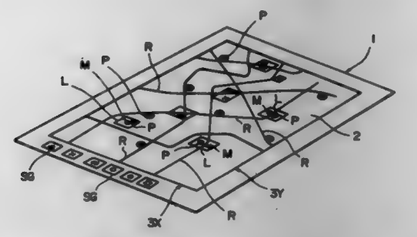
5,385,371

MAP IN WHICH INFORMATION WHICH CAN BE CODED IS ARRANGED IN INVISIBLE STATE AND A METHOD FOR CODING THE CONTENT OF THE MAP

Michio Izawa, 6-15-408 Tsunashimahigashi 3-chome, Kohoku-ku, Yokohama, Kanagawa, Japan

Filed Apr. 26, 1994, Ser. No. 233,343
Claims priority, application Japan, Mar. 8, 1994, 6-062157
Int. Cl.[6] G09B *29/00*
U.S. Cl. 283—34 10 Claims

1. A map display system comprising:
- a map with visible features thereon, said map having blocks of encoded information not visible to the naked eye, each of said blocks of encoded information being associated with one of said visible features and including an identification thereof;
- a data store for storing digital data representing said map and including additional digital data representing additional features not visible on said map;
- a map scanner for reading said blocks of encoded information and for providing to said data store the information encoded therein; and
- a monitor for displaying a portion of said map represented by said digital data responsive to identification of a visible feature by said map scanner, and for displaying said additional features represented by said additional digital data,



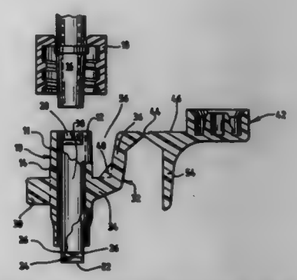
the displayed portion of said map and said additional features having a smaller scale than said map and including the one of said visible features identified by said map scanner.

5,385,372

LUER CONNECTOR WITH INTEGRAL CLOSURE

David S. Utterberg, 2033 First Ave., #3, Seattle, Wash. 98121

Filed Jan. 8, 1993, Ser. No. 2,778
Int. Cl.[6] A61M *25/00, 5/32*
U.S. Cl. 285—332 20 Claims



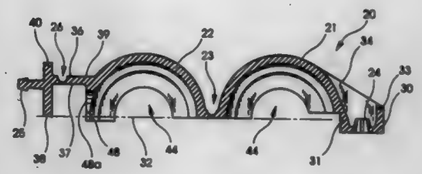
1. A luer connector which comprises a tube having an open, outer end and a luer-tapered surface communicating with said outer end; said tube carrying a side arm which is attached to said tube at a position longitudinally spaced from the open, outer end, said side arm extending from said position radially outwardly from said tube and also extending in generally longitudinal relationship with the axis of said bore toward said open, outer end, to define a space between said tube and said side arm; a cap connected to said side arm by a hinge in a position permitting said cap to pivot between a closed position in which the cap closes said open, outer end and an open position in which said cap is spaced from said open, outer end, said side arm defining an effectively rigid, fixed configuration to position said hinge and cap to permit pivoting to said closed position from the open position upon pressing with a single finger.

5,385,373

TAMPER-EVIDENT, SELF-LOCKING COVER FOR MECHANICAL CONNECTIONS AND RELATED OBJECTS

Vaughn R. Love, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Mar. 22, 1993, Ser. No. 34,284
Int. Cl.[6] A47C *3/00*
U.S. Cl. 292—307 B 20 Claims



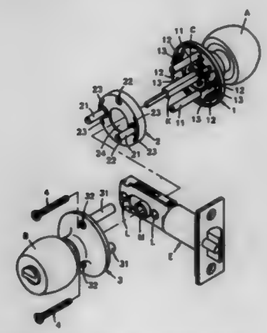
1. A tamper-evident cover for enclosing an object comprises:
- a pair of semi-cylindrical shell halves hingedly joined together;
- a female receptacle outwardly extending from a first one of said pair of shell halves;
- a male stem in a non-engaging orientation, outwardly extending from a second one of said pair of shell halves;
- hinge means connecting said male stem with said second one of said pair of shell halves for allowing the orientation of said male stem to be changed to an engaging orientation; and
- said male stem in said engaging orientation being in axial alignment with said female receptacle when said pair of shell halves are closed together.

5,385,374

REINFORCED CYLINDRICAL DOOR LOCK SET

Yaw-Shin Fann, Chiayi; San-Yi Lin, Yun-Lin Hsien; Rong-Fan Wu, Chiayi Hsien; Ching-Chuan Kuo, Chiayi Hsien, and Lan-Kun Don, Chiayi Hsien, all of Taiwan, Prov. of China, assignors to Tong-Lang Metal Industry Co., Ltd., Chiayi, Taiwan, Prov. of China

Filed Jun. 21, 1993, Ser. No. 80,365
Int. Cl.[6] E05B *3/00*
U.S. Cl. 292—336.3 6 Claims



1. A cylindrical door lock set, comprising:
- an outer knob supporting plate having a central hole, an outer side, and an inner side provided with a pair of posts on two sides of said central hole, said posts being hollow and being threaded internally;
- an outer door knob connected to said outer side of said outer knob supporting plate;

a turning mechanism supported on said inner side of said outer knob supporting plate and provided with a turn shaft;

an annular mounting plate secured on said inner side of said outer knob supporting plate and formed with a pair of mounting shafts and a central hole to permit said turn shaft of said turning mechanism to extend therethrough;

a latch unit formed with a shaft engaging hole to permit said turn shaft to extend therethrough, and two side holes disposed on two sides of said shaft engaging hole in a lengthwise direction of said latch unit to receive respectively said mounting shafts, said latch unit being disposed between said posts;

an inner knob supporting plate having an outer side and being formed with a central hole and a pair of holes which are aligned with said posts;

an inner door knob connected to said outer side of said inner knob supporting plate in said central hole, said inner door Knob engaging one end of said turn shaft; and

a pair of bolts respectively passing through said holes of said inner knob supporting plate and respectively engaging said posts.

5,385,375

REINFORCED IMPACT BEAM FOR A BUMPER ASSEMBLY AND METHOD OF MANUFACTURE

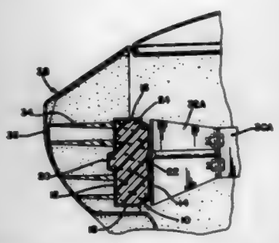
Terry B. Morgan, Lansing, Mich., and Dean M. Bayer, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 979,981, Nov. 23, 1992. This application Nov. 1, 1993, Ser. No. 143,732

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[6] B60R *19/22*

U.S. Cl. 293—109 **5 Claims**



1. A reinforced bumper assembly mounted at the front or rear end of an automobile comprising:

(a) a unitary impact beam having a closed cross section formed by laterally spaced front and rear walls connected by top and bottom walls and at least one open end;

(b) rib means formed in at least one of the front and rear walls;

(c) a foam gusset spanning the distance between and bonded to at least the front and rear walls;

(d) energy absorber means mounted on the front wall of the impact beam; and

(e) a fascia covering the energy absorber means.

5,385,376

DEVICE FOR PICKING UP LITTER SUCH AS ANIMAL EXCREMENT

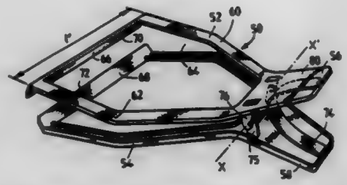
Giorgio Malaspina, Ovada, Italy, and Nicola Francone, Yerres, France, assignors to Socoplast, France and Nuova Poliver Di Oddone C., Italy

Filed Dec. 10, 1993, Ser. No. 165,963

Claims priority, application France, Dec. 15, 1992, 92 15107; Jul. 9, 1993, 93 08480

Int. Cl.[6] A01K *29/00*; E01H *1/12*

U.S. Cl. 294—1.3 **17 Claims**



1. A device for picking up litter such as animal excrement comprising:

a tongs device having:

two substantially identical arm forming assemblies, each of said arm forming assemblies comprising two elongated elements each having first and second ends, interconnection means for interconnecting said first ends of the elongated elements, and a cross-member for interconnecting said second ends of said elongated elements, said cross-members each comprising a lip portion,

an axis disposed in parallel with said cross-members, said interconnection means disposed relative to said axis so that said arm forming assemblies pivot about said axis,

two control extensions disposed opposite said axis from said arm forming assemblies, each said control extension being integral with a respective one of said arm forming assemblies and being disposed at an angle relative to the respective arm forming assembly, and

resilient return means cooperating with said control extensions for pressing the lip portions of said cross-members against each other; and

a bag comprising a pocket-forming portion including two facing walls interconnected at a bottom thereof, two bellows-forming parts, and an extension-forming portion having a free end, said bag being selectively mountable on the tongs device by disposing said pocket-forming portion between the arm-forming assemblies of the tongs device, the extension-forming portion of the bag being folded back around said cross-members to extend substantially over an entire length of the arm-forming assemblies of the tongs device.

5,385,377

PICKUP TRUCK BED COVERS AND ATTACHMENT SYSTEM THEREFORE

Randall Girard, LaSalle, Canada, assignor to Canvashack Convertible Tops Inc., Windsor, Canada

Filed Oct. 8, 1992, Ser. No. 958,299

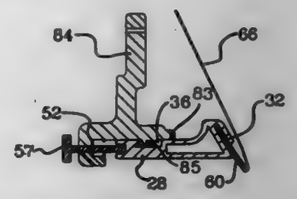
Int. Cl.[6] B60P *7/02*

U.S. Cl. 296—36 **11 Claims**

1. An attachment system for removably securing a flexible cover to the perimeter of a bed of a vehicle having a pair of spaced sidewalls, each sidewall having an inturned top edge, comprising:

rails having a top wall, a bottom wall and opposed side edges, the bottom walls of each rail being adapted to overlie the inturned top edge of a one of the sidewalls, the top wall being adapted to receive a clamp member for affixing the rails to the respective inturned edge of the sidewall, and a side edge of the rails located away from the bed including a depending lip which forms a bight of consistent width and depth that extends along that side of the rails; and

a flat resilient fastener for securing the flexible cover to the rails, the fastener having opposed first and second longitudinal edges, a length of the fastener being connected along each side edge of the flexible cover, the bight being adapted to receive the first longitudinal edge of the fastener but the fastener being wider than the depth of the bight so that the second longitudinal edge of the fastener



is spaced from an end of the depending lip when the first edge is received in the bight whereby a side edge of the cover is folded inwardly so that the fastener lies in a plane parallel to the cover, the first edge of the fastener is inserted in the bight to attach the cover to the vehicle, and the fastener acts as a spring to tension the cover, and the rails include a ridge which extends along the top wall and the ridge is notched to locate the clamp member at a location appropriate for attaching the rail to the sidewall of the bed.

5,385,378

GLOVE BOX STRUCTURE FOR MOTOR VEHICLES

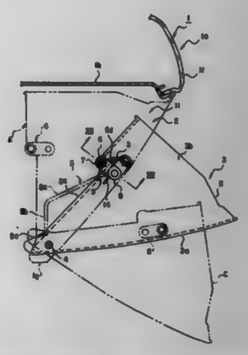
Hitoshi Hakamada, and Kenji Hoshino, both of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1993, Ser. No. 127,515

Claims priority, application Japan, Sep. 28, 1992, 4-282517

Int. Cl.[6] B60R *7/06*

U.S. Cl. 296—37.12 **14 Claims**



1. A glove box structure for use in an instrument panel in a motor vehicle, comprising:

a partition assembly defining an opening;

a glove box pivotally mounted at a lower end thereof in said opening for angular movement between a first angular position in which said glove box is fully disposed in said opening, a second angular position in which said glove box is partly displaced out of said opening, and a third angular position in which said glove box is fully displaced out of said opening;

said partition assembly including a side partition having a fixed pivot connection for mounting said glove box and a limit member;

said glove box having means defining a pivot axis for mounting in said pivot connection and an engaging member for engaging said limit member to lock said glove box in said second angular position; and

releasing means mounted on said glove box for releasing said engaging member from said limit member to allow said glove box to move angularly about said pivot connection from said second angular position to said third angular position.

5,385,379

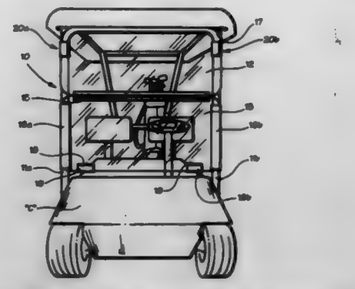
SPLIT-PANEL WINDSHIELD ASSEMBLY FOR ATTACHMENT TO A RECREATION VEHICLE

Edward J. Heavner, Concord, N.C., assignor to Plastics Manufacturing, Inc., Harrisburg, N.C.

Continuation-in-part of Ser. No. 131,654, Oct. 5, 1993. This application May 20, 1994, Ser. No. 246,945

Int. Cl.[6] B60J *1/04*

U.S. Cl. 296—84.1 **12 Claims**



1. In a split-panel windshield assembly of the type for attachment to at least one of a pair of laterally spaced and vertically extending front support posts of a recreation vehicle, and including a lower windshield panel for being attached to a lower portion of respective front support posts and an upper windshield panel pivotally connected along a top side edge of the lower windshield panel, the upper windshield panel being movable from a closed position generally above and coplanar with the lower windshield panel to an open position generally forward of and beside the lower windshield panel, the improvement in said windshield assembly comprising retaining means located on at least one of said front support posts to releasably hold said upper windshield panel in the closed position, said retaining means comprising:

(a) fastener means removably attached to the front support post of said recreation vehicle; and

(b) a retainer clip carried by said fastener means and including a windshield retaining member, the windshield retaining member and fastener means defining a windshield panel retaining space therebetween for holding said upper windshield panel in the closed position.

5,385,380

SPLIT WINDSHIELD ASSEMBLY FOR RECREATION VEHICLE

Edward J. Heavner, Concord, N.C., assignor to Plastics Manufacturing, Inc., Harrisburg, N.C.

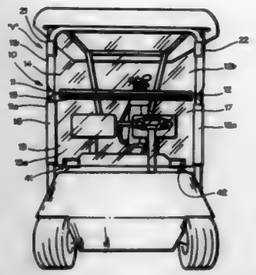
Filed Oct. 5, 1993, Ser. No. 131,654

Int. Cl.[6] B60J *1/04*

U.S. Cl. 296—84.1 **19 Claims**

8. A retainer clip for holding an upper windshield panel of a split windshield assembly in a closed position adjacent to first and second front support posts of a recreation vehicle, said retainer clip comprising:

(a) an attachment member having an outer surface for engaging and being attached to a front portion of said front support posts, and an inner surface for engaging an inside face of said upper windshield panel when said upper windshield panel is in the closed position;
(b) a windshield retaining member integrally formed at one end with said attachment member and having an inner surface opposite the inner surface of said attachment member for engaging an obverse face of the upper windshield panel when said upper windshield panel is in the closed position, whereby the attachment member and the windshield retaining member cooperate to securely hold said upper windshield panel therebetween in the closed position while the recreation vehicle is in motion; and
(c) said windshield retaining member being movable from a biased, panel holding position adjacent the obverse face of



the upper windshield panel to a panel release position generally perpendicular to the obverse face of the upper windshield panel.

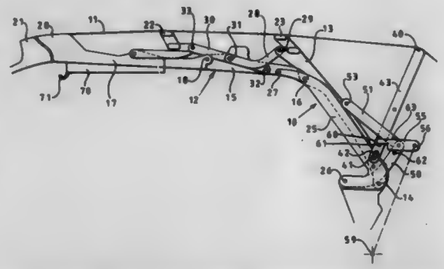
16. A hollow windshield clamp for being attached to a lower windshield panel of a split windshield assembly to grip and hold a curved top edge of an upper windshield panel when said upper windshield panel is in an open position, said clamp comprising:
(a) a base for being fixedly attached to the lower windshield panel at a lower portion thereof; and
(b) first and second flexible hollow arms integrally formed with the base and extending outwardly from the base, said first and second hollow arms having opposed, closely spaced-apart inside surfaces defining a longitudinally-extending, windshield-holding channel for engaging the curved top edge of said upper windshield panel when said upper windshield panel is in the open position.

5,385,381
VEHICLE ROOFS

Donald J. Moore, Wolston, and William Bennion, Shoreham By Sea, both of United Kingdom, assignors to Jaguar Cars Limited, United Kingdom

Filed Sep. 14, 1993, Ser. No. 121,229
Claims priority, application United Kingdom, Oct. 3, 1992, 9220654
Int. Cl.[6] B60J *7/08*
U.S. Cl. 296—117 **5 Claims**

1. A vehicle roof comprising a roof frame and a cover of flexible material, the roof frame having a pair of main beams, said main beams extending longitudinally of the vehicle on either side of the passenger compartment when the roof is erected, the forward ends of the main beams being interconnected by a canopy rail which is adapted to engage and be latched to the windscreen header of the vehicle, at least one bow spanning the main beams at a position spaced longitudinally rearwardly of the canopy rail, said bow when the roof is erected extending above the common plane of the main beams, said main beams being hinged at one or more positions along their lengths and linkage mechanisms being provided on each side of the roof frame to control folding of the roof frame as it is moved between an erected position and a lowered position, power means being associated with the linkage mechanisms;
a. for movement of the roof frame between its erected and lowered positions;

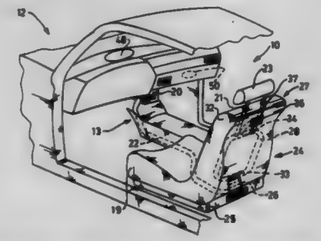


b. to retract said bow towards the common plane of the main beams during movement of the roof frame from its lowered to its raised position; and
c. to extend the bow above the plane of the main beams to tension the cover when the canopy rail of the roof frame has been latched to the windscreen header.

5,385,382
COMBINATION SEAT FRAME AND VENTILATION APPARATUS

Arthur W. Single, II, Plymouth; Thomas J. Steiner, Washington; James J. Cristiano, Novi; Matthew J. Macek, Dearborn; Debra Yeager, Canton, and Riad A. Farah, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 6, 1993, Ser. No. 132,418
Int. Cl.[6] A47C *7/74*
U.S. Cl. 297—180.13 **9 Claims**

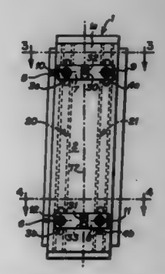


1. An occupant seating apparatus for a passenger compartment of a motor vehicle having a source of conditioned air under pressure, said apparatus comprising:
a seat base secured to said motor vehicle within said passenger compartment;
a seat back having a rearward facing surface;
a seat back frame;
an inlet disposed on a lower portion of said seat back frame, said inlet being in communication with said source of conditioned air;
an outlet disposed on an upper portion of said seat back frame, said outlet being in communication with said passenger compartment;
a tubular portion of said seat back frame fluidly interconnecting said inlet to said outlet in a substantially sealed relationship, said tubular portion comprising:
a horizontal lower portion having a first end and a second end, said inlet being disposed substantially midway between said first and second ends;
a right vertical portion having a right lower end and a right upper end, said right lower end fluidly joined to said first end of said lower horizontal portion in a sealed relationship;
a left vertical portion having a left lower end and a left upper end, said left lower end fluidly joined to said second end of said lower horizontal portion in a sealed relationship; and
a horizontal upper portion having a third end fluidly joined to said right upper end in a sealed relationship and a fourth end fluidly joined to said left upper end in a sealed relationship, said outlet being disposed substantially midway between said third and fourth ends; and
support means for securing said seat back frame to said seat base.

5,385,383
DOOR PILLAR FOR PASSENGER CAR COACHWORK

Gundolf Kreis, Oberstimm; Norbert Ensing, Denkendorf; Ulrich Klages, and Heinrich Timm, both of Ingolstadt, all of Germany, assignors to Audi A.G., Ingolstadt, Germany

PCT No. PCT/EP91/02262, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/11156, PCT Pub. Date Jul. 9, 1992
PCT Filed Nov. 29, 1991, Ser. No. 30,299
Claims priority, application Germany, Dec. 20, 1990, 4041021
Int. Cl.[6] B60J *5/04*
U.S. Cl. 296—202 **20 Claims**

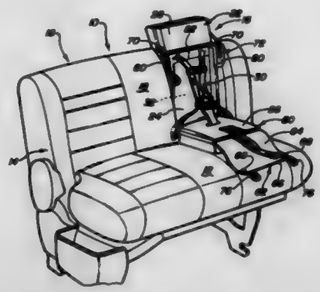


1. A slanting door pillar assembly in a vehicle coachwork for improved swivel mounting of a vehicle door comprising in operative combination:
a) an extruded light-metal, hollow-section closed tubular pillar member, slanted from vertical, having a first wall provided with at least two pairs of transversely spaced slots including an upper slot pair and a lower slot pair, each of said slots being disposed parallel to a longitudinal axis of said closed tubular pillar member and having a length which is shorter than a length of said closed tubular pillar member;
b) a pair of, substantially horizontally oriented hinge lugs including an upper hinge lug and a lower hinge lug adapted for swivel mounting a vehicle door to an outer surface of said first wall of said closed tubular pillar member at heights corresponding to said upper and lower slot pairs respectively, each of said hinge lugs having a base plate provided with a pair of holes having a transverse spacing equal to the transverse spacing of said upper and lower pair of spaced slots of said closed tubular pillar member first wall;
c) means for fastening the base plates of said upper and lower hinge lugs to said first wall; and
d) said first wall including means for retaining said fastening means in place prior to tightening to facilitate position adjustment of said hinge lugs and fitting of said vehicle door during assembly.

5,385,384
CHILD SAFETY SEAT

Karl E. Gierman, 8090 Virginia, Northville, Mich. 48167, and Paul Mandrik, 57470 Wood Creek Dr., Lennox, Mich. 48048

Filed Aug. 6, 1993, Ser. No. 103,341
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—238 **17 Claims**

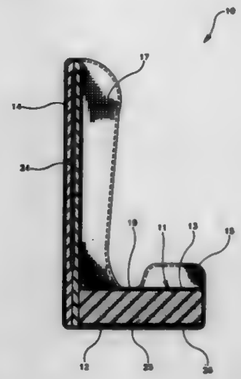


1. In a child seat of the type adapted for integration into a vehicle seat and having a seat member and a headrest that are each supported for movement relative to a back support member, an improvement comprising a head support member disposed within the headrest and a crushable energy absorbing pad supported thereon, said energy absorbing pad adapted to permanently crush for absorbing a portion of the energy dissipated when an occupant of the child seat engages the headrest in response to the vehicle seat being subjected to an acceleration.

5,385,385
CHILD'S AUTOMOTIVE SAFETY BOOSTER SEAT WITH A VIEW

Matthew H. Silverman, 61 Hubbard St., Concord, Mass. 01742

Continuation-in-part of Ser. No. 936,953, Aug. 26, 1992, abandoned. This application Mar. 10, 1993, Ser. No. 29,090
Int. Cl.[6] A47D *1/10*
U.S. Cl. 297—250.1 **7 Claims**



1. A child's automotive booster seat providing safety and comfort to a child occupant, as well as having universality to conform to different angles of automobile backseats, said child's automotive booster seat comprising a seat portion and a back portion of integral construction forming a unitary structure, means defining a flexible foam intersection between said seat portion and said back portion, allowing said back portion to bend with respect to said seat portion in order to accommo-

date different angles of said automobile backseats, said seat portion having a substantially rigid core member overlaid with a soft, compressible foam layer, a plurality of upper and lower side supports providing confinement and constraint to said child occupant, and means defining a pair of wells disposed between said upper and lower side supports, said wells being substantially flush with a surface of said seat portion, whereby an automotive lap seatbelt can be fitted snugly about said child occupant to prevent submarining during an impact or crash.

5,385,386

TRANSPORTABLE SEAT

Claudia H. Beamish, and Michael A. L. Derrington, both of Westraw House, Pettinain Lanark ML11 8SL, Scotland

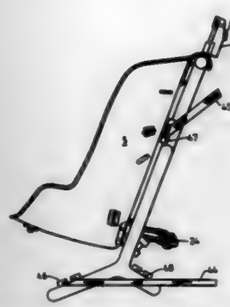
PCT No. PCT/GB92/00622, § 371 Date Oct. 6, 1993, § 102(e) Date Oct. 6, 1993, PCT Pub. No. WO92/17361, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 7, 1992, Ser. No. 129,164

Claims priority, application United Kingdom, Apr. 8, 1991, 9107313

Int. Cl.[6] B60N *2/28*

U.S. Cl. 297—256.16 **20 Claims**



1. A kit for transporting a child, said kit comprising:
a car seat having a frame, said seat being adapted to couple to and uncouple from said frame;
said car seat frame being adapted to be mounted to a car;
upper and lower coupling means for coupling and uncoupling said car seat to said car seat frame, said upper and lower coupling means being operable from a single location associated with said seat; and
locking means adapted to simultaneously lock said upper and lower coupling means when said seat is coupled to said car seat frame;
said locking means comprising an upper lock and a lower lock connected to said car seat frame, said upper and lower locks being operatively coupled together by a connector rod.

5,385,387

CHILD CARRIER WITH DETACHABLE BASE

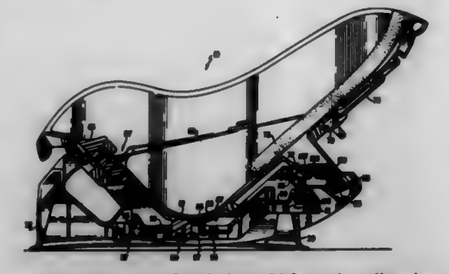
James M. Kain, Tipp City, Ohio, assignor to Lisco, Inc., Tampa, Fla.

Filed Oct. 1, 1993, Ser. No. 130,341

Int. Cl.[6] B60N *2/28*

U.S. Cl. 297—256.16 **1 Claim**

1. A child carrier comprising
seat means having a seat base including a foot end, head end, a back and side walls;
a transverse channel having an upper and lower end extending upwardly within said head end of said seat base;
spring biased latching means extending through said back of said seat means and into said channel, said latching means being below the upper end of said channel;
said channel being adapted to fit over an upper forward transverse rod of an inner basket of a shopping cart with said latching means being adapted to pass over and fit under the transverse rod;
a base geometrically configured so as to mate with the bottom of said seat means, said base having a substantially flat bottom surface, a head end, foot end, and side walls;
a frame having first and second ends movably mounted within said base and being configured at said first end so as to mate with and move with said spring biased latching means;
hook means pivotally mounted within said base;
means for securing said second end of said frame to said hook means;



second spring means for biasing said frame in a direction so as to maintain said hook means in a substantially upwardly extending position;
means on the bottom of said seat means configured so as to mate with said hook means when said seat means is placed on said base;
whereby movement of said latching means in one direction moves said frame so as to overcome the bias of said second spring means and rotate said hook means to a position so as to permit removal of said seat means from said base.

5,385,388

SPLIT BACK CHAIR

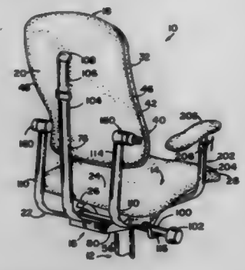
Frederick S. Faiks, Greenville; Carl V. Forslund, III; Robert M. Scheper, both of Grand Rapids; Craig M. Anderson; Glenn A. Knoblock, both of Kentwood, and Dale M. Groendal, Jenison, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 790,348, Nov. 12, 1991, Pat. No. 5,249,839. This application Oct. 1, 1993, Ser. No. 130,583

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[6] A47C *3/00*

U.S. Cl. 297—301 **12 Claims**



1. A chair comprising:
a base;
a seat operably connected with said base;
a control operably connected with said base and disposed generally underneath said seat;
a back operably connected with said control and having a lumbar portion positioned to contact at least a portion of a lower back area of a seated adult user, and having a thoracic portion thereof positioned to contact at least a portion of an upper back area of the user;
a first support having an upper portion pivotally connected with said thoracic portion adjacent an upper portion of said thoracic portion and having a lower portion pivotally mounted in said control so that said first support pivots about a generally transverse axis and said thoracic portion rotates rearward with respect to said seat; and
a second support having a portion connected with said lumbar portion for resiliently biasing said lumbar portion toward the back of the user, said second support being operatively related to said first support so that said lumbar portion rotates rearward with respect to said seat independently of rotation of said thoracic portion and said first support about said transverse axis so that the lumbar and thoracic portions follow the lower and upper areas, respectively, of the back of the user to achieve a natural, free-floating chair back motion and to provide generally continuous, sympathetic back support.

5,385,389

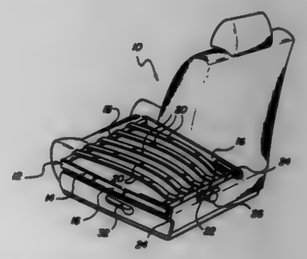
ADJUSTABLE VEHICLE SEAT

Macram N. Bishai, Weston, Mass., assignor to McCord Win Textron, Winchester, Mass.

Continuation of Ser. No. 36,973, Mar. 25, 1993, Pat. No. 5,316,371. This application Dec. 27, 1993, Ser. No. 173,218

Int. Cl.[6] B60N *2/02*

U.S. Cl. 297—339 **6 Claims**



1. An adjustable automotive vehicle seat equipped with a height adjust mechanism comprising:
a frame having spaced members that are fixed with respect to the vehicle seat and cross members spaced along the longitudinal direction of the seat and attached to the spaced members so that one of the cross members moves along the longitudinal direction with respect to the other, a resilient reshapable support member that is fixedly secured to the spaced cross members for concurrent movement with the one cross member and an actuator for moving the one cross member with respect to the other, the actuator having a moveable member that is operatively associated with the one cross member, the height of the seat being adjusted by adjusting the shape of the support member which is accompanied by controlling the actuator to move the one cross member with respect to the other.

5,385,390

PORTABLE SEAT CARRIER

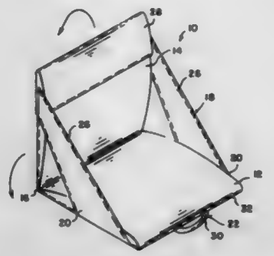
Jimmy Freeman; Richard Freeman, both of 169 Manhattan Ave. #3A, New York, N.Y. 10025, and George Spector, 233 Broadway Room 702, New York, N.Y. 10279

Filed Feb. 9, 1994, Ser. No. 194,160

Int. Cl.[6] A47C *4/00*

U.S. Cl. 297—380 **3 Claims**

1. A portable seat carrier which comprises:
a) a seat in which a person may sit upon;
b) a backrest, to support a back of the person, rotatively connected to said seat by a pair of hinges;
c) supporting means extending from the sides of said seat to removably connect to said backrest for supporting said backrest in an upright position;
d) carrying means for carrying said seat and said backrest so that when said supporting means is removed from an placed behind said backrest, said backrest can be folded backwards against said seat to form a briefcase type con-



figuration, allowing said carrying means to transport said briefcase type configuration to another location; wherein said supporting means includes:
e) a pair of flexible arm straps, each attached at a lower end to one side of said seat and extending upwardly at an angle towards said backrest; and
f) a cover pocket attached to the upper ends of said arm straps, so that said cover pocket fits over a top portion of said backrest.

5,385,391

LARGE TRUCK WITH COMPLIANT FRAME MEMBERS

Alan W. Dickerson, Mt. Eliza, Australia, assignor to Broken Hill Proprietary Company Limited, of BHP House, Victoria, Australia

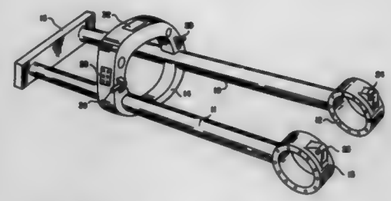
Filed as PCT/AU90/00084, Mar. 2, 1990

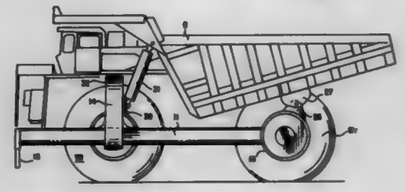
Continuation of Ser. No. 752,513, abandoned. This application Sep. 13, 1993, Ser. No. 119,530

Claims priority, application Australia, Mar. 3, 1989, PJ 3029; Sep. 8, 1989, PJ 6255; Dec. 21, 1989, PJ 7941

Int. Cl.[6] B60P *1/16*

U.S. Cl. 298—17 R **30 Claims**





1. A truck comprising:
a main frame having a forward frame and a rear frame, said

forward frame including two forward spaced frame members and forward frame means, fixedly positioned transverse between said two forward spaced frame members, for maintaining said forward spaced frame members rigid, said rear frame including two rear spaced frame members having front ends which are rigidly affixed to the forward frame means and rear ends which provide compliance for independent relative movement of said rear ends in a plane transverse to a longitudinal axis of each rear spaced frame member;

a wheel mounting hub attached to each said rear end of said rear spaced frame members, each hub supporting a pair of rear wheels one on either side of said hub;

rigid load supporting means for supporting a load;

means for maintaining transverse spacing between said rear wheel pairs; and

means for pivotally mounting said load supporting means with respect to said main frame;

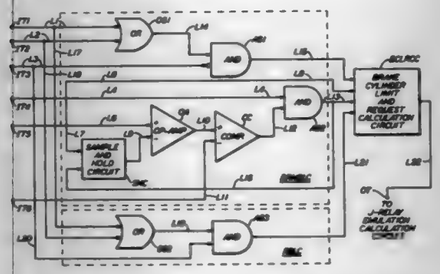
wherein independent relative movement of said rear ends of said rear spaced frame members is provided relative to said forward frame in a plane transverse to a longitudinal axis of each rear spaced frame member as said truck passes over uneven terrain.

5,385,392

RECOVERABLE AND A DIRECT RELEASE AND NON-RECOVERABLE BAIL-OFF LOGIC ARRANGEMENT FOR USE ON A RAILROAD VEHICLE

Vincent Ferri, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Aug. 13, 1992, Ser. No. 929,037
Int. Cl.[6] B60T *13/68*
U.S. Cl. 303—20 17 Claims



1. A direct release and non-recoverable bail-off logic and recoverable bail-off logic arrangement for use on a railway vehicle comprising, a first pair of logic gate circuits for determining a non-recoverable bail-off command by sensing the presence of a manual bail-off signal, by sensing the presence of a dynamic bail-off signal, and by sensing the absence of an emergency brake signal,

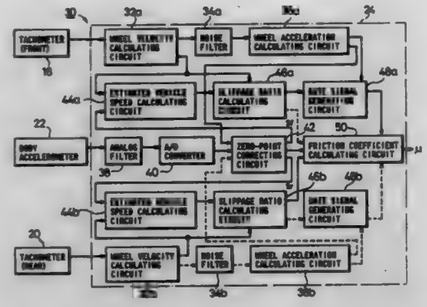
said first pair of logic gate circuits includes an OR gate, a plurality of electronic circuits and a logic gate circuit for determining a direct release command by sensing a freight/passenger mode signal and sensing that a present brake pipe pressure signal is greater than a previous brake pipe pressure signal by a given amount, and a second pair of logic gate circuits for determining a recoverable bail-off command by sensing the presence of said manual bail-off signal and sensing the presence of said dynamic bail-off signal as well as sensing the presence of said emergency brake signal.

5,385,393

DEVICE FOR CALCULATING COEFFICIENT OF FRICTION OF ROAD SURFACE

Keishin Tanaka; Toichiro Hikichi, and Chiaki Kumagai, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 77,628
Claims priority, application Japan, Jun. 24, 1992, 4-166242
Int. Cl.[6] B60T *8/70*
U.S. Cl. 303—106 3 Claims



1. An antilock braking control device for calculating the coefficient of friction between a wheel and a road surface, for use in a vehicle having front and rear wheels, and applying a controlled braking force to the vehicle, comprising:

a pair of sensors disposed respectively proximate said front and rear wheels of said vehicle for detecting a rate of rotation of said respective wheels;

means for calculating respective peripheral velocities of said front and rear wheels based on outputs from said sensors;

first slippage ratio calculating means for calculating a slippage ratio of one of said front and rear wheels based on a peripheral velocity of said one wheel and the velocity of the vehicle;

second slippage ratio calculating means for calculating a slippage ratio of the other wheel from a peripheral velocity of said other wheel and the velocity of the vehicle;

vehicle acceleration detecting means disposed on said vehicle for detecting acceleration or deceleration of the vehicle;

wheel acceleration calculating means for calculating peripheral acceleration or deceleration of said one wheel based on the peripheral velocity of said one wheel;

instructing means for generating a calculation starting signal when the slippage ratio of said one wheel and the peripheral acceleration of said one wheel respectively satisfy predetermined conditions;

friction coefficient calculating means for calculating the coefficient of friction between the road surface and said one wheel based on the slippage ratio of said other wheel and said acceleration or deceleration of the vehicle detected in response to said calculating starting signal, wherein said coefficient of friction is calculated prior to initiating an antilock control mode in response to said calculation starting signal; and

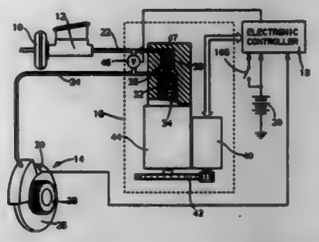
means for applying a braking force to said one wheel, wherein said braking force is increased until a target slip ratio is reached, and thereafter said braking force is controlled in said antilock control mode in order to maintain said target slip ratio, said target slip ratio being set based on said coefficient of friction detected prior to initiating said antilock control mode.

5,385,394

ANTILOCK BRAKE SYSTEM WITH CONTROLLED PRESSURE AUGMENTATION

Kevin G. Leppek, Rochester Hills, and Alexander Kade, Grosse Pointe W, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 11, 1993, Ser. No. 59,397
Int. Cl.[6] B60T *13/20*
U.S. Cl. 303—115.2 5 Claims



1. An antilock braking system for a wheel of a vehicle traveling over a road surface comprising:

a master cylinder for supplying pressurized fluid;

a wheel brake responsive to pressurized fluid for braking the vehicle wheel;

a pressure modulator comprising a fluid displacement piston disposed for reciprocal movement within a bore, the piston having a home position whereat the piston is at an extended limit of travel at which the bore has a minimum volume;

means for providing fluid communication between the bore and the wheel brake;

a normally open valve operable to a closed position;

means for coupling the pressurized fluid from the master cylinder to the bore and the wheel brake through the normally open valve for braking the vehicle wheel in accord with the fluid pressure when the normally open valve is open, the normally open valve when operated to the closed position isolating the pressurized fluid output of the master cylinder from the bore and wheel brake and establishing a closed braking system for the wheel brake wherein reciprocal movement of the piston provides for modulation of the fluid pressure at the wheel brake;

a normally closed check valve in parallel with the normally open valve, the check valve being opened by a pressure in the closed system greater than the pressure of the pressurized fluid supplied by the master cylinder to couple the pressurized fluid from the master cylinder to the bore and the wheel brake independent of the normally open valve to limit the fluid pressure in the closed system and being opened by the piston when the piston is moved to the home position to couple the pressurized fluid from the master cylinder to the bore and the wheel brake independent of the normally open valve;

means for sensing the position of the piston in the bore;

means for initializing the piston at an initial position spaced from the home position by a predetermined distance, the check valve being closed when the piston is at the initial position; and

antilock control braking means responsive to predetermined wheel parameters for determining a requirement for antilock control braking and when the requirement for antilock controlled braking is determined:

(a) operating the normally open valve to a closed position, the fluid pressure in the closed system when the normally open valve is first operated to the closed position comprising an initial trapped fluid pressure;

(b) modulating the position of the piston in the bore to modulate the fluid pressure in the closed system at the wheel brake in accord with an ABS pressure cycle including release phase initiated in response to an incipient wheel lock condition wherein the piston is moved away from the home position to release the fluid pressure at the wheel brake to allow recovery from the wheel lock condition and an apply phase wherein the piston is moved toward the home position at a predetermined rate to increase the fluid pressure at the wheel brake at the predetermined rate, and

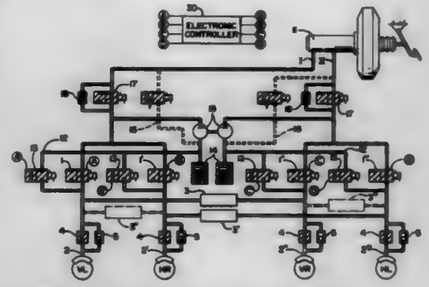
(c) when the sensed position of the piston during the apply phase represents an impending opening of the check valve by the piston, decreasing the predetermined rate.

5,385,395

SLIP-CONTROLLED BRAKE SYSTEM, ESPECIALLY FOR AUTOMOTIVE VEHICLES

Peter Volz, Darmstadt, Germany, assignor to Alfred Teves GmbH, Germany

Continuation of Ser. No. 952,892, Nov. 20, 1992, abandoned.
This application Feb. 17, 1994, Ser. No. 198,199
Claims priority, application Germany, Mar. 22, 1991, 4109450
Int. Cl.[6] B60T *8/32, 8/36, 8/48;* F15B *20/00*
U.S. Cl. 303—116.1 16 Claims



1. A slip-controlled brake system comprising:

a pedal actuated brake pressure generator;

a brake circuit connecting the pressure generator to a plurality of vehicle wheel brakes, each of the wheel brakes being separately controlled through appertaining pressure conduits;

a wheel sensor at each of first and second vehicle wheels and electronically coupled to an electronic circuit for both detecting wheel rotating patterns and generating electrical brake pressure control signals;

an hydraulic auxiliary pressure pump disposed in the brake circuit and supplementing the pressure generator in response to signals from the electronic circuit;

a separately controlled electromagnetic inlet valve disposed in each of the pressure conduits appertaining to first and second wheel brakes associated with the first and second wheels, a first pressure conduit and a first inlet valve associated with the first wheel and a second pressure conduit and a second inlet valve associated with the second wheel, the first and second inlet valves operatively responsive to signals from the electronic circuit;

a return conduit connected to each of the first and second pressure conduits, a first return conduit fluidly connected to the first pressure conduit between the first inlet valve and the first brake and a second return conduit fluidly connected to the second pressure conduit between the second inlet valve and the second brake;

a separately controlled electromagnetic outlet valve disposed in each of the first and second return conduit conduits, a first outlet valve disposed in the first return conduit and a second outlet valve disposed in the second return conduit, the first and second outlet valves operatively responsive to the signals from the electronic circuit, the first and second pressure conduits being controlled separately from one another such that pressure within each of the first and second pressure conduits is generally

independently varied to maximize braking effectiveness; and

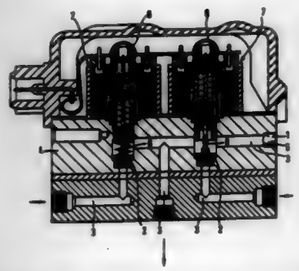
a volume displacing pressure duration snubber having a first chamber and a second chamber separated by a resilient member and with the first chamber connected to the first pressure conduit between the first wheel brake and the first inlet valve and with the second chamber connected to the second pressure conduit between the second wheel brake and the second inlet valve, the snubber used to reduce brake chatter during an antilock braking operation without hydraulic cross-talk between the first and second pressure circuits.

5,385,396

VALVE BLOCK AND METHOD OF ASSEMBLING AN ELEMENT THERETO

Erhard Beck, Adolfstrasse 14, D-6290 Weilburg, and Albrecht Otto, Albert-Schweitzer-Strasse 2, D-6450 Hanau-Mittelbuchen, both of Germany

Division of Ser. No. 778,219, Dec. 11, 1991. This application Jan. 3, 1994, Ser. No. 176,195
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—119.2 **3 Claims**



1. A valve block, in particular for slip-controlled brake systems, comprising a plurality of valve domes and valve seats inserted into a valve block housing for accommodating the associated magnetic coils and the valve plungers, and comprising a plurality of pressure fluid channels passing through the valve block housing, with closure elements being inserted thereinto, wherein at least one part inserted into the valve block housing is a blocking element which keeps a pressure fluid channel of said valve block housing shut, and in that the blocking element is constructed of a shape memory alloy having an austenite starting temperature at which reversion to said shape memory occurs such that, at a temperature higher than said austenite starting temperature, a locking fixation of said blocking element inserted into the valve block housing is established by a shape change thereof, whereby abraded particles are not formed by locking of said blocking element in said fluid channel.

5,385,397

STACKABLE COMPACT DISC CAROUSEL

Gary Chow, #207-1508 Mariners Walk, Vancouver, British Columbia, Canada V6J 4X9

Continuation-in-part of Ser. No. 880,690, May 8, 1992, abandoned. This application Feb. 11, 1993, Ser. No. 16,464
Int. Cl.[6] A47F *1/04*
U.S. Cl. 312—9.45 **20 Claims**

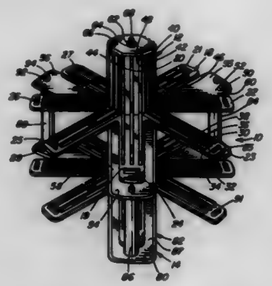
1. A stackable storage rack for thin, flat objects, the rack comprising:

a turntable having radially extending grooves for receiving said objects;

a base having a top, a bottom and portions thereof extending radially outwards beyond the turntable;

means for rotatably mounting the turntable on the base;

a plurality of elongated members extending perpendicularly from the top of the base on said portions thereof, said members having tops; and



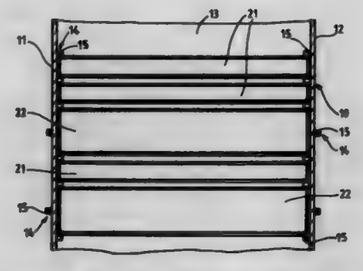
means on the bottom of the base for releasibly receiving said tops of said members of another said rack, whereby a plurality of said racks can be stacked on each other.

5,385,398

COMPACT DISC STORAGE SYSTEM

Erwin Huys, Kortrijk, Belgium, assignor to Beac Sarl, Luxembourg, Luxembourg

Filed Sep. 30, 1992, Ser. No. 937,890
Int. Cl.[6] A47B *81/06*
U.S. Cl. 312—9.48 **8 Claims**



1. A compact disc storage system comprising at least two opposed walls having a plurality of spaced arm partitions disposed on the inside surface thereof so as to define a plurality of compartments, each compartment being sized to slidably receive a single compact disc box of first thickness, each of said partitions being comprised of at least one spring element resiliently attached to the wall so as to be able to be pushed away from a compartment defining position in response to a pressure applied when a box of a second thickness greater than the spacing between adjacent partitions is slidably fitted between the two opposed walls and said partition capable of being restored to the compartment defining position when said pressure is released.

5,385,399

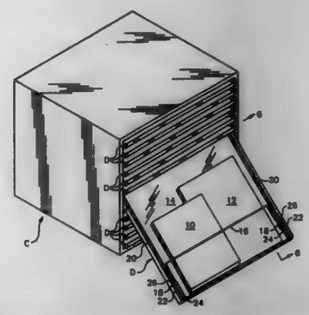
DOCUMENT STORAGE AND DISPLAY CABINET

Merwyn C. Weidner, P.O. Box 98574, Des Moines, Wash. 98198

Filed May 3, 1993, Ser. No. 55,569
Int. Cl.[6] A47F *7/00*
U.S. Cl. 312—190 **6 Claims**

1. In a document display device, including a document display surface having front, rear and side edges, and a document hold-down means movable by the user across the document display surface of the device, the improvement wherein said document hold-down means comprises guide rods extending front to rear of the document display surface substantially at the side edges thereof, carriage means on and movable by

the user along said guide rods throughout the span thereof between the front and the rear of the document display surface, a hold-down rod with the ends thereof mounted for pivotal movement with respect to said carriage means and with a central portion laterally offset from said carriage means, said central portion spanning substantially the entire width of said document display surface, spring means acting between said



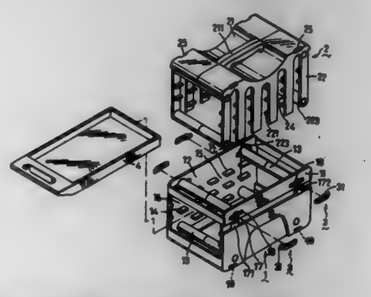
carriage means and said hold-down rod to normally urge the rod toward the document display surface, the coordinated movability of the carriage means on the guide rods and the pivotal movability of the hold-down rod on the carriage means enabling placement by the user of the central portion of the hold-down rod in any position front to rear relative to the document display surface.

5,385,400

EXPANSIBLE TOOL CABINET

Chung Chen, Taichung Hsien, Taiwan, Prov. of China, assignor to Tung I Enterprise Co., Ltd., Taiwan, Prov. of China

Filed Sep. 10, 1993, Ser. No. 119,811
Int. Cl.[6] A47B *45/00*
U.S. Cl. 312—205 **5 Claims**



1. An expansible tool cabinet, comprising:

a plurality of tool receiving drawers;

a stationary outer housing having two opposed vertical side walls, each of said side walls having an inner wall surface formed with a plurality of vertically and horizontally spaced projections, said projections cooperatively defining a plurality of vertical slide ways and longitudinal slide ways thereamong, said outer housing further having an open front side to access said longitudinal slide ways;

a slidable inner housing having a horizontal top wall which has two opposite longitudinal edges, each of said longitudinal edges being formed with a plurality of spaced downwardly extending guiding strips, each of said strips having a plurality of spaced protrusions protruding inwardly therefrom, said protrusions cooperatively defining a plurality of longitudinal slide ways thereamong, said inner housing further having an open front side to access said longitudinal slide ways, said inner housing being disposed slidably in said outer housing and being movable between a first position, wherein each of said guiding strips is received in a corresponding one of said vertical slide ways of said outer housing and each of said longitudinal slide ways of said outer housing overlaps with a corresponding one of said longitudinal slide ways defined by said protrusions, said drawers being removably received in overlapping said longitudinal slide ways of said outer and inner housings via said open front side of said outer housing, and a second position, wherein said inner housing is above said outer housing and said drawers are removably and selectively received in said longitudinal slide ways of said outer housing and said longitudinal slide ways of said inner housing via said open front sides of said inner and outer housings; and

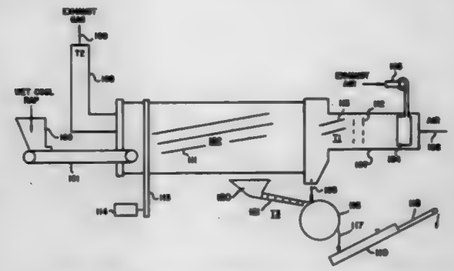
a retaining unit provided on said outer housing and operable to retain selectively said inner housing in one of said first and second positions.

5,385,401

PROCESS FOR ADDING RECYLCED TIRE PARTICLE TO ASPHALT

Robert H. Nath, Albuquerque, N. Mex., assignor to Cyclean, Inc., Austin, Tex.

Filed Oct. 6, 1993, Ser. No. 132,359
Int. Cl.[6] C08L *95/00*
U.S. Cl. 366—7 **19 Claims**



1. A method of manufacturing asphalt-rock compositions containing rubber for placement on highways comprising in combination the steps of:

finely grinding rubber from scrap rubber tires to make finely ground rubber;

mixing said finely ground rubber with oil at ambient temperature and at a ratio of approximately one pound of rubber to one pound of oil;

further mixing said rubber and oil mixture with asphalt; and

heating said mixture of asphalt and rubber to a temperature which is less than that which causes smoking, and which is high enough to prevent said rubber from removing oils from the asphalt.

5,385,402

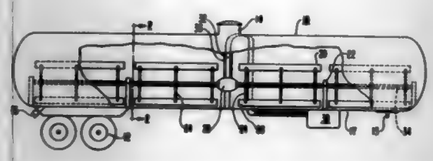
HAZARDOUS WASTE TRANSPORTATION AND DISPOSAL

Robert M. Rumph, Sumter, S.C., assignor to Sumter Transport, Inc., Sumter, S.C.

Continuation of Ser. No. 175,726, Dec. 30, 1993, Pat. No. 5,340,213, which is a continuation of Ser. No. 939,424, Sep. 4, 1992, Pat. No. 5,275,487, which is a continuation of Ser. No. 622,104, Dec. 4, 1990, abandoned. This application Aug. 23, 1994, Ser. No. 294,495
Int. Cl.[6] B01F *15/02*, *7/04*
U.S. Cl. 366—196 **26 Claims**

17. An apparatus for containing and transporting a substance, the apparatus comprising:

an elongated mobile tank having an outer wall with opposing ends;
a pair of opposing imperforate side walls, each side wall being located on an opposing end of the elongated tank, the side walls being continuous;
elongated agitation means mounted within the tank, having opposing ends, and extending substantially along the entire length of the elongated tank between the side walls for agitating substances within the tank, each of the opposing



ends of the agitation means being spaced from an adjacent side wall of the tank, the agitation means including at least one elongated blade connected to a rotatable shaft, the blade having a substantially flat surface portion;
a hydraulic motor for rotating the agitation means, the motor being located within the tank and being at least partially submerged in the substance when the tank is loaded; and
hydraulic lines connected to the motor for transmitting hydraulic fluid into and out of the motor.

5,385,403

MIXING APPARATUS FOR MIXING MATERIALS

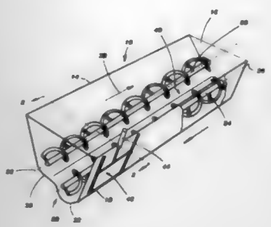
William S. Knight; Stanley W. Knight; William M. Saunders, all of Brodhead, and Ric S. Joranlien, Monroe, all of Wis., assignors to Knight Manufacturing Corp., Brodhead, Wis.

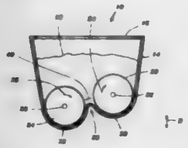
Continuation-in-part of Ser. No. 154,581, Nov. 18, 1993, which is a continuation-in-part of Ser. No. 56,568, May 3, 1993, Pat. No. 5,275,335, which is a continuation of Ser. No. 831,835, Feb. 6, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 165,108

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[6] A01C *15/00*

U.S. Cl. 366—297 10 Claims





1. A mixing apparatus for mixing materials, said apparatus comprising:
a container defining an opening for the reception therein of the materials, said container also defining an outlet for the discharge therethrough of the materials;
a rotatable feed means disposed within and co-operating with said container for feeding the materials through said container, said feed means having an axis of rotation extending through said container;
a rotatable mixing means disposed within said container and co-operating with said container and said feed means for mixing the materials within said container, said mixing means having a further axis of rotation extending through said container, said further axis of rotation being disposed spaced and parallel relative to said axis of rotation of said feed means;
said container further including:
a base;
said base including:
a first portion which co-operates with said feed means; and
a second portion which co-operates with said mixing means, said second portion being disposed at a lower elevation relative to said first portion, the arrangement being such that when said feed means and said mixing means are rotating and when a residue of the materials is disposed adjacent to said first portion, rotation of said feed and mixing means moves said residue in a direction from said first portion immediately towards said second portion, said feed and mixer means being circumferentially spaced relative to each other, the materials being fed by said feed means from said feed means to said mixing means even when the level of the materials drops below the top of said mixing means so that all of the materials within said container are fed at a substantially constant flow rate within said container.

5,385,404

TEMPERATURE MEASURING DEVICE

Barbara L. Jones, 80 Chisbury Close, Forest Park, Bracknell RG12 3TX, England

Filed Jul. 11, 1991, Ser. No. 728,551

Claims priority, application United Kingdom, Jul. 11, 1990, 9015268

Int. Cl.[6] G01J *5/58;* G01K *11/00*

U.S. Cl. 374—161 2 Claims



1. A method of measuring the temperature of an environment, including the steps of shaping a nitrogen-containing synthetic or natural type Ib diamond such that the diamond reflects at least some of the light entering the diamond, placing the nitrogen-containing synthetic or natural type Ib diamond in the environment the temperature of which is being measured, directing light of a selected wavelength emitted by an emitter to enter the diamond, determining the amount of light entering the diamond, receiving the light reflected by and leaving the diamond with a light receiver, determining the wavelength or the amount of light leaving the diamond and received by the light receiver, and comparing the change in wavelength or amount of light with a standard.

5,385,405

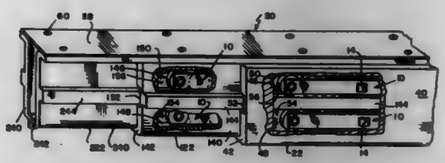
FLOATING ROLLER RETAINER ASSEMBLY FOR SLIDES

James D. Hobbs, Plainfield; James M. Lentz, Beech Grove, and Richard E. Karr, Indianapolis, all of Ind., assignors to General Devices Co., Inc., Indianapolis, Ind.

Filed Jun. 7, 1993, Ser. No. 72,815

Int. Cl.[6] A47B *88/00*

U.S. Cl. 384—19 36 Claims



1. A roller assembly for use in a telescoping slide assembly having at least two slide members that are slidably interconnected for movement along the longitudinal axis of the slide assembly, the roller assembly comprising
first means for maintaining vertical spacing between the interconnected slide members,
second means for maintaining lateral spacing between the interconnected slide members, the second means including a Spacer formed to include a first vertical side wall having a first opening, a second vertical side wall having a second opening, and a laterally extending open-ended aperture interconnecting the first and second openings, the second means further including a bearing loosely received in the laterally extending open-ended aperture for lateral sliding movement relative to the spacer and arranged to extend through each of the first and second openings, and
third means for longitudinally aligning the first means.

5,385,406

LINEAR MOTION ROLLING GUIDE UNIT

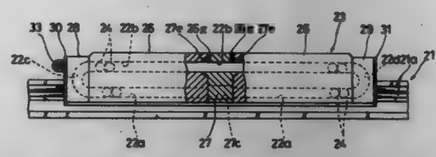
Tomohiro Ichida, Gifu, and Takehiko Hara, Kanagawa, both of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1993, Ser. No. 139,105

Claims priority, application Japan, Oct. 22, 1992, 4-079427[U]

Int. Cl.[6] F16C *29/06*

U.S. Cl. 384—45 6 Claims



1. A linear motion rolling guide unit, comprising:
a track rail in which tracks are formed in the lengthwise direction, a slider movable relative to said track rail having a rolling element circulating path containing a load bearing track that corresponds to each said track, and a plurality of rolling elements arranged and contained in said rolling element circulating path that bear the load by circulating while rolling over said tracks; wherein, said slider includes a plurality of casings arranged in a row in said lengthwise direction in which said load bearing tracks are formed, and a spacer juxtapositioned between each casing in which rolling element guide track grooves connecting said load bearing tracks are formed, said rolling element guide track grooves formed in said spacer being slightly larger than the load bearing tracks formed in said casings.

5,385,407

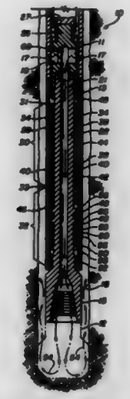
BEARING SECTION FOR A DOWNHOLE MOTOR

Frank V. De Lucia, Spring, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 29, 1994, Ser. No. 235,545

Int. Cl.[6] E21B *4/02*

U.S. Cl. 384—97 20 Claims

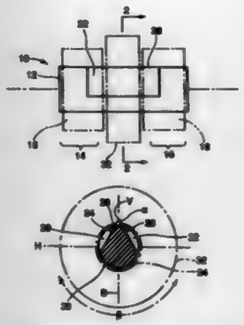


1. In a downhole motor for coupling to a drill pipe and having a power section, a bearing section and a drill bit section, the bearing section having an upper end and a lower end, an outer cylindrical member, a rotatable concentric inner cylindrical member having a hollow center for receiving drilling fluid from said drill pipe and being in radial spaced relationship with the outer cylindrical member, and bearing means for supporting said inner and outer cylindrical members for relative rotation by said power section and for absorbing both radial and thrust loads therebetween, an improved bearing section comprising:
a high pressure fluid flow restrictor between said inner and outer hollow cylindrical members and sealed from said drilling fluid to force said drilling fluid to flow through the hollow center of said inner cylindrical member to said drill bit section, said restrictor forming a first bearing assembly;
a drill fluid lubricated bearing assembly forming a second bearing assembly spaced from said first bearing assembly, said second bearing assembly being located between said inner and outer cylindrical members; and
orifices in the outer cylindrical member in the vicinity of said second bearing assembly for allowing drilling fluid from said drill bit to enter therein and exit therefrom to lubricate said second bearing assembly.

15. In a downhole motor for coupling to a drill pipe string and having a power section, a bearing section, and a drill bit section, and wherein the bearing section has an upper end and a lower end, an outer hollow cylindrical member, a rotatable concentric inner cylindrical member having a hollow center and being in radial spaced relationship with said outer hollow cylindrical member, and bearing means for supporting said inner and outer cylindrical members for relative rotation by said power section and for transmission of both thrust loads and radial loads therebetween, a coupling adapter for coupling said bearing section to said power section and comprising:
an elongated annular wall having a first portion with a first thickness forming a member with a hollow cylindrical core and having one end sealed to form a closed upper end and a second portion forming an inverted cup-shaped lower end, said second portion of said annular wall having a second thickness less than said first thickness of said first portion;

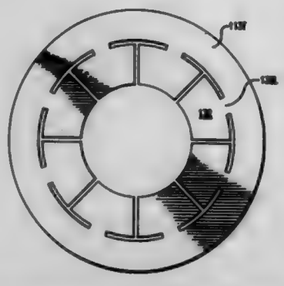
external threads around an external portion of said closed upper end for attaching to said power section;
tapered threads on at least a portion of the interior of said cup-shaped lower end for attaching to said bearing section;
said hollow core of said coupling adapter being in axial alignment with said hollow center of said inner cylindrical member;
substantially opposing slots in said first thickness of said elongated annular wall in fluid transfer relationship with said hollow core for allowing drilling fluid from said power section to enter said hollow core for travel to said drill bit section;
each of said opposing slots having a first wall extending into said hollow core at substantially a tangent to said hollow core; and
each of said opposing slots have a second wall extending into said hollow core at an angle with respect to said first wall so as to impart a rotation to said drilling fluid entering said opposed slots to transform any turbulent flow of said drilling fluid into laminar flow as it moves through said hollow core of said inner cylindrical member to said drill bit section.

5,385,408
ROCKER TIP ROLLER HYDRODYNAMIC BEARING OIL SLOTS
Joseph L. Tevaarwerk, Worthington, Ohio, assignor to Gas Research Institute, Chicago, Ill.
Filed Oct. 18, 1993, Ser. No. 137,368
Int. Cl.[6] F16C *32/06, 7/00*; F01L *1/18*
U.S. Cl. 384—115 **20 Claims**



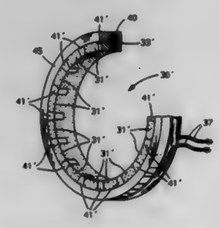
1. A hydrodynamic bearing for limited roller oscillation comprising:
a generally cylindrical pin including:
first and second end portions for connection to a supporting element;
first and second oil slots formed into the surface of said pin, each said oil slot extending lengthwise along respective portions of the pin generally between said end portions, and extending widthwise generally across respective chords of the pin circumference, said first and second oil slots positioned in spaced relationship such that their respective chords define an angle;
an upper load bearing zone defined widthwise along the circumference of the pin and lengthwise between said first and second oil slots; and
a lower load bearing zone defined widthwise along the circumference of the pin generally opposite the upper load bearing zone and lengthwise between said first and second oil slots, said lower load bearing zone being larger than said upper load bearing zone;
wherein said pin surface is finished for direct contact with the cylindrical bore of a roller which oscillates through an arc around said pin.

5,385,409
NON-CONTACTING MECHANICAL FACE SEAL OF THE GAP-TYPE
Russell D. Ide, P.O. Box 744, Coventry, R.I. 02816
Continuation of Ser. No. 785,005, Oct. 30, 1991, Pat. No. 5,246,295. This application Aug. 9, 1993, Ser. No. 103,103
Int. Cl.[6] F16C *17/06*
U.S. Cl. 384—124 **20 Claims**



1. In a gap type rotary mechanical seal assembly, a method of providing a high pressure fluid barrier between a sealing member and a rotating surface to be sealed comprising the steps of: securing the sealing member to a bearing member; supporting the bearing member for deformation under load relative to the surface to be sealed; providing a supply of compressible fluid in the proximity of the bearing assembly; securing the surface to be sealed to a shaft for rotation with respect to the bearing member so as to cause the bearing to deflect in a way that creates a pressurized fluid film between the bearing and the surface to be sealed so as to axially move the sealing member secured to the bearing member away from the surface to be sealed whereby a barrier of high pressure fluid is formed between the sealing member and the surface to be sealed.

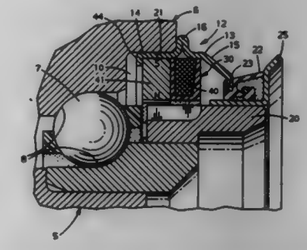
5,385,410
VARIABLE RELUCTANCE INTEGRAL BEARING SENSOR
Takeshi Shirai, Pendleton, Ind., and Andrzej M. Pawlak, Troy, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 31, 1992, Ser. No. 938,083
Int. Cl.[6] F16C *33/00*
U.S. Cl. 384—446 **5 Claims**



1. In a bearing assembly having a stationary outer race and a coaxial rotating inner race, the inner race having annexed thereto a toothed ring with circumferentially symmetrical alternating high and low magnetically permeable regions, an integral rotation sensor and bearing grease seal comprising, in combination:

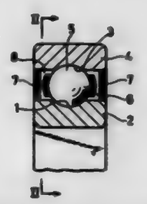
a high magnetic permeability housing having a substantially cylindrical outer surface sized for compressive mounting against the outer race, an inner surface radially opposite thereto and an inner race sealing lip;
a high magnetic permeability ring-shaped flux member concentric within said housing and having an outer circumference and an inner circumference, said outer circumference sized for contiguous communication with said inner surface of said housing;
a plurality of permanent magnets each having a pair of poles, a similar one of said poles of each magnet being contiguous with said inner circumference of said flux member such that said poles of each magnet are aligned radially, each of said permanent magnets being circumferentially spaced from the others by whole number multiples of an arc equal to the arc between two adjacent high magnetically permeable regions of the toothed ring;
a wire coil concentric within said housing and adjacent said flux member and said permanent magnets, said wire coil having a pair of terminal ends to provide a sensor output; and
a seal statically secured to said inner race sealing lip and dynamically communicating with said inner race.

5,385,411
VARIABLE RELUCTANCE INTEGRAL BEARING SENSOR
Takeshi Shirai, Pendleton, Ind., and Andrzej M. Pawlak, Troy, Mich., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 938,083, Aug. 31, 1992. This application Apr. 18, 1994, Ser. No. 228,785
Int. Cl.[6] F16C *33/00*
U.S. Cl. 384—446 **1 Claim**



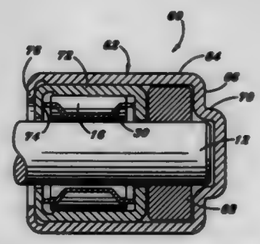
1. In a bearing assembly having a stationary outer race and a coaxial rotating inner race, the inner race having annexed thereto a toothed ring with circumferential high magnetically permeable regions equally separated by low magnetically permeable regions, an integral rotation sensor and bearing grease seal comprising, in combination:
a high magnetic permeability housing having substantially cylindrical outer and inner surfaces;
a plurality of permanent magnets each having a pair of poles, a similar one of said poles of each magnet being contiguous with said inner surface of said housing such that said poles of each magnet are aligned radially, each of said permanent magnets being circumferentially spaced from the others by whole number multiples of an arc equal to the arc between two adjacent high magnetically permeable regions of the toothed ring;
a wire coil concentric within said housing and axially adjacent said permanent magnets, said wire coil having a pair of terminal ends to provide a sensor output;
a static seal between said housing and outer race; and
a dynamic seal between said housing and inner race.

5,385,412
ROLLING BEARING
Takayuki Yatabe; Fusasuke Goto, both of Kanagawa; Norihiro Aoki, Tokyo, and Yoichi Imamura, Hyogo, all of Japan, assignors to NSK Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 875,405, Apr. 29, 1992, Pat. No. 5,282,689, which is a continuation of Ser. No. 827,036, Jan. 29, 1992, abandoned. This application Aug. 4, 1993, Ser. No. 101,056
Claims priority, application Japan, Sep. 20, 1991, 3-241179; Aug. 6, 1992, 4-210043; Jul. 21, 1993, 5-200124
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[6] F16C *19/00*
U.S. Cl. 384—492 **2 Claims**



2. In a rolling bearing composed of an outer race having an inner-race raceway on an outer peripheral wall thereof, an outer race having an outer-race raceway on an inner peripheral wall thereof, a plurality of rolling elements interposed for rotation between the outer-race raceway and the inner race, and a lubricant composition filled in a space, which is defined between the inner-race raceway and the outer-race raceway, at a position where the plurality of rolling elements are disposed, the improvement wherein:
(a) at least one of the inner-race and outer-race raceways is made of steel having an oxygen content not higher than 6 ppm;
(b) at least a raceway surface of said at least one raceway has been hardened by heat treatment;
(c) the lubricant composition comprises as a base oil a synthetic lubricant; and
(d) the lubricant composition further comprises 18–28% of a thickener which comprises a polyurea compound.

5,385,413
BEARING ASSEMBLY WITH AXIAL RETENTION
Richard F. Murphy, Torrington; James Van Horne, Morris, and Walter R. Gist, Jr., Harwinton, all of Conn., assignors to The Torrington Company, Torrington, Conn.
Filed Dec. 9, 1993, Ser. No. 164,240
Int. Cl.[6] F16C *19/26*
U.S. Cl. 384—564 **10 Claims**



1. A bearing assembly for mounting on a shaft, the bearing assembly comprising:
a double-walled bearing cup coaxial with the shaft, the bearing cup having an inner cup portion and an outer cup portion fixed over the inner cup portion;

a retaining washer positioned within the bearing cup and adapted to be fixed over the shaft;

abutment means provided by the bearing cup for limiting axial movement of the bearing cup relative to the retaining washer; and

rolling members positioned within the bearing cup, engageable directly with the shaft, such that the bearing cup may freely rotate with respect to the shaft.

5,385,414

PRINTING HEAD AND ITS DRIVE TIMING CONTROL CIRCUIT FOR IMPACT PRINTER

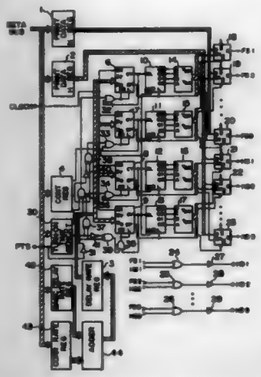
Hiroshi Shirotori; Katsuhiko Nishizawa; Shigeki Mizuno, and Tetsuro Takahashi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 33,037

Claims priority, application Japan, Mar. 23, 1992, 4-064880; Mar. 23, 1992, 4-064881; Aug. 25, 1992, 4-226202; Aug. 25, 1992, 4-226216

Int. Cl.[6] B41J *2/30*

U.S. Cl. 400—124.02 **2 Claims**



1. A circuit of an impact printer provided with a scanning printing head including an array of impact elements disposed along a line, said line being inclined at an angle with respect to a vertical line, the circuit controlling timing of driving each of the impact elements of the array so that the impact elements of the array are driven along the vertical line, the circuit comprising:

delay rate register means for storing a predetermined delay time according to the scanning speed of said printing head;

turn-on time generating means for generating a turn-on time signal having a predetermined time width in synchronism with a printing timing signal which is generated in response to the distance of movement of said printing head;

printing data register means for storing printing data;

latching means for separately latching the printing data bit by bit so as to output driving signals to drive said impact elements in said array;

start timing control means for generating a latch signal for latching the printing data bit by bit in time sequence in said latching means by firstly generating a counting signal by the interval based upon the delay time stored in said delay rate register means corresponding to the start of said turn-on time signal and secondly decoding the counted value of said counting signal; and

stop timing control means for generating a reset signal for resetting the printing data bit by bit in time sequence by firstly generating a counting signal by the interval based upon the delay time stored in said delay rate register means corresponding to the end of said turn-on time signal and secondly decoding the counted value of said counting signal.

5,385,415

DOT MATRIX PRINTING HEAD WITH VARIABLE ARMATURE ABUTMENTS

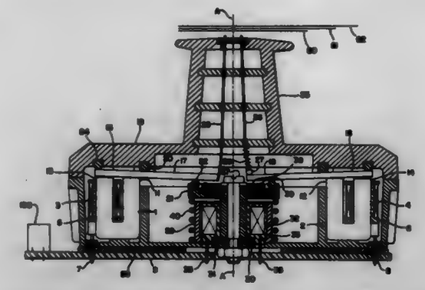
Ettore Quattrini, Binasco, Italy, assignor to Bull HN Information Systems Italia S.p.A., Turin, Italy

Filed Apr. 28, 1994, Ser. No. 234,064

Claims priority, application European Pat. Off., Apr. 28, 1993, 93830181

Int. Cl.[6] B41J *2/27*

U.S. Cl. 400—124.22 **5 Claims**



1. Dot matrix printing head comprising a plurality of printing electromagnets, each having a magnetic core, a winding magnetically coupled to said core and a movable armature coupled to a printing element and resiliently biased away from said core and towards a first abutment member, common to the armatures of said plurality of electromagnets, in a fixed position relative to said plurality of electromagnets and defining a first gap width between said armature and said magnetic core due to each of said armatures abutting the first abutment member, comprising:

a second abutment element, movable from a first position to a second position in which said second abutment element defines a second gap width between said armature and said magnetic core due to each of said armatures abutting the second abutment member, and

motor means, coupled to said second abutment member and operable to move said second abutment element in either one or another of said two predetermined positions, whereby the gap width between said armature and said magnetic core may be dynamically set in dependance of either one or another of two printing modes.

5,385,416

DEVICE FOR IDENTIFYING AN INK RIBBON CARTRIDGE USED IN A PRINTER

Tomohiro Maekawa; Yasuji Yui, and Hitoshi Kamoda, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Dec. 2, 1992, Ser. No. 984,679

Claims priority, application Japan, Dec. 13, 1991, 3-330585

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[6] B41J *35/28*

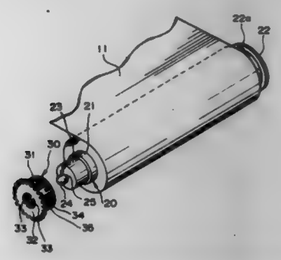
U.S. Cl. 400—208 **22 Claims**

1. A device for identifying an ink ribbon cartridge used in a printing apparatus, comprising:

a spool rotatably disposed in the ink ribbon cartridge and having an ink ribbon wound thereabout;

a ring rotatably mounted on said spool so as to be rotatable relative thereto and having an information mark recorded thereon;

means for rotatably driving said ring relative to said spool; and



sensor means for detecting said information mark recorded on said ring, said sensor means being disposed in the printing apparatus in opposite relation to said rink.

5,385,417

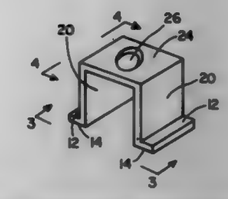
KEY COVER FOR INDIVIDUAL KEY OF COMPUTER KEYBOARD

Lawrence E. Wade, 2920 Appleton Dr., West Valley City, Utah 84119, and Michael L. Wade, 1379 E. Galaxie Dr., Sandy, Utah 84093

Filed Apr. 12, 1993, Ser. No. 44,705

Int. Cl.[6] B41J *5/26*

U.S. Cl. 400—472 **1 Claim**



1. A protective cover for an individual key on a computer keyboard, said cover comprising

a pair of spaced apart feet, said feet having elongate, flat, narrow bottom surfaces, with each bottom surface having a length of between about ½ of an inch to 1 inch and a width of from about 1/16 of an inch and 3/16 of an inch, said feet being spaced apart sufficiently so that the feet can span an individual key on a computer keyboard;

a pair of sidewalls, with each sidewall extending upwardly from a respective one of said pair of feet, said sidewalls having a width substantially the same as the length of the bottom surfaces of said feet, said sidewalls further having a height of between about ¼ of an inch and ½ of an inch;

a top wall connected to upper ends of said pair of sidewalls, said top wall having a width substantially the same as the width of said sidewalls;

an opening in the top wall, said opening having a size just sufficient that the tip of a pencil can be inserted therein to depress a key over which the cover is positioned; and

means for adhering the bottom surfaces of said feet to the housing of a computer keyboard such that the cover fits over and covers a desired key of the keyboard, wherein said means for adhering the bottom surfaces of said feet to the housing comprises a thin layer of foam material adhered to the bottom surfaces of said feet and a layer of adhesive material applied to the exposed bottom side of said layer of foam material.

5,385,418

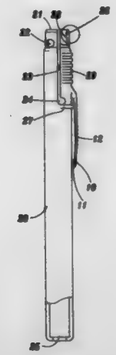
CLAMPING PEN

Jung-Jen Hsieh, No. 6, Alley 15, Lane 670, Chung-Shan Rd., Kuei-Jen Hsiang, Tainan Hsien, Taiwan, Prov. of China

Filed Jan. 5, 1994, Ser. No. 177,389

Int. Cl.[6] B43K *21/22*

U.S. Cl. 401—92 **8 Claims**



1. A clamping pen comprising:

a) a hollow tube having an open upper end and a lower end for receiving a rod member therein;

b) a pair of slots extending axially inwardly from the open upper end and terminating in a pair of closed ends;

c) a resilient clip member having a first end secured to the tube and a free end;

d) a flange formed on the tube and positioned between the fixed end and free end of the clip member adjacent the closed ends for defining a fulcrum point engageable by the clip member; and

e) whereby when the clip member is compressed towards the tube into engagement with the flange, the pair of slots are expanded for permitting the rod member to be moved inwardly or outwardly of the tube.

5,385,419

FASTENER

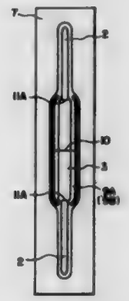
Kanji Noguchi, Tokyo, Japan, assignor to Shilogane Kasei Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 71,578

Claims priority, application Japan, Jun. 19, 1992, 4-042436[U]

Int. Cl.[6] B42F *13/00*

U.S. Cl. 402—75 **4 Claims**



1. A fastener adapted to be secured to an attaching surface for binding up sheets in cooperation with a holder having holes

and sliders slidably mounted on the holder, said fastener comprising:

a base having tongue-shaped strips, said tongue-shaped strips being adapted to pass through holes of sheets and in turn, through holes of said holder to be held down by said sliders so that said tongue-shaped strips are secured to bind said sheets;

a pair of synthetic resin sheets bonded to each other along the respective edges by heat melting to encapsulate said base on either side thereof with said tongue-shaped strips projecting from said base;

an adhesive layer provided on one of said synthetic resin sheets; and

a detachable sheet covering the surface of said adhesive layer so that said base can be secured to said attaching surface by said adhesive layer when said detachable sheet is stripped off;

whereby said fastener may be secured to a surface for binding up sheets.

5,385,420

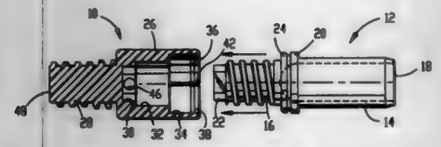
COUPLING ASSEMBLY

Robert D. Newman, Sr., and Robert D. Newman, Jr., both of P.O. Box 377, Greenwood, Mo. 64034

Filed Aug. 3, 1993, Ser. No. 101,582

Int. Cl.[6] B25G *3/04*; F16B *21/08*

U.S. Cl. 403—299 **9 Claims**



1. A threaded snap-fit coupling assembly for use in attaching a handle to an implement provided with a threaded opening of a predetermined diameter, the assembly comprising:

an adaptor including a cylindrical receptacle having a diameter larger than the predetermined diameter of the threaded opening, and a male fastening member that is externally threaded and sized for threaded receipt in the opening of the implement so that the adaptor may be connected to the implement;

a coupling including a handle engaging means for retaining the coupling on the handle, and a cylindrical male portion that is externally threaded and sized for threaded receipt in the opening of the implement and for sliding receipt within the receptacle of the adaptor; and

a snap-fit connection means exerting a holding force on the coupling when the male portion of the coupling is received in the receptacle of the adaptor for retaining the coupling on the adaptor, the connection means permitting removal of the coupling from the adaptor when the coupling is pulled from the receptacle with a force sufficient to overcome the holding force of the snap-fit connection means.

5,385,421

FAIL-SAFE COMPOSITE-CAST METAL STRUCTURE

Mark R. Morgan, Dayton, and Harry J. Couch, Tipp City, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 2,449, Jan. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 660,202, Feb. 25, 1991, Pat. No. 5,195,571. This application Jun. 15, 1994, Ser. No. 260,508

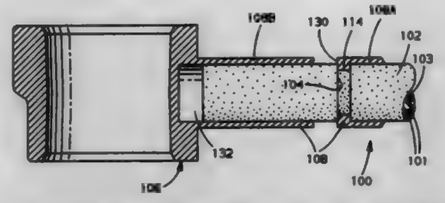
Int. Cl.[6] B22D *19/04, 19/14*

U.S. Cl. 403—272 **9 Claims**

8. A structural component having a fiber-reinforced plastic body and a metal member on said body, wherein:

a main body comprises of a matrix of substantially continuous reinforcing fibers having a heat resistance greater than the melting point of said metal, said fibers further being bound together by a resin that has significantly less resistance to heat decomposition than said fibers, the main body having an annular groove at a preselected distance from an end thereof;

the metal member comprises a casting formed from molten



metal introduced and cooled on the body around a portion of the body including said annular groove, wherein the structural component comprises:

a layer at an interface between the metal member and the body from which the resin has degraded exposing some of the fibers to the metal, the metal being continuously formed amongst and around the exposed fibers, securely interlocking and interconnecting therewith.

5,385,422

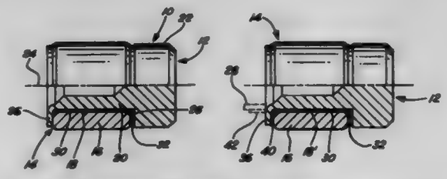
PIVOT/ROTATIONAL DEVICE

Ronald D. Kruger, Grand Blanc, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 8, 1993, Ser. No. 14,929

Int. Cl.[6] F16C *11/00*

U.S. Cl. 403—371 **2 Claims**



1. A pivot/rotational device comprising:

(a) a pivot pin having a head and a tubular, cylindrical shank of reduced diameter relative to and projecting from said head,

(b) and a two-part bushing assembly comprising a ring and a sleeve,

(c) said sleeve having opposite ends and being longitudinally split from end to end,

(d) said sleeve being formed of anti-friction material and having a cylindrical body portion provided with first and second ends and encircling and in surface-to-surface contact with said shank,

(e) said ring encircling and in surface-to-surface contact with said body portion of said sleeve and having first and second ends with said first end adjacent said head,

(f) said sleeve having a radially outwardly extending collar at said first end of said body portion disposed between and in surface-to-surface contact with said head and said first end of said ring,

(g) said tubular shank having an open end opposite said head,

(h) said tubular shank having on said open end a radially outwardly extending flange of less thickness than said tubular shank,

(i) said radially outwardly extending flange abutting said second end of said ring,

(j) said ring being restrained from axial movement relative to said pin by said collar and head at said first end thereof and by said flange at said second end thereof,

(k) said flange being flexible so that it may be formed initially as a cylindrical straight line extension of said tubular shank to facilitate assembly of said ring into said encircling relationship with respect to said body portion of said sleeve after which said flange may be turned radially outwardly into abutting relationship with said second end of said ring as aforesaid.

5,385,423

JOINT FOR CORRUGATED STRUCTURAL MEMBERS

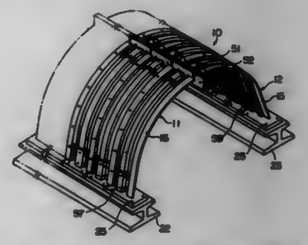
Sakio Abukawa, Oodate, Japan, assignor to Toko Tekko Kabushiki Kaisha, Japan

Division of Ser. No. 664,557, Mar. 4, 1991, Pat. No. 5,233,799. This application Feb. 1, 1993, Ser. No. 11,999

Claims priority, application Japan, Apr. 9, 1990, 2-37834; Apr. 13, 1990, 2-39916; Oct. 29, 1990, 2-113691

Int. Cl.[6] F16B *1/00*; E04B *1/32*

U.S. Cl. 403—245 **9 Claims**



1. A joint assembly comprising: two non-corrugated plate members each having opposed front and back surfaces, the two plate members being connected in back-to-back relation; and at least one corrugated plate member connected to and extending outwardly from the front surface of said each non-corrugated plate member, each corrugated plate member having proximal and distal ends with corrugations extending therebetween, and said each corrugated plate member having its proximal end abutting the front surface of the non-corrugated plate member to which it is connected.

5,385,424

CLAMP DEVICE FOR ROTARY SHAFT PORTION

Masakazu Matsumoto, Higashi-Osaka, Japan, assignor to Nikken Kosakusho Works, Ltd., Higashi-Osaka, Japan

PCT No. PCT/JP92/00396, § 371 Date Nov. 18, 1992, § 102(e) Date Nov. 18, 1992, PCT Pub. No. WO92/19882, PCT Pub. Date Dec. 11, 1992

PCT Filed Mar. 30, 1992, Ser. No. 946,436

Claims priority, application Japan, Apr. 26, 1991, 3-29731

Int. Cl.[6] F16D *49/00*

U.S. Cl. 403—369 **7 Claims**

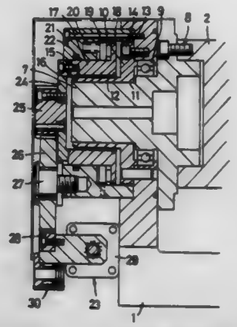
1. a clamp device for a rotary shaft portion comprising:

a sleeve fixed to a main body, said sleeve being radially elastically deformable and rotatably supporting the shaft portion, the fixed sleeve having a tapered surface on a radially outer periphery thereof,

a plurality of rows of needle rollers inclined at substantially the same angle with respect to the axis of the sleeve and arranged on the tapered surface of the fixed sleeve so as to move helically like a screw and move axially with respect to said tapered surface upon being rotated,

a rotatable clamp member having a tapered surface of substantially the same taper angle as the tapered surface of the fixed sleeve and rotatably fitted to the tapered surface of the fixed sleeve with the rollers provided therebetween, the clamp member being axially movable, and

a drive unit for rotating the clamp member;



wherein said sleeve is in rotatable sliding contact with said shaft when said clamp member is not rotated by said drive unit.

5,385,425

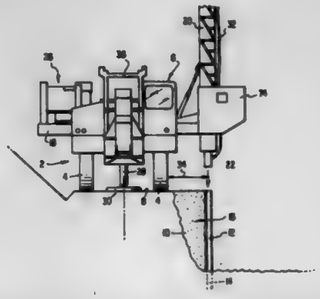
APPARATUS AND METHOD FOR REPAIR OF ROADWAY

Randall A. Hayes, P.O. Box 159, Betsy Layne, Ky. 41605

Continuation of Ser. No. 818,882, Jan. 10, 1992, abandoned. This application Jun. 24, 1994, Ser. No. 265,681

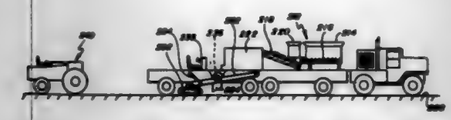
Int. Cl.[6] E01C *11/16, 23/04*

U.S. Cl. 404—72 **11 Claims**



1. Apparatus for repair of a roadway embankment comprising movable base means having supporting wheels and capable of being driven on a roadway, platform means mounted on said base means and rotatable with respect to said base means about a generally vertical axis, drilling means at one end of said platform means for drilling a hole for receiving an elongate reinforcing rail, and power means at an opposite end of said platform for generating power for said drilling means and for counterbalancing the weight of said drilling means, wherein said drilling means comprises a drilling bit, a mast for supporting said drilling bit, and means for generating a flow of air to remove cuttings, and the length of said platform is such that the distance between the centerline of said drilling bit and the outer side of the closest supporting wheel is at least about five feet when said drilling bit is in an operative position, and further comprising jib means attached to said mast for engaging and maneuvering said rail and for placing said rail in a hole made by said drilling means, whereby said base means may be located on a damaged roadway, said drilling bit operated to drill said hole for receiving said reinforcing rail, and said jib means operated to place said rail in said hole.

5,385,426
APPARATUS, METHOD AND USE FOR REDUCED SHINGLES
James S. Omann, 11235 Park Dr., Rogers, Minn. 55374
Filed Mar. 5, 1993, Ser. No. 27,277
Int. Cl.[6] E01C *19/12, 23/06*
U.S. Cl. 404—75 10 Claims



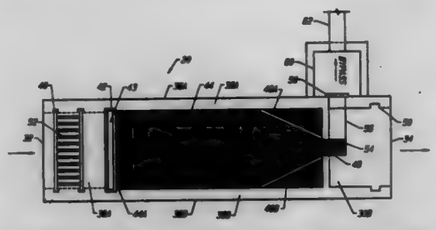
8. A method of manufacturing and applying a paving material for roadways, driveways, walkways and the like surfaces from waste shingles without adding additional asphalt oil to the shingles, the method of:
(a) reducing sticky, abrasive waste shingles and portions thereof to shingle granules of a size on average of powdered granules to less than one inch;
(b) applying a rejuvenator oil to the shingle granules;
(c) tumbling the oiled shingle granules to rejuvenate the granules;
(d) evenly applying the rejuvenated shingle granules to the surface to be paved;
(e) evenly applying compaction to the applied shingle granules; and
(f) permitting the compacted material to cure, dry and harden.

5,385,427
METHOD AND APPARATUS FOR CONTAINMENT OF OIL AND OTHER POLLUTANTS
Richard D. Kateley, 113 Whispering Woods Hill, Guilford, Conn. 06437, and Sloan Danenhower, P.O. Box 432, Old Lyme, Conn. 06371
Continuation-in-part of Ser. No. 849,665, Mar. 11, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 121,995
Int. Cl.[6] E02B *15/04*
U.S. Cl. 405—68 15 Claims



1. A marine containment boom from a fixed position above a body of water to be selectively moved to first position wherein it extends continuously from the fixed position to have a portion of said boom resting on the floor of the body of water and to a second position wherein it extends continuously from the fixed position to a second position wherein said portion of said boom floats on the surface of the body of water, said boom comprising a length of pipe, a containment means supported by said pipe, said containment means including a skirt having a web provided with a continuous ballast at the free end of the web, at least one permanent anchor, a line for permanently coupling said anchor to said pipe, a source of compressed air, means for directing air from said source of compressed air into said pipe to cause said boom to have a positive buoyancy, said pipe being at least partly of a pipe of a semi-flexible material positioned in said boom to permit said boom to be flexibly bent during movement between said first and second positions from said fixed position to avoid damage due to flexing or bending when deployed continuously from said fixed position, and cable means for connecting said skirt to said anchor.

5,385,428
WATER INTAKE FISH DIVERSION APPARATUS
Edward P. Taft, 3rd, Wellesley, and Thomas C. Cook, Cohasset, both of Mass., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Jun. 22, 1992, Ser. No. 902,189
Int. Cl.[6] E02B *8/08*
U.S. Cl. 405—81 19 Claims

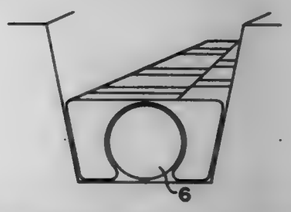


1. A fish diversion apparatus for a water intake comprising:
a. a floor, two opposite side walls, and a roof, all of which collectively define a water flow passage for a water flow to flow through said passage, said passage having a longitudinal axis and further having an upstream aperture for admitting said water flow into said passage and a downstream aperture for discharging said water flow from said passage, wherein dimensions of said floor, walls and roof may be selected to define dimensions of said upstream aperture, said downstream aperture, and said passage;
b. flow bypass means having an inlet aperture and an outlet aperture, said inlet aperture in fluid communication with said upstream aperture;
c. a plane screen mounted within said passage and inclined at a specified degree of an angle with respect to said floor said screen defining a fish flow path with cross sectional area decreasing from said upstream aperture to said inlet aperture; and
d. a separation wall which abuts said downstream aperture and said water intake such that said fish flow path diverts said fish from said passage into said inlet aperture for discharge of said fish from said outlet aperture at a safe location and such that water discharged from said downstream aperture is channeled through a forebay to said water intake.

5,385,429
SYNTHETIC COVER FOR WASTE
David L. Hansen, Averill Park, N.Y., assignor to Landfill Service Corporation, Apalachin, N.Y.
Continuation of Ser. No. 81,566, Jun. 23, 1993, which is a continuation-in-part of Ser. No. 966,269, Oct. 26, 1992, Pat. No. 5,275,908, which is a continuation-in-part of Ser. No. 674,864, Mar. 25, 1991, Pat. No. 5,161,915. This application Feb. 28, 1994, Ser. No. 203,948
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[6] B09B *1/00*
U.S. Cl. 405—129 23 Claims

1. A mixture for covering waste comprising the following constituents:
approximately thirty percent to sixty percent, by weight, liquid;
approximately forty percent to seventy percent, by weight, mineral binder;
up to approximately ten percent, by weight, fibers; and
wherein a mixture of the constituents forms a thick viscid slurry capable of being applied in a uniform layer of approximately a quarter of an inch to form a daily or interim cover.

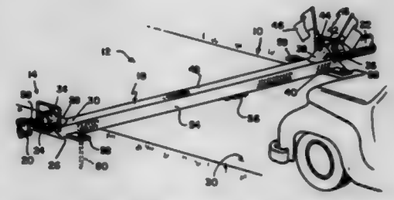
5,385,430
PIPELINE BALLASTING DEVICE
Geoff W. Connours, 146 Crystal Dr., Chatham, Ontario, Canada N7M 3E1
Filed Apr. 23, 1993, Ser. No. 51,414
Int. Cl.[6] F16L *1/028*
U.S. Cl. 405—157 11 Claims



1. A longitudinally-extending conduit weighting device comprising top-loading, bifurcated envelope of flexible-fabric material, for receiving a charge of ballast material, in contained relation within a pair of mutually adjacent, downwardly-depending, lateral lobes having walls adapted to retainingly confine at least a portion of said charge within said lobes and wherein said lobes are hingedly interconnected through an intermediate, longitudinally-extending, flexible, bifurcation of said envelope; and,
wherein said envelope includes envelope-lifting grommet means arranged along said bifurcation, wherein said envelope-lifting grommet means are operable to be engaged for lifting of said envelope; and,
wherein said envelope includes lobe-separating grommet means arranged in secured relation on laterally spaced apart, outside ones of said walls with said outside ones of said walls being arranged on mutually opposite sides of said hingedly interconnecting bifurcation, in mutually laterally spaced relation thereto, and are operable to be engaged to selectively exert a lobe-separating force across said hingedly interconnecting bifurcation, in response to selective differential application of extrinsic lift forces at said lobe-separating grommets and said envelope-lifting grommets, respectively, whereupon said lobe-separating force acts across said envelope to open up a conduit-accepting space between lobes, and whereby said containment means containing said ballast material is thereby operable to be positioned in straddling, superposed relation over a conduit, with said conduit being embraced in said conduit accepting space between said lobes on relaxation of said extrinsic lifting forces; and,
whereby, in a subterranean conduit emplacement, said containment means acts to at least partially counter buoyant displacement forces normally effecting said conduit therein.

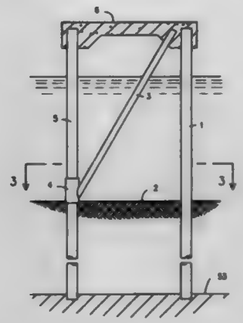
5,385,431
FLOW CONDUIT FOR TRAVERSING A TRAFFIC WAY
Henry E. Topf, Jr., Roechdale, Ind., assignor to Miller Pipeline Corporation, Indianapolis, Ind.
Filed Apr. 23, 1993, Ser. No. 52,151
Int. Cl.[6] F16L *1/00*
U.S. Cl. 405—157 37 Claims

1. An apparatus for conveying fluid flow across a traffic way between a first flow conduit and a second flow conduit, the apparatus comprising
a vehicle drive-over ramp defining a sealed fluid-conducting conduit formed to include an interior fluid flow region and including a base plate, a first angled side wall appended to the base plate, a second angled side wall appended to the base plate, and a top plate extending between the pair of angled side walls, the base plate, top plate, and side walls cooperating On one side to define the interior fluid flow region and on an exterior opposite side defining the vehicle drive-over ramp for permitting a vehicle's running gear to pass over the fluid flow region by contacting the opposite sides and transversing the ramp's opposite sides while in contact therewith.



first coupling means for coupling the .vehicle drive-over ramp to the first flow conduit to allow fluid flow between the first flow conduit and the interior fluid flow region, and
second coupling means for coupling the vehicle drive-over ramp to the second flow conduit to allow fluid flow between the interior fluid flow region and the second flow conduit.

5,385,432
WATER AREA STRUCTURE USING PLACING MEMBER FOR UNDERWATER GROUND
Osamu Kiyomiya, Yokohama; Kenichiro Minami, Kaizuka; Kunio Takahashi, and Koichi Sato, both of Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
PCT No. PCT/JP91/00625, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO92/20869, PCT Pub. Date Nov. 26, 1992
PCT Filed May 10, 1991, Ser. No. 960,372
Int. Cl.[6] E02B *3/06;* E02D *17/00*
U.S. Cl. 405—204 9 Claims



1. An offshore structure having a lower part secured in a seabed and an upper part positioned above the surface of a body of water, comprising:
a plurality of placing members disposed in spaced apart, longitudinal alignment with one another, each placing member of said plurality of placing members being disposed a first predetermined distance from contiguous placing members of said plurality of placing members;
a plurality of pile members disposed in spaced apart, longitudinal alignment with one another, each pile member of said plurality of pile members being disposed a second predetermined distance from contiguous pile members of said plurality of pile members, said second predetermined

distance being greater than said first predetermined distance and said offshore structure therefore including more placing members than pile members;

each pile member of said plurality of pile members being disposed in transversely spaced apart alignment with a preselected placing member of said plurality of placing members;

said plurality of placing members being disposed on a first side of the offshore structure against which external forces including earth and wave pressures are directly loaded, and said plurality of pile members being disposed on a second side of said offshore structure against which said external forces are not directly loaded;

a plurality of cylindrical sleeve members disposed in overlying relation to said seabed, each cylindrical sleeve member having a first cylindrical part and a second part that diverges from said first cylindrical part;

each pile member of said plurality of pile members having an ensleeved part extending through said cylindrical part of said cylindrical sleeve member;

a diagonal member disposed at a predetermined slope between each pile member of said plurality of pile members and each placing member of said plurality of placing members that is transversely opposed to a pile member;

each diagonal member having a lower end received within said second part of said cylindrical sleeve member;

a spacer means connected to said first cylindrical part of each cylindrical sleeve member for spacing said ensleeved part of each pile member apart from said first cylindrical part of each cylindrical sleeve member;

a space defined between said ensleeved part of each pile member and said cylindrical part of each cylindrical sleeve member;

each space being filled with a mortar means;

means formed on each pile member of said plurality of pile members for engaging said mortar means to prevent slippage between each pile member and each cylindrical part of each cylindrical sleeve member;

a longitudinally extending coupler member disposed in bridging relation between uppermost ends of said plurality of placing members, uppermost ends of said plurality of diagonal members, and uppermost ends of said plurality of pile members, said offshore structure having a predetermined longitudinal extent and said longitudinally extending coupler member extending said predetermined longitudinal extent;

whereby each diagonal member provides a brace that enables said pluralities of pile and placing members to support said coupler member even when said structure is subjected to seismic, hydraulic, or other externally imparted forces acting thereagainst; and

whereby when said structure is subjected to said externally imparted forces, each placing member of said plurality of placing members and each diagonal member of said plurality of diagonal members is subjected to compressive forces and each pile member of said plurality of pile members is subjected to tensile forces.

5,385,433

BEARING PLATE

Frank Calandra, Jr., Pittsburgh; John C. Stankus, Canonsburg; Eugene H. Stewart, Pittsburgh, all of Pa., and Dominic Cricelli, Flora, Ill., assignors to Jennmar Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 61,841, May 14, 1993, Pat. No. 5,292,209. This application Nov. 22, 1993, Ser. No. 156,066

Int. Cl.[6] E21D *21/00*; F16B *43/02*

U.S. Cl. 405—302.1 **35 Claims**

1. Apparatus for supporting a rock formation comprising,

an elongated member having a base portion with a length substantially greater than a width defining longitudinal edges forming a channel therebetween,

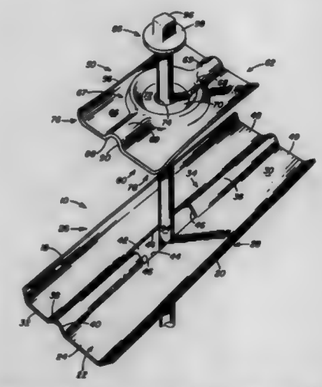
said base portion having a bearing surface for contacting the rock formation and an opposite surface,

at least one opening extending through said elongated member base portion,

a bearing plate including a contact surface and an outer surface, said contact surface positioned in overlying abutting relation with said elongated member opposite surface,

an embossed area extending outwardly from said plate outer surface and having a central opening therethrough,

said plate central opening aligned with said elongated member opening,



said embossed area extending on said bearing plate outwardly from said bearing plate central opening,

said plate embossed area positioned in overlying relation with said elongated member base portion opposite surface for reinforcing said elongated member, and

anchor means extending through said aligned openings into the rock formation and bearing against said plate embossed area for urging said bearing plate into compressive engagement with said elongated member to reinforce said elongated member compressed against the rock formation to support the rock formation.

5,385,434

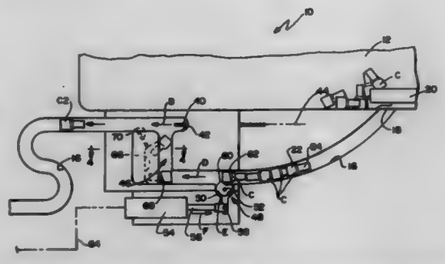
ELECTRICAL CONNECTOR DELIVERY SYSTEM

Robert L. Quinn; Edwin W. Parkinson, and James R. Pelletier, all of St. Petersburg, Fla., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 988,965, Dec. 9, 1992, abandoned. This application Feb. 1, 1994, Ser. No. 190,717

Int. Cl.[6] B65G *51/02*

U.S. Cl. 406—73 **14 Claims**



1. A connector delivery system for delivering an electrical connector component from a storage container to a processing station spaced from said storage container by a given distance,

the storage container containing a plurality of connector components each having a large dimensioned end and a small dimensioned end, the connector delivery system comprising:

a substantially entirely enclosed delivery conduit extending substantially the entire given distance from the storage container to the processing station, and being transversely dimensioned to generally correspond to said large dimensioned end of each of the connector components to allow one of the plurality of connector components to pass therethrough at a given time;

delivery means for effecting a pressure differential within the delivery conduit which creates a high pressure air current on one side of the delivery means to deliver the connector components to the processing station, and a vacuum on the other side of the delivery means to draw the connector components from the storage container into the conduit, wherein the delivery means moves the connector components from the storage container through the delivery conduit in a downstream direction to the processing station independent of gravitational forces;

feed means for allowing one of the plurality of connector components through the conduit at a given time while blocking a successive one of the plurality of connector components;

orientation means extending along a portion of the conduit for effecting delivery of the connector components to the processing station in a predetermined orientation, the orientation means being defined by an orientation track having a slot which is larger than the small dimensioned end of the connector components and smaller than the large dimensioned end of the connector components, so that when the small dimensioned end of one of the connector components enters the track ahead of said large dimensioned end, said small dimensioned end enters the slot exposing the large dimensioned end of the connector component within the conduit, and the vacuum is effective to draw the large dimensioned end of the connector component downstream through the conduit ahead of the small dimensioned end; and

actuating means for actuating said feed means, said actuating means being operatively associated with a tool at said processing station for cyclically actuating the feed means in response to operation of the tool.

5,385,435

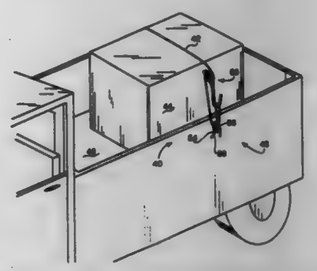
TIE DOWN SYSTEM AND A METHOD OF USING SAME

Frederick A. Musta, 112 Danville Ct., Danville, Calif. 94526

Filed Aug. 1, 1991, Ser. No. 739,173

Int. Cl.[6] F16G *11/10*; B60P *7/08*

U.S. Cl. 410—102 **14 Claims**



1. A tie-down system for securing articles to a load bearing structure, comprising:

securing means for securing articles to a load bearing structure, the securing means comprising an elongated, flexible body having first and second ends;

fastening means for fastening both ends of the securing means to the load bearing structure, the fastening means including first and second clip members, each clip member having an opening for compatibly accepting one end of the securing means, each of the clip members being removably connected to the load bearing structure, the first clip member including first and second hooks and an eyelet, the first hook being attached to the load bearing structure and the securing means is attached to the first clip member eyelet and the second end of the securing mans being attached to the second hook of the first clip member; and

tensioning means, connected to the securing means and located between the first and second clip members, for applying and maintaining a tensioning force to the articles through securing means in cooperation with the fastening means,

whereby articles are secured to the load bearing structure by the tensioning force existing between the securing means and the fastening means.

5,385,436

INDEXED OPERATING HEAD FOR AUTOMATIC MACHINE TOOLS

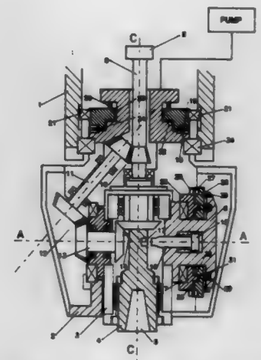
Armando Corsi, Piacenza, Italy, assignor to Jobs S.p.A., Piacenza, Italy

Filed Jan. 7, 1994, Ser. No. 178,939

Claims priority, application Italy, Jan. 15, 1993, PC93A000002

Int. Cl.[6] B23C *1/12*

U.S. Cl. 409—201 **12 Claims**



1. An operating head for automatic machine tools, which comprises:

a fork fitted on a support having at least two degrees of freedom;

means for numerically controlling rotation of the fork around a first axis;

a support for a chuck fitted on said fork and rotatable relative thereto, under a numerical control, around a second axis which is orthogonal to the first axis, wherein said chuck includes a connection for a tool; and

means for allowing changing of the angular position of both the fork and the support for the chuck and for keeping the tool in contact with the piece to be machined wherein a single kinematic chain is provided, said kinematic chain comprising a first shaft driven by a motor and co-axial to the first axis of the fork, a second, inclined shaft connected through first bevel gears to said first shaft and through second bevel gears to a third shaft which is co-axial to the support for the chuck, wherein first means and second means are provided for locking said fork and for locking said support respectively, and

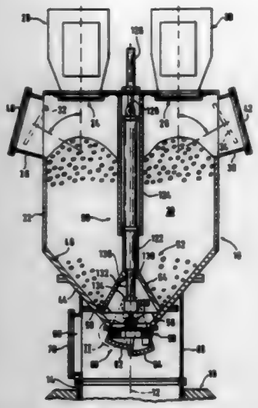
wherein means are provided, for blocking the rotation of said chuck and means for releasing said first and/or said second locking means, for keeping said chuck blocked.

5,385,437

DEVICE FOR CHARGING A PRESSURIZED ENCLOSURE

Emile Losardi; Gilbert Bernard; Giovanni Cimenti, and Jean-Jacques Vesturini, all of Luxembourg, Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Mar. 3, 1994, Ser. No. 206,138
Claims priority, application Luxembourg, Mar. 4, 1993, 88232
Int. Cl.[6] F27B *11/00*
U.S. Cl. 414—204 **14 Claims**



1. A device for charging a pressurized enclosure with a solid material, comprising:

a materials hopper forming a vertical sealing-off receptacle which includes a funnel-shaped lower part defining a substantially vertical central outflow axis for the material:

a feeding pipe for the pressurized enclosure which is positioned axially below said lower pan of the hopper;

a closing off bell movable inside the hopper between a lower position for closing off a discharge opening in said funnel-shaped lower pan and an upper position for freeing said discharge opening;

a lower sealing member including a closing off element set out below the bell so as to be axially movable with respect to the bell, a seat mounted axially below the discharge opening, means for moving the closing off element between a protected position below the bell and an operational position outside the bell when the bell is in said lower closing off position; and

wherein the closing off element includes a lateral peripheral surface into which there is incorporated an inflatable seal and the seat includes a first peripheral sealing surface which is substantially vertical or inclines downwardly and which surrounds and faces the inflatable seal when the closing off element is in the operational position.

5,385,438

METHOD OF USING A ROBOTIC SYSTEM FOR MIXING AND PACKING ARTICLES

Saadat Fadaie, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

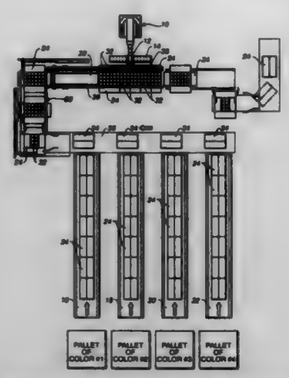
Division of Ser. No. 944,351, Sep. 14, 1992, Pat. No. 5,328,319. This application Apr. 11, 1994, Ser. No. 225,703
Int. Cl.[6] B65B *5/06*
U.S. Cl. 414—786 **4 Claims**

1. A method of changing the mix of articles in a plurality of containers, each container accommodating a plurality of such articles, said method comprising the steps of:

conveying a plurality of containers to a mixing station, each of said plurality of containers containing a plurality of articles having physical characteristics differing from the physical characteristics of the plurality of articles in the other of said plurality of containers at said mixing station;

while the plurality of containers are at said mixing station, removing a predetermined number of articles from each of at least two of said plurality of containers, said removal step including clamping the articles to be removed and lifting said articles from said containers while clamped;

after said removal step, transporting the removed articles



after said transporting step, inserting the removed articles into containers differing from the respective containers from which the articles were removed to change the mix of articles in the containers in which the articles are inserted, and

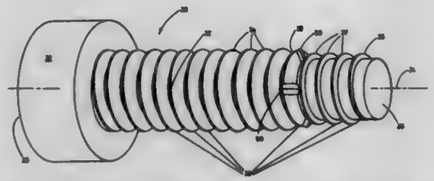
prior to clamping of said plurality of articles, engaging said plurality of articles in each of said plurality of containers to move said plurality of articles to predetermined locations within said plurality of containers.

5,385,439

RADIAL EXTRUSION THREAD-FORMING SCREW

Donald R. Hurdle, N 1313 Cottage Dr., Oostburg, Wis. 53070

Filed Nov. 29, 1993, Ser. No. 158,954
Int. Cl.[6] F16B *25/00, 39/30*
U.S. Cl. 411—386 **39 Claims**



1. An article for forming internal threads in a workpiece, the article comprising:

(a) a cylindrical shank directed along an axis and having a first end and a second end;

(b) a plurality of threads located upon the cylindrical shank, each of the threads having a crest and a root, the threads including

(i) a lead thread beginning at the first end and advancing circumferentially in a spiroid helix about the axis and wherein the crest of the lead thread defines a first major diameter such that the first major diameter at a given position on the lead thread is a diameter of a major cone and wherein the root of the lead thread defines a first minor diameter;

(ii) load-bearing threads beginning at the first end adjacent the lead thread and advancing circumferentially in a helix about the axis toward the second end, and wherein the crests and the roots of the load-bearing threads define a second major diameter and a second minor diameter, respectively, and further wherein the second major diameter and the second minor diameter are the diameters of a major cylinder and a minor cylinder;

(iii) a forming thread located intermediate the lead thread and the load-bearing threads and advancing circumferentially in a helix toward the second end, the forming thread having a plurality of forming elements that extend outwardly from the forming thread and which are spaced substantially circumferentially equidistant from each other, said forming elements having an outermost portion, and wherein each successive forming element moves a progressively decreasing amount of material from the workpiece to form the internal threads while each successive forming element's outermost portion increases in distance from the axis of the cylindrical shank; and

wherein except for the forming thread, the lead thread and the load-bearing threads do not have any forming elements; and

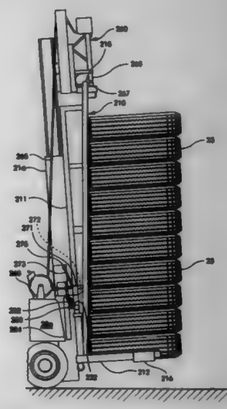
(c) means for engaging the cylindrical shank to rotate the cylindrical shank about the axis and turn the article into the workpiece, the means for engaging being located at the second end.

5,385,440

LIFT TRUCK ACCESSORIES FOR STACKING AND MOVING STACKS OF TIRES

Thomas M. Raben, 12548 Apache Pass Ave., Evansville, Ind. 47720

Continuation-in-part of Ser. No. 917,779, Jun. 21, 1992, abandoned. This application Mar. 26, 1993, Ser. No. 38,144
Int. Cl.[6] B66F *9/12*
U.S. Cl. 414—608 **20 Claims**



1. A tire-stacking device for use in cooperative arrangement with a lift truck having a lifting apparatus, the tire-stacking device comprising:

a frame having a base end, a lifting end and a platform extending between said ends, said platform being capable of supporting a plurality of tires in side-by-side relation when said frame is in a horizontal position;

a lateral support structure having a root end, a free end and a support surface positioned between said ends, said root end being attached to said base end of said frame with said free end of said lateral support structure extending away from said platform, said support surface being capable of supporting the plurality of tires when said frame is in a vertical position;

roller means, attached to said base end, for supporting said base end of said frame;

means for releasably connecting said lifting end of said frame to the lifting apparatus of the lift truck; and

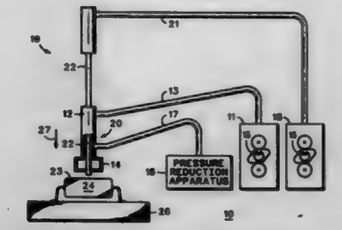
means for preventing said base end of said frame from swinging away from the lift truck when said frame is in said vertical position and the lift truck is depositing said plurality of tires.

5,385,441

METHOD AND APPARATUS FOR PICKING AND PLACING AN ARTICLE

Mavin C. Swapp, Gilbert, and Milo W. Frisbie, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1993, Ser. No. 155,878
Int. Cl.[6] B66F *11/00*
U.S. Cl. 414—627 **12 Claims**



1. A method of transporting a workpiece, comprising the steps of:

providing a pick and place apparatus comprising a cam coupled to a pickup device, the pickup device comprising a suction tube having a suction cup at one end and surrounding a portion of a pin;

placing the pin adjacent the workpiece;

placing the suction cup adjacent the workpiece;

picking up the workpiece using suction;

positioning the workpiece at a desired location; and

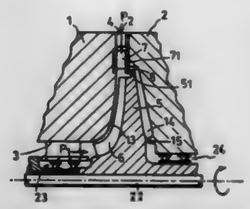
releasing the workpiece using the pin while maintaining the suction.

5,385,442

CENTRIFUGAL PUMP WITH AN OPEN-FACED IMPELLER

Jean-Robert Lehe, Vernon; André Beaurain, Chambly; René Bosson, Vernon, and Etienne Tiret, La Chapelle Reanville, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Nov. 24, 1993, Ser. No. 160,419
Claims priority, application France, Nov. 30, 1992, 92 14389
Int. Cl.[6] F01D *3/00*
U.S. Cl. 415—104 **2 Claims**



1. A centrifugal pump with an open-faced impeller for conveying a working liquid, the pump comprising at least one open-faced impeller provided with blades placed inside a casing defining a suction pipe facing bottoms of the blades in the vicinity of a central shaft that drives the at least one open-faced impeller and forming a part of a rotary assembly, and a deliv-

ery pipe fitted with a fixed diffuser disposed facing peripheral ends of the blades,

the pump further including an active axial balancing system for the rotary assembly, which balancing system is integrated in the at least one open-faced impeller and comprises a balancing chamber interposed between a rear face of the body of the at least one open-faced impeller and an outer rear portion of the casing, said balancing chamber communicating with said delivery pipe via a first nozzle whose axial clearance is kept invariable in operation and which is defined by a peripheral end of the at least one open-faced impeller acting as a balancing turntable, and a nozzle piece secured to said outer rear portion of the casing and interposed between the fixed diffuser and said peripheral end of the at least one open-faced impeller, said balancing chamber communicating with the suction pipe of the pump via a second nozzle;

said centrifugal pump having a clearance J between the at least one open-faced impeller and a front portion of the casing which is determined by a sequence of design dimensions limited to a design dimension J1 defined between said radial nozzle piece and said front wall of the casing facing the blades, a design dimension J12 defined between said nozzle piece and the peripheral end of the at least one open-faced impeller and a design dimension J13 defined between said peripheral end of the at least one open-faced impeller and a front face of the at least one open-faced impeller.

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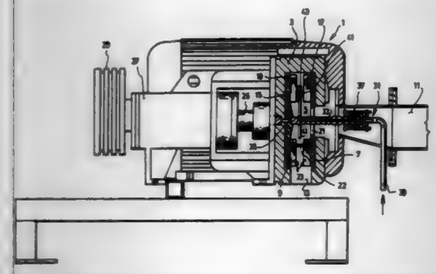
CENTRIFUGAL LIQUID PUMP WITH INTERNAL GAS INJECTION ASSEMBLY

Roseau Dufour, Breakeyville, Canada, assignor to Les Traitements des eaux Poseidon Inc., Outremont, Canada

Filed Oct. 12, 1993, Ser. No. 134,591

Int. Cl.[6] F04D *31/00*

U.S. Cl. 415—116 **18 Claims**



1. In a centrifugal pump for use to pump a liquid, said pump comprising:

a) a casing defining an inner, substantially cylindrical chamber, said chamber having a pair of opposite end walls coaxial with each other;

b) a liquid inlet in open communication with the chamber, said inlet being coaxial with said chamber and opening into one of the opposite end walls thereof;

c) a liquid outlet in open communication with the chamber, said outlet extending tangentially out of said chamber;

d) a rotary impeller rotatably mounted within the chamber, said impeller comprising a pair of spaced apart discs of a given radius coaxial with said chamber, said discs being rigidly interconnected at such a distance away from each other as to extend close to said opposite end walls, respectively, one of said discs located adjacent the one opposite end wall into which said liquid inlet opens having a central opening to allow the liquid injected through said inlet to enter the chamber; and

e) a power shaft coaxial with and rigidly connected to the other one of said discs so as to rotate the impeller in a given direction within the chamber, said power shaft extending out of said casing in a direction opposite to said liquid inlet;

the improvement consisting in a gas-injection assembly for use to inject and dissolve, at least in part, a gas into the liquid while said liquid is being pumped, said assembly comprising:

f) a gas feed pipe coaxial with and rigidly connected to the impeller so as to rotate therewith, said gas feed pipe extending coaxially through both the liquid inlet and the opening of the one disc of the impeller in a direction opposite to the power shaft and having a gas inlet located outside said casing and connected through a rotary seal joint to a pressurized gas source, and a gas outlet located within the casing; and

g) at least one gas injector pipe rigidly connected to the gas feed pipe so as to rotate in unison therewith and with the impeller to which said gas feed pipe is connected, said at least one injector pipe being perpendicular to said feed pipe and extending radially within said casing between the discs of the impeller, said at least one injector pipe having one end in open communication with the gas outlet of the feed pipe and another radially, opposite end defining a gas nozzle opening within the casing between the discs at a radial distance away from said feed pipe that is shorter than the radius of said discs.

5,385,444

PUMP CASING MADE OF SHEET METAL

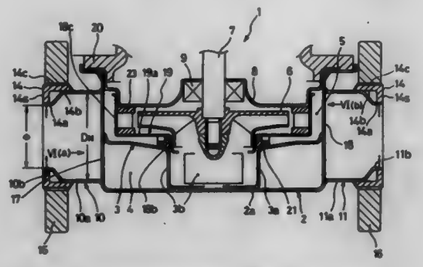
Makoto Kobayashi; Masakazu Yamamoto, and Yoshio Miyake, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 45,686

Claims priority, application Japan, Apr. 14, 1992, 4-120177; Jul. 6, 1992, 4-201988

Int. Cl.[6] F04D *29/40*

U.S. Cl. 415—182.1 **26 Claims**



1. A pump casing made of sheet metal, comprising:

a substantially cylindrical cup-shaped pump casing made of sheet metal and having a bottom on one axial end thereof and an opening defined in an opposite axial end thereof;

a partition wall disposed in said pump casing for partitioning said pump casing into a suction chamber and a hydrocasing chamber for housing an impeller;

a suction nozzle mounted on a cylindrical side wall of said pump casing and communicating with said suction chamber; and

guide device comprised by guide vanes, for guiding fluid discharged from said impeller.

5,385,445

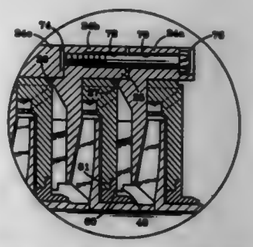
CENTRIFUGAL PUMP

John M. McKenna, Port Murray, N.J., assignor to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Filed Dec. 3, 1993, Ser. No. 161,965

Int. Cl.[6] F04D *1/08, 29/44*

U.S. Cl. 415—199.2 **13 Claims**



1. A multi-stage centrifugal pump comprising:

a pump housing having an inlet and an outlet; and

a plurality of pump stages within the pump housing, each pump stage comprising a diffuser, a channel ring, a biasing means for biasing the diffuser into contact with the channel ring and a rotatable impeller;

each channel ring being a disk shaped member having a central opening therethrough, the outer periphery of the channel ring having a raised portion defining a first circular rim, the first circular rim having an inner diameter, the first circular rim having an axial thickness;

each diffuser being a disk shaped member having a central opening therethrough, the outer diameter of the diffuser being smaller than the inner diameter of the channel ring first circular rim, the outer diameter of the diffuser being larger than the diameter of the channel ring central opening, the axial thickness of the diffuser being smaller than the axial thickness of the channel ring first circular rim, the diffuser fitting with a non-interference fit within the first circular rim of the channel ring.

5,385,446

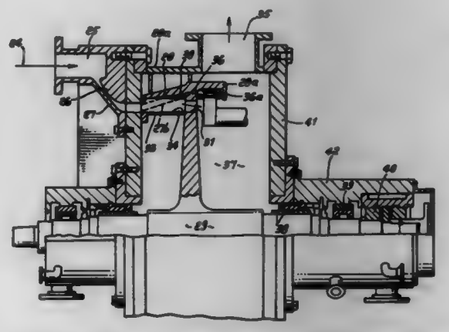
HYBRID TWO-PHASE TURBINE

Lance G. Hays, 2737 Ridgepine, La Crescenta, Calif. 91294

Filed May 5, 1992, Ser. No. 878,605

Int. Cl.[6] F01K *25/04*

U.S. Cl. 415—202 **21 Claims**



1. In a rotary turbine having inlet means for mixtures of gas and liquid, and rotary shaft means having an axis, the combination comprising

a) separator means to receive said mixture of gas and liquid in a first stream, and to separate the mixture into a second stream of gas and a third stream of liquid,

b) first means to receive at least one of said streams at the pressure of the first stream for generating torque exerted on the shaft means, and

c) said separator means including rotating surface means for generating torque exerted on the same shaft means,

d) whereby said first means and separator means separately operate to generate shaft power, via the same shaft means,

e) said surface means including a surface rotating about the axis defined by the shaft means and at a velocity lower than the velocity of the stream of liquid at impingement, for receiving said liquid forming a layer on said surface means so as to convert a portion of the kinetic energy thereof to shaft means energy by production of frictional forces formed by slowing the liquid stream to a velocity close to said velocity of said surface,

f) said first means being operatively connected with the separator means, and said separator means being operatively connected to said shaft means to be slowed to shaft means angular velocity by shaft loading,

g) said first means located between said axis and said rotating surface means.

5,385,447

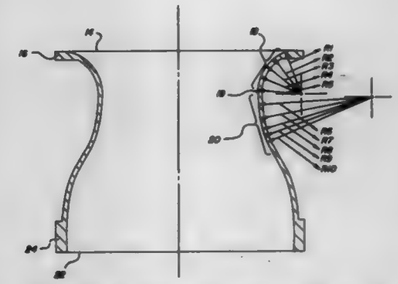
AXIAL FLOW PUMP FOR DEBRIS-LADEN OIL

Donald E. Geister, Ann Arbor, Mich., assignor to Marine Pollution Control, Detroit, Mich.

Filed Mar. 26, 1993, Ser. No. 38,729

Int. Cl.[6] F04D *3/00*

U.S. Cl. 415—220 **10 Claims**



1. A hydraulically-driven, axial flow pump for pumping viscous liquids, particularly debris-containing or multi-phase flow, comprising:

a venturi-shaped intake having an inlet, a throat of minimum area, and an outlet;

a rotating impeller mounted in the intake, the impeller having a plurality of blades defining a first interface at the intake throat;

a fixed stator mounted in the intake between the impeller and the outlet, the stator coaxial with the impeller and having a plurality of stator blades;

an impeller/stator interface defined between the impeller and stator blades;

means connected to the impeller to rotate the impeller and force oil through the pump from the inlet to the outlet; wherein,

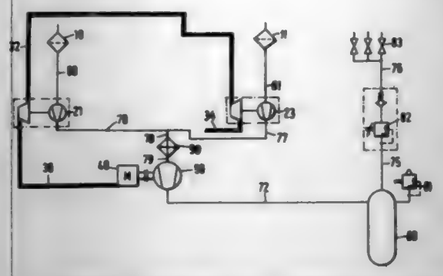
the pump intake has a first contoured portion from the inlet to the throat having an initial radius of curvature equal to or greater than the axial distance from the intake inlet to the throat radius, and a second contoured surface portion from the throat to the impeller blade exit having a second initial radius of curvature greater than the axial distance from the throat to the impeller exit.

5,385,448
PROPELLER SHAPED AGITATOR
Thilo Merkt, Oyten; Horst Schäfer, Rhade; Günter Feldle, Ostfildern-Nellingen, and Oskar Gabler, Frankenthal, all of Germany, assignors to KSB Aktiengesellschaft, Frankenthal, Germany
Filed Aug. 11, 1993, Ser. No. 105,041
Claims priority, application Germany, Aug. 11, 1992, 4226498
Int. Cl.[6] F04D *29/20*
U.S. Cl. 416—229 R **8 Claims**



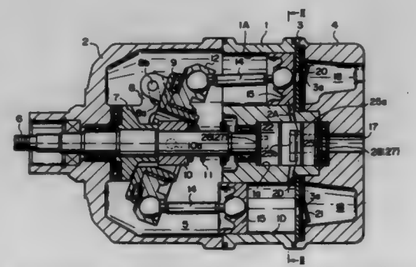
1. An agitator comprising:
(a) an impeller made of a plastic material, said impeller comprising a plurality of blades, each of said blades comprising a blade root and a hub segment;
(b) a plurality of hub elements made of a metallic material, each of said hub elements being disposed within one of said hub segments, adjacent hub elements being connected to each other such that said hub elements form a means for receiving a rotational driving force; each of said hub elements having a smooth projection free outer surface facing each of said blades and an inner surface facing each of said means for receiving a rotational driving force; and
(c) means for connecting each of said impellers to each of said hub elements such that stress peaks, imparted from said driving force, in the region of said blades, said blade roots and said hub segments are substantially prevented.

5,385,449
COMPRESSOR ARRANGEMENT
Harald Wenzel, Kefenrod, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Continuation-in-part of Ser. No. 910,893, Jul. 10, 1992, abandoned. This application Apr. 20, 1993, Ser. No. 50,546
Claims priority, application Germany, Jul. 10, 1991, 4123208
Int. Cl.[6] F04B *41/06*
U.S. Cl. 417—243 **2 Claims**



1. A compressor arrangement for compressing a gaseous medium, the arrangement comprising a compressor, a heat engine having a work side and an exhaust side, the compressor being driven by the work side of the heat engine, a line connecting the compressor to means for using the compressed medium, the compressor having an intake line, two exhaust-driven superchargers arranged in the intake line of the compressor, the superchargers having drive sides, the drive sides of the superchargers being arranged in series downstream of the exhaust side of the heat engine, wherein the heat engine and the compressor are separate machines, the heat engine and the compressor each having a drive shaft, a coupling connecting the drive shaft of the heat engine to the drive shaft of the compressor, each supercharger having a compressor side, a line for supplying a total flow volume of the compressor sides of both superchargers to the compressor, and an intermediate cooler arranged in the total flow volume line between the superchargers and the compressor.

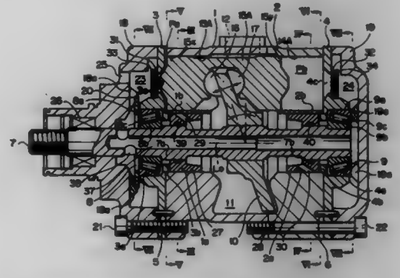
5,385,450
RECIPROCATING-PISTON TYPE REFRIGERANT COMPRESSOR WITH AN IMPROVED ROTARY-TYPE SUCTION-VALVE MECHANISM
Kazuya Kimura; Shigeyuki Hidaka; Hideki Mizutani, and Toru Takeichi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan
Filed Oct. 4, 1993, Ser. No. 131,449
Claims priority, application Japan, Oct. 2, 1992, 4-265017
Int. Cl.[6] F04B *1/12*
U.S. Cl. 417—269 **10 Claims**



1. A reciprocating-piston-type refrigerant compressor provided with a body including a cylinder block having a central bore extending axially about a central axis, a plurality of axial cylinder bores formed in the cylinder block of the body and arranged around the central axis of the cylinder block, a crank chamber formed in the body as an independent chamber separate from the cylinder bores of the cylinder block, an axial drive shaft extending through the crank chamber and rotatably supported in the body, the axial drive shaft having one end disposed in the central bore of the cylinder block, at least one suction-gas-receipt chamber formed in the body for receiving refrigerant gas before compression, and a plurality of reciprocating pistons axially slidably received in the plurality of cylinder bores and reciprocated by a piston drive mechanism arranged in the crank chamber so as to be driven by the drive shaft, comprising:
a rotary valve means connected to one end of the drive shaft so as to rotate together with said drive shaft, the rotary valve means having a generally cylindrical outer circumference extending between opposite axial ends thereof, and a suction passageway for permitting the refrigerant gas before compression to be pumped from the suction-gas-receipt chamber into respective said cylinder bores in a timed relationship with the reciprocation of said reciprocating pistons during rotation of said rotary valve means;
means for defining a recessed chamber in the central bore of the cylinder block for rotatably receiving said rotary valve means, the recessed chamber being surrounded by an inner wall area being in sealing contact with the cylindrical outer circumference of the rotary valve means; and

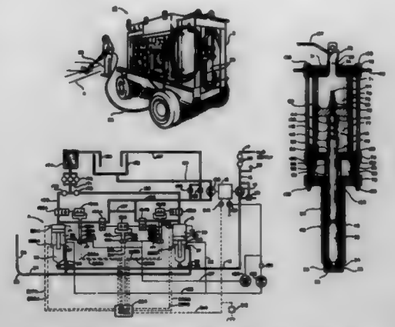
a sealing means for providing a gas-tight sealing between the outer circumference of said rotary valve means and said inner wall area of said recessed chamber at predetermined respective positions adjacent to both of said opposite ends of said rotary valve means.

5,385,451
SWASH-PLATE TYPE COMPRESSOR WITH TAPERED BEARINGS AND ROTARY VALVES
Toshiro Fujii; Koichi Ito, and Kazuaki Iwama, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshikki Seisakusho, Aichi, Japan
Continuation of Ser. No. 103,922, Aug. 6, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 255,830
Claims priority, application Japan, Aug. 6, 1992, 4-210542
Int. Cl.[6] F04B *1/12*
U.S. Cl. 417—269 **12 Claims**



1. A swash-plate type compressor comprising:
a cylinder block (1, 2) having opposite ends, a central axial (*1a*, *2a*) bore, a plurality of working bores (13, 14) extending parallel to each other around the central bore, and a swash-plate chamber (11) intersecting the central bore and the working bores, a gas to be compressed being introduced into the swash-plate (3, 4) chamber;
first and second valve plates attached to respective opposite ends of the cylinder block, each of the valve plates having a central hole (*3a*, *4a*) and discharge valves (31, 32) arranged around the central hole in correspondence with the working bores;
first and second housing (18, 19) attached to respective opposite ends of the cylinder block over the valve plates to form discharge chambers between the housings and the valve plates, respectively;
a drive shaft (7) inserted in the central axial bore of the cylinder block;
first and second tapered roller bearings (8, 9) secured in the central holes of the valve plates, respectively, to support the drive shaft;
annular locating projection means (*3b*, *4b*) arranged on one of the cylinder block and the valve plates around the drive shaft;
locating hole means (*1a*, *2a*) arranged in the other of the cylinder block and the valve plates to fit over the annular locating projection means;
a swash-plate (10) accommodated in the swash-plate chamber and fixed to the drive shaft for rotation therewith;
a plurality of double headed pistons (15) inserted in the respective working bores and reciprocally moved by the swash-plate for forming compression chambers (Pa, Pb) on either side of each of the double headed pistons, the compression chambers on one side of the double headed pistons communicating with one of the discharge chambers via the discharge valves; and
a suction passage (*1b*, *2b*) extending from the swash-plate chamber to each of the compression chambers between the first and second valve plates.

5,385,452
HYDRAULIC FLUID PRESSURIZER WITH FLUID CUSHIONING MEANS
Joe H. Lyday, Beaumont, Tex., assignor to Active Management, Inc., Beaumont, Tex.
Filed Dec. 7, 1992, Ser. No. 986,273
Int. Cl.[6] F04B *35/00*; **F01B** *11/02*
U.S. Cl. 417—403 **11 Claims**

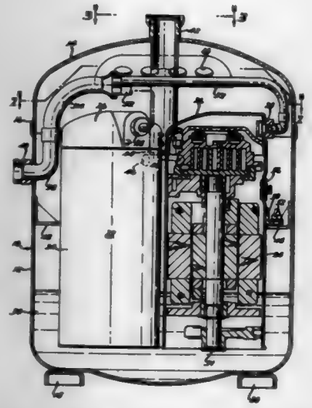


1. An intensifier for pressurizing a working fluid, the intensifier comprising
a low pressure chamber having a top end and a bottom end longitudinally opposite the top end;
a high pressure chamber coaxial with and coupled to the bottom end of the low pressure chamber;
a piston adapted to reciprocate longitudinally within the low pressure chamber;
a plunger having a piston end and a pressure end, the plunger coupled by its piston end to the piston and having its pressure end extending into the high pressure chamber;
a first collar concentric the plunger and coupled to the piston;
a spring concentric the plunger and coupled to the first collar opposite the piston;
a second collar concentric the plunger and coupled to the spring opposite the first collar; and
a seat concentric the plunger and coupled to the bottom of the low pressure chamber, the seat adapted to receive internally the second collar and the spring;
driving means for directing a driving fluid into and out of a space between the piston and the top end of the low pressure chamber;
return means for directing a return fluid into and out of a space between the piston and the bottom end of the low pressure chamber; and
charging means for directing the working fluid into and out of the high pressure chamber.

5,385,453
MULTIPLE COMPRESSOR IN A SINGLE SHELL
James F. Fogt, Sidney, and Jean-Luc Caillat, Dayton, both of Ohio, assignors to Copeland Corporation, Sidney, Ohio
Filed Jan. 22, 1993, Ser. No. 9,305
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—410.5 **90 Claims**

1. A variable capacity motor-compressor system comprising:
(a) a hermetic shell;
(b) a plurality of motor-compressors disposed in said shell, each of said motor-compressors including a motor and a compressor;
(c) a sheet metal sleeve surrounding and affixed to each of said motor-compressor compressors, each said sleeve

substantially encompassing a motor, a compressor, and a discharge muffler; and



(d) mounting means affixed to each of said sleeves for mounting each of said motor-compressors to said shell.

5,385,454

BEARING DEVICE FOR USE IN A CANNED MOTOR

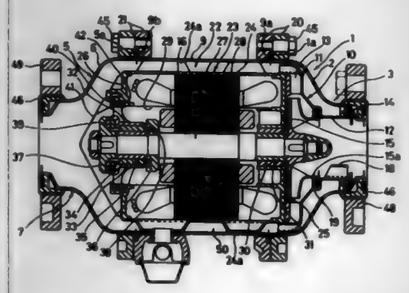
Makoto Kobayashi; Masakazu Yamamoto; Yoshio Miyake, and Yoshikazu Kimura, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 45,694

Claims priority, application Japan, Apr. 14, 1992, 4-120182; Apr. 14, 1992, 4-120183; Jun. 5, 1992, 4-171684; Jun. 5, 1992, 4-171689; Jun. 5, 1992, 4-171691

Int. Cl.[6] F04B *17/00*

U.S. Cl. 417—423.12 **26 Claims**



1. A cartridge type bearing device in a canned motor having a motor frame and a rotor rotatable with respect to the motor frame, the rotor having a shaft, said cartridge type bearing device being capable of receiving bidirectional thrust forces and comprising:

a bearing housing detachably mounted on said motor frame;

a radial bearing supported by said bearing housing, said shaft being rotatably supported by said radial bearing;

a pair of axially spaced stationary thrust sliding surfaces on said bearing housing;

a pair of axially spaced rotating thrust sliding surfaces on said rotor in confronting relationship to said stationary thrust sliding surfaces, respectively; and

a resilient member interposed between said motor frame and said bearing housing for resiliently holding said bearing housing in radial position with respect to said motor frame,

said bearing housing and said stationary and rotary thrust surfaces comprising a cartridge for receiving bidirectional thrust.

5,385,455

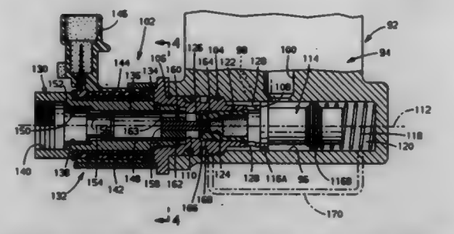
FLOW CONTROL VALVE

Larry E. Dinsmore, Frankenmuth, and Gary G. Hegler, Chesaning, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 18, 1993, Ser. No. 107,881

Int. Cl.[6] F04B *7/00*

U.S. Cl. 417—505 **2 Claims**



1. In combination with a hydraulic pump including a housing with a valve bore therein having a longitudinal centerline, an EVO valve comprising:

a valve body having a center passage therein,

means mounting said valve body on said pump housing,

means on said valve body defining a valve seat in said center passage symmetric about said longitudinal centerline of said valve bore,

a solenoid body rigidly attached to said valve body having a bore therein concentric with said longitudinal centerline of said valve bore and cooperating with said valve bore in defining a fluid flow path of said EVO valve,

means defining a concentric discharge type discharge port of said EVO valve on said valve body concentric with said longitudinal centerline of said valve bore and in fluid communication with said fluid flow path,

a wire coil on said solenoid body around said bore in said solenoid body,

a tubular solenoid armature mounted in said bore in said solenoid body for bodily shiftable movement in the direction of said longitudinal centerline of said valve bore between a retracted position and an extended position when said wire coil carries an electric current,

a damper tube mounted on said solenoid bode and cooperating with said bore is said solenoid body in defining an annular damping chamber exposed to an end of said tubular solenoid,

means defining an orifice in said damper tube in fluid communication with said fluid flow path for admitting fluid to said damping chamber and for exhausting fluid from said damping chamber,

a metering rod, and

means rigidly connecting said metering rod to said tubular solenoid armature for bodily shiftable movement as a unit therewith so that said metering rod cooperates with said valve seat in defining a variable orifice of said EVO valve having a maximum size in said retracted position of said armature and a minimum size in said extended position of said armature and operative to permit fluid flow through said tubular armature around said metering rod.

5,385,456

PUMP FOR HOT CHAMBER DIE CASTING OF CORROSIVE LIGHT ALLOYS

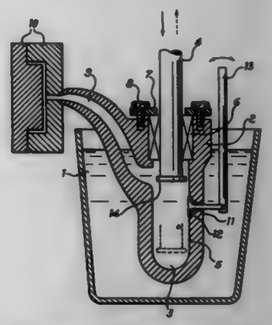
Flavio Mancini, Contrada delle Bassiche 37, Brescia, Italy

Filed May 25, 1993, Ser. No. 67,321

Claims priority, application Italy, May 26, 1992, BS92 A 000057

Int. Cl.[6] B22D *17/04*

U.S. Cl. 417—510 **7 Claims**



1. A pump for hot chamber die casting of corrosive light alloys comprising:

a body having a cavity formed therein, an opening for introducing a molten alloy into the cavity, and a mouth, the molten alloy within the cavity having a top surface;

a piston which vertically reciprocates within the cavity for compressing the molten alloy therein to raise the top surface of the molten alloy within the cavity;

a seal packing detachably constrained to the mouth of the body for guiding the piston, the piston having a diameter substantially smaller than a diameter of the cavity so that the piston moves within the cavity without coming into contact with a wall of the cavity;

a sprue interconnecting the cavity with a mold; and

a valve for closing the opening in the body during compression of the molten alloy in the cavity;

wherein a lower edge of the seal packing and of the piston, a mouth of the sprue, and the opening into the body are located below the top surface of the molten alloy.

5,385,457

NUTATING POSITIVE DISPLACEMENT DEVICE HAVING A MAGNETIC ELEMENT WIRE SENSING ARM

John E. Durand, 26581 Dolorosa, Mission Viejo, Calif. 92691

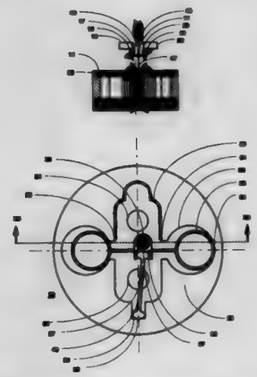
Filed Aug. 30, 1993, Ser. No. 113,019

Int. Cl.[6] F01C *1/06, 17/00*

U.S. Cl. 418—59 **4 Claims**

1. A nutating positive displacement device including the combination of a nutator capable of nutating within a nutating chamber defined by the interior surface of the body of the positive displacement device between an inlet into and an outlet out of the positive displacement device, an inverted pendulous, low friction, substantially non-sliding nutator vertically elongated double pivoting fulcrum, wherein:

the fulcrum comprises a bottom base coupled to a central beam coupled to a top nutator support bearing surface, the bottom of the fulcrum comprises a pivoting base pivotally and substantially non slidingly mating with a base receptacle defined by a body interior surface, the base coupled to the fulcrum beam which in turn supports the fulcrum nutator support bearing surface, both ends of the substantially non slidng nutator vertically elongated double pivoting fulcrum shaped to an effective diameter whose length is the length of the substantially non sliding nutator vertically elongated double pivoting fulcrum, thereby causing the top nutator support bearing to move in a straight line, and the nutator support bearing surface pivotally and substantially non slidingly mates with a



nutator restraint defined by the center bottom surface of the nutator.

5,385,458

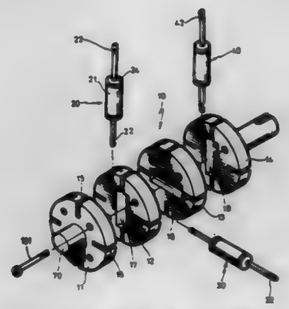
VANE-TYPE ROTARY COMPRESSOR

Jen Y. Chu, 75-2, Feng Jen Street, Chi-Loong, Taiwan, Prov. of China

Filed Feb. 15, 1994, Ser. No. 196,547

Int. Cl.[6] F04C *18/00*

U.S. Cl. 418—255 **1 Claim**



1. A vane-type rotary compressor comprising:

(a) a cylinder housing defining a longitudinally directed central axis having a gas inlet conduit and a gas outlet conduit, said cylindrical housing having formed therein a cylindrical housing inner chamber; and,

(b) rotor means having a longitudinally directed rotor central axis mounted eccentrically and rotationally within said cylindrical housing inner chamber for eccentric rotation therein, said rotor means including four disk shaped plate members defining a first plate member, a second plate member, a third member, and a fourth plate member, each of said plate members having four radially extending and equally spaced apart grooves extending from an outer peripheral surface of each of said plate members; said four plate members threadedly secured each to the other in aligned relation, said aligned four plate members forming four radially and longitudinally extending and equally spaced apart slots formed therein, said first and fourth plate members respectively having a first and sixth semicylindrical recess formed within first surfaces thereof having respectively a first and sixth central axis line direc-

tion and in open communication with a first pair of opposing slots, said second plate member having a second and third semi-cylindrical recess formed within opposing surfaces thereof in open communication respectively with said first pair of opposing slots and a second pair of opposing slots, said second semi-cylindrical recess having a central axis line orthogonal to said third semi-cylindrical recess, said third plate member having respectively a fourth and fifth semi-cylindrical recess formed within opposing surfaces thereof and in open communication with said first and second pair of opposing slots, said fourth semi-cylindrical recess having a central axis line orthogonally directed with respect to a central axis line of said fifth semi-cylindrical recess, said first and second semi-cylindrical recesses being aligned each to the other to form a first recess chamber, said third and fourth semi-cylindrical recesses being aligned each to the other to form a second recess chamber, and said fifth and sixth semi-cylindrical recesses being aligned each to the other to form a third recess chamber, and a first, a second and a third piston respectively displaceable within said first, second and third recess chambers, each of said piston members having a central axis with opposing hook members extending on opposing sides thereof and respectively passing through said first and second pair of slots, two pairs of vane members slidingly mounted in said slots and coupled to each of said hook members, said vane members being contiguously positioned with reapect to an inner wall of said cylinder housing as said rotor means eccentrically rotates through a portion of a rotative displacement of said rotor means.

5,385,459

RUBBER CURING BLADDERS HAVING SELF RELEASE OR LOW ADHESION TO CURING OR CURED HYDROCARBON RUBBERS

Daniel F. Graves, Clinton, and William L. Hergenrother, Akron, both of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 906,095, Jun. 29, 1992. This application Apr. 4, 1994, Ser. No. 222,154

Int. Cl.[6] B29C *35/00*; B29D *30/00*; C08L *9/02*

U.S. Cl. 425—52 **9 Claims**

1. In a curing press for hydrocarbon based rubbers of the type which uses an inflatable bladder or sleeve the improvement wherein the bladder or sleeve comprises:

at least one butadiene-acrylonitrile polymer molded into a curing bladder or curing sleeve having an ultimate tensile strength of 1500 psi or more and a 300 percent modulus of 500–1000 psi, wherein said bladder or sleeve retains a capability to achieve 300 percent elongation after 48 hours at 121° C., wherein said bladder or sleeve has surfaces having crosslinked polymers therein and wherein the crosslinked polymers of said surfaces consist essentially of one or more butadiene-acrylonitrile polymers in amounts from 50 to 100 weight percent of all rubbers present and of one or more optional polymers selected from EPDM, SAN, hydrogenated polybutadiene, hydrogenated poly(styrene-butadiene), brominated poly(p-methylstyrene-isobutylene) or coumarone-indene resin.

5,385,460

APPARATUS TO MAKE AN ENDLESS, FLAT, FLEXIBLE BELT OF POURABLE PLASTICS

Franz-Josef Kaiser, Hamburg, Germany, assignor to Balatros GmbH, Hamburg, Germany

Division of Ser. No. 704,811, May 23, 1991, Pat. No. 5,219,505. This application Feb. 11, 1993, Ser. No. 16,755

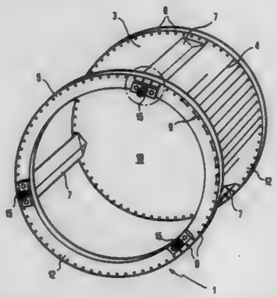
Int. Cl.[6] B28B *21/30*

U.S. Cl. 425—115 **6 Claims**

1. A drum-like frame adapted for use in a centrifugal casting mold utilized for casting an endless, flat, flexible belt having a generally center plane, a width, and a length extending in the longitudinal direction thereof of pourable plastic material having a multiple strand core as a tension bearer at the generally central plane of the belt; said drum-like frame comprising:

two parallel spaced-apart lateral discs having peripheral outer edges whose outside contour corresponds to the inner contour of the casting mold and whose inside surfaces define the lateral spacing of the casting mold, said discs also having opposing circularly arranged series of holes therein;

spacers extending between and holding said discs apart which are of a length corresponding to the width of the belt to be cast; and



spaced-apart support filaments extending between said discs and through said opposing series of holes and around and slightly inwardly of the outer edges of said discs to be positioned generally at the center plane of the belt to be cast, said support filaments being formed from a single long filament strung back and forth through said opposing series of holes from one disc to the other, said support filaments being adapted to receive the multiple strand core wound therearound to extend in the longitudinal direction of the belt to be cast.

5,385,461

INJECTION MOLDING MACHINE FOR MAKING A MAGNETIC TAPE CASSETTE

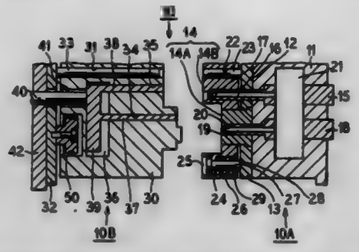
Tetsuo Machida, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 885,454, May 19, 1992. This application Jun. 14, 1993, Ser. No. 76,166

Claims priority, application Japan, May 20, 1991, 3-114772; Oct. 8, 1991, 3-260763

Int. Cl.[6] B29C *45/16*

U.S. Cl. 425—130 **10 Claims**



1. An injection molding machine comprising: a molding die unit consisting of a male molding die assembly and a female molding die assembly mating with the male molding die assembly; and a movable die base; wherein either the male molding die assembly or the female molding die assembly is a movable molding die assembly and the other is a fixed molding die assembly, the movable molding die assembly is attached to the movable die base, the fixed molding die assembly is attached to a fixed member of the injection molding machine, and the movable molding die assembly can be moved toward the fixed molding die assembly by a moving means built therein or by a moving means formed on the movable die base, wherein said female molding die assembly comprises a first die component fixed to a female die base of the female die assembly and a movable die component longitudinally slidable with respect to said female die base and a longitudinal restraint extending from said female die base and restricting longitudinal separation of said movable component from said female die base.

5,385,462

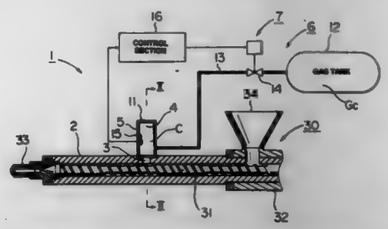
VENT-TYPE INJECTION MOLDING MACHINE

Takashi Kodama, and Kiyoto Takizawa, both of Nagano, Japan, assignors to Nissei Plastic Industrial Co., Ltd., Nagano, Japan

Filed Sep. 13, 1993, Ser. No. 119,391

Int. Cl.[6] B29C *45/63*

U.S. Cl. 425—135 **6 Claims**



1. A vented injection molding machine comprising:

a heating cylinder provided with a vent hole for exhausting a gas component generated from a melted resin;

a vent hole cover, covering said vent hole, having a gas exhaust port at an upper portion including a lid which functions as a valve for opening or closing said gas exhaust port wherein a gas staying chamber is formed at an interior of said vent hole cover; and

an inert gas supply unit for supplying an inert gas to the interior of said vent hole cover.

5,385,463

CONTROL SYSTEM FOR CONTINUOUS VULCANIZATION LINE FOR MANUFACTURING SPONGE RUBBER PRODUCT

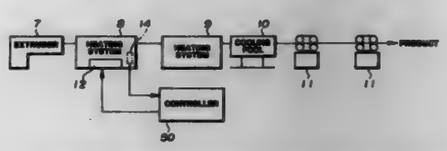
Takanori Kawamura, Chiba, and Kibatsu Shinohara, Kanagawa, both of Japan, assignors to Kinugawa Rubber Ind. Co., Ltd., Chiba, Japan

Division of Ser. No. 855,073, Mar. 23, 1992, Pat. No. 5,328,348. This application Mar. 7, 1994, Ser. No. 206,843

Claims priority, application Japan, Mar. 29, 1991, 366179

Int. Cl.[6] B29C *35/10*

U.S. Cl. 425—143 **4 Claims**



1. A control system for automatically controlling a continuous vulcanization line for sponge rubber materials comprising:

an extruder for pre-forming said sponge rubber material;

a primary heating means arranged downstream of said extruder for primary heating of the pre-formed sponge rubber material:

a secondary heating means for finally heating the sponge rubber material downstream of said primary heating means;

sensor means for monitoring a temperature in said primary heating means;

discrimination means for determining whether said monitored temperature is within a predetermined criterion defined by designated upper and lower temperature limits whose limits correlate to upper and lower limits of an outside dimension of an acceptable sponge rubber product;

arithmetic means for deriving an offset temperature of said monitored temperature, offsetting from said criterion, to generate an offset temperature indicative signal;

said primary heating means including a microwave generating means for internally heating the pre-formed sponge rubber material; and

control means for controlling an output power of microwave generated by said microwave generating means, in response to said offset temperature indicative signal, such that the output power of said microwave generating means is increased to increasingly compensate an expansion ratio of the pre-formed sponge rubber material when the monitored temperature is less than said lower temperature limit and that the output power of said microwave generating means is decreased to decreasingly compensate said expansion ratio when the monitored temperature exceeds said upper temperature limit.

5,385,464

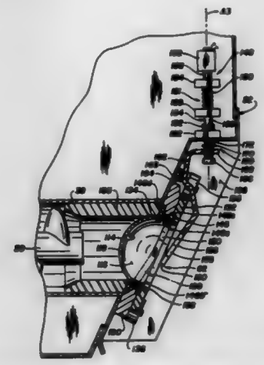
APPARATUS FOR AUTOMATICALLY DISPENSING FOOD PRODUCT SUCH AS HARD ICE CREAM

David B. Anderson, 410 East St. George Blvd., St. George, Utah 84770

Filed May 26, 1993, Ser. No. 68,134

Int. Cl.[6] B29C *47/92*

U.S. Cl. 425—145 **20 Claims**



1. Apparatus for automatically dispensing food product such as hard ice cream, comprising an insulated housing having a refrigerated chamber therein,

a receptacle in said chamber for holding a supply of food product under refrigeration, said receptacle having an open upper end to permit loading of food product into the receptacle and a lower end,

cutting means adjacent the lower end of the receptacle for cutting food product from said supply,

conveyer means in said chamber generally below said cutting means for receiving food product cut from said supply and for conveying said food product from said chamber,

scoop means for receiving food product conveyed by said conveyer means from said chamber and for dispensing a predetermined quantity of food product, and

means for sensing the extent to which food product becomes packed in said scoop means as it is conveyed to the scoop means and for effecting stoppage of the delivery of food product to said scoop means when the scoop means becomes packed to a predetermined extent.

5,385,465

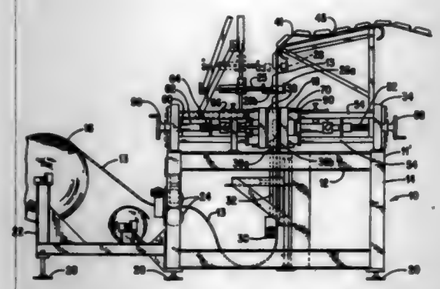
VERTICLE THERMOFORMING APPARATUS

Daniel Greiwe, 344 Sturges, Elmhurst, Ill. 60123; Claude Powell, Rt. 2, Box 43, New London, Mo. 63459, and Greg Pranger, 16 King Arthur Ct., Apt. 7, North Lake, Ill. 60164

Continuation-in-part of Ser. No. 635,664, Dec. 28, 1990, abandoned. This application Oct. 1, 1992, Ser. No. 955,114

Int. Cl.[6] B29C *51/00*

U.S. Cl. 425—308 **16 Claims**



1. An apparatus of thermoforming plastic sheet material into desired forms in a manner so as to minimize material waste and improve product quality, comprising:

a. a forming station including complementary first mold means and second mold means moveable toward and away from each other along a horizontal axis, one of said mold means having at least one forming tool therein;

b. indexer means disposed above and adjacent to said mold means for moving said plastic material into said forming station without the use of a chain rail or clamping rail running along side material vertically between said mold means such that the length of said plastic material runs on an upward path of travel from the bottom toward the top of said apparatus to eliminate sagging of said material and the need for said chain rails or said clamping rail during a molding operation; said indexer means being moveable along a vertical path in a reciprocal manner relative to said mold means;

c. means for moving said mold means adjacent one another in said molding operation with said plastic material disposed vertically there between, said mold means cooperating to form a molded article;

d. means disposed between said first mold means and said second mold means to clamp said plastic sheet material around said forming tool in one of said mold means during said molding operation to thereby isolate and individually secure around all of its borders each area of sad plastic forming tool and provide more uniform drawing of said plastic material.

5,385,466

THERMOPLASTIC CONTAINER INJECTION BLOW MOLDING APPARATUS

Robert S. Kosefsi, Holland, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Sep. 16, 1993, Ser. No. 122,837

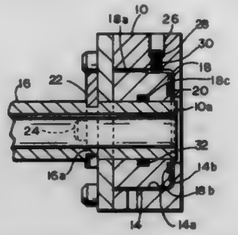
Int. Cl.[6] B29C *49/60*

U.S. Cl. 425—522 **19 Claims**

1. In an apparatus for blow molding hollow thermoplastic articles, the improvement comprising:

a face block adapted to be secured to said blow molding machine, said face block having at least one opening extending generally axially therethrough, the at least one opening having an annular flange projecting radially thereinto, said annular flange being spaced axially inwardly from a front face of the face block;

an elongate hollow core rod having an end portion positioned within said opening of said face block, said end portion having a free end positioned adjacent said annular flange, said end portion being capable of moving, in a plane extending transversely of a longitudinal central axis



of said core rod, relative to said at least one opening, said core rod having another portion extending beyond said front face of said face block;

O-ring sealing means carried in a free end of said end portion of said core rod, said O-ring sealing means being adapted to sealingly engage said annular flange as said end portion of said core rod moves relative to said opening; and

means for accurately positioning said core rod relative to said annular flange to maintain said O-ring sealing means in sealing engagement with said annular flange.

5,385,467

METHODS AND APPARATUS FOR GAS COMBUSTION

Enrico Sebastiani, Legnano, and Giuseppe Fogliani, Formigine, both of Italy, assignors to Worgas Bruciatori S.r.l., Modena, Italy

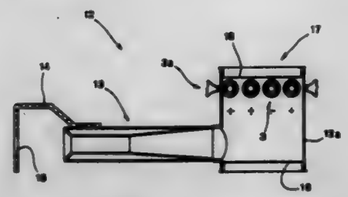
PCT No. PCT/IT91/00056, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO92/01196, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 5, 1991, Ser. No. 965,418

Claims priority, application Italy, Jul. 6, 1990, 40099 A/90; Jan. 14, 1991, MO 91 A 00008

Int. Cl.[6] F23D *3/40*; F23C *5/00*

U.S. Cl. 431—326 **42 Claims**



1. A method of bringing about the combustion of gases in a burner having a diffuser equipped with a plurality of slots defining an efflux area for a mixture of gas fuel and air wherein:

the slots of the diffuser are fed with a mixture of gas fuel and air having an aeration rate greater than 0.9;

the slots are arranged in groups, each group generating a slender lamellar flame;

the specific loading of the burner diffuser is comprised between 0.3 and 0.8 kW/cm^2 at the maximum nominal output.

5,385,468

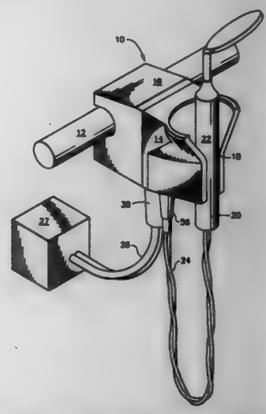
REMOVABLE INSTRUMENT HOLDER

Gregory R. Verderber, Cincinnati, Ohio, assignor to Gregg Laboratories, Inc., Cincinnati, Ohio

Filed Jul. 9, 1993, Ser. No. 89,254

Int. Cl.[6] A61C *1/02*

U.S. Cl. 433—77 **15 Claims**



1. A holder assembly for a powered instrument, comprising:

a first section for rigidly affixing the assembly to a support, said first section containing means for connecting said first section to a power supply; and

a second section, releasably coupled to said first section, for releasably holding a powered instrument, said second section containing means for supplying power to said instrument;

whereby when said first and second sections are coupled together, energy from the power supply is transferred via said first and second sections to the instrument for operating the instrument, and when said first and second sections are separated, said second section containing said instrument holding means is disconnected from the power supply, and may be sterilized.

5,385,469

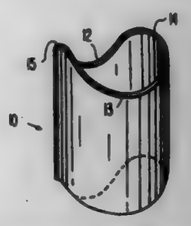
METHOD FOR FORMING A CORONAL REPLACEMENT FOR A TOOTH AND PRODUCT FOR CASTING THE CROWN

Bernard Weissman, 225 E. 48th St., New York, N.Y. 10170

Continuation-in-part of Ser. No. 898,769, Jun. 12, 1992, Pat. No. 5,326,263, and Ser. No. 976,606, Nov. 16, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 56,696

Int. Cl.[6] A61C *9/00*, *5/10*

U.S. Cl. 433—40 **3 Claims**



1. A dental mold form comprising a generally tubular outer wall having first and second opposing ends; a double scallop formed at each of the first and the second ends, comprising a first scallop and an opposing second scallop, one scallop at each end being more deeply indented than the opposing scallop at that end, the scallops at the second end being oriented circumferentially ninety degrees out of phase with the scallops at the first end; the tubular outer wall having a length of an order of magnitude equal to that of teeth, said length being approximately at least about nine millimeters and not more than about fifteen millimeters, and being formed of an orally safe material having a sufficient modulus of stiffness to retain its shape but to be deformable radially under finger pressure.

5,385,470

JAW ARTICULATOR AND FACE BOW WITH BITE-FORK COLUMN

Michael H. Polz, Waldmüllerstrasse 12, D-8520 Erlangen, Germany

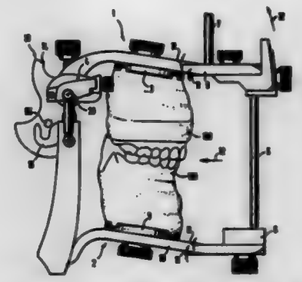
PCT No. PCT/EP91/01498, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/02192, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 8, 1991, Ser. No. 972,499

Claims priority, application Germany, Aug. 8, 1990, 4025121

Int. Cl.[6] A61C *11/00*

U.S. Cl. 443—57 **24 Claims**



1. An improved dental apparatus including an articulator for simulating jaw movements, the articulator including an upper part and a lower part for carrying respectively an upper jaw model and a lower jaw model, the upper and lower parts being connected by joints permitting swiveling about a hinge axis and linear motion, each joint including a ball movably received in a cavity formed by a guide, wherein the improvement comprises:

said guide having a first guide surface extending parallel to the hinge axis and a second, sloping guide surface merging at a convex corner with the first guide surface, the second guide surface deviating from the direction of the hinge axis by an angle for permitting motions of surtrusion and retrusion.

5,385,471

CEREC INLAY HOLDER AND INSERTER

Ng T. Chuen, Flat A, 28th Floor, Shing Loong Court, 13 Dragon Terrace, Causeway Bay, Hong Kong

Continuation-in-part of Ser. No. 698, Jan. 5, 1993, abandoned. This application Dec. 27, 1993, Ser. No. 175,210

Int. Cl.[6] A61C *3/00*; B25B *7/00*, *9/00*

U.S. Cl. 433—153 **28 Claims**

1. A grasping device comprising:

a tweezer member having a pair of mutually spaced legs extending resiliently from a common base and terminating at their distal ends in cooperatively arranged gripping segments;

means defining a socket extending laterally from one of said legs;

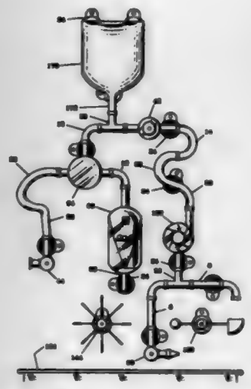
a finger receiving ring; and

connecting means protruding from said ring, said connecting means being removable from and insertable in said socket



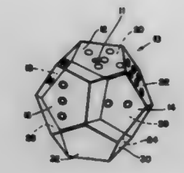
to thereby accommodate attachment and removal of said ring to and from said tweezer member.

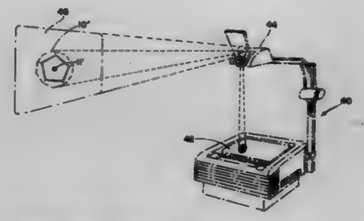
5,385,472
CONSTRUCTION WATER TOY
Keith A. Mullin, 2797 Northbrook Pl., Boulder, Colo. 80304
Filed Jul. 26, 1993, Ser. No. 96,378
Int. Cl.[6] G09B *23/12*
U.S. Cl. 434—126 17 Claims



1. A fluid-conveying and -operated toy comprising
a fluid reservoir for a flowable fluid having an inlet and an outlet;
at least one elongated fluid conduit member having an inlet and an outlet and which provides fluid flow communication of said fluid from said reservoir to an activity member;
at least one said activity member disposed adjacent to said outlet of said fluid conduit member and which is placed into motion by being contacted with said fluid;
coupling means for connecting said inlet of said conduit member to said outlet of said reservoir to provide a fluid flow path for said fluid communication of said flowing fluid from said reservoir into and through said conduit member and then to said activity member; and
attaching means for removably attaching each of said reservoir, conduit member and activity member to a generally flat vertical surface in an orientation such that said fluid flows along said fluid flow path under the force of gravity.

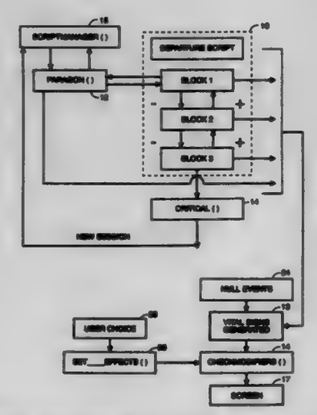
5,385,473
DISPLAY POLYHEDRA HAVING MARKED AND UNMARKED PAIRED OPPOSING FACES
John Veltman, Velarde, assignor to Cuisenaire Company of America, Inc., White Plains, N.Y.
Filed Nov. 1, 1993, Ser. No. 145,998
Int. Cl.[6] G09B *19/02*
U.S. Cl. 434—205 8 Claims





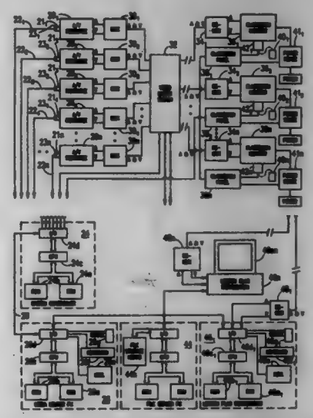
1. A polyhedra comprising:
a transparent body defined by a plurality of faces including a first set of faces bearing indicia, and a second set of faces, said first and second sets of faces being in one-to-one correspondence and each face of said second set being blank and being disposed opposite a corresponding first set face whereby indicia on a face of said first set may be viewed through a corresponding face of the second set.

5,385,474
MEDICAL SIMULATOR
Charles Brindle, 4685 N. Wilshire Rd., Whitefish Bay, Wis. 53211
Filed Dec. 9, 1992, Ser. No. 989,034
Int. Cl.[6] G09B *23/00*
U.S. Cl. 434—267 15 Claims



1. A method of simulating emergency conditions as might be experienced in the operating room, including the steps of displaying from a memory simulated initial patient vital sign information representing a desired patient condition, modifying the vital sign information in accordance with one of a plurality of scripts, displaying a plurality of user input options, evaluating the input options selected by the user from the plurality of options in relation to preferred option choices in the script to determine the appropriateness and timeliness of the user responses, modifying the vital sign data in accordance with said script for improvements of vita sign information displayed if the user responses are appropriate and timely for return to the desired patient condition or continuing to display worsening patient vital sign information a critical condition in accordance with the script if the responses are inappropriate or untimely, providing a plurality of script blocks in each script, said script blocks being initiated sequentially representing worsening patient conditions, and passing to a lower script block if the simulated patient's condition worsens and rising to a higher script block if the simulated patient's condition improves, assigning a numerical value to each correct user selection or selections untimely made and progressing upwardly in the script when a positive threshold number is achieved and moving downwardly in the script when a negative threshold number is achieved, providing the user with a plurality of options, timing the user response time, transitioning through the script blocks in accordance with the evaluation of the user response time and appropriateness of the user choices.

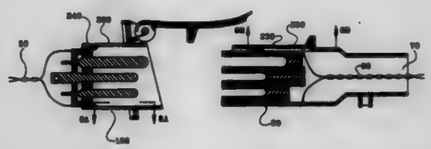
5,385,475
APPARATUS AND METHOD FOR GENERATING AND PRESENTING AN AUDIO VISUAL LESSON PLAN
David Sudman, Gurnee; Joseph Ulowetz, Northbrook; Dilip Singhi, Glenview, and Maureen Pajerski, Rolling Meadows, all of Ill., assignors to Rauland-Borg, Skokie, Ill.
Filed Apr. 1, 1993, Ser. No. 40,468
Int. Cl.[6] G09B *5/00*
U.S. Cl. 434—307 R 31 Claims



1. A system for connecting audiovisual output signals from audiovisual resources to at least one monitor in accordance with a predetermined sequence, the system comprising:
a storage medium;
means for inputting a lesson plan to the storage medium, the lesson plan comprising a data file having a format corresponding to the sequence defined by the lesson plan, the lesson plan including labels for identifying selected ones of the audiovisual resources and control commands for the selected audiovisual resources wherein each of the control commands is associated with one of the labels;
a processor for interpreting the lesson plan in the storage medium and distinguishing between identifying labels and control commands, the processor providing first output signals in response to the identifying labels and second output signals in response to the control commands;
a switching network responsive to the first output signals from the processor for connecting the outputs of the selected ones of the audiovisual resources to the at least one monitor in the predetermined sequence as defined by the lesson plan;
a driver responsive to the second output signals from the processor for controlling the operation of the connected audiovisual resource in the predetermined sequence as defined by the lesson plan; and
and a non-volatile storage medium for storing the lesson plan, wherein the inputting means inputs the lesson plan to the storage medium from the non-volatile storage medium.

20. A method of generating a predetermined sequence for connecting audiovisual output signals from audiovisual resources to at least one monitor, comprising the steps of:
selecting media for playback in the audiovisual resources;
scheduling the selected media for playback at a predetermined date and time;
loading the media into appropriate audiovisual resources at the predetermined date and time;
assembling into a memory a lesson plan comprising labels for identifying selected ones of the audiovisual resources and control commands for the selected audiovisual resources, wherein each of the control commands is associated with one of the labels and wherein the identifying labels and control commands are assembled into a format that determines the predetermined sequence for connecting the audiovisual output signals from the audiovisual resources to the at least one monitor, by providing images on a display corresponding to the identifying labels and the control commands, and recording the identifying labels and control commands into the format of the lesson plan; and
saving the assembled lesson plan to a non-volatile memory.

5,385,476
MAGNETIC CIRCUITS FOR COMMUNICATING DATA
Kenneth O. Jasper, Charlotte, N.C., assignor to Vehicle Enhanced Systems Inc., Rock Hill, S.C.
Continuation of Ser. No. 899,617, Jun. 16, 1992, abandoned.
This application Jan. 24, 1994, Ser. No. 185,295
Int. Cl.[6] H01F *15/02*
U.S. Cl. 439—38 12 Claims



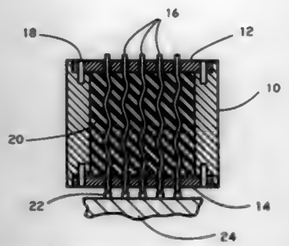
1. An electrical connector for transferring multiple electrical signals from one cable on a trailer to another cable on a tractor of a tractor/trailer combination, comprising:
a multi-pin plug;
a multi-receptacle socket matable with said plug;
said plug comprising a plurality of pins, a first non-ferrous shell surrounding said pins, and a first air-core coil carried on said first shell;
said socket comprising a second non-ferrous shell surrounding said receptacles, and a second air-core coil carried on said second shell;
said first and second air-core coils being positioned adjacent to each other to form an air-core transformer when said plug and socket are mated; and
means for delivering high-frequency information-bearing electrical signals to at least one of said first and second

air-core coils for magnetic transfer to the other of said first and second air-core coils by air-core transformer action.

5,385,477
CONTACTOR WITH ELASTOMER ENCAPSULATED PROBES

Yakov F. Vaynkof, Woodland Hills; Karl F. Zimmermann, Agoura; Jerry W. Shorter, Camarillo, and Joseph K. Bond, Newbury Park, all of Calif., assignors to CK Technologies, Inc., Newbury Park, Calif.

Filed Jul. 30, 1993, Ser. No. 100,611
Int. Cl.[6] H05K *1/00*
U.S. Cl. 439—66 **19 Claims**



1. An electrical probe contactor for making a plurality of electrical connections to contact pads on a device to be tested in which an array of individual probes is moved against a corresponding array of contact pads on the device and the probes are allowed to buckle transversely to the longitudinal axis of the probes in order to accommodate locational differences in the pads, comprising, in combination:

an array of generally parallel, electrically conductive, probe wires disposed in a pattern corresponding to the pattern of the contact pads to be electrically engaged, each coupling wire having a first end and a second end;

an elastic probe material disposed in a housing and encapsulating said probe wires to form an integrated elastic system so as axial force is applied to the ends of the probe wires, the force causes each wire to buckle with a plurality of transverse deflections and thereby induce other adjacent probe wires to buckle with a set of similar transverse deflections so that all probe wires bend and buckle in identical, parallel congruent wave forms, wherein said ends of the probe wires extending outwardly from top to bottom of the elastic coupling material for passing through plate means.

5,385,478
SHEET-LIKE CONTACT DEVICE AND A CONNECTOR USING THIS DEVICE

Yukihisa Niekawa, Kawasaki, Japan, assignor to Fujisoku Corporation, Kawasaki, Japan

Continuation of Ser. No. 987,028, Dec. 7, 1992, abandoned. This application Jan. 14, 1994, Ser. No. 183,129
Claims priority, application Japan, Dec. 13, 1991, 3-330360
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—67 **12 Claims**

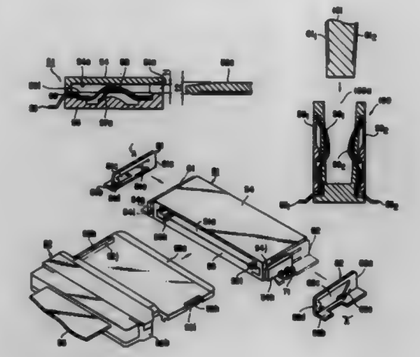
1. A connector device comprising:

a socket including: a socket body with an opening in one side;

a first contact member provided in said socket body, said first contact member comprising a TAB tape including a plurality of first contact elements patterned on the surface of the first contact member and slits defined between the first contact elements, the first contact member being curved so that said first contact elements have central raised portions;

a flat frame holding said first contact member in its curved state, one side of said first contact member being attached to one side of the frame and an opposite side of the first contact member being attached to another side of the frame; said first contact member extending from said one side of the frame to said opposite side of the frame and being free of support by said frame therebetween;

a plurality of springs each having one end attached to said one side of the frame and an opposite end which is left free, said springs being mounted at the back of said first contact member so as to correspond to and bias said first contact elements; said frame being mounted in said socket body in flat, undeformed state, and



a plug including:

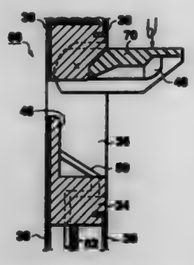
an insert portion that can be inserted in said opening; and

a second contact member provided on said insert portion, said second contact member comprising a TAB tape including second contact elements provided in a pattern on the surface of the second contact member so that said second contact elements make contact with said first contact elements of the first contact member.

5,385,479
MODULAR JACK

Masanobu Okada, Nagaokakyo, Japan, assignor to Murata Mfg. Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 103,443, Aug. 6, 1993, abandoned. This application Dec. 2, 1993, Ser. No. 160,253
Claims priority, application Japan, Aug. 10, 1992, 4-212599; Aug. 11, 1992, 4-213996; Aug. 11, 1992, 4-214042; Dec. 2, 1992, 4-322879
Int. Cl.[6] H01R *13/447*
U.S. Cl. 439—144 **26 Claims**



1. A modular jack for connection to a modular plug, the modular plug having a tip and electrodes and being insertable into the jack by movement in an insertion direction into an inserted position, said modular jack comprising:

a flat member having first and second opposed major faces and having a hole that extends between, and forms an opening at, each of said first and second major faces, said hole being delimited by inner walls formed in said flat member for guiding insertion movement of the plug and a bottom portion, adjacent said second major face, against which the tip of the plug abuts when the plug is in the inserted position;

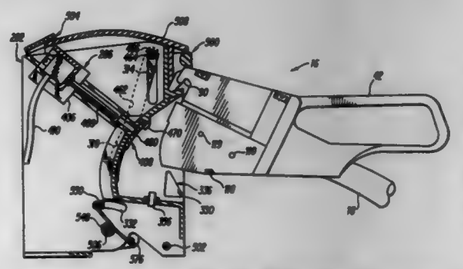
an electrode section located in said hole so as to be electrically connected to electrodes of the modular plug when the modular plug is inserted into said hole through said opening; and

a cover mounted to said flat member for movement between an open position in which said opening is uncovered for insertion of the plug into said jack and a closed position in which said cover is housed in said hole and covers said opening, said cover being formed to prevent a user's fingers from contacting said electrode section and to impede entry of dust into said hole when said cover is in the closed position, said cover having a hook portion for releasably locking the plug in the inserted position.

5,385,480
ELECTRICAL CONNECTOR INLET ASSEMBLY WITH BREAK-AWAY MECHANISM FOR ELECTRIC VEHICLE

Ernest G. Hoffman, Middlefield, Conn., assignor to Hubell Incorporated, Orange, Conn.

Continuation-in-part of Ser. No. 5,108, Jan. 15, 1993, Pat. No. 5,344,330. This application Sep. 2, 1993, Ser. No. 115,092
Int. Cl.[6] H02J *7/00*; H01R *13/453*
U.S. Cl. 439—310 **21 Claims**



1. An electrical connector inlet assembly for recharging a battery of an electric vehicle, comprising:

a first housing with a mounting member for rigidly coupling said first housing to a structure of the vehicle;

a second housing with an inlet cavity for receiving a mating electrical connector with a first set of electrical contacts therein;

a joint assembly movably coupling said first housing to said second housing for limited relative movement therebetween;

a second set of electrical contacts movably coupled to said second housing for movement between a retracted position remote from said inlet cavity and an extended position located within said inlet cavity for electrically engaging the first set of electrical contacts of the mating electrical connector;

an actuation mechanism operatively coupled to said second set of electrical contacts for moving said second set of electrical contacts between said retracted position and said extended position; and

a break-away mechanism for disengaging the first set of electrical contacts of the mating electrical connector from said second set of electrical contacts when coupled together and after application of an excessively high force therebetween, said break-away mechanism including

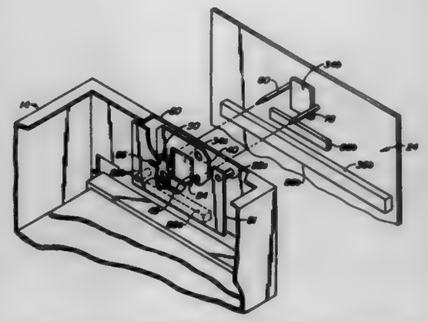
a release mechanism for moving said second set of contacts from said extended position to said retracted position upon a predetermined amount of relative movement between said first and second housings, and

a trigger mechanism operatively coupled between said first and second housings for sensing relative movement between said first and second housings and operatively coupled to said release mechanism for activating said release mechanism.

5,385,481
ALIGNMENT MECHANISM FOR BLIND-MATABLE CONNECTION FOR TWO OR MORE CONNECTORS

Keaneth A. Kotyuk, Morgan Hill, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Dec. 20, 1991, Ser. No. 811,190
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—378 **15 Claims**



1. An alignment system for blind-matable connection of at least a first pair of connector parts to second pair of connector parts mounted on a backplane of a cabinet that removably receives a drawer of the type formed from a chassis constructed to carry electrical and/or electronic apparatus, the drawer including a backwall integrally formed with the chassis and adapted to be placed in confronting, substantially parallel relation with the backplane when the drawer is received by the cabinet, the alignment system comprising:

first means for mounting one of the first pair of connector parts to the drawer, the backwall of the drawer having a first pair of apertures formed therein, the one of the first pair of connector parts being fixedly located relative to the first pair of apertures;

second means for floatably mounting the other of the first pair of connector parts to the backwall of the drawer, the second means including a planar mounting plate having the other connector part mounted thereto, the second means having a second pair of apertures formed therein located relative to the other connector part;

the second pair of apertures being alignable with the first pair of apertures;

alignment means mounted to the backplane for axially aligning the first and second pair of pairs of apertures when the backwall of the drawer is placed in confronting relation with the backplane of the cabinet; and

third means for mounting the second connector parts to the backplane relative to the alignment means.

5,385,482
WIRING CONNECTOR DEVICE

Michael L. Rottner, Alpharetta, Ga., assignor to Georgian Art Lighting Designs, Inc., Lawrenceville, Ga.

Filed Sep. 1, 1993, Ser. No. 115,221
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—409 **19 Claims**

1. An electrical connection device for wiring a chandelier comprising in combination:

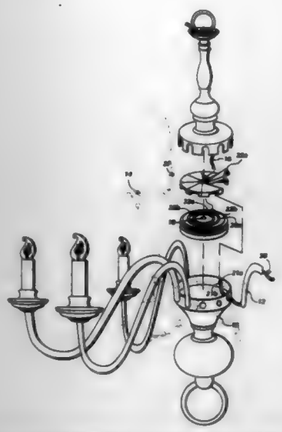
a substrate;

means for supporting said substrate at a support axis for said chandelier;

a plurality of pairs of electrically conductive tines disposed on said substrate radially about said support axis, each of said pairs of electrically conductive tines comprising a grounded tine and an ungrounded line;

conducting means for connecting all of said grounded tines together and all of said ungrounded tines together; wherein

each of said pairs of tines is under one of a plurality of clamps and



each clamp of said plurality of clamps is selectively movable between an open position at which said pair of tines is exposed so that a parallel two conductor wire can be laid across said pair of tines and a closed position at which said clamp urges said two conductor wire onto said pair of tines so that the grounded tine of said pair pierces the insulation of one conductor of said two conductor wire and the ungrounded line of said pair pierces the insulation of the other conductor of said two conductor wire.

5,385,483

CONNECTOR DEVICE

Tse H. Lin, No. 2, Lane 126, Pu Ting Rd., Hsin Chu City, Taiwan, Prov. of China

Filed Oct. 13, 1993, Ser. No. 135,680
Int. Cl.[6] H02G *15/08*
U.S. Cl. 439—424 **17 Claims**



1. A connector device comprising:

an inner sleeve (11) made of flexible conductive material and having a plurality of pressouts (111) in an inner periphery thereof;

an outer sleeve (12) having two openings at two distal ends thereof made of flexible nonconductive material for enclosing said inner sleeve (11) therein;

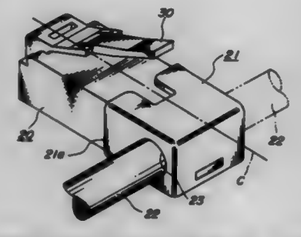
wherein said connector device allows two sheathed cables (20) to be parallely inserted into either of said ends thereof without being deviated by said pressouts (111) of said inner sleeve (11) and is allowed to be clamped by external force thus causing said pressouts (111) to penetrate outer sheaths of said two cables (20), thereby electrically connecting said two cables (20) via said inner sleeve (11).

5,385,484

MODULAR PLUG AND COVER THEREFOR

Alden S. Bartle, Lawrenceville; Michael A. Wise, Duluth, both of Ga.; Masao Sasaki, Kawasaki, Japan; Hironori Ishizuka, Kawasaki, Japan, and Hideharu Kajizuka, Kawasaki, Japan, assignors to OKI Electric Cable Co., Ltd. and OKI Telecom, Suwanee, Ga.

Continuation of Ser. No. 29,566, Mar. 11, 1993, Pat. No. 5,354,212. This application May 23, 1994, Ser. No. 247,674
Int. Cl.[6] H01R *13/56*
U.S. Cl. 439—468 **23 Claims**



1. A modular plug and cover arrangement, comprising:

a plug body, said plug body having an insert portion and a rear portion extending outwardly of said insert portion, said rear portion receiving therein a cable for connection to said insert portion;

a cover portion of substantially enclosed configuration having an open end engageable with said plug body such that an enclosed space is defined between an end of said rear portion and an opposing wall of said cover portion;

means for retaining said cover portion on said plug body; and

an access opening in said cover portion and receivable of a cable therethrough,

wherein said cover portion is engageable with said plug body in an upright position as well as in an inverted position such that the orientation of said access opening is reversed.

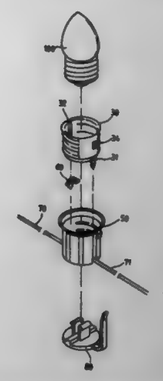
5,385,485

COPPER SLEEVE FOR LAMP SOCKETS

Liu S. Fu, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Aug. 3, 1993, Ser. No. 101,564
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—419 **1 Claim**

1. A copper sleeve for a lamp socket comprising a cylindrical member integrally made of copper, said cylindrical member having a lower portion, a vertical wall, a terminal at the lower portion, a longitudinal slot at the vertical wall, and a hook extending upwardly and outwardly from the vertical



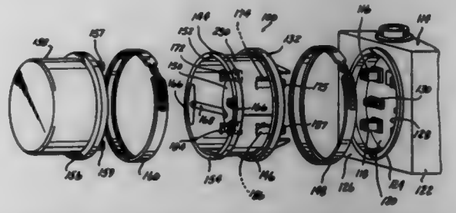
wall, said terminal being formed with a curved knife point at a lower end.

5,385,486

WATTHOUR METER SOCKET ADAPTER WITH ADDITIONAL PLUG-IN TERMINAL CAPABILITY

Darrell Robinson, Highland Township, Oakland County; Michael E. Lewis, Ann Arbor; Karl R. Loehr, Novi, and Allen V. Prucha, Howell, all of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.

Filed Feb. 10, 1994, Ser. No. 195,360
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—517 **16 Claims**



1. A watthour meter socket adapter for interconnecting a watthour meter socket having a plurality of jaw terminals to a watthour meter having a plurality of outwardly extending blade terminals present in a greater number than the number of jaw terminals in the watthour meter socket, the watthour meter socket adapter comprising:

a housing;

a plurality of electrical terminals mounted in the housing, each electrical terminal having a jaw terminal at one end for receiving one of the blade terminals of a watthour meter and a blade terminal at another end extending through and outward from the housing for interconnection into a jaw terminal in a watthour meter socket;

at least one additional jaw terminal mounted in the housing separate from the jaw terminals connectible to the blade terminals of a watthour meter;

at least one additional blade terminal extending through and outward from the housing separate from the blade terminals connected to the jaw terminals in the housing; and

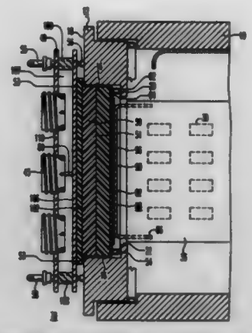
connector means, mounted on the at least one additional blade terminal externally of the housing, for receiving an electrical conductor in a watthour meter socket in an electrical connection.

5,385,487

APPARATUS FOR ELECTRICALLY OPERATING DEVICES IN A CONTROLLED ENVIRONMENT

Bruce A. Beltman, Allentown, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 30, 1993, Ser. No. 114,403
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—540 **16 Claims**



1. An apparatus for electrically operating a device within a controlled environment said apparatus comprising a chamber for providing a controlled environment and an enclosure for said chamber, said enclosure having an access port therethrough providing access to said chamber, and a mounting assembly having a front section for passage through said access port for disposition within said chamber, a rear section for extending exteriorly of said access port, and an intermediate member disposed between said front and rear sections and to which said front and rear sections are secured, said intermediate member being configured to mate with and seal said access port when said front section is disposed within said chamber, said intermediate member providing thermal insulation between said front and rear sections, a socket for receiving a device to be electrically operated, said socket being mounted on said front section, terminals on said rear section for connection to a source of electrical power for said devices, and means for interconnecting said terminals on said rear section to respective terminals on said front section socket, said access port having a counter-bored configuration providing an internal shoulder surrounding a portion of the passageway through said access port, said intermediate member having a front surface facing towards said front section, and a first gasket mounted along the outer periphery of said front surface for engagement with said internal shoulder.

5,385,488

PATCH PANEL

Gordon P. F. Clark, Beaconsfield, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jan. 21, 1993, Ser. No. 6,410
Int. Cl.[6] H01R *13/74*
U.S. Cl. 439—557 **9 Claims**

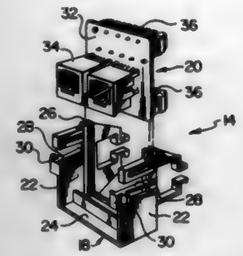
1. A patch panel comprising:

an assembly of at least one connector and a printed circuit board with the connector being mounted upon the printed circuit board;

a mount for removably supporting the assembly of at least one connector and printed circuit board in a desired location relative to the mount, and wherein the mount is substantially 'U' shaped having two opposed arms extending from a base and having guide means comprising a guide disposed on each of the two opposing arms of the 'U' shaped mount for receiving the assembly of connector and printed circuit board during its movement into its desired

location, the mount having latch means disposed on the arms; and

a panel for detachably holding the mount in a predetermined position to the panel with the latch means engaging the panel and wherein the panel obstructs the assembly of

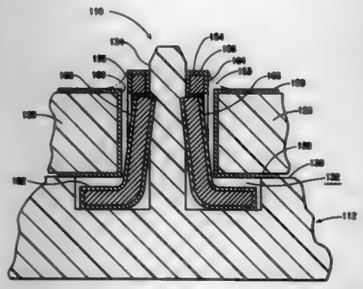


connector and printed circuit board to prevent removal of the assembly of at least one connector and printed circuit board from the mount when the mount supporting the assembly is held to the panel in the predetermined position.

5,385,489
SOLDERABLE HOLD-DOWN

Mark S. Schell, Palatine, Ill., assignor to Berg Technology, Inc., Reno, Nev.

Continuation of Ser. No. 43,883, Apr. 7, 1993, abandoned. This application Nov. 10, 1993, Ser. No. 150,277
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—571 **12 Claims**



1. A right angle connector/circuit board combination, comprising:

an insulative housing having a first mating side, a second side substantially parallel to the first side, a plurality of rows and columns of passages extending from the first side through the housing to the second side, a third side substantially perpendicular to the first and second sides and for mounting on a circuit board, having a hole, the third side having a substantially planar surface, an annular space recessed in the substantially planar surface, and an insulative cylindrical peg extending through the annular space and the hole on the circuit board;

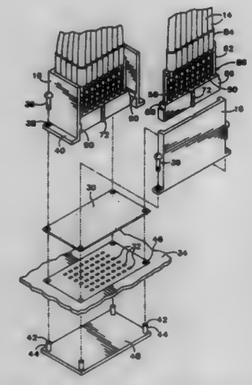
a plurality of terminals having first end portions, second end portions and bent portions connecting the first end portions and the second end portions such that the first end portions are substantially perpendicular to the second end portions, one of the terminals held in each one of the passages; and

an eyelet made with a solderable surface, the eyelet having a skirt portion and a cylindrical sleeve portion connected to the skirt portion and having partially sheared sections, the cylindrical sleeve portion positioned around the peg, the cylindrical sleeve portion being disposed in the hole, the cylindrical sleeve portion being soldered to the circuit board hole, the skirt portion substantially positioned in the annular space, the partially sheared sections pressed into the peg immovably attaching the eyelet on the peg.

5,385,490
MODULAR CONNECTOR FOR USE WITH MULTI-CONDUCTOR CABLE

Michael L. Demeter, Vernonia, and Robert F. Stanton, Lake Oswego, both of Oreg., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 24, 1993, Ser. No. 111,642
Int. Cl.[6] H01R *17/04*
U.S. Cl. 439—579 **10 Claims**



1. A connector for use with a multi-conductor electrical cable, comprising:

(a) a plurality of modules each having a cable termination end and a junction end and each including a plurality of conductive strips arranged in a planar array;

(b) a respective jacket of electrically insulative material encasing respective portions of all of said conductive strips of each one of said modules and holding all of said conductive strips of each one of said modules immobile with respect to each other;

(c) a respective conductor terminal portion included in each of said conductive strips of a respective one of said modules, adjacent said cable termination end of the respective one of said modules including each of said conductive strips;

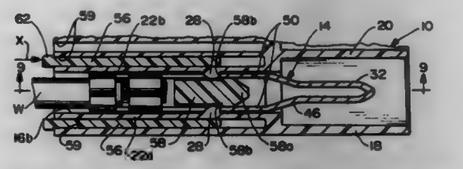
(d) a respective connector module junction face defined at said junction end of each of said plurality of modules, each said conductive strip of a respective one of said modules having a respective connecting surface located in and which is a part of said connector module junction face thereof and said connecting surfaces of said module being located in a linear array at a predetermined distance from one another; and

(d) retainer means for holding all of said plurality of modules together in a predetermined relationship to one another with their respective connector module junction faces aligned with one another as a planar connector mating face.

5,385,491
ELECTRICAL CONNECTOR WITH FLEXIBLE TERMINAL LATCH MEANS AND TERMINAL POSITION ASSURANCE DEVICE

Rupert J. Fry, Des Plaines, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Dec. 21, 1993, Ser. No. 171,145
Int. Cl.[6] H01R *13/426*
U.S. Cl. 439—595 **10 Claims**



10. In an electrical connector which includes a dielectric housing defining at least one elongated terminal-receiving passageway with at least one flexible latch wall extending longitudinally of the passageway,

a terminal adapted to be inserted into the passageway, the terminal having a side wall in proximity to said flexible latch wall,

complementary interengaging primary latch means between the side wall of the terminal and said flexible latch wall for holding the terminal in the terminal-receiving passageway,

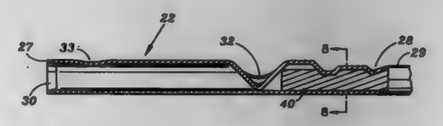
wherein the improvement comprises:

a terminal position assurance device insertable generally parallel to the passageway and. engageable with the flexible latch wall of the housing and an inside portion of said side wall of the terminal to prevent lateral separation thereof and disengagement of the primary latch means and, thereby, provide a secondary latch means for the terminal.

5,385,492
ELECTRICAL CONNECTOR DEVICE AND METHOD OF MANUFACTURE THEREOF

Ross M. Stuart, Tustin, Calif., assignor to Edward W. Burger and John C. Harrington, III, both of Phoenix, Ariz.

Continuation of Ser. No. 750,886, Jan. 28, 1992, Pat. No. 5,254,022, which is a continuation of Ser. No. 386,439, Jul. 28, 1989, abandoned. This application Jun. 30, 1993, Ser. No. 86,242
Int. Cl.[6] H01R *4/10*
U.S. Cl. 439—877 **7 Claims**



1. An electrical connector assembly comprising:

a) a pin connector assembly including

i) a pin member insulating body means having a recess formed in a face thereof;

ii) a pin member in said recess formed of electrically conductive material terminating at or inwardly of said face;

b) a socket connector assembly including

i) socket member insulating body means having a portion thereof for abutting coaction with the face of said pin connector assembly body means;

ii) a generally tubular socket member projecting out from said socket member insulating body means and configured, dimensioned and arranged for mating coaction with said pin member within said socket member, the inner configuration of said recess generally corresponding to the outer configuration of said socket member;

iii) said socket member including spring means formed as at least one depression adjacent the insertion end of said socket member a distance from the end thereof sufficient to enable partial insertion of the pin member within the socket member prior to engagement with said depression, said distance being within a range of one to four times the outer diameter of said socket member, and said depression configured in shape and depth for urging the pin member after insertion therethrough into abutting electrical engagement with the opposite inner sidewall of said socket member to thereby produce an engaging force for holding said pin member;

iv) said depression being generally oval-shaped with the long axis of the oval in axial alignment with the longitudinal axis of said socket member, and having a radius of curvature in the axial direction of said socket member approximately equal to twice the radius of the opening of said socket member;

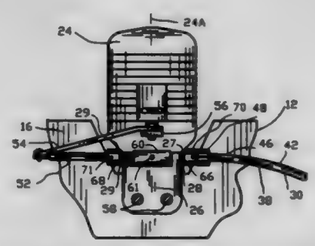
v) electrical conductor stop means formed in said socket member for enabling positioning of said pin member within said socket member a selected distance from the insertion end thereof; and

vi) said tubular socket member is circular in cross section and said pin member stop means is a generally V-shaped depression in said socket member having a depression angle of approximately 60 degrees.

5,385,493
SYSTEM FOR INTRODUCING A LUBRICANT

Jerry D. Nelson, 17315 Tobacco Rd., Lutz, Fla. 33549

Continuation of Ser. No. 634,016, Dec. 26, 1990, abandoned. This application Mar. 7, 1994, Ser. No. 207,885
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—63 **14 Claims**



1. A system for introducing a lubricant into a cable mounting tube of an outboard motor, the outboard motor being pivotable in response to a motorboat steering device, the motorboat steering device comprising an inner cable being linearly movable within an outer sheath with the outer sheath having a sheath nut for threadably affixing to a threaded entrance end of the cable mounting tube when a distal end of the inner cable extends from a threaded exit end of the cable mounting tube, the distal end of the inner cable being connected for pivoting the outboard motor in response to the motorboat steering device:

the improvements comprising:

1. a sealing nut having a nut body;

2. said nut body having an end wall;

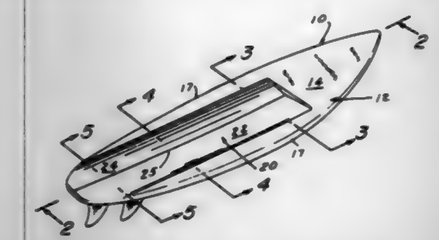
3. a threaded bore only partially extending through said nut body for threadably affixing said nut body to the threaded exit end of the cable mounting tube;

4. a cable bore defined in said end wall of said nut body and communicating with said threaded bore;

5. said cable bore supporting the inner cable when the distal end of the inner cable is disposed external said nut body;

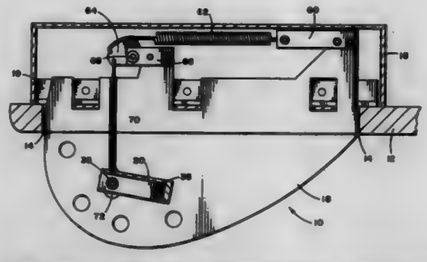
6. an annular recess defined in said cable bore of said nut body;
7. a resilient seal ring disposed in said recess for creating a seal between said nut body and the inner cable to prevent intrusion of a foreign matter into said cable bore of said nut body;
8. a grease fitting disposed in said nut body for enabling the introduction of the lubricant into said cable bore;
9. an intermediate bore interposed between said threaded bore and said cable bore of said nut body and said grease fitting being disposed in said nut body proximate said intermediate bore;
10. an adapter nut;
11. said adapter nut having an adapter nut body;
12. a threaded bore only partially extending through said adapter nut body for threadably affixing said adapter nut body to the threaded entrance end of the cable mounting tube;
13. a cable bore only partially extending through said adapter nut body and communicating with said threaded bore;
14. an externally threaded tube disposed proximate said cable bore for threadably affixing said adapter nut body to the sheath nut of the outer sheath; and
15. a grease fitting disposed in said adapter nut body for enabling the introduction of the lubricant into said cable bore.

5,385,494
FOOT BRACE AND LEVERAGED TURNING APPARATUS FOR SURFBOARDS
Gene Wilhelmi, 419 Main St., No. 74, Huntington Beach, Calif. 92648
Filed Mar. 12, 1993, Ser. No. 31,290
Int. Cl.[6] B63B *35/79*
U.S. Cl. 441—74 16 Claims



1. A surfboard having a riding surface defined by a foot bracing and leveraged turning apparatus comprising:
a surfboard body having a core member comprising a stern portion, a nose portion, an upper surface, a bottom surface, and oppositely disposed side rails;
bracing and leveraged turning means defined by a concave depression formed in said upper surface, said concave depression having a lower surface and a pair of oppositely disposed inclined wall members positioned longitudinally along at least a portion of the length of said surfboard, each of said pair of wall members extending from said lower surface toward said side rails, said lower surface having a maximum height where said lower surface meets said pair of wall members whereby a riding surface is defined that is entirely recessed within said upper surface, said bracing and leveraged turning means being positioned between the stern and nose portion of said surfboard body, whereby the feet of a surfer are selectively positioned along said bracing and leveraged turning means so as to control the action and direction of the surfboard in a positive manner.

5,385,495
SELF ADJUSTING WATER SKI ASSEMBLY
John A. Heuns, 4611 Sloewood Dr., Tangerine, Fla. 32777
Filed Apr. 8, 1993, Ser. No. 45,551
Int. Cl.[6] B63B *35/81*
U.S. Cl. 441—79 7 Claims



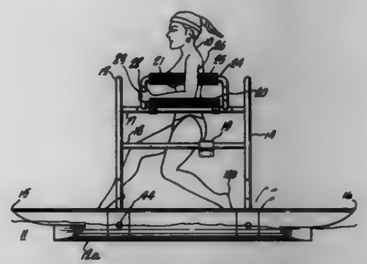
1. An automatically adjusting water ski fin and wing assembly comprising;
a mounting means adapted to extend and over lie an elongated longitudinal slot in a rear portion of a water ski;
means for securing said mounting means to an upper surface of the water ski;
a fin connected to said mounting means and extending through said slot and away from a lower surface of the water ski;
a wing extending outward from either side of said fin and substantially perpendicular thereto;
a pivot pin connecting said wing to said fin; and
means for rotating said wing about said pivot in response to the velocity of the fin through water changing.

5,385,496
BUOYANCY COMPENSATOR WITH LATERAL EXPANSION AND METHOD THEREFOR
Scott P. Seligman, Carlsbad, Calif., assignor to Sea Quest, Inc., Carlsbad, Calif.
Filed Apr. 7, 1993, Ser. No. 44,225
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—115 17 Claims



1. A method for making an inflatable chamber for a diver's buoyancy compensator from flexible fabric wherein said inflatable chamber is characterized by limited loss in the lateral dimension upon inflation comprising:
providing two flexible material gusset sheet members, each sheet member having an interior and an exterior peripheral edge portion wherein said interior peripheral edge portions have matching interior configurations defining a partially open interior;
providing two flexible major sheet members, each major sheet member having a peripheral edge portion, which has a matching configuration with one or the other of said gusset sheet member exterior peripheral edge portions;
providing a die;
placing said two gusset sheet members within said die with said two matching interior peripheral edge portions on top of each other;
sealing said two gusset sheet members within said die whereby each said two matching interior peripheral edge portions are sealed in a single plane to form a gusset;
removing each said gusset from said die;
indexing each of said unsealed exterior peripheral edge portions of said gusset with a matching exterior peripheral edge portion of said flexible major sheet members;
providing a die;
placing said matching exterior peripheral edge portions within said die and sealing said matching edge portions in two substantially parallel planes which are also substantially parallel to said first substantially parallel plane; and,
removing said sealed gusset and major sheet members to define an inflatable chamber having three substantially parallel sealed edge regions.

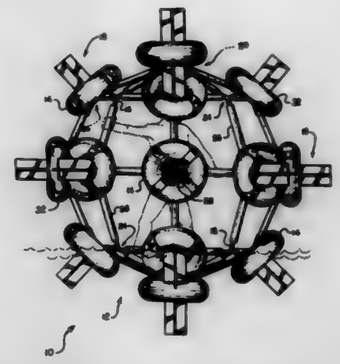
5,385,497
WATER EXERCISER
Jack S. Chu, 18 Elm St., Alhambra, Calif. 91801
Filed Jan. 22, 1993, Ser. No. 7,733
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—129 51 Claims



1. Apparatus for supporting a human on water comprising:
float means for resting on water, the float means including at least two spaced apart elongated floats,
structure means for supporting a human, the structure means being affixed to the float means and being for receiving a human, and
spaced means in the structure means for receiving at least part of a limb of the human for protrusion below the float means, such that the limb can be used for moving the float means and structure means on water, each elongated float including a leading end and a trailing end, the leading end and trailing end being relatively pointed thereby to facilitate movement through the water and wherein each elongated float includes multiple, separable components and including means for securing the structure means to at least one of the components of each of the elongated floats,
wherein the structure means includes an at least partially circular frame member for surrounding at least part of the human.

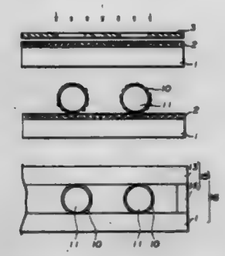
5,385,498
RECREATIONAL FLOATING CAGE
Mohammad Parvardeh, 2565 ½ Washington Rd., Augusta, Ga. 30904
Filed Apr. 20, 1994, Ser. No. 230,528
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—129 19 Claims

1. A recreational floating cage comprising:
an open frame including rigid, tubular members and hub connector members, said open frame generally defining a surface of a sphere having an empty interior;
float members having means for attaching said float members to said open frame; and



paddles having means for attaching said paddles to said open frame.

5,385,499
ENVELOPE FOR DISPLAY DEVICE AND METHOD FOR MANUFACTURING SAME
Yukio Ogawa, and Tatsuo Yamaura, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan
Filed Jan. 29, 1993, Ser. No. 10,782
Claims priority, application Japan, Jan. 30, 1992, 4-014755
Int. Cl.[6] H01J *9/26*
U.S. Cl. 445—24 15 Claims

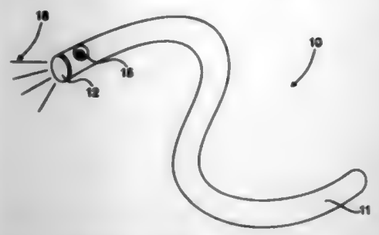


1. A method for manufacturing an envelope for a display device, comprising the steps of:
preparing spacers each coated with an oxide solder;
uniformly applying liquid for forming a photoadhesive photosensitive film to a glass substrate;
exposing said glass substrate to light in a pattern;
placing said coated spacers on positions corresponding to said pattern;
putting a glass flat plate on said spacers; and
heating said spacers to integrate said glass substrate, spacers and glass flat plate with each other.

5,385,500
FLASHLIGHT TOY
Caitlyn R. Schmidt, 194 Deyo Hill Rd., Johnson City, N.Y. 13790
Filed May 14, 1993, Ser. No. 61,893
Int. Cl.[6] A63H *3/00, 33/00, 33/26*
U.S. Cl. 446—73 10 Claims

1. A flexible toy, comprising a flexible body portion having a flexible, inner core member comprising a flexible corrugated tube that can be twisted or shaped, said flexible body portion,

having no memory, and maintaining its shape when it is wrapped, twisted and configured to conform said body portion to surfaces in which it is brought into contact and then released, said corrugated tube being overlaid with decorative skin, said flexible toy having means defining an opening at one

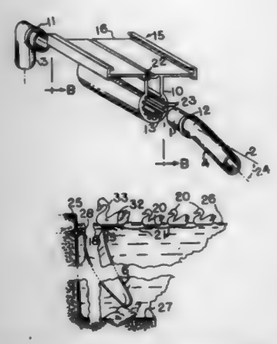


end, with a flashlight apparatus being disposed within said opening and light emanating from the flashlight apparatus being caused to project from said opening, said shaping of said flexible body portion having the dual purpose of both configuring said flexible toy and directing the light emanating from said opening upon a particular spot or object.

5,385,501
AQUATIC TOY

Richard I. Fish, 6477 Robert St., West Palm Beach, Fla. 33413

Filed Jul. 15, 1994, Ser. No. 275,353
Int. Cl.[6] A63H *23/14*
U.S. Cl. 446—154 8 Claims



1. For floating and automatically moving about upon the surface of a body of water, said body of water having a bottom and a supply of water under pressure, a tethered floating toy comprising:

A) a figure having an upper portion arranged to float above said surface, and a lower portion arranged to lie below said surface, said lower portion having a bottom face;

B) an elongate flexible tubular tether means for tethering said toy, said tether means having a first terminus connectable to said supply of water, an intermediate portion provided with anchor means for holding said intermediate portion, at one point thereof, immovable on the bottom of said body of water, and a second terminus;

C) a rigid tubular member having a first passage extending along a first axis and a second passage extending along a second axis transverse to said first axis, said first and second passages in fluid communication at a first end of each passage, said first passage having a second end extending along a third axis at an angle to said first axis, wherein said first, second and third axes lie substantially in a common plane;

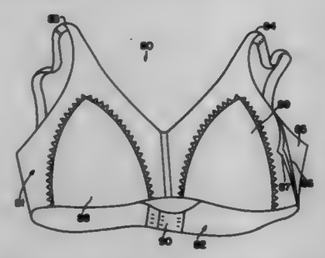
D) means for connecting a second end of said second passage in fluid communication with said second terminus of said tether means; and

E) mounting means for pivotably connecting the bottom face of said figure to said tubular member with said first axis arranged substantially parallel to a forward-to-rearward axis of said figure, with said second end of said first passage extending rearward so as to enable said tubular member to rotate about said first axis, and said third axis to rotate relative to said forward-to-rearward axis to propel said figure in various directions when water under pressure is ejected from said second end as forces from said tether means move said second passage in various directions.

5,385,502
MOISTURE MANAGING BRASSIERE FOR SPORTS AND GENERAL WEAR

Herbert L. Moretz, Davidson, N.C., and Daniel L. Brier, Key Largo, Fla., assignors to Intelpro Corporation, Lincolnton, N.C.

Continuation-in-part of Ser. No. 3,263, Jan. 12, 1993, Pat. No. 5,269,720, which is a continuation-in-part of Ser. No. 991,761, Dec. 17, 1992, Pat. No. 5,297,296, which is a continuation-in-part of Ser. No. 945,677, Sep. 16, 1992, Pat. No. 5,291,617, which is a continuation-in-part of Ser. No. 842,224, Feb. 26, 1992, Pat. No. 5,210,882, which is a continuation-in-part of Ser. No. 791,066, Nov. 12, 1991, Pat. No. 5,217,782. This application Jun. 4, 1993, Ser. No. 72,522
Int. Cl.[6] A41C *3/00*
U.S. Cl. 450—93 6 Claims



1. A moisture managing brassiere having a breast supporting front portion, a back portion connected to said front portion, and a pair of shoulder straps connected respectively at one end to said front portion and at respective opposite ends to said back portion, said brassiere constructed of a composite stretch fabric comprising:

(a) an inner fabric layer constructed of hydrophobic moisture wicking fibers for residing in skin contact during garment wear and for wicking moisture away from the skin of the wearer;

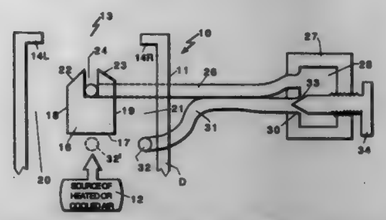
(b) an intermediate fabric layer residing adjacent to said inner fabric layer for receiving, dispersing, and transporting moisture outwardly away from said inner fabric layer; and

(c) an outer fabric layer residing adjacent said intermediate fabric layer for receiving and dispersing moisture wicked outwardly from said inner and intermediate fabric layers, said outer fabric layer comprising the outer shell fabric of said brassiere.

5,385,503
TEMPERATURE CONTROLLER AIR OUTLET

Ronald D. Stouffer, Silver Spring, and Ernest W. Chesnutis, Jr., Columbia, both of Md., assignors to Bowles Fluidics Corporation, Columbia, Md.

Filed Dec. 1, 1992, Ser. No. 982,646
Int. Cl.[6] B60H *1/34;* F24F *13/08*
U.S. Cl. 454—153 8 Claims



1. A method for controlling the temperature of air efflux from a heated or cooled air outlet to ambient air, comprising:

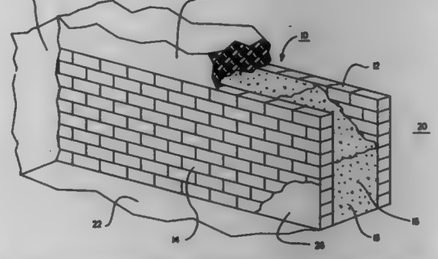
providing a controllable fluidic island oscillator in said air outlet, and

controlling the oscillatory and non-oscillatory conditions of said island oscillator to moderate the mixing of said air flow through said outlet with ambient air and thus modulate said air efflux.

5,385,504
PERMANENT VENTILATION SEAL

David A. Hussey, Monroeville, Pa., and Fred Stafford, III, Newell, W. Va., assignors to Earth Support Systems, Glassport, Pa.

Filed Aug. 30, 1993, Ser. No. 113,860
Int. Cl.[6] E21F *1/00, 3/00;* E02D *3/02*
U.S. Cl. 454—169 7 Claims



5. An explosion-proof mine seal comprising a pair of walls constructed across a mine entry, and a closed-cell polyurethane foam binding material provided between said walls, and said binding material adhering to each of said walls and to the floor, roof and ribs of the mine entry.

5,385,505
PRESSURE MAINTENANCE SYSTEM FOR SUBSTANTIALLY SEALED SPACE

Gordon P. Sharp, Newton, Mass., and Eric Desrochers, Nashua, N.H., assignors to Phoenix Controls Corporation, Newton, Mass.

Filed Jul. 2, 1993, Ser. No. 86,648
Int. Cl.[6] F24F *11/04*
U.S. Cl. 454—238 20 Claims

1. A system for maintaining a desired pressure in a substantially sealed enclosed space comprising:

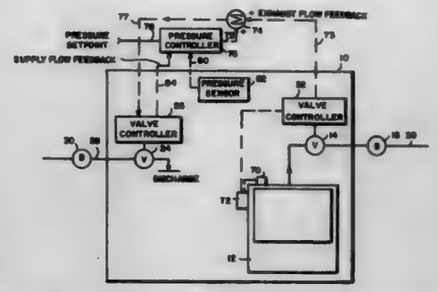
a gas supply at a pressure above the desired pressure;

a gas exhaust at a pressure below the desired pressure;

a supply flow control element and an exhaust flow control element for connecting said supply and said exhaust, respectively, to said enclosed space,;

means for generating a first signal indicative of the instantaneous pressure in the enclosed space;

means for generating a second signal indicative of intended flow through a driving one of the two control elements;



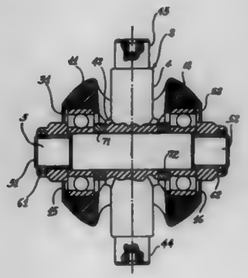
means responsive to said first and second signals for controlling flow through a tracking one of said two control elements; and

means for providing a designed, at least nominal, effective leakage for the space with changes in the pressure differential between the space and at least one of the gas supply and gas exhaust.

5,385,506
HUB-SPIDER DRIVE ASSEMBLY FOR A HOOKE'S JOINT

Enrico Aurora, Miglianico (Chieti), Italy

Filed Jun. 17, 1993, Ser. No. 78,592
Claims priority, application Italy, Oct. 23, 1992, RM92U000217
Int. Cl.[6] F16D *3/16*
U.S. Cl. 464—117 6 Claims



1. A Hooke's joint assembly comprising:

a hub including

a central part with a branch arm at each end,

a first hole through said central part and the branch arms and a second hole through said central part transverse to said first hole,

a bearing at each of said branches aligned with said first hole,

a spider including

a first shaft having a boss with a third hole therethrough transverse to the first shaft longitudinal axis, said first shaft aligned in said hub second hole with the third hole of the boss aligned with the hub first hole, and

a second shaft extending through said third hole of said first shaft boss in an interference fit coupling relation-

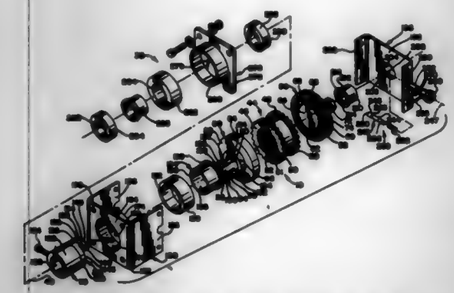
ship, the ends of said second shaft mounted in said bearings.

5,385,507

TWIST TENSIONER WITH SELECTIVELY ENGAGEABLE COUPLING

Terry L. Swearingen, Wyanet, and David W. Mueller, Neponset, both of Ill., assignors to Martin Engineering Company, Neponset, Ill.

Filed Nov. 4, 1993, Ser. No. 147,692
Int. Cl.[6] F16H *57/00*; F16D *3/72*
U.S. Cl. 474—92 **7 Claims**



1. A tensioning device for imparting torsional bias to a shaft including an adapter member connectable to the shaft for conjoint rotation therewith; a first hub member selectively rotationally engageable with said adapter member; means for providing selective rotational engagement of said first hub member to said adapter member such that said first hub member and said adapter member are relatively rotatable with respect to one another through a preselected degree of relative rotation and such that said first hub member is engageable with said adapter member upon sufficient relative rotation of said first hub member with respect to said adapter member such that further rotation of said first hub member provides a corresponding rotation of said adapter member; a second hub member rotatable with respect to said first hub member; a torsion coupling member of resilient material having a first end connected to said first hub member and a second end connected to said second hub member; and means for selectively connecting said second hub member to a fixed frame to prevent rotation of said second hub member in at least one rotational direction; whereby rotation of said second hub member in a first rotational direction rotates said first hub member into engagement with said adapter member and thereby rotates the shaft in said first rotational direction to a desired position whereupon further rotation of the second hub member in said first rotational direction operates to store a torsional biasing force in said coupling member when said second hub member is rotated with respect to said first hub member and such that relative rotation of said adapter member in said first rotational direction with respect to said first hub member disconnects said adapter member from said first hub member.

5,385,508

ASSEMBLY FOR GUIDING DIFFERENT KINDS OF EQUIPMENT AROUND ELONGATED OBJECTS

Lasri Pietikäinen, Helsinki, Finland, assignor to Imatran Voima Oy, Helsinki, Finland

Filed Jun. 23, 1993, Ser. No. 80,127
Claims priority, application Finland, Jun. 24, 1992, 922943
Int. Cl.[6] F16H *7/00*
U.S. Cl. 474—148 **11 Claims**

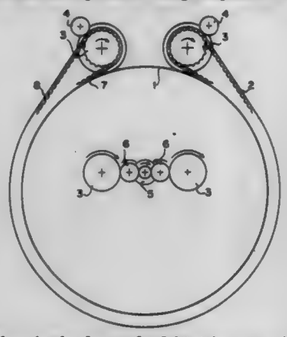
1. An assembly for guiding different types of apparatuses around elongated objects having a circular cross section, said assembly comprising:

a body part, and

a motor for providing a transfer motion of the assembly, wherein

a first and a second belt pulley are adapted to said body part and include shafts being aligned in parallel,

a belt-like element capable of being adapted to run over said



belt pulleys in the form of a folded loop, so that the loop opens between said belt pulleys, the loop section of said belt-like element an inner leg which rests against the periphery of said object of circular cross section, and

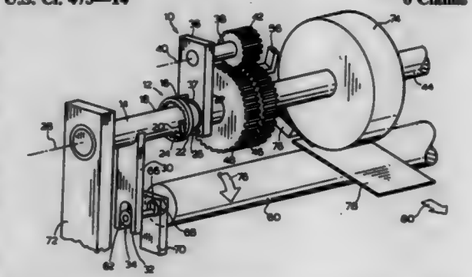
means adapted to cooperate with each of said belt pulleys and suited for compressing said belt-like element essentially nonslipping against said pulley.

5,385,509

GEAR TRANSMISSION WITH RATCHET O.W.C. AND PLANETARY GEAR SET SUITABLE FOR PROVIDING A PULSED DRIVE

John D. Long, Claremont, Canada, assignor to Longford Equipment International Limited, Scarborough, Canada

Filed Jul. 20, 1993, Ser. No. 93,624
Int. Cl.[6] F16H *29/04, 33/08*
U.S. Cl. 475—14 **6 Claims**



1. A gear transmission comprising:

a one-way clutch having an input member and an output member and a clutch axis;

a pendulum mounted to said input member for rocking about said clutch axis, said pendulum terminating in an input end;

a support arm mounted to the output member of said one-way clutch;

a planetary gear rotatably supported by said support arm about an axis aligned with said clutch axis;

a fixed sun gear and a co-axial rotatable output sun gear in meshing relation with said planetary gear, said rotatable sun gear and said fixed sun gear having a different number of teeth such that for every orbit of said planetary gear, said rotatable sun gear rotates a fraction of a revolution.

3,385,510

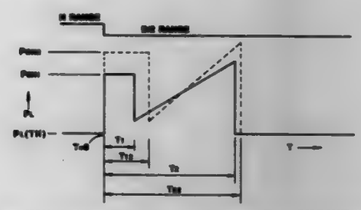
Patent Not Issued For This Number

5,385,511

SELECT SHOCK ATTENUATING METHOD AND SYSTEM FOR AUTOMATIC TRANSMISSION

Naonori Iizuka, Fuji City, Japan, assignor to Jatco Corporation, Fuji City, Japan

Filed May 18, 1993, Ser. No. 62,289
Claims priority, application Japan, May 18, 1992, 4-124644
Int. Cl.[6] G60K *41/18*
U.S. Cl. 475—132 **5 Claims**



1. In a method of operating an automatic transmission which comprises a plurality of hydraulically actuable and frictionally engageable couplings, a hydraulic control system including a pressure regulator valve capable of effecting pressure regulation to generate line pressure under the control of an actuator, and a control unit programmed to condition the hydraulic control system in one state wherein hydraulic fluid under the line pressure is supplied to one of the plurality of hydraulically actuable and frictionally engageable couplings to establish one gear ratio from a neutral or to condition the hydraulic control system in another state wherein hydraulic fluid under the line pressure is supplied to two of the plurality of hydraulically actuable and frictionally engageable couplings to establish another gear ratio from the neutral, the improvement being such that during a transition from the neutral to the one state, a control signal supplied to the actuator is subject to a pulse-like change with a first height corresponding to a first precharge level and a first duration of time corresponding to a first precharge period of time, then to a gradual increase at a first rate until a first coupling period of time is expired, and then to a drop to such a level as to keep the line pressure high enough to maintain torque transmission, while during a transition from the neutral state to the another state, the control signal is subject to a pulse-like change with a second height corresponding to a second precharge level and a second duration of time corresponding to a second precharge period of time, then to a gradual increase at a second rate until a second coupling period of time is expired, and then to a drop to such a level as to keep the line pressure high enough to maintain torque transmission.

5,385,512

TRANSMISSION FOR ELECTRICALLY DRIVEN TOOL

Antony J. Moolenaar, Dorst; Jan P. Houben, and Jacobus F. Geerts, both of Breda, all of Netherlands, assignors to Emerson Electric Co., Breda, Netherlands

Filed Jul. 31, 1992, Ser. No. 922,828
Claims priority, application Netherlands, Aug. 2, 1991, 9101335
Int. Cl.[6] F16H *1/28*
U.S. Cl. 475—153 **10 Claims**

1. A transmission for an electrically powered tool which transmits power from an electric motor to a tool shaft, said transmission comprising:

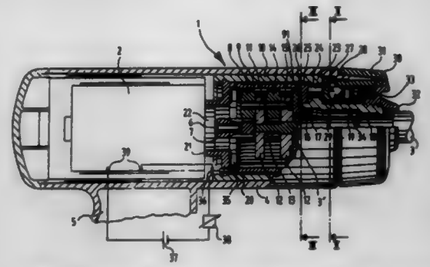
(a) said tool shaft mounted within a housing;

(b) an adjustable breaking coupling having two mutually slidable parts which slide relative to one another to interrupt the drive torque on said tool shaft when said tool shaft encounters a predetermined resistance moment;

(c) a signal generator activated by movement of one of said parts to deenergize the motor when said parts slide relative to one another;

(d) compression spring means engaged with said breaking coupling for urging said two parts into engagement with each other; and

(e) adjustment means including a lever system engaged with said spring means and said breaking coupling for modifying the amount of spring force acting on said breaking coupling and thereby adjusting said predetermined resistance moment without substantially expanding or compressing said spring means.

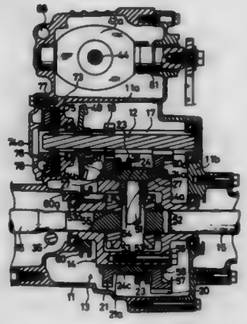


5,385,513

TRANSMISSION ASSEMBLY WITH SEPARATEABLE HALVES DIFFERENTIAL CASING WITH GEARS AND CLUTCH MOUNTED ON CASING FOR VEHICLES

Norihiro Ishii, Itami; Toshiyuki Hasegawa, Ashiya; Atsuo Yoshina, Yao, and Masaru Iida, Itami, all of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Jan. 27, 1993, Ser. No. 9,684
Int. Cl.[6] F16H *1/40, 37/08*
U.S. Cl. 475—203 **5 Claims**



1. A transmission assembly for vehicles comprising a transmission casing (11) which includes a drive shaft (12) extending laterally of said transmission casing and a differential gearing (13) having a differential casing (14) which is driven to rotate by said drive shaft, said differential gearing being adapted to drive left and right wheel axles (15) differentially, characterized in:

that two sets of speed-reducing and -changing gear trains are disposed between said drive shaft (12) and said differential gearing (13), said gear trains being composed of two gears (17, 18) fixedly mounted on said drive shaft and another two gears (20, 21) rotatably mounted on said differential casing (14) and meshing respectively with said two gears on said drive shaft, said gears being arranged such that said another two gears are disposed adjacent to side ends of said differential casing;

that a collar member (24) is fixedly mounted on said differential casing (14) and includes at its side ends a pair of integral sleeve members (24*a*, 24*b*) through which said an-

other two gears (20, 21) are mounted on said differential casing; and

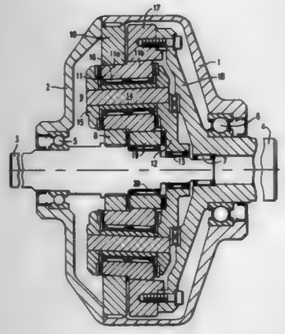
that an annular clutch member (23) is slidably but non-rotatably mounted on said collar member (24) and is disposed between said another two gears (20, 21) for coupling said another two gears to said differential casing (14) one at a time through said collar member.

5,385,514

HIGH RATIO PLANETARY TRANSMISSION

Daniel J. Dawe, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Aug. 11, 1993, Ser. No. 104,567
Int. Cl.[6] F16H *1/32*
U.S. Cl. 475—336 **11 Claims**



1. A planetary type traction roller transmission comprising:

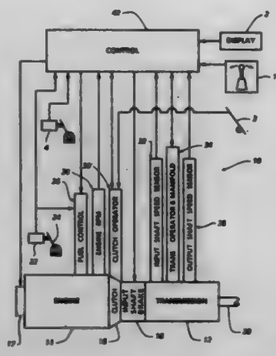
a housing, coaxial input and output shafts rotatably supported in said housing, a first sun roller structure associated with one of said input and output shafts in said housing, a first traction ring disposed in said housing around said first sun roller structure and having a traction surface spaced from said first sun roller structure, a number of planetary traction rollers supported in the space between said first sun roller structure and the traction surface of said first traction ring, said planetary traction rollers each having two sections of different diameters, one section being in engagement with the traction surface of said first traction ring and said first sun roller structure, and a second traction ring operatively connected for rotation with the other of said input and output shafts and surrounding the second sections of said planetary traction rollers and being in engagement therewith for the transmission of motion between said second planetary roller section and said second traction ring, said planetary traction rollers being supported with their axes slightly inclined with respect to the axis of the input and output shafts and the surfaces of said two sections of the planetary traction rollers being slightly conical and the traction surfaces of said traction rings being also conical according to the respective planetary traction roller section surfaces to provide for radial engagement of the traction surfaces by axial engagement forces between the planetary traction rollers and the traction rings.

5,385,515

START RATIO ENGAGEMENT CONTROL SYSTEM AND METHOD

Kwok W. Chan, Chorley, and Michael Dobson, Leyland, both of England, assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 11, 1993, Ser. No. 104,687
Claims priority, application United Kingdom, Aug. 27, 1992, 9218254
Int. Cl.[6] F16H *61/08*
U.S. Cl. 477—75 **20 Claims**



1. A method of controlling a semi-automatic mechanical change gear transmission system (10) comprising a manual fuel throttle control (24), a fuel throttle controlled engine (14), a multiple speed change gear mechanical transmission (12) having a lowest grouping of gear ratios (1st–5th) suitable for start from stop operation and having a specific ratio within said lowest grouping of ratios determined to be the predetermined start ratio, a friction master clutch (16) interposed the engine and transmission, a master clutch control (3), a central processing unit (38) for receiving inputs indicative of vehicle speed and for processing same according to predetermined logic rules to issue command output signals to non-manually controlled operators including a fuel throttle control operator (26), and a transmission operator (34), said processing unit sensing conditions indicative of selection of a downshift directly from a higher gear ratio into the predetermined start ratio and for implementing same upon sensing predetermined enabling conditions, said method comprising:

selecting a desired target engine speed, and

sequencing initiation of a direct shift into the preselected start ratio to achieve completion thereof when the product of the numerical gear ratio of the preselected start ratio (GR) multiplied by the expected output shaft rotational speed (OS) is subatantially equal to the target engine speed.

5,385,516

CONTROL METHOD FOR MANAGING ENGINE TORQUE

Jean-Paul Grange, Illkirch Graffenstaden, and Olivier Lecomte, Lipsheim, both of France, assignors to General Motors France, Gennevilliers, France

Filed Sep. 14, 1992, Ser. No. 944,625
Claims priority, application United Kingdom, Dec. 24, 1991, 9127353
Int. Cl.[6] F16H *59/14*
U.S. Cl. 477—107 **13 Claims**

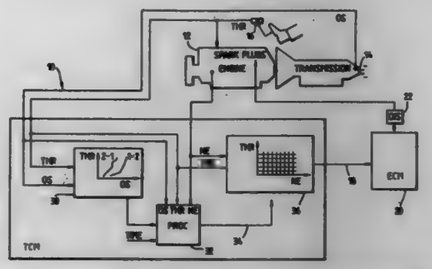
1. A method of managing engine torque during a transmission gear change, comprising the steps of:

determining a type of gear change;

measuring an engine operating parameter during the gear change;

determining a time of torque management in relation to at least one value obtained from a storage medium based on the type of gear change and the measured engine operating parameter, the at least one value in the storage medium being chosen experimentally to provide substantially a most appropriate time for torque management;

when the determined type of gear change is an upshift, obtaining an upshift start value for determining initiation



of torque management from a lookup table in the storage medium based on engine throttle position and initiating torque management when a measured engine speed is less than the difference between the maximum engine speed occurring during the upshift and the upshift start value; and

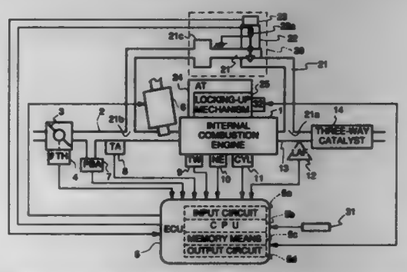
managing engine torque during the determined time of torque management.

5,385,517

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH TORQUE CONVERTER LOCK-UP

Fumio Hara, and Takashi Shinchi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 53,681
Claims priority, application Japan, Apr. 30, 1992, 4-138043
Int. Cl.[6] F02D *1/00*; B60K *41/00*
U.S. Cl. 477—169 **6 Claims**



1. In an air-fuel ratio control system for an internal combustion engine, said engine being installed on an automotive vehicle having an automatic transmission provided with a locking-up device, said control system controlling the air-fuel ratio of an air-fuel mixture supplied to said engine to a predetermined air-fuel ratio leaner than a stoichiometric air-fuel ratio when said locking-up device is engaged,

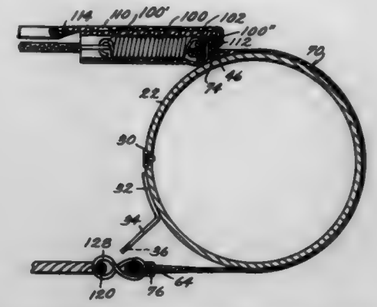
the improvement comprising air-fuel ratio-setting means for setting said predetermined air-fuel ratio to a value depending on whether said locking-up device is fully engaged or partially engaged.

5,385,518

WATER TRAMPOLINE

Noble H. Turner, 372 Puuikena Dr., Honolulu, Hi. 96821

Filed Oct. 26, 1993, Ser. No. 141,099
Int. Cl.[6] A63B *5/11*
U.S. Cl. 482—27 **21 Claims**



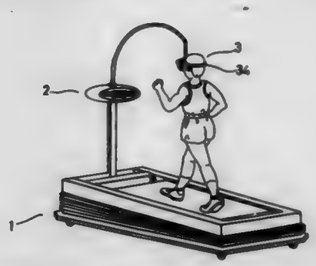
1. A water trampoline comprising a hollow inflatable support means having an inner periphery and an outer periphery, said inner periphery defining a space therewithin, means for inflating said support means with air, an elastic trampoline mat having an outer edge, a plurality of springs operatively connected to said outer edge, suspension means having an upper portion and a lower portion and an inner surface, the upper portion of said suspension means being connected to said springs, said suspension means extending around said support means, and retaining means connected to spaced points of said lower portion of the suspension means for retaining the lower portion of said suspension means in operative position, said retaining means including an elongated retaining element having opposite ends disposed adjacent one another, and a plurality of connector members, one of the ends of said connector members being connected to spaced points of the lower portion of said suspension means, the other of the ends of said connector members being connected to spaced points of said retaining element, and means for adjusting the distance between said adjacent ends of the retaining element to control the tension of the suspension means when in operative position.

5,385,519

RUNNING MACHINE

Chi-Hsueh Hsu; Chih-Yes Shyu, and Jong-Yes Shyu, all of 4F, No. 144, Chu-Lin Road, Yung-Ho Shih, Taipei Hsien, Taiwan, Prov. of China

Filed Apr. 19, 1994, Ser. No. 229,706
Int. Cl.[6] A63B *21/00, 22/02*
U.S. Cl. 482—54 **1 Claim**



1. A running machine, comprising:

a flat lower plate member having a rectangular contour;

an upper plate member disposed in spaced vertical relationship with said lower plate member;

a plurality of laterally extending roller shafts rotatively

coupled to said upper plate member in spaced parallel relationship;

an endless belt disposed around said plurality of roller shafts;

a motor disposed adjacent a front portion of said upper plate member and drivingly coupled to at least one of said plurality of roller shafts for providing displacement of said endless belt thereon;

means for displacing said upper plate member relative to said lower plate member, said displacement means including four electrically operated lifts disposed between said upper plate member and said lower plate member, each of said lifts having a first end coupled to said lower plate member adjacent a respective corner thereof and having an opposing second end coupled to said upper plate member;

a bellows having one end encompassing a perimeter portion of said upper plate member and an opposing other end encompassing a perimeter portion of said lower plate member;

a computer electrically coupled to said motor and each of said four electrically operated lifts for controlling a speed of said motor and displacement of each of said lifts responsive to predetermined program; and,

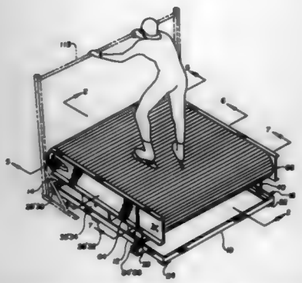
a visual-acoustic mask electrically coupled to said computer for providing visual and acoustic stimuli to a user, said visual-acoustic mask including a display screen for displaying images thereon and a pair of speakers for providing sounds associated with said images, wherein said computer coordinates changes in said lifts and motor with said images and said sounds to simulate a predetermined running environment.

5,385,520

ICE SKATING TREADMILL

James J. Lepine, and John P. Frappier, both of Fargo, N. Dak., assignors to Hockey Acceleration, Inc., Fargo, N. Dak.

Continuation of Ser. No. 890,536, May 28, 1992, abandoned.
This application Jan. 18, 1994, Ser. No. 183,294
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **13 Claims**



1. An ice skating treadmill comprising in combination:

a base frame having a skating deck lifting mechanism;

a skating deck having

side rails supported in parallel and apart from each other, said side rails mounted to the lifting mechanism of the base frame by a hinged support means, thus providing a tiltable skating deck,

a belt drive drum operably attached by a drive shaft between the side rails rotatable by means of a drive motor; and

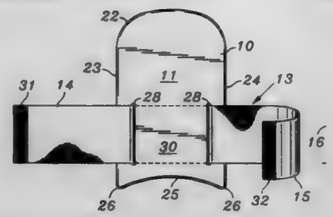
a main belt engaged by said drive drum to rotate around said drive drum, said belt fitted with T-lock brackets arranged parallel to each other and perpendicular to a direction of rotation of said belt, said T-lock brackets each slidingly engaging T-lock channeled slats allowing the slats to individually articulate as the belt rotates around the drive drum, edges of said slats abutting together while in a level configuration and forming a flat smooth high density ice skating surface, the skating surface having a lubricant to provide a coefficient of friction approximately the same as that of a natural ice surface.

5,385,521

AQUATIC EXERCISE DEVICE

Sanford S. Weissbach, 2276 S. Beverly Glen Blvd., No. 202, Los Angeles, Calif. 90064

Filed Jun. 25, 1993, Ser. No. 81,166
Int. Cl.[6] A63B *31/00*
U.S. Cl. 482—55 **22 Claims**



1. An aquatic exercise device comprising:

an elongated buoyant board element having a relatively flat face, the board being generally planar and being without lateral extending flaps and being sized and configured to fit adjacent to the back of a human body, and

band means affixed with the board whereby the band means is adapted to releasably secure the flat face of the board adjacent to the back of the human body, the band means being of a length sufficient that at least together with the board, the band means together with the board is able to surround the torso of the body with the board being located adjacent to the back of the human body, and wherein the overall width of the band means extends at least about 20% of the board length, and wherein the band means is located essentially in a lower portion of the board element and not in an upper portion of the board element.

5,385,522

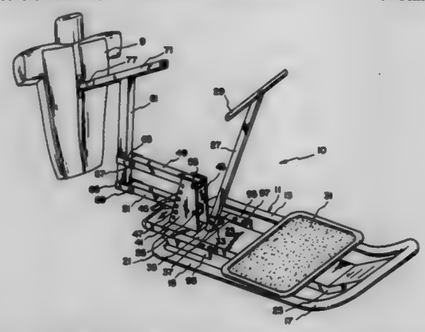
Patent Not Issued For This Number

5,385,523

DUAL MOTION BLOCKING SLED

Charles P. Forrest, 1306 St. Stephens Rd., Mobile, Ala. 36603

Filed Dec. 17, 1993, Ser. No. 168,203
Int. Cl.[6] A63B *67/00*
U.S. Cl. 482—83 **9 Claims**



1. A blocking sled, comprising:

a) a base having runner means for guiding said sled over a ground surface;

b) first attachment means on said base for pivotably attaching a first arm thereto at a first end of said first arm;

c) said first arm having a second end carrying second attachment means for reciprocably carrying a second arm, said second arm having a first end engaging said second attachment means and a second end remote therefrom, said second attachment means comprising a cross member having a receptacle reciprocably receiving said second arm, said second attachment means further comprising biasing means for biasing said second arm in a direction away from said receptacle;

d) said second end of said second arm having, attached thereto, a vertically adjustable bracket removably receivable within a pad;

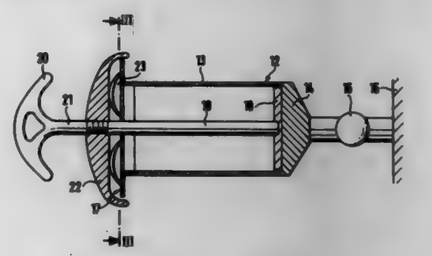
e) whereby said pad may be engaged and simultaneously reciprocated and pivoted while said runner means remains firmly on said ground surface.

5,385,524

EXERCISE DEVICE

Frantisek Jahoda, Am Schreiberg 7, A-5201 Seekirchen, Austria

Filed May 12, 1993, Ser. No. 61,173
Claims priority, application Germany, May 13, 1992, 4215754
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—113 **4 Claims**



1. An apparatus for exercising an individual's muscles, comprising:

a hollow housing;

a rod member with a longitudinally-extending axis and two spaced ends, one of said ends is disposed within said housing and the other of said ends extends outwardly of said housing;

a handle attached to the outwardly extending end of said rod member for moving said rod member in a first axial direction; and

varying resistance means for resisting movement of said rod member in said first axial direction, said varying resistance means comprising at least two resistance elements having different resistive force characteristics, at least one of said resistance elements is located within said hollow housing, wherein the individual exerts force on said handle to serially overcome the resistive force of said resistance elements.

5,385,525

WALL MOUNTED SHOWER EXERCISE MACHINE

Robert A. Davis, P.O. Box 1038, Southwest Harbor, Me. 04679

Filed Apr. 8, 1994, Ser. No. 225,137
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—121 **11 Claims**

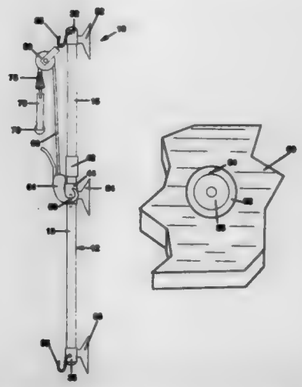
1. An exercise machine for warmup and workout in the shower and at other locations selected by the user comprising:

an elongate rectangular framework having first and second spaced apart substantially vertical legs joined by a plurality of substantially horizontal cross braces, said cross braces comprising at least one cross brace each at the top of the legs, bottom of the legs, and midsection of the legs;

a plurality of suction cup anchors attached to the elongate rectangular framework approximately at four corners of the framework and at the midsection of the legs for anchoring the shower exercise machine to nonporous wall surfaces;

first and second stretchable resistance cords having sufficient length to accommodate arm exercise motion over the stretching distance of the cords, said first and second cords being anchored at one end to the rectangular framework substantially at the midsection of the respective legs, said cords terminating at the other ends respectively in first and second hand grips;

first and second pulleys, said first and second cords passing through and around the respective first and second pulleys;



and a plurality of pulley supports constructed for supporting the pulleys at different locations on the rectangular framework, said pulley supports comprising pulley supports constructed for supporting the pulleys approximately at respective corners of the rectangular framework including the corners at the top of the legs or the corners at the bottom of the legs of the rectangular framework for changing the direction of the handle grips and the direction of stretching of the cords for exercising different muscles.

5,385,526

APPARATUS AND METHOD FOR PACKAGING BLANKS

Albert Sigrist, Colombier, and Roberto Rizzolo, Champ-du-Moulin, both of Switzerland, assignors to Fabriques de Tabac Reunies, SA, Qual Henarenaud, Switzerland

Continuation of Ser. No. 881,787, May 12, 1992, abandoned.
This application Feb. 22, 1994, Ser. No. 200,856
Claims priority, application Switzerland, May 16, 1991, 1468/91
Int. Cl.[6] B31B *1/00*; B65H *45/30*
U.S. Cl. 493—14 **83 Claims**

1. A method of processing a packaging blank, said method comprising the steps of:

withdrawing the blank from a storage means by transfer means;

depositing the blank on a cylindrical support surface of a drum;

holding the blank in place by holding means after the transfer means have ceased their action;

actuating the drum with a discontinuous rotary movement;

thereafter carrying out the following processing steps:

checking the correct presence, positioning, and orientation of the blank by a checking means,

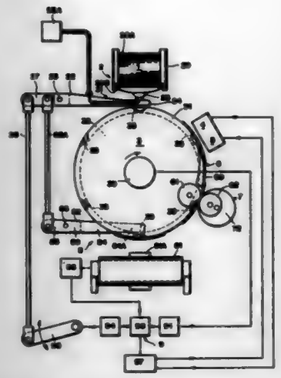
depositing at least one drop of adhesive on at least one surface portion of the blank,

folding at least one other surface portion of the blank onto the one surface portion thereby forming at least one fold,

compressing the fold with compression means, and

printing a code on at least one further surface portion of the blank; and

thereafter carrying out the further steps of:



deactivating the holding means, and

withdrawing the blank from the drum by withdrawal means.

5,385,527

METHOD FOR THE PREPARATION OF CYLINDRICAL MEMBERS FOR PAPER CONTAINERS

Toru Fukada, Ichihara, and Shigeichi Ishihara, Kawasaki, both of Japan, assignors to Du Pont-Mitsui Polychemicals Co., Ltd., Tokyo, Japan

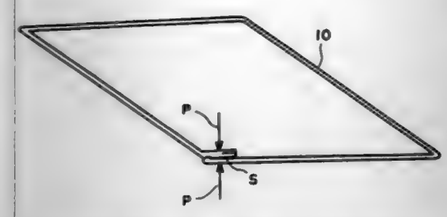
PCT No. PCT/JP91/00980, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO92/01559, PCT Pub. Date Feb. 6, 1992

Continuation of Ser. No. 838,200, Mar. 6, 1992, abandoned. This PCT application Jul. 23, 1991, Ser. No. 149,694

Claims priority, application Japan, Jul. 26, 1990, 2-198277

Int. Cl.[6] B31B *1/14, 1/64;* B31C *1/00*

U.S. Cl. 493—135 **8 Claims**



1. A method of preparing a cylindrical member for a paper container, which comprises the steps of:

providing a laminated sheet having a paper layer and an exposed layer of a thermoplastic polyester resin, said polyester resin being polyethylene terephthalate comprising terephtalic acid units and ethylene glycol units as main polymeric components and 3 to 20 mol % of copolymeric components:

forming a preform sheet by folding back an edge of said laminated sheet in a manner such that said polyester layer is exposed on both sides of the folded edge;

irradiating said polyester layer of the folded edge and the polyester layer of another edge of said preform sheet by a carbon dioxide gas laser beam in a direction respectively vertical to said folded edge and said another edge and directly converting said carbon dioxide laser beam to thermal energy in said layers and softening said layers;

forming a cylindrical member with an overlapped portion by placing said another edge over said folded edge; and

pressing said overlapped portion to seal said another edge and folded edge together.

5,385,528

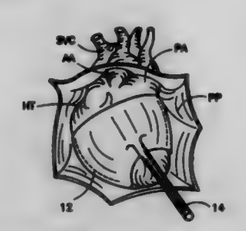
INTRAPERICARDIAL ASSIST DEVICE AND ASSOCIATED METHOD

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Jun. 17, 1993, Ser. No. 78,567

Int. Cl.[6] A61B *17/12*

U.S. Cl. 600—18 **21 Claims**



1. A surgical method for resuscitating a stopped heart, comprising the steps of:

providing an inflatable balloon in a collapsed configuration;

inserting said balloon into an intrapericardial space about a stopped heart;

inflating said balloon in said intrapericardial space to place a compressive pressure on the stopped heart sufficient to force blood from the heart; and

subsequently no said step of inflating, deflating said balloon to permit blood to re-enter the heart.

5,385,529

METHOD FOR CONTROLLING THE TEMPERATURE OF AN INCUBATOR

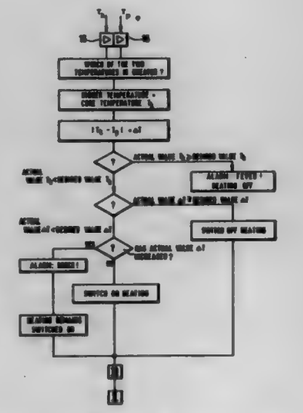
Jochim Koch, Ratzeburg, Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Continuation-in-part of Ser. No. 831,869, Feb. 5, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 128,869

Claims priority, application Germany, Feb. 8, 1991, 4103801

Int. Cl.[6] A61G *11/00*

U.S. Cl. 600—22 **6 Claims**



1. A method for controlling an operating parameter of an apparatus for maintaining the temperature of a patient, the apparatus including heater means responsive to an actuating variable for adjusting the operating parameter in said apparatus, the method comprising the steps of:

applying a first temperature sensor to the body of the patient at a first location thereon to provide a first actual value representative of the core temperature of the patient;

applying a second temperature sensor to the body of the patient at a second location thereon remote from said first location to provide a second actual value representative of the periphery of the patient;

supplying said actual temperature values to a measured value processing unit;

determining the actual difference ΔT_{act} value between said actual temperature values;

applying first and second desired temperature values and a desired difference ΔT_{des} value of said desired temperature values to said measured value processing unit with said first and second desired temperature values and said desired difference ΔT_{des} value being determined specific to the patient by medical personnel attending the patient;

logically combining said actual temperature values and said desired temperature values and said actual difference ΔT_{act} value and said desired difference ΔT_{des} value in said measured value processing unit in accordance with a preprogrammed algorithm to obtain a logic signal dependent upon said values; and,

applying said logic signal to a controller for generating said actuating variable for controlling said operating parameter via said heater means for maintaining the temperature of the patient.

5,385,530

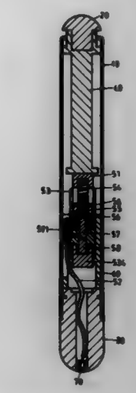
ELECTRODE MASSAGING APPARATUS

Otto Wu, Room 918, 15 Fu Hsing N. Road, Taipei, Taiwan, Prov. of China

Filed Oct. 22, 1993, Ser. No. 139,721

Int. Cl.[6] A61N *1/32*

U.S. Cl. 601—21 **1 Claim**



1. A massaging apparatus having a rod-like contour, comprising:

a. a longitudinally extended housing, said housing having a bore extending longitudinally therethrough between opposing open ends thereof;

b. an electrode cover mounted in a first of said opposing open ends of said housing, said electrode cover having an opening formed longitudinally therethrough;

c. a conductive electrode member disposed at a distal end of said electrode cover within said opening formed in said electrode cover;

d. an insulative cover member disposed within said housing adjacent said electrode cover, said insulative cover member having a through bore formed longitudinally therethrough;

e. a button member displaceably mounted in a second of said opposing open ends of said housing;

f. a movement controlling rod member disposed within said housing and having a first end thereof coupled to said button member; and,

g. voltage generating means disposed within said through bore of said insulative cover and having one end thereof coupled to a second end of said movement controlling rod member for generating an impulse voltage responsive to displacement of said button member, said voltage generating means including (1) a cover member disposed within said insulative cover and having a bore extending longitudinally therethrough, (2) a base seat member secured to a distal end of said cover member and forming a closure for a respective end of said bore of said cover member, (3) a pressing member displaceably mounted at a proximal end of said cover member and biased by a first spring member, (4) an impact block member coupled to said pressing member and biased by a second spring member, (5) a first metallic block member disposed within said bore of said cover member between said impact block member and said base seat member, said first block member having a conductive plate extending therefrom, (6) a second metallic block member disposed within said bore of said cover member between said first metallic block member and said base seat member, said first block member being formed of a material composition different from that of said second block member for generating an impulse voltage responsive to an impact force being applied by said impact block member to said first and second metallic members, said impact force being generated responsive to displacement of said button member by a user, and (7) a conductive lead member having one end coupled to said conductive plate of said first metallic block member and an opposing end coupled to said conductive electrode member for coupling said impulse voltage therebetween.

5,385,531

MASSAGE ROBOT FOR RELAXATION ARMCHAIR

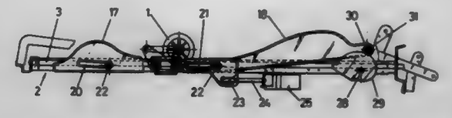
Fernando J. Jover, Novelda, Spain, assignor to Eurokeytos S.A., Alicante, Spain

Filed Jun. 17, 1993, Ser. No. 79,055

Claims priority, application Spain, Jul. 8, 1992, 9201407

Int. Cl.[6] A47C *3/00;* A61H *7/00, 15/00*

U.S. Cl. 601—99 **10 Claims**



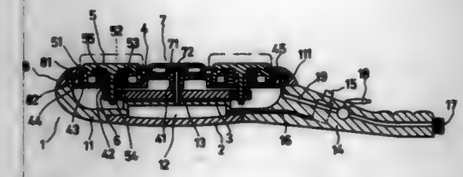
1. In a massage chair comprising a stationary chassis having a back-frame and massaging means mounted in said back-frame, said massaging means comprising bracket guide-means for guiding massage roller means, and massage roller means for providing a massage to a back of a person seated in the chair, said massage roller means being guided along said bracket guide-means, and means for translating said massage roller means along said bracket guide-means so that said bracket guide-means impart the designed path of travel to said massage roller means, the improvement comprising:

said bracket guide-means being adjustable for selectively changing said path of travel of said massage roller means to fit the back of different users of the chair and for changing the massage;

said bracket guide-means comprising an upper back-section and a lower back-section, said upper back-section being vertically movable with respect to said lower back-sec-

tion; and means for mounting said upper back-section for vertical movement with respect to said lower back-section.

5,385,532
AUTOMATIC MASSAGER AND WASHER
Chih-Yen Shyu, 4F, No. 144, Chu-Lin Road, Yung-Ho Shih Taipei Hsien, Taiwan, Prov. of China
Filed Jan. 13, 1994, Ser. No. 181,221
Int. Cl.[6] A46B *13/06*
U.S. Cl. 601—160 **1 Claim**



1. An automatic massager and washer comprising:

(a) a base housing having a frontal rounded portion and a rear handle portion, said rear handle portion having an inlet end adapted to be coupled in fluid communication with a water supply tube, said rear handle portion having a water conduit formed therein and extending between said inlet end and said frontal rounded portion of said base housing, said base housing frontal rounded portion having a center recessed cavity formed therein, said base housing frontal portion having a bathing milk chamber formed within a lower section thereof defined by an upper horizontal wall and a sealing cap threadedly engaged to said base housing frontal rounded portion defining a lower wall of said bathing milk chamber, said rear handle portion having an air conduit extending between and in fluid communication with said bathing milk chamber and a compressed air push button mounted on said base housing rear handle portion, said rear handle portion having mounted thereon a water faucet valve coupled to said water supply tube for controlling water flow therethrough;

(b) a center hollow post secured to said upper horizontal wall of said bathing milk chamber, said center hollow post having a vertically directed post through opening formed therethrough and in fluid communication with said bathing milk chamber;

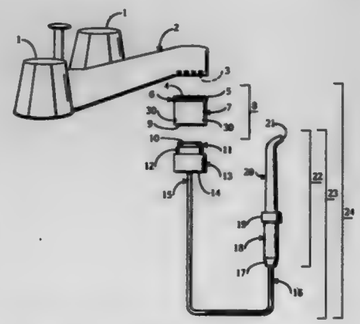
(c) a water pressure turbine rotatably mounted within said center recessed cavity, said water pressure turbine having a center tubular post mounted around said center hollow post and rotatably displaceable with respect thereto, said water pressure turbine having a plurality of turbine blades formed on a circumferential section thereof, said water pressure turbine having a plurality of upper turbine recesses spaced about said center tubular post, each of said upper turbine recesses having a vertically directed tubular post formed therein;

(d) a large gear secured to and surrounding said center tubular post of said water pressure turbine and mounted adjacent an upper surface of said upper horizontal wall of said bathing milk chamber;

(e) a plurality of massaging wheels respectively located within each of said upper turbine recesses, each of said massaging wheels having a vertically directed center locating rod extending through a respective vertically directed tubular post and secured to a small gear at an end section of said vertically directed center locating rods, each of said small gears in meshing engagement with said large gear, said large gear being rotatably displaced by rotation of said water pressure turbine thereby rotating each of said small gears which responsively rotate each of said massaging wheels, each of said massaging wheels having a groove formed within an upper section thereof for securement thereto of a brush for massaging the body of a user; and,

(f) an oozing cap having a plurality of openings formed therethrough mounted over a top end of said center hollow post in fluid communication with said vertically directed post through opening, said oozing cap being threadedly coupled to said turbine center tubular post, said bathing milk chamber containing bathing milk displaced through said oozing cap openings responsive to actuation of said compressed air push button.

5,385,533
FAUCET ORAL JET RINSE
Michael P. Coviello, 315 E. Venetian Ct., Merritt Island, Fla. 32953
Filed May 14, 1993, Ser. No. 61,294
Int. Cl.[6] A61H *9/00*
U.S. Cl. 601—165 **2 Claims**



1. A fluid delivery system that connects to a faucet and functions as an aerator mechanism and as an oral hygiene system, comprising:

a quick disconnect coupling having a cylindrical appearance similar to that of standard faucet aerators and means for threaded connection to faucets; flow through capability; containment and operation of a sliding aerator; aligning with, coupling with, sealing with and locking with a corresponding quick disconnect plug;

a sliding aerator mechanism having a generally cylindrical appearance and means for flow through aeration of fluid and sliding action within the main chamber of said quick disconnect coupling;

a quick disconnect plug having a generally cylindrical appearance and means for aligning with, coupling with, sealing with, and locking with the aforementioned quick disconnect coupling; and means for flow through capability, leak tight connection to a flexible hose, and single handed operations;

a handle having a generally cylindrical appearance and means for fluid transfer and leak tight connection to a flexible hose and nozzle;

a flexible hose having a smooth bore and means for fluid transfer and leak tight connection to the aforementioned quick disconnect plug and handle;

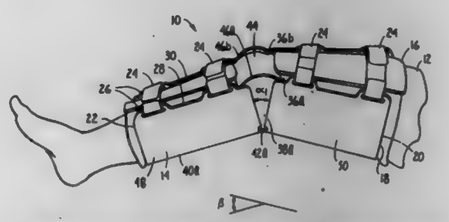
a nozzle having a slender and tapered tubular appearance and an angled tip and means for connecting with and sealing with the aforementioned handle providing a leak tight seal and flow through capability;

an insert having an annular passage and means for connecting with and sealing with said flexible hose;

a means for sealing the aforementioned quick disconnect coupling and a faucet in a leak tight relationship therewith;

a means for sealing the aforementioned quick disconnect coupling and the quick disconnect plug in a leak tight relationship therewith.

5,385,534
SPLINT ASSEMBLED FROM A FLAT STACKABLE KIT
Keith L. Cassford, Long Beach, Calif., assignor to Smith & Nephew Donjoy Inc., Carlsbad, Calif.
Filed Jul. 9, 1993, Ser. No. 89,015
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—15 **20 Claims**



1. A flat stackable kit for a splint in a disassembled state comprising:

a support member for a body part of a user being splinted, wherein said support member is formed from a substantially rigid material and has an elongated substantially planar surface with a first longitudinal edge bordering said support member surface and a second longitudinal edge bordering said support member surface opposite said first longitudinal edge;

a contour joint formed substantially longitudinally in said support member surface and flattened in a fully extended position;

a flexion joint formed substantially perpendicular to said contour joint in said support member surface and flattened in a fully extended position;

a substantially rigid flexion member having a substantially planar surface and detached from said support member surface when said kit is in the disassembled state, while sized to be extendable across at least a portion of said flexion joint when said kit is assembled as the splint; and

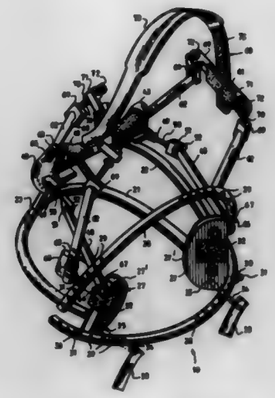
means for fastening said flexion member surface to said support member surface across said flexion joint when said kit is assembled as the splint.

5,385,535
CERVICAL COLLAR
Charles McGuinness, 10 Karen Ave., Plainview, N.Y. 11803
Filed Sep. 28, 1993, Ser. No. 128,307
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—18 **21 Claims**

1. A cervical collar, comprising:

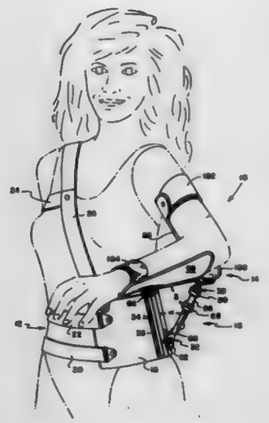
a generally annular support brace which, in use, is receivable about and circumferentially surrounds a wearer's neck and is generally supportable on the wearer's shoulders and upper torso, said support brace including a pair of vertically-spaced-apart, interconnected and generally horizontally-disposed, arcuate, upper and lower support members, each composed of a plastic resilient tube, and each having a front central portion and rear opposite terminal end portions which, in use, are disposed generally adjacent to the front and rear of the wearer's neck, respectively, said support brace including a pair of generally vertically-extending rear struts interconnecting the rear terminal end portions of said support members and adjustable and releasable rear strap means for joining said terminal end portions of said support members together via said rear struts, said strap means including at least one strap disposed over and generally above said terminal end portions of said upper support member so as to be positioned to support the back of the head of the wearer and a second rear strap spaced below said at least one strap;

chin support means for engaging and supporting the chin of the wearer; and



mounting means for adjustably mounting said chin support means on said support brace.

5,385,536
ORTHOPEDIC BRACE FOR ARM AND SHOULDER
Wayne Z. Burkhead, 2909 Lemmon Ave., Dallas, Tex. 75204; Bernard E. McConnell, and Thomas E. McConnell, both of Greenville, Tex., assignors to Wayne Z. Burkhead, Dallas, Tex.
Filed Mar. 1, 1993, Ser. No. 22,689
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—20 **6 Claims**



1. An orthopedic brace for supporting a person's forearm, elbow and upper arm, comprising:

means for attaching the brace securely to a person's torso;

means coupled to the attaching means for immobilizing and supporting a person's forearm, elbow and upper arm relative to the person's shoulder;

means for selectively positioning and locking said supporting means at a desired elevation and at a desired orientation relative to the attaching means;

the immobilizing means including means for selectively positioning and locking the person's forearm, elbow and upper arm at a desired elbow angle; and,

wherein the elevation of the supporting means can be varied by selectively varying a location at which the positioning means mounts to the supporting means.

5,385,537
SPLINT SYSTEM

Mark A. Davini, 382 Boston Turnpike, Suite 101, Shrewsbury, Mass. 01545

Filed Dec. 8, 1992, Ser. No. 987,376
Int. Cl.[6] A61F *5/04*
U.S. Cl. 602—21 **8 Claims**



1. An improved splint system for the treatment and prevention of carpel tunnel syndrome in the wrist of a human being, said wrist having a radius, an ulna and first and second narrow sides, said splint system comprising:

(a) a substantially V-shaped brace of semi-rigid material consisting of a pair of generally planar panels joined along a corner and diverging therefrom to provide a first free end and a second free end, said panels being dimensioned and angularly oriented to embrace a first narrow side of the wrist of a human being;

(b) a strap connected to one of said free ends of said brace and dimensioned to extend about the second narrow side of the wrist;

(c) means on the other of said free ends for engagement by said strap; and

(d) means for securing said strap in an adjusted length between said free ends to cooperate with said brace to apply pressure upon the opposite narrow sides of the wrist of the patient to press the radius and ulna of the wrist toward one another, said brace retaining its V-shaped configuration when said splint system is secured about the wrist of the patient.

5,385,538
KNEE BRACE HAVING AN INFLATABLE BLADDER SUPPORT

Donnerl B. Mann, High Springs, Fla., assignor to D'Mannco, Inc., High Springs, Fla.

Filed Jun. 26, 1992, Ser. No. 904,844
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—26 **7 Claims**

1. An orthotic appliance to treat knee flexion contractures comprising

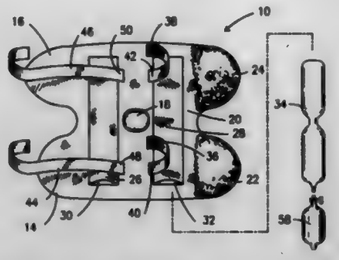
a cloth body for wrapping around a patient's knee having a generally centrally located hole for a dorsal surface of the knee to protrude through the cloth body,

the cloth body having a soft bottom layer in contact with the patient, a tightly woven fabric top layer and a soft foam layer intermediate the bottom and top layers,

hook and loop securing straps attached to the top layer to provide a means to maintain the cloth body in position wrapped around the patient's knee,

a pair of longitudinal pockets integral with the cloth body top layer on opposite sides of the hole,

a longitudinal support element mounted within each pocket, and an air bladder mounted adjacent the longitudinal support element in each pocket being capable of inflation

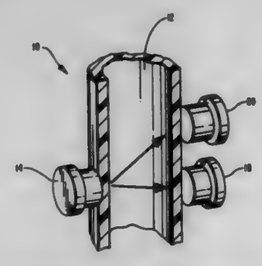


to rigidly support the patient's knee and deflation to allow the patient to move the knee.

5,385,539
APPARATUS FOR MONITORING HEMATOCRIT LEVELS OF BLOOD

David L. Maynard, The Woodlands, Tex., assignor to Advanced Haemotechnologies, The Woodlands, Tex.

Filed Jun. 30, 1992, Ser. No. 906,926
Int. Cl.[6] A61B *5/00*
U.S. Cl. 604—4 **25 Claims**



1. An apparatus for measuring the hematocrit of blood comprising

light emitting means for emitting light into a blood sample;

first light detecting means for detecting light emitted from the light emitting means, said first light detecting means positioned to receive light emitted from the light emitting means into the blood sample along a first path from the light emitting means, through the blood sample, to the first light detecting means, the first light detecting means outputting a signal corresponding to the amount of light detected;

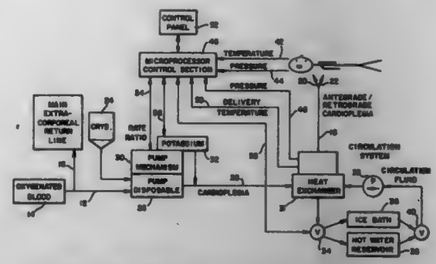
second light detecting means for detecting light emitted from the light emitting means, said second light detecting means being positioned to receive light emitted from the light emitting means into the blood sample, such that light emitted from the light emitting means must travel farther to reach the second light detecting means than to reach the first light detecting means, thereby forming a second path from the light emitting means, through the blood sample, to the second light detecting means which is longer than the first path from the light emitting means to the first light detecting means, the second light detecting means outputting a signal corresponding to the amount of light detected; and

light intensity regulating means for regulating the intensity of light emitted by the light emitting means such that the received light on one of the paths remains at a constant value.

5,385,540
CARDIOPLEGIA DELIVERY SYSTEM

Martyn S. Abbott, Richardson; Thomas C. Thompson; Kenneth A. Jones, both of McKinney; Albert M. Davis, and Andrew P. Mattson, both of Richardson, all of Tex., assignors to Quest Medical, Inc., Allen, Tex.

Filed May 26, 1993, Ser. No. 67,683
Int. Cl.[6] A61M *37/00, 31/00, 1/00*
U.S. Cl. 604—4 **69 Claims**



1. A clinical multi-fluid pumping system comprising:

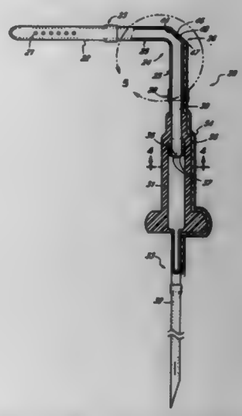
(a) a first pump for combining a first fluid containing blood and a second fluid, metered from two separate sources, and pumping the combined flow into a patient delivery line, said pump comprising a pump chamber for receiving and combining said first and second fluids having an inlet and an outlet and drive means for varying the volume of the pump chamber; and

(b) control means for: adjusting the ratio of the first and second fluids combined by the first pump and adjusting the total volumetric rate of flow from the first pump.

5,385,541
CEREBROSPINAL FLUID SHUNT CAPBLE OF MINIMAL INVASIVE REVISION

Wolff M. Kirsch, Redlands, and Yong H. Zhu, Loma Linda, both of Calif., assignors to Loma Linda University Medical Center, Loma Linda, Calif.

Filed Apr. 24, 1992, Ser. No. 874,293
Int. Cl.[6] A61F *2/20*
U.S. Cl. 604—8 **15 Claims**



1. A shunting device for cerebrospinal fluid adapted to be implanted in part in the skull of a patient, said device having interior and exterior surfaces and comprising:

a ventricle tube adapted t be inserted through the skull and into the ventricle of the patient, said ventricle tube having openings for receiving said fluid into said ventricle tube for draining said fluid to another location;

a drain tube in fluid communication with said ventricle tube for draining said fluid to another location within the patient, said drain tube having openings too allow said fluid to drain out of said shunting device, said ventricle tube and said drain tube being joined at a junction;

a surface formed at said junction and angularly disposed with reapect to both said ventricle tube and said drain tube; and

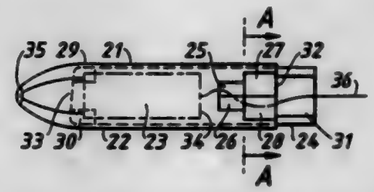
an opening formed in said surface to externally receive an endoscopic device for inspecting and cleaning said shunting device, said opening being located on said shunting device such that said endoscopic device can access substantially the entire length of both said ventricle tube and said drain tube;

wherein the interior surfaces of said shunting device are coated with a material which is non-light absorptive, whereby laser light will not damage said shunting device.

5,385,542
TAMPON APPLICATORS

David A. Rawlings, Appleton-le-Moors, United Kingdom, assignor to Smith & Nephew plc, United Kingdom

PCT No. PCT/GB92/00238, § 371 Date Sep. 3, 1993, § 102(e) Date Sep. 3, 1993, PCT Pub. No. WO92/13508, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 10, 1992, Ser. No. 98,335
Claims priority, application United Kingdom, Feb. 12, 1991, 9102928
Int. Cl.[6] A61F *13/20*
U.S. Cl. 604—14 **14 Claims**



1. A tampon applicator including an outer cylindrical member for containing a tampon having a front end through which a tampon can be ejected and a rear end, and an inner arcuate member which is arranged to lie between an inner surface of the outer member and the tampon and to be slidably moved within the outer member to act as a piston for ejecting the tampon wherein one end of the inner member is adapted to engage the tampon and has an extending shoulder and wherein the outer member is integrally provided with a first inward projection to engage the tampon and prevent rearward movement thereof and at least one second inward projection at a distance from the first inward projection and intermediate the first projection and the rear end of the cylindrical member to engage the shoulder of the inner member and prevent complete withdrawal of the inner member from the outer member, the distance between said first and second projections being such as to provide sufficient axial movement of the inner member to allow it to be slid rearwardly past the first projection before the shoulder engages the second projection.

5,385,543

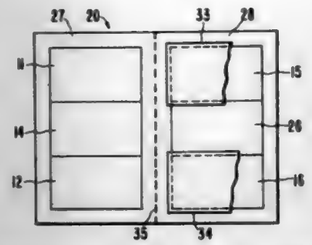
IONTOPHORETIC DELIVERY DEVICE AND METHOD OF HYDRATING SAME

Ronald P. Haak; J. Richard Gyory, both of San Jose; Felix Theeuwes, Los Altos, and Robert M. Myers, Stanford, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 605,290, Oct. 29, 1990, abandoned. This application Jun. 30, 1993, Ser. No. 85,466

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 **45 Claims**



1. A multilaminate dry state electrode assembly for an electrically powered iontophoretic agent delivery device including a source of electrical power which is electrically connected to the electrode assembly, the electrode assembly including:

a) a reservoir layer including a substantially non-hydrated hydratable matrix containing an agent to be delivered through a body surface;

b) an electrode layer in electrical contact with both the reservoir layer and the power source;

c) means for hydrating the substantially non-hydrated agent containing matrix, said means including a preformed sealable passageway through the electrode layer, the passageway when unsealed establishing fluid communication between the exterior of the device and the matrix, said means enabling a liquid from an external source to be introduced through the passageway and into the reservoir matrix in order to hydrate the matrix and activate the electrode assembly; and

d) means for sealing the passageway after introducing the liquid therein.

5,385,544

BPH ABLATION METHOD AND APPARATUS

Stuart D. Edwards, Los Altos; Hugh R. Sharkey, Redwood City; Ingemar H. Lundquist, Pebble Beach; Ronald G. Lax, Grass Valley, and Bruno Strul, Palo Alto, all of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675. This application May 14, 1993, Ser. No. 61,072

Int. Cl.[6] A61B *17/20*

U.S. Cl. 604—22 **6 Claims**

1. A medical probe device for medical treatment of the prostate, comprising:

a catheter having a stylet guide housing at one end;

a stylet having a flexible radio-frequency electrode with a sharpened tip and an insulating sleeve that retains the electrode and is movable relative to the electrode;

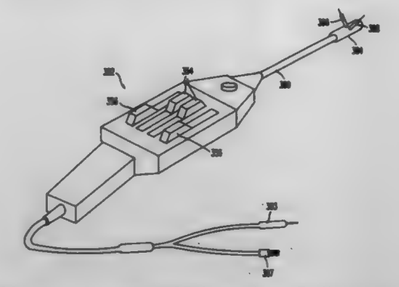
stylet guide means disposed in the stylet guide housing for retaining and directing the stylet outward through a stylet port in a side of the stylet guide housing;

means for introducing the catheter through the urethra to a zone adjacent to the prostate;

means for advancing the electrode from the catheter through the wall of the urethra into the prostate tissue to be treated such that the sharpened tip of the electrode punctures and penetrates the urethra wall with the sleeve extending through the urethra wall;

means for retracting the insulating sleeve within the prostate tissue to expose a predetermined length of electrode in the prostate tissue;

power supply means connected to the electrode for passing electric current through the electrode until the temperature of the prostate tissue adjacent the predetermined length of electrode is raised to a temperature causing destruction of cells of the prostate tissue; and



first temperature monitoring means connected to the power supply means for measuring the temperature of tissue proximal to the prostate and providing a cutoff of the electric current when the monitored temperature exceeds a predetermined value.

5,385,545

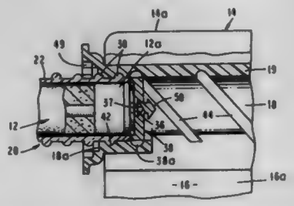
MIXING AND DELIVERY SYSTEM

Marshall S. Kriesel, Saint Paul, and Thomas N. Thompson, Richfield, both of Minn., assignors to Science Incorporated, Bloomington, Minn.

Filed Jun. 24, 1992, Ser. No. 903,651

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—82 **39 Claims**



1. An apparatus for controllably intermixing a first component and a second liquid component comprising:

(a) a container having a fluid reservoir for containing the second component and a chamber in fluid communication with said fluid reservoir; and

(b) adding means for presenting the first component to the second component for intermixing therewith, comprising:

(i) a support upon which the first component is removably affixed;

(ii) a container for containing said support for exposure of said support to said second component; and

(iii) connector means for connecting said container to said chamber so that said support is exposed to fluid contained within the container in a manner such that said second component removes at least a portion of said first component from said support, whereby portions of said first and second components will be intermixed.

5,385,546

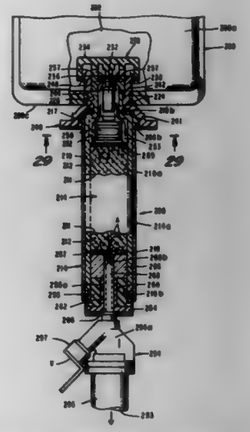
MIXING AND DELIVERING SYSTEM

Marshall S. Kriesel, Saint Paul, and Thomas N. Thompson, Richfield, both of Minn., assignors to Science Incorporated, Bloomington, Minn.

Continuation-in-part of Ser. No. 903,651, Jun. 24, 1992. This application Feb. 1, 1993, Ser. No. 989,097

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—85 **30 Claims**



1. An apparatus for controllably intermixing a first component and a second liquid component comprising:

(a) a first container having a fluid reservoir for containing the second component and an outlet assembly having a fluid outlet in fluid communication with said fluid reservoir and first flow control means for normally closing said fluid outlet, said first flow control means being movable into a fluid outlet opening position;

(b) adding means for presenting the first component to the second component for intermixing therewith, comprising:

(i) a support upon which the first component is removably affixed;

(ii) a second container for containing said support, said second container having a plug receiving chamber; and

(iii) connector means for directly connecting said second container to said outlet assembly of said first container so that said support can be exposed to fluid flowing out of said fluid outlet of said container; and

(c) second flow control means for controlling the flow of fluid into said second container, said second flow control means comprising a closure plug engageable by said first flow control means as said second container is connected to said outlet assembly, to move said closure plug into said plug receiving chamber and simultaneously to move said first flow control means into said fluid outlet opening position whereby fluid can flow toward said adding means.

5,385,547

ADAPTOR FOR DRUG DELIVERY

Joseph Wong, Lake Villa, Ill.; Ray W. Wood, Elkhorn, Wis., and James McShane, Mt. Prospect, Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Nov. 19, 1992, Ser. No. 978,555

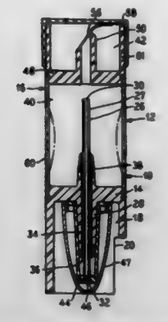
Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—87 **47 Claims**

1. A device for coupling a first container including a beneficial agent to a second member, the device comprising:

a substantially hollow member;

a fluid path, having a channel including a first opening and a second opening, mounted within a wall that divides the substantially hollow member into an upper section and a lower section, the upper section including means for receiving at least a portion of a first container and the substantially hollow member including walls that define an



exterior of the upper section that are capable of, at least in part, being biased inwardly; and

a fluid within the upper section wherein the walls of the upper section exert pressure on the fluid.

5,385,548

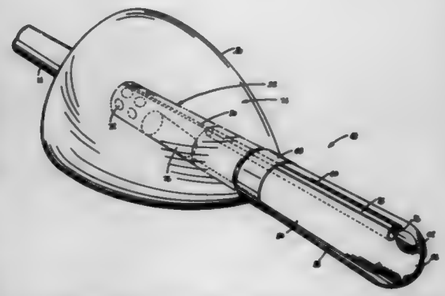
BALLOON CATHETER FOR RETROGRADE PERFUSION

Christopher R. Williams; Steven M. Grossman, and Roderick E. Briscoe, all of Grand Rapids, Mich., assignors to DLP, Inc., Grand Rapids, Mich.

Filed Apr. 22, 1993, Ser. No. 51,023

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **13 Claims**



1. A catheter for supplying liquid to an organ in a perfusion procedure comprising;

a tubular catheter body having an interior lumen, a proximal end, and a distal end;

a catheter entrance at the proximal end of the catheter body leading to the interior lumen;

an inflatable balloon having a proximal end and a distal end;

a flow tip extending outwardly from distal end of the balloon;

the proximal end of the balloon encircling the catheter body at the distal end of the catheter body and the distal end of the balloon encircling a flow tip to define a balloon interior between the balloon and the catheter body and flow tip;

an entrance means comprising at least one passage from the interior lumen to the balloon interior; and

the flow tip having a distal end and an exit means comprising at least one longitudinal flow channel extending from

within the balloon interior to a point outside of the balloon interior and distal to the balloon, the at least one flow channel being open along a longitudinal side thereof forming an elongated longitudinal opening extending to the distal end of the flow tip.

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DIGITALLY CONTROLLED, DISPOSABLE SYRINGE INFLATION SYSTEM, AND METHOD FOR MONITORING, DISPLAYING BALLOON CATHETER INFLATION DATA

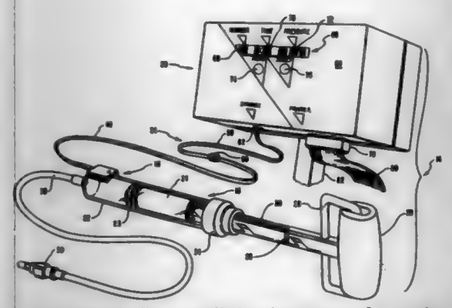
Fred P. Lampropoulos, and Jerrold L. Foote, both of Salt Lake City, Utah, assignors to Merit Medical Systems, Inc., Salt Lake City, Utah

Continuation of Ser. No. 664,587, Mar. 4, 1991, Pat. No. 5,201,753, which is a continuation-in-part of Ser. No. 324,938, Mar. 17, 1989, Pat. No. 5,135,488. This application Mar. 4, 1993, Ser. No. 26,431

The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.

Int. Cl.[6] A61M *29/00, 1/00, 5/48*

U.S. Cl. 604—100 5 Claims



1. An electronically controlled syringe system for monitoring inflation of a balloon-type member and for displaying inflation data, comprising:

a syringe for connection to said member through tubing, said syringe comprising a barrel and a plunger selectively operable to inflate said member by applying fluid pressure to said member through said tubing by sliding the plunger within the barrel;

transducer means the sensing said applied fluid pressure and for outputting an electrical signal proportional to said sensed fluid pressure, said transducer means being placed in fluid communication with said syringe and the tubing connected thereto:

electronic circuit means, electrically connected to said transducer means, for receiving said electrical signal and for electronically processing said signal so as to derive and so as to display electronic data representing the magnitude of said fluid pressure applied to said member and the length of time said fluid pressure is applied to said member;

display means, electrically connected to said electronic circuit means, for outputting a visual display of the magnitude of said applied fluid pressure and the corresponding length of time said pressure is applied to said member; and

switching means, electrically connected to said electronic circuit means and said display means, for selectively switching the expression on the display means of fluid pressure values from units of atmospheres to units of pounds per square inch as desired by the user.

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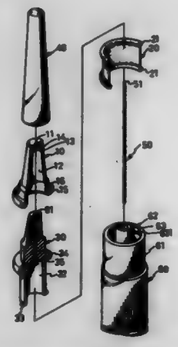
NEEDLE PROTECTIVE MEANS FOR PREVENTION AGAINST STAB AND VIRUS INFECTION

Chan-Ho Su; Yi-Hsien Su, and I-Yan Su, all of No. 6, Alley 1, Lane 768, Pa Teh Road, Sec. 4, Taipei, Taiwan, Prov. of China

Filed Mar. 29, 1994, Ser. No. 219,258

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 9 Claims



1. A needle protective means for prevention against stab and virus infection being used together with a conventional syringe, needle, and protective cap, comprising a front protector, a middle rubber sleeve, and a rear protector;

said front protector defining a first chamber therein and having an inward projection formed at a top portion thereof to project into said first chamber and thereby forming a first annular groove between said front protector and said inward projection, said front protector further having a first needle passage extending through said top portion and said inward projection of said front protector to communicate with said first chamber, and a flange radially outward and then upward extending from a lower outer periphery of said front protector to form a second annular groove between said first flange and said lower outer periphery of said front protector;

said middle rubber sleeve being made of ductile material and having two rims which are expanded to have larger thickness than that of the remaining part of said rubber sleeve and thereby functioning as two lashing rings;

said rear protector consisting of an upper portion and a lower portion, said upper portion being suitable for fitly engaging into said first chamber, said lower portion defining a second chamber which communicates with a second needle passage extending through said upper portion, said rear protector further having a second flange radially outward and then downward extending from a middle or waist portion of said rear protector to form a third annular groove between said second flange and said middle portion of said rear protector, and two lugs radially outward extending from a lower outer periphery of said rear protector;

said middle rubber sleeve being put over said first and said second flanges with said thicker rims falling into said second and said third annular grooves such that said first and said second flanges are closely wrapped and bound together;

said first and said second needle passages aligning with each other after said rear protector having been received in said first chamber of said front protector to allow said needle to extend therethrough and finally project out of said front protector;

said syringe having a head portion consisting of a needle support and an outer wall, on an inner surface of which internal threads being provided so that said rear protector can be firmly but detachably screwed to said syringe by the engagement of said lugs of said rear protector with said internal threads; and

said front protector being capable of being pulling forward to separate from said rear protector but still connecting said rear protector by means of said rubber sleeve which is extended and deformed under pull force, said front protector, when being pulled to completely pass beyond said needle and be slightly inclined, together with said extended rubber sleeve and said rear protector incasing said needle with a point of said needle pressing against said first annular groove of said front protector.

5,385,551

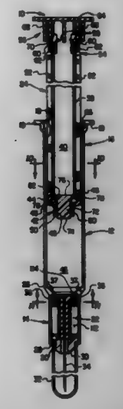
NONREUSABLE MEDICAL DEVICE WITH FRONT RETRACTION

Thomas J. Shaw, 1510 Hillcrest, Little Elm, Tex. 75068

Filed Sep. 22, 1993, Ser. No. 125,292

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 33 Claims



1. In a medical device having a retraction mechanism with a needle for injecting or collecting fluid, an elongate hollow body containing a retraction mechanism and a movable member, slidable axially in the body, the retraction mechanism including a needle holding member having an unretracted position wherein the needle is extended from the body while being biased toward a retracted position entirely within the body, a biasing element for applying retraction force to the needle holding member in a retraction direction, and a release element capable of holding the needle holding member against the retraction force provided by the biasing element, the release element being triggered to release the needle holding member for retraction of the needle in response to selective movement of the movable member, the improvement comprising:

the needle holding member and release element are separable members coupled, along a sliding interface oriented in the direction of retraction, with a friction force which exceeds the retraction force;

retraction is initiated by relative sliding movement between the needle holding member and the release element, caused by selective movement of said movable member; and

retraction occurs by reduction of the extent of said sliding interface in response to said relative sliding movement, until retraction force exceeds said friction force, whereby said needle holding member separates from said release element and moves into said retracted position.

5,385,552

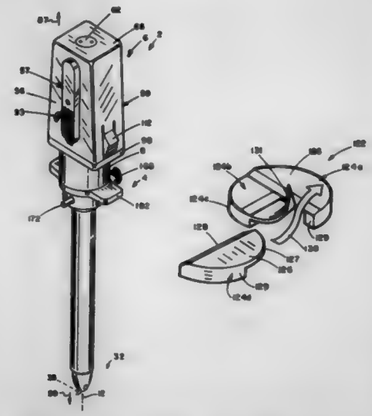
TROCAR WITH OVERLAPPING SEAL ELEMENTS

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Mar. 11, 1993, Ser. No. 31,174

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—167 22 Claims



1. A medical device, designed for minimally invasive surgical procedures on a patient, comprising:

a body having proximal and distal ends and a hollow interior defining a path between the proximal and distal ends;

an object sized to pass along the path; and

a seal mounted within the body and fluidly sealing the path with and without the object directed along the path and into the hollow interior, the seal including:

four overlapping elastomeric sealing elements stacked on top of one another in an interleavened manner so that a portion of each said sealing element overlaps an adjacent sealing element and is overlapped by another adjacent sealing element, each of said sealing elements having a distal edge extending across the path, the distal edges being arranged at 90° intervals so that first and second of said distal edges are parallel and third and fourth of said distal edges are perpendicular to said first and second distal edges, the sealing elements crossing at a common location so to fluidly seal the path when an object is not positioned along the path, said sealing elements configured to permit the object to pass therethrough in a distal direction towards the patient.

5,385,553

TROCAR WITH FLOATING SEPTUM SEAL

Charles C. Hart, Huntington Beach; Mark A. Ritchart, Murietta, and Donald L. Gadberry, San Juan Capistrano, all of Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Continuation-in-part of Ser. No. 952,300, Sep. 28, 1992, Pat. No. 4,308,336, which is a continuation-in-part of Ser. No. 732,141, Jul. 18, 1991, Pat. No. 5,209,737. This application Jun. 15, 1993, Ser. No. 77,005

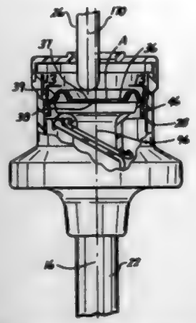
Int. Cl.[6] A61M *39/04*

U.S. Cl. 604—167 23 Claims

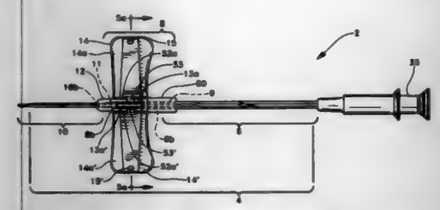
1. A trocar adapted to form an access channel across a body wall, and configured to receive a surgical instrument, the trocar comprising:

a cannula having an axis extending between a proximal end and a distal end of the trocar;

a seal housing disposed at the distal end of the cannula and forming with the cannula the access channel of the trocar;
a flexible valve disposed relative to the housing and across the access channel, the valve having elastomeric properties for forming a seal with the instrument when the instrument is disposed in the access channel;
first portions of the valve defining an orifice which is normally concentric with the axis of the cannula, the first portions being sized and configured to receive the instrument and form the seal with an outer surface of the instrument; and
second portions of the valve disposed circumferentially outwardly of the first portions of the valve for facilitating movement of the orifice from a first position generally concentric with the axis of the cannula to a second position generally removed from the axis of the cannula, in response to insertion of the instrument along a line removed from the axis of the cannula.

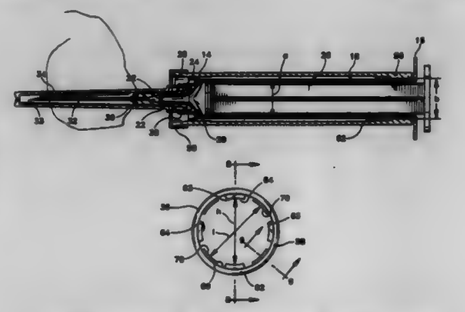


5,385,554
CATHETER INTRODUCER WITH NOTCHED NEEDLE
Greg L. Brimhall, West Jordan, Utah, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Continuation of Ser. No. 33,609, Mar. 17, 1993, Pat. No. 5,267,971. This application Aug. 27, 1993, Ser. No. 112,488
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—168 **4 Claims**



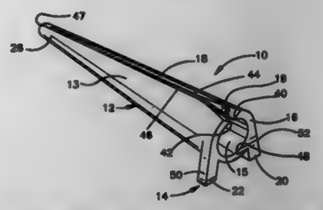
1. A catheter introducer assembly comprising:
a cannula for insertion into a blood vessel, the cannula comprising a proximal end, a distal end and a lumen;
an intermediate member coaxial with the cannula located substantially proximal of the cannula and in fluid communication with the cannula;
a tube coaxial with the cannula and the intermediate member located substantially proximal of the intermediate member and in fluid communication with the cannula;
an introducer needle comprising:
a first region aligned with the cannula and a second region aligned with the tube;
a cylindrical wall defining a lumen;
a proximal end and a sharp distal end; the needle being placed axially in the cannula and the tube such that a first annular space is formed between the first region of the needle and the lumen of the cannula and a second annular space is formed between the second region of the needle and the tube, the needle being provided with a first opening in the first region and a second opening in the second region, the openings extending through the cylindrical wall and into the needle lumen such that blood can flow through the openings from the needle lumen.

5,385,555
LOCKABLE SAFETY SHIELD FOR HYPODERMIC SYRINGE
Roderick J. Hausser, Verona, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jan. 8, 1993, Ser. No. 1,888
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—192 **22 Claims**



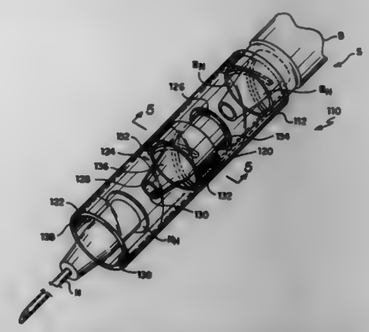
1. A safety assembly for a hypodermic syringe having a syringe barrel with opposed proximal and distal ends, said distal end of said syringe barrel having a needle cannula mounted thereto, said safety assembly comprising:
a locking collar for secure mounting around said syringe barrel, and having a stop wall projecting outwardly from said syringe barrel and at least one deflectable lock wall projecting distally and outwardly from said locking collar; and
a safety shield for mounting over said syringe barrel for telescoping movement from a proximal position where said needle cannula is exposed to a locked distal position where said safety shield protectively surrounds said needle cannula, said safety shield including at least one stop block projecting inwardly therefrom said stop block being engageable with said stop wall of said locking collar for preventing removal of said safety shield from said syringe barrel, said safety shield further comprising at least one locking tooth dimensioned and disposed to generate inward deflection of said lock wall of said locking collar during said telescoping movement of said safety shield from said proximal position toward said distal position, said locking tooth being spaced distally from said stop block a sufficient distance to enable engagement of said lock wall and said stop wall of said locking collar between said locking tooth and stop block of said safety shield, and said locking tooth configured to lockably engage said deflectable lock wall to prevent proximal movement of said safety shield from its locked distal position wherein said locking engagement of said locking collar and said safety shield can be achieved solely upon axial movement of the safety shield distally with respect to said barrel.

5,385,556
ENDCAP FOR HYPODERMIC SYRINGE
I-Wen Wang, 2384 Euclid Heights Blvd., Apt. #305, Cleveland Heights, Ohio 44106, and Wei-Ming Wang, 4841 Westchester Dr., Apt. #217, Youngstown, Ohio 44515
Filed Dec. 8, 1993, Ser. No. 162,934
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—192 **14 Claims**



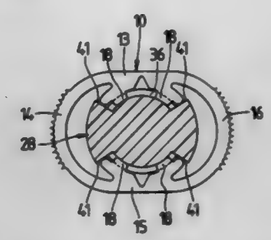
1. An endcap for a syringe including a needle, the endcap comprising;
a. a hollow, resiliently deformable sheath having:
(i) an open slit extending substantially the length of said sheath and terminating at a proximal end of said sheath, said slit having a substantially uniform slit width;
(ii) an open proximal end having a periphery adapted to encircle and compressively attach to such syringe; and,
b. a base section attached to and extending radially outwardly from a portion of said periphery of said proximal end, said base section being disposed opposite said slit whereby said proximal end of said sheath is supported by said base section such that said slit faces upwardly when said base section is disposed on a support surface.

5,385,557
SHIELDING DEVICE FOR A SYRINGE NEEDLE
Clarence J. Thompson, P.O. Box 4338, Oneida, Tenn. 37841
Filed Apr. 4, 1994, Ser. No. 222,025
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—198 **8 Claims**



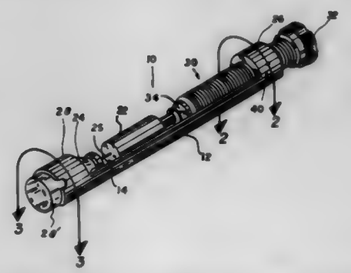
1. A needle guard for use with a syringe comprising:
a tubular body having a cross-section complementary in shape and slightly larger than that of the syringe, said tubular body being axially displaceable between an extended position and a retracted position to respectively conceal and expose a needle of the syringe;
a first frictional element offering resistance to an axial displacement of said tubular body relative to the syringe;
a collar having a first end and a second end, said first end being configured to be matingly engageable with a nose of a barrel of the syringe, said second end being configured to be matingly engageable with a hub of the needle of the syringe;
said collar including a bore passing therethrough, said bore being in fluid communication with the bore in the nose of the barrel and the bore in the hub of the needle;
said collar being configured to sealingly engage the nose of the barrel and the hub of the needle to prevent leakage of fluid therefrom; and
said first frictional element being affixed to an exterior surface of said collar.

5,385,558
ANGIOGRAPHIC CONTROL SYRINGE
Joseph R. Cottone, Sr., Marietta, and Anthony J. Cottone, Ball Ground, both of Ga., assignors to Maxxim Medical, Inc., Sugar Land, Tex.
Filed Sep. 3, 1993, Ser. No. 116,345
Int. Cl.[6] A61M *5/00, 5/315*
U.S. Cl. 604—208 **8 Claims**



1. In an angiographic syringe, including a syringe barrel and a plunger slidably engaged with said syringe barrel, the plunger including a stem and a head, a locking mechanism, comprising:
a substantially oblong locking ring positioned circumferentially on the stem of said plunger;
a plurality of grooves formed on opposing sides of the stem of said plunger; and
a pair of inward protrusions from said locking ring on opposing sides of said stem, said protrusions being movable outward concomitantly responsive to longitudinal compression of said locking ring, thereby permitting detachable engagement of said protrusions and of said grooves on opposing sides of said stem.

5,385,559
SYRINGE FILLING AND METERING DEVICE
Gerald Mannix, Miramar, Fla., assignor to R. Jason Newsom, Miami, Fla.
Filed Dec. 20, 1993, Ser. No. 169,045
Int. Cl.[6] A61M *5/00*; B65B *1/04*
U.S. Cl. 604—211 **5 Claims**



1. A syringe filling assembly designed to allow metering of a liquid into a syringe by a sightless person, said assembly comprising:
a) an elongate base having an open side extending along a

majority of the length thereof and said base terminating in opposite ends,

b) said base including an interior surface extending along the length of said base and exposed in accessible communication with said open side,

c) said inner surface of said base comprising a plurality of recesses integrally formed therein and configured to receive an outer surface portion of the syringe and medicine container therein,

d) metering means movably mounted on said base and structured and disposed for regulating a quantity of liquid passing into the syringe from the medicine container,

e) said metering means structured and disposed to be selectively movable between an inwardly extended position and an outwardly protracted position relative to both said base and the syringe when mounted on said base,

f) said metering means comprising an elongated shaft movably connected to a first of said opposite ends o said base and movable through said first end towards and away from the syringe,

g) said first end including an open construction defined by a first collar configured in surrounding relation to at least a portion of said metering means,

h) said first collar comprising an internally threaded construction integrally formed along said interior surface thereof; said elongated shaft comprising an externally threaded construction disposed in movable, mating, threaded engagement with said interior surface of said first collar,

i) an indicator means structured and disposed to engage a plurality of threads of said externally threaded construction, said indicator means structured and disposed to produce a plurality of successive sounds upon engagement with a plurality of successive threads of said externally threaded construction of said elongated shaft, and

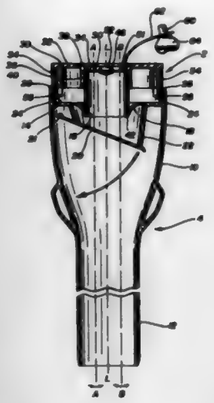
j) said indicator means and said threaded construction of said elongated shaft being cooperatively calibrated relative to one another so as to indicate one unit volume of medicine being dispensed per one of the plurality of successive sounds being produced by said indicator means.

5,385,560

REDUCER FOR CANNULAE

Thomas Wulf, Hamburg, Germany, assignor to Ethicon Endo-Surgery, Cincinnati, Ohio

Filed Sep. 28, 1993, Ser. No. 128,620
Claims priority, application Germany, Oct. 13, 1992, 4234452
Int. Cl.[6] A61M *5/00, 25/00, 5/178*
U.S. Cl. 604—264 **9 Claims**



1. In combination:

a cannula with open distal and proximal ends and a cylindrical opening extending through said ends, said cylindrical opening having a first diameter; and

a reducer comprising:

a covering cap secured to said cannula proximal end;

a socket extending distally from said cap, said socket containing a distal end opening with a second diameter, said socket distal end opening extending into the opening in said cannula proximal end, and said socket having a proximal end having a face containing at least two openings with third and fourth diameters, said openings having seals associated therewith and said at least two openings capable of accepting the operating shafts of surgical instruments;

wherein said first diameter is greater than said second diameter.

5,385,561

APPARATUS AND METHOD FOR INJECTING A VISCOUS MATERIAL INTO THE TISSUE OF A PATIENT

David E. Cerny, Lilburn, Ga., assignor to Bard International, Inc., Murray Hill, N.J.

Filed Jan. 18, 1994, Ser. No. 183,172
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—264 **12 Claims**



1. A method for injecting a viscous material into the tissues of a patient, comprising the steps of:

inserting an endoscope having a working channel into the body of a patient to a point proximate to an injection location;

inserting an apparatus comprising a cannula having a non-coring needle disposed at the forward end thereof through said working channel of said cystoscope and into the tissues of said patient to a point immediately adjacent said injection location, said non-coring needle having an orifice on one side thereof, and said apparatus further comprising indicia inscribed thereon in predetermined alignment with said one side of said non-coring needle upon which said orifice is located, said indicia being visible to said physician when said needle is positioned adjacent said injection location;

observing the orientation of said indicia to determine the orientation of said needle orifice

rotating said cannula and said needle until said orifice on said needle is aligned toward said injection location; and

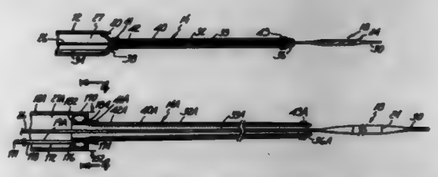
injecting a viscous substance through said cannula and said needle into said injection location.

5,385,562

GUIDE CATHETER SYSTEM FOR AN ANGIOPLASTY BALLOON CATHETER

Daniel O. Adams, Blaine, and William H. Penny, St. Anthony, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 925,227, Aug. 3, 1992, abandoned, which is a continuation of Ser. No. 605,398, Oct. 29, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 6,210
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—280 **9 Claims**



1. A guide catheter system for guiding a balloon catheter, the guide catheter system comprising:

a guide catheter having a proximal end and a distal end and defining a first guide lumen through which the balloon catheter is guided; and

a guide catheter extension having a length greater than the guide catheter to provide a second guide lumen extending beyond the distal end of the guide catheter, the guide catheter extension comprising:

an elongated shaft having a distal end and a proximal end; and

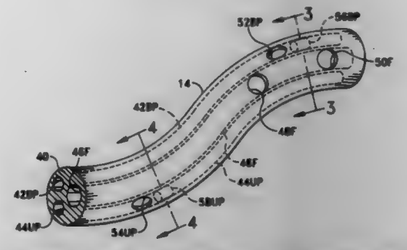
a flexible tube comprising a coil spring mounted to the distal end of the shaft, the tube having an outer diameter less than the diameter of the guide catheter and the defining the second guide lumen with an inner diameter sufficiently large to permit passage of the balloon catheter therethrough.

5,385,563

URODYNAMIC CATHETER

James R. Gross, Wareham, Mass., assignor to The Kendall Company, Mansfield, Mass.

Filed Sep. 14, 1993, Ser. No. 120,500
Int. Cl.[6] A61M *25/00*; A61B *5/00*
U.S. Cl. 604—284 **6 Claims**



1. A urodynamic catheter comprising a flexible tube having a distal end for insertion within the urogenital tract of a male patient or the urinary tract of a female patient and an opposed proximal end;

a fill lumen extending between the ends of the tube and having at least one opening at its distal end adapted for introducing a liquid into a patient's bladder;

a first pressure-sensing lumen having an opening adapted for being positioned within the bladder for obtaining pressure readings as the bladder is filled with liquid through the fill lumen and then as the bladder empties; and

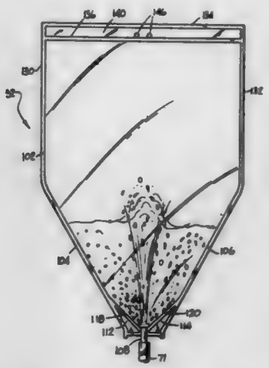
a radio-opaque marker element fixedly seated within the first pressure-sensing lumen in close proximity and distal to the opening in the pressure-sensing lumen.

5,385,564

SYSTEM FOR PREPARATION AND USE OF DIALYSIS SOLUTION

Glenn L. Slater, Ogden, Utah; Jerry Woods, Pittsburg, Calif.; Steve Alford, Antioch, Calif.; Dave Updyke, Pittsburg, Calif., and Rick Methe, Antioch, Calif., assignors to Fresenius USA, Inc., Walnut Creek, Calif.

Filed Oct. 5, 1992, Ser. No. 957,050
Int. Cl.[6] A61B *19/00*; A61M *5/32*
U.S. Cl. 604—416 **7 Claims**



1. A method for preparing and using a dialysis solution, comprising placing an acid dialysate concentrate into a container, the container having a bottom portion to hold the dialysate concentrate, the bottom portion having a lower end with an access port and the container having a least one side that slopes in relation to an opposite side whereby the container has a width at the lower end that is less than a width above the lower end; sealing the container; flowing water into the container through the access port so that the flowing water produces turbulence in the bottom portion to simultaneously dissolve the dialysate concentrate in the bottom portion; and withdrawing the acid dialysis solution from the container.

5,385,565

TOOL AND METHOD FOR DEROTATING SCOLIOTIC SPINE

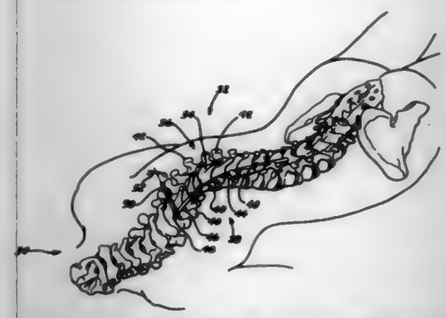
R. Charles Ray, Tacoma, Wash., assignor to Danek Medical, Inc., Memphis, Tenn.

Continuation of Ser. No. 949,103, Sep. 21, 1992, Pat. No. 5,281,223. This application Nov. 3, 1993, Ser. No. 148,674
Int. Cl.[6] A61B *17/56, 19/00*
U.S. Cl. 606—61 **4 Claims**

1. A method for reducing rotational deformity of a scoliotic spine having a convex side and a concave side, the method comprising the steps:

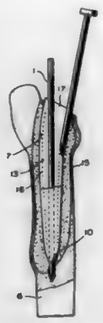
connecting a derotation rod to the scoliotic spine using multiple hooks, the derotation rod having a scoliotic configuration and a kyphotic configuration;

rotating the derotation rod from its scoliotic configuration to its kyphotic configuration; and



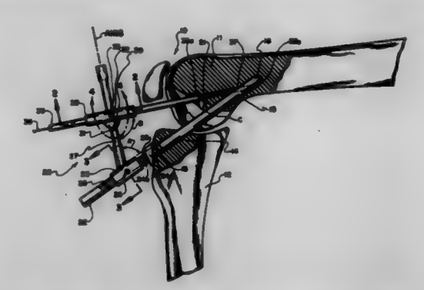
reducing the rotational deformity of the scoliotic spine by applying force to the convex side of the scoliotic spine in an anterior direction during the rotating step.

5,385,566
DEVICE AND A METHOD FOR USE IN TRANSPLANTATION OF BONE TISSUE MATERIAL
Göte Ullmark, Vallrundan 27, 818 33 Valbo, Sweden
Filed Feb. 22, 1993, Ser. No. 24,175
Claims priority, application Sweden, Feb. 20, 1992, 9200501
Int. Cl.[6] A61F *2/36, 5/04*
U.S. Cl. 606—95 9 Claims



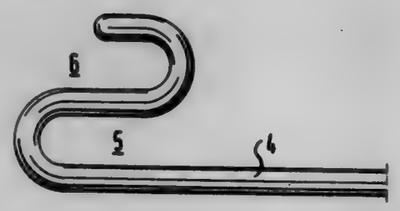
1. A device for use in transplantation of bone tissue material in a cavity of a bone so as to give the cavity a desired shape with a required thickness of the bone material forming a wall of the cavity, said device comprising:
means for compacting the bone tissue material in the cavity,
a guide pin for fixed engagement to said bone substantially centrally in the cavity,
said compacting means having an opening for passage of the guide pin,
said guide pin guiding sliding movement of the compacting means within said cavity when said guide pin is engaged to said bone,
wherein the compacting means has a jacket to compact the bone material,
said jacket delimiting an inner hollow space and having a plurality of openings to allow liquid to pass through the jacket and into the hollow space when compacting the bone material.

5,385,567
SIGHT BARREL ARTHROSCOPIC INSTRUMENT
E. Marlowe Goble, 850 E. 1200 North, Logan, Utah 84321
Filed Sep. 7, 1990, Ser. No. 580,172
Int. Cl.[6] A61B *17/60, 19/00*
U.S. Cl. 606—96 12 Claims



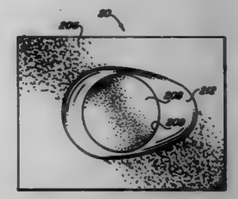
1. A sight barrel arthroscopic instrument comprising, a guide rod for fitting in a straight cruciate ligament tunnel formed in a patient's knee from the tibial tuberosity through the ligament points of origin and into the femur endosteum; a straight mast secured to said guide rod, to extend vertically therefrom in alignment with the vertical plane of and spaced apart from the patient's knee when said guide rod is positioned in the straight cruciate ligament tunnel; and a sight barrel sleeve means for mounting across and spaced a distance along said straight mast from said guide rod, and is for guiding drilling of an intersecting tunnel from outside the knee in the vertical plane in front of the knee to a point along the distal femur intracondyle notch and into the femur endosteum, to intersect, at an acute angle, the straight cruciate ligament tunnel.

5,385,568
SURGICAL INSTRUMENT FOR MANIPULATING A THREAD
Manfred Boebel, Oethisheim, and Hossein Messroghli, Gross Gerau, both of Germany, assignors to Richard Wolf GmbH, Knittlingen, Germany
Continuation of Ser. No. 961,172, Oct. 14, 1992, abandoned.
This application Dec. 10, 1993, Ser. No. 165,011
Claims priority, application Germany, Oct. 14, 1991, 4133966
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—144 8 Claims



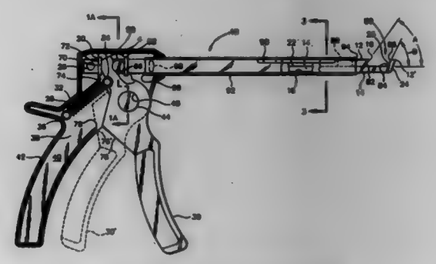
1. A surgical instrument for manipulating a thread situated within a body, in particular a body cavity, comprising a shaft having a proximal end and a distal end, a handle located at said proximal end of the shaft, and two thread receivers located at said distal end of the shaft, each of said thread receivers being formed by a hook-shaped structure having an opening and being arranged to at least partly surround the thread, said openings being arranged to face in opposite directions and said hook-shaped structures being arranged to lie directly adjacent one another in a single, common plane.

5,385,569
SURGICAL SUTURING ACCESSORY
G. Michael Swor, Sarasota, Fla., assignor to Surgical Safety Products, Inc., Sarasota, Fla.
Filed May 21, 1993, Ser. No. 67,038
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—148 10 Claims



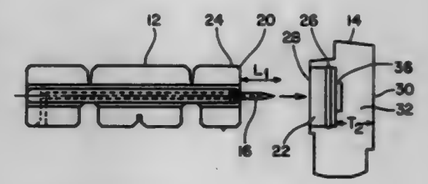
1. A surgical suturing accessory for use with suture needles and cautery tips, comprising:
a flexible supporting layer having a top surface and a bottom surface;
an adhesive material affixed to the bottom surface of the flexible supporting layer;
an abrasive material layer sufficiently abrasive to clean tissue from cautery tips, the abrasive material affixed to the top of the flexible supporting layer; and
a needle holder carried by the abrasive material layer and dimensioned smaller than the abrasive layer so as to leave exposed sufficient abrasive material for permitting the abrading of a cautery tip, the needle holder formed of soft material into which a suture needle may be readily placed and removed.

5,385,570
SURGICAL CUTTING INSTRUMENT
Albert K. Chin, Palo Alto, and Charles Gresl, San Francisco, both of Calif., assignors to R. J. Surgical Instruments, Inc., Encinitas, Calif.
Filed Jan. 12, 1993, Ser. No. 3,287
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—170 22 Claims



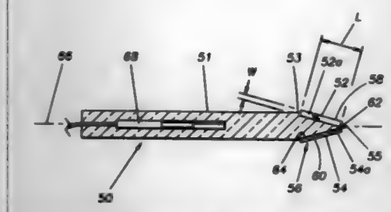
1. A surgical cutting instrument comprising:
a housing;
a first elongated cutting member defining distal and proximal ends, said first cutting member being movably mounted with respect to said housing and having an axially directed passage therein defining an inlet opening in said distal end extending forwardly from said housing;
a second elongated cutting member received within said passage of said first cutting member and defining corresponding distal and proximal ends, said second cutting member being fixed relative to said housing;
a recess in said second cutting member;
means defining an opening in said first cutting member so as to permit removal of bone chips from said recess, said means defining an opening being a side opening;
means on said housing for reciprocally moving said first cutting member with respect to said second cutting member in a first, forward direction and in a second, rearward direction;
said first and second cutting members being so configured as to produce a shearing action on bone placed between said cutting members and thereby produce a chip of bone for each reciprocation of said first member, wherein each said chip is deposited in said recess and moved into said passage through said opening and moves rearward with each reciprocation;
sheath means on said housing covering at least a portion of said first member so as to prevent damage to tissue in the region of the operation situs due to movement of said first cutting member, said sheath means comprising a generally tubular shield fitted around said first cutting member, said shield being of a length so as to normally cover said side opening whereby bone chips are thereby prevented from being removed through said means defining an opening; and
latch means on said housing for releasably holding said shield in position around said first cutting member whereby said latch means may be released and said shield removed from said first cutting member thereby permitting bone chips to be removed from said recess through said side opening.

5,385,571
LANCET
Susumu Morita, Nishinomiya, Japan, assignor to APLS Co., Ltd., Okayama, Japan
Filed Feb. 5, 1993, Ser. No. 13,777
Claims priority, application Japan, Aug. 28, 1992, 4-060676[U]
Int. Cl.[6] A61B *17/34*
U.S. Cl. 606—181 16 Claims



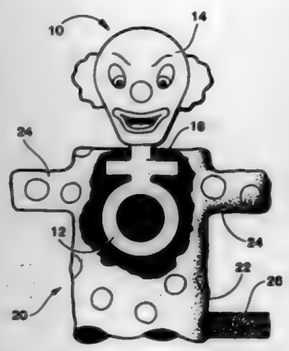
1. A lancet comprising:
a needle end;
a lancet body, the needle end being molded in the lancet body and protruding from a lancet end of the lancet body;
a separable needle protector unitarily formed with said lancet body and needle end such that the needle end is embedded in said protector to protect the needle end before use; and
the needle protector comprising a hood portion having an opening and being tightly fittable to the lancet end from which the needle end protrudes, the hood portion having a flat contact base substantially larger than and opposite the opening, the hood portion thereby being substantially free-standing with the opening upwardly oriented in such a manner that the lancet end, after use, may be tightly engaged by interference or snap fit into said opening to substantially insulate the needle end from the environment by inserting the lancet end substantially downwardly into the opening thereby to surround the lancet end of the lancet body with the hood portion, so as to be separable only upon application of a force in excess of about 1 Kg.

5,385,572
TROCAR FOR ENDOSCOPIC SURGERY
Anthony A. Nobles, Fountain Valley; Arthur Lancaster, Costa Mesa; Robert J. Flower, Huntington Beach, and Ben G. Brosch, Jr., Mission Viejo, all of Calif., assignors to Beowulf Holdings, Los Angeles, Calif.
Filed Nov. 12, 1992, Ser. No. 974,956
Int. Cl.[6] A61B *1/04, 17/34*
U.S. Cl. 606—185 **7 Claims**



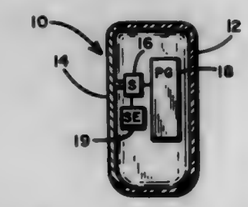
1. An endoscopic piercing instrument, comprising:
a transparent shaft having a distal end configured for cutting tissue and a proximal segment, the proximal segment having a cavity formed therein;
a light transmitting member positioned in the cavity in light communication with the distal end of the shaft for transmitting light which impinges on the distal end and propagates to the light transmitting member through said transparent shaft; and
a pyramidal puncturing head formed from a plurality of contiguous flat triangular surfaces on the shaft at the distal end, the puncturing head comprising a plurality of sharpened blades each aligned with and secured to an edge between said contiguous flat triangular surfaces.

5,385,573
INFANT TEETHER AND HAND PUPPET COMBINATION
Barry M. Wright, 3154 Lehigh St., Caledonia, N.Y. 14423
Filed Jan. 25, 1994, Ser. No. 186,340
Int. Cl.[6] A61J *17/00*
U.S. Cl. 606—235 **2 Claims**



1. A combination teether ring and hand puppet;
said hand puppet including a mitten of soft fabric to fit on a baby's hand, said mitten including sleeves extending therefrom, said mitten and sleeves respectively constituting body and arms of said puppet;
said teether ring including a handle portion and a bite portion at opposite ends of a connecting stem, said bite portion being of a relatively hard elastomeric material;
said mitten surrounding said connecting stem, said handle portion being inside said mitten and adapted for gripping by said baby, said bite portion being outside said mitten and constituting head and face of said puppet;
whereby said baby wearing said mitten can alternatively grip said handle to manipulate said teether, and relax its grip without dropping said teether.

5,385,574
IMPLANTABLE INTRAVENOUS CARDIAC STIMULATION SYSTEM WITH PULSE GENERATOR HOUSING SERVING AS OPTIONAL ADDITIONAL ELECTRODE
Robert G. Hauser, Long Lake; Roger W. Dahl, Andover, and Bruce H. KenKnight, Robbinsdale, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.
Continuation-in-part of Ser. No. 514,251, Apr. 25, 1990, Pat. No. 5,133,353. This application Jul. 24, 1992, Ser. No. 917,899
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—4 **30 Claims**

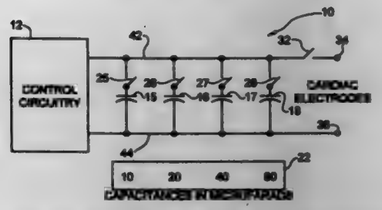


1. An implantable pulse generation means for delivering an electrical energy pulse to the heart comprising:
a pulse generator for generating the electrical energy pulse;
a first cardiac electrode connected to the pulse generator for implantation in the region of the heart to deliver the electrical energy pulse thereto;
a second cardiac electrode connected to the pulse generator for implantation in the region of the heart to deliver the electrical energy pulse thereto;
a housing body enclosing and containing the pulse generator having an electrically conductive outer surface electrically connected to said pulse generator as a second cardiac electrode; and
means for directing the electrical energy pulse between the first and second electrodes upon a first condition of the heart, and directing said electrical energy pulse to the first electrode, and the conductive surface of the pulse generator housing electrically connected in common with the first electrode, against said second electrode upon a second condition of the heart.

5,385,575
IMPLANTABLE CARDIOVERTER DEFIBRILLATOR HAVING VARIABLE OUTPUT CAPACITANCE
Theodore P. Adams, Edina, Minn., assignor to Angeion Corporation, Plymouth, Minn.
Continuation-in-part of Ser. No. 856,982, Mar. 24, 1992, abandoned, and a continuation-in-part of Ser. No. 999,393, Dec. 31, 1992. This application Sep. 29, 1993, Ser. No. 128,859
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **12 Claims**

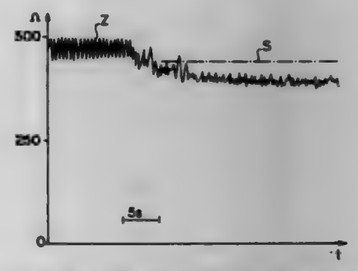
1. An improved implantable cardioverter defibrillator system for producing a capacitive-discharge countershock, the implantable cardioverter defibrillator system being a self-contained human implantable device including a pulse-generating capacitor means for storing an electrical charge of greater than 1 joule, means for internally charging the pulse-generating capacitor means, and means for selectively discharging the electrical charge in the pulse-generating capacitor as a countershock to be delivered through electrodes adapted to be implanted in a human patient in response to a sensing of a

myocardial arrhythmia in the human patient, the improvement comprising:
the pulse generating capacitor means including:
two or more separate capacitor systems; and
means for selectively electrically connecting each of the



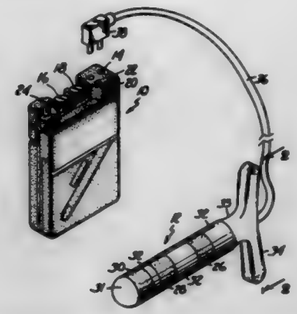
capacitor systems in parallel with the other capacitor systems during the charging and discharging of the pulse-generating capacitor means,
such that the pulse generating capacitor means has at least two
different selectable effective output capacitance values.

5,385,576
METHOD FOR DETECTING VENTRICULAR FIBRILLATION AND APPARATUS FOR DETECTING AND TREATING VENTRICULAR FIBRILLATION
Kjell Noren, Solna; Pia Hagel, Sollentuna, and Kurt Hoegnelid, Voesterhuninge, all of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 4, 1993, Ser. No. 101,727
Claims priority, application European Pat. Off., Aug. 18, 1992, 92114090
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—6 **11 Claims**



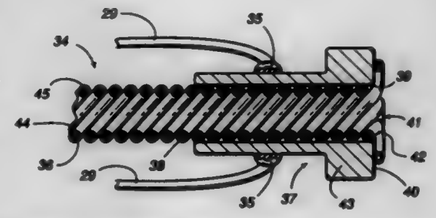
5. An apparatus for detecting and treating ventricular fibrillation comprising:
impedance measuring means for acquiring a measured impedance signal from a heart, dependent on the blood volume in said heart;
evaluation means connected to said impedance measuring means for evaluating said measured impedance signal and for detecting a drop in the level of said measured impedance signal below a predetermined threshold, said drop being indicative of the presence of ventricular fibrillation;
pulse generator means, activatable by said evaluation means, for generating electrical pulses; and
electrode means, connected to said pulse generator means, for delivering said electrical pulses to said heart.

5,385,577
ELECTRODE FOR ACTIVATING PELVIC REFLEXES
Donald D. Maurer, Marine on the St. Croix, and Mary M. Lien, Arden Hills, both of Minn., assignors to Empi, Inc., St. Paul, Minn.
Filed Nov. 12, 1992, Ser. No. 975,518
Int. Cl.[6] A61N *1/05, 1/36*
U.S. Cl. 607—41 **35 Claims**



1. An electrode for controlling incontinence in a patient, the electrode comprising:
a molded elongated tubular member having a proximal end, a distal end, a longitudinal axis, first, second, and third conductive polymer bands, a first nonconductive polymer band positioned between the first and second conductive polymer bands, and a second nonconductive polymer band positioned between the second and third conductive polymer bands;
a patient conforming handle member connected to the distal end of the tubular member for properly positioning the electrode and for preventing movement of the electrode in either a proximal or a distal direction; and
wherein the first and second conductive polymer bands form a first electrical circuit and provide electrical stimulation at a first frequency and the first and third conductive polymer bands form a second electrical circuit and provide electrical stimulation at a second frequency, wherein the second frequency is different from the first frequency.

5,385,578
ELECTRICAL CONNECTION FOR MEDICAL ELECTRICAL STIMULATION ELECTRODES
M. Elizabeth Bush, Fremont; Drew Hoffmann, Los Gatos; M. Dean Matthews, Saratoga, and Pedro G. Medrano, Santa Clara, all of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.
Filed Feb. 18, 1993, Ser. No. 18,832
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—122 **28 Claims**



1. An endocardial lead, comprising:
a hollow tubular, electrically conductive sleeve having a first open end for receiving a conductor, and having a second open end including an outer face surface;

an electrode, electrically and mechanically integrated with an outer intermediate surface of said sleeve between said first and second ends; and

a conductor, fitted into said sleeve through said first open sleeve end, such that a distal end of the conductor passes through the sleeve to the face surface of the sleeve, where the conductor is electrically and mechanically connected to the sleeve.

5,385,579

MYOCARDIAL BODY IMPLANTABLE LEAD

John R. Helland, Santa Clarita, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Mar. 30, 1993, Ser. No. 40,070
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—130 33 Claims



1. A myocardial lead for use with a desired cardiac pulse generator, comprising:

an electrical conductor having a proximal end and a distal end;

an insulation sheath covering said electrical conductor;

an electrical connector coupled to said proximal end of said electrical conductor for electrically and mechanically interfacing with the pulse generator; and

a myocardial electrode coupled to said distal end of said electrical conductor, said myocardial electrode comprising a plurality of struts, the struts being formed of electrically conductive material, said struts each having a distal end and a proximal end, the distal ends thereof being joined together, the proximal ends thereof being joined together and electrically interconnected to the electrical conductor.

5,385,580

SELF-SUPPORTING WOVEN VASCULAR GRAFT

Peter J. Schmitt, Garnerville, N.Y., assignor to Meadox Medicals, Inc., Oakland, N.J.

Continuation of Ser. No. 573,932, Aug. 28, 1990, abandoned.
This application Sep. 21, 1992, Ser. No. 949,176
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 44 Claims



1. A self-supporting tubular woven synthetic vascular graft having a continuous uniform surface, comprising:

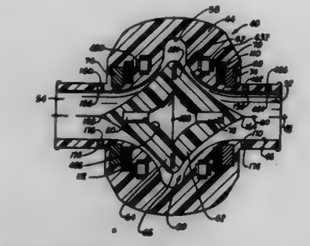
a filling yarn includi ¿ a stiffening component woven together with multifilament yarn throughout the weave, the stiffening component to provide radial burst strength, dimensional stability and radial rigidity sufficient to maintain the lumen of the tubular structure open.

5,385,581

MAGNETICALLY SUSPENDED AND ROTATED ROTOR

Gunter L. Brasseur, Munich, Germany, and Don B. Olsen, Salt Lake City, Utah, assignors to Life Extenders Corporation, Redlands, Calif.

Continuation of Ser. No. 510,313, Apr. 16, 1990, Pat. No. 5,078,741, which is a continuation of Ser. No. 193,180, May 9, 1988, Pat. No. 4,944,748, which is a continuation of Ser. No. 914,486, Oct. 2, 1986, abandoned, which is a continuation of Ser. No. 720,081, Apr. 4, 1982, abandoned. This application Mar. 2, 1992, Ser. No. 810,006
The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.
Int. Cl.[6] A61M *1/10*; F04B *17/00*; A61N *1/362*
U.S. Cl. 623—3 10 Claims



1. An apparatus comprising:

a pump implantable in a human body having a circulatory system for pumping blood to provide a replacement for, or an assist to, a natural heart in the human body, the pump comprising:

a housing having an inlet passage and an outlet passage for connecting the pump into the circulatory system of the human body into which the pump is implanted, the housing having an impellor chamber defining walls fluidly interposed between the inlet passage and the outlet passage, and the blood being passed through portions of the housing during the pumping of the blood and the housing having surfaces which are contacted by blood during pumping of the blood through the housing;

an impellor disposed in the impellor chamber in the housing and rotatable therein about an impellor rotation axis for drawing blood into the housing inlet passage and discharging blood from the housing outlet passage, the impellor having surfaces which are contacted by the blood during the pumping of the blood through the housing, the surfaces of the housing and the impellor which are contacted by blood being provided with a non-solvent coating;

a magnetic suspension means for magnetically suspending the impellor in the impellor chamber out of contact with the walls of the impellor chamber, the magnetic suspension means comprising;

permanent magnet impellor support means comprising an assembly of permanent magnets mounted on the impellor and on the housing for existing forces on the impellor tending to align the rotation axis of the impellor with a selected support axis of the housing while tending to drive the impellor axially away from a selected null position on said support axis at such times that the impellor is axially displaced from the null position;

an electromagnetic mounted on the housing and positioned thereon to exert a force directed along the support axis on portions of the permanent magnet impellor support means disposed on the impellor at such times that an electric current is passed through the electromagnet, the electromagnet thereby exerting an axial force on the impellor; and

electromagnetic control means mounted on the housing for detecting a displacement of the impellor from a control position of the impellor on the support axis and passing a current through the electromagnet to drive the impellor toward the control position; and

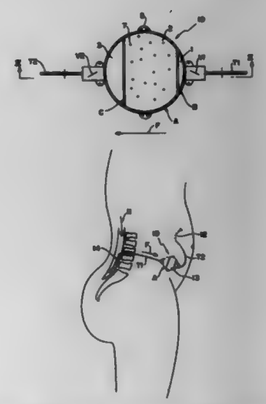
impellor drive means mounted on the housing for sensing a preselected physical quantity related to a flow of blood in said circulatory system and magnetically coupled to the impellor for rotating the impellor at a rate varying in accordance with a selected relationship to said quantity, said physical quantity being a pressure in the inlet passage of the housing.

5,385,582

SPINAL FLUID DRIVEN ARTIFICIAL ORGAN

Ayub K. Ommaya, 8006 Gleusbrook Rd., Bethesda, Md. 20814

Continuation-in-part of Ser. No. 653,635, Feb. 11, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 103,244
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[6] A61F *2/04*
U.S. Cl. 623—12 21 Claims



1. A method for treating diseases in a human or mammal, comprising:

implanting an artificial organ in a body portion of the human or mammal, said artificial organ having an inlet port, an outlet port, an internal chamber, an inlet micropore filter and an outlet micropore filter, said implanting of said artificial organ including positioning said artificial organ such that said artificial organ receives cerebrospinal fluid from the human or mammal so that the fluid passes through said inlet port, passes unimpeded through said inlet micropore filter, passes through said internal chamber, passes unimpeded through said outlet micropore filter and passes out said outlet port; and

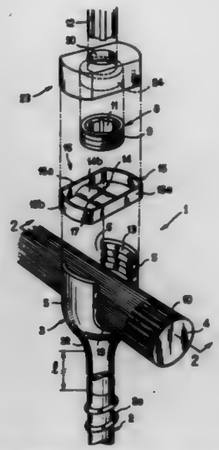
introducing product-secreting cells into said internal chamber such that the product-secreting cells come in contact with the cerebrospinal fluid passing through the internal chamber and such that the product-secreting cells are prevented from exiting said internal chamber with the cerebrospinal fluid due to said outlet micropore filter.

5,385,583

IMPLANT FOR AN OSTEOSYNTHESIS DEVICE, PARTICULAR FOR THE SPINE

Yves P. C. Cotrel, Paris, France, assignor to Sofamor, Paris, France

Continuation of Ser. No. 851,946, Mar. 13, 1992, abandoned.
This application Sep. 23, 1993, Ser. No. 126,071
Claims priority, application France, Aug. 19, 1991, 91-10402
Int. Cl.[6] A61F *2/44*
U.S. Cl. 623—17 14 Claims



1. An implant for an osteosynthesis device for engaging an elongated rod to a bone, comprising:

a bone anchoring element including;

a bone engaging portion configured to engage the bone; and

a rod securing portion including a body member having two branches defining a channel therebetween adapted for receiving the elongated rod therein, said body member being open at a rear portion thereof and said branches having threaded inner surfaces facing said channel and extending from said rear portion;

a plug threaded for engagement with said threaded inner surfaces of said branches to close said open rear portion of said body member and secure the elongated rod therein when the rod is disposed within said channel; and

a connection element including a strip configured to be received within said channel and positioning means connected to said strip for positioning said strip relative to said branches, said strip further having a surface facing said plug when said plug is in threaded engagement with said inner surfaces and an opposite surface facing the elongated rod when the rod is within said channel,

whereby when said plug is threaded into said channel said plug bears on said strip of said connection element which bears on the elongated rod to clamp the rod within said channel.

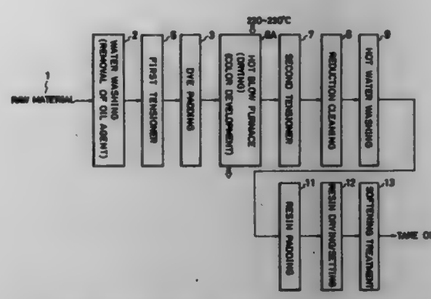
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5,385,584

METHOD OF DYEING A WEBBING OF A SEAT BELT DEVICE

Katsuhiko Teramura; Tsuneo Chikaraishi, and Kiyokazu Hamada, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 30,615
Claims priority, application Japan, Mar. 19, 1992, 4-063440
Int. Cl.[6] D06B *3/18*
U.S. Cl. 8—149.1 **6 Claims**



1. A method of dyeing a webbing for a seat belt device, comprising the steps of:

washing a webbing,

padding a dye to the webbing while the webbing is in a wet condition after said washing,

introducing the webbing with the dye after padding the dye directly into a hot blow furnace sequentially having a drying zone, a roller and a color developing zone, said webbing being introduced at first to the drying zone for drying the webbing before contacting the roller, thereafter contacting with the roller and then introduced to the color developing zone for developement of color of the dye, and

subsequently washing the webbing while completely dipping the webbing into a washing liquid and bending the webbing in two different directions so that washing is completed.

5,385,585

USE OF ANIONIC ALKYL CELLULOSE MIXED ETHERS IN TEXTILE PRINTING

René Klesewetter, Soltau-Ahlften; Eugen Reinhardt, Walsrode; Reinhard Knlewske, Fallingbostel, and Klaus Szablikowski, Walsrode, all of Germany, assignors to Wolff Walsrode AG, Walsrode, Germany

Filed Jan. 27, 1993, Ser. No. 9,532
Claims priority, application Germany, Feb. 7, 1992, 4203531
Int. Cl.[6] C09B *67/00*; D06P *1/50*
U.S. Cl. 8—562 **5 Claims**

1. In a the method of printing of a textile with a flowable printing paste in which said paste is applied to said textile, the improvement comprises including in the paste methyl carboxymethyl cellulose as a thickener and flow promoter.

5,385,586

LIQUOR OXALATE STABILIZERS

Graeme J. Farquharson, Sydney, Australia; John D. Kildea, Mandurah, Wash.; Anthony E. Gross, St. Charles, Ill., and Stephen C. Grocott, Gardens Winthrop, Wash., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 36,293, Mar. 24, 1993, abandoned. This application Mar. 17, 1994, Ser. No. 214,928
Int. Cl.[6] C01F *7/34*
U.S. Cl. 23—305 A **4 Claims**

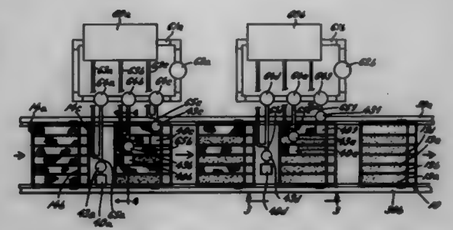
1. A method for inhibiting the precipitation of sodium oxalate crystals in a Bayer process liquor, the method comprising the steps of adding to the Bayer liquor, after red mud separation and immediately prior to crystallization of alumina trihydrate, or during crystallization of alumina trihydrate, an effective amount from about 5 to 1000 parts per million of a composition consisting essentially of a surface active, cationic alkylammonium salt compound, said alkylammonium salt compound including at least one quaternary ammonium moiety and at least five carbon atoms, wherein the addition of the effective amount of the alkylammonium salt compound to the Bayer process liquid inhibits precipitation of sodium oxalate from the Bayer process liquor.

5,385,587

METHODS AND APPARATUS FOR PASTING BATTERY CURRENT COLLECTORS

David L. Lund, Minneapolis; Donald W. Groff, Eagan, both of Minn.; James J. Boak, Columbus, Ga., and Kenneth S. Ramsey, Phenix City, Ala., assignors to GNB Battery Technologies Inc., Meadots Heights, Minn.

Filed Aug. 11, 1993, Ser. No. 105,508
Int. Cl.[6] H01M *4/20*
U.S. Cl. 29—623.5 **32 Claims**



30. A method for fabricating a pasted battery plate, which method comprises:

providing a collector assembly which includes a current collector and enlarged members having a top surface and a bottom surface and a thickness greater than the current collector, the collector assembly having at least one area into which paste is to be filled to a first level on one side of the current collector and a second level on the other side of the current collector to form a paste layer having a thickness less than the thickness of the enlarged members;

providing a paste-dispensing nozzle having a dispensing end and an orifice in the dispensing end;

positioning the dispensing end of the nozzle at a level intermediate the top surface of the enlarged members and the current collector;

dispensing paste through the nozzle orifice into the paste area and sizing the first level of the paste with the nozzle dispensing end while leaving the top surface of the enlarged members substantially free of paste; and

sizing the second level of the paste while leaving the bottom surface of the enlarged members substantially free of paste.

5,385,588
ENHANCED HYDROCARBONACEOUS ADDITIVE CONCENTRATE
Timothy J. Brennan, Collinsville, Ill., and Lawrence J. Cunningham, Kirkwood, Mo., assignors to Ethyl Petroleum Additives, Inc., Richmond, Va.
Continuation-in-part of Ser. No. 892,024, Jun. 2, 1992, Pat. No. 5,279,626. This application Oct. 21, 1993, Ser. No. 140,676
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[6] C10L *1/22*
U.S. Cl. 44—331 **26 Claims**

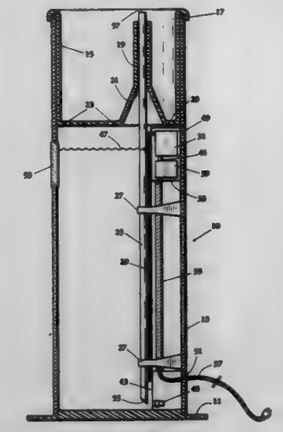
1. An additive concentrate package characterized by having an enhanced shelf-life stability comprising
a) a major amount of detergent/dispersant;
b) a minor amount of demulsifier; and
c) an amount of solvent stabilizer composition sufficient to enhance the shelf-life stability of the additive package
wherein the solvent stabilizer composition contains at least one liquid aromatic hydrocarbon solvent and at least one liquid alkyl or cycloalkyl alcohol and wherein the weight ratio of aromatic solvent to alcohol is within the range of from about 2:1 to about 25:1.

5,385,589
NON-CIRCULATING HYDROPONIC PLANT GROWING SYSTEM
Bernard A. Kratky, Hilo, Hi., assignor to University of Hawaii, Honolulu, Hi.
Filed Aug. 5, 1992, Ser. No. 924,992
Int. Cl.[6] A01B *79/00*
U.S. Cl. 47—58 **6 Claims**



1. A method of growing plants in a non-circulating hydroponic system, comprising the steps:
providing a water impermeable container of selected dimensions having an open top and a closed bottom;
providing a cover for the container with a selected number of spaced apertures at selected spacings;
providing plural elongated reusable conical tubes with plural apertures at different levels from a lower narrow end towards an upper broader end of each tube;
filling the tubes with a growing medium;
planting seeds or seedlings of a selected crop having a projected growing season till harvest in the medium;
forming a predetermined amount of nutrient solution by mixing nutrients and water;
adding the nutrient solution to the container;
covering the container;
placing the tubes vertically in the apertures in the cover by suspending the upper ends of the tubes on the cover and the lower ends of the tubes in the solution above the bottom of the container;
sealing the container;
allowing the nutrient solution to enter through the apertures in the tubes into the growing medium;
lifting the nutrient solution to the seed or seedling by capillary action in the growing medium, and causing roots of the seedling to grow downward through the medium and through the apertures;
allowing the nutrient solution to recede below a level of the lower ends of the tubes; and
growing roots into the receded solution at the bottom of the container through the lower apertures of the tubes, the selected dimensions of said water impermeable container, the number and selected spacing of said apertures and the predetermined amount of nutrient solution being selected to provide sufficient space and sufficient nutrient. Solution to sustain said desired crop for it's entire growing season without the need to replenish the solution in said container.

5,385,590
HYDROPONIC PLANTER
Harry M. Sledge, 5822 S. 67th E. Ave., Tulsa, Okla. 74145
Filed Mar. 19, 1993, Ser. No. 34,741
Int. Cl.[6] A01G *25/00*
U.S. Cl. 47—62 **12 Claims**

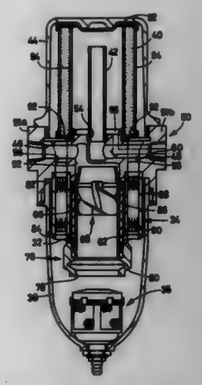


1. A hydroponic planter comprising:
a tank for storing a solution of plant nutrients up to a selected level therein, said tank having a closed bottom and an open top;
a pot for containing a growing medium and plants rooted therein, said pot having at least one drain hole through a bottom thereof;
means for suspending said pot within said tank with said pot bottom above said selected level;
a riser pipe mounted within said tank having an open lower end proximate said tank bottom for receiving said solution therein and an open upper end for discharging said solution therefrom into said pot;
a pump and a dry compartment within said tank containing said pump; and
an air line pneumatically connecting an air outlet of said pump to an air inlet in a lower portion of riser pipe above said open lower end thereof for injecting air into a lower portion of said riser pipe above said open lower end whereby, as air bubbles rise in said pipe through said open upper end, some of said solution is transported therewith and discharged from said open upper end.

5,385,591
METAL BOND AND METAL BONDED ABRASIVE ARTICLES
Srinivasan Ramanath, and William H. Williston, both of Holden, Mass., assignors to Norton Company, Worcester, Mass.
Filed Sep. 29, 1993, Ser. No. 128,399
Int. Cl.[6] B24D *3/02*
U.S. Cl. 51—309 **14 Claims**

1. An abrasive tool comprising:
a metal core; and
an abrasive composition comprising diamond and a metal bond bonded to the metal core, the metal bond comprising a filler wherein the hardness of the filler is maintained above about 300 kg/mm^2 upon firing of the bond at a temperature of above 700° C. for at least about 10 minutes.

5,385,592
FILTER DEVICE FOR COMPRESSED AIR
Sadao Maeda, Okazaki, Japan, assignor to Maeda Limited, Japan
PCT No. PCT/JP93/00664, § 371 Date Jul. 22, 1993, § 102(e) Date Jul. 22, 1993, PCT Pub. No. WO93/23146, PCT Pub. Date Nov. 25, 1993
PCT Filed May 20, 1993, Ser. No. 90,179
Claims priority, application Japan, May 20, 1992, 4-152692
Int. Cl.[6] B01D *46/12, 45/12*
U.S. Cl. 55—323 **17 Claims**

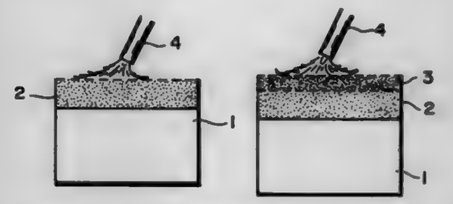


1. A filter device for compressed air, comprising:
first filter means for separating liquid and solid particles from incoming compressed air passing therethrough, said first filter means including a deflector having an axis which coincides with a direction of flow of incoming compressed air through said first filter means, and a plurality of vanes which are disposed around said axis for whirling the incoming compressed air, to thereby separate said liquid and solid particles from said compressed air, under a centrifugal force which occurs upon impingement of said compressed air upon said plurality of vanes;
second filter means for removing any residual liquid and solid particles remaining in the compressed air passing therethrough, after the compressed air has passed through said first filter means;
a lower housing in which said first and second filter means are accommodated;
an upper housing communicating with said lower housing;
a partition member disposed between said lower and upper housings, and having an inlet passage through which said incoming compressed air is directed to said deflector of said first filter means, and an outlet passage through which the compressed air filtered by said firsthand second filter means is delivered out of the filter device; and
a mounting sleeve disposed in said lower housing and secured to said partition member, for supporting said deflector such that said axis of the deflector is aligned with an axis of said mounting sleeve.

5,385,593
SELENIUM ENCAPSULATION FOR PRODUCING COLORED GLASS
Anthony V. Longobardo, Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 29, 1993, Ser. No. 38,304
Int. Cl.[6] C03B *1/00*; C03C *6/00, 1/00, 3/076*
U.S. Cl. 65—17.1 **18 Claims**

1. In a method of producing selenium containing glass compositions including the steps of combining selenium with other batch materials and melting the combined materials, the improvement comprising, prior to combining said selenium and batch materials, encapsulating said selenium in a low silica, high alkali glass forming composition which promotes oxidation of selenium and has a viscosity of up to 10,000 Poise at a temperature between 600° to 1200° C. and subsequently adding said encapsulated selenium to said batch materials.

5,385,594
METHOD FOR FABRICATING AN OPTICAL WAVEGUIDE
Hiroo Kanamori; Akira Urano; Haruhiko Aikawa; Shinji Ishikawa; Chisai Hirose, and Masahide Saito, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Dec. 4, 1992, Ser. No. 986,001
Claims priority, application Japan, Dec. 6, 1991, 3-323093
Int. Cl.[6] C03C *17/00*
U.S. Cl. 65—60.2 **11 Claims**



1. A process for forming an optical waveguide, comprising the steps of:
(a) increasing a bulk density of at least an upper portion of a first porous vitreous layer while the first porous vitreous layer is being formed by Flame Hydrolysis Deposition,
(b) forming a second porous vitreous layer on the first porous vitreous layer by Flame Hydrolysis Deposition, where the second porous vitreous layer contains a refractive index increasing dopant; and
(c) heating the first and second porous vitreous layers to form an under cladding layer and a core layer, respectively, where the under cladding layer and the core layer comprise a transparent glass layer.

5,385,595
TITANIUM NITRIDE DIFFUSION BARRIER FOR PLATINUM-COATED FIBERGLASS SPINNER BORES
Dennis L. McGarry, Granville, Ohio, assignor to Owens-Corning Fiberglas Technology Inc., Summit, Ill.
Filed Dec. 23, 1993, Ser. No. 172,358
Int. Cl.[6] C03B *37/04*
U.S. Cl. 65—515 **19 Claims**

1. A process for preparing a durable, corrosion-resistant fiberglass spinner, comprising:
A) providing a spinner, comprising a foraminous wall including a plurality of bores having substantially cylindrical surfaces;
B) applying by chemical vapor deposition a substantially uniform layer of titanium nitride to the surfaces of the bores; and
C) applying by transient liquid phase deposition a substan-

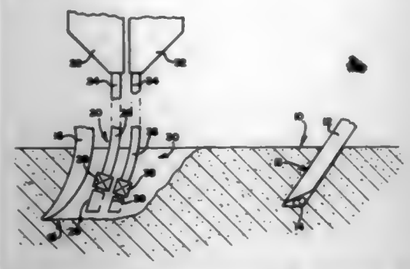
tially uniform layer of platinum to the layer of titanium nitride.

5,385,596

TREATING OF AGRICULTURAL SOIL

Andrew E. Makkink, Doornbult, Sannieshof, Delareyville District, Transvaal Province, Sannieshof, South Africa

Filed May 20, 1993, Ser. No. 65,112
Claims priority, application South Africa, May 21, 1992, 92/3709
Int. Cl.[6] C05B *21/00*; C05G *3/00*
U.S. Cl. 71—43 **5 Claims**



1. A method of fertilizing agricultural soil, including, simultaneously, in a single soil working operation,

depositing in the soil, below a surface of soil, along a fertilizer line which is predetermined in respect of lateral position and depth, a liquid fertilizer in the form of a clear solution which fertilizer is of a kind which can exist at ambient temperatures as a clear solution without crystallization of one or more constituents thereof only at pH values lower than 4;

depositing in the soil, below the surface of the soil, along a neutralizing reagent line which is predetermined relative to said fertilizer line in respect of lateral position and level, a flowable neutralizing reagent adapted to react with said fertilizer to form fertilizer compounds having pH values at least higher than 4,

the method further including keeping said fertilizer and said neutralizing reagent separate until they are deposited in the soil.

5,385,597

SAFETY DEVICE FOR A DRIVE UNIT OF A VIBRATION ROLLER

Manfred Polacek, Germering, Germany, assignor to Wacker-Werke GmbH & Co KG, Reichertshofen, Germany

PCT No. PCT/EP92/01815, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993, PCT Pub. No. WO93/03226, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 9, 1992, Ser. No. 30,357
Claims priority, application Germany, Aug. 10, 1991, 4126488
Int. Cl.[6] G05G *1/04, 5/06*
U.S. Cl. 74—523 **3 Claims**

1. A safety device for a drive unit of a vibration roller with a guiding center pole, said safety device compriaing:

a locking bar having a switch-off position and a locking position, said locking bar comprising a first means for biasing said locking bar into said switch-off position and having an abutment for defining said locking position, said locking bar displaceable from said switch-off position into said locking position for operating the drive unit;

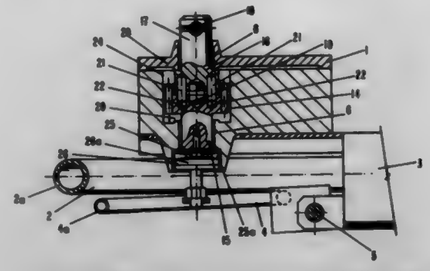
a switch lever for manually operating the drive unit, with the drive unit being forcibly switched off when said locking bar is in said switch-off position;

a control element in the form of a toothed rack, said control element actuated by said switch lever, said control element having a second means for biasing said control element into a zero position in which zero position the drive unit is inoperative;

an actuating device for the drive unit in the form of a control cable connected to said control element and the drive unit;

a switchable coupling connected between said control element and said switch lever, said coupling comprising a spring biasing said coupling into a disengaged position in which disengaged position said switch lever is freely movable and disengaged from said control element, and said coupling being switchable consecutively from said disengaged position into an engaged position for operatively connecting said switch lever and said control element and further into a locked engaged position with said locking bar, during movement from said switch-off position to said locking position of said locking bar; and

a blocking device comprising a first disk with an end face having teeth, said first disk connected to said switch lever in said locked engaged position so as to be rotated with said switch lever, and a second disk connected to said locking bar having an end face with an elastomer coating oppositely arranged to said end face having teeth, wherein in said locked engaged position of said coupling said control element and said switch lever are blocked at least against displacement by said second means for biasing and said spring by said blocking device.

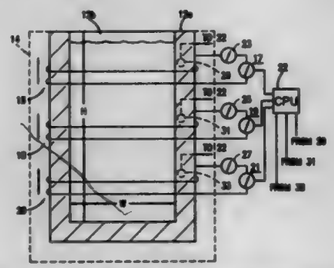


5,385,598

METHOD AND APPARATUS FOR ISOLATING A METALLIC COMPOUND WITHIN A MOLTEN BATH

Bernard J. Costello, Princeton, N.J., assignor to Argus International, Ringoes, N.J.

Filed May 5, 1993, Ser. No. 57,319
Int. Cl.[6] C22B *21/06*
U.S. Cl. 75—10.11 **23 Claims**



1. A method for altering the concentration of a selected metallic element within a liquid metallic composition containing at least two metallic element constituents, this method comprising the steps of:

(a) placing a molten material including the liquid metallic composition containing said selected metallic element within a vessel having an upper end, a lower end, adjacent horizontal regions between said upper end and said lower end of said vessel, and an open top at said upper end;

(b) heating said vessel to obtain a temperature gradient extending between said upper end and said lower end of said vessel, whereby the temperature at an upper region, near the upper end of the vessel is greater than the temperature at adjacent regions below said upper region, the temperature of said upper region being sufficient to cause the metallic element whose concentration is desired to be altered to migrate from lower temperature regions toward a higher temperature region;

(c) maintaining the aforesaid temperature gradient for a period sufficient to enable a desired amount of said metallic element to migrate to said higher temperature region;

(d) reducing temperatures in each said region to reverse the temperature gradient established in step (b) so that the temperature of the upper region is reduced to a level sufficient to enable said metallic element to form an intermetallic compound with at least one of the constituents of the metallic liquid composition whereby said intermetallic compound migrates through the vessel in a direction which is a function of a density of the intermetallic compound relative to a density of the liquid metallic composition to thereby concentrate the intermetallic compound in a given region within the vessel.

5,385,599

AGENT FOR DESULFURIZATION, DEPHOSPHORIZATION, DESILICONIZING AND DENITRIDING OF PIG IRON, CAST IRON AND CHROMIUM AND MANGANESE CONTAINING MELTS AND PROCESS FOR THE TREATMENT THEREOF

Alfred Freimuth, Alpenblick 7, D-83355 Grabenstatt-Bergen, Germany

Filed Dec. 14, 1993, Ser. No. 166,639
Claims priority, application Germany, Dec. 15, 1992, 4242328
Int. Cl.[6] C21C *7/02*
U.S. Cl. 75—326 **20 Claims**

1. An agent for desulfurization, dephosphorization, desiliconizing and denitriding of pig-iron, cast iron, FeCr- and FeMn-containing melts, comprising:

(a) 90% to 10% by weight of at least one of the mineral raw material components selected from the group consisting of alkali plagioclase, alkali orthoclase, montmorillonite, bentonite, vermiculite, muscovite and zeolithe; and,

(b) 10% to 90% by weight of an additional compound chosen from the group consisting of calcium carbide, calcium oxide, and combinations thereof.

5,385,600

METHOD FOR BENEFICIATING NICKEL SULFIDE CONCENTRATES AND CORRESPONDING MIXTURES, UNSUITABLE FOR SMELTING

Seppo S. Jounela, Espoo, Finland, assignor to Outokumpu Harjavalta Metals Oy, Harjavalta, Finland

Filed Jun. 11, 1993, Ser. No. 76,248
Claims priority, application Finland, Jun. 18, 1992, 922844
Int. Cl.[6] C22B *23/00, 23/02*
U.S. Cl. 75—430 **7 Claims**

1. A method for fully beneficiating nickel sulfide concentrates containing at least Fe and MgO and valuable metals, comprising the steps of:

separating nickel sulfide concentrates by concentrating into two separate concentrates, a first of which concentrates is suited to a pyrometallurgical treatment and a second of which concentrates is suited to an hydrometallurgical treatment so that a Fe/MgO ratio of the pyrometallurgical treatable concentrate which contains a higher valuable metal content than the hydrometallurgically treatable concentrate is adjusted to be at least 2.6; and

treating hydrometallurgically the concentrate which contains a lower valuable metal content but a higher MgO content than the pyrometallurgically treatable concentrate.

5,385,601

PROCESS FOR CONVERTING ALUMINUM DROSS TO LADLE FLUX FOR STEEL PROCESSING

Francis L. Keneay, Grand Island, N.Y.; David J. Sosinsky, Ellicott City, Md., and Robert J. Schmitt, Murrysville, Pa., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Sep. 24, 1991, Ser. No. 764,693
Int. Cl.[6] C22B *7/04*
U.S. Cl. 75—748 **26 Claims**

1. A process for converting aluminum dross in a furnace equipped with one or more plasma-arc electrodes into a slag composition suitable for use as a ladle flux for steel processing, said process comprising the steps of:

a) selecting an aluminum dross to be treated;

b) selecting a calcium oxide based and silicon oxide based flux to be mixed with said aluminum dross;

c) mixing said aluminum dross with said flux to form a charging material;

d) introducing said charging material into said furnace;

e) melting both said dross and said flux of said charging material by providing arc-forming energy to said electrodes and adjustably flowing a plasma forming gas to said melted dross and flux to form vaporized volatile components and molten oxides substantially free of said volatile components, said molten oxide capable of solidifying into a low melting point calcium aluminate slag composition suitable for use in steel processing;

f) tapping said molten oxide from said furnace; and

g) removing substantially all said volatile components from said furnace.

5,385,602

AGGLOMERATING BY EXTRUSION

William J. Keough, Toronto; Gregory J. Saunders, Sudbury; Neil L. Smith, Oakville, and Mark Stratychuk, Don Mills, all of Canada, assignors to Southwind Enterprises Inc., Sudbury, Canada

Filed Apr. 22, 1993, Ser. No. 50,790
Int. Cl.[6] C22B *1/243*
U.S. Cl. 75—766 **7 Claims**

1. A method of producing extrudates containing a metallurgical by-product comprising the steps of:

(a) Preparing a first mixture comprising a metallurgical by-product, said metallurgical by-product containing at least one member selected from the group consisting of ferrous metal and compounds, non-ferrous transition metals and compounds and precious metals; a silicate-bearing compound capable of chemically reacting with water and water added in an amount which is required to chemically react with said silicate-bearing compound;

(b) Melting a hydrocarbonaceous substance having a melting temperature less than 200° C. and adding the molten hydrocarbonaceous substance to the first mixture obtained in step (a), in an amount expressed in weight percent which does not exceed said silicate-bearing compound present in said first mixture, and mixing said molten hydrocarbonaceous substance with said first mixture to obtain a second mixture; and

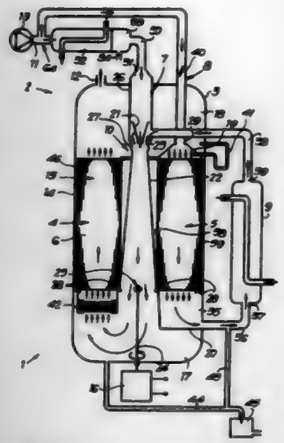
(c) Extruding said second mixture for obtaining extrudates.

5,385,603

DEVICE FOR DRYING A GAS

Desideratus Sienack, Aartselaar, Belgium, assignor to Atlas Copco Airpower, Wilrijk, Belgium

Filed Apr. 15, 1993, Ser. No. 46,949
Claims priority, application Belgium, Apr. 15, 1992, 09200338
Int. Cl.[6] B01D *53/06*
U.S. Cl. 96—125 24 Claims



1. A device for drying a gas, comprising:

a dryer including a pressure vessel and at least one of an adsorption medium and an absorption medium, said pressure vessel having a drying zone and a regeneration zone and said at least one of said adsorption medium and said absorption medium is alternatingly movable through said drying zone and said regeneration zone, and said dryer including means for making said adsorption medium and said absorption medium movable through said drying zone and said regeneration zone;

a first conduit means, in communication with said drying zone, for delivering a first portion of the gas to said drying zone;

a second conduit means, in communication with said regeneration zone, for delivering a second portion of the gas to said regeneration zone;

means for causing the gas to become said first portion and said second portion prior to delivery through said first and second conduit means;

a cooler in communication with said second conduit means, said cooler cooling said second portion of gas after said second portion of gas has passed through said regeneration zone; and

a blending device disposed in said pressure vessel, said blending device being connected to said first and second conduit means so that said second portion of gas is fed via said blending device into said first conduit means and mixed with said first portion of gas,

wherein the mixture of first and second portions of gas passes from said first conduit means through said at least one of said adsorption medium and said absorption medium in said drying zone and is dried in said drying zone, said second portion of gas passes from said second conduit means through said at least one of said adsorption medium and said absorption medium in said regeneration zone such that a moisture is introduced into said second portion of gas from said at least one of said adsorption medium and said absorption medium, and said cooler extracts a liquid from said second portion of gas.

5,385,604

GERMICIDE RESISTANT FLOOR FINISH

Neil T. Ainslie, Fort Wayne, Ind., assignor to Huntington Laboratories, Inc., Huntington, Ind.

Filed Dec. 20, 1993, Ser. No. 170,153
Int. Cl.[6] C09D *5/14*
U.S. Cl. 106—15.05 5 Claims

1. A germicide resistant floor finish composition comprising

about 1.5×10^{-4} to about 0.15 weight percent biocidal preservative,

about 0.001 to about 10 weight percent wetting agent,

about 0.01 to about 10 weight percent defoamer,

about 0.1 to about 15 weight percent C_1–C_4 alkyl carbitol,

about 0.2 to about 30 weight percent plasticizer,

about 0.1 to about 10 weight percent freeze-thaw stabilizer,

about 8 to about 24 weight percent styrenated acrylic polymer,

about 0.025 to about 5 weight percent of an rosin ester resin,

about 0.04 to about 6 weight percent wax, and water, provided that the weight ratio of rosin ester resin to wax is greater than 1.

5,385,605

SYNERGISTIC ANTI-MICROBIAL COMPOSITIONS COMPRISING METHYLENE(BISTHIOCYANATE) AND 2-BROMO-2-NITRO-PROPANE-1,3-DIOL

Allen R. Syrinek, Richmond, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Jul. 7, 1993, Ser. No. 88,050
Int. Cl.[6] A01N *31/00*
U.S. Cl. 106—18.33 13 Claims

1. An anti-microbial composition comprising methylene(bisthiocyanate) and 2-bromo-2-nitro-propane-1,3-diol in a ratio ranging from 0.001 parts methylene(bisthiocyanate) to 1 part 2-bromo-2-nitro-propane-1,3-diol to from 2 parts methylene(-bisthiocyanate) to 1 part 2-bromo-2-nitro-propane-1,3-diol.

5,385,606

ADHESIVE COMPOSITION AND METHOD

Nicholas Kowanko, 618 S. Fifth St., Moorhead, Minn. 56560

Continuation of Ser. No. 908,474, Jul. 6, 1992, abandoned. This application Mar. 22, 1993, Ser. No. 34,184
Int. Cl.[6] C08L *89/00*; C08H *1/02*
U.S. Cl. 106—124 19 Claims

1. An adhesive composition comprised of a mixture of human or animal-derived protein material in an amount of about 27–53% by weight and a di- or polyaldehyde in an amount of about 1 Part by weight for every 20–60 Parts of protein by weight, balance substantially water, wherein the protein is human serum albumin.

5,385,607

WATER-SOLUBLE SULPHOALKYL HYDROXYALKYL DERIVATIVES OF CELLULOSE AND THEIR USE IN GYPSUM- AND CEMENT-CONTAINING COMPOUNDS

René Kiesewetter, Soltau-Ahlften; Klaus Szablikowski, Walsrode, and Werner Lange, Visselhövede, all of Germany, assignors to Wolff Walsrode AG, Walsrode, Germany

Filed Jan. 27, 1993, Ser. No. 9,538
Claims priority, application Germany, Feb. 7, 1992, 4203529
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[6] C08L *1/26, 1/28, 1/30*
U.S. Cl. 106—197.1 2 Claims

1. A water-soluble, ionic, tertiary cellulose ether comprising cellulose etherified with

(i) sulphoalkyl radicals with a degree of substitution (DS) of 0.001 to 0.6 and

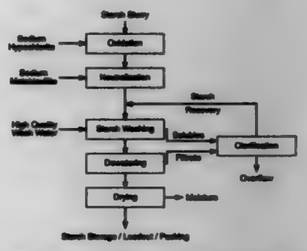
(ii) at least two radicals selected from the group consisting of hydroxyalkyl, alkoxyhydroxyalkyl, 3-alkoxy-2-hydroxyalkyl, aryl and arylalkyl radicals.

5,385,608

ABSORBABLE DUSTING POWDER DERIVED FROM REDUCED-PROTEIN MODIFIED STARCH

Larry E. Fitt, Orland Park, and Harry T. McNary, Westmont, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 862,774, Apr. 3, 1992, Pat. No. 5,346,892, which is a continuation-in-part of Ser. No. 623,158, Dec. 5, 1990, Pat. No. 5,126,334. This application May 16, 1994, Ser. No. 242,816
Int. Cl.[6] C08B *31/18, 30/04*
U.S. Cl. 106—210 6 Claims



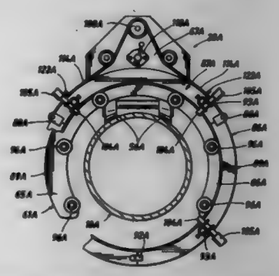
1. A process for preparing a modified starch composition comprising treating a starch with a hypochlorite to remove protein to a level less than about 0.15% by weight and oxidize from about 0.03 to about 0.5% by weight of the hydroxyl groups.

5,385,609

APPARATUS AND METHOD FOR TREATING THE OUTER SURFACE OF A PIPELINE

James L. Rose, and Samuel J. Homes, both of Houston, Tex., assignors to E. B. Thomas, Houston, Tex.

Continuation-in-part of Ser. No. 646,499, Jan. 28, 1991, Pat. No. 5,107,633, which is a continuation-in-part of Ser. No. 470,819, Jan. 26, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 874,646
Int. Cl.[6] B24C *3/06*
U.S. Cl. 118—119 12 Claims



1. A carriage adapted to be supported on a pipeline for longitudinal movement along the pipeline to treat the outer surface of the pipeline; said carriage comprising:

an upper support frame having anti-friction means for supporting contact with the upper surface of the pipe and a pair of inverted U-shaped yokes on opposed ends of said frame for fitting alongside opposite sides of the pipeline in spaced relation thereto;

said U-shaped yokes being fixed to said upper support frame with each yoke having a pair of downwardly extending arms fitting alongside opposite sides of said pipeline, said arms having lower ends spaced from each other a distance greater than the diameter of said pipeline;

a nozzle assembly supported from said upper support frame and including a generally cylindrical housing mounted for pivotal movement into an operable position about said pipeline;

rollers mounted between said nozzle assembly and said yokes for oscillating movement of said nozzle assembly and housing relative to said yokes;

a plurality of fluid discharge nozzles mounted on said housing and spaced about the outer periphery of said pipeline; and

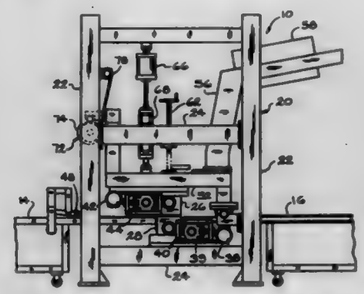
drive means on said support frame operatively connected to said nozzle assembly for oscillating said nozzle assembly and housing thereon relative to said yokes in an arcuate direction concentric to the outer periphery of said pipeline.

5,385,610

SELF-ADJUSTING ROLL COATER

Richard P. Deerer, Grosse Pointe, and Kenneth G. Huber, Grand Blanc, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Oct. 6, 1993, Ser. No. 132,753
Int. Cl.[6] B05C *1/02, 1/08*
U.S. Cl. 118—241 6 Claims



1. A machine for coating liquid onto sheet material workpieces comprising;

a frame,

a first coating roller fixed for rotation relative to said frame,

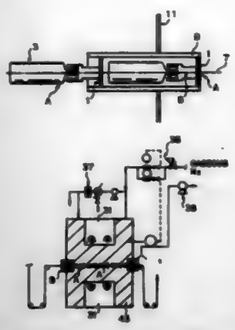
a second coating roller fixed for rotation relative to said frame,

coating means for causing said liquid to coat at least one of said first or second roller,

transport means for causing said sheet material workpieces to enter said machine and pass between said first and second coating rollers thereby causing said liquid coating at least one of said coating rollers to be transferred onto said sheet material workpieces, and

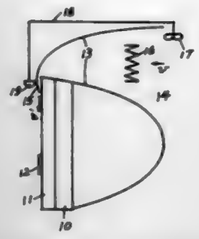
adjustment means for causing the separation distance between said first and second coating rollers to automatically adjust to a desired separation distance for said sheet material workpieces of varying thicknesses, said adjustment means including a movable frame member supporting at least one of said coating rollers and a gaging means for measuring the thickness of said sheet material workpieces before passing between said coating rollers and an actuator for setting a separation distance between said rollers, said actuator having a cam and follower which set a minimum distance between said coating rollers, and said adjustment means having a pressure applying member for applying a controllable force on said moveable frame member causing said follower to engage said cam and enabling said rollers to separate beyond said minimum distance causing said follower to disengage said cam in response to the compressive force exerted by said rollers against said workpieces exceeding a predetermined level.

5,385,611
APPARATUS FOR FORMING RESIN COATING ON SURFACE OF ARTICLE HAVING THREE-DIMENSIONAL STRUCTURE
Yoshihiro Matsumoto, Kyoto; Mitsuhiro Shinomoto, Suita, and Yasunori Yagi, Takarazuka, all of Japan, assignors to Osaka Sanso Kogyo Ltd., Osaka, Japan
Filed Mar. 4, 1993, Ser. No. 26,399
Claims priority, application Japan, Mar. 6, 1992, 4-049859
Int. Cl.[6] B05C *3/10*; F26B *15/10*
U.S. Cl. 118—642 6 Claims



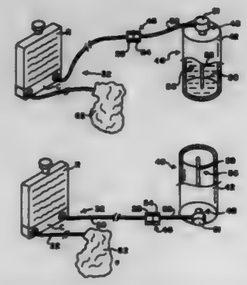
1. An apparatus for forming a resin coating on the surface of an article having a three-dimensional structure, comprising:
(i) a compartment (a) in which the surface of the article is coated with a resin solution;
(ii) a compartment (b) in which said resin solution coated on said article is cured; and
(iii) means for successively transporting said article through said compartments;
wherein said compartment (b) is substantially shut off from the outside air and has an entrance and an exit for said article transport means, said entrance and said exit being provided with respective guide members having substantially the same cross-sectional configuration, said article transport means having at least two plate members with substantially the same cross-sectional configuration as that of said guide members and at least one article retaining means so that while said article transport means is passing through each of said guide members, at least one of said plate members seals the cross-sectional portion of said guide member, and said compartment (b) is provided with inert gas introducing means.

5,385,612
CLEANING SYSTEM
Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576
Filed Sep. 29, 1992, Ser. No. 953,749
Int. Cl.[6] B08B *3/10*
U.S. Cl. 134—18 23 Claims



17. A method of preventing undesirable material or object contained in a fluid medium from degrading the performance of a sensitive component or element on a vehicle which is relatively moving in the fluid medium at a given velocity, the density of said undesirable material or object being significantly greater than that of said fluid medium, comprising:
forcing said relatively moving fluid stream containing said undesirable material or object to flow, in its entirety, in a single, spiral path of simple cross-sectional shape for generating centrifugal forces on both the moving fluid stream and the undesirable material or object; and
centrifugally separating the undesirable material or object from the fluid stream , without loss of the fluid stream from said forcing step and said separating Step when there is no undesirable material or object in the fluid medium and with only minimal loss of the fluid stream when there is undesirable material or object in the fluid medium.

5,385,613
METHOD FOR FLUSHING AN AUTOMATIC TRANSMISSION COOLING SYSTEM
Larry E. Coleman, 466 Union Ave., Memphis, Tenn. 38103
Filed Oct. 4, 1993, Ser. No. 130,779
Int. Cl.[6] B08B *5/00, 9/00, 9/06, 9/093*
U.S. Cl. 134—22.1 4 Claims



1. A method of flushing an automatic transmission cooling system without the use of pumping machinery or air compressors, comprising the steps of:
(a) providing a disposable and self-contained canister including pressurized air and a soap solution therein and having no chemical flushing agents thereinside, said canister further including a tube inside of said canister;
(b) connecting the transmission cooling system to said canister;
(c) positioning said canister so that said tube terminates within said soap solution:
(d) then causing the soap solution alone without any chemical flushing agents to flow through said tube and from the canister through the transmission cooling system under the influence of the presurized air;
(e) then inverting said canister so that said tube no longer terminates within said soap solution but rather within the pressurized air: and
(f) then purging the soap solution from the cooling system by allowing the pressurized air from within the canister to flow through said tube and through the transmission cooling system.

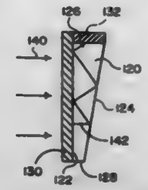
5,385,614
SERIES INTERCONNECTED PHOTOVOLTAIC CELLS AND METHOD FOR MAKING SAME
Scot P. Albright; Rhodes R. Chamberlin, both of El Paso, Tex., and Roger A. Thompson, Littleton, Colo., assignors to Photon Energy Inc., Golden, Colo.
Filed May 6, 1993, Ser. No. 58,653
Int. Cl.[6] H01L *31/05, 31/18*
U.S. Cl. 136—244 44 Claims



21. A photovoltaic device with a plurality of photovoltaic cells having a series interconnection between adjacent cells, comprising:
a substrate;
a first photovoltaic cell located on said substrate, said first photovoltaic cell having a first lower electrode, a first photoactive portion positioned on said first lower electrode, and a first upper electrode adjacent to said first photoactive portion;
a second photovoltaic cell located on said substrate and separate from said first photovoltaic cell, said second photovoltaic cell having a second lower electrode, a second photoactive portion positioned on said second lower electrode, and a second upper electrode adjacent to said second photoactive portion and separated from said first upper electrode by a cut-line; and
a conductor, positioned between said first photovoltaic cell and said second photovoltaic cell and underlying said cut-line, directly contacting said first upper electrode at a contact point and said second lower electrode to electrically connect said first upper electrode of said first photovoltaic cell to said second lower electrode of said second photovoltaic cell to establish a series interconnection between said first photovoltaic cell and said second photovoltaic cell, at least a portion of said conductor, at said contact point located beneath said first upper electrode, said conductor having a width defined by a first edge adjacent said first photovoltaic cell and a second edge adjacent said second photovoltaic cell, said cut-line positionable at any location from said second edge to an intermediate location between said first and second edges thereby simplifying formation of said cut-line.

5,385,615
SOLAR ENERGY SYSTEM
William E. Horne, Renton, Wash., assignor to United Solar Technologies, Inc., Olympia, Wash.
Division of Ser. No. 970,948, Nov. 3, 1992, Pat. No. 5,269,851, which is a continuation of Ser. No. 660,623, Feb. 25, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 136,456
Int. Cl.[6] H01L *31/052*
U.S. Cl. 136—246 2 Claims

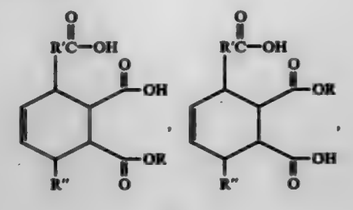
1. A photovoltaic module for converting solar energy into electrical energy, the solar energy comprising electromagnetic radiation having wavelengths within a solar band, the module comprising:
a substrate portion having first, second and third surfaces, wherein the first and second surfaces are generally opposite, non-parallel and internally reflective such that solar energy transmitted into the substrate portion internally reflects within the substrate portion and is focused to the third surface, the third surface being substantially smaller than the first and second surfaces;
a first photovoltaic cell means at the first surface of the substrate portion, the first photovoltaic cell means having first and second surfaces, the first surface being exposed directly to the solar energy and the second surface being toward the substrate portion, the first photovoltaic cell means comprising a first active area, a pair of first electrodes and first means for absorbing electromagnetic radiation incident upon the first active area within a first response band of wavelengths and for converting a portion of the electromagnetic radiation so absorbed into an electric potential difference between the first electrodes, the response band including a portion of the solar band, whereby a portion of the solar energy outside the first response band is transmitted through the first photovoltaic cell means and through the first surface of the substrate portion into the substrate portion;

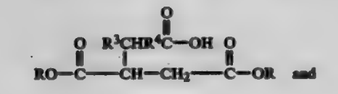


a second photovoltaic cell means at the third surface of the substrate portion, the second photovoltaic cell means comprising a second active area, a pair of second electrodes, and second electrode means for absorbing electromagnetic radiation incident upon the second active area within a second response band of wavelengths different from the first response band and for converting a portion of the electromagnetic radiation so absorbed into an electrical potential difference between the second electrodes, the second response band including a portion of the solar band, the active area of the second photovoltaic cell means being substantially smaller than the active area of the first photovoltaic cell.

5,385,616
CORROSION INHIBITION BY FORMATION OF IRON CARBOXYLATE
James A. Dougherty, Manchester; George W. Dear, Florissant, and Bernardus A. Oude, St. Louis, all of Mo., assignors to Petrolite Corporation, St. Louis, Mo.
Filed Feb. 14, 1994, Ser. No. 195,240
Int. Cl.[6] C23C *22/48*
U.S. Cl. 148—248 12 Claims

1. A method for inhibiting corrosion of a metal surface bearing a corrosion product including ferrous ions, comprising applying to the surface a corrosion inhibitor selected from the group consisting of





and

-continued



wherein R is hydrogen or an alkyl, aryl, aralkyl or alkaryl group of from about one to about twenty carbons, R′ is a linear organic moiety of from about two to about 20 carbon atoms and R″ is hydrogen or a linear organic moiety of up to about 20 carbon atoms, the total number of carbon atoms in R′ and R″ being from about 10 to about 20 carbon atoms, R^3 is an alkyl or alkenyl group of from about two to about fifteen carbons and R^4 is an alkylene or alkenylene group of from about two to about fifteen carbons.

5,385,617
ULTRALOW YIELD STRENGTH STEEL

Kazushi Hamada, and Kazushige Tokuno, both of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

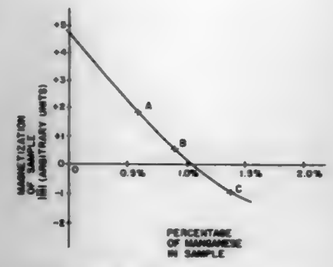
Filed Jan. 26, 1994, Ser. No. 186,723
Claims priority, application Japan, Feb. 9, 1993, 5-020898
Int. Cl.[6] C22C *38/14, 38/00, 38/04*
U.S. Cl. 149—337 1 Claim

1. An ultralow yield strength steel consisting of:
0.01 wt % or less of C;
0.10 wt % or less of Si;
0.2 wt % or less of Mn;
0.05 wt % or less of P;
0.05 wt % or less of S;
0.05 wt % or less of Al;
0.01 to 0.1 wt % of Ti;
0.01 wt % or less of soluble N;
0.01 to 0.25 wt % of hexagonal boron nitride particles having an average diameter of from 1 to 30 μm; and
the balance consisting of iron and unavoidable impurities.

5,385,618
NON-MAGNETIC ALLOY

Joseph L. Abita, Boyds, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 984,637, Dec. 2, 1992, Pat. No. 5,294,268.
This application Nov. 19, 1993, Ser. No. 154,573
Int. Cl.[6] C22C *9/00*
U.S. Cl. 148—509 4 Claims



1. A non-magnetic alloy, comprising:
(a) a first volume amount of a first copper material that has a first value of susceptibility; and
(b) a second volume amount of a second manganese material that has a second value of susceptibility, the sign of the second value of susceptibility being opposite to the sign of the first value of susceptibility, the product of the value of the first volume amount times the first value of susceptibility being equal to the negative product of the value of the second volume amount times the second value of susceptibility, a resultant non-magnetic alloy having a percent by volume of manganese that is higher than 0.57 percent by volume.

5,385,619
NITROCELLULOSE PROPELLANT COMPOSITION

Thomas B. Downes, and Ian A. Duncan, both of Ayrshire, Scotland, assignors to Royal Ordnance PLC, Lancashire, England

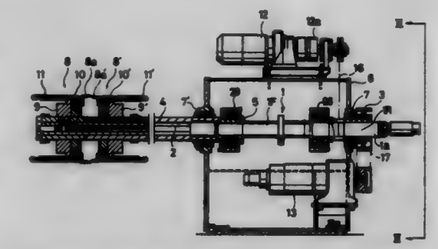
Continuation of Ser. No. 754,901, Apr. 12, 1985, abandoned.
This application Jan. 5, 1988, Ser. No. 163,121
Claims priority, application United Kingdom, Apr. 16, 1984, 8409867
Int. Cl.[6] C06B *45/10, 25/18*
U.S. Cl. 149—19.4 9 Claims

1. In a nitrocellulose based propellent composition containing a platonizing ballistic modifier, the improvement comprising, as a platonizing ballistic modifier, a copper II complex of a C_6–C_{12} straight chain aliphatic monocarboylic acid, said complex being effective to introduce a region of distinct operational platonization in the burning rate versus pressure relationship of the propellent composition, when used as the sole ballistic modifier, and to modify said relationship in favor of enhanced operational platonization when present as a supplementary ballistic modifier.

5,385,620
PROCESS AND APPARATUS FOR BUILDING A GREEN TIRE

Kazuo Sato, Takaishi, and Kazuaki Kondo, Toyota, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

PCT No. PCT/JP90/01429, § 371 Date Aug. 28, 1992, § 102(e) Date Aug. 28, 1992, PCT Pub. No. WO92/07709, PCT Pub. Date May 14, 1992
PCT Filed Nov. 2, 1990, Ser. No. 863,299
Int. Cl.[6] B29D *30/32, 30/36*
U.S. Cl. 156—131 8 Claims



1. An apparatus for building a green tire comprising:
a housing;
a main shaft rotatably supported by the housing;
a countershaft disposed coaxially with the main shaft, the countershaft being movable relative to the main shaft in an axial direction thereof and rotatable integrally with the main shaft;
left and right shoulder formers mounted respectively on the main shaft and the countershaft and adapted for supporting a carcass, each of the shoulder formers having radially expandable bead locking means;
drive means for moving the main shaft and the countershaft relative to each other in axial directions thereof, the drive means having a driving state of moving the main shaft and the countershaft in axial directions so that the left and right shoulder formers forcibly move to or away from each other and a suspending state of allowing the countershaft to freely move relative to the main shaft so that the left and right shoulder formers move toward each other responsive to additional tension of the carcass caused by the radially expandable bead locking means; and

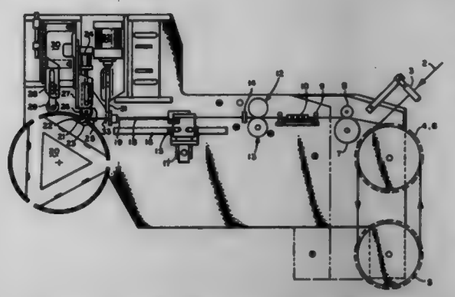
setting means for selectively setting the drive means in either of the driving state or the suspending state, the setting means setting the drive means in the suspending state when the radially expandable bead locking means is actuated.

5. A method for building a green tire on a green tire building apparatus including left and right shoulder formers arranged in an axial direction for supporting a cylindrical carcass, the shoulder formers each being provided with a bead locking mechanism and being forcibly movable in the axial direction by a driving mechanism, the driving mechanism being further selectively settable in an idle state where the two shoulder formers are freely movable toward each other in response to additional tension of the carcass caused by the bead locking mechanism, the method comprising the steps of:
forming a cylindrical carcass on the green tire building apparatus;
setting left and right bead rings at specified positions radially outside the respective bead locking mechanisms of the left and right shoulder formers;
setting the driving mechanism in the idle stat so that the left and right shoulder formers are freely movable toward each other;
actuating the bead locking mechanism to lock the bead rings on the specified positions of the cylindrical carcass while allowing the left and right shoulder formers to move to each other in response to the additional tension; and
actuating the driving mechanism to forcibly move the left and right shoulder formers toward each other in shaping of the cylindrical carcass into a toroidal form after the bead rings are locked on the cylindrical carcass.

5,385,621
TIRE BEAD-MAKING METHOD WITH TWO WINDING TENSION LEVELS

Ralph W. Golightly, Gadsen, Ala., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 23, 1993, Ser. No. 125,523
Int. Cl.[6] B29D *30/48;* B31C *13/00;* B60C *15/04*
U.S. Cl. 156—136 12 Claims

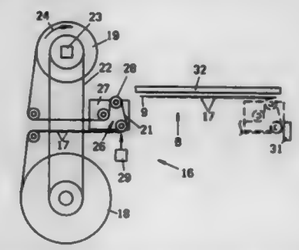


1. A method of making tire beads on a forming wheel comprising:
a. attaching an end of a wire to said forming wheel;
b. initially winding said wire around said forming wheel by rotating said forming wheel a predetermined number of turn, said initial winding being at a first tension level in said wire, said first tension level created by resisting said winding with braking means at a first resistance level; and,
c. continuing said winding at a predetermined second tension level in said wire greater than said first tension level, said second tension level created by resisting said winding with said braking means at a second resistance level greater than said first resistance level after said rotation of said forming wheel said predetermined number of turns whereby the increased resistance of said braking means is resisted by the friction of the revolutions of wire about the forming wheel.

5,385,622
WEB SPLICING METHOD AND APPARATUS

Karl-Heinz Klingebiel, Winsen/L, Germany, assignor to Körber AG, Hamburg, Germany

Filed Jan. 19, 1994, Ser. No. 184,238
Claims priority, application Germany, Feb. 4, 1993, 4303171
Int. Cl.[6] B65H *21/00*
U.S. Cl. 156—157 12 Claims



1. A method of splicing a leader of a fresh web of flexible material to a selected portion of an expiring web of flexible material, comprising the steps of advancing the expiring web lengthwise along a predetermined path; applying an adhesive substance to one side of the leader of the fresh web; maintaining the fresh web at a standstill in the course of said applying step, advancing the leader along a portion of said path and arresting the expiring web subsequent to said applying step, pressing the applied adhesive substance at the one side of the leader of the fresh web and one side of the selected portion of the expiring web against each other and maintaining the webs at a standstill in the course of said pressing step, said applying step including attaching a series of uniting bands, which have adhesive first and second sides, to a carrier including an elongated strip of flexible material so that one side of each uniting band adheres to but is separable from the carrier, contacting the one side of the leader of the fresh web with the other sides of a selected number of uniting bands of said series, said contacting step including moving the strip transversely of the leader of the fresh web for applying the uniting bands of said selected number transversely of the leader of the fresh web and simultaneously with said contacting step detaching the one side of each of said selected number of uniting bands from the carrier.

5,385,623
METHOD FOR MAKING A MATERIAL WITH ARTIFICIAL DIELECTRIC CONSTANT

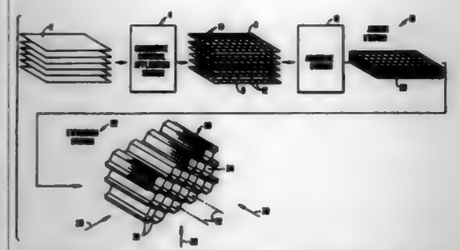
Rodolfo E. Diaz, Phoenix, Ariz., assignor to Hexcel Corporation, Pleasanton, Calif.

Filed May 29, 1992, Ser. No. 890,757
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—197 21 Claims

1. Method for making a material with a first frequency dependent complex permittivity along a first principal axis, a second frequency dependent complex permittivity along a second principal axis, and a third frequency dependent complex permittivity along a third principal axis, said method comprising the following steps:
choosing a frequency of interest for each principal axis;
choosing a polarization for a wave of interest relative to each principal axis;
determining the frequency dependent complex permittivity along each principal axis such that the wave of interest for the chosen polarization encounters the desired frequency dependent complex permittivity;
designing a pattern and a cellular core structure in which the

dimensions, geometry and conductivity characteristics of the pattern and the dimensions and the geometry of the cellular core structure are chosen to achieve the desired frequency dependent complex permittivity along each principal axis;

selecting a substantially non-electrically conductive sheet material;



applying an electrically conductive material to the sheet material according to said pattern design; and thereafter

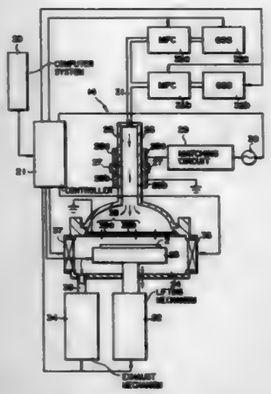
forming a cellular core structure from layers of the sheet material according to said cellular core structure design, said structure defining said first principal axis, said second principal axis, and said third principal axis.

5,385,624

APPARATUS AND METHOD FOR TREATING SUBSTRATES

Yutaka Amemiya, and Akihito Toda, both of Yamanashi, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,026
Claims priority, application Japan, Nov. 30, 1990, 2-335671
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—345 **3 Claims**



1. A substrate treating apparatus, comprising:

a chamber including a substrate treating section and a plasma generating section;

an ion trap interposed between the substrate treating section and the plasma generating section;

a support disposed within the substrate treating section for supporting a substrate;

an adjustment means, connected to said support, for adjusting a distance between said substrate and said ion trap;

a first gas source containing a first gas for an etching process;

a second gas source containing a second gas for an ashing process;

supply means, connected to the first and second gas sources and to the plasma generating section, for supplying said first gas and said second gas to said substrate treating section after said first gas and said second gas have passed from said plasma section through said ion trap;

an exhaust means for exhausting said substrate treating section; and

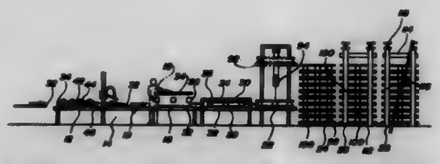
a process control means, connected to said plasma generating section, said supply means, and said adjustment means, for controlling said plasma generating section, said supply means and said adjustment means such that the etching process and the ashing process are simultaneously performed on the substrate in said substrate treating section.

5,385,625

APPARATUS FOR MANUFACTURING CORRUGATED PALLETS USING A STACKED COMPRESSION STATION

Brian R. LaFreniere, Lambertville, N.J., assignor to Bay Corrugated Container, Inc., Monroe, Mich.

Filed Sep. 7, 1993, Ser. No. 118,399
Int. Cl.[6] B65H *29/00, 31/34*
U.S. Cl. 156—379.8 **11 Claims**



1. An apparatus for manufacturing a plurality of corrugated pallets, said pallets having a base panel of corrugated material, a top panel of corrugated material and a plurality of spacer blocks disposed therebetween, wherein each of said spacer blocks is bonded to said base panel and top panel, said apparatus comprising:

a loading station for receiving base panels and top panels;

a glue applicator for extending a plurality of continuous sheets of glue to predetermined areas of said base panels and top panels;

an assembly station for assembling a pallet from said panels and blocks including a locating system for receiving and locating a base panel in relation to a top panel;

a transfer compression station for applying initial pressure to each of said corrugated pallets individually while simultaneously transferring pallets individually in a horizontal direction;

a stacking means to stack a plurality of said corrugated pallets in a vertical column;

a stacked compression station for receiving a plurality of said vertical columns and for applying pressure to said plurality of vertical columns of said corrugated pallets;

conveying means for transferring said base panels from said loading station through said glue applicator to said assembly station, said conveying means further transferring said base and top panels from said assembly station to said transfer compression station, wherein said transfer compression station transfers said corrugated pallets to said stacking means;

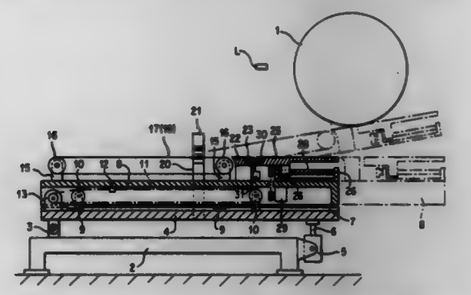
said conveying means further comprising means to transfer the vertical columns of corrugated pallets.

5,385,626

STRIP WINDER FOR A TIRE BUILDING MACHINE

Kenzaro Shimizu; Osamu Fujiki, and Mitsuru Hitotsuyanagi, all of Hyogo, Japan, assignors to Toyo Tire & Rubber Co., Ltd., Osaka, Japan

Division of Ser. No. 740,696, Aug. 6, 1991, Pat. No. 5,248,374. This application Aug. 31, 1993, Ser. No. 114,564
Claims priority, application Japan, Aug. 8, 1990, 2-211033; Jul. 4, 1991, 3-190866
Int. Cl.[6] B29D *30/30*
U.S. Cl. 156—406.4 **1 Claim**



1. A strip winding system for a tire building machine comprising a tire building drum, a swing frame disposed below and forwardly of said building drum and extending in a longitudinal direction at right angles with the axis of the building drum in such a manner that it may swing vertically about a pivot close to one end thereof which is farther away from said building drum, a slide frame mounted on said swing frame so as to be slidable along the longitudinal axis thereof and having mounted thereon a strip transport belt, a cutting bed longitudinally stationary relative to said slide frame and a cutting bed longitudinally movable relative to said slide frame disposed in the order mentioned from said pivot of said swing frame toward said building drum, a traveling cutter for cutting said strip disposed between said stationary cutting bed and movable cutting bed, said stationary and movable cutting beds respectively having suction orifices opening on the juxtaposed upper surfaces thereof for fixing said strip in position, said slide frame having a post carrying a clamp on top thereof for fixing the conveyance run of said transport belt, and said slide frame and swing frame being movable to a position in which a leading end portion of said strip which is aligned with the front edge of the stationary cutting bed is brought into pressure contact with the lower end of said building drum, in which position the slide frame with said transport belt fixed by said clamp is then capable of sliding movement while said strip is kept stationary to transfer the leading end portion of the strip from the first cutting bed onto the conveyance run of said transport belt.

5,385,627

MAILING MACHINE INCLUDING MAILPIECE GUIDING APPARATUS

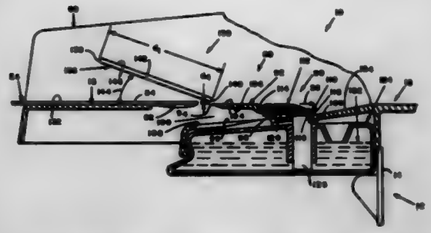
Charles M. Weimer, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 21, 1990, Ser. No. 616,962
Int. Cl.[6] B43M *3/00*
U.S. Cl. 156—441.5 **7 Claims**

1. In a machine for processing a mailpiece, wherein the machine includes an elongate horizontally-extending deck, the machine includes means for feeding a mailpiece in a downstream path of travel on the deck, the machine includes an upright registration wall extending downstream alongside of the deck, and the machine includes a stripper blade horizontally aligned with the deck for operational engagement with a mailpiece fed thereto, an improvement for guiding a mailpiece out of operational engagement with the stripper blade, the improvement comprising:

a. the deck including a horizontally-extending upstream portion; and

b. an elongate mailpiece guide wall for guiding a mailpiece out of operational engagement with the stripper blade, the guide wall extending laterally from the registration wall and overhanging the upstream portion of the deck, the



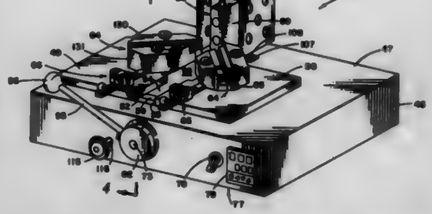
guide wall having an upstream edge and a downstream edge, the guide wall inclined downwardly from the upstream to the downstream edge thereof and forming an angle of substantially ten to twenty five degrees with respect to the upstream portion of the deck, and the downstream edge of the guide wall overhanging and spaced a predetermined distance above the stripper blade.

5,385,628

GASKET WELDING APPARATUS AND METHOD

Roland Davis, P.O. Box 5303, Winter Park, Fla. 32793-5303, and Gil Koch, 3945 S. Peninsula Dr., Daytona Beach, Fla. 32127

Filed Mar. 24, 1993, Ser. No. 35,434
Int. Cl.[6] B29C *65/20, 65/34*
U.S. Cl. 156—499 **9 Claims**



1. Apparatus for heat welding end edges of heat fusible gasket material together to form a joint, said apparatus comprising:

a housing;

left and right plates spaced across a gap;

means mounting said plates on said housing for relative movement of said plates with respect to each other;

left and right members mounted on said housing for travel with said plates, said members including channels for respectively supporting corresponding left and right lengths of said gasket material with said end edges disposed in spaced, facing positions within said gap;

a heater element including heated surfaces;

means mounting said heater element on said housing for selective movement between a retracted position removed from said gap and an advanced position with said heated surfaces within said gap facing said end edges disposed in said spaced, facing positions;

means biasing said heater element into said retracted position;

means for releasably locking said heater element in said advanced position;

means, cooperative with said plate mounting means, for selectively setting the spacing of said gap to longest, intermediate and shortest spacing positions; and

means cooperative with said selectively setting means and said locking means for setting said spacing to said longest spacing position and for releasing said heater element from said advanced to said retracted position under action of said biasing means, automatically in response to changing the setting of said plates from said intermediate spacing position, through said longest spacing position, to said shortest spacing position;

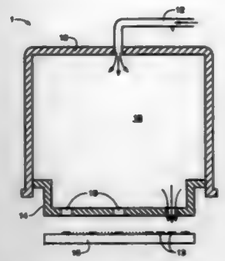
wherein said selectively setting means comprises a shaft mounted on said housing for selective rotation, a cam mounted on said shaft, and cam followers respectively fixed on said plates and positioned to track said cam.

5,385,629

AFTER ETCH TEST METHOD AND APPARATUS

Alan J. Lamberton, Eagle, and Rod C. Langley, Boise, both of Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Oct. 14, 1993, Ser. No. 137,674
Int. Cl.[6] H01L *21/306*; B44C *1/22*; B29C *37/00*
U.S. Cl. 156—626 **10 Claims**



1. A method of testing quality of an etching of a semiconductor device, comprising the following steps:

selecting a wafer from a fabrication process that has undergone an etch process;

removing photoresist from a first portion of die on the wafer to create exposed die, while retaining the photoresist on a second portion of the die on the wafer; and

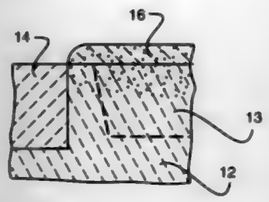
performing a quality analysis on etch results of the first portion of the die.

5,385,630

PROCESS FOR INCREASING SACRIFICIAL OXIDE ETCH RATE TO REDUCE FIELD OXIDE LOSS

Ara Philipossian, Redwood Shores, Calif.; Hamid R. Soleimani, Westborough, and Brian S. Doyle, Framingham, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1993, Ser. No. 85,281
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—628 **14 Claims**



1. In the fabrication of integrated circuitry, the steps of:

a) implanting a material on a substrate with nitrogen, to enhance the etchability of said material by an etchant by causing structural damage to said material; and

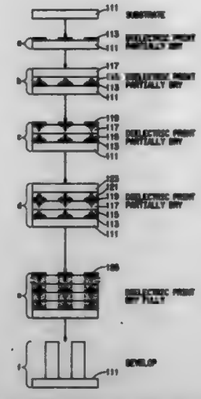
b) exposing said material to said etchant.

5,385,631

METHOD OF MAKING PLASMA DISPLAY APPARATUS

Hiroshi Tamemasa, Kanagawa, and Carl B. Wang, Tokyo, both of Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1993, Ser. No. 109,874
Int. Cl.[6] B44C *1/22*; B29C *37/00*
U.S. Cl. 156—628 **7 Claims**



1. A method of making a plasma display apparatus which comprises the steps of forming a plurality of first electrodes on one of a plurality of dielectric substrates to extend in one direction; forming a plurality of second electrodes on a second substrate to extend in another direction perpendicular to said one direction; forming a ridge on at least one of said substrates to define a plurality of pixel areas; and providing a fluorescent material in said pixel areas, the improvement in which a relief corresponding to said ridge is fabricated by the steps of:

providing a plurality of dielectric layers on the substrates so that at least one surface of an unpatterned first dielectric layer of a dielectric composition comprising an organic polymer comes in contact with a patterned second dielectric layer of a dielectric composition comprising an organic polymer, a solvent and a dispersibility changing agent, thereby forming an assembly;

partially drying the assembly under a certain heating condition, decided by a function of heating temperature and time varied depending on the boiling points of the dispersibility changing agent and the solvent, to diffuse a desired pattern from the surface of the second dielectric layer containing the dispersibility changing agent into the interior of the first dielectric layer; and

developing the assembly to remove the second dielectric layer and the area of the first dielectric layer patterned by diffusion.

5,385,632

METHOD FOR MANUFACTURING INTEGRATED SEMICONDUCTOR DEVICES

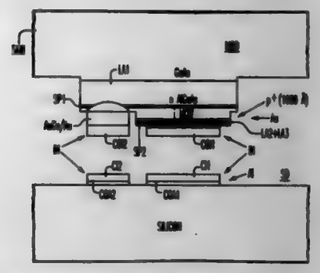
Keith W. Goossen, Aberdeen, N.J., assignor to AT&T Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1993, Ser. No. 83,742
Int. Cl.[6] H01L *21/306*; B44C *1/22*; C03C *15/00*
U.S. Cl. 156—630 **21 Claims**

1. The method of forming an integrated semiconductor device, comprising the steps of:

bonding conductors of a first semiconductor device having a substrate to conductors on a second semiconductor device having a substrate;

flowing an etch-resist to fill a space between the first semiconductor device and the second semiconductor device;



allowing the etch-resist to dry; and

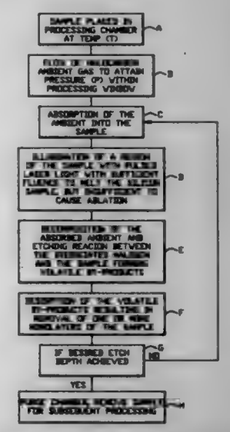
removing the substrate from the second semiconductor device.

5,385,633

METHOD FOR LASER-ASSISTED SILICON ETCHING USING HALOCARBON AMBIENTS

Stephen D. Russell; Douglas A. Sexton, and Richard J. Orazi, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1990, Ser. No. 501,707
Int. Cl.[6] B44S *1/22*
U.S. Cl. 156—693 **12 Claims**



1. A method of performing a maskless laser-assisted etching of silicon in a gaseous chlorofluorocarbon ambient comprising:

placing said silicon in contact with said gaseous chlorofluorocarbon ambient;

directing radiant energy onto said silicon within said gaseous chlorofluorocarbon ambient to create a melted portion of said silicon where the radiant energy impinges; and

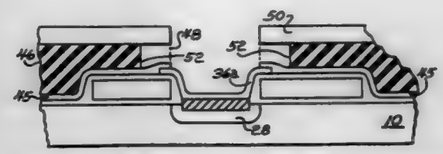
etching away only said melted portion of said silicon within said gaseous chlorofluorocarbon ambient which have said radiant energy impinging thereon.

5,385,634

SEALED SELF ALIGNED CONTACT PROCESS

Douglas Butler; E. Henry Stevens; Richard A. Bailey, and Thomas C. Taylor, all of Colorado Springs, Colo., assignors to Ramtron International Corporation, Colorado Springs, Colo. and Nippon Steel Semiconductor Corporation, Chiba, Japan

Continuation of Ser. No. 701,211, May 16, 1991, abandoned, which is a division of Ser. No. 505,242, Apr. 5, 1990, Pat. No. 5,043,790. This application Apr. 7, 1993, Ser. No. 43,569
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—644 **22 Claims**



1. In the fabrication of an integrated circuit transistor having an electrode to which electrical contact is to be made, the electrode being proximate to other structure of the integrated circuit, a process comprising the steps of:

forming a first conductive nitride layer over a first region that includes the electrode and the other structure such that said first conductive nitride layer is in electrical contact with the electrode and isolated from the other structure;

forming a second nitride layer over said first conductive nitride layer;

patterning said second nitride layer to leave second nitride portions over said electrode and a part of said other structure;

patterning said first conductive nitride layer using said second nitride portions as a mask;

adding a further layer of nitride to cover said other structure, said first conductive nitride layer and said second nitride layer;

adding a relatively thick insulation over said further layer of nitride;

anisotropically etching said insulation and said further layer of nitride to open a window to a portion of said first conductive nitride layer over said electrode; and

etching said insulation in said window isotropically to widen the window, said nitride layers protecting said other structure from being exposed during said etch, whereby an electrically conductive material can be placed in said widened window to become electrically coupled to said electrode with improved step coverage.

5,385,635

PROCESS FOR FABRICATING SILICON CHANNEL STRUCTURES WITH VARIABLE CROSS-SECTIONAL AREAS

James F. O'Neill, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1993, Ser. No. 143,774
Int. Cl.[6] H01L *21/306*
U.S. Cl. 156—647 **8 Claims**

1. A method of fabricating a three dimensional structure from a silicon wafer having at least one recess with a variable cross-sectional area, the wafer having a thickness and two opposing, substantially parallel surfaces, the fabricating method comprising the steps of:

forming a first layer of etch resistant material on both surfaces of the wafer;

patterning the first layer of etch resistant material on one of the wafer surfaces to delineate a plurality of vias, said vias exposing the surface of the wafer, at least one of the vias having opposing ends and sides with opposing via exten-

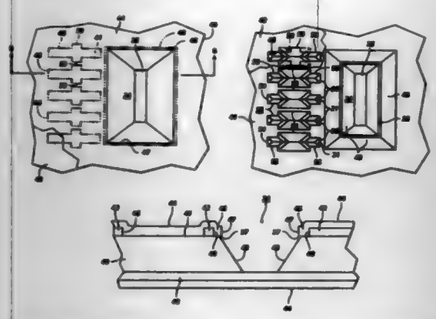
sions extending in opposite directions from each via side at a location therealong;

depositing a second layer of etch resistant material on both sides of the wafer and over the first layer of etch resistant material and vias therein;

patterning the second layer of etch resistant material on the same wafer surface as that patterned in the first layer of etch resistant material to produce at least one via within a boundary of one of the vias in said first layer of etch resistant material to expose the silicon wafer surface;

placing the wafer into a first anisotropic etchant to etch coarsely the wafer to produce at least one recess in the wafer through the vias in the second layer of etch resistant material;

removing the second layer of etch resistant material from the wafer to expose the first layer of etch resistant material and the vias in said one surface thereof which expose the wafer surface through said vias;



placing the wafer into a second anisotropic etchant for a time period to produce relatively fine recesses in the exposed wafer surface through the vias in the first layer of etch resistant material, the extensions on opposing sides of said at least one recess causing the second etchant to etch along the {111} crystal planes, so that the second etchant etches under the via extensions of said at least one via in the etch resistant material in opposing directions towards the recess ends, thereby enlarging the recess cross-sectional area intermediate the via ends while the wafer is in the second etchant; and

removing the wafer from the second anisotropic etchant within a time period sufficient to stop the etching under the first layer of etch resistant material to delineate a recess shape having a different cross-sectional area at each end than at a location intermediate the etched recess ends.

5,385,636

METHOD OF FORMING A METAL CONTACT ON A PROJECTION ON A SEMICONDUCTOR SUBSTRATE

Francis Poingt, Ste Genevieve des Bois; Elisabeth Gaumont-Goarin, Montrouge, and Lionel Le Gouezigou, Le Val St Germain, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Mar. 1, 1994, Ser. No. 203,301
Claims priority, application France, Mar. 5, 1993, 93 02577
Int. Cl.[6] H01L *21/312*
U.S. Cl. 156—649 **3 Claims**

1. A method of forming a metal contact on projection on a semiconductor substrate, in which:

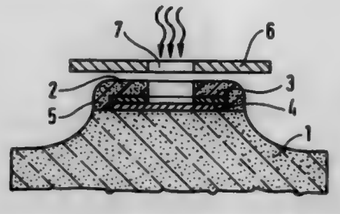
a) a metal film is deposited on the semiconductor substrate, and then a spot of photosensitive resin is deposited on a zone of the substrate that is to be protected;

b) the metal film around the zone protected by the spot of photosensitive resin is etched;

c) the photosensitive resin is caused to flow around the protected zone so as to come into contact with the semiconductor substrate; and

d) the semiconductor substrate is subjected to etching all around the zone protected by the spot of photosensitive resin, in such a manner as to form said projection;

wherein the photosensitive resin is caused to flow by passing it for a short period of time in contact with vapor of a solvent for the resin; and



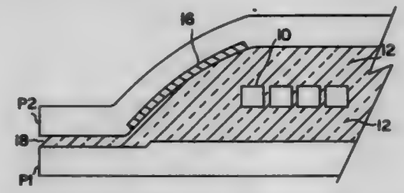
wherein an opening is formed in the metal film in the zone protected by the spot of photosensitive resin by placing over the spot a mask defining the opening to be made, by subjecting the photosensitive resin to radiation through said mask, and by performing a selective ablation treatment to remove the resin in the opening defined in this way, and then by etching the metal underlying said opening.

5,385,637

STABILIZING DOMAINS IN INDUCTIVE THIN FILM HEADS

Pradeep K. Thayamballi, Fremont, Calif., assignor to Read-Rite Corporation, Milpitas, Calif.

Filed Dec. 7, 1992, Ser. No. 986,252
Int. Cl.[6] G11B *5/00*
U.S. Cl. 156—656 **5 Claims**



1. A method of stabilizing a magnetic thin film recording head structure having a substrate for supporting a lower magnetic pole layer, an upper top magnetic pole layer for forming a magnetic yoke with said lower pole layer, said pole layers characterized by an easy axis of magnetization, said top pole layer including a sloping nose area narrowing from said magnetic yoke, an electrical coil layer formed between said pole layers, and insulation encompassing said coil layer, wherein said layers are deposited as thin films, comprising the steps of:

depositing a sandwich of NiFe/MnFe/NiFe thin films in a selected localized area of said head structure adjacent to said nose area prior to the deposition of said upper top magnetic pole layer;

configuring said deposited sandwich to conform to said sloping nose area of said top pole layer;

depositing a seed layer upon said deposited sandwich for serving as a base for subsequent plating;

raising the temperature of said thin film recording structure above the Neel temperature of MnFe and applying a uniaxial magnetic field along said easy axis of magnetization of said pole layers;

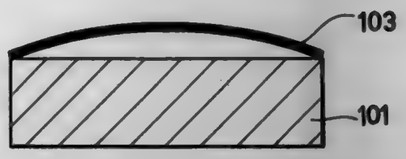
cooling said head structure to room temperature in the presence of said uniaxial magnetic field.

5,385,638

METHOD OF MANUFACTURING A STAMPER

Hitoshi Isono, Tenri, and Hirotoshi Takemori, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 798,595, Nov. 26, 1991, abandoned. This application May 3, 1993, Ser. No. 56,612
Claims priority, application Japan, Nov. 28, 1990, 2-331062; Dec. 27, 1990, 2-416754
Int. Cl.[6] B44C *1/22*
U.S. Cl. 156—663 **19 Claims**



1. A method of manufacturing a stamper, comprising the steps of:

coating a surface of a substrate with a photosensitive material;

directing light on the resulting coated surface to expose the photosensitive material;

developing the photosensitive material to make a photoresist masked pattern on the substrate;

etching the substrate at the unmasked portion;

removing the photoresist to make a master;

forming a first nickel layer on a surface of the substrate;

forming an intermediate layer of tantalum or chrome over the nickel layer;

forming a second nickel layer on the intermediate layer to form a conductive film having a three-stratum structure;

forming an electroformed layer on the conductive film by an electroforming process; and

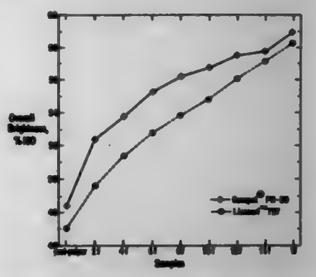
separating the conductive film with the electroformed layer from the substrate.

5,385,639

DEINKING WASTEPAPER PRINTED WITH OIL-BASED INK

Mean-Jeng Hou, Tega Cay, S.C., and Narayanasamy Seenivasan, Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Aug. 27, 1993, Ser. No. 113,549
Int. Cl.[6] D21C *5/02*
U.S. Cl. 162—5 **8 Claims**

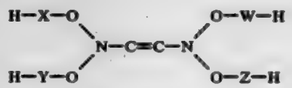


1. A method for deinking pulp which has been made from paper printed with oil-based ink wherein said method comprises:

a) pulping the paper with water at temperature of 25–85 degrees C. in alkaline conditions;

b) diluting the pulp to a consistency of 0.8–3.0%;

c) mixing the pulp with at least one alkoxylated diamine of Formula I:



Formula I

where X, Y, W and Z may be alike or different and are each independently selected from the group consisting of

(i) $-(CH_2-CH(CH_3)-O)_a(CH_2-CH_2-O)_b-$;

(ii) $-(CH_2-CH_2)-O)_c(CH_2-CH(CH_3)-O)_d-$;

and

(iii) random copolymers of ethylene oxide and propylene oxide,

wherein a, b, c and d are each selected independently to be a number from 1–30 so as to give an HLB value of 5–15; and

d) treating said pulp in a flotation cell.

5,385,640

PROCESS FOR MAKING MICRODENOMINATED CELLULOSE

Michael K. Weibel, West Redding, and Richard S. Paul, Redding, both of Conn., assignors to Microcell, Inc., West Redding, Conn.

Filed Jul. 9, 1993, Ser. No. 89,683
Int. Cl.[6] D21B *1/10*
U.S. Cl. 162—23 **7 Claims**



1. A process for preparing microdenominated cellulose comprising repeatedly passing a liquid suspension of fibrous cellulose through a zone of high shear, said zone being defined by two confronting refining disk surfaces, with one of said surfaces rotating relative to the other, under conditions and for a length of time sufficient to render said suspension substantially stable and to impart to said suspension a Canadian Standard Freeness that shows consistent increase with repeated passage of said cellulose through said zone of high shear.

5,385,641

DELIGNIFICATION OF CELLULOSIC RAW MATERIALS USING ACETIC ACID, NITRIC ACID AND OZONE

Alex Berg, Schwilbisch-Hall; Wim Janssen, Murrhardt; Stefan Baldt, Schwäbisch Gmünd; Rudolf G. Kunz, deceased, late of Nürtingen by Eberhard C. Kunz, executor , and Wolfdieter Klein, Recklinghausen, all of Germany, assignors to Acetocell GmbH & Co. KG, Geckwesd, Germany

Filed Mar. 9, 1992, Ser. No. 848,132
Claims priority, application Germany, Mar. 8, 1991, 4107354
Int. Cl.[6] D21C *3/20*
U.S. Cl. 162—76 **7 Claims**

1. A process for the delignification of lignocellulose-containing raw materials utilizing in a first stage a weight ratio of the lignocellulose-containing raw material to a pulping solution containing aqueous monocarboxylic acid of between 0.08:1 to

0.5:1, with a water content in the pulping solution of 5 to 50% by weight, a temperature of between 140° and 230° C. under a pressure of 3 to 30 bar and with a residence time of between 0.5 and 8 hours, followed by a subsequent extraction or washing treatment, said process being further characterized by treatment of the thus-obtained monocarboxylic acid-moist pulp with a pulping solution having a composition corresponding to the pulping solution used in the first stage, with addition of nitric acid at a weight proportion of 0.5 to 5.0% by weight / atro of the raw material at a temperature of 60° to 140° C. and under a pressure of 1 to 6 bar and a residence time of 0.1 to 6 hours, and subsequent washing or extraction with water or with the pulping solution in a second stage and thereafter in a third stage effecting treatment of the resulting monocarboxylic acid-moist pulp in a consistency range of 3 to 60% by weight in a liquid phase corresponding to the composition of the pulping solution of the first stage with an ozone-containing gas under a pressure of 1 to 12 bar and at a temperature of 15° to 50° C. with an amount of ozone of 0.1 up to 2.5% by weight based on the atro weight of the raw material to produce a pulp with a lignin content of less than 1% by weight; said monocarboxylic acid comprising a C_1–C_4 aliphatic monocarboxylic acid or a mixture thereof.

5,385,642

PROCESS FOR TREATING TISSUE PAPER WITH TRI-COMPONENT BIODEGRADABLE SOFTENER COMPOSITION

Doan Van Phan, West Chester; Paul D. Trokhan, and David C. Hippe, both of Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 13, 1993, Ser. No. 61,409
Int. Cl.[6] D21H *21/22*
U.S. Cl. 162—112 **22 Claims**

1. A process for softening a tissue paper web which comprises the step of treating at least one surface of a dry tissue paper web with a tri-component biodegradable softener composition comprising a mixture of:

(a) a nonionic softener selected from the group consisting of sorbitan mono-, di-, tri- esters and mixtures thereof;

(b) a nonionic surfactant compatibilizer selected from the group consisting of ethoxylated sorbitan esters, propoxylated sorbitan esters, alkylpolyglycosides and mixtures thereof; and

(c) a polyhydoxy compound selected from the group consisting of glycerol, polyethylene glycol, polypropylene glycol and mixtures thereof;

wherein the weight ratio of the nonionic softener to the nonionic surfactant compatibilizer ranges from about 10:1 to 1:10 and wherein the weight ratio of the nonionic softener to the polyhydroxy compound ranges from about 10:1 to 1:10, in a manner such that the tri-component softener is applied to said at least one surface in an amount of from about 0.1 to about 3% by weight of the dry tissue paper web.

5,385,643

PROCESS FOR APPLYING A THIN FILM CONTAINING LOW LEVELS OF A FUNCTIONAL-POLYSILOXANE AND A NONFUNCTIONAL-POLYSILOXANE TO TISSUE PAPER

Robert S. Ampulski, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 10, 1994, Ser. No. 212,412
Int. Cl.[6] D21H *21/22*
U.S. Cl. 162—135 **23 Claims**

1. A process for applying low levels of a functional-polysiloxane compound and a nonfunctional-polysiloxane compound to a dry tissue paper web, said process comprising the steps of:

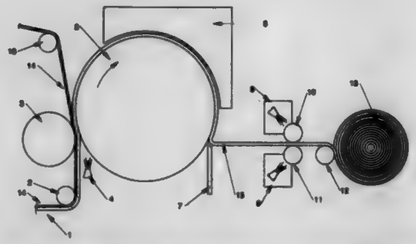
a) providing a dry tissue paper web;

b) mixing a functional-polysiloxane compound with a suitable nonfunctional-polysiloxane compound to form a functional-polysiloxane containing solution;

c) mixing said functional-polysiloxane containing solution with water and a suitable surfactant emulsifier to form a functional-polysiloxane containing emulsion;

d) applying said functional-polysiloxane containing emulsion to a heated transfer surface;

e) evaporating at least a portion of the water from said heated transfer surface to form a film containing said functional polysiloxane compound and said nonfunctional-polysiloxane compound, and
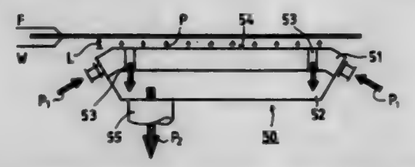


f) transferring said film from said heated transfer surface to at least one outwardly-facing surface of said tissue web by contacting said outwardly-facing web surface with said heated transfer surface, thereby transferring a sufficient amount of said functional polysiloxane compound such that from about 0.004% to about 0.75% of said functional-polysiloxane compound, based on the dry fiber weight of said tissue web, is retained by said tissue web, and wherein the weight ratio of the functional-polysiloxane compound to the nonfunctional-polysiloxane compound retained by the tissue web ranges from 19:1 to 1:19.

5,385,644

METHOD AND DEVICE FOR INTENSIFYING THE OPERATION OF A YANKEE PRESS IN A SOFT-TISSUE PAPER MACHINE

Lars H. M. Hanssa, and Jens P. Eskvist, both of Turku, Finland, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

Filed Jun. 7, 1993, Ser. No. 73,101
Claims priority, application Finland, Jun. 8, 1992, 922649
Int. Cl.[6] D21F *5/18, 5/20*
U.S. Cl. 162—207 **20 Claims**



1. A method in a soft-tissue paper machine for intensifying the operation of a Yankee press in which at least one press roll is arranged adjacent to a Yankee cylinder to form a nip therebetween in which a web is pressed, and air is introduced into the Yankee press and blown against the web through a Yankee hood arranged over said Yankee cylinder to dry the web running on said Yankee cylinder, the method comprising the steps of:

arranging a blow box in proximity to and before the nip in a running direction of the web,

directing hot and humid air from said Yankee hood into said blow box,

blowing the hot and humid air from said blow box against the web,

drawing the air after it has been blown against the web into said blow box, and

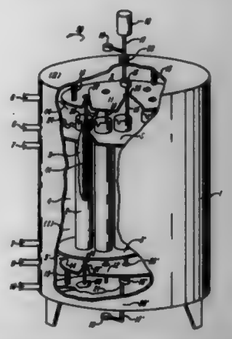
directing the air drawn into said blow box from said blow box as exhaust air to be removed from the Yankee press and outlet to the external environment.

5,385,645

HEAT TRANSFER APPARATUS WITH POSITIVE DRIVE ORBITAL WHIP ROD

Yao-Tzu Li, Lincoln, Mass., assignor to Y. T. Li Engineering, Inc., Acton, Mass.

Continuation-in-part of Ser. No. 716,083, Jun. 17, 1991, Pat. No. 5,221,439. This application Jun. 22, 1993, Ser. No. 81,039
Int. Cl.[6] B01D *1/24*; F28F *17/00*
U.S. Cl. 202—175 **15 Claims**



1. An orbital drive for use in a heat transfer apparatus having (i) at least one vertically oriented heat transfer tube that receives a first fluid to be processed at its upper end and has a second fluid flow over its outer surface to produce a radial heat transfer through the wall of the tubes, and (ii) a flexible whip rod disposed in each tube and extending generally the length of the tube, comprising,

a motive power source,

means for translating the output of said motive power into an orbital motion,

means for mechanically and positively coupling said orbital motion to said whip rod to cause it to orbit over the inner surface of said tube to distribute the first fluid and to remove solids from the inner surface deposited from the first fluid as a result of the heat transfer.

5,385,646

METHOD OF TREATING CHEMICAL PROCESS EFFLUENT

Allan D. Holiday, Overland Park, Kans., assignor to Farmland Industries, Inc., Kansas City, Mo.

Filed Sep. 3, 1993, Ser. No. 116,863
Int. Cl.[6] B01D *3/38*
U.S. Cl. 203—11 **16 Claims**

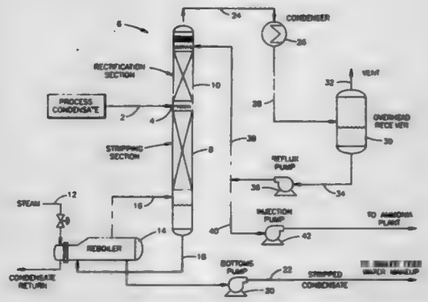
1. A method for treating a chemical production plant process effluent aqueous stream of dilute contaminants, said method comprising the following steps:

stripping at least a portion of said contaminants from said process effluent in a stripping section to obtain a contaminant-rich overhead stream and an aqueous bottom stream of reduced contaminant content;

rectifying said contaminant-rich overhead stream in a rectification section to obtain a concentrated overhead stream;

condensing said concentrated overhead stream to obtain a contaminant-rich overhead condensate;

recycling said overhead condensate to the rectifying step to form a closed loop so as to build up the concentration of contaminants in said overhead condensate; and



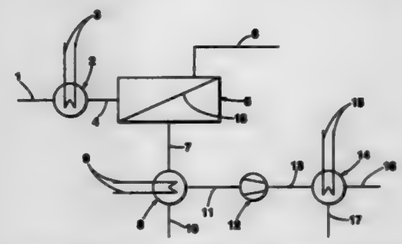
separating and withdrawing from said closed loop a fraction of said overhead condensate; and reusing said fraction of the overhead condensate the chemical production plant.

5,385,647

PROCESS FOR THE REDUCTION OF THE ALCOHOL CONTENT OF ALCOHOLIC BEVERAGES

Hartmut E. A. Brueschke, Nussloch; Walter H. Schneider, Donnersheim, and Guenter F. Tusel, Homburg/Saar, all of Germany, assignors to Deutsche Carbone AG, Neunkirchen/-Heinitz, Germany

Division of Ser. No. 701,187, May 16, 1991, abandoned, which is a continuation of Ser. No. 308,800, Feb. 9, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 7,258
Claims priority, application Germany, Feb. 11, 1988, 3804236
Int. Cl.[6] B01D *3/00, 13/00*; A23L *2/08*
U.S. Cl. 203—39 **11 Claims**



1. A process for reducing the alcohol content of an alcoholic beverage comprising the steps of:

pervaporating said beverage with a pervaporation membrane to remove at least a portion of the alcohol as a permeate vapor;

first condensing said permeate vapor at a temperature of about 0° to −30° C. and a pressure of about 0.5 to 50 mbar in a manner to substantially condense the alcohol vapors in said permeate vapor while avoiding substantial condensation of volatile aroma compounds in said permeate vapor;

further condensing said permeate vapor at a temperature of about −20° to −70° C. and by the use of a multi-step condensation, with each condensation step being carried out at a step-wise increased higher pressure compared to the first condensing step, up to atmospheric pressure, to enable condensation of said aroma compounds; and

mixing said condensed aroma compounds with the alcohol-reduced retentate of said pervaporation step.

5,385,648
PROCESS FOR PREPARING A CERIC ION-CONTAINING AQUEOUS ACID SOLUTION
Noboru Sugishima; Noriaki Ikeda; Koichi Yamamoto, and Yasuhiko Kizu, all of Himeji, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan
Filed Jul. 22, 1993, Ser. No. 95,201
Claims priority, application Japan, Jul. 28, 1992, 4-201070
Int. Cl.[6] C07C *50/12*; C25B *3/00*
U.S. Cl. 204—89 R 28 Claims

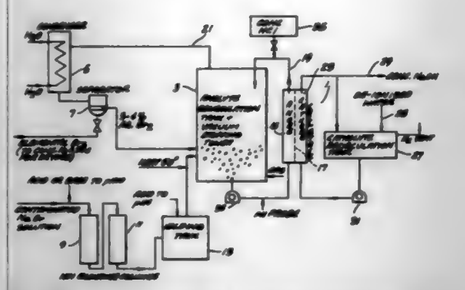
1. A process for preparing a ceric ion-containing aqueous acid solution by electrolytically oxidizing cerous ions in a cerous ion-containing aqueous acid solution contained in an electrolytic bath having no diaphragm between the anode and the cathode, which process comprises adding in an amount of 1 to less than 20,000 ppm at least one heterocyclic compound selected from the group consisting of substituted five-membered heteromonocyclic compounds, substituted six-membered heteromonocyclic compounds and condensed heteropolycyclic compounds to the cerous ion-containing aqueous acid solution, and

electrolytically oxidizing said cerous ions to ceric ions.

5,385,649
SEPARATION OF 1-HEXENE FROM HEXANE BY AZEOTROPIC DISTILLATION
Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.
Filed May 18, 1994, Ser. No. 245,473
Int. Cl.[6] B01D *3/36*; C07C *7/06*
U.S. Cl. 203—62 1 Claim

1. A method for recovering 1-hexene from a mixture of 1-hexene and hexane which comprises distilling a mixture of 1-hexene and hexane in the presence of an azeotrope forming agent, recovering the hexene-1 and the azeotrope forming agent as overhead product and obtaining the hexane as bottoms product; wherein said azeotrope forming agent consists of one material selected from the group consisting of t-butanol, cyclopentanol, diacetone alcohol and 2-ethyl-1-butanol.

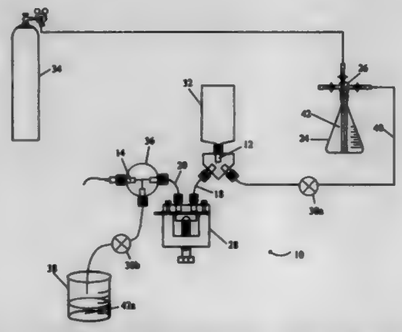
5,385,650
RECOVERY OF BROMINE AND PREPARATION OF HYPOBROMOUS ACID FROM BROMIDE SOLUTION
Jonathan N. Howarth; Ahmad Dadgar, both of Lafayette, and Rodney H. Sergent, W. Lafayette, all of Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.
Continuation-in-part of Ser. No. 791,049, Nov. 12, 1991, abandoned. This application Apr. 30, 1993, Ser. No. 56,858
Int. Cl.[6] C25B *1/22*, *1/24*
U.S. Cl. 204—103 29 Claims



25. A process for preparing a solution containing at least about 0.05M HOBr from a feed solution containing bromide ion and a source of acid comprising:

passing an electric current through the feed solution between an anode and a cathode of an electrolytic cell which are in electrical communication with the solution, the solution remaining at a pH of less than about 6.2 during passage of said current therethrough has been inserted after "solution," thereby generating bromine by electrolysis of the solution at the anode and producing an electrolyzate containing bromine, the bromine reacting with water in the electrolyzate to produce a solution containing at least about 0.05M HOBr.

5,385,651
DIGITAL ELECTROCHEMICAL ETCHING OF COMPOUND SEMICONDUCTORS
John L. Stickney; Qing Lei, and Choong K. Rhee, all of Athens, Ga., assignors to University of Georgia Research Foundation, Athens, Ga.
Continuation-in-part of Ser. No. 695,969, May 6, 1991, Pat. No. 5,320,736, which is a continuation-in-part of Ser. No. 640,597, Jan. 11, 1991, abandoned. This application May 28, 1993, Ser. No. 68,752
Int. Cl.[6] C25F *3/12*
U.S. Cl. 204—129.25 7 Claims

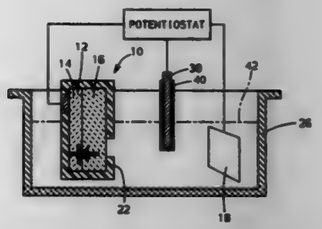


1. A method for the electrochemical etching of compound semiconductors which comprises alternating atomic layers of at least a first element and a second element, comprising the steps of:

a. providing an electrochemical flow cell system which comprises a first electrode, a compound semiconductor comprising alternating layers of at least a first element and a second element, an electrolyte solution which can be actively flowed over said compound semiconductor, and a means for selecting and controlling the electrochemical potential across said electrochemical flow cell system, wherein said first electrode and the compound semiconductor are in electrochemical contact with each other by way of said electrolyte solution; and

b. sequentially stripping layers of the first element and the second element from the compound semiconductor by selecting a first electrochemical potential sufficiently close to the upper or lower decomposition potential of the compound semiconductor to result in the removal of at least a portion of the atomic layer of the first element, leaving the atomic layer of the second element intact, and then selecting a second electrochemical potential sufficiently close to the lower or upper decomposition potential of the compound semiconductor to result in the removal of at least a portion of the atomic layer of the second element left after the removal of said portion of the atomic layer of the first element, wherein said first electrochemical potential is not sufficient to strip the second element from the semiconductor and said second electrochemical potential is not sufficient to strip the first element from the semiconductor.

5,385,652
METHOD OF ETCHING USING A SILVER/SILVER OXIDE REFERENCE ELECTRODE
Su-Chee S. Wang, Troy, Mich., and Dan W. Chilcott, Sharpsville, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed Dec. 17, 1993, Ser. No. 168,328
Int. Cl.[6] C23F *3/00*
U.S. Cl. 204—129.25 6 Claims



1. A method of wet electrochemical etching comprising:

providing an etchant solution;

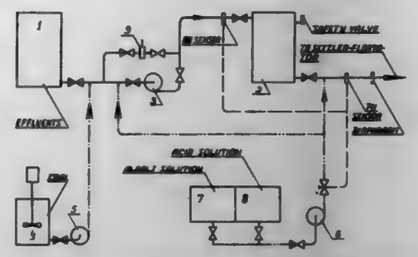
providing a working electrode comprising silicon being selectively masked and having a p-n junction, a counter-electrode and a reference electrode in contact with the anisotropic etchant solution;

said reference electrode comprising an Ag layer and an Ag_2O layer;

applying a positive bias voltage to the working electrode to selectively etch the same; and

measuring the potential between the working electrode and the reference electrode, and selectively adjusting the voltage applied to the working electrode as a function of the measured potential.

5,385,653
METHOD OF AND DEVICE FOR INDUSTRIAL WASTE WATER TREATMENT
Semyon Tamarkin, 11 Lincoln Ave., West Orange, N.J. 07052
Filed Nov. 9, 1993, Ser. No. 149,090
Int. Cl.[6] C02F *1/463*
U.S. Cl. 204—150 6 Claims



1. A method of treatment of electroconductive waste water, comprising the step of

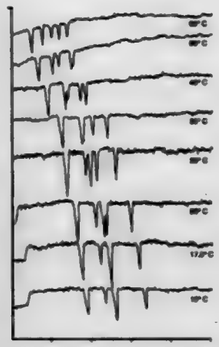
loading a vessel with metal particles;

pumping waste water to the vessel though a line;

supplying coal particles into the line through which the waste water is pumped to the vessel; and

passing the coal particles with waste water through the vessel loaded with metal particles to form galvanic couples to produce Fe^{+2} which provide chemical reduction of ions of heavy metals and formation $Fe(OH)_2$ to form a coagulating agent which absorbs impurities contained in the waste water.

5,385,654
CONTROLLED TEMPERATURE ANION SEPARATION BY CAPILLARY ELECTROPHORESIS
Lenore Kelly, Sunnyvale; Dena S. Burgi, Menlo Park, and Robert J. Nelson, Fremont, all of Calif., assignors to Thermo Separation Products Inc., Fremont, Calif.
Filed Jul. 7, 1993, Ser. No. 88,439
Int. Cl.[6] G01N *27/26*, *27/447*
U.S. Cl. 204—180.1 18 Claims



1. A method for detecting and separating anions in a sample using capillary electrophoresis comprising the steps of, providing a capillary filled with a carrier electrolyte, said carrier electrolyte containing a light-absorbing co-anion, heating or cooling said capillary to a target temperature in the range of from 25° C. to 60° C., introducing a sample containing one or more anions into said capillary, applying an electrical current to said capillary under conditions causing anions in said sample to migrate and separate, and detecting said anions indirectly using a photometric detector while maintaining the temperature in said capillary to within ±0.5° C. of said target temperature, wherein said anions are detected by simultaneously monitoring said sample at two different wavelengths.

5,385,655
TREATMENT OF METAL PARTS TO PROVIDE RUST-INHIBITING COATINGS
Randall J. Brent, North Royalton, and David A. Blaha, Parma, both of Ohio, assignors to Man-Gill Chemical Company, Cleveland, Ohio
Continuation of Ser. No. 969,128, Oct. 30, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 156,308
Int. Cl.[6] C25D *13/12*
U.S. Cl. 204—181.1 27 Claims

15. A method of producing an adherent and rust-inhibiting multilayer finish on metal parts selected from the group consisting of ferrous metal, zinc, aluminum, and alloys thereof comprising the steps of

(A) immersing the parts in an aqueous acidic zinc, lead, iron or manganese phosphating solution for a period of time and at a temperature sufficient to deposit an adherent phosphate coating on said metal parts;

(B) rinsing the phosphate-coated parts with an aqueous acidic solution containing an under-paint corrosion inhibitor;

(C) immersing the phosphate-coated metal parts contained on a rack or in a rotatable porous barrel in an aqueous dispersion, emulsion or solution of a thermosetting resin and passing through said parts, an electric current thereby electrodepositing resin particles on the phosphate-coated parts by electrophoresis to form a first resin film;

(D) contacting the electrophoretically coated parts with an aqueous composition prior to curing of the coating deposited in (B) to form a second film of the aqueous composi-

tion over the first film as a seal coat, said second film comprising water and at least one water-dispersible or emulsifying film-forming resin;

(E) curing the films on the metal parts by subjecting the parts to an elevated temperature for a time sufficient to cure the films; and

(F) contacting the cured resin-coated parts with oil, oil containing a corrosion inhibitor, or a corrosion inhibitor without oil to form a top seal coat.

5,385,656

PROCESS FOR PRODUCING GRAVEL-IMPACT-RESISTANT MULTICOAT LACQUER FINISHES AND PASTE FILLER USABLE THEREFOR

Klaus P. Doehler, Radevormwald; Wolfgang Göldner, Heiligenhaus; Roland Grütter, Wuppertal; Reiner Jungermann, Dortmund, and Manfred Oppermann, Wuppertal, all of Germany, assignors to Herberts GmbH, Wuppertal, Germany

Filed Jul. 22, 1992, Ser. No. 918,482
Claims priority, application Germany, Aug. 1, 1991, 4125459
Int. Cl.[6] C25D *12/12*
U.S. Cl. 204—181.1 18 Claims

1. A process for producing a gravel-impact-resistant multicoat lacquer finish on electrically conductive substrates comprising:

applying a primer on a conductive substrate by cathodic electrodeposition from an aqueous coating agent;

subsequently applying over the applied primer, either wet-on-wet, or after flashing-off or after stoving, a primer surfacer coat of an aqueous paste filler containing at least one curable water-dilutable binder cured at a temperature not greater than 180° C.; and

applying over the applied primer surfacer coat, either wet-on-wet or after flashing-off or after stoving, at least one base coat and at least one finishing coat,

wherein the aqueous paste filler comprises 0.1 to 20 wt % of at least one member selected from the group consisting of polyamide powder and polyacrylonitrile powder which do not melt or dissolve during stoving and which have particle diameters in a range of 0.1 to 100 μm, and

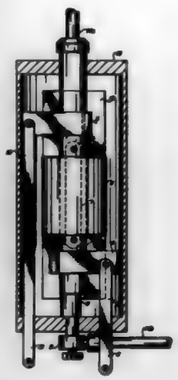
wherein the aqueous paste filler has a high-solid value of not less than 75 wt. %.

5,385,657

APPARATUS FOR THE GASIFICATION OF WATER

Arthur E. Dungan, P.O. Box 8, Bethany, La. 71007

Filed Sep. 22, 1993, Ser. No. 124,448
Int. Cl.[6] C25B *9/00, 15/08*
U.S. Cl. 204—228 10 Claims



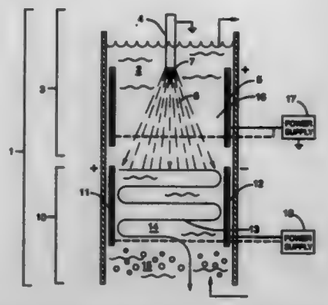
1. An apparatus for generating hydrogen gas from water using a source of electric power, said apparatus comprising a hollow reaction vessel; a water intake conduit positioned in fluid communication with one end of said reaction vessel and a gas outlet conduit positioned in fluid communication with the opposite end of said reaction vessel; an electrode connected to the source of electric power and extending through said reaction vessel and having a first end secured in said water intake conduit and a second end secured in said gas outlet conduit; pump means provided in fluid communication with said water intake conduit for pumping water into said water intake conduit; switch means provided in electrical communication with said electrode and the source of electric power for selectively energizing said electrode, whereby said electrode is heated responsive to operation of said switch means and electric power, and water is caused to flow through said water intake conduit into said reaction vessel and contacts said electrode and is converted into hydrogen and oxygen gas for exiting said gas outlet, responsive to operation of said pump means.

5,385,658

ELECTRIC FIELD CONTROLLED EMULSION PHASE CONTACTOR

Timothy C. Scott, Knoxville, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 764,811, Mar. 22, 1991, Pat. No. 5,262,027.
This application Aug. 6, 1993, Ser. No. 103,939
Int. Cl.[6] B03C *5/00*
U.S. Cl. 204—305 11 Claims



1. A system for contacting liquid phases comprising:

a transporting means for transporting a liquid phase contacting system;

an introducing means for introducing a first liquid phase into a continuous second liquid phase within said liquid phase contacting system;

an applying means for applying to said first liquid phase a generally vertically oriented pulsed electric field having a D.C. offset with superimposed voltage spikes, said pulsed electric field being of sufficiently high intensity to shatter said first liquid phase into many micro-droplets upon exiting said introducing means to form a dispersion;

a subjecting means for subjecting said dispersion to a further pulsed electric field so that said first liquid phase undergoes continuous coalescence and redispersion; and,

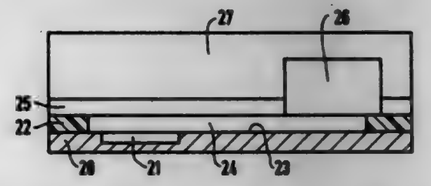
a coalescing means for coalescing said dispersion to form a separate liquid phase of said first liquid phase.

5,385,659

REFERENCE ELECTRODE

Walter Gumbrecht, Herzogenaurach; Wolfgang Schelter, Uttenreuth, and Bernhard Montag, Forchheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 10, 1993, Ser. No. 119,929
Claims priority, application Germany, Sep. 14, 1992, 4230691
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—435 18 Claims



1. A planar reference electrode for chemical sensors, which are able to be supplied with a measuring fluid and a calibrating fluid, comprising:

an internal reference element situated on a flat substrate;

a structured polymer layer covering the substrate in a vicinity of the internal reference element, the structured polymer layer having at least one trench, which serves as a diffusion channel and which extends in a lateral direction from the internal reference element to a region in contact with a measuring fluid to be supplied to the chemical sensor, where diffusion characteristics in the trench are determined, at least in part, by the trench geometry; and

a covering which seals off the trench.

5,385,660

DENDRITIC GROWTH ASSISTED ELECTROFORM SEPARATION

William G. Herbert, Williamson; Loren E. Hendrix, Webster; Gary J. Maier, Webster, and Ernest F. Matyi, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1993, Ser. No. 169,281
Int. Cl.[6] C25D *1/20*
U.S. Cl. 205—67 18 Claims

1. A method for parting an electrodeposited article comprised of a first surface region and a second surface region from a mandrel, wherein the method comprises:

(a) positioning the article and the mandrel in a metal deposition solution;

(b) forming a plurality of metal dendrites on the second surface region, wherein the first surface region is free of metal dendrites; and

(c) gripping a portion of the second surface region, thereby contacting the metal dendrites, while separating the article and the mandrel.

5,385,661

ACID ELECTROLYTE SOLUTION AND PROCESS FOR THE ELECTRODEPOSITION OF COPPER-RICH ALLOYS EXPLOITING THE PHENOMENON OF UNDERPOTENTIAL DEPOSITION

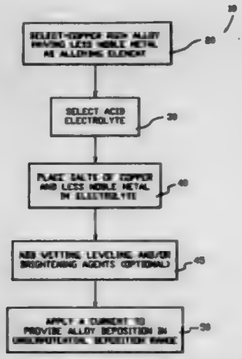
Panayotis C. Andricacos, Croton-on-Hudson; I-Chia Chang, Peekskill, both of N.Y.; Hariklia Deligianni, Edgewater, N.J., and Wilma J. Horkans, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 17, 1993, Ser. No. 123,623
Int. Cl.[6] C25D *3/58*
U.S. Cl. 205—239 20 Claims

13. A method for electrodepositing copper-rich alloys on a substrate using a deposition potential, the method comprising the steps of:

selecting a copper-rich alloy having, as the minor component, a metal that is less noble than copper and form an underpotential deposition layer on copper;

selecting a methane sulfonic acid electrolyte adapted to permit the underpotential deposition of said less noble metal on said copper and the electrodepositing of said copper-rich alloy on the substrate;



dissolving in said acid electrolyte simple salts of said metal and said copper that will be deposited as said copper-rich alloy to form the plating solution;

applying a current between a cathode and an anode in said plating solution to electroplate said copper-rich alloy on the cathode.

5,385,662

METHOD OF PRODUCING OXIDE CERAMIC LAYERS ON BARRIER LAYER-FORMING METALS AND ARTICLES PRODUCED BY THE METHOD

Peter Kurze, Düren; Dora Banerjee, Kerpen, and Hans-Jürgen Kletke, Düren, all of Germany, assignors to Electro Chemical Engineering GmbH, Zug, Switzerland

Filed Nov. 25, 1992, Ser. No. 982,092
Claims priority, application Germany, Nov. 27, 1991, 4139006
Int. Cl.[6] C25D *9/06*
U.S. Cl. 205—316 7 Claims

1. A method of producing oxide ceramic layers on Al, Mg, Ti, Ta, Zr, Nb, Hf, Sb, W, Mo, V, Bi or their alloys, the method comprising carrying out a plasma-chemical anodic oxidation in a substantially chloride-free electrolytic bath having less than 5×10^{-3} mol/l chloride ions and a pH value of 2–8 and a constant bath temperature of between −30° to +15° C., and maintaining constant in the electrolytic bath a current density of at least 1 A/dm^2 until the voltage reaches an end value; the electrolytic bath containing phosphate ions, borate ions and fluoride ions in a quantity of up to a total of 2 mol/l, and a stabilizer selected from the group consisting of urea, hexamethylenediamine and hexamethylenetetramine, glycol and glycerin in a quantity of up to 1.5 mol/l.

5,385,663

INTEGRATED HYDROCRACKING-CATALYTIC DEWAXING PROCESS FOR THE PRODUCTION OF MIDDLE DISTILLATES

Joseph E. Zimmerman, Arlington Heights, and Edward C. Haas, Glendale Hts., both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Jun. 18, 1992, Ser. No. 900,402
Int. Cl.[6] C10G *67/00*
U.S. Cl. 208—58 3 Claims

1. In a hydrocarbon conversion process which comprises the steps of:

a. passing a feed stream comprising a complex mixture of

hydrocarbonaceous compounds having boiling points above about 370 degrees centigrade into a hydrocracking reaction zone operated at hydrocracking conditions and producing a hydrocracking zone effluent stream comprising normally liquid distillate product hydrocarbons;

b. passing the hydrocracking zone effluent stream into a fractionation zone operated at conditions effective to separate entering hydrocarbons into a plurality of product streams including at least one middle distillate stream having a boiling point range between about 232 and about 450 degrees centigrade, and

c. admixing a substantially sulfur-free first hydrogen rich gas stream with the middle distillate stream and passing the resultant admixture into a catalytic dewaxing zone operated at dewaxing conditions and producing a dewaxing zone effluent stream; the improvement which comprises:

i. using a dewaxing catalyst comprising a SAPO or MgAPSO nonzeolitig molecular sieve and a hydrogenation component comprising palladium or platinum in the dewaxing step whereby the dewaxing zone effluent stream does not require stabilization by a sequential hydrotreatment;

ii. recovering a low sulfur second hydrogen rich gas stream from the dewaxing zone effluent stream; and

iii. compressing the entire second hydrogen rich gas stream and passing the entire untreated second hydrogen rich gas stream into said hydrocracking zone as a makeup hydrogen gas stream charged to the hydrocracking zone.

5,385,664

APPARATUS FOR PRODUCING ULTRAPURE WATER

Masayoshi Oinuma, and Toru Kawachi, both of Tokyo, Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Filed Aug. 2, 1993, Ser. No. 100,137

Claims priority, application Japan, Aug. 25, 1992, 4-225681

Int. Cl.[6] C02F *3/02*

U.S. Cl. 210—151 **12 Claims**



1. An ultrapure water production apparatus, comprising:

a source water pretreatment system including a biological treatment device formed of an upward flow biological decomposition device containing therein activated carbon as carriers to be fluidized by an upward flow of source water and biomass fixed to surfaces of the carriers, said upward flow biological decomposition device including a biological decomposition tank containing the carriers with the biomass; an aeration tank; a source water inflow pipe connected to a lower part of the biological decomposition tank for supplying the source water to the biological decomposition tank; a treated water discharge pipe connected to an upper part of the biological decomposition tank to supply water in the biological decomposition tank to the aeration tank; an outflow pipe connected between a lower part of the aeration tank and the lower part of the biological decomposition tank to return water in the aeration tank back to the biological decomposition tank; and an overflow water outflow pipe connected to an upper part of the aeration tank,

a primary pure water system connected to the overflow water outflow pipe for receiving water from the overflow water outflow pipe and processing primary purification for water, and

a secondary pure water system connected to the primary pure water system for processing secondary purification for water.

5,385,665

APPARATUS FOR THE FOAMING OF ORGANIC COMPONENTS IN WATER

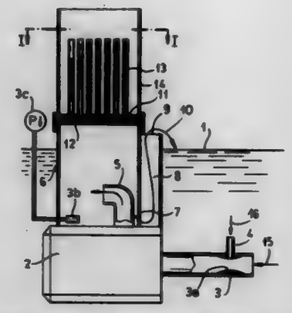
Adolf Neuhaus, Breckerfelder Str. 135, W-5828 Ennepetal-Oberhaeser, Germany

Filed May 4, 1993, Ser. No. 57,303

Claims priority, application Germany, May 4, 1992, 4214318

Int. Cl.[6] B01D *17/035*; A01K *63/04*

U.S. Cl. 210—169 **1 Claim**



1. A foaming apparatus for the foaming separation of organic components from seawater or sweet water, comprising:

an upright aeration vessel provided with means for feeding water to said vessel, an overflow for discharging water from said vessel, a vessel mouth formed at the top of said vessel, and means for feeding air to the water in said vessel whereby bubbles are formed at said mouth of said vessel entraining organic components from the water therewith;

a collection unit comprising a bottom plate mounted on the mouth of said vessel and having a plurality of holes therein, and a collecting receptacle connected to said bottom plate and extending upwardly therefrom; and

riser means extending upwardly from said bottom plate and communicating with said mouth for conducting said bubbles upwardly through said riser means and into said collection unit, whereby said organic components entrained with said bubbles are removed at an upper end of said riser means, said riser means being formed of a plurality of at least three closely spaced tall thin wall tubes of uniform circular cross section having a constant diameter of between 3 mm and 8 mm and defining upwardly extending passages between them thereby allowing said organic components which rise to the upper end of the riser tubes in said riser means to be deposited into said receptacle after exiting said tubes, each of said tubes extending from a corresponding openings formed in said bottom plate of said collecting unit spanning said mouth of said vessel.

5,385,666

MEANS FOR RELEASING LEAVES AND DEBRIS FROM HAND-HELD SWIMMING POOL LEAF SKIMMER

Leon Perlweig, 23017 Gainford St., Woodland Hills, Calif. 91364

Filed Oct. 12, 1993, Ser. No. 135,011

Int. Cl.[6] E04H *4/14*

U.S. Cl. 210—169 **5 Claims**



1. A swimming pool skimmer having:

an elongated pole;

an open frame fastened to one end of said pole, the other end of said pole adapted to be held by the user,

a porous, flexible basket carried by said frame and normally hanging below said frame in an extended, open position to facilitate collecting and holding debris during skimming, and

manually actuatable means mounted on said pole and connected to said basket for extending said basket in an open position above said frame when said pole and basket are rotated about the axis of the pole 180° from their position during skimming to permit debris collected in said basket to fall freely therefrom,

said manually actuatable means comprising: an elongated handle having one end pivotally coupled to said pole at a point near said other end of said pole and manually movable from a first position lying along said pole on one side of said pivot point to a second position along said pole on the other side of said pivot point, an operating member movably mounted on said pole, and means interconnecting said handle, said operating member and said basket, whereby upon movement of said handle from said first position to said second position said operating member is moved to extend said basket.

5,385,667

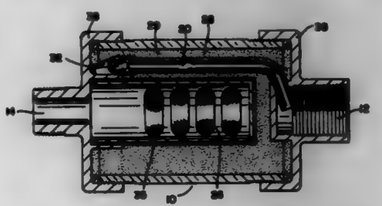
APPARATUS FOR THE PURIFICATION OF SHOWER WATER

William R. Steger, 7145 Logan Ave. S., Minneapolis, Minn. 55423

Continuation of Ser. No. 710,117, Jun. 4, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 51,003

Int. Cl.[6] B01D *15/00*

U.S. Cl. 210—198.1 **8 Claims**



1. An apparatus for the purification of household water which comprises:

a chamber having water inlet and outlet passages, containing an effective amount of finely divided metal particles having a suitable redox potential and having sufficient unfilled space for the suspension of the finely divided metal particles in the household water flowing therethrough;

water inlet means for directing the flow of household water from said water inlet passage into and radially outwardly through the finely divided metal particles in the chamber and for suspending the finely divided metal particles in said chamber said inlet means including a water inlet tube extending into said finely divided metal particles, wherein said water inlet tube has a smaller diameter than the diameter of said water inlet passage; and

means for separating said finely divided metal particles from the outlet water leaving the chamber through the outlet passage.

5,385,668

APPARATUS FOR SEPARATING PARTICULATE MATERIAL FROM A LIQUID MEDIUM

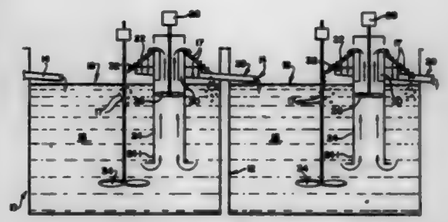
Lennox P. H. Greenhalgh, Bedfordview, and Robert P. Riley, Parkrand, both of South Africa, assignors to Bateman Project Holdings Limited, Boksburg, South Africa

Filed Jun. 26, 1992, Ser. No. 908,249

Claims priority, application South Africa, Jun. 27, 1991, 91/4976

Int. Cl.[6] C02F *9/00*

U.S. Cl. 210—257.1 **9 Claims**



1. An installation for maintaining a particulate material in suspension in a liquid medium and for continuously separating the particulate material from the liquid medium in which the particles are suspended, which includes

a plurality of vessels for the liquid medium, each vessel having an inlet to charge liquid medium into the vessel to a predetermined level and an outlet;

independently operable and separate agitation means provided within each said vessel for maintaining particulate material in the vessel in suspension in the liquid medium;

an open-ended lift pipe mounted substantially upright in each said vessel to present an upper end and a lower end, with the lower end of the lift pipe submerged in the liquid medium and the upper end extending above said level of the liquid medium;

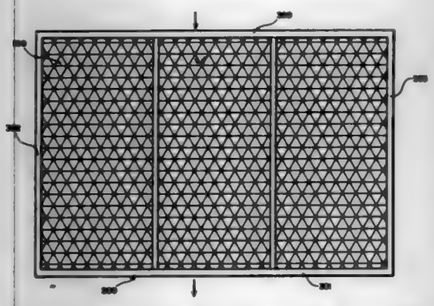
a screen provided in each said vessel, the screen being mounted on the upper end of the lift pipe to be located in a position substantially above the liquid medium and being arranged at an angle to the horizontal to present an upper screen area and a lower screen area and with at least the upper screen area at an elevation above the said liquid level;

separate means in the form of an axial flow impeller provided within the lift pipe for causing an upward flow through the lift pipe of a portion of the liquid medium with suspended particles in each said vessel to a level at least as high as the upper area of the screen, and for continuously discharging that portion of the liquid medium with suspended particles onto the upper area of the screen, thereby causing a flow of liquid medium and particles under force of gravity down the screen from the upper area of the screen to the lower area of the screen, with the liquid passing through the screen and the particles being retained on the screen;

collecting means for collecting screened liquid medium having passed the screen and conveying it to the aforesaid outlet of each said vessel; and

conduit means provided for each said vessel for feeding the collected liquid medium from the said outlet of each said vessel to the inlet of a succeeding vessel at least partially under force of gravity.

5,385,669
MINING SCREEN DEVICE AND GRID STRUCTURE THEREFOR
Vincent D. Leone, Sr., Houston, Tex., assignor to Environmental Procedures, Inc., Houston, Tex.
Filed Apr. 30, 1993, Ser. No. 56,123
Int. Cl.[6] B01D *29/00*
U.S. Cl. 210—488 **10 Claims**



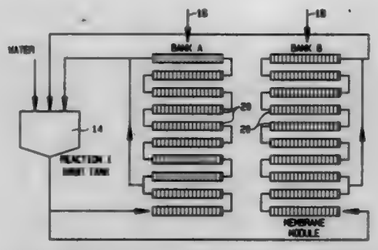
1. A screen apparatus for separating solids from a drilling fluid, the screen apparatus comprising
an outer frame having four interconnected sides defining a frame opening through the frame, the four sides including two pairs of spaced-apart parallel sides,
at least one support member extending across the outer frame from one side to an opposing side parallel to and across from the one side,
a grid structure secured over the frame and covering the frame opening, the grid structure comprising
a plurality of spaced-apart first extending elements each extending across the frame continuously in a straight line and at an angle to sides of the frame,
a plurality of spaced-apart second extending elements each extending across the frame continuously in a straight line and at an angle to sides of the frame and at an angle to the first extending elements,
a plurality of base extending elements extending across the frame parallel to both sides of one of the pairs of spaced-apart parallel sides of the frame,
the first extending elements intersecting the second extending elements forming an acute angle therebetween so that with the base extending elements a plurality of open triangular openings are defined through the grid structure, each triangular opening having a shape of an acute triangle , and
a solids-filtering screen means secured over the grid structure and covering the plurality of triangular openings for filtering solids from the drilling fluid.

5,385,670
METHOD FOR DRYING POROUS ULTRAFILTRATION MEMBRANES
Richard M. McDonogh, Stuttgart; Hermann J. Gohl, Bisingen-Zimmern, and Reinhold J. Buck, Alleshausen, all of Germany, assignors to Gambro Dialysatoren GmbH & Co. KG, Germany
Filed May 10, 1993, Ser. No. 60,021
Claims priority, application Germany, Jun. 23, 1992, 4220441
Int. Cl.[6] B01D *39/00*
U.S. Cl. 210—500.3 **20 Claims**

19. A method for drying a wet porous ultrafiltration membrane comprising the steps of: providing a wet porous ultrafiltration membrane composed of at least one material selected from the group consisting of polyether sulphone, polyether imide, polysulphone, polyamide and polyvinyl pyrrolidone, said ultrafiltration membrane including pores; filling, at least partially, said pores of said ultrafiltration membrane with a water miscible solution of a water soluble inorganic solid having a melting point about 35° C. dissolved in an organic solvent which is completely miscible with water and which has a molecular weight in the range of between about 100 and about 500; and drying said membrane; wherein at least a portion of said organic solid remains in said pores upon drying.

20. An ultrafiltration membrane produced in accordance with the method of claim 19.

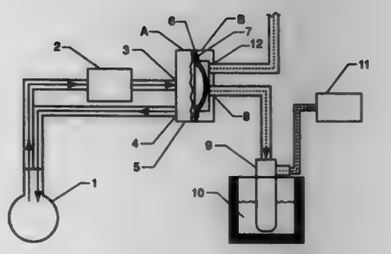
5,385,671
MAGNESIUM HYDROXIDE RECOVERY
Marie M. B. Talbot, Montrose; Marie M. J. Talbot, Hayfields, and Francis D. Urbaniak-Hedley, Lincoln Meade, all of South Africa, assignors to Adcock Ingram Self Medication (Proprietary) Limited, Natal, South Africa
Filed Oct. 29, 1993, Ser. No. 145,901
Claims priority, application South Africa, Nov. 3, 1992, 92/8469
Int. Cl.[6] B01D *6/168*
U.S. Cl. 210—636 **10 Claims**



1. A method for the separation of magnesium hydroxide from a mixture of particulate magnesium hydroxide and dissolved sodium sulphate in water and for the washing and thickening of the magnesium hydroxide which includes the steps of:
(a) pumping the mixture from a holding tank through an ultrafiltration module comprising a plurality of tubular membranes to which is applied a back pressure so that the dissolved sodium sulphate passes through the membrane pores positioned substantially at right angles to the direction of flow as a permeate;
(b) adding water to the mixture prior to its introduction into the ultrafiltration module at a rate substantially equal to the permeate flow rate until the sulphate concentration in the magnesium hydroxide is less than a desired level; and
(c) then discontinuing the water addition thus allowing the magnesium hydroxide to thicken until a desired viscosity is reached.

5,385,672
METHOD FOR PREPARING MEMBRANES WITH ADJUSTABLE SEPARATION PERFORMANCE
Eric S. Peterson, Idaho Falls; Christopher J. Orme, Shelley, and Mark L. Stone, Idaho Falls, all of Id., assignors to EG&G Idaho, Inc., Idaho Falls, Id.
Filed Oct. 13, 1993, Ser. No. 135,223
Int. Cl.[6] B01D *53/22, 61/08*
U.S. Cl. 210—637 **14 Claims**

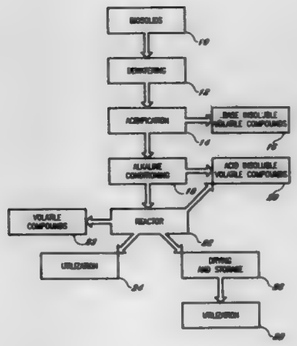
1. A separation process which comprises the steps of:
(a) placing onto a porous support a membrane capable of swelling in the presence of a solution comprising at least one solvent and at least one solute;
(b) applying the solution to the feed side of the membrane to allow the membrane to swell substantially maximally
(c) subsequently applying vacuum depressurization to the permeate side of the membrane while the solution is passed to the feed side of the membrane to thereby provide a flux rate through the membrane; and



(d) continuing to adjust and selectively apply said vacuum depressurization until the desired separation of the solvent and solute and the desired flux rate are attained.

5,385,673
METHOD OF TREATING WASTEWATER BIOSOLIDS
Robert E. Fergen, Raleigh, N.C., assignor to Hazen and Sawyer, P.C., New York, N.Y.
Filed Sep. 8, 1992, Ser. No. 942,144
Int. Cl.[6] C02F *11/14*
U.S. Cl. 210—710 **9 Claims**

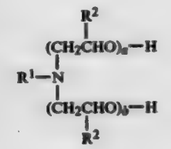
1. A method of sterilizing wastewater sludge for reuse as a fertilizer supplement, as a landfill cover material, and for stabilization of soils, said method comprising the steps of:
(a) initially dewatering a volume of wastewater sludge until reaching a moisture content in the range of 40% to 90%;
(b) admixing an acidic material to said wastewater sludge to depress said volume of wastewater sludge to a pH below 5 standard units;
(c) admixing an alkaline material to said depressed pH volume of wastewater sludge to a pH value of 12 or more standard units;
(d) placing said volume of wastewater sludge into a closed reactor vessel to maintain said wastewater sludge at a temperature of at least 55° C. for at least two hours; and



(e) removing said wastewater sludge from said reactor vessel and allowing drying of said wastewater sludge to occur.

5,385,674
PROCESS FOR SEPARATION OF PETROLEUM EMULSIONS OF THE WATER-IN-OIL TYPE
Rainer Kupfer, Hattersheim; Martin Hille, Liederbach; Roland Böhm, Kelkheim, and Friedrich Staiss, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany
Filed May 27, 1993, Ser. No. 68,630
Claims priority, application Germany, May 30, 1992, 4217985
Int. Cl.[6] B01D *17/05*
U.S. Cl. 210—708 **10 Claims**

1. A process for separation of a petroleum emulsion of the water-on-oil type, which comprises adding to the emulsion an effective amount of an esterification product of the components consisting essentially of an oxyalkylated primary fatty amine component of the following formula I



in which R^1 is an alkyl radical or alkenyl radical having 6 to 23 carbon atoms, R^2 is H, CH_3, or H and CH_3 within the chain of

the polyoxyalkylene radical, arranged in blocks or randomly, and a and b are numbers from 2 to 30 in total, with the proviso that neither a nor b is zero,

and 0.5 to 1.5 mol, per mole of oxyalkylated primary fatty amine, of a dicarboxylic acid component; and separating the emulsion to an oil phase and a water phase.

5,385,675

METHOD FOR OIL SPILL DISPERSION

Albert L. Vroman; Pamela K. Benner, and Shelly A. Stedman, all of Portland, Mich., assignors to Zing Odor Control, Inc., Portland, Mich.

Filed Jun. 25, 1993, Ser. No. 81,224
Int. Cl.[6] C02F *1/40*
U.S. Cl. 210—728 **8 Claims**

1. A method for treating an oil spill in water which comprises:

applying a composition consisting essentially of effective amounts of a mixture of methyl benzoate and a surfactant to the oil spill so that the oil coalesces in the water as particles and sinks, wherein the volume ratio of methyl benzoate to surfactant is between about 1 to 10 and 10 to 1.

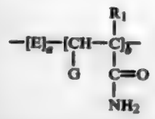
5,385,676

WATER SOLUBLE GRAFT COPOLYMERS FOR PAINT SPRAY BOOTH SLUDGE DEWATERING

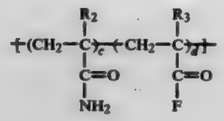
Wen P. Liao, Warminster, and Deborah L. Purnell, Philadelphia, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 773, Jan. 5, 1993, Pat. No. 5,298,566, which is a division of Ser. No. 691,206, Apr. 25, 1991, Pat. No. 5,211,854. This application Aug. 3, 1993, Ser. No. 100,903
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[6] C02F *1/56*; C08F *265/10*
U.S. Cl. 210—734 **14 Claims**

1. A method of dewatering paint spray booth sludge in the recirculating water system of a paint spray booth comprising adding to the water from about 0.1 to 100 ppm, by weight, of a water soluble graft copolymer having the structure:



wherein E is the repeat unit obtained after polymerization of an α, β ethylenically unsaturated compound, the molar percentage of a:b is from about 95:5 to 5:95, with the proviso that the sum of a and b equals 100%; G comprises the structure:



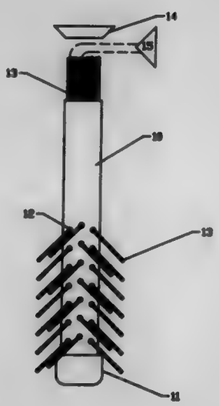
wherein R_1, R_2 and R_3 are the same or different and are hydrogen or a lower alkyl group having C_1 to C_3, F is the salt of an ammonium cation and the molar percentage of c:d is from 95:5 to 5:95 with the proviso that the sum of c and d equals 100%.

5,385,677

FIBER OPTIC PHOTOCHEMICAL OXIDATION DECONTAMINATION OF AQUEOUS LEACHATE PLUMES

William B. Venable, P.O. Box 736, Tallassee, Ala. 36078

Filed Apr. 30, 1993, Ser. No. 56,357
Int. Cl.[6] C02F *1/32*
U.S. Cl. 210—748 **6 Claims**



4. A method for the in-situ remediation of an aqueous leachate plume within an aquifer, said method comprising:

drilling a borehole into said aquifer;

placing at least one ultraviolet lamp at an above-ground location proximate said borehole, said at least one ultraviolet lamp having an output power, said at least one ultraviolet lamp further comprising means for adjusting said output power;

lowering an apparatus through said borehole into said aqueous leachate plume within said aquifer, the apparatus comprising:

a housing having a circumference, an upper end, a distal end, and a cap disposed on said distal end;

a source of an oxidizing agent, said oxidizing agent having a flow rate;

means for adjusting the flow rate of said oxidizing agent;

inlet means disposed at the upper end of said housing for introducing said oxidizing agent into said housing;

a plurality of outlet openings disposed around the circumference of said housing, said plurality of outlet openings defining means for discharging said oxidizing agent;

a plurality of optical fibers perpendicularly connected to and extending from said at least one ultraviolet lamp, said plurality of optical fibers extending through said housing, each of said plurality of optical fibers further having a distal end, each of said plurality of outlet openings having the distal end of at least one of said plurality of optical fibers extending therethrough;

introducing said oxidizing agent into said inlet means, through said housing, through said plurality of outlet openings, and into said aqueous leachate plume;

transmitting ultraviolet light generated by said at least one ultraviolet lamp through the distal end of each of said plurality of optical fibers into said aqueous leachate plume;

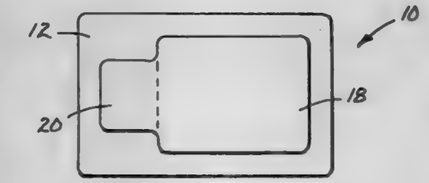
wherein contaminants present in said aqueous leachate plume are oxidized by contact with said oxidizing agent and said ultraviolet light.

5,385,679

SOLID STATE CONDUCTIVE POLYMER COMPOSITIONS, BIOMEDICAL ELECTRODES CONTAINING SUCH COMPOSITIONS, AND METHOD OF PREPAKING SAME

Rose Uy, and Timothy M. Dietz, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Continuation of Ser. No. 792,957, Nov. 15, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 101,812
Int. Cl.[6] C08J *3/00*; A61B *5/04*
U.S. Cl. 252—500 **11 Claims**



1. A solid state conductive polymer composition comprising:

(a) an ionically conductive polymer electrolyte complex formed by a process where the complex is effectively dehydrated by essentially evaporating the water, and

(b) an essentially non-volatile plasticizer

said polymer electrolyte complex comprising a solid solution of an ionic salt dissolved in a solvating polymer wherein the complex is ionically conductive after processing;

said solvating polymer comprising crosslinked poly(N-vinyl lactam) present in the composition in an amount of from about 5 to about 50 weight percent of the composition;

said plasticizer comprising a polyhydric alcohol present in the composition in an amount of from about 50 to about 95 weight percent of the composition;

said ionic salt present in the composition in an amount sufficient to interact with non-carbon atoms of the solvating polymer;

wherein the composition maintains its glass transition properties notwithstanding exposure to ambient air conditions for at least two weeks and wherein the solid solution functions as an ionically conductive medium after the at least two weeks.

5,385,678

FILTER MATERIAL

Paul R. Witt, Muscatine, Iowa, assignor to Grain Processing Corporation, Muscatine, Iowa

Filed Mar. 18, 1993, Ser. No. 32,969
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[6] B01D *15/00*
U.S. Cl. 210—777 **17 Claims**

12. A process for filtering a liquid which comprises passing through a mesh screen to build up thereon a filter precoat an aqueous slurry of a granular precoat composition comprising a major amount of a substantially water-insoluble phosphorylated starch and minor amounts of silica gel and cellulosic fibers, the particle size of the granular composition being sufficiently large for retention on a filter screen.

5,385,680

FINISHING PROCESS FOR TEXTILES, FINISHING BATH FOR TEXTILES USING PHOSPHINICOSUCCINIC ACID, PHOSPHINI COBISSUCCINIC ACID OR THEIR MIXTURES, FINISHED TEXTILES AND USE OF SAID ACIDS AS FINISHES

Wilhelm Didier, Issy Les Moulineaux, and Gelabert Antonio, Bouffemont-Moisselles, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Division of Ser. No. 41,463, Apr. 2, 1993, Pat. No. 5,300,240. This application Jan. 24, 1994, Ser. No. 185,149
Claims priority, application France, Apr. 3, 1992, 92 04076
Int. Cl.[6] D06M *13/184, 13/188, 13/192*
U.S. Cl. 252—8.6 **5 Claims**

1. Finished textile, characterized in that it is obtained by impregnating said textile with a finishing bath containing phos-

phinicosuccinic acid (I), phosphinicobissuccinic acid (II) or a mixture of phosphinicosuccinic acid (I) and phosphinicobissuccinic acid (II).

5,385,681

SCOURING AGENT COMPOSITION FOR FABRIC

Toshio Sato, Bangkok, Thailand; Masayuki Abe, Wakayama, Japan, and Jureerut Phis-On, Muang Samutprakarn, Thailand, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 13, 1993, Ser. No. 91,813
Claims priority, application Japan, Jul. 29, 1992, 4-202287
Int. Cl.[6] D06M *1/00*
U.S. Cl. 252—8.7 **10 Claims**

1. A scouring agent composition for a fabric comprising (A) an adduct of a secondary or branched alcohol having 8 to 16 carbon atoms with an alkylene oxide, (B) a salt of a secondary alkanesulfonic acid having 13 to 17 carbon atoms and/or a salt of carboxymethylate of an adduct of a branched alcohol having 12 to 18 carbon atoms with an alkylene oxide anti (C) a fatty acid having 6 to 18 carbon atoms or a salt thereof.

5,385,682

GREASE COMPOSITION

Timothy Hutchings, Wantage, and Kathryn M. Pilgrem, Didcot, both of England, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

PCT No. PCT/GB91/00755, § 371 Date Dec. 24, 1993, § 102(e) Date Dec. 24, 1993, PCT Pub. No. WO91/18076, PCT Pub. Date Nov. 28, 1991
PCT Filed May 15, 1990, Ser. No. 945,961
Claims priority, application United Kingdom, May 15, 1990, 9010841
Int. Cl.[6] C10M *141/08*
U.S. Cl. 252—18 **2 Claims**

1. A grease composition comprising:
(a) a lubricating base oil;
(b) a thickener selected from a lithium, calcium or sodium soap, or a mixture of two or more thereof; and
(c) a flame retardant additive comprising a mixture containing 1 to 7% by weight, based on the grease composition, of calcium oxide and from 1 to 7% by weight, based on the grease composition, of a potassium compound selected from potassium carbonate, potassium hydrogen carbonate and potassium sulphate.

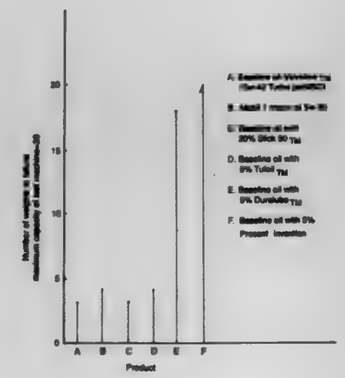
5,385,683

ANTI-FRICTION COMPOSITION

Louis J. Ransom, P.O. Box 515, Branchville, N.J. 07826

Filed Oct. 5, 1993, Ser. No. 131,738
Int. Cl.[6] C10M *139/00, 141/12*
U.S. Cl. 252—35 **44 Claims**

1. An anti-friction composition, comprising:
a first liquid component including a lubricant;
a second liquid component including bismuth chemically associated with an organic carrier; and



a third liquid component including tin chemically associated with an organic carrier,
wherein said second and third components together represent a concentration relative to the first component of 1–10%.

5,385,684

BRANCHED AMIDO-AMINE DISPERSANT ADDITIVES

Antonio Gutierrez, Mercerville, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Division of Ser. No. 926,129, Aug. 5, 1992, Pat. No. 5,229,020, which is a continuation of Ser. No. 358,903, May 30, 1989, abandoned. This application Jul. 15, 1993, Ser. No. 92,184
Int. Cl.[6] C10M *149/12, 151/04*
U.S. Cl. 252—47.5 **35 Claims**

1. A dispersant additive formed by a process which comprises:
(a) contacting in a first liquid reaction mixture a first nitrogen-containing compound having at least two reactive nitrogen moieties with a polyfunctional reactant having within its structure a first functional group reactive with a —NH— group, in an amount and under conditions sufficient to selectively react at least a portion of the first functional groups in the polyfunctional reactant with the reactive nitrogen moieties to form a first adduct;
(b) contacting the first adduct with a second nitrogen-containing compound having at least two —NH— groups in an amount and under conditions sufficient to react the additional functional groups in the first adduct with the —NH— groups in the second nitrogen-containing compound to form a branched second adduct characterized by having within its structure on average (i) at least two nitrogen-containing moieties derived from the second nitrogen-containing compound per nitrogen-containing moiety derived from the first nitrogen-containing compound and (ii) at least two unreacted primary or secondary amine groups per molecule; and
(c) contacting the branched second adduct in a second liquid reaction mixture with an aldehyde and a long chain hydrocarbyl substituted hydroxy aromatic compound; wherein the polyfunctional reactant comprises at least one alpha, beta-unsaturated compound of the formula:



wherein X is sulfur or oxygen, Y is —OR^4, —SR^4, or —$NR_4(R^5)$, and R^1, R^2, R^3, R^4 and R^5 are the same or different and are hydrogen or substituted or unsubstituted hydrocarbyl.

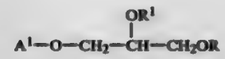
5,385,685

COMPOSITIONS COMPRISING GLYCEROGLYCOLIPIDS HAVING AN ETHER LINKAGE AS A SURFACTANT OR COSURFACTANT

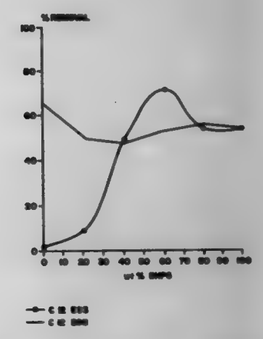
Robert W. Humphreys, Oradell, N.J.; Anthony Hung, New City, N.Y.; Shang-Ren Wu, Mahwah, N.J., and Abid N. Khan-Lodhi, Hoole Chester, United Kingdom, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 816,437, Dec. 31, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,977
Int. Cl.[6] C11D *17/00*
U.S. Cl. 252—174.17 **14 Claims**

(a) 5–70% of a detergent active mixture wherein said mixture comprises a glyceroglycolipid compound having the structure:



wherein A^1 comprises one to four saccharide units, R and R^1 are the same or different and are hydrogen, a straight or branched-chain saturated or unsaturated hydrocarbon radical having from about 1 to about 24 carbons or an acyl group; except that R and R^1 cannot both be hydrogen; and wherein said mixture further comprises one or more additional actives selected from the group consisting of alkali metal or alkanolamine soap, 0 to 24 carbon fatty acid soap, nonionic surfactants, cationic surfactants, zwitterionic surfactants and amphoteric surfactants;
(b) 0–50% builder;
(c) 0–40% electrolyte;
(d) 0.01–5% enzyme;
(f) 0–20% phase regulant; and (g) remainder water and minors.



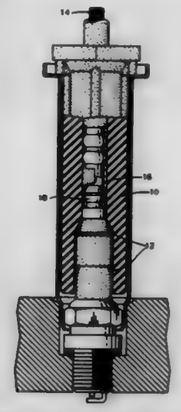
1. A liquid detergent composition comprising (percentages by weight):

5,385,686

SPARK PLUG BOOT WITH IMPROVED LUBRICANT

Laurie-Jo Miller, West Farmington; Brian R. Sabo, Vienna; Bruce S. Gump, and Jerry J. DeSalvo, both of Warren, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 14, 1993, Ser. No. 76,657
Int. Cl.[6] C10M *105/54*
U.S. Cl. 252—54 **6 Claims**



1. An elastomeric spark plug boot including a lubricant applied to a portion of the walls forming the spark plug boot

cavity wherein said lubricant comprises a perfluoroalkyl-polyether and a silicone extender.

5,385,687

POLYANHYDRIDE MODIFIED ADDUCTS OR REACTANTS AND OLEAGINOUS COMPOSITIONS CONTAINING SAME

Jacob Emert, Brooklyn, N.Y.; Robert D. Landberg, Bridgewater, and Antonio Gutierrez, Mercerville, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 12,975, Feb. 2, 1993, Pat. No. 5,256,325, which is a continuation of Ser. No. 750,149, Aug. 26, 1991, abandoned, which is a division of Ser. No. 291,745, Dec. 29, 1988, Pat. No. 5,047,160, which is a continuation-in-part of Ser. No. 161,919, Feb. 29, 1988, abandoned. This application Aug. 4, 1993, Ser. No. 102,039

Int. Cl.[6] C10M *159/12*

U.S. Cl. 252—56 R **29 Claims**

1. An oil soluble dispersant additive useful in lubricating oil compositions comprising the reaction products of:

(i) at least one intermediate adduct comprised of the reaction products of

(a) at least one polyanhydride, and

(b) at least one member polyols; and

(ii) at least one member selected from the group consisting of

(a) at least one long chain hydrocarbyl substituted C_3–C_{10} monocarboxylic or C_4–C_{10} dicarboxylic acid producting material.

5,385,688

ANTIFREEZE GEL COMPOSITION FOR USE IN A CABLE CONDUIT

Wm R. Miller, Marine; Sheri H. Dahlke, Stillwater, and John M. Fee, Scandia, all of Minn., assignors to American Polywater Corporation, Stillwater, Minn.

Filed Jan. 8, 1993, Ser. No. 1,860

Int. Cl.[6] C09K *5/00*

U.S. Cl. 252—73 **13 Claims**

1. A chemical duct block kit comprising:

(a) a first container holding an antifreeze gel composition comprising:

(i) about 60 to 90 wt. % of an alkylene glycol;

(ii) about 0.5 to 3 wt % of a polymeric thickener;

(iii) about 0 to 3 wt % of an alkali metal hydroxide; and

(iv) about 10 to 40 wt % of water; and

(b) a second container holding a solid absorbent powder composition comprising:

(i) about 30 to 90 wt % of a hydroxyalkyl cellulose; and

(ii) about 10 to 70 wt % of a superabsorbent starch-graft polymer;

wherein a said blocking composition is formed when said antifreeze gel composition is combined with said absorbent composition.

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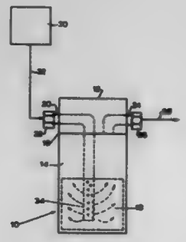
PROCESS AND COMPOSITION FOR PURIFYING SEMICONDUCTOR PROCESS GASES TO REMOVE LEWIS ACID AND OXIDANT IMPURITIES THEREFROM

Glenn M. Tom, New Milford, and James V. McManus, Danbury, both of Conn., assignors to Novapure Corporation, Danbury, Conn.

Filed Jun. 29, 1993, Ser. No. 84,414

Int. Cl.[6] C09K *3/00*

U.S. Cl. 252—194 **15 Claims**



1. A scavenger having utility for purifying a gaseous mixture comprising (i) a primary component selected from one or more members of the group consisting of hydrogen, nitrogen, noble gases, diborane and Group IVA–VIA hydride gases, and (ii) impurities selected from one or more members of the group consisting of Lewis acids and oxidants, said scavenger comprising:

an inert support having a surface area in the range of from about 50 to about 1000 square meters per gram, and thermally stable up to at least about 250° C.; and

an active scavenging species, present on the support at a concentration of from about 0.01 to about 1.0 moles per liter of support, and formed by the deposition on the support of a Group IA metal selected from sodium, potassium, rubidium, and cesium and their mixtures and alloys and pyrolysis thereof on said support.

5,385,690

LIQUID–CRYSTALLINE ELASTOMERS OR THERMOSET MATERIALS HAVING A FIXED ANISOTHROPIC NETWORK STRUCTURE

Heino Finkelmann, c/o E. Merck Frankfurter Strasse 250, D-6100 Darmstadt, and Jürgen Küpfer, Freiburg, both of Germany, assignors to Heino Finkelmann, Deuzlingen, Germany

PCT No. PCT/EP92/01591, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO93/03114, PCT Pub. Date Feb. 18, 1993

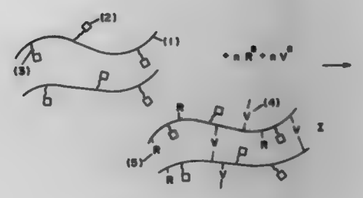
PCT Filed Jul. 13, 1992, Ser. No. 930,527

Claims priority, application Germany, Jul. 26, 1991, 4124859

Int. Cl.[6] C09K *19/52*; G02F *1/13*

U.S. Cl. 252—299.01 **19 Claims**

1. A process for the preparation of liquid-crystalline elastomers or thermoset materials having a fixed, anisotropic network structure, comprising:



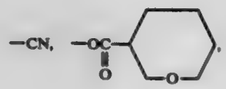
aligning liquid crystalline elastomer containing reactive radicals having unreacted functional groups by subjecting said elastomer to mechanical stress, and

subsequently fixing the alignment by linking at least a portion of said reactive radicals to polymer chains.

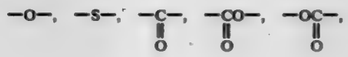
$$R_1—A_1—X_1—A_2—X_2—A_3—R_2 \quad (I),$$

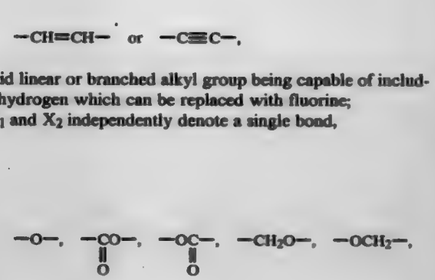
wherein

R_1 and R_2 independently denote hydrogen, halogen,



or a linear or branched alkyl group having 1–18 carbon atoms capable of including one or non-neighboring two or more —CH_2— groups which can be replaced with

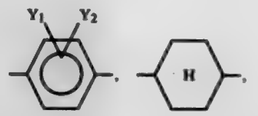




said linear or branched alkyl group being capable of including hydrogen which can be replaced with fluorine;

X_1 and X_2 independently denote a single bond,

A_1, A_2 and A_3 independently denote a single bond,



5,385,691

Patent Not Issued For This Number

5,385,692

MESOMORPHIC COMPOUND, LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL DEVICE, DISPLAY APPARATUS AND DISPLAY METHOD

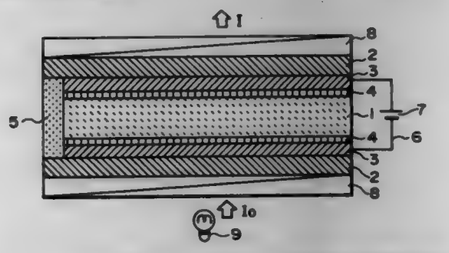
Takashi Iwaki; Takao Takiguchi, both of Tokyo; Takeshi Togano, Yokohama; Yoko Yamada, Isehara, and Shinichi Nakamura, Hadano, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 975,108, Nov. 12, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 225,344

Claims priority, application Japan, Nov. 12, 1991, 2-95684; Oct. 30, 1992, 3-16329

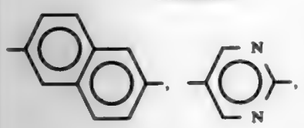
Int. Cl.[6] C09K *19/32, 19/34*

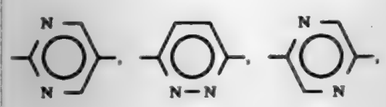
U.S. Cl. 252—299.62 **36 Claims**

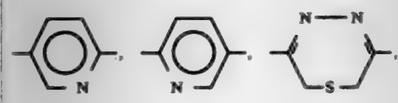


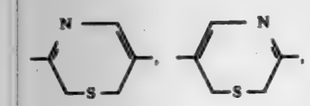
1. A mesomorphic compound represented by the following formula (I):

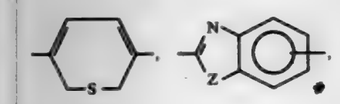
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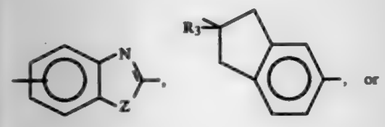




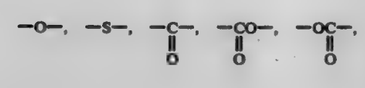






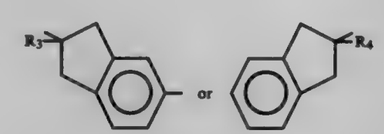


gen, —CN or a linear or branched alkyl group having 1–18 carbon atoms capable of including one or non-neighboring two or more —CH_2— groups which can be replaced with





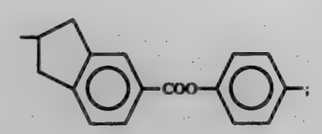
said linear or branched alkyl group being capable of including hydrogen which can be replaced with fluorine; Y_1 and Y_2 independently denote, H, F, Cl, Br, —CH_3, —CF_3 or —CN; Z denotes O or S; and at least one of A_1, A_2 and A_3 is



and the remaining two of A_1, A_2 and A_3 cannot be a single bond simultaneously; and

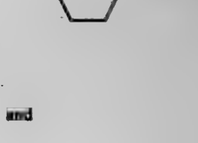
with the proviso that:

(i) —A_1—X_1—A_2—X_2—A_3— is not

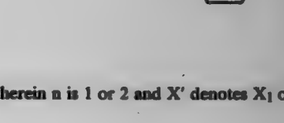


wherein R_3 and R_4 independently denote hydrogen, halo-

(ii) X_1 and X_2 are not an ester group simultaneously when A_1 is



and A_2 and A_3 are



(iii) X_1 and X_2 are not an ester group simultaneously when A_3 is



and A_1 and A_2 are

and

wherein n is 1 or 2 and X' denotes X_1 or X_2.

5,385,693

OPTICALLY ACTIVE ESTER DERIVATIVES, PREPARATION PROCESS THEREOF, LIQUID CRYSTAL MATERIALS AND A LIGHT SWITCHING ELEMENT

Takayuki Higashii, Kishiwada; Isao Kurimoto, Toyonaka; Shoji Toda, Takarazuka; Masayoshi Minai, Moriyama; Takeshi Tani, Tsukuba; Chizu Kawakami, Tsukuba; Koichi Fujisawa, Tsukuba, and Kiyoshi Imamura, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

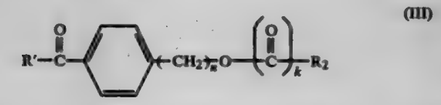
Division of Ser. No. 854,585, Mar. 20, 1992, Pat. No. 5,264,151, which is a division of Ser. No. 398,984, Aug. 28, 1989, Pat. No. 5,124,070. This application May 17, 1993, Ser. No. 61,688

Claims priority, application Japan, Aug. 29, 1988, 63-215986; Aug. 30, 1988, 63-217189; Sep. 6, 1988, 63-223853; Sep. 29, 1988, 63-248671; Oct. 3, 1988, 63-249529

Int. Cl.[6] C09K *19/12, 19/20;* C07C *69/66, 65/00*

U.S. Cl. 252—299.65 1 Claim

1. An optically active carboxylic acid compound represented by the formula (III):



(III)

wherein R_2 represents an optically active alkyl or alkoxyalkyl group having 3 to 15 carbon atoms optionally substituted by halogen atoms: R' represents a hydroxyl group or a halogen atom; k is 0; n represents an integer of 2 to 6.

5,385,694

MICROEMULSION POLYMERIZATION SYSTEMS AND COATED MATERIALS MADE THEREFROM

Huey S. Wu, and Eric W. Kaler, both of Newark, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Division of Ser. No. 38,573, Mar. 26, 1993, abandoned. This application Mar. 30, 1994, Ser. No. 220,323

Int. Cl.[6] B01J *13/00*

U.S. Cl. 252—312 1 Claim

1. A microemulsion comprising water, at least one unsaturated organic monomer having at least one fluoroalkyl group, and a surfactant having the general formula

$$R_fRYX,$$

where R_f is a fluoroalkyl group or a fluoroalkylether group having 1 to 15 carbon atoms, R is an alkylene group or an alkylene thioether linkage of 0 to 4 carbon atoms, Y is a carboxylate group, sulfonic group, sulfate group or hydroxyl, X is an alkali metal ion, ammonium ion, or an oxyethylene $(OCH_2CH_2)_m$ linkage where m is an integer from 1 to 15, and YX taken together are a quaternary ammonium salt.

5,385,695

DEMULSIFIER METHODS EMPLOYING B-IMINODIPROPIONATE

Elliot Cohen, 9700 NW. 48th Dr., Coral Springs, Fla. 33076

Continuation-in-part of Ser. No. 523,728, May 15, 1990, Pat. No. 5,110,503. This application Apr. 29, 1992, Ser. No. 875,429

The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.

Int. Cl.[6] B01D *17/05*

U.S. Cl. 252—344 16 Claims

1. A method for separating organic material from water including the steps of contacting a mixture of water and an organic material selected from the group consisting of a wash liquor, a tramp oil, a paint, and a grease with the reaction product of (A) an alpha-beta unsaturated acid or salt thereof selected from the group consisting of acrylic and methacrylic acids and mixtures thereof; and (B) a short chain organic amine

having from 6 to 10 carbons for a sufficient time to effect substantial separation of the organic material from the water wherein the reaction product is a beta-iminodipropionate.

5,385,696

HIGH FOAMING NONIONIC SURFACTANT BASED LIQUID DETERGENT

Stephen T. Repinec, Jr., Flemington; Gilbert S. Gomes, Somerset, both of N.J., and Rita Erilli, Rocourt, Belgium, assignors to Colgate Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 893,138, Jun. 3, 1992. This application Jul. 9, 1993, Ser. No. 91,515

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[6] C11D *1/83, 1/84*

U.S. Cl. 252—546 **10 Claims**

1. A high foaming light duty, liquid detergent comprising approximately by weight:

(a) 6% to 12% of a water soluble nonionic surfactant selected from the group consisting of primary and secondary C_8–C_{18} alkanol condensates with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{18} alkylphenol with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{20} alkanol with a heteric mixture of ethylene oxide and propylene oxide having a weight ratio of ethylene oxide to propylene oxide from 2.5:1 to 4:1 and a total alkylene oxide content of 60% to 85% by weight and condensates of 2 to 30 moles of ethylene oxide with sorbitan mono and tri-C_{10}–C_{20} alkanoic acid esters having an HLB of 8 to 15;

(b) 4% to 9% of a water-soluble anionic detergent which is selected from the group consisting of a C_8–C_{18} alkyl sulfates, C_8–C_{18} alkyl benzene sulfonate and C_{10-20} paraffin sulfonate;

(c) 1% to 6% of a water-soluble betaine; and

(d) balance being water as an aqueous medium in which said nonionic surfactant, said anionic detergent and said betaine are solubilized in said water, wherein said composition does not contain any polymeric thickener, clay, silica or alkanol amide, said composition having a Brookfield viscosity at room temperature using a #2 spindle at 30 rpm of about 100 to about 1,000 cps.

5,385,697

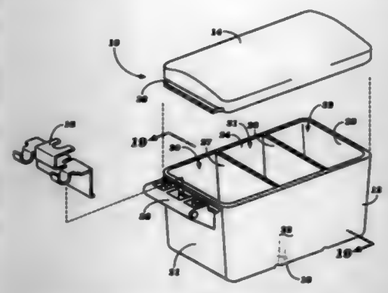
CARBURETOR FLOAT AND METHOD OF FORMING SAME

Randy P. Jesson, 13012 2nd St. SE., Lake Stevens, Wash. 98258

Filed Oct. 18, 1993, Ser. No. 138,698

Int. Cl.[6] F02M *5/16*

U.S. Cl. 261—70 **13 Claims**



1. A carburetor float for a carburetor that is part of a fuel delivery system in an internal combustion engine, the carburetor including a float bowl, a float-controlled valve extending into the float bowl for metering the flow of fuel into the float bowl, a fuel discharge fed by the float bowl, the carburetor float being pivotally secured in engagement with the float-controlled valve and being responsive to the level of fuel in the float bowl, the carburetor float comprising:

a hollow body defining a sealed interior chamber, the hollow body giving the carburetor float buoyancy so that the carburetor float rides at the level of the fuel in the float bowl and functions to control the opening and closing of the float-controlled valve in response to changes in the level of fuel in the float bowl, and

a divider wall within the hollow body for dividing the interior chamber into at least two cells that are sealed from each other and from the fuel in the float bowl,

whereby a leak in the hollow body will cause fuel in the float bowl to leak only into the one cell formed by that portion of the hollow body, while the other cell or cells remain sealed and the carburetor float continues to function to control the float-controlled valve;

wherein the hollow body of the carburetor float is formed by at least two pieces of formed plastic material that are sealed together; and

wherein the two pieces of plastic material include flanges and a spring clip is clamped to the carburetor float between the two flanges of the two pieces of plastic material as they are welded together.

5,385,698

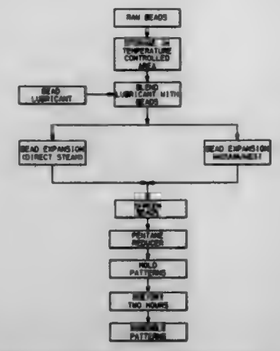
DIMENSIONALLY ACCURATE EXPANDED FOAM CASTING PATTERN

Gary E. Bishop, Troy, Mich., and Patrick J. Van Ryckeghem, Franklin, Tenn., assignors to Saturn Corporation, Troy, Mich.

Filed Apr. 23, 1992, Ser. No. 871,976

Int. Cl.[6] B29C *67/22*

U.S. Cl. 264—53 **5 Claims**



1. In a method of making expendable casting patterns from relatively high density polymer beads containing an initial quantity of dispersed vapor-forming expansion agent, said method comprising heating the beads to pre-expand them to a lower density, larger volume, cellular state for pattern molding in which state they then contain a smaller quantity of the expansion agent, again heating the beads to further expand and mold and bond them together into a casting pattern and thereafter aging the pattern to a dimensionally stable condition, the improvement comprising heating the pre-expanded cellular beads in a stream of heated air at a temperature and for a time to reduce the expansion agent content to a level still permitting pattern molding but permitting a reduction in pattern aging time at ambient conditions and thereafter cooling the beads to ambient conditions before they are again heated for said molding into said casting pattern.

5,385,699

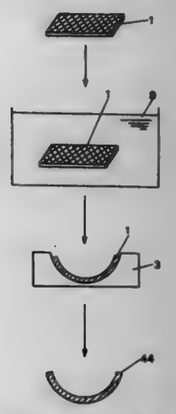
METHOD FOR PRODUCING A HONEYCOMB SHAPED CERAMIC

Hironao Numoto, Ikoma; Atsushi Nishino, Neyagawa, and Yukiyoshi Ono, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 711,223, Jun. 6, 1991, Pat. No. 5,273,692. This application Sep. 15, 1993, Ser. No. 122,081

Int. Cl.[6] C04B *41/00*

U.S. Cl. 264—57 **15 Claims**



1. A method for producing a honeycomb shaped ceramic having a predetermined shape made of a flat honeycomb molding formed from a composition containing a heat-resistant inorganic material, comprising the steps of:

forming a flat honeycomb molding from a composition containing heat-resistant inorganic materials, a binder which is gelled when coming in contact with hot water, and a plasticizer;

providing the honeycomb molding with flexibility by immersing the honeycomb molding in hot water at a temperature high enough to gel the binder;

placing the honeycomb molding on a heat-resistant jig having a predetermined shape; and

sintering the honeycomb molding on the jig to be formed into a shape of an outside surface thereof.

5,385,700

METHOD OF MAKING A HOLDER OF CERAMIC MATERIAL

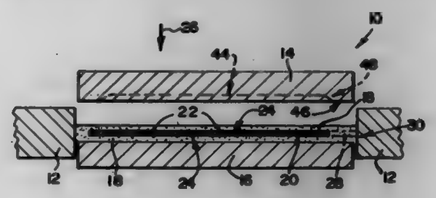
Ivor E. Deaton, Wantage, England, assignor to Programme 3 Patent Holdings, Luxembourg, Luxembourg

Filed Apr. 29, 1992, Ser. No. 875,780

Claims priority, application United Kingdom, May 3, 1991, 9109678; Jul. 24, 1991, 9110659

Int. Cl.[6] C04B *33/32*

U.S. Cl. 264—59 **9 Claims**



1. A method of making a holder of ceramic material the method comprising the steps of:

locating at least one core in a mass of particulate ceramic material or particulate precursor thereof;

compressing and consolidating the particulate material around each core so that the core is at least partially embedded therein;

removing each core from the consolidated mass of particulate material to leave a green artifact having a cavity therein; and

sintering the green artifact to produce a sintered unitary artifact of ceramic material having at least one cavity therein for containing a liquid,

each core being shaped and the particulate material being arranged such that at least part of each core is in the form of a thin slab or layer sandwiched between a pair of layers of the particulate material so that, after the sintering, at least part of each cavity is in the form of a thin gap between opposed plates of sintered ceramic material, each slab or layer having at least one opening therethrough which is filled with the particulate material, the particulate material in each opening, after consolidation thereof in the gap by the compressing and after the sintering, forming a bridge across the gap between the associated plates and sintered thereto, the bridge being capable of acting as a strut or tie between the associated plates, for reinforcing the holder, at least one said core being provided, at least at its surface and embedded in the core material, with particles of a wicking material or its precursor, so that the sintering provides, at least on the inner surface of the cavity left by said core, porous wicking material for wicking a liquid held by the holder.

5,385,701

METHOD OF MOLDING SILICON NITRIDE CERAMICS

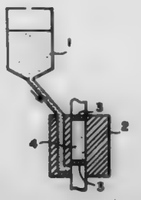
Tomoyuki Awazu; Yasushi Tsuzaki; Osamu Komura, and Akira Yamakawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Jul. 24, 1992, Ser. No. 919,590

Claims priority, application Japan, Jul. 26, 1991, 3-187477; Jun. 8, 1992, 4-147745

Int. Cl.[6] C04B *33/28, 33/58*

U.S. Cl. 264—86 **2 Claims**



1. A method of cast molding or pressure cast molding silicon nitride ceramics from a mixture of ceramic powders consisting essentially of Si_3N_4 and a liquid, a mean particle diameter of said Si_3N_4 being 0.1 to 1.0 μm, in which strain is imparted to a gel-like slurry mixture having a powder content of 45 vol % to 60 vol %, by vibrating said gel-like slurry mixture at an acceleration of 0.1 G to 150 G, and an amplitude of 1 μm to 1 cm, to fluidize said slurry mixture,

feeding said mixture, in a fluidized state, into a mold formed at least in part of a material which permits permeation of liquid therethrough, no vibration being applied to said mold, and

allowing said mixture in said mold to solidify by stopping application of strain to said mixture while simultaneously conducting a molding operation to form a molded body.

5,385,702
METHOD FOR STABLE RAPID SPINNING OF A POLYBENZOXAZOLE OR POLYBENZOTHIAZOLE FIBER

Michael E. Mills, Midland, Mich.; Yoshihiko Terumoto, Ohtsu, Japan; Timothy L. Fahey, Midland, Mich., and Masaru Nakagawa, Ohtsu, Japan, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 985,078, Dec. 3, 1992, Pat. No. 5,294,390. This application Mar. 8, 1994, Ser. No. 207,989
Int. Cl.[6] D01D *5/04*; D01F *6/26*; D02G *3/02*
U.S. Cl. 264—103 7 Claims

1. A process for making one or more multi-filament polybenzoxazole or polybenzothiazole fiber(s), said process comprising the steps of:

(a) extruding a polybenzoxazole or polybenzothiazole dope at a temperature of at least 100° C. through a plurality of orifices in a spinneret, the density of orifices of the spinneret being at least 0.25 per cm^2 to form a plurality of dope filaments;

(b) drawing the dope filaments to reach a certain final line speed across an air gap that contains a gas at a temperature between about 5° C. and about 100° C., wherein the gas flows through the air gap at a rate sufficient such that the filaments are exposed to a similar surrounding gas temperature; and

(c) contacting the drawn dope filaments with a fluid to remove solvent from the filaments; and

(d) combining the filaments into one or more fibers during or after step (c).

5,385,703
FORMING EXTRUDED MOLDING TRIM FOR VEHICLES AND APPLIANCES

William Shanok, New York, N.Y.; Daniel Shanok; Frederick Shanok, both of Warren, N.J.; Ronald Good, Bloomfield Hills, Mich.; Joseph Limansky, East Brunswick, N.J.; Victor Shanok, and Jesse P. Shanok, both of New York, N.Y., assignors to Silvatrim Associates, South Plainfield, N.J.

Division of Ser. No. 900,226, Nov. 23, 1992. This application Oct. 20, 1993, Ser. No. 138,200
Int. Cl.[6] B29C *47/02*
U.S. Cl. 264—145 12 Claims



1. A method of forming a molding trim for vehicles and appliances, comprising:

extruding a plastic strip with a uniform cross section throughout its length to form a longitudinally extending construction having a longitudinally extending first bar-like portion formed from a rigid plastic material, and a transverse longitudinally extending second bar-like portion extending perpendicularly downwardly from a longitudinally extending underneath surface of said first bar-like portion;

providing, during said extruding, a decorative appearance on a longitudinally extending upper surface of said first bar-like portion;

forming, during said extruding, at least one continuous longitudinal rib extending transversely outwardly from at least one longitudinal side of said second bar-like portion so that said rib is spaced a predetermined distance from a free end of said second bar-like portion and also from said first bar-like portion;

notching said second bar-like portion from said free end of said second bar-like portion to said underneath surface of said first bar-like portion, including through said rib, at longitudinally spaced apart predetermined intervals, to provide notched first portions therein while maintaining uniform cross section of said first bar-like portion throughout its length; and

removing the notched first portions so that remaining second portions of said second bar-like portions provide longitudinally spaced apart leg portions extending perpendicularly and vertically downwardly from said longitudinally extending underneath surface of said first bar-like portion with each of said leg portions having at least one tab thereon formed from remaining portions of said rib;

whereby said first bar-like portion having said decorative appearance and said leg portions having at least one tab on each leg portion provide a one piece integral construction for said molding trim to facilitate attachment of said molding trim to vehicles and appliances.

5,385,704
PROCESS OF MAKING POLYETHYLENE TEREPHTHALATE PHOTOGRAPHIC FILM BASE

Andy H. Tsou; Jehuda Greener; Gary D. Smith, all of Rochester, and Gary M. Mosehauer, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 27, 1993, Ser. No. 98,488
Int. Cl.[6] B29C *55/14*
U.S. Cl. 264—210.7 5 Claims

1. A process for making a polyethylene terephthalate polyester photographic film base having a planar birefringence of from 0.12 to 0.149 which comprises:

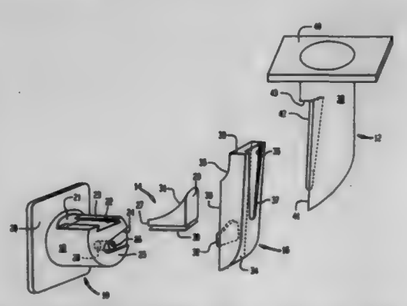
casting a molten polyethylene terephthalate resin onto a casting surface to form a sheet,

orienting the sheet by stretching in the machine direction, at a stretch ratio of from 2 to 3.5 and tentering in the transverse direction at a stretch ratio of from 2 to 3.3, the temperature of the sheet during orienting in the machine direction being from 90° C. to 105° C. and in the transverse direction being from 95° C. to 115° C., heatsetting the tentered film with constraint at a temperature of 200° C. to 250° C. and detentering the heatset film by permitting the width to shrink from 2 to 20 percent.

5,385,705
REUSABLE CORE APPARATUS FOR A CASTING MOLD, AND METHODS OF UTILIZING SAME

Gary J. Malloy, 410 Weatherhead St., and David W. Jaeger, 3935 S. State Rd., both of Angola, Ind. 46703

Filed Apr. 11, 1993, Ser. No. 41,159
Int. Cl.[6] B29C *33/76*
U.S. Cl. 264—219 19 Claims



14. A method for casting a part having an internal cast surface, comprising the steps of:

providing a casting member having a casting cavity therein;

providing first and second reusable core means, said second reusable core means including a pair of loose pieces;

providing means for aligning said first and second reusable core means during assembly together and for securing said first and second reusable core means together in a predetermined engaging relationship in said casting cavity while a part is being cast, said aligning and securing means consisting of cooperating joint members formed integrally with said first and second reusable core means;

partially positioning said first reusable core means in said cavity;

fitting said second reusable core means to said first reusable core means by engaging said cooperating joint members together in a temporary engaging relationship;

fully positioning said first reusable core means in said cavity such that said cooperating joint members are moved relative to each other out of said temporary engaging relationship into said predetermined engaging relationship to define an internal casting surface within said casting cavity;

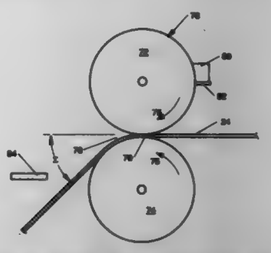
casting a part in said casting cavity, said part having an internal cast surface defined by said first and second reusable core means; and

removing said first reusable core means from said part and said casting cavity independently of said second reusable core means.

5,385,706
PROCESS OF MAKING A REFASTENABLE MECHANICAL FASTENING SYSTEM WITH SUBSTRATE HAVING PROTRUSIONS

Dennis A. Thomas, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Apr. 7, 1993, Ser. No. 44,337
Int. Cl.[6] B29C *41/32, 61/02*; B32B *3/16*
U.S. Cl. 264—519 19 Claims



1. A process for making a fastening system comprising one or more free formed prongs, the process comprising the steps of:

(a) providing a molten thermally sensitive material;

(b) providing a substrate having one or more protrusions;

(c) depositing discrete amounts of said molten thermally sensitive material on one or more of said protrusions on (of) said substrate;

(d) stretching a portion of said discrete amounts of said molten thermally sensitive material in a direction having a vector component parallel to the plane of said substrate so as to form a prong on each said protrusion having said molten thermally sensitive material deposited thereon; and

(e) solidifying said molten thermally sensitive material of said prong, said prong having a base, a shank, and an engaging means.

5,385,707
METAL MATRICES FOR USE IN HIGH GRADIENT MAGNETIC SEPARATION OF BIOLOGICAL MATERIALS AND METHOD FOR COATING THE SAME

Stefan Miltenyi, Moltzfeld 60a, D-5060 Bergisch Gladbach 1, Cologne; Andreas Radbruch, Bonn; Walter Weichel, Cologne; Werner Muller, Cologne; Christoph Gottlinger, Cologne, and Klaus L. Meyer, Pulheim, all of Germany, assignors to Stefan Miltenyi, Germany

Continuation of Ser. No. 291,176, Dec. 28, 1988, abandoned. This application Jan. 21, 1993, Ser. No. 6,709
Int. Cl.[6] G01N *30/02, 30/48*
U.S. Cl. 422—69 11 Claims



1. A method to coat a magnetic gradient-intensifying matrix for use in a separation chamber of an apparatus for performing high gradient magnetic separation (HGMS) processes, said apparatus includes a magnet having a pole gap for receiving said separation chamber, said magnet providing a magnetic field in said pole gap, which method includes the steps of:

treating said matrix comprised of finely divided magnetically susceptible metal parts with a coat-forming liquid preparation in a preparation vessel, thereby covering the surfaces of said matrix of magnetizable metal parts, which preparation comprises a monomer capable of forming a polymer or a prepolymerized polymer;

removing excess coat-forming liquid from said so covered matrix; and

effecting the formation of a solid polymer coating of said matrix to form a solid, coated matrix, said solid polymer coating being impermeable to ions and containing substantially less than 30% water by weight based on the total weight of the coating on the matrix to form a coated matrix;

transferring said matrix from said preparation vessel to said separation chamber of said apparatus.

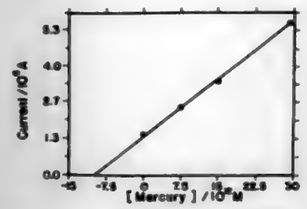
5,385,708
DETERMINATION OF ULTRA LOW LEVELS OF MERCURY

Daniel Mandler, and Iva Turyan, both of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Filed Jul. 2, 1993, Ser. No. 86,160
Int. Cl.[6] G01N *27/26, 33/20*
U.S. Cl. 422—82.03 4 Claims

1. A highly specific and sensitive electrode for a quantitative determination of ultra-low concentration levels of about

2×10^{-12}M of mercury in aqueous media, consisting of a glassy-carbon electrode spin-coated with a monolayer of



4,7,13,16,21,24-hexaoxa-1,10-diazabicyclo-[8.8.8]hexacosane reagent.

5,385,709

SOLID STATE CHEMICAL MICRO-RESERVOIRS

Kensall D. Wise; Johannes W. Schwank, both of Ann Arbor, and John L. Gland, Pinckney, all of Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 834,199, Feb. 12, 1992, Pat. No. 5,262,127. This application Jun. 24, 1993, Ser. No. 80,526

Int. Cl.[6] G01N *27/00*

U.S. Cl. 422—98 **2 Claims**

1. A method for storing a chemical in a chemical micro-reservoir comprising:

i) absorbing up to 10^{-3} mmol of a predetermined chemical onto an active film of a chemical micro-reservoir;

ii) storing said predetermined chemical on said active film; and

iii) heating said film to release said predetermined chemical, wherein said chemical micro-reservoir comprises:

i) a substrate comprising

a) two opposed major surfaces including a dielectric window region;

b) heater means situated on said dielectric window region on one side of side opposed surfaces; and

c) a conductivity cell electrode means situated on said dielectric window on the opposite surface from said heater means; and

ii) an active film deposited on said surface containing said conductivity cell electrode means.

5,385,710

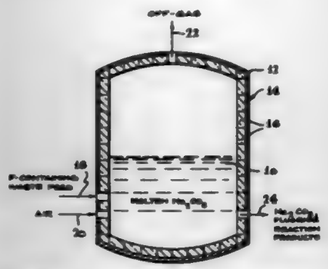
DIFFUSION RESISTANT REFRACTORY FOR CONTAINMENT OF FLUORINE-RICH MOLTEN SALT

Gary D. Schnittgrund, Granada Hills, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Dec. 21, 1993, Ser. No. 170,954

Int. Cl.[6] B09B *3/00*; B01J *19/02*

U.S. Cl. 422—184 **14 Claims**



1. In a molten salt oxidation system for oxidizing fluorine-containing organic waste comprising a vessel containing a molten salt including fluorine compounds, said vessel having a containment wall formed of diffusion resistant refractory for containment of fluorine and fluorine compounds in said molten salt, the improvement which comprises

a containment wall comprising a porous refractory impregnated with a salt which is non-reactive with said refractory, thereby effectively blocking diffusion paths for fluorine and its compounds from said molten salt through said refractory, wherein said non-reactive salt comprises a halide or a carbonate.

5,385,711

ELECTROLYTIC CELL FOR GENERATING STERILIZATION SOLUTIONS HAVING INCREASED OZONE CONTENT

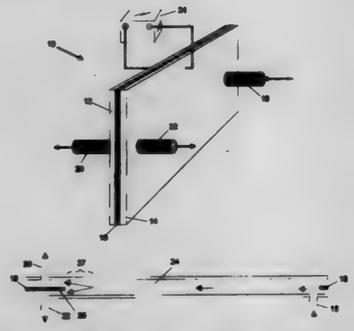
Forrest A. Baker, Albuquerque, and Wesley L. Bradford, Los Alamos, both of N. Mex., assignors to Los Alamos Technical Associates, Inc., Albuquerque, N. Mex.

Continuation of Ser. No. 857,731, Mar. 26, 1992, Pat. No. 5,316,740. This application Feb. 23, 1994, Ser. No. 200,146

The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.

Int. Cl.[6] C01B *13/10*; B01J *19/12*

U.S. Cl. 422—186.07 **1 Claim**



1. An apparatus for generating a mixed oxidant stream including ozone, said apparatus comprising:

anode means comprising a first surface; cathode means comprising a second surface;

means for maintaining an electrical potential between said first and second surfaces; and

means for causing an electrolytic solution to flow between said first and second surfaces and to be subsequently divided into cathode and anode streams, said anode stream comprising the portion of said electrolytic solution that was caused to flow between said first and second surfaces adjacent to said first surface;

means for defining a electrochemical interaction zone bounded by said first and second surfaces in which said electrolytic solution undergoes electrochemical interactions, wherein said electrolytic solution flows through said interaction zone in the same direction that bubbles generated on said first and second surfaces would travel in the absence of said flow of electrolytic solution.

5,385,712

MODULAR CHEMICAL REACTOR

Darren K. Sprunk, 12767 Archery Dr., Baton Rouge, La. 70815

Filed Dec. 7, 1993, Ser. No. 163,900

Int. Cl.[6] B01J *8/04*, *19/00*

U.S. Cl. 422—190 **2 Claims**

1. A modular chemical reactor, comprising:

(a) a cylindrical reactor housing having first and second ends;

(b) a first set of external threads on the external surface of the first end of the reactor housing;

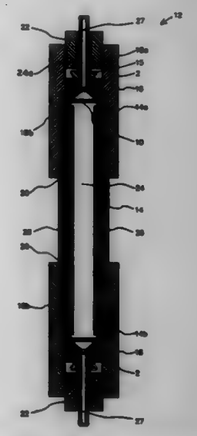
(c) a cylindrical first modular housing nut having first and second ends, a first middle portion adjacent the first end, and a second middle portion adjacent the second end, the first end of the first housing nut having the same internal diameter as the first middle portion of the first housing nut, the second end of the first housing nut having the same internal diameter as the second middle portion of the first housing nut, the internal diameter of the first end and the first middle portion of the first housing nut being larger than the internal diameter of the second end and the second middle portion of the first housing nut, the external diameters of the first end, second end, first middle portion, and second middle portion of the first housing nut being identical;

(d) a first set of internal threads on the internal surface of the first housing nut, the first set of internal threads being constructed and arranged to engage the first set of external threads on the external surface of the first end of the reactor housing;

(e) a first seal nut having first and second ends, the first seal nut being coaxial with the first housing nut;

(f) a second set of external threads on the external surface of the first seal nut;

(g) a second set of internal threads on the internal surface of the second end of the first housing nut, the second set of internal threads being constructed and arranged to engage



the second set of external threads on the external surface of the first seal nut;

(h) a cylindrical first seal housing disposed within and contiguous with the first housing nut, the first seal housing having first and second ends;

(i) a first compression fitting having first and second ends, the first end of the first compression fitting being conical, the second end of the first compression fitting being cylindrical, the first end of the first compression fitting being disposed within the second end of the first seal housing, the second end of the first compression fitting being disposed within the first end of the first seal nut;

(j) a first screen seal disposed within the first seal housing, the first screen seal comprising

(k) a first seal chamber having a conical opening in which the first end of the first compression fitting is disposed, a cylindrical middle portion communicating with the conical opening, and a conical end portion communicating with the cylindrical portion, the opening tapering from a larger width to a smaller width in a direction away from the second end of the first seal housing and toward the cylindrical middle portion, the conical end portion tapering from a larger width to a smaller width in a direction away from the cylindrical middle portion;

(l) a first conical convergence chamber;

(m) a first cylindrical passageway connecting the first seal chamber to the first convergence chamber;

(n) a second seal chamber at the first end of the first seal housing;

(o) a first flat perforated member disposed between the first convergence chamber and the second seal chamber in a plane perpendicular to the first cylindrical passageway;

the first convergence chamber tapering from a larger width to a smaller width in a direction away from the first cylindrical passageway and toward the first perforated member, the second seal chamber tapering from a smaller width to a larger width in a direction away from the first perforated member, the second seal chamber having a substantially larger width than the first seal chamber;

(p) a third set of external threads on the external surface of the second end of the reactor housing;

(q) a cylindrical second modular housing nut having first and second ends, a first middle portion adjacent the first end, and a second middle portion adjacent the second end, the first end of the second housing nut having the same internal diameter as the first middle portion of the second housing nut, the second end of the second housing nut having the same internal diameter as the second middle portion of the second housing nut, the internal diameter of the first end and the first middle portion of the second housing nut being greater than the internal diameter of the second end and the second middle portion of the second housing nut, the external diameters of the first end, second end, first middle portion, and second middle portion of the second housing nut being identical;

(r) a third set of internal threads on the internal surface of the second housing nut, the third set of internal threads being constructed and arranged to engage the third set of external threads on the external surface of the second end of the reactor housing;

(s) a second seal nut having first and second ends, the second seal nut being coaxial with the second housing nut;

(t) a fourth set of external threads on the external surface of the second seal nut;

(u) a fourth set of internal threads on the internal surface of the second end of the second housing nut, the fourth set of internal threads being constructed and arranged to engage the fourth set of external threads on the external surface of the second seal nut;

(v) a cylindrical second seal housing disposed within and contiguous with the second housing nut, the second seal housing having first and second ends;

(w) a second compression fitting having first and second ends, the first end of the second compression fitting being conical, the second end of the second compression fitting being cylindrical, the first end of the second compression fitting being disposed within the second end of the second seal housing, the second end of the second compression fitting being disposed within the first end of the second seal nut;

(x) a second screen seal disposed within the second seal housing, the second screen seal comprising

(y) a third seal chamber having a conical opening in which the first end of the second compression fitting is disposed, a cylindrical middle portion communicating with the conical opening, and a conical end portion communicating with the cylindrical portion, the opening tapering from a larger width to a smaller width in a direction away from the second end of the second seal housing and toward the cylindrical middle portion, the conical end portion tapering from a larger width to a smaller width in a direction away from the cylindrical middle portion;

(z) a second conical convergence chamber;

(a') a second cylindrical passageway connecting the third seal chamber to the second convergence chamber;

(b') a fourth seal chamber at the first end of the second seal housing; and

(c') a second flat perforated member disposed between the second convergence chamber and the fourth seal chamber

in a plane perpendicular to the second cylindrical passageway;

the second convergence chamber tapering from a larger width to a smaller width in a direction away from the second cylindrical passageway and toward the second perforated member, the fourth seal chamber tapering from a smaller width to a larger width in a direction away from the second perforated member, the fourth seal chamber having a substantially larger width than the third seal chamber.

5,385,713

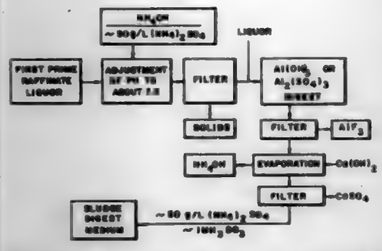
METAL AND FLUORINE VALUES RECOVERY FROM MINERAL ORE TREATMENT

Bryan J. Carlson, Johnson City, Tenn., assignor to EcoTek, Inc., Erwin, Tenn.

Continuation-in-part of Ser. No. 891,167, May 29, 1992, Pat. No. 5,273,725. This application Nov. 12, 1993, Ser. No. 151,284

Int. Cl.[6] C01G *56/00*

U.S. Cl. 423—11 **6 Claims**



1. The process for recovering boron values and fluorine values from an acidic aqueous feed liquor containing substantial fluoroborate moieties, comprising contacting said feed liquor with basic material to adjust the pH thereof to above about 7.0 and provide a first clarified liquor containing said fluoroborate moieties, and contacting said first clarified liquor at elevated temperature with sufficient cation reactant selected from $Al(OH)_3$ or $Al_2(SO_4)_3$ to precipitate substantially all of said fluorine values as an aluminum fluoride compound and provide a second clarified liquor containing said boron values as boric acid.

5,385,714

SYNTHETIC, CRYSTALLINE ALUMINOSILICATE, METHOD FOR ITS PREPARATION AS WELL AS USE

Roland Thome; Arno Tissler, both of Bonn; Hubertus Schmidt, Eitorf; Gunter Winkhaus, Konigswinter, and Klaus Unger, Mainz, all of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany

Continuation of Ser. No. 549,185, Jul. 6, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 908,539

Claims priority, application Germany, Jul. 6, 1989, 3922181

Int. Cl.[6] C01B *33/26;* **B01J** *29/06*

U.S. Cl. 423—328.2 **16 Claims**

1. A method of preparing a pure phase of synthetic, pentasil, crystalline aluminosilicate comprising the steps of

preparing a reaction mixture containing compounds selected from the group consisting of SiO_2 and Al_2O_3, hydrated derivatives of SiO_2 and Al_2O_3, or alkali silicates and aluminares, with mineralizers and seeding crystals, in an aqueous alkaline medium which is essentially free of organic substances, wherein the molar ratio of SiO_2/Al_2O_3 in said mixture ranges from 15 to about 30 and said mixture has the following molar ratios:

OH^-/SiO_2=0.1–0.2, and

H_2O/SiO_2=20–60;

exposing the mixture to hydrothermal crystallization at a temperature above 100° C.; and

recovering the products of crystallization from said mixture, wherein said crystalline products have a silicon-29 high resolution solid state magnetic resonance spectrum with a substantial peak, assignable to silicon atoms linked over oxygen atoms with 2 silicon and 2 aluminum atoms, between −96 and −102 ppm based on a tetramethylsilane standard and have the following chemical composition:

0–3 M_2O:Al_2O_3:15–31 SiO_2:0–40 H_2O;

wherein M represents an alkali cation.

13. An pure phase of synthetic, pentasil, crystalline aluminosilicate having the chemical composition

0–3 M_2O:Al_2O_3:15–30 SiO_2:0–40 H_2O;

wherein M represents an alkali cation;

said crystalline aluminosilicate having an X-ray diffraction diagram with X-ray reflections belonging to the following d values:

d Values/Interplanar Spacing	Relative Intensity	%
11.2 ± 0.3	strong	52
10.1 ± 0.3	strong	31
9.8 ± 0.2	weak	10
3.85 ± 0.1	very strong	100
3.83 ± 0.1	strong	81
3.75 ± 0.1	strong	50
3.73 ± 0.1	strong	54
3.60 ± 0.1	strong	31
3.06 ± 0.05	weak	16
3.00 ± 0.05	weak	21
2.01 ± 0.02	weak	15
1.99 ± 0.02	weak	20;

and

having a silicon-29 high resolution solid-state nuclear magnetic resonance spectrum with a substantial peak, assignable to silicon atoms linked over oxygen atoms with 2 silicon and 2 aluminum atoms, between −96 and −102 ppm; and

having a silicon-29 high-resolution solid-state nuclear magnetic resonance spectrum with absorption bands at approximately 100, −106, −112 and −116 ppm based on standard tetramethylsilane; and

wherein said crystalline aluminosilicate being synthesized from an inorganic mixture by hydrothermal reaction.

5,385,715

SYNTHESIS OF ULTRA-HARD ABRASIVE PARTICLES

Michael L. Fish, 17 Knoppiesdoring Street, Randpark Ridge Extension 14, Randpark, Transvaal, South Africa

Filed Apr. 22, 1988, Ser. No. 185,092

Claims priority, application South Africa, Apr. 24, 1987, 87/2940

Int. Cl.[6] C30B *29/04*

U.S. Cl. 423—446 **1 Claim**

1. A method of producing friable diamond particles including the steps of subjecting a reaction mass to temperature and pressure conditions suitable for producing the particles, the reaction mass comprising a source material for producing diamond, a metallic diamond solvent and sodium chloride capable of being occluded in the diamond particles so produced and being removed therefrom, recovering the diamond particles from the reaction mass, and removing at least some of the occluded material from the diamond particles. (according to claim 1 wherein the chloride salt is sodium chloride.)

5,385,716

METAL-MAGNESIUM COMPOUNDS, PROCESS FOR PREPARING SAME AND THE USE THEREOF FOR THE PREPARATION OF FINELY DIVIDED METAL AND ALLOY POWDERS AND INTERMETALLIC COMPOUNDS

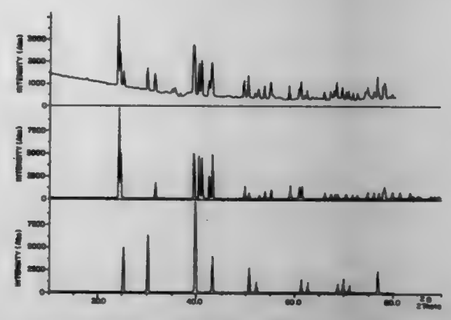
Borislav Bogdanovic, and Ursula Wilczok, both of Mülheim/-Ruhr, Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim/Ruhr, Germany

Filed Jul. 22, 1991, Ser. No. 734,365

Claims priority, application Germany, Jul. 31, 1990, 4024205

Int. Cl.[6] C01B *9/00*

U.S. Cl. 423—463 **16 Claims**



1. A tetrahydrofurane soluble metal-magnesium compound of the formula M^1-Mg-halide or M^1-hydride-Mg-halide in which

M^1 is a metal of Group IIIA-VA, VB-VIIB, VIII, IB or IIB of the Periodic Table,

produced by reacting the metal M^1 or a halide or hydride thereof in an organic solvent with at least one magnesium-containing member selected from the group consisting of a magnesium hydride (MgH_2), a hydridemagnesium halide (HMgX), an organomagnesium compound and metallic magnesium, at least one of the M^1-component or the magnesium component containing a halide ion, optionally in the presence of at least one activator selected from the group consisting of anthracene or a derivative thereof, magnesium . 3 THF (MgA) or a derivative thereof, a magnesium halide, an organic halide and quinuclidine.

5,385,717

PROCESS FOR THE SYNTHESIS OF ZEOLITES HAVING AN ALUMINOSILICATE FRAMEWORK BELONGING TO THE FAUJASITE STRUCTURAL FAMILY, PRODUCTS OBTAINED AND THEIR USE IN ADSORPTION AND CATALYSIS

François Dougnier, Illzach; Jean-Louis Guth, Brunstatt; Joël Patarin, Mulhouse, and Didier Anglerot, Lons, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Aug. 20, 1992, Ser. No. 933,031

Claims priority, application France, Aug. 28, 1991, 91 10691

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

Int. Cl.[6] C01B *33/26;* **B01J** *29/08*

U.S. Cl. 423—702 **28 Claims**

1. In a process for preparing a zeolite having an aluminosilicate framework belonging to the faujasite structural family and having a Si:Al ratio greater than 1 in which a reaction mixture having a pH greater than 10, containing water, a source of tetravalent silicon Si^{IV}, a source of trivalent aluminium Al^{III}, a source of hydroxide ions in the form of a strong base and a structuring agent ST is formed to provide an aluminosilicate gel having a composition required to obtain after crystallization of the gel a compound of the faujasite structural family; maintaining the gel at a temperature not higher than 150° C. and under a pressure at least equal to the autogenous pressure of the mixture for a period of time sufficient to crystalline the gel to form a zeolite precursor; containing the structuring agent ST and calcining the zeolite precursor to destroy the structuring agent thereby forming the zeolite, the improvement which comprises using a structuring agent ST comprising at least one linear polyalkylene oxide of the formula

$$R—O\text{+}C_mH_{2m-1}X—O\text{+}_nR'$$

in which R and R', which are identical or different, each represents hydrogen or a C_1 to C_4 alkyl group, X is hydrogen or an —OH group, m is 2 or 3 and varies within the same linear polyalkylene oxide, and n is a number greater than 12.

23. A zeolite precursor having an aluminosilicate framework belonging to the faujasite structural family consisting of aluminosilicates having a Si:Al ratio which is greater than 1 having a structure of cubic symmetry comparable to that of faujasite and exhibiting cavities trapping the molecules of a structuring agent ST, wherein the structuring agent consists of at least one linear polyalkylene oxide of the formula

$$R—O\text{+}C_mH_{2m-1}XO\text{+}_nR'$$

in which R and R', which are identical or different, each represent hydrogen or a C_1 to C_4 alkyl group, X is hydrogen or a hydroxyl group, m is 2 or 3 and varies within the same polyalkylene oxide, and n is a number larger than 12.

5,385,718

ZEOLITES

John L. Casci, Cleveland, and Mervyn D. Shannon, Cheshire, both of England, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Filed Jun. 18, 1991, Ser. No. 717,194

Claims priority, application United Kingdom, Jun. 21, 1990, 9013859

Int. Cl.[6] C01B *33/34*

U.S. Cl. 423—718 **10 Claims**

1. A zeolite, designated NU-85, comprising intergrowth crystals of zeolites EU-1 and NU-87, said crystals containing discrete bands the structures of which are individually characteristic of the structures of zeolite EU-1 and zeolite NU-87, said bands exhibiting substantial crystal lattice continuity therebetween.

5,385,719

COPOLYMERS AND THEIR USE AS CONTRAST AGENTS IN MAGNETIC RESONANCE IMAGING AND IN OTHER APPLICATIONS

Evan C. Unger, 13365 E. Camino La Cebadilla, Tucson, Ariz. 85749, and Guanli Wu, 2602 W. Alden St., Tucson, Ariz. 85745

Continuation-in-part of Ser. No. 765,921, Sep. 24, 1991, abandoned. This application Sep. 22, 1992, Ser. No. 949,691

Int. Cl.[6] A61K *49/00;* **C08G** *69/26*

U.S. Cl. 528—272 **35 Claims**

1. A compound comprising: a copolymer which comprises at least two of a first monomer of the formula

$$X_1—\{(CHR_2)_m—CHR_2CHR_2—Y\}_n—(CHR_2)_m—CHR_2CHR_2—X_2,$$

wherein

X_1 and X_2 are,

Y is O, NH, NR_1, S, or CO,

each Z is, independently, Cl, Br, or I,

n is 0–10,000,

each m is 0 or 1,

each R_1 is, independently, a C_1–C_{20} substituted or unsubstituted alkyl or cycloalkyl group, and
each R_2 is, independently, H or OH, and
at least one of a second monomer which is a polynitrilo chelating agent having at least two COOH, $COOR_1$, or COZ groups,
said first and second monomers bound to one another to form a copolymer through a carboxylic thioester linkage of at least one of said SH groups of said first monomer and at least one of said COOH, $COOR_1$, or COZ groups of said second monomer,
wherein said first and second monomers comprise at least about 10 monomers;
and further comprising a paramagnetic ion chelated to said compound.

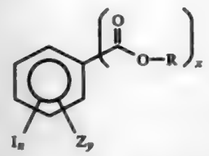
5,385,720

COMPOSITIONS OF IODOBENZOIC ACID DERIVATIVES AND CELLULOSE DERIVATIVES FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Edward J. Baker, Northumberland, England; Robert W. Lee, Gilbertsville, Pa.; Carl R. Illig, Phoenixville, Pa.; Brent D. Douty, Coatesville, Pa., and John L. Toner, Downingtown, Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 29,756, Mar. 11, 1993, Pat. No. 5,312,616. This application Mar. 23, 1994, Ser. No. 216,988
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[6] A61K *49/04, 31/715, 31/235*
U.S. Cl. 424—5 **15 Claims**

1. An x-ray contrast composition for oral or retrograde examination of the gastrointestinal tract comprising:
(a) from about 0.01 to 200 mg of iodine per ml of the composition of an x-ray contrast producing agent having the formula, or pharmaceutically acceptable salt thereof



wherein
Z is H, halo, C_1–C_{20} alkyl, cycloalkyl, lower alkoxy, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;
R is C_1–C_{25} alkyl, cycloalkyl, or halo-lower-alkyl, each of which may be optionally substituted with halo, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy;
$(CR_1R_2)_p$ $(CR_3{=}CR_4)_mQ$, or $(CR_1R_2)_p$ C≡C - Q;
R_1, R_2, R_3 and R_4 are independently lower-alkyl, optionally substituted with halo;
x is 1—3
y is 1—4;
n is 1—5;
m is 1—15;
p is 1—10; and
Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl;
(b) from 0.05 to 10% w/v of a cellulose derivative selected from the group consisting of methylcellulose, carboxymethylcellulose, sodium carboxymethylcellulose, hydroxyethyl methylcellulose, hydroxypropyl methylcellulose and microcrystalline cellulose;
(c) from 0 to 55% w/v of an oily vehicle;
(d) from 0 to 20% w/v of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;
(e) from 0 to 15% w/v of a viscosity modifying excipient; and
(f) water to make 100% by volume.

5,385,721

COMPOSITIONS OF ALKYLBENZENES AND CELLULOSE DERIVATIVES FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Edward J. Baker, Northumberland, England; Kurt A. Josef, Wayne; Edward R. Bacon, Audubon; Kimberly G. Estep, Pottstown; Carl R. Illig, Phoenixville; Brent D. Douty, Coatesville; John L. Toner, Downingtown, and Robert W. Lee, Gilbertsville, all of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 13,605, Feb. 4, 1993, Pat. No. 5,308,607. This application Mar. 22, 1994, Ser. No. 217,138
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[6] A61K *49/04, 31/715, 31/02*
U.S. Cl. 424—5 **15 Claims**

1. An x-ray contrast composition for oral or retrograde examination of the gastrointestinal tract comprising:
(a) from about 0.01 to 200 mg of iodine per ml of the composition of an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein
R is methyl, ethyl, n-propyl, C_4–C_{25} alkyl, cycloalkyl, unsaturated allyl or halo-lower-alkyl, each of which may be optionally substituted with halo, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy or lower-alkoxy carbonyl; $(CR_1R_2)_p$—$(CR_3{=}CR_4)_mQ$, or $(CR_1R_2)_p$—C≡C—Q;
R_1, R_2, R_3 and R_4 are independently H, lower-alkyl, optionally substituted with halo;
n is 2–5;
m is 2–5;
p is 1–10; and
Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl;
(b) from 0.05 to 10% w/v of a cellulose derivative selected from the group consisting of methylcellulose, carboxymethylcellulose, sodium carboxymethylcellulose, hydroxyethyl methylcellulose, hydroxypropyl methylcellulose and microcrystalline cellulose;
(c) from 0 to 55% w/v of an oily vehicle;
(d) from 0 to 20% w/v of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;
(e) from 0 to 15% w/v of a viscosity modifying excipient; and
(f) water to make 100% by volume.

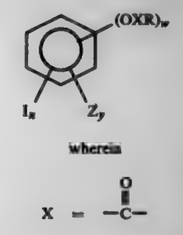
5,385,722

COMPOSITIONS OF IODOPHENYL ESTERS AND IODOPHENYL SULFONATES AND CELLULOSE DERIVATIVES FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Edward J. Baker, Northumberland, England; Robert W. Lee, Gilbertsville; Edward R. Bacon, Audubon, both of Pa.; Sol J. Daum, Albany, N.Y.; Kimberly G. Estep, Pottstown, Pa.; Kurt A. Josef, Wayne, Pa.; Brent D. Douty, Coatesville, Pa.; Carl R. Illig, Phoenixville, Pa., and John L. Toner, Downingtown, Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 40,823, Mar. 31, 1993, Pat. No. 5,318,769. This application Apr. 18, 1994, Ser. No. 229,048
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.
Int. Cl.[6] A61K *49/04, 31/71 S, 31/22*
U.S. Cl. 424—5 **16 Claims**

1. An x-ray contrast composition for oral or retrograde examination of the gastrointestinal tract comprising:
(a) from about 0.01 to 200 mg of iodine per ml of the composition of an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein

Z=H, halo, C_5–C_{20} alkyl, cycloalkyl, lower alkoxy, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;
R=C_1–C_{25} alkyl, cycloalkyl, aryl or halo-lower-alkyl, each of which may be optionally substituted with lower-alkoxy, hydroxy, carboxy or lower-alkoxy carbonyl, lower-alkenyl, lower-alkynyl, lower-alkylene or lower-alkoxy-carbonyloxy;
n=1–5;
y=0–4; and
w=1–4,
(b) from 0.05 to 10% w/v of a cellulose derivative selected from the group consisting of methylcellulose, carboxymethylcellulose, sodium carboxymethylcellulose, hydroxyethyl methylcellulose, hydroxypropyl methylcellulose and microcrystalline cellulose;
(c) from 0 to 55% w/v of an oily vehicle;
(d) from 0 to 20% w/v of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;
(e) from 0 to 15% w/v of a viscosity modifying excipient; and
(f) water to make 100% by volume.

5,385,723

NON-PRIMATE VITREAL REPLACEMENT PROCESS

Debra L. Skelnik, P.O. Box 758, Rte. 3, Cambridge, Minn. 55008, and Richard L. Lindstrom, 20050 Lakeview Ave., Excelsior, Minn. 55331

Continuation of Ser. No. 463,485, Jan. 11, 1990, Pat. No. 5,102,653. This application Sep. 25, 1991, Ser. No. 765,427
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[6] A61K *49/00*
U.S. Cl. 424—9 **12 Claims**

1. Vitreal replacement process comprising the steps of:
a. procure an animal and grade the animal's eye by a grading of an inflammatory response scale;
b. with or without a suture means in the sclera, extract by a syringe and needle, or similar method, the vitreal humor from the posterior chamber of the animal's eye;
c. count the number of inflammatory cells in the vitreal humor sample, whereby the eye is graded for inflammatory response;
d. put in an approximate amount of like solution;
e. allow self-closure or apply closure means including and not limited to suture means, cautery or stapling;
f. evaluate the eye for vitreal hemorrhage;
g. wait 48 hours;
h. grade the eye by a grading scale;
i. visually grade and count the number of inflammatory cells in the aqueous or vitreous whereby the eye is graded for the inflammatory response; and,
j. compare to a non-inflammatory response in an animal.

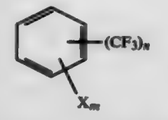
5,385,724

TRIFLUOROMETHYL ANALOGS OF X-RAY CONTRAST MEDIA FOR MAGNETIC RESONANCE IMAGING

David H. White; Steven R. Woulfe, both of Ballwin; Youlin Lin, Chesterfield, and Mills T. Kneller, University City, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Division of Ser. No. 782,153, Oct. 25, 1991, Pat. No. 5,318,770. This application Mar. 4, 1994, Ser. No. 206,353
Int. Cl.[6] A61B *5/055*
U.S. Cl. 424—9 **9 Claims**

1. A method for obtaining fluorine-19 magnetic resonance images of body organs and tissues which comprises:
(a) administering to a mammal having organs and tissues, a diagnostically effective amount of a trifluoromethylbenzene derivative and paramagnetic species in a pharmaceutically acceptable carrier, said trifluoromethyl benzene derivative having a general formula:



where X is $-CONR_1R_2$, $-NR_1COR_2$, $-SO_2NR_1R_2$, $-CO_2H$, or pharmaceutically acceptable salts thereof, and where R_1 and R_2 may be same or different and are selected from the group consisting of H, alkyl, and hydroxyalkyl, and where n is in the range from 1 to 5 and m=6−n; and
(b) imaging the organs and tissues.

5,385,725

ECHO CONTRAST AGENT FOR LEFT HEART OPACIFICATION AND METHOD OF USING THE SAME

Shoa-Lin Lin, Kaohsiung, and Chung-Yuan Mou, Taipei, both of Taiwan, Prov. of China, assignors to National Science Council, Taipei, Taiwan, Prov. of China

Division of Ser. No. 919,902, Jul. 27, 1992, Pat. No. 5,302,372. This application Apr. 11, 1994, Ser. No. 225,534
Int. Cl.[6] A61B *8/00*
U.S. Cl. 424—9 **7 Claims**

1. An improved echo contrast agent for use in echocardiography to opacify left ventricle,
comprising:
(a) an aqueous albumin-glucose solution containing 0.40 to 0.60 grams of albumin and 4.0 to 10.0 grams of glucose per 10 ml of said aqueous albumin-glucose solution;
(b) glycerin having a volume ratio between said glycerin and said aqueous albumin-glucose solution of no less than 0.050; and
(c) a plurality of microbubbles having diameters ranging from approximately 1 to 9 microns.

5,385,726
USE OF
2-PHENYL-1,2-BENZISOSELENAZOL-3-(2H)-ONE
Glenn S. Baldew, Den Haag, and N. P. E. Vermeulen, Leiden, both of Netherlands, assignors to Rhone-Poulenc Rorer GmbH, Cologne, Germany
Continuation of Ser. No. 46,253, Apr. 6, 1993, abandoned. This application Jul. 12, 1993, Ser. No. 89,306
Claims priority, application Germany, Aug. 6, 1990, 4024885
Int. Cl.[6] A61K *49/00, 33/24, 31/33*
U.S. Cl. 424—10 16 Claims

1. A method for the prevention or treatment of a side effect resulting from the administration of cisplatin, said method comprising administering an effective amount of 2-phenyl-1,2-benzisoselenazol-3(2H)-one to a mammal in need of the prevention or treatment of a side effect of cisplatin and a pharmaceutically acceptable carrier therefor.

5,385,727
DENTIFRICES CONTAINING ZINC OXIDE PARTICLES AND SODIUM BICARBONATE
Anthony E. Winston, East Brunswick, N.J.; Todd W. Domke, Newtown, Pa., and Amy L. Joseph, Hopewell, N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.
Filed May 19, 1993, Ser. No. 64,409
Int. Cl.[6] A61K *7/16, 7/18*
U.S. Cl. 424—49 7 Claims

1. A dentifrice in the form of a toothpaste or tooth gel comprising:
a. about 3–70% sodium bicarbonate;
b. an effective amount of zinc oxide particles; and
c. a liquid vehicle in an amount sufficient to provide the desired consistency, said dentifrice being free of more soluble zinc salts and their lingering unpleasant metallic and astringent taste, said zinc oxide particles being agglomerated and having a medium particle size of 50 microns or less and being agglomerated from zinc oxide primary particles having sub-micron average particle size, and whose release of zinc ions is effective primarily as an antiplaque, anti-gingivitis, antibacterial and tartar formation inhibiting agent and whose release to kill the bacteria and prevent tartar formation is free from the lingering unpleasant metallic and astringent taste of most zinc salts when they are also absent.

5,385,728
ANTIMICROBIAL ETCHANTS
Byoung I. Suh, 8 Hamilton La., Oak Brook, Ill. 60521
Filed Sep. 28, 1993, Ser. No. 127,811
Int. Cl.[6] A61C *5/00;* B44C *1/22;* A61K *7/22*
U.S. Cl. 424—54 1 Claim

1. In a method for treating tooth enamel or dentin involving etching or partial decalcification of said dentin or enamel, the improvement comprising:
treating said dentin or enamel in a single step with a composition comprising an antimicrobially effective amount of benzalkonium chloride and a suitable etchant at a concentration sufficient to etch or partially decalcify tooth dentin or tooth enamel.

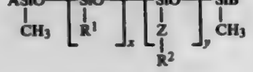
5,385,729
VISCOELASTIC PERSONAL CARE COMPOSITION
Michael Prencipe, East Windsor, and Angelo Zaccagnino, South River, both of N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.
Continuation-in-part of Ser. No. 738,766, Aug. 1, 1991, Pat. No. 5,202,112. This application Aug. 24, 1992, Ser. No. 933,851
Int. Cl.[6] A61K *7/06, 7/48*
U.S. Cl. 424—70.11 15 Claims

1. A linear viscoelastic personal care composition in the form of a hair or skin-treating aqueous gel with a pH of about 4 to about 9 comprising a topically acceptable aqueous vehicle, about 0.01% to 5% of a nonionic, anionic or amphoteric surfactant or mixture thereof and, in an amount of about 0.02% to 5 weight % effective to render the composition stable against phase separation or syneresis, viscosity change in storage, settling of dispersed or suspended particles under high and low-temperature conditions and formation of fish eyes, highly cohesive, readily flowable uniformly and homogeneously when extruded from a dispensing tube or pump with excellent subsequent stand-up and return to its pre-extrusion condition, and linearly viscoelastic, a synthetic linearly viscoelastic cross-linked polymeric thickening agent having in a 1 wt. % aqueous solution an elastic or storage modulus G′ and a viscous or loss modulus G″ substantially independent of frequency in an applied frequency range of 0.1 to 100 radians/sec, a G′ minimum value of 1,000 dynes/sq. cm which varies less than 1 order of magnitude of its original value, and a ratio of G″/G′ ranging from more than 0.05 to less than 1, said thickening agent having a molecular weight of about 1,000 to about 5,000,000 and containing about 0.01 to about 30% of cross-linking agent by weight of the cross-linked thickening agent.

5,385,730
LACTONE-MODIFIED SILICONE COMPOSITIONS AND COSMETIC AGENTS OR LUSTERING AGENTS CONTAINING THEM
Shoji Ichinohe, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 469,208, Jan. 24, 1990, abandoned. This application Jan. 2, 1992, Ser. No. 960,563
Claims priority, application Japan, Jan. 26, 1989, 1-18456
Int. Cl.[6] A61K *7/027, 47/34;* C08G *77/38*
U.S. Cl. 424—78.02 9 Claims

1. A uniform and stable lactone-modified silicone composition comprising between greater than 10 and 60 parts by weight of a lactone-modified silicone block copolymer of general formula (I), and between less than 90 and 40 parts by weight of a low-viscosity silicone oil of general formula (II) having a viscosity of not more than 100 cSt at 25° C.;

(I)



(II)



wherein in formula (I)
R^1 is the same or a different group selected from the group consisting of an alkyl group having 1 to 30 carbon atoms, a substituted or non-substituted phenyl group having 1 to 30 carbon atoms, and a phenylalkylene group having 1 to 30 carbon atoms consisting of a substituted or non-substituted phenyl group and an alkylene group having 2 to 3 carbon atoms, and wherein at least 50 wt. % of R^1 is an alkyl group having 1 to 30 carbon atoms;
A and B is each the same or a different group, and represents a methyl or R^2Z group;
wherein R^2 represents a polyester group having a block sequence structure and having an average molecular weight of 200 to 100,000 obtained by lactone ring opening polymerization;
Z is a divalent group that connects a silicone atom to a R^2 group;
X is an integer of 3 to 1,000;
Y is an integer of 0 to 50; and in formula (II)
R is a substituted or non-substituted, the same or a different, monovalent hydrocarbon group having 1 to 6 carbon atoms; and
a is a number of from 1.8 to 2.3.

5,385,731
METHOD OF TREATING HYPERLIPIDEMIA WITH GRANULOCYTE COLONY STIMULATING FACTOR
Parviz Lalezari, Scarsdale, and Manoucheir Khorshidi, Great Neck, both of N.Y., assignors to Montefiore Medical Center, Bronx, N.Y.
Filed Nov. 14, 1991, Ser. No. 795,929
Int. Cl.[6] A61K *37/02*
U.S. Cl. 424—85.1 11 Claims

1. A method for the treatment of hyperlipidemia in mammals which comprises administering to a mammal with hyperlipidemia an amount of granulocyte colony stimulating factor which is sufficient to treat hyperlipidemia.

5,385,732
VARIANTS OF TISSUE PLASMINOGEN ACTIVATOR, COMPOSITIONS AND METHODS OF USE FOR SAME
Stephen Anderson, Princeton, N.J.; Kevin M. Brady, Concord, Calif.; Bruce A. Keyt, Pacifica, Calif., and Leonard G. Presta, San Francisco, Calif., assignors to Genentech, Inc., South San Francisco, Calif.
Continuation of Ser. No. 824,740, Jan. 21, 1992, Pat. No. 5,270,198, which is a continuation of Ser. No. 480,691, Feb. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 196,909, May 20, 1988, abandoned. This application Mar. 22, 1993, Ser. No. 35,427
Int. Cl.[6] C12N *9/48;* A61K *32/547*
U.S. Cl. 424—94.64 26 Claims

1. A fibrinolytically active human tissue plasminogen activator (t-PA) amino acid sequence variant having one or more amino acid substitutions which provide an Asn-X-Ser or Asn-X-Thr tripeptidyl sequence that starts at an amino acid position selected from the group consisting of amino acid positions 57 to 61, 63 to 69, 99, 101, 103 to 105, 106, 107, 109, 112 and 250 of the amino acid sequence of native human t-PA, wherein X is any amino acid except proline, and having N-linked glycosylation attached to the Asn within such tripeptidyl sequence.

15. A fibrinolytically active tissue plasminogen activator (t-PA) amino acid sequence variant having an asparagine at amino acid position 103 of the native human t-PA, or having an asparagine at amino acid position 105 and a serine or threonine at amino acid position 107 of the native human t-PA, as part of the Asn-X-Ser or Asn-X-Thr tripeptidyl sequence, wherein X is any amino acid except proline.

19. A fibrinolytically active human tissue plasminogen activator (t-PA) variant having an asparagine substituted at amino acid position 103 of the native human t-PA, as part of the Asn-X-Ser or Asn-X-Thr tripeptidyl sequence, wherein X is any amino acid except proline.

5,385,733
TOPICAL PREPARATION AND METHOD FOR SUPPRESSION OF SKIN ERUPTIONS CAUSED BY HERPES SIMPLEX VIRUS
Roy J. Mankovitz, 18057 Medley Dr., Encino, Calif. 91316
Continuation-in-part of Ser. No. 884,659, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 755,880, Sep. 6, 1991, Pat. No. 5,215,748, which is a continuation-in-part of Ser. No. 601,276, Oct. 22, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 104,193
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[6] A61K *35/78, 31/05*
U.S. Cl. 424—195.1 3 Claims

1. A topical preparation for preventing and treating herpes simplex virus eruptions in human subjects comprising at least 0.05% by weight butylated hydroxytoluene and at least 0.5% by weight oleum melaleucae alternifolia.

2. A method for treating herpes simplex virus eruptions in a human subject, comprising topically administering at least 0.05% by weight butylated hydroxytoluene and at least 0.5% by weight oleum melaleucae alternifolia to the area of the eruptions.

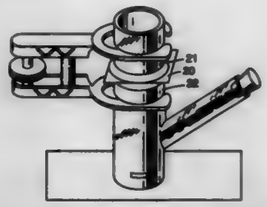
5,385,734
HORSERADISH PREPARATION FOR THE TREATMENT OF NASAL AND SINUS DYSFUNCTION
William H. Friedman, St. Louis, Mo., assignor to Horseradish Spray, Inc., St. Louis, Mo.
Division of Ser. No. 844,107, Mar. 2, 1992, Pat. No. 5,248,504. This application May 27, 1993, Ser. No. 68,998
Int. Cl.[6] A01N *65/00;* A61K *35/78, 9/14*
U.S. Cl. 424—434 10 Claims

1. A formulation for the treatment of nasal or sinus dysfunction comprising an aqueous salt dispersion of solid horseradish particles having a mean particle diameter not greater than 20 microns, said dispersion containing from 0.01 to 10.0 weight percent of the horseradish particles.

5,385,735
SEMDURAMICIN PREMIX
Antonio Grizzuti, Old Lyme, and Robert J. Lloyd, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.
Continuation of Ser. No. 614,365, Nov. 16, 1990, abandoned. This application Apr. 27, 1993, Ser. No. 50,154
Int. Cl.[6] A23K *1/165*
U.S. Cl. 424—442 9 Claims

1. A Semduramicin animal premix comprising:
a. About 2 weight % to about 10 weight % Semduramicin or a pharmaceutically acceptable cationic salt thereof;
b. about 0.5 weight % to about 50 weight % Semduramicin degradation reducing Stabilizer;
c. about 40 weight % to about 80 weight % diluent;
d. about 5 weight % to about 50 weight % density increasing bulking agent;
e. about 2 weight % to about 10 weight % dust controlling oil; and
f. about 0.25 weight % to about 5 weight % flowability enhancing glidant selected from the group consisting of sodium aluminosilicate and silicon dioxide.

5,385,736
TRANSDERMAL MELATONIN DELIVERY SYSTEM
Joan K. Kappes, Minneapolis, and John R. Hart, Hugo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jul. 12, 1993, Ser. No. 90,330
Int. Cl.[6] A61F *13/02*
U.S. Cl. 424—448 19 Claims



1. An adhesive coated sheet material comprising a backing bearing on one surface thereof a pressure sensitive adhesive coating comprising a homogeneous mixture of
(i) a copolymer comprising
(1) about 60 to 80 percent by weight of a monomeric acrylic or methacrylic acid ester of an alkyl alcohol containing 4 to 10 carbon atoms, based on the weight of all monomers in the copolymer;
(2) about 4 to 9 percent by weight of a monomer selected from the group consisting of acrylic acid, methacrylic acid, an alkyl acrylate or methacrylate containing 1 to 3

carbon atoms in the alkyl group, acrylamide, methacrylamide, a lower alkyl substituted acrylamide, diacetone acrylamide, and N-vinyl-2-pyrrolidone, based on the weight of all monomers in the copolymer; and

(3) about 15 to 35 percent by weight of vinyl acetate, based on the weight of all monomers in the copolymer;

(ii) a therapeutically effective amount of melatonin; and

(iii) a skin-penetration enhancing amount of 2-(2-ethoxyethoxy)ethanol.

5,385,737

SURFACTANT-CONTAINING SEAMLESS CAPSULES

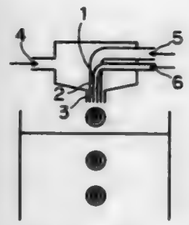
Chitoshi Shigeno; Naoki Katada; Jun Shida, all of Wakayama; Norikazu Iwase, Tochigi; Hirotaka Sato, Tochigi, and Hidenori Yoroza, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jun. 10, 1993, Ser. No. 74,414

Claims priority, application Japan, Jun. 12, 1992, 4-179023; Jun. 27, 1992, 4-193327

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—451 **12 Claims**



1. Surfactant-containing seamless capsules comprising an inner layer and an outer layer having a film-forming material, wherein said inner layer comprises a liquid containing an oily component and a surfactant component, and wherein the emulsifiability of said liquid in the capsules is such that when 0.5 g. of said liquid is added to 2.5 liters of 40° C. water, followed by stirring under the conditions shown below, the oily component remains emulsified and dispersed and substantially unseparated from the water at 40° C.:

Stirring conditions:

Container:	Three-liter beaker (14 cm inside diameter, 20 cm height);
Impeller:	Anchor blade (5 cm diameter, 5 cm height, 1 cm width);
Blade position:	Upper side of the blade located 1 cm below the water surface level;
Rotational speed of blade:	150 rpm; and
Stirring time:	30 seconds.

5,385,738

SUSTAINED-RELEASE INJECTION

Yoshiya Yamahira, Kobe; Keiji Fujioka, Amagasaki; Shigeji Sato, Ibaraki, and Yoshihiro Takada, Takatsuki, all of Japan, assignors to Sumitomo Pharmaceuticals Company, Ltd., Osaka, Japan

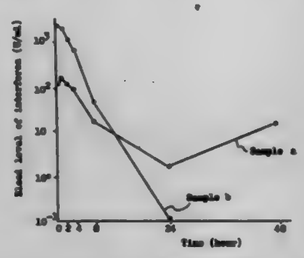
Continuation of Ser. No. 488,531, Feb. 28, 1990, abandoned, which is a continuation of Ser. No. 849,968, Apr. 10, 1986, abandoned, which is a continuation-in-part of Ser. No. 660,044, Oct. 12, 1984, abandoned. This application Mar. 4, 1992, Ser. No. 844,929

Claims priority, application Japan, Oct. 14, 1983, 58-193064; Nov. 1, 1983, 58-206226; Nov. 21, 1983, 58-220452; Apr. 11, 1985, 60-77250

The portion of the term of this patent subsequent to Sep. 27, 2005, has been disclaimed.

Int. Cl.[6] A61K *9/14, 9/50;* A61F *2/02;* B01J *13/02*

U.S. Cl. 424—489 **33 Claims**



1. A sustained-release preparation, which comprises a suspension of a powder in an injectable viscous solvent, said powder comprising a pharmaceutically effective amount of an active ingredient and a pharmaceutically acceptable biodegradable carrier selected from the group consisting of proteins, polysaccharides and synthetic high molecular compounds.

5,385,739

STABLE COMPOSITIONS OF GASTROPROTECTED OMEPRAZOLE MICROGRANULES AND PROCESS FOR THE PRODUCTION THEREOF

Patrice Debregeas, Versailles, and Gérard Leduc, Maisonsherbes, both of France, assignors to Ethypharm, Madrid, Spain

Filed Jun. 16, 1993, Ser. No. 78,548

Claims priority, application France, Jun. 16, 1992, 92 07249

Int. Cl.[6] A61K *9/54, 9/62*

U.S. Cl. 424—494 **8 Claims**

1. A stable formulation of omeprazole microgranules containing a neutral core of sugar and starch and an active layer consisting of a dilution of omeprazole in mannitol in substantially equal amounts, wherein the active omeprazole layer contains about 10% by weight of carboxymethylstarch, about 5% by weight of a sodium lauryl sulfate surface-active compound, and wherein the dilution of omeprazole in mannitol is applied to the neutral core by means of hydroxypropyl methylcellulose as a high viscosity binder.

5,385,740

BIOLOGICALLY ACTIVE MATERIAL CHARACTERIZED BY CATABOLIC ACTIVITY GENERALLY ASSOCIATED WITH CACHEXIA-INDUCING TUMORS, PREPARATIONS, PRODUCTION AND USES THEREOF

Michael J. Tisdale, Claverdon, and Susan A. Beck, Willenhall, both of United Kingdom, assignors to Cancer Research Campaign Technology Limited, London, England

Division of Ser. No. 372,340, Jun. 2, 1989, Pat. No. 5,219,579. This application Oct. 20, 1992, Ser. No. 963,902

Claims priority, application United Kingdom, Mar. 18, 1988, 8806471

Int. Cl.[6] A61K *35/12*

U.S. Cl. 424—573 **3 Claims**

1. A method of preparing a biologically active lipolytic material which comprises subjecting an extract or sample of a biological material to a purification procedure comprising a stage of exclusion chromatography employing a filtration gel for retaining material having a molecular weight of up to 4000 daltons, recovering the retained material, measuring the lipolytic activity of fractions of the retained material without aging said fractions prior to measuring the lipolytic activity and selecting the lipolytic active fraction or fractions thereof, said biological material being selected from the group consisting of:

a mammalian tumor tissue of a cachexia-inducing tumor,

a culture of mammalian tissue cells of a cachexia-inducing tumor, and

a body fluid of a mammal bearing a cachexia-inducing tumor, and

said lipolytic material having the following characteristics

(a) it produces weight loss cachectic symptoms when administered by injection to healthy non-tumor bearing mice,

(b) it is resolvable into at least one main active lipolytic component comprising a molecular species having a molecular weight of about 1500 daltons as determined by gel filtration exclusion chromatography,

(c) it is resistant to trypsin, chymotrypsin, periodate, RNAase and DNAase, insofar as its lipolytic activity is concerned when solutions thereof are tested by in vitro assaying of glycerol released upon incubation with mouse adipose tissue, but said lipolytic activity is inhibited by both pronase and alkaline phosphatase,

(d) when tested as specified in (c) above, its lipolytic activity is inhibited by compounds selected from the group consisting of hypoxanthine, Salbutamol, tolbutamide, 5,8,11,14,17-eicosapentaenoic acid and a triglyceride of 5,8,11,14,17-eicosapentaenoic acid,

(e) when incubated in vitro with adipocytes prepared from mouse adipose tissue, it promotes the establishment of an elevated level of cyclic adenylic acid (cAMP) in such cells.

5,385,741

CALCIUM ALGINATE GEL PARTIALLY DEFICIENT IN CALCIUM IONS FOR USE IN BINDING METAL CATIONS

Jean-Charles Rinn, Cognac, and Bertrand Robillard, Epernay, both of France, assignors to Champagne Moet & Chandon, Epernay, France

PCT No. PCT/FR92/00171, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO92/14544, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 25, 1992, Ser. No. 940,856

Claims priority, application France, Feb. 25, 1991, 91 02220

Int. Cl.[6] C12G *1/06;* C02F *1/42;* C12N *11/10*

U.S. Cl. 426—13 **34 Claims**

1. A method of preparation of a calcium alginate gel partially deficient in calcium ions, said method comprising the successive steps of:

(a) preparing a solution of a soluble alginate salt having ionic binding sites for calcium ions,

(b) preparing a solution of a calcium salt capable of gelling said solution of said soluble alginate salt,

(c) contacting said solution of said soluble alginate salt with said calcium salt solution under conditions capable of gelling said soluble alginate salt as a calcium alginate gel, wherein said calcium alginate gel has a calcium ion content corresponding substantially to saturation of the binding sites of the alginate;

(d) reducing by ion exchange of calcium ions with protons the content of said calcium ions in the alginate gel by contacting said gel with an aqueous solution of acid having a pH between 1 and 3.5 during a period of time sufficient to lower the content of said calcium ions in said gel to between about 0.01 mg/g and about 1.5 mg/g of moist alginate gel, so that said gel is deficient in calcium ions, has ionic binding sites resulting from the absences of said calcium ions and has an affinity for ions capable of binding to said gel at said binding sites not occupied by calcium ions, and

(e) recovering said calcium alginate gel partially deficient in calcium ions.

26. The method of claim 1 wherein the calcium alginate gel partially deficient in calcium ions from step (e) is used in a method for preventing or reducing the risk of precipitation of crystals including potassium bitartrate and calcium tartrate in a liquid containing ions capable of forming said crystals, said method comprising contacting said liquid with said calcium alginate gel partially deficient in calcium ions whereby said gel binds said ions capable of forming said crystals at binding sites of said gel not occupied by calcium ions; and separating said gel having said bound ions capable of forming said crystals.

5,385,742

PROCESS OF MAKING SUBSTRATE-LIMITED DOUGHS

Johannes H. Van Eijk, Plein Vogelzang, Netherlands, assignor to Gist-Brocades N.V., Netherlands

Continuation of Ser. No. 985,810, Dec. 3, 1992, abandoned, which is a continuation of Ser. No. 806,693, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 517,360, May 1, 1990, abandoned. This application Sep. 23, 1993, Ser. No. 125,561

Claims priority, application European Pat. Off., Feb. 12, 1990, 90200318

Int. Cl.[6] A21D *8/04*

U.S. Cl. 426—19 **10 Claims**

1. In a process for the preparation of yeast-leavened bread products from a bread dough containing yeast and fermentable sugars, the improvement comprising preparing a bread dough for a yeast-leavened bread product containing a yeast, which yeast consists of a yeast not capable of fermenting maltose and sugar(s) fermentable by the yeast whereby the amount of sugar(s) fermentable by the yeast is limited to control maximal gas production by the yeast and fermenting the dough in which substantially all available fermentable sugar is consumed by the yeast to form the yeast-leavened product.

5,385,743

YOGHURT FLAVOR AND PROCESS FOR THE MANUFACTURING OF A YOGHURT FLAVOR

Peter Hans van der Schaft, Leusden, Netherlands, assignor to PFW (Nederland) B.V., Arnhem, Netherlands

Continuation of Ser. No. 582,448, Sep. 13, 1990, abandoned. This application Mar. 12, 1993, Ser. No. 31,039

Claims priority, application European Pat. Off., Sep. 15, 1989, 89202269

Int. Cl.[6] A23C *9/12*

U.S. Cl. 426—42 **6 Claims**

1. Process for the preparation of a yoghurt flavor, comprising:

(a) preparing a vessel of cheese whey solids or a fraction thereof and water having an initial pH of between about 6 and about 7,

(b) pasteurizing the medium while avoiding browning thereof,
(c) cooling the pasteurized medium to a temperature range of about 25°–50° C.,
(d) inoculating the cooled medium with a bacterial starter culture containing at least one *Streptococcus thermophilus* and at least one *Lactobacillus bulgaricus* in a ratio of 1:1 in a closed vessel without aeration,
(e) fermenting the inoculated medium in said temperature range until the pH drops to about 4.5 or less to produce volatile yoghurt flavor components that are retained in said closed vessel at said temperature range,
(f) cooling the medium to about 4°–10° C. or drying the fermented medium to retain said volatile yoghurt flavor components in said medium to produce said yoghurt flavor, and
(g) conducting said process while avoiding off-flavor.

5,385,744

CHOCOLATE-ENCAPSULATED FILLINGS

Frederick W. Cain, Voorburg; Adrian D. Hughes, 's-Gravenhage, both of Netherlands, and Geoffrey Talbot, Kempston, Great Britain, assignors to Van Den Bergh Foods Co., Division of Conopco Inc., Lisle, Ill.

Filed Jul. 1, 1992, Ser. No. 907,360
Claims priority, application European Pat. Off., Jul. 3, 1991, 91306027; United Kingdom, Jul. 17, 1991, 9115421
Int. Cl.[6] A23G *3/00*
U.S. Cl. 426—89 **10 Claims**

1. In a chocolate-encapsulated filling product comprising at least an edible filling and a chocolate coating, wherein the filling includes at least 10 wt. %, of a filling fat, the improvement wherein undesired blooming in the coating is minimized, said improvement comprising utilizing as part of the filling fat, an (H_2M+HM_2) hardstock fat which migrates from the filling into the coating, said (H_2M+HM_2) hardstock fat, having a stearic acid content of at least 5 wt. % and an iodine value of less than 20, and being present in an amount such that the coating displays an (H_2M+HM_2) hard stock content after storage for 10 weeks at 20° C. of at least 0.5 wt. % as a result of migration of said (H_2M+HM_2) hardstock fat from the filling, the coating initially having an SOS content of at least 15 wt. %, in which:
H means saturated fatty acid with ≧C16;
M means saturated fatty acid with C8–C14;
S means saturated fatty acid with C16–C18; and
O means oleic acid.

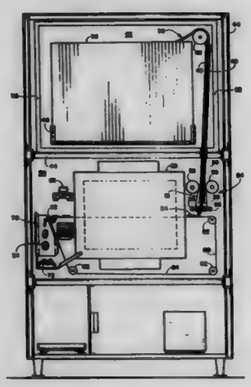
5,385,745

PROCESS FOR FORMING, STORING, BAKING AND VENDING FRESH BAKED FOOD PRODUCTS

James A. Dromgoole; Kenneth H. Hall, and Robert Noga, all of 7847 Dunbrook Rd., Ste. C & D, San Diego, Calif. 92126

Division of Ser. No. 833,157, Feb. 10, 1992, Pat. No. 5,309,824.
This application Jan. 26, 1994, Ser. No. 189,560
Int. Cl.[6] A21D *8/00*
U.S. Cl. 426—392 **8 Claims**

1. The process of preparing, storing, baking and delivering a plurality of food product units which comprises the steps of:
mixing a dough comprising ingredients selected to produce a desired product upon baking;
continuously forming said dough into a plurality of product units onto at least one first carrier sheet;
bringing a second carrier sheet into contact with said product units in a laminated relationship with said product units between said sheets;
placing a selected length of the resulting laminated sheets into a shipping container;
transversely cutting said sheets when a selected quantity of product units are in said container;
placing said container in a vending machine;
feeding the cut end of said sheets from said container to stripping means where a selected length of said sheets is removed from a selected number of said product units;
allowing said product units to fall onto a conveyor belt as said sheets are removed;
conveying said product units through a convection oven;



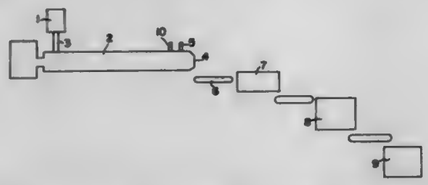
retaining said product units in said oven at a selected temperature for a time sufficient to bake said product units to the desired degree;
cooling the baked product units to a desired temperature as said conveyor moves said baked product units beyond said oven; and
moving the resulting baked product units to a delivery area.

5,385,746

PREPARATION OF CEREAL FOODS BY EXTRUSION COOKING

Joao De Almeida, Lutry, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Jun. 19, 1992, Ser. No. 901,539
Claims priority, application European Pat. Off., Jul. 20, 1991, 91112176
Int. Cl.[6] A23L *1/10*; A23P *1/12*
U.S. Cl. 426—447 **14 Claims**



1. A process for preparing a food comprising mixing ingredients, including a cereal flour and water, to obtain a moist ingredient blend having a solids content of at least 70% by weight, extrusion cooking the moist blend in an extrusion cooking stage of an extruder to obtain a cooked blend and prior to extruding the cooked blend from the extruder through a die, injecting a compressed gas into the cooked blend and then extruding the gas-injected cooked blend through the die to obtain an extruded product.

5,385,747

PROCESS FOR MAKING A FRUIT GEL COMPOSITION IN SQUEEZE CONTAINER

Sumner N. Katz, Norwood Park Township, Cook County, and Thomas L. O'Connor, Chicago, both of Ill., assignors to Mama Tish's Italian Specialties, Inc., Chicago, Ill.

Filed Jul. 23, 1992, Ser. No. 918,234
Int. Cl.[6] A23L *1/0526, 1/0528, 1/0532, 1/068*
U.S. Cl. 426—573 **8 Claims**

1. A process for preparing an edible gel composition comprising the steps of: mixing together a fruit material and a sweetener and at least one food grade acid in an amount sufficient to impart a tart taste simulating that of fresh fruit to provide a first system, heating the first system to a sterilizing temperature for sufficient time to effect sterilization, combining in water a powdered food gelling agent including carrageenan and a source of ions of a metal to which the carrageenan is sensitive to provide a second system, agitating the second system independently of the first system while heating it to a temperature in the range from about 185° F. to about 190° F. for a time sufficient to solubilize the second system, cooling the first and second systems respectively to first and second predetermined temperatures wherein the second temperature is at least the gel point temperature of the second system and then combining the first and second systems to form said composition, said first predetermined temperature being such that the temperature of the combined composition will be no greater than about 10° F. above the gel point temperature of the second system, and cooling the composition to below the gel point temperature of the second system.

5,385,748

BEVERAGE THICKENER EMULSIFIER SYSTEM

John R. Bunger, Union, Ky.; Brenda L. Keller, West Chester, and Robert E. Tarr, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 783,657, Oct. 28, 1991, abandoned.
This application Oct. 5, 1993, Ser. No. 131,871
Int. Cl.[6] A23L *2/00, 2/02*
U.S. Cl. 426—590 **20 Claims**

1. A beverage which comprises:
a) from about 0.001% to about 0.1% xanthan, from about 0.001% to about 0.1% guar gum, and from about 0.01% to about 0.2% propylene glycol alginate;
b) a flavor component in an amount effective impart flavor characteristics to the beverage;
c) from about 0.001% to about 0.5% clouding agent;
d) an effective amount of a sweetener; and
e) the remainder being water, said beverage having a viscosity of 50 cps or less at 60 seconds^{-1} shear rate (11° C.) and, wherein said beverage is characterized by having a stable oil in water emulsion.

5,385,749

DIRECTLY COMPRESSIBLE PULVERULENT COMPOSITION AND A PROCESS FOR OBTAINING THE SAME

Michel Serpelloni, Beuvry les Bethune, and Alain Croisier, Locon, both of France, assignors to Roquette Freres, France

Filed Dec. 16, 1991, Ser. No. 807,128
Claims priority, application France, Dec. 14, 1990, 90 15708
Int. Cl.[6] A23G *3/00*
U.S. Cl. 426—658 **6 Claims**

1. A directly compressible powdered xylitol composition comprising xylitol and at least one additive selected from the group consisting of mannitol, pulverulent maltitol, maltodextrins, glucose syrups, hydrogenated glucose syrups and hydrogenated maltodextrins, said composition having a xylitol content of at least 60% by weight, based on the weight of the composition, and having a compressibility, determined in a test A, higher than 70N, the said test A consisting of measuring the force, expressed in Newtons, which is necessary for crushing a tablet prepared from said composition such that the appearance of fracture lines is produced inside the mass of said tablet, this force thus corresponding to the resistance to crushing of said tablet which is cylindrical with flat surfaces, with a diameter of 13 mm, a thickness of 4 mm and a weight of 0.717 g, having an apparent volumetric mass or density of 1.35 g/ml, the said force being exerted against the peripheral surface of the tablet in the direction of the axis of revolution thereof by means of a movable stop applying a thrust against a fixed stop also applied against the peripheral surface of the tablet along a generatrix, the latter being diametrically opposed to the generatrix against which the movable stop is applied, said composition having been prepared by a process which comprises subjecting a starting material comprising at least 60% by weight xylitol and at least one additive selected from the group consisting of mannitol, pulverulent maltitol, maltodextrins, glucose syrups, hydrogenated glucose syrups and hydrogenated maltodextrins, to an extrusion treatment inside an extrusion apparatus comprising a heat treatment zone and at least one extrusion die, the rate of supply of starting material to the apparatus as well as the parameters for the extrusion treatment, including the temperature existing inside the heat treatment zone, the diameter of the extrusion die and the speed of transport of the starting material inside the heat treatment zone being selected so that the starting material will be partially melted at the outlet of the die and before it leaves the die.

5,385,750

ALKYL GLYCOSIDE COMPOSITIONS WITH IMPROVED WETTING PROPERTIES

Robert A. Aleksejczyk, Hatfield, and Allen D. Urfer, Lansdale, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed May 14, 1992, Ser. No. 883,000
Int. Cl.[6] A01N *25/30*
U.S. Cl. 427—4 **24 Claims**

1. In a method, wherein a substrate is coated with an aqueous composition comprising a material to be coated on the substrate, the improvement which comprises: including in the aqueous composition a wetting increasing effective amount of a mixture of an aliphatic glycoside of the formula

$$RO(CH(R')-CH_2O)_yG_x$$

and from about 2% to about 20% by weight of a fatty alcohol, based on the amount of the glycoside and alcohol, the fatty alcohol having from about 7 to about 20 carbon atoms, wherein RO is the residue of a fatty alcohol containing from about 7 to about 18 carbon atoms, R' is H, CH_3 or CH_3CH_2, G is the residue of a reducing saccharide, y is an average number of from about 0 to about 5, and x is an average degree of polymerization of from 1 to about 4, relative to the aqueous composition without the mixture.

5,385,751

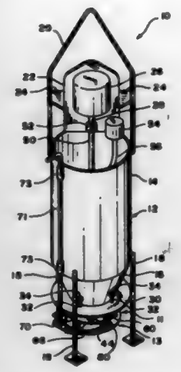
ATMOSPHERIC PRESSURE CVD PROCESS FOR PREPARING FLUORINE-DOPED TUNGSTEN OXIDE FILMS

Umar Riaz, Ann Arbor, and James W. Proscia, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 86,800
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[6] B05D *5/12*; C23C *16/40*
U.S. Cl. 427—126.2 **19 Claims**

1. A process for providing fluorine-doped tungsten oxide on the surface of a substrate, which process comprises reacting together a tungsten alkoxide, an oxygen-containing compound, and a fluorine-containing compound at the surface of the substrate at a temperature and for a time sufficient to form a film of fluorine-doped tungsten oxide on the substrate.

5,385,752
METHOD AND APPARATUS FOR COATING INTERIOR SURFACES
Wesley M. Stoole, P.O. Box 28, Vidalia, La. 71373
Filed Oct. 14, 1993, Ser. No. 135,979
Int. Cl.[6] B32B *35/00*; B05B *13/00*
U.S. Cl. 427—140 20 Claims



1. An apparatus for coating an interior surface, said apparatus comprising:
a tank for containing a coating material;
slinging means positioned below said tank for applying said coating material to a surface;
flow control means for controlling the flow of said coating material from said tank to said slinging means; and
vibration producing means acting on said coating material in said tank, said vibration producing means improving flowability of said coating material from said tank to said slinging means.

11. A method of applying a coating material to an interior surface of a manhole, said method comprising:
locating a manhole having an interior surface to be coated;
providing a coating material in a tank for application to said interior surface of said manhole;
producing vibrations in said coating material in said tank for increasing the flowability of said coating material from said tank to a slinging means; and
slinging said coating material against said interior surface of said manhole for forming at least a single coating on said interior surface.

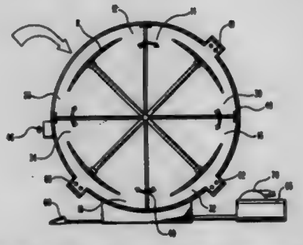
5,385,753
PROCESS FOR REACTIVELY COATING PARTICLES
Patrick C. Hu, Baton Rouge, La., and Richard I. Leavitt, Ponte Vedra Beach, Fla., assignors to Albemarle Corporation, Richmond, Va.
Filed Aug. 30, 1993, Ser. No. 114,028
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—215 17 Claims

1. A process which comprises contacting zeolite particles with a titanium or zirconium compound selected from the group consisting of halides, ethers, and esters in an anhydrous or substantially anhydrous inert medium so as to react said compound with the water of hydration of the zeolite and form a titania or zirconia coating on the particles.

5,385,754
TREATMENT OF LIGNOCELLULOSIC MATERIALS
Harold A. Earl, Clwyd, and Richard J. Salisbury, Gwynedd, both of United Kingdom, assignors to BP Chemicals Limited, London, United Kingdom
Filed Sep. 17, 1993, Ser. No. 123,534
Claims priority, application United Kingdom, Sep. 29, 1992, 9220503
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—221 14 Claims

1. A process for modifying lignocellulosic material by a chemical treatment method, said method comprising treating the lignocellulosic material with:
a. phthalic anhydride and
b. a thermosetting resin selected from consisting of phenol-formaldehyde resins; urea formaldehyde resins and urethane resins, and hat curing the phthalylated resin-impregnated product so formed.

5,385,755
APPARATUS AND METHODS FOR CURING AN ADHESIVE PROMOTER ON A WINDSHIELD
Jack B. Staley, Grand Rapids, Mich., assignor to Safelite Glass Corporation, Columbus, Ohio
Filed Oct. 23, 1992, Ser. No. 965,160
Int. Cl.[6] B05D *3/02*
U.S. Cl. 427—379 11 Claims

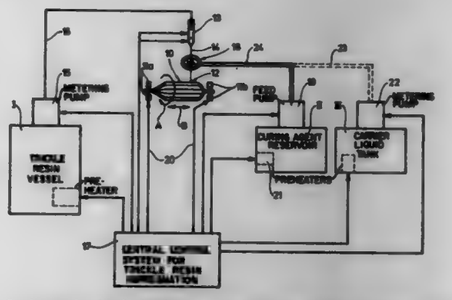


1. A method for curing an adhesive promoter onto glass, comprising the steps of:
applying the adhesive promoter to the glass, said adhesive promoter having a solvent carrier;
introducing the glass with the adhesive promoter applied thereto into a first chamber, said first chamber maintaining an environment with temperature between approximately 200° F. and 260° .F (93° C. and 127° C.) to flash off said solvent carrier;
introducing the glass from the first chamber into a second chamber, said second chamber maintaining an environment for heating and humidifying the glass with temperature between approximately 150° F. and 200° F. (65° C. and 93° C.) and humidity between approximately 80 percent and 90 percent for hydrolysis to form a coating on the glass;
introducing the glass from the second chamber into a third chamber, said third chamber maintaining an environment with temperature between approximately 200° F. and 250° F. (93° C. and 121° C.) to dry the glass and evaporate water from said coating; and
removing the glass from the third chamber wherein each of said first, second and third chambers lie adjacent one another within a curing apparatus.

5,385,756
FORMALDEHYDE-FREE BINDER
Elizabeth P. Lofton, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Division of Ser. No. 576,574, Aug. 31, 1990. This application Sep. 21, 1992, Ser. No. 961,551
Int. Cl.[6] B05D *3/02*
U.S. Cl. 427—389.9 4 Claims

1. A method for treating a nonwoven consisting essentially of:
(a) forming a waterborne formaldehyde-free composition comprising at least one polymeric binder, said binder consisting essentially of a polymer having at least one copolymerized ethylenically-unsaturated dicarboxylic acid, the half ester thereof, or the anhydride thereof, in an amount of from about 0.5% to about 10%, by weight based on the weight of said binder;
(b) contacting said composition with at least one fixed base sufficient in amount to neutralize from about 20% to about 80% of the calculated equivalents of acid of said copolymerized dicarboxylic acid, the half ester thereof, or the anhydride thereof;
(c) applying said composition to said nonwoven; and
(d) heating said composition.

5,385,757
TRICKLE RESIN IMPREGNATION BY MIXING RESIN IN FREE FALL WITH A CURING AGENT
Willy Kress, Bisingen, Germany, assignor to Kress-Elektrik GmbH & Co. Elektromotorenfabrik, Bisingen, Germany
Filed Apr. 15, 1992, Ser. No. 869,938
Claims priority, application Germany, Apr. 19, 1991, 4112776
Int. Cl.[6] B05D *1/30*
U.S. Cl. 427—420 12 Claims

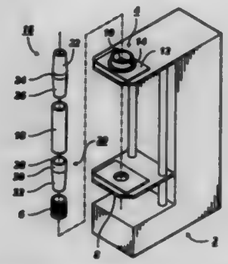


1. A method of obtaining trickle resin impregnation of an object to be impregnated, comprising the step of:
applying a jet of liquid synthetic resin and a curing agent on the object to be impregnated, the step of applying including supplying a trickle resin from an outlet opening and free of the curing agent, causing the trickle resin to flow in a path in free fall due to an action of gravity between said outlet opening and the object to be impregnated so as to strike the object to be impregnated, and mixing the curing agent into the trickle resin while the trickle resin flows in the path spaced from the outlet opening.

5,385,758
METHOD FOR APPLYING AUTODEPOSITION COATING
Bashir M. Ahmed, Utica, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.
Filed Dec. 30, 1992, Ser. No. 999,479
Int. Cl.[6] B05D *1/02*
U.S. Cl. 427—421 11 Claims

1. A process for forming an autodeposition coating on a substrate having a metallic surface comprising applying an aqueous resinous autodepositing composition to the substrate intermittently from a motile source of the autodepositing composition.

5,385,759
SUBSTRATE COATING METHODS AND APPARATUS
David P. Crump, Pittsford, and Edward C. Williams, Palmyra, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 1, 1993, Ser. No. 143,703
Int. Cl.[6] B05D *1/18*
U.S. Cl. 427—430.1 13 Claims



1. A substrate coating method comprising:
(a) positioning a first coupler comprised of a tapered first end portion and an opposed, tapered second end portion in an opening of a reservoir apparatus to define a reservoir for a coating solution between the surfaces of the first coupler and the reservoir apparatus, wherein the tapered second end portion of the first coupler extends below the opening;
(b) engaging the bottom end of a vertically disposed, hollow substrate with a first end portion including a recessed rim of a second coupler comprised of the first end portion and an opposed, tapered second end portion;
(c) moving the top end of the substrate over a part of the tapered second end portion of the first coupler to engage the substrate with the first coupler, and moving the first coupler and the substrate through the opening, whereby the coating solution is deposited on the outer surface of the substrate;
(d) positioning the second coupler in the opening to define the reservoir, wherein the tapered second end portion of the second coupler extends below the opening; and
(e) adding the coating solution to the reservoir at any suitable time.

5,385,760
PROCESS FOR THE PRODUCTION OF A COMPOSITE COATING OF A FUNCTIONAL SUBSTANCE IN A METAL MATRIX ON THE SURFACE OF AN ARTICLE
Wolfgang Schauerberger, Eisenhofen; Monika Mauler, Mitterscheyern, and Martin Thoma, Munich, all of Germany, assignors to MTU Motoren-und Turbinen-Union München GmbH, Munich, Germany
Filed Dec. 6, 1993, Ser. No. 163,473
Claims priority, application Germany, Dec. 9, 1992, 4241420
Int. Cl.[6] C23C *26/00*
U.S. Cl. 427—443.1 28 Claims

1. A process of applying a composite coating on the surface of an article comprising the steps of:
covering a surface of an article with a dispersed mixture comprising a water-soluble powder of an acid or salt and a functional material,
melting the water-soluble acid or salt in situ on the covered metal article to transform the acid or salt to a water solu-

ble product which adheres to the surface of the article and fixes the functional material thereto, and

immersing the thus coated article into an electrolytic or electroless bath containing a metal matrix and effecting electrolytic or electroless deposition of said matrix onto the surface of the article coated with said functional material while dissolving said water-soluble product in the bath to incorporate said functional material into said matrix and fix said functional material to the surface of the article by said matrix in replacement of the now dissolved water soluble product of said acid or salt.

5,385,761

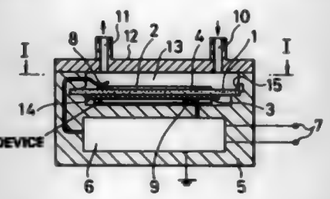
DISCHARGE ELEMENT, METHOD OF PRODUCING THE SAME AND APPARATUS COMPRISING THE SAME

Masao Iwasaga, Tokyo, Japan, assignor to I.T.M. Corporation, Tokyo, Japan

Continuation of Ser. No. 815,806, Dec. 30, 1991, abandoned, which is a division of Ser. No. 696,713, May 7, 1991, abandoned. This application Oct. 22, 1993, Ser. No. 143,242

Int. Cl.[6] B05D *3/06, 1/00, 5/12*

U.S. Cl. 427—448 **14 Claims**



1. A method of producing a discharge element responsive to an operating voltage for generating a uniform silent creeping discharge on a surface of an insulator sheet along edges of a semiconductor linear electrode, the discharge element including a ceramic insulator sheet, the method comprising the steps of:

forming a masking member for defining a shape of the semiconductor linear electrode on the ceramic insulator sheet;

adhering said masking member to the surface of the ceramic insulator sheet by screen printing;

forming the semiconductor linear electrode on the ceramic insulator sheet by applying a coating including a ceramic conductive material selected from the group consisting essentially of TiN and TaN by plasma or flame spray on the insulator sheet and the masking member; and

applying a,n aging voltage between the semiconductor linear electrode and the sheet electrode which is greater than the operating voltage for about 1 to 1.0 hours to remove projections and recesses arranged irregularly at the edge of the semiconductor linear electrode whereby the semiconductor linear electrode is aged.

5,385,762

DIAMOND DOPING

Johan F. Prins, 8 Portland Place, Northcliff Extension 13, Johannesburg, Transvaal, South Africa

Filed Jun. 7, 1993, Ser. No. 73,458

Claims priority, application South Africa, Jun. 5, 1992, 92/4113

Int. Cl.[6] B05D *3/06*

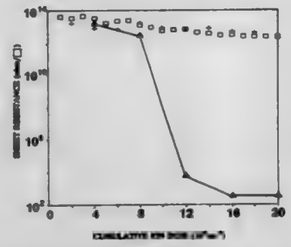
U.S. Cl. 427—526 **13 Claims**

1. A method of producing a doped diamond comprising the steps of:

(i) creating a damaged layer of point defects in the form of vacancies and interstitial atoms within the crystal lattice of a diamond using low dose ion implantation at low temperature;

(ii) introducing dopant atoms into the damaged layer using low dose ion implantation at low temperature;

(iii) rapidly annealing the product of step (ii) to reduce lattice damage and to cause dopant interstitial atoms to diffuse into lattice positions; and



(iv) repeating steps (i) to (iii) within the same layer until a doped diamond having a desired amount of dopant is produced wherein the amount of dopant is greater than could be achieved with a single doping without causing amorphisation of the diamond.

5,385,763

METHOD FOR FORMING A FILM ON A SUBSTRATE BY ACTIVATING A REACTIVE GAS

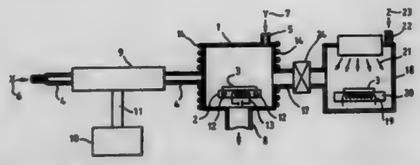
Haruo Okano, Tokyo; Sadahisa Noguchi, Fuchu, and Makoto Sekine, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 917,531, Jul. 20, 1992, abandoned, which is a division of Ser. No. 686,283, Apr. 16, 1991, Pat. No. 5,156,881, which is a continuation of Ser. No. 169,577, Mar. 17, 1988, abandoned. This application Mar. 1, 1994, Ser. No. 203,757

Claims priority, application Japan, Mar. 18, 1987, 62-61237; Mar. 18, 1987, 62-61238

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—572 **42 Claims**



1. A thin film forming method, comprising the steps of:

supporting a semiconductor substrate, having a trench or an unevenness thereon, in a reaction vessel;

introducing a reactive gas into the reaction vessel;

activating the reactive gas to form a deposit species, the deposit species characterized by a phase diagram including a liquid phase region defined by a melting curve and an evaporation curve that intersect at a triple point; and

forming a thin film containing at least a part of the deposit species on the substrate while retaining a pressure in the reaction vessel higher than the triple point of the phase diagram of the deposit species, and retaining a temperature of the substrate within the liquid phase region of the phase diagram of the deposit species.

5,385,764

HYDRAULICALLY SETTABLE CONTAINERS AND OTHER ARTICLES FOR STORING, DISPENSING, AND PACKAGING FOOD AND BEVERAGES AND METHODS FOR THEIR MANUFACTURE

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, and a continuation-in-part of Ser. No. 19,151, Feb. 17, 1993. This application Jul. 21, 1993, Ser. No. 95,662

Int. Cl.[6] B32B *13/00;* **C04B** *14/00*

U.S. Cl. 428—34.4 **167 Claims**

1. An article of manufacture comprising a food or beverage container formed from a hydraulically settable matrix, said matrix including the chemical reaction product of a hydraulically settable mixture comprising a hydraulically settable binder selected from the group consisting of portland cement, slag cement, calcium aluminate cement, silicate cement, phosphate cement, high-alumina cement, and magnesium oxychloride cement, water, and a rheology-modifying agent, the hydraulically settable mixture having a rheology and early green strength during formation of the food or beverage container such that the hydraulically settable matrix of the container is form stable through the removal of water from the hydraulically settable mixture within a period of time less than about 10 minutes after being positioned into a desired shape of the food or beverage container, the hydraulically settable matrix having a density less than about 1.5 g/cm^3, said hydraulically settable matrix having a thickness of less than about 5 mm.

5,385,765

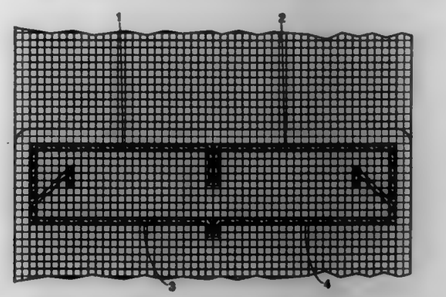
SPLICING FOR FLUOROPOLYMER COATED BELTS

Linda L. Springer, Buskirk, and Charles E. Carelli, Eagle Bridge, both of N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Oct. 26, 1992, Ser. No. 966,227

Int. Cl.[6] B65H *19/22;* **B32B** *3/02;* **B29D** *28/00*

U.S. Cl. 428—36.1 **30 Claims**



1. A spliced fluoropolymer coated mesh fabric comprising a fluoropolymer coated mesh fabric, which constitutes a plurality of mesh voids in a warp and weft direction and has two ends, overlapped at said ends, wherein said overlapped ends are arranged so as to align said mesh voids; and a fluoropolymer cord interwoven through at least one row of said aligned voids of said overlapped ends, said cord roughly filling said voids of said mesh fabric.

5,385,766

EXTRUDED PLASTICS NET BAG

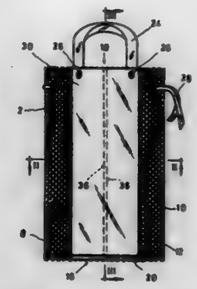
Jacinto F. Ferré, Cardedeu, Spain, assignor to Intermas, S.A., Barcelona, Spain

Filed Mar. 22, 1993, Ser. No. 34,079

Claims priority, application Spain, Jan. 19, 1993, 9300101

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—36.1 **5 Claims**



1. An extruded plastics net bag, formed from a tubular body of netting which in the flattened state defines two superimposed side panels comprising:

a mouth; two handles of plastics material, each of which has the ends thereof attached to the tubular body by welded sections; a bottom end defined by a line of welding joining said side panels together; and a band extending longitudinally on one of said side panels, from said bottom end to said mouth and which is attached to the body of the bag (a) by said line of welding defining the bottom end of the bag and (b) by two of said welded sections joining the handles to the tubular body,

wherein said band is provided with two longitudinal folds which define a central longitudinal section therebetween and two folded longitudinal sections which are superimposed, at least in part, on said central section of the band and are positioned between the central section of the band and the side panel of the tubular body to thereby define a longitudinal pouch, each of said folded longitudinal sections having a free longitudinal edge with the respective free edges of both folded sections being generally adjacent to allow access to the interior of the pouch.

5,385,767

GOLF CLUB SHAFT AND PRODUCTION METHOD THEREOF

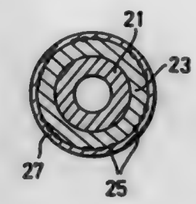
Akira Noguchi, Tokyo, Japan, assignor to Daiwa Golf Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 456,976, Dec. 26, 1989, abandoned. This application Apr. 24, 1992, Ser. No. 873,969

Claims priority, application Japan, Dec. 28, 1988, 63-169804[U]

Int. Cl.[6] A63B *53/10*

U.S. Cl. 428—36.91 **10 Claims**



1. A golf club shaft comprising a mandrel, and an inner layer

constituted of a plurality of prepreg sheets made of high-strength fibers which cross the longitudinal axis of the shaft and which are impregnated with a matrix of synthetic resin, the prepreg sheets being wound around said mandrel, a middle layer formed by prepreg sheets made of high-strength fibers impregnated with synthetic resin wound around said inner layer, and an outer layer formed by winding a prepreg sheet having fibers and an impregnating matrix which become transparent after curing, wherein the fibers of the prepreg sheet forming said outer layer are arranged in the longitudinal axial direction of the shaft, and further comprising a string member wound around said middle layer.

5,385,768

ELECTRICALLY CONDUCTIVE FILM

Yuzo Otani, Tokyo, and Naohiro Takeda, Yokohama, both of Japan, assignors to Diafoil Company, Limited, Tokyo, Japan

Continuation of Ser. No. 713,079, Jun. 11, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 53,344
Claims priority, application Japan, Jun. 14, 1990, 2-155651
Int. Cl.[6] B32B *27/40*
U.S. Cl. 428—141 **2 Claims**

1. An electrically conductive polyester film comprising a polyester base film and a coating layer which is formed by applying a coating liquid to said base film, thereafter stretching said coated film and heat-setting said film, wherein said coating liquid is an aqueous composition comprising a polyurethane resin, an alkylol melamine and carbon black having an average particle size of 0.01–0.2 μm in an amount of 30–60% by weight of the solid content and produces a layer when dried at 80° C. for 10 minutes, the rupture elongation of said layer being at least 300% at 80° C. and is cross-linkable at 10°–200° C., and said coating layer has a surface resistivity of 10^{4}—10^{10} Ω/□, and a surface roughness (Ra) of not more than 0.05 μm.

5,385,769

MICROPATTERN-EMBOSSED ORIENTED ELASTOMER FILMS

Richard J. Wick, Ingleside, Ill., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 637,359, Jan. 4, 1991, Pat. No. 5,182,069. This application Aug. 7, 1992, Ser. No. 65,038
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—141 **8 Claims**

1. A geometric-pattern-embossed and oriented, heat-shrinkable, elastic, thermoplastic elastomer film produced by an in-line process, said film comprising at least one thermoplastic elastomer, said thermoplastic elastomer being a blend of an olefinic elastomer, an ethylene copolymer, and a process oil, said thermoplastic elastomer being extrusion-embossed with a geometric micropattern surface comprising between about 50 and 350 lines per inch, each having a depth between about 0.001 and 0.0025 inch and forming a geometric pattern of recessed surface areas and surrounding, intersecting raised surface areas on said film, and said film is oriented in-line in the transverse direction and/or the machine direction to an extent between about 50% and 500%, whereby the film is uniformly stretched in the geometric recessed areas and in the geometric intersecting raised areas of the film, surrounding said recessed areas, whereby said film substantially retains the effects of the embossment, after orientation.

5,385,770

METHODS FOR PRODUCING DETECTIBLE WARNINGS ON SURFACES AND PRODUCTS THEREOF

Jon N. Julnes, P.O. Box 1870, Woodinville, Wash. 98072

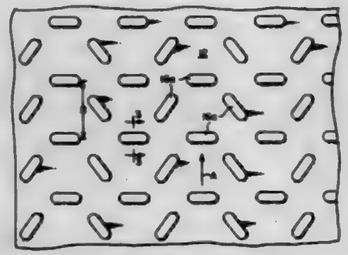
Filed May 17, 1994, Ser. No. 243,952
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 **19 Claims**

1. A method for producing in situ a pattern of detectable warnings on a surface comprising the steps of:

a) perforating a sheet of non-porous material having an upper and lower surface to form a mask having a plurality of apertures in the form of a repeating pattern wherein the sheet has a thickness corresponding to the desired elevation of the detectable warnings;

b) positioning the mask on a substrate surface so that the lower surface thereof contacts the substrate;

c) preparing a viscous substance having the ability to cure into a solid;



d) initiating a cure of the viscous substance;

e) filling the apertures with the viscous substance;

f) removing the mask thereby exposing raised detectable warnings on the substrate; and

g) permitting the detectable warnings to cure substantially completely and undisturbed.

5,385,771

OUTDOOR POSTER GRADE ELECTROGRAPHIC PAPER

Carl V. Willetts, Penenden Heath, United Kingdom; Cynthia F. Klausner, Hadley; Donald A. Brault, Granby, both of Mass.; Bryan W. M. Crosbie, Whitstable, United Kingdom; Alan F. Stewart, Pelham, and Dene H. Taylor, Holyoke, both of Mass., assignors to Rexham Graphics Inc., So. Hadley, Mass.

Filed May 10, 1993, Ser. No. 58,259
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—211 **33 Claims**

1. An electrographic printing paper suitable for the printing of a quality image having an image density of at least 1.0 for black, comprised of a dielectric coating on a conductive base paper which contains a wet strength agent and exhibits a wet burst strength of at least 50 kPa and a wet expansion of less than about 3%.

5,385,772

PRESSURE-SENSITIVE ADHESIVE SYSTEMS WITH FILLER

Manuel Slovinsky, Sao Paulo, Brazil; Jeffrey R. Tarizzo, Tacoma, Wash.; Dennis K. Fisher, and Brian J. Briddell, both of Jackson, Mich., assignors to Adco Products, Inc., Michigan Center, Mich.

Continuation of Ser. No. 428,204, Oct. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 245,510, Sep. 19, 1988, abandoned. This application Feb. 19, 1991, Ser. No. 657,889
Int. Cl.[6] B32B *7/12*; C08L *33/06, 33/08*
U.S. Cl. 428—220 **3 Claims**

1. A pressure-sensitive adhesive system consisting essentially of:

a pressure-sensitive adhesive matrix;

optionally from about 0.5 to about 5.0 weight percent of a thixotropic agent dispersed within said matrix;

organic particulate solids having a particle size of from about 1 to about 300 microns,

wherein said organic particulate solids are substantially homogeneously dispersed within said matrix as a filler and wherein said organic particulate solids are substantially comprised of organic composition having a molecular weight of at least 500; and

optionally at least one coating of an unfilled pressure-sensitive adhesive material, said matrix being a support material for said coating,

wherein said organic particulate solids are incorporated into said matrix in the amount of from 1 to 25 weight percent based on the total weight of said matrix and said organic particulate solids,

wherein the adhesive system is formed as a sheet having a thickness of from 25 to 50 mils, and

wherein said organic particulate solids are polyvinyl acetate.

5,385,773

COPOLYESTER OF CYCLOHEXANENEDIMETHANOL AND PROCESS FOR PRODUCING SUCH POLYESTER

Cheuk C. Yau, and Clinton Cherry, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Apr. 27, 1993, Ser. No. 52,978
Int. Cl.[6] B32B *13/00*
U.S. Cl. 428—221 **7 Claims**

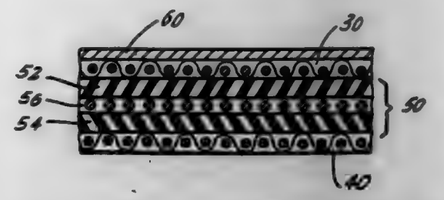
1. Process for producing copolyester having repeat units consisting essentially of a dicarboxylic acid component consisting essentially of repeat units from at least 90 mol % terephthalic acid and a glycol component comprising repeat units from about 10–95 mol % 1,4-cyclohexanedimethanol and from about 90-5 mol % ethylene glycol comprising reacting said dicarboxylic acid component and said glycol component at temperatures sufficient to effect esterification or trans-esterification and polycondensing said reaction product under absolute pressure of less than 10 mm Hg for a time of less than about 2 hours in the presence of a catalyst and inhibitor system consisting essentially of about 0–75 ppm Mn, about 50–150 ppm Zn, about 5–20 ppm Ti, about 5–200 ppm Ge and about 10–80 ppm P, all parts by weight based on the weight of the copolyester.

5,385,774

ROOF MATERIAL FOR MOTOR VEHICLES

Johannes Cramer, Ahaus; Erwin Winterberg, and Hans Nockemann, both of Wuppertal, all of Germany, assignors to Gebr. Happich GmbH, Germany

Filed Jan. 16, 1990, Ser. No. 464,133
Claims priority, application Germany, Jan. 13, 1989, 3900846
Int. Cl.[6] B32B *25/00*; B60J *7/00, 11/00*
U.S. Cl. 428—247 **17 Claims**



1. A roof material for a motor vehicle, comprising an upper fabric, a lower fabric and a rubber layer disposed therebetween, said upper fabric being comprised of polyacrylonitrile warp threads and polyacrylonitrile filling threads wherein at least the polyacrylonitrile warp threads are endless threads, said rubber layer being comprised of at least two rubber sublayers and an intermediate layer disposed between said sublayers.

5,385,775

COMPOSITE ELASTIC MATERIAL INCLUDING AN ANISOTROPIC ELASTIC FIBROUS WEB AND PROCESS TO MAKE THE SAME

Robert D. Wright, Atlanta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 9, 1991, Ser. No. 805,736
Int. Cl.[6] B32B *27/00, 27/36, 5/16*; D04H *1/04*
U.S. Cl. 428—284 **23 Claims**



1. A composite elastic material adapted to provide improved tenacity in one direction, the composite material comprising:

an anisotropic elastic fibrous web comprising:

a first layer of elastomeric meltblown fibers; and,

a second layer of substantially parallel elastomeric filaments autogenously bonded to at least a portion of the elastomeric meltblown fibers so that the elastic fibrous web is anisotropic; and

at least one gatherable layer joined at spaced apart locations to the anisotropic elastic fibrous web so that the gatherable layer is gathered between the spaced-apart locations.

5,385,776

NANOCOMPOSITES OF GAMMA PHASE POLYMERS CONTAINING INORGANIC PARTICULATE MATERIAL

MacRae Maxfield, Plainfield; Brian R. Christiani, Maplewood; Sanjeeva N. Murthy, Neshanic Station, and Harold Tuller, Long Valley, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County

Filed Nov. 16, 1992, Ser. No. 976,600
Int. Cl.[6] B32B *5/06, 5/22*
U.S. Cl. 428—297 **18 Claims**

1. A composite material comprising a polymer matrix comprising a gamma phase polyamide, wherein at least about 10 weight percent of said polyamide based on the total weight of said polyamide is in the gamma phase, having dispersed therein from greater than zero to less than 0.05% by wgt. of the matrix of an inorganic particulate material selected from the group consisting of layered materials having a thickness equal to or less than about 200 Å and fibrillar silicates having a diameter equal to or less than about 100 Å wherein distances between layers of said layered materials or between fibrils of said fibrillar silicates are at least about 15 Å.

5,385,777

POROUS FILM, PROCESS FOR PRODUCING THE SAME, AND USE OF THE SAME

Hiroyuki Higuchi; Kiichiro Matsushita; Minoru Exoe, and Toshihiko Shinomura, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Mar. 30, 1993, Ser. No. 39,907
Claims priority, application Japan, Mar. 30, 1992, 4-106173; Jan. 11, 1993, 5-002636
Int. Cl.[6] B32B *5/18*; H01M *2/16*; C08J *5/18*; C08L *23/04, 23/10*
U.S. Cl. 428—316.6 **10 Claims**

1. A porous film comprising a composition comprising polypropylene and polyethylene, the polypropylene being present in a proportion of from 10 to 90% by weight based on the total weight of polypropylene and polethylene, the polyethylene being present in a proportion of from 90 to 10% by weight

based on the total weight of polypropylene and polyethylene, and the polyethylene having a weight average molecular weight (Mw) to number average molecular weight (Mn) ratio, Mw/Mn, of 10 or less as measured by high-temperature gel-permeation chromatography;

said porous film having a phase separation structure in which a polypropylene portion and a polyethylene portion independently exist, either one of said polypropylene portion and said polyethylene portion forming a continuous phase, with the other forming a discontinuous phase, and said continuous phase being porous;

said porous film having a resistivity of 5 $\Omega.cm^2$ or less as measured in an organic electrolytic solution at room temperature; and

said porous film, when heated to a specific temperature in a range of from 120° to 150° C. having a resistivity of 200 $\Omega.cm^2$ or higher and maintaining said resistivity up to a temperature of at least 25° C. higher than said specific temperature.

5,385,778

TOUGHENED THERMOSETTING RESIN COMPOSITES AND PROCESS

Marvin L. Deviney, and Joel J. Kampa, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Jul. 19, 1993, Ser. No. 94,258
Int. Cl.[6] B32B *27/00*
U.S. Cl. 428—319.7 **6 Claims**

1. A shaped structural composite comprising a thermosetting resin having Tg of at least 150° C. and having dispersed substantially uniformly therethrough microspheres of a thermoplastic resin having a Tg of at least 150° C.

5,385,779

MAGNETIC RECORDING MEDIUM

Toshihiko Miura, and Hiroo Inaba, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 6, 1993, Ser. No. 102,834
Claims priority, application Japan, Aug. 12, 1992, 4-214998
Int. Cl.[6] G11B *5/00*
U.S. Cl. 428—323 **3 Claims**

1. A magnetic recording medium comprising a nonmagnetic support having thereon a lower nonmagnetic layer comprising nonmagnetic particles dispersed in a binder, and further having on the lower layer an upper magnetic layer comprising ferromagnetic metal particles comprising α-iron crystals dispersed in a binder, wherein said upper magnetic layer has diffraction dots attributable to the ferromagnetic metal particles present on the magnetic layer surface when analyzed by reflection high-energy electron diffraction, the number of said diffraction dots is from 5 to 15 when counted in a 100° range on a circular arc of diffraction dots caused by diffraction on a (211) plane of α-iron crystals of said ferromagnetic metal particles present on the magnetic layer surface.

5,385,780

SINTERABLE MASS OF POLYMER POWDER HAVING RESISTANCE TO CAKING AND METHOD OF PREPARING THE MASS

Bling-Lin Lee, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 623,323, Dec. 5, 1990, abandoned. This application Jul. 14, 1993, Ser. No. 91,631
Int. Cl.[6] B28B *11/06*; B29C *59/00*; B32B *5/16*
U.S. Cl. 428—325 **38 Claims**

1. A laser sinterable mass of partially coated particles comprising, a host powder having host particles no greater than 177 μ, an initial bulk density in the range from 0.3–0.6 gm/cm^3 and an initial glass transition temperature, initial Tg, higher than 50° C., said initial T_g occurring at least 3° C. lower than said host powder's final T_g; and,

a coating powder having coating particles which coat said host particles leaving at least some portion thereof uncoated;

said coating powder is selected from the group consisting of a substantially amorphous coating powder and a crystalline coating powder each having an average particle diameter in the range from 0.02μ–44 μ but smaller than said host particles, and a bulk density in the range from 0.15 to 0.35 gm/cm^3;

said amorphous coating powder having an initial T_g and sintering temperature higher than said final T_g of said host particles, and said crystalline coating powder having a crystalline melting point and sintering temperature higher than said final T_g of said host particles;



said partially coated particles being essentially free from electric charge, having an increased bulk density at least 10% higher than that of said host powder, and being flowable under applied force in the range from about 10 g-force to about 100 g-force, without caking at a storage temperature above the initial T_g of said host powder but below said host powder's final T_g;

said increased bulk density being obtained by blending said host powder with said coating powder with an energy input greater than 30 watt-hr/lb of said host powder, so as to discharge coated powder at a drop temperature above a minimum drop temperature defined as initial T_g minus 20° C., but at a drop temperature below said host powder's final T_g.

5,385,781

MULTILAYER THERMOFORMABLE STRUCTURE

Deenadayalu Chundury, Newburgh, Ind.; Anthony S. Scheibelhoffer, Norton, Ohio; Berdine L. Leonard, Macedonia, Ohio; Ronald E. Thompson, Parma, Ohio; Randall S. McAllister, Evansville, Ind.; Surachai Wimolkiatisak, North Royalton, and Anthony F. Dean, Jr., Cuyahoga Falls, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 948,080, Sep. 21, 1992, Pat. No. 5,264,280. This application Sep. 20, 1993, Ser. No. 124,291
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[6] B32B *27/08*; C08L *53/02*
U.S. Cl. 428—330 **15 Claims**

1. A multilayer thermoformable structure comprising

(A) at least one cap layer of a polymer composition comprising (i) at least about 50% to about 80% by weight of a high impact polystyrene, (ii) from about 0% to about 45% by weight of at least one block polymer of a vinyl aromatic monomer and an aliphatic conjugated diene, a selectively hydrogenated derivative thereof, or a selectively hydrogenated derivative thereof to which has been grafted a unsaturated carboxylic reagent, wherein the block polymer contains up to about 50% by weight bound styrene, and (iii) from about 0% to about 45% by weight of at least one block polymer of a vinyl aromatic monomer and a conjugated diene, a partially hydrogenated derivative thereof, or a selectively hydrogenated derivative thereof to which has been grafted a unsaturated carboxylic reagent, wherein the block polymer contains greater than about 60% by weight bound vinyl aromatic monomer, with the proviso that the cap layer includes at least one of (Aii) or (Aiii); and

(B) at least one core layer selected from the group consisting of

(1) at least one polymer composition comprising (i) from about 50% to about 80% by weight of at least one polyolefin, (ii) from about 10% to about 30% by weight of a polymer of a vinyl aromatic compound and an unsaturated dicarboxylic acid anhydride or imide, or mixtures thereof; and (iii) from about 5% to about 20% by weight of a block polymer of a vinyl aromatic compound and a conjugated diene, a partially hydrogenated derivative thereof, or a selectively hydrogenated derivative thereof to which has been grafted a unsaturated carboxylic reagent;

(2) at least one polymer composition comprising (i) from about 50% to about 80% by weight of a polyolefin, (ii) from about 10% to about 30% by weight of a homopolymer of a vinyl aromatic monomer, or a polymer of a vinyl aromatic monomer and at least one monomer selected from the group consisting of acrylic acid or ester, methacrylic acid or ester, acrylonitrile and maleic anhydride; (iii) from about 5% to about 20% by weight of at least one block polymer of a vinyl aromatic monomer and an aliphatic conjugated diene, a partially hydrogenated derivative thereof, or a selectively hydrogenated derivative thereof to which has been grafted a unsaturated carboxylic reagent;

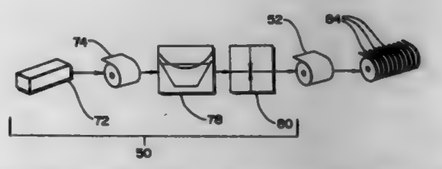
(3) at least one polymer composition comprising (i) from about 70% by weight of at least one polyolefin, (ii) from about 5% to about 30% by weight of a block polymer of a vinyl aromatic compound and a conjugated diene, a partially hydrogenated derivative thereof, or a selectively hydrogenated derivative thereof to which has been grafted a unsaturated carboxylic reagent, wherein the block polymer is derived from at least about 60% by weight bound vinyl aromatic monomer; and (iii) from about 0.3% to about 15% by weight of a block polymer of a vinyl aromatic compound and a conjugated diene, a partially hydrogenated derivative thereof, or a selectively hydrogenated derivative thereof to which has been graded a unsaturated carboxylic reagent, wherein the polymer is derived from up to about 50% by weight bound vinyl aromatic monomer.

5,385,782

PRE-COATED DATA CARTRIDGE BASE PLATE

Christopher J. Zwettler, Maplewood, Minn., and Leif O. Erickson, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation of Ser. No. 887,536, May 21, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 52,813
Int. Cl.[6] B05D *5/00*
U.S. Cl. 428—332 **7 Claims**



1. An improved data cartridge base plate of the type in which a flat metallic base plate is used for providing component mounting for high quality operation of a data cartridge tape, wherein the base plate comprises a sheet of aluminum having an anodized, insulative coating on both major surfaces, said sheet having been leveled and dimensioned to have a designated width, blanked to have a pin insertion aperture surface defining a plurality of pin insertion apertures extending perpendicularly through the width of the plate, each pin insertion aperture having a substantially uniform size with an error tolerance of less than 0.0005 inch (0.0127 millimeter), and subsequently stippled to relieve stresses built up therein to further improve flatness, said thus formed base plate ensuring that

i) during the subsequent manufacture of a data cartridge, no treatment of the base plate need occur between the formation of said apertures and the insertion of pins therein, such that the flatness and allowed precise match between the aperture dimensions and the outside dimension of the pins results in precise perpendicularity of the pins with respect to the plane of the base plate and

ii) the resultant base plate has non-coated edge surfaces which may subsequently facilitate ready electrical contact to the base plate, allowing the dissipation of electrostatic charges as may otherwise build up in the cover of a completed data cartridge.

5,385,783

HIGH TEMPERATURE-RESISTANT MASKING TAPE

Bharat Patel, Mt. Vernon; Phil Bianchini, Bronx, and Nilufer Tanrikulu, Tuckahoe, all of N.Y., assignors to Tesa Tape Inc., Charlotte, N.C.

Filed Sep. 8, 1993, Ser. No. 118,544
Int. Cl.[6] C09J *7/04*, *7/02*; B32B *7/12*
U.S. Cl. 428—353 **5 Claims**



1. In a high temperature-resistant masking tape comprising

a) an impregnated paper substrate having a first and a second surface,

b) a release coating on said first surface,

c) a primer coating on said second surface, and

d) an adhesive coating on said primer coating, the improvement comprising

1) the primer comprising a mixture of a carboxylated SBR rubber latex, a natural rubber and an acrylic rubber, and

2) the adhesive comprising a cured mixture of natural rubber and an acrylic synthetic rubber, wherein the tape is capable of withstanding a temperature of 180° C. for 20 minutes without cracking when removed from a metal surface and without leaving an adhesive residue thereon.

5,385,784

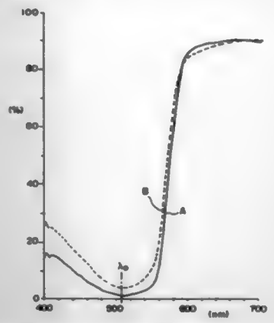
DEEPLY DYED POLYESTER FABRIC

Yoshiyuki Sasaki, Takatsuki; Shigenobu Kobayashi, Toyonaka; Katsuyuki Kazaoka, Ibaraki; Tomio Matsubara, Ikoma, and Kaoru Asada, Kashihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP92/01196, § 371 Date Mar. 7, 1994, § 102(e) Date Mar. 7, 1994, PCT Pub. No. WO94/06957, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 16, 1992, Ser. No. 193,059
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—369 **9 Claims**

1. A deeply dyed polyester fabric composed of warps and wefts, which are dyed with a lightness index L* value of 25 to 65; fibers at least in the surface layer portion of either or both of the warps and the wefts exhibiting a light transmittance that

the difference (ΔX in %) between the light transmittance (X⊥ in %) of polarized light vibrating perpendicular to the fiber



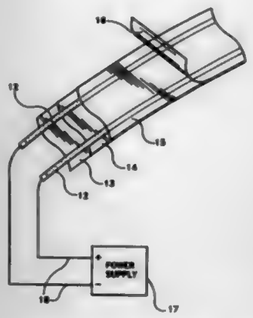
axis at a wavelength of the maximum absorption and the light transmittance (X|| in %) of polarized light vibrating parallel to the fiber axis at the same wavelength is not larger than 10%.

5,385,785

APPARATUS AND METHOD FOR PROVIDING HIGH TEMPERATURE CONDUCTIVE-RESISTANT COATING, MEDIUM AND ARTICLES

Walter C. Lovell, Wilbraham, Mass., assignor to Tapeswitch Corporation of America, Farmingdale, N.Y.

Filed Aug. 27, 1993, Ser. No. 113,391
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—408 19 Claims



1. A high-temperature article, which comprises:

a first substrate comprised of a high temperature material; and

a continuous high-temperature conductive-resistive coating lastingly adhered to said first substrate, said coating including a non-conductive binder and an electrically-conductive component to provide a continuous electrically-resistive path for application of electrical current through said coating, the integrity of said path and said lasting adhesion maintained within a range of from about 400° F. to about 2000° F.;

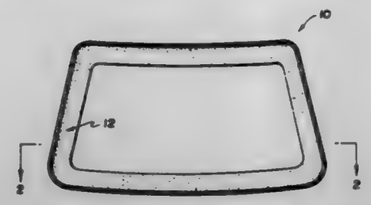
whereby surface temperature of said coating along said path is adjustable in response to electric current applied thereto at a temperature range of from about 400° F. to about 2000° F. without deterioration due to oxidation of the conductive-resistive coating.

5,385,786

APPARATUS AND METHOD FOR CONTROLLING STRESSES IN LAMINATED AUTOMOTIVE GLASS

Donivan M. Shetterly, Toledo, and James P. Schnabel, Jr., Maumee, both of Ohio, assignors to Glasstech, Inc., Perrysburg, Ohio

Filed Feb. 9, 1993, Ser. No. 16,162
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—432 14 Claims



1. An improvement in a glass sheet annealing ring, the improvement comprising:

an insulating ring juxtaposed the inboard periphery of the annealing ring for reducing the cooling rate of the glass sheet in proximity to said insulating ring thereby reducing the magnitude of net inner band tension while maintaining edge compression as the glass sheet is cooled.

5,385,787

ORGANOSILANE ADHESION PROMOTION IN MANUFACTURE OF ADDITIVE PRINTED WIRING BOARD

Karl L. Minten, Greenville, S.C., assignor to AMP-AKZO Corporation, Newark, Del.

Filed Feb. 3, 1993, Ser. No. 12,698
Int. Cl.[6] B05D *1/00*
U.S. Cl. 428—447 7 Claims

1. In a process for the manufacture of an additive printed wiring board wherein a dielectric base material is provided with a conductive pattern comprising electrolesaly deposited metal forming a metal-to-dielectric base material bond by activating and electrolesaly plating the metal, the improvement which comprises providing a bond strength improvement for the metal-to-dielectric base material bond by contacting the dielectric base material with a solution containing a ureidosilane, drying the solution containing the ureidosilane to remove solvent therefrom before contacting the dielectric base material with the activation solution prior to electrolesaly depositing metal, and recrystallizing the electrolesaly deposited metal.

5,385,788

POLYESTERS

Sanderson A. Charleston, Oxfordshire, United Kingdom, assignor to Coates Brothers PLC, United Kingdom

PCT No. PCT/GB91/01180, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO92/01012, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 15, 1991, Ser. No. 961,723
Claims priority, application United Kingdom, Jul. 13, 1990, 9015396
Int. Cl.[6] B32B *15/08*; B29C *53/00*
U.S. Cl. 428—458 15 Claims

1. A process for making a coated can body, comprising the steps of: applying to the can body a composition comprising a colorant, an inert diluent and a film-forming polyester resin produced by the polycondensation of: (i) a polycarboxylic acid component comprising one or more polycarboxylic acids; and (ii) a polyhydric alcohol component comprising one or more polyhydric alcohols, and

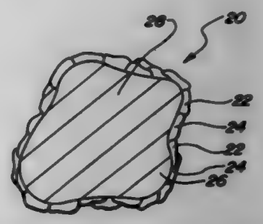
said alcohol component forming from 5 to 60% by weight of the components from which the polyester is derived; and subjecting the can body to a spin necking operation.

5,385,789

COMPOSITE POWDERS FOR THERMAL SPRAY COATING

Subramaniam Rangaswamy, Rochester Hills, and Robert A. Miller, Oak Park, both of Mich., assignors to Sulzer Plasma Technik, Inc., Troy, Mich.

Filed Sep. 15, 1993, Ser. No. 121,824
Int. Cl.[6] B22F *7/02*
U.S. Cl. 428—570 12 Claims



1. A thermal spray powder comprising a plurality of composite particles, the composite particles of said powder comprising:

a core portion of at least one metal selected from the group consisting of nickel, iron, cobalt, copper and chromium, and combinations and alloys thereof, said one metal comprising at least about 85 percent by weight of said core, and said core comprising between about 70 to 96 percent by weight of said composite particle;

at the surface of said core portion, a first plurality of particles of a first metal selected from the group of aluminum and its alloys, wherein aluminum comprises at least about 80 percent by weight of said first plurality of particles and wherein said first plurality of particles comprises between about 3 to 20 percent by weight of said composite particle;

at the surface of said core portion a second plurality of particles of a second metal selected from the group consisting of iron, copper, iron alloys, and copper alloys, wherein at least 80 percent by weight of said second plurality of particles comprises iron, copper or a combination of iron and copper, said second plurality of particles comprising between about 0.5 to 10 percent by weight of said composite particle, and wherein said first and second plurality of particles are capable of reacting exothermically during a thermal spray process.

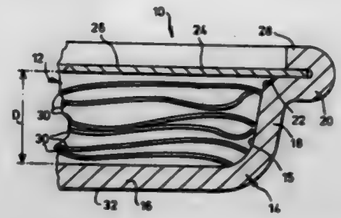
5,385,790

HEAT SHIELDS

Alan W. Atkinson, Barby; David R. Bridge, and Alan James, both of Rugby, all of United Kingdom, assignors to T&N Technology Limited, Warwickshire, United Kingdom

Filed May 11, 1993, Ser. No. 59,351
Claims priority, application United Kingdom, Aug. 21, 1992, 9217795
Int. Cl.[6] B32B *15/00*
U.S. Cl. 428—593 12 Claims

1. A heat shield for a vehicle comprising at least one metal member defining a substantially rigid enclosure having a substantially continuous heat-reflecting outer surface, and a plurality of sheets of smooth flexible metal foil within said enclosure, all said sheets extending generally parallel to said heat-reflecting surface and being substantially free of indentations or projections which would limit the contact areas of overlying sheets of the foil, the sheets being arranged one above the



other and being free to contact one another over substantially the entire area of the shield.

5,385,791

GOLD-NICKEL-VANADIUM-MOLYBDENUM BRAZING MATERIALS

Howard Mizuhara, Hillsborough, and Eugene Huebel, Union City, both of Calif., assignors to The Morgan Crucible Company plc, Windsor

Filed Aug. 4, 1992, Ser. No. 925,569
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] B23K *35/30*; B32B *15/04, 15/20*; C22C *5/02*
U.S. Cl. 428—621 8 Claims

1. A ductile brazing material for brazing a first material and a second material having a liquidus temperature of approximately 960° C. to 1,100° C., said brazing material consisting essentially of, in weight percent: 75–98% gold, 0.5–20% nickel, 0.5–6% vanadium, 0.25–5.9% molybdenum, 0–5% chromium.

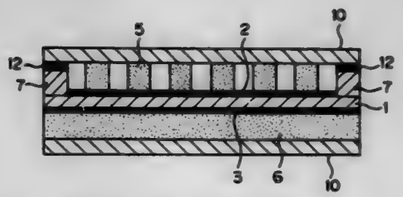
6. A braze joint comprising a first material selected from the group consisting of metals, ceramics and mixtures thereof, a second material selected from the group consisting of metals, ceramics and mixtures thereof and a ductile brazing material disposed between said first and said second materials having a composition consisting essentially of, in weight percent: 75–98% gold, 0.5–20% nickel, 0.5–6% vanadium. 0.25–5.9% molybdenum, 0–5% chromium.

5,385,792

SOLID OXIDE FUEL CELL

Akira Shiratori; Hiroshi Takagi, and Shozo Kobayashi, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 25, 1993, Ser. No. 67,559
Claims priority, application Japan, May 28, 1992, 4-135470
Int. Cl.[6] H01M *8/12*
U.S. Cl. 429—32 10 Claims



1. A solid oxide fuel cell unit comprising:

a solid electrolyte having a fuel electrode on a first surface and an air electrode on a second surface;

a conductive fuel distributor disposed on the fuel electrode;

a conductive air distributor disposed on the air electrode;

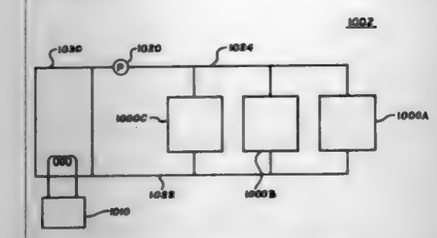
a fuel spacer and an air spacer which isolate reactive gases inside the fuel cell from outside air;
a fuel-side barrier film disposed on the fuel spacer; and
an air-side barrier film disposed on the air spacer;
and an interconnector in contact with one of the conductive fuel distributor and conductive air distributor;
wherein the barrier films prevent diffusion on calcium and chromium.

5,385,793

THERMAL MANAGEMENT OF BATTERY SYSTEMS

William H. Tiedemann, Cedarburg, Wis., and John Newman, Kensington, Calif., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Jul. 20, 1992, Ser. No. 916,965
Int. Cl.[6] H01M *10/48*
U.S. Cl. 429—62 39 Claims



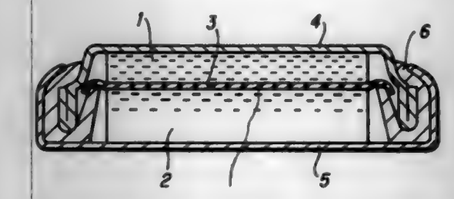
1. A construction for a battery, comprising:
a plurality of units;
an intercell conductor external said plurality of units coupled between at least two of said plurality of units;
a wall surrounding said intercell conductor and said plurality of units, said wall forming a channel, said intercell conductor located in said channel; and
fluid located in the channel, wherein the fluid located in the channel controls the temperature in the battery, wherein said units are comprised of lithium cells.

5,385,794

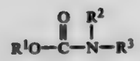
CELL ELECTROLYTE SOLVENT, CELL ELECTROLYTE COMPRISING THE SOLVENT AND NON-AQUEOUS ELECTROLYTE BATTERY COMPRISING THE ELECTROLYTE

Keiichi Yokoyama; Akio Hiwara, both of Sodegaura; Shigeru Fujita, Tokyo, and Atsuo Omaru, Koriyama, all of Japan, assignors to Mitsui Petrochemical Industries Ltd. and Sony Corp., both of Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 77,623
Claims priority, application Japan, Jun. 17, 1992, 4-158337; Sep. 24, 1992, 4-279446
Int. Cl.[6] H01M *6/14*
U.S. Cl. 429—194 19 Claims

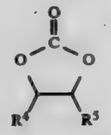


1. A solvent for cell electrolyte comprising about 0.05 to 20% by volume, based on the total volume of the solvent, of a carbamate represented by the following formula (1)



(1)

wherein R^1, R^2 and R^3 independently represent a linear or branched alkyl group having 1 to 4 carbon atoms, and a cyclic carbonate represented by the following formula (2)



(2)

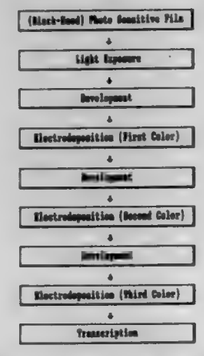
wherein R^4 and R^5 independently represent a substituent selected from the group consisting of a hydrogen atom, methyl group and ethyl group.

5,385,795

METHOD FOR PRODUCING COLOR FILTER

Hitoshi Yuasa; Yukio Yamasita, both of Yokohama; Haruyoshi Sato, Kawasaki; Toru Nakamura, and Yutaka Otsuki, both of Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,390
Claims priority, application Japan, Mar. 8, 1991, 3-043811; Mar. 15, 1991, 3-051564
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[6] G03F *7/00*
U.S. Cl. 430—7 41 Claims



1. A method for producing a color filter comprising the steps of:
(A) forming a photosensitive coating film on an electrically conductive layer formed on a surface of a substrate, and exposing said photosensitive coating film through a mask having patterns of at least three different degrees of light transmittances;
(B) developing and removing a photosensitive coating film portion corresponding to a pattern selected from the group consisting of a pattern having a smallest degree of light transmittance and a pattern having a largest degree of light transmittance for exposing said electrically conductive layer, and electrodepositing a colored coating on the exposed electrically conductive layer for forming a colored layer thereon;
(C) sequentially repeating said step (B) for each film portion corresponding to a pattern having different degrees of light transmittances, wherein said sequence of repetition is selected from the group consisting of increasing light transmittance of said mask and decreasing light transmittance of said mask for producing different colored layers, respectively; and
(D) transferring said colored layers onto another substrate.

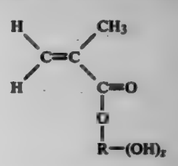
5,385,796

ELECTROPHOTOGRAPHIC IMAGING MEMBER HAVING UNMODIFIED HYDROXY METHACRYLATE POLYMER CHARGE BLOCKING LAYER

John W. Spiewak, Webster; Hsuy-Jen Yuh, Pittsford; Constance J. Thornton, Ontario; Dennis A. Abramsohn, Pittsford; Deborah Nichol-Landry, Rochester; Joseph Massimo, Penfield; Ronald F. Ziolo; Robert C. U. Yu, both of Webster; Kathleen Carmichael, Williamson, and Neil S. Patterson, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 691,180, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 458,916, Dec. 29, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 860,396
Int. Cl.[6] G03G *5/14, 5/05*
U.S. Cl. 430—64 23 Claims

1. An electrophotographic imaging member comprising a supporting substrate having an electrically conductive surface comprising an electrically conductive charge injecting material, a charge blocking layer comprising a water insoluble high molecular weight unmodified hydroxy methacrylate polymer having a weight average molecular weight of at least about 400,000, and at least one photoconductive layer, wherein said blocking layer having a surface resistivity greater than about 10^{10} ohms/square and wherein said water insoluble high molecular weight unmodified hydroxy methacrylate polymer is a polymeric reaction product consisting essentially of one or more monomers having the following structure:



wherein
R is a linear or branched saturated aliphatic hydrocarbon group containing 1 to 6 carbon atoms, and
z is 1 to 6.

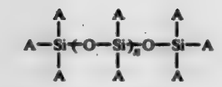
5,385,797

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS, DEVICE UNIT, AND FACSIMILE MACHINE EMPLOYING THE SAME

Shin Nagahara, Inagi; Akio Maruyama, Tokyo, and Haruyuki Tsuji, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 948,252
Claims priority, application Japan, Sep. 24, 1991, 3-243306
Int. Cl.[6] G03G *5/14*
U.S. Cl. 430—67 23 Claims

1. An electrophotographic photosensitive member, comprising an electroconductive support, a photosensitive layer, and a protection layer in named order, the protection layer containing a binder resin and an electroconductive particle, the electroconductive particle having a polymer coating prepared by cross-linking a siloxane compound represented by the following Formula (I):



(I)

wherein A group is a hydrogen atom or a methyl group, the ratio of the number of the hydrogen atoms to the total number of the A groups is in a range of from 0.1 to 50%, and n is an integer of 0 or more.

5,385,798

TONER WITH BORIC ACID CHARGE ADDITIVE

Kock-Yee Law, Penfield, and Ihor W. Tarnawskyj, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 15, 1993, Ser. No. 120,989
Int. Cl.[6] G03G *9/097*
U.S. Cl. 430—106.6 21 Claims

1. A negatively charged toner composition consisting essentially of resin, pigment particles, surface additives, and as a charge enhancing additive an alkali metal salt of boric acid.

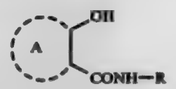
5,385,799

TONER FOR DEVELOPMENT OF ELECTROSTATIC IMAGE

Hitoshi Ono, Yokohama; Osamu Ando, Kawasaki, and Masako Takeuchi, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

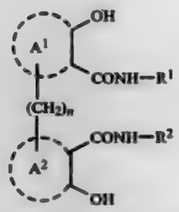
Filed Dec. 21, 1992, Ser. No. 993,692
Claims priority, application Japan, Dec. 20, 1991, 3-339069
Int. Cl.[6] G03G *9/097*
U.S. Cl. 430—110 19 Claims

1. A toner for the development of electrostatic images, comprising a resin, a colorant and at least one compound of formulae (I) or (II):



(I)

where A and R, which may be the same or different, each represent an aromatic ring residue selected from the group consisting of benzene, naphthalene, anthracene, phenanthrene, carbazole, fluorene, fluorenone, dibenzofuran, dibenzothiophene and benzocarbazole, where each of the foregoing residues may be substituted by an alkyl, an amino, an alkoxy, a halogen, a nitro or a phenyl, wherein the hydroxyl group and the amido group in the formula are bonded to the aromatic ring A at adjacent positions,



(II)

where A^1, A^2, R^1 and R^2, which may be the same or different, each represent an aromatic ring residue, and the hydroxyl groups and the amido groups in the formula are bonded to aromatic rings A^1 and A^2 at adjacent positions and n represents an integer of from 1 to 5.

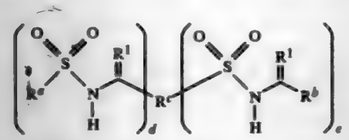
5,385,800

BIS AND TRIS N-(CARBONYL, CARBONIMIDOYL, CARBONOTHIOYL)SULFONAMIDE CHARGE CONTROL AGENTS, TONERS AND DEVELOPERS

John C. Wilson, and Peter S. Alexandrovich, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

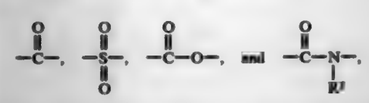
Filed Dec. 22, 1993, Ser. No. 171,784
Int. Cl.[6] G03G 9/097, 13/22
U.S. Cl. 430—110 19 Claims

1. An electrophotographic toner comprising polymeric binder and a charge control agent selected from the group consisting of sulfonamides having the general structure:



wherein each R_1 is independently O, S, N—H, N—R^z, or N—L—R^z

wherein L is a linking group selected from:



and R^z is independently selected from the group consisting of alkyl having from 1 to 20 carbons, cycloalkyl having from 3 to 18 carbons, and aromatic and heteroaromatic ring systems having a solitary ring or 2 to 3 linked or fused rings;

R^a, R^b, and R^c are each independently a ring system of a single ring or 2 or 3 fused or linked rings, said ring system being substituted or unsubstituted, said ring system having from 3 to 34 carbons, including carbons of substituents;

d is an integer from 0 to 3;

e is an integer from 0 to 3; and

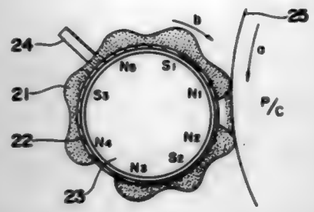
the sum of d+e is 2 or 3.

5,385,801

METHOD OF DEVELOPING ELECTROSTATIC LATENT IMAGE

Yoshihisa Terasaka, Settsu; Junji Ohtani, Kobe; Junji Machida, Toyonaka; Tamotsu Shimizu, Settsu; Hiroshi Murasaki, Ibaragi, and Hiroshi Mizuno, Ikoma, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 727,524, Jul. 9, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 109,741
Claims priority, application Japan, Jul. 12, 1990, 2-186697; Jul. 12, 1990, 2-186698; Jul. 12, 1990, 2-186700; Jul. 12, 1990, 2-186701; Jul. 12, 1990, 2-186705; Jul. 12, 1990, 2-186707
Int. Cl.[6] G03G 13/09
U.S. Cl. 430—122 20 Claims



1. A method of developing electrostatic latent images which comprises the steps of:

supplying a developer onto a developing sleeve made of nonmagnetic material and arranged oppositely to an electrostatic latent image-retaining member with a minute gap therebetween, said developer including toners having a mean particle size within a range of 3 to 20 μm and resin-coated carriers which comprise core particles formed of magnetic materials and a resin-coating layer formed by polymerizing monomers on a surface of the core particles and having pores which have a pore size distribution within a range of 0.001 to 3 μm and a mean pore size within a range of 0.1 to 0.5 μm on the surface thereof;

forming a magnetic brush of the developer by the magnetic force of a magnet member having plural poles in the circumferential direction thereof, said magnet member fixedly arranged within the developing sleeve;

mixing the developer conveyed by a rotation of the developing sleeve forward to a regulating member oppositely arranged to the developing sleeve, wherein excess developer is scraped off by said regulating member;

conveying the mixed and regulated developer by the rotation of the developing sleeve to a developing zone where the electrostatic latent image-retaining member is arranged oppositely to the developing sleeve; and

developing electrostatic latent images using the developer.

5,385,802

PROCESS FOR PRODUCING TONER

Yoshihiro Inabe; Tsutomu Kubo, and Koichi Takashima, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 769,250
Claims priority, application Japan, Oct. 8, 1990, 2-268317; Jan. 14, 1991, 3-078657
Int. Cl.[6] G03G 9/093, 9/097
U.S. Cl. 430—137 4 Claims

1. A process for producing an electrophotographic toner, which comprises subjecting toner particles comprising on at least the surface thereof a polymer containing as a monomer component a monomer having a salt structure consisting of an anionic component and a cationic component, to ion exchange to replace said anionic component with another anionic component,

wherein said monomer is a vinyl monomer, said anionic component is a halogen ion, said other anionic component is an aliphatic carboxylic acid group, an aromatic carboxylic acid group, an aromatic sulfonic acid group, an anion of sulfate, or an anionic residue of acid dye, and said cationic component is a quaternary ammonium group.

5,385,803

AUTHENTICATION PROCESS

James M. Duff, Mississauga; H. Bruce Goodbrand, Hamilton, both of Canada, and David L. Hecht, Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 73
Int. Cl.[6] G03G 9/093
U.S. Cl. 430—138 24 Claims

1. A process for the authentication of documents consisting essentially of generating developed documents in an electrophotographic apparatus, or in a laser printer with an encapsulated toner comprised of a core comprised of polymer, an optional pigment, and an infrared emitting component, and thereover a polymeric shell; and subjecting the document to an infrared reader whereby the infrared component is detected spectroscopically.

5,385,804

SILICON CONTAINING NEGATIVE RESIST FOR DUV, I-LINE OR E-BEAM LITHOGRAPHY COMPRISING AN AROMATIC AZIDE SIDE GROUP IN THE POLYSILSESQUIOXANE POLYMER

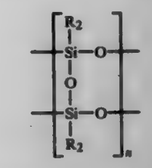
Jagannathan Premlatha, Patterson; Harbans S. Sachdev, Hopewell Junction, and Ratnam Sooriyakumaran, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 20, 1992, Ser. No. 932,830
Int. Cl.[6] G03F 7/012
U.S. Cl. 430—195 3 Claims

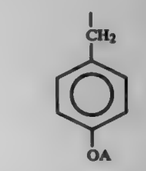
1. A photoresist composition, comprising:

a solvent present together in admixture in said photoresist composition at more than 50% by weight; and

a condensation product of a polymer having the formula:



where n is at least three and where R_2 has the chemical formula:



where A is hydrogen or an ester of an aromatic azide wherein the esterification rate is 5%–95%.

5,385,805

PROCESS AND MATERIALS FOR CONTROLLING THE VISUAL ASPECT OF IMAGES

Luc Leenders, and Eddie Daems, both of Herentals, Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 22, 1993, Ser. No. 155,221
Claims priority, application European Pat. Off., Dec. 1, 1992, 92203713
Int. Cl.[6] G03C 11/12
U.S. Cl. 430—257 14 Claims

1. Process for controlling the visual aspect of an image present in a hydrophilic colloid layer, layer system, or relief pattern on a permanent support by transferring a continuous non-photosensitive layer assembly from a temporary support to said image, wherein said transfer is brought about by the consecutive steps of:

1) pre-wetting the image-carrying permanent support,

2) bringing the pre-wet image-carrying permanent support in face-to-face contact with said continuous non-photosensitive layer assembly carried by said temporary support,

3) stripping off the temporary support to leave said continuous non-photosensitive layer assembly covering and adhering to said image-carrying permanent support, and.

4) drying the resulting layer packet, wherein said continuous non-photosensitive layer assembly comprises in the given sequence:

a) a polyester layer having sufficient adhesiveness to said temporary support to remain adhering thereto before being stripped therefrom and yet having sufficient repellency in respect of said temporary support to make possible an easy separation therefrom,

b) a subbing layer system, and

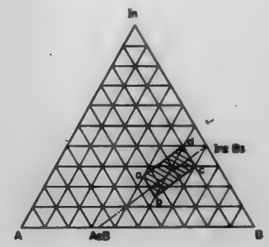
c) an adhesive top layer showing high adhesiveness to said pre-wet image-carrying permanent support.

5,385,806

OPTICAL INFORMATION RECORDING MEDIUM

Eiji Ohno, Toyonaka; Noboru Yamada, Hirakata, and Masatoshi Takao, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 540,445, Jun. 15, 1990, abandoned, which is a continuation of Ser. No. 253,213, Oct. 4, 1988, abandoned. This application Feb. 26, 1992, Ser. No. 842,731
Claims priority, application Japan, Oct. 5, 1987, 62-251039
Int. Cl.[6] G03C 1/705
U.S. Cl. 430—270 13 Claims



1. A rewritable optical information recording medium consisting essentially of a laser light transparent substrate and a recording film, which is formed on said substrate, whereon information is recorded or erased by causing changes in an optical constant of said recording film by irradiating laser light through said substrate, in which material of said recording film is an alloy consisting of indium, A and B, wherein A is at least one element selected from the group consisting of Ag and Cu, and B is selected from the group consisting of S, Se and Te and wherein the composition of said recording film is in an area enclosed by a, b, c and d in FIG. 1, wherein the compositions in percentages at the points a, b, c and d are as follows:

	(In,	A,	B)
a:	(25,	35,	40)
b:	(15,	35,	50)
c:	(30,	10,	60)
d:	(40,	10,	50).

5,385,807

PHOTOPOLYMERIZABLE COMPOSITION

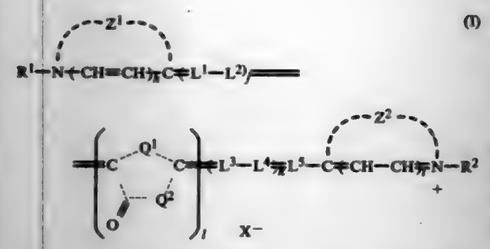
Yasuo Okamoto; Syuichi Kondo, and Toshinao Ukai, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Jun. 22, 1992, Ser. No. 901,773
Claims priority, application Japan, Jun. 24, 1991, 3-152062
Int. Cl.[6] G03C 1/72
U.S. Cl. 430—283 21 Claims

1. A photopolymerizable composition comprising:

(i) a polymerizable compound carrying an addition-polymerizable unsaturated bond selected from those compounds carrying at least one terminal ethylenically unsaturated bond in the molecule;

(ii) a methine compound represented by the following general formula (I):



wherein Z^1 and Z^2 each represents a group of non-metallic atoms required for forming a 5- or 6-membered nitrogen atom-containing heterocyclic ring selected from thiazole rings, benzothiazole rings, naphthothiazole rings, oxazole rings, benzooxazole rings, naphthoxazole rings, selenazole rings, benzoselenazole rings, naphthoselenazole rings, tellurazole rings, thiazoline rings, oxazoline rings, isooxazole rings, benzoisooxazole rings, naphthyridine rings, tetrazole rings, imidazo(4,5-b)quinoxaline rings, or 4,9-dioxo-4,9-dihydronaphtho (2,3-d)imidazole rings, R^1 and R^2 each represents an alkyl group; Q^1 and Q^2 represent groups of atoms required for forming a 4-thiazolidinone, 5-thiazolidinone, 4-imidazolidinone, 5-imidazolidinone, 4-oxazolidinone, 5-oxazolidinone or 4-dithiolanone ring together with carbon atoms to which $Q^1$and Q^2 are linked; L^1, L^2, L^3, L^4 and L^5 each represents a methine group; i and h each represents 0 or 1; l is 1 or 2; j and k each represents 0, 1, 2 or 3; and X^- represents a counter anion;

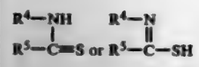
(iii) at least one compound selected from the group consisting of:

(a) compounds having carbon-halogen bonds;

(b) aromatic onium salts;

(c) organic peroxides;

(d) thio compounds represented by the following general formula (II):



(II)

wherein R^4 represents an alkyl or aryl group; R^5 represents a hydrogen atom or an alkyl group, or R^4 and R^5 may be bonded together to form a group of non-metallic atoms required for forming a 5- to 7-membered ring which may comprise hetero atoms selected from oxygen, sulfur or nitrogen atoms;

(e) hexaaryl-biimidazoles;

(f) ketoxime esters; and

(g) compounds represented by the following general formula (III):



(III)

wherein R^6, R^7, R^8 and R^9 may be the same or different and each represents a substituted or unsubstituted alkyl, aryl, alkenyl, alkynyl or heterocyclic group, provided that at least two of R^6, R^7, R^8 and R^9 may be bonded together to form a ring structure and that at least one of them represents an alkyl group; and Z^+ represents an alkali metal cation or a quaternary ammonium cation.

5,385,808

PHOTOSENSITIVE RESIN COMPOSITION AND SEMICONDUCTOR APPARATUS USING IT

Akira Tokoh, Tokyo; Nobuyuki Sashida, Nobuyuki; Etsu Takeuchi, and Takashi Hirano, both of Yokohama, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Continuation of Ser. No. 618,798, Nov. 28, 1990, abandoned. This application Oct. 25, 1993, Ser. No. 140,893

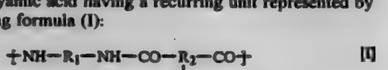
Claims priority, application Japan, Nov. 30, 1989, 1-309311; Nov. 30, 1989, 1-309312; Nov. 30, 1989, 1-309313; Nov. 30, 1989, 1-309314; Jan. 12, 1990, 2-003377; Jan. 23, 1990, 2-011944; Sep. 21, 1990, 2-250135

Int. Cl.[6] G03C *1/73*

U.S. Cl. 430—283 **53 Claims**

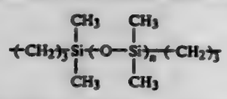
1. A photosensitive resin composition which comprises as essential components:

(A) a polyamic acid having a recurring unit represented by the following formula (I):



[I]

wherein 0.5-50 mol% of R_1 consists of a silicone diamine residue represented by the following formula [II]:



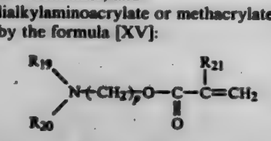
[II]

wherein n represents an integer of 1-50, and the remainder of 50-99.5 mol% of R_1 consists of an organic group selected from the group consisting of an aromatic group, an aliphatic group, an alicyclic group, and a heterocyclic group, and R_3 consists of an organic group selected from the group consisting of an aromatic group, an aliphatic group, an alicyclic group, a heterocyclic group, and a silicone group, and m represents 1 or 2,

(B) an amide compound having a carbon-carbon double bond,

(C) a photosensitizer, and

(D) a dialkylaminoacrylate or methacrylate compound represented by the formula [XV]:



[XV]

wherein R_{19} and R_{20} each represents CH_3 or C_2H_5, R_{21} represents H or CH_3, and p is 2 or 3.

5,385,809

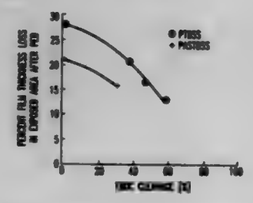
PROCESS FOR FABRICATING A DEVICE UTILIZING PARTIALLY DEPROTECTED RESIST POLYMERS

Michael P. Bohrer, Lebanon, and David A. Mixon, Basking Ridge, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 8,029, Jan. 25, 1993, abandoned. This application Apr. 28, 1994, Ser. No. 234,501

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—311 **8 Claims**



1. A process for manufacturing a device comprising:

obtaining a substrate with an imaging layer of resist material applied thereon that is substantially free of added acid or base, the resist material comprising a polymer with a backbone chain having pendant substituents with acid labile functional groups attached, the functional groups selected from the group consisting of alkyloxy carbonyl and alkyl, wherein at least 5% of the functional groups have been removed and replaced by hydrogen; exposing a discrete portion of the imaging layer to a dose of radiation, thereby forming an exposed region and an unexposed region wherein an acid is generated in substantially greater amounts in the exposed region than in the unexposed region; developing an image defined by the exposed and unexposed regions of the resist material in the imaging layer; and using said image for manufacturing a device.

5,385,810

Patent Not Issued For This Number

5,385,811

METHOD FOR PROCESSING SILVER HALIDE PHOTOGRAPHIC MATERIALS

Mitsunori Hirano, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

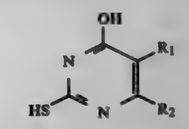
Filed Apr. 28, 1994, Ser. No. 234,921

Claims priority, application Japan, Apr. 27, 1993, 5-122151

Int. Cl.[6] G03C *5/305*

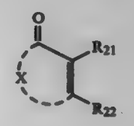
U.S. Cl. 430—438 **8 Claims**

1. A method for processing silver halide photographic materials having a support having thereon at least one silver halide emulsion layer and at least one protective layer provided over said emulsion layer in which each of the photographic materials contains colloidal silica in at least one emulsion layer and is at most 200% in the total swelling degree of the whole hydrophilic colloid layers provided on the side of said emulsion layer, and after optical exposure said photographic materials are developed with a developer adjusted to pH 9.5–12.0 and containing at least (1) a hydroquinone developing agent in a concentration of from 0.2 to 0.75 mole/l, (2) an auxiliary developing agent of 1-phenyl-3-pyrazolidone type and/or an auxiliary developing agent of p-aminophenol type in a concentration of from 0.001 to 0.06 mole/l, (3) free sulfite ions in a concentration of from 0.3 to 1.2 mole/l, (4) a compound represented by the following formula (I), and (5) a compound represented by the following formula (II) in a concentration bearing a ratio of from 0.03 to 0.12 to the concentration of the hydroquinone developing agent:



(I)

wherein R_1 and R_2 each represent a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, a hydroxyl group, a mercapto group, a carboxyl group, a sulfo group, a phosphono group, an amino group, a nitro group, a cyano group, a halogen atom, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, a sulfamoyl group or an alkoxy group, or R_1 and R_2 may combine with each other to complete a ring structure;



(II)

wherein R_{21} and R_{22} each represent a hydroxy group, an amino group, an acylamino group, an alkylsulfonylamino group, an arylsulfonylamino group, an alkoxycarbonylamino group, a mercapto group or an alkylthio group, and X is constituted of carbon, oxygen or/and nitrogen atoms and forms a 5- or 6-membered ring together with the vinyl group's two carbon atoms to which R_1 and R_2 are attached and the carbonyl group's carbon atom.

5,385,812

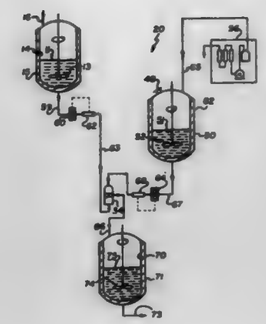
CONTINUOUS MANUFACTURE OF GELLED MICROPRECIPITATED DISPERSION MELTS

Pranab Bagchi, Webster; James T. Beck, Rochester, and Vincent J. Flow, III, Kendall, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1992, Ser. No. 996,949

Int. Cl.[6] G03C *5/26*

U.S. Cl. 430—449 **19 Claims**



1. A method of manufacture of gelled coating melts of small-particle microprecipitated dispersions of photographic materials comprising

providing a first flow comprising a gelatin-free microprecipitated dispersion of a small-particle photographic agent having a particle diameter between 5 and 100 nm,

providing a second flow comprising a solution of gelatin, a viscosity control surfactant and water,

continuously mixing said first and second flow together to form a gelled dispersion melt for continuous coating of photographic products to produce floe-free and invarient viscosity melts, wherein the residence time of mixing of the first and second flows is between about 0.1 and about 10 seconds, wherein the flow rate of the first flow is at least about 50 ml per minute.

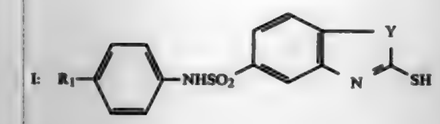
5,385,813

COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Siegbert Klötzer, Cologne, and Otto Lapp, Bergisch Gladbach, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Apr. 19, 1993, Ser. No. 48,676
Claims priority, application Germany, Apr. 30, 1992, 4214196
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—503 **3 Claims**

1. A color photographic silver halide material comprising at least one negatively developing, green-sensitive silver halide emulsion layer containing at least one magenta coupler, characterized in that the green-sensitive silver halide emulsion layer contains at least one compound corresponding to general formula (I):



wherein
is hydrogen or halogen,
Y is S.

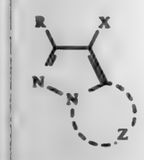
5,385,814

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Minoru Uchida; Toshio Kawagishi, and Yasuhiro Yoshioka, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

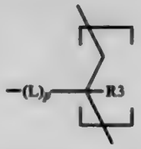
Filed Nov. 27, 1992, Ser. No. 982,430
Claims priority, application Japan, Nov. 28, 1991, 3-337878; May 6, 1992, 4-139665
Int. Cl.[6] G03C *7/36, 7/38, 7/18*
U.S. Cl. 430—504 **21 Claims**

1. A silver halide color photographic light-sensitive material comprising at least one light-sensitive silver halide emulsion layer on a support, wherein at least one of said light-sensitive silver halide emulsion layers contains at least one compound represented by Formula (MI) below, and at least one layer of said silver halide color photographic light-sensitive material contains at least one acylacetamide yellow coupler having an acyl group represented by Formula (YI) below:



Formula (MI)

where R represents a hydrogen atom or a substituent, Z represents a nonmetallic atomic group required to form a 5-membered azole ring which contains two to four nitrogen atoms, and may have a substituent; and X represents a group which is split off upon a coupling reaction with the oxidized form of a developing agent to form a development inhibitor or a precursor of a development inhibitor, or a group which reacts with another molecule of the oxidized form of a developing agent after split off and forms a development inhibitor or a precursor of a development inhibitor;



Formula (YI)

where R_1 represents a monovalent group; and Q represents a nonmetallic atomic group required to form, together with C, a 3- to 5-membered hydrocarbon ring or a 3- to 5-membered heterocyclic ring having at least one hetero atom selected from the group consisting of N, O, S, and P in the ring, R_1 is not a hydrogen atom and does not combine with Q to form a ring, said light-sensitive sensitive material further comprising a yellow-colored cyan coupler.

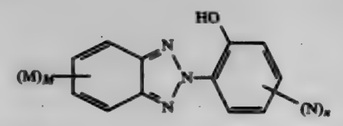
5,385,815

PHOTOGRAPHIC ELEMENTS CONTAINING LOADED ULTRAVIOLET ABSORBING POLYMER LATEX

Edward Schofield, Penfield, and Richard P. Szajewski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 907,008, Jul. 1, 1992. This application Dec. 29, 1993, Ser. No. 175,041
Int. Cl.[6] G03C *1/815, 1/825*
U.S. Cl. 430—512 **21 Claims**

1. A photographic element comprising a light sensitive silver halide emulsion layer, and a UV absorbing polymer latex which is loaded with a non-polymeric UV absorbing compound, wherein the polymer is a homopolymer or heteropolymer comprising repeating monomeric units having the formula (I):



(I)

wherein: the phenyl ring and benzo ring are optionally additionally substituted; and one of m and n is 1, and M and N have the formula:

wherein R3 is H or an alkyl group; L is a bivalent linking group; and p is 0 or 1.

5,385,816

PHOTOGRAPHIC SILVER HALIDE COLOR MATERIALS WITH SULFONYLHYDRAZINE COLOR DEVELOPER

Paul L. R. Stanley, Harrow, and Siu C. Tsoi, Watford, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1993, Ser. No. 29,644
Claims priority, application United Kingdom, Apr. 29, 1992, 9209258
Int. Cl.[6] G03C *7/26, 7/30, 7/32*
U.S. Cl. 430—544 **15 Claims**

1. A multicolor photographic element comprising at least one color-forming unit sensitive to a particular region of the spectrum comprising a silver halide emulsion layer and, in or adjacent said layer,

(1) a development inhibitor releasing developer (IRD) which comprises a hydrazide, sulphonamidophenol, sulphonamidonaphthol, or hydroquinone moiety attached directly or via a linking group to a development inhibitor moiety which compound is oxidisable during silver halide development enabling release of the development inhibitor moiety under alkaline conditions,

(2) a sulphonhydrazide color developing agent having the formula

R—NHNH—SO_2—R^1,

wherein R is a substituted or unsubstituted heterocyclic group,
R^1 is an substituted or unsubstituted alkyl, aryl or heterocyclic group,
and R or R^1 contains a ballasting group of such size and configuration as to render the compound non-diffusible, and

(3) a color coupler capable of forming image dye with the sulphonhydrazide during silver halide development.

5,385,817

PHOTOGRAPHIC EMULSIONS CONTAINING INTERNALLY AND EXTERNALLY MODIFIED SILVER HALIDE GRAINS

Eric L. Bell, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1993, Ser. No. 3,183
Int. Cl.[6] G03C *1/035*
U.S. Cl. 430—567 **20 Claims**

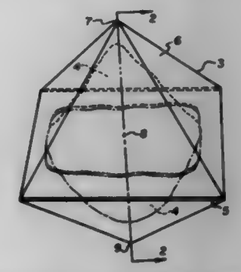
1. A photographic silver halide emulsion comprising silver halide grains, a dopant, and a grain surface modifier; wherein said dopant is a transition metal complex comprising a nitrosyl or thionitrosyl ligand with a transition metal selected from the group consisting of ruthenium or osmium; and wherein said grain surface modifier is a transition metal complex containing a transition metal selected from Group VIII of the periodic table, and is positioned at intervals along the surface of said silver halide grains in a Silver bromide carrier, said silver bromide carrier accounting for less than about 2 molar percent of said silver halide grains.

5,385,818

PROCESS FOR THE PREPARATION OF SILVER HALIDE EMULSIONS AND PHOTOGRAPHIC ELEMENTS CONTAINING HOLLOW SILVER HALIDE GRAINS

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1994, Ser. No. 202,320
Int. Cl.[6] G03C *1/035*
U.S. Cl. 430—567 **21 Claims**



1. A photographic element comprising a silver halide emulsion having incorporated therein a hollow silver halide grain, wherein said hollow silver halide grain encapsulates at least two distinct voids.

5,385,819

PREPARATION OF THIN TABULAR GRAIN SILVER HALIDE EMULSIONS USING SYNTHETIC POLYMERIC PEPTIZERS

Wayne A. Bowman, Walworth; Roger A. Weiss, Webster; Gerald W. Klein, Issaquah; John E. Keevert, Jr., and Shane C. Weber, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

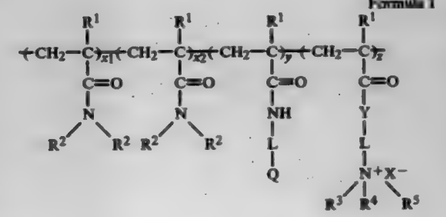
Filed Dec. 22, 1993, Ser. No. 171,588
Int. Cl.[6] G03C *1/015, 1/005, 1/04*
U.S. Cl. 430—569 **17 Claims**

1. A process for preparing a thin tabular grain silver halide emulsion comprised of silver halide grains in which the halide content is at least 50 mole percent bromide and wherein tabular grains of less than 0.15 micrometers in thickness and having an aspect ratio of greater than 8 account for greater than 50 percent of the total grain projected area; said process comprising the steps of nucleating said silver halide grains in the presence of a nucleation peptizer and thereafter growing said silver halide grains in the presence of a growth peptizer, wherein said nucleation peptizer is:

(1) a gelatino-peptizer;

(2) a polymer of the following Formula I:

Formula I



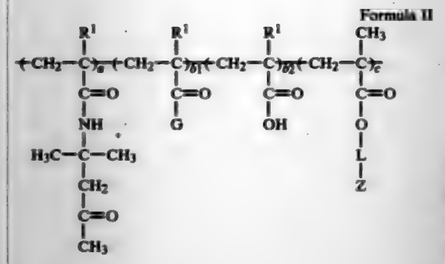
wherein:
x_1 is 0–84
x_2 is 0–84
y is 16–100
z is 0–10
each R^1 is, independently, hydrogen or a methyl group,
each R^2 is, independently, hydrogen, a methyl group or an ethyl group,
L is an alkylene or arylene group of 1 to 10 carbon atoms,
Q is $CO_2^-M^+$ or $SO_3^-M^+$ wherein M^+ is hydrogen, an alkali metal or an NH_4^+, $NH_3R_1^+$, $NH_2R_1R_2^+$, $NHR_1R_2R_3^+$ or $NR_1R_2R_3R_4^+$ group wherein R_1, R_2, R_3 and R_4 are independently alkyl groups of 1 to 6 carbon atoms,
Y is —O— or



wherein R is hydrogen, a methyl group or an ethyl group,
R^3, R^4 and R^5 are independently hydrogen or an alkyl group of 1 to 6 carbon atoms or R^3, R^4 and R^5 taken together with the nitrogen atom to which they are attached form a five- or six-membered ring which can include an oxygen heteroatom,
x^- is Cl^-, Br^-, I^-, $R^6CO_2^-$, $R^6OSO_3^-$, $R^6SO_3^-$ or $R^6SO_2^-$ where R^6 is an alkyl or aryl radical of 1 to 10 carbon atoms,

or (3) a synthetic polymer of Formula II as follows:

Formula II



wherein

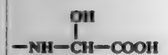
a is 0–15

b_1+b_2 is greater than 65

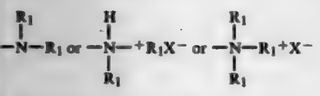
c is greater than 10

each R^1 is, independently, hydrogen or a methyl group,

G is —OH, —NH—L—COOH or



L is an alkylene or arylene group of 1 to 10 carbon atoms



each R_1 is independently methyl or ethyl

X^- is Cl^-, Br^-, I^-, $R^6CO_2^-$, $R^6OSO_3^-$, $R^6SO_3^-$ or $R^6SO_2^-$ where R^6 is an alkyl or aryl radical of 1 to 10 carbon atoms;

and wherein said growth peptizer is:

(1) a gelatino-peptizer; or

(2) a synthetic polymer of the Formula II above, with the proviso that at least one of the nucleation peptizer and the growth peptizer is a synthetic polymer of Formula II.

5,385,820

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Etuzi Tanaka; Motoshige Yamada, and Akira Tanaka, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 51,830, Apr. 26, 1993, abandoned. This application Apr. 29, 1994, Ser. No. 235,243

Claims priority, application Japan, Apr. 30, 1992, 4-111578

Int. Cl.[6] G03C *1/14, 1/09*

U.S. Cl. 430—595 **6 Claims**

1. A silver halide photographic light-sensitive material comprising a support and at least one silver halide emulsion layer provided on the support wherein said light-sensitive material is produced by the process comprising the following steps:

preparing a silver halide emulsion which comprises 50 mol % or more of silver chloride and 5×10^{-9} mol or more of a water-soluble rhodium compound per 1 mol of silver and at least one sensitizing dye represented by the following formula (I);

adjusting the pH of said emulsion as finished to be 4.8 or less; and

coating said silver halide emulsion on said support:

(I)

wherein L_1, L_2, L_3, L_4 and L_5 each represents a methine group; A represents O or S; Z_1 and Z_2 may be identical or different and each represents a group of non-metallic atoms necessary to complete a thiazole nucleus, a thiazoline nucleus, an oxazole nucleus or a selenazole nucleus; R_1 and R_2 each represents an alkyl group of 1 to 4 carbon atoms or an alkyl group of 1 to 4 carbon atoms which is substituted with an acid or an acid salt; R_3 represents an alkyl group of 1 to 6 carbon atoms which may be substituted with an acid group, an aryl group or a heterocyclic ring.

5,385,821

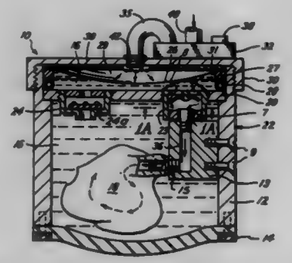
METHOD FOR HYPOTHERMIC PRESERVATION OF LIVING TISSUE

Bobby J. O'Dell, and Leonid Bunegin, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 29,688, Mar. 11, 1993, Pat. No. 5,362,622. This application Jul. 19, 1994, Ser. No. 276,938

Int. Cl.[6] A01N *1/02*

U.S. Cl. 435—1 **3 Claims**



1. A method of perfusing and oxygenating living tissue, comprising:

providing a living tissue preservation unit, said unit comprising a perfusion compartment and a tissue compartment each capable of containing a perfusate, and a pumping compartment having a gas opening, said perfusion compartment coupled to said tissue compartment by first and second one-way passage means and said tissue compartment comprising at least one flexible wall;

adding a perfusate to said perfusion compartment and said tissue compartment;

immersing living tissue into said perfusate in said tissue compartment;

sealingly interposing a flexible, gas-permeable membrane between said pumping compartment and said perfusion compartment;

supplying gas to said living tissue preservation unit through said gas opening in said pumping compartment to permeate through said membrane between said pumping compartment and said perfusion compartment;

flexing said membrane in a first direction in response to pressure differentials across the membrane so as to displace a perfusate from said perfusion compartment through said first passage means into said tissue compartment;

flexing said membrane in second direction opposite to said first direction to displace perfusate from the tissue compartment through said second passage means into said perfusion compartment; and

removing gas from said living tissue preservation unit by allowing permeation of said gas through said membrane from said perfusion compartment to said pumping compartment and exhausting said gas from said pumping compartment.

5,385,822

METHODS FOR DETECTION AND QUANTIFICATION OF CELL SUBSETS WITHIN SUBPOPULATIONS OF A MIXED CELL POPULATION

Meryle J. Melnicoff, Cherry Hill, N.J.; Bruce D. Jensen, Schwenksville, Pa.; Katharine A. Muirhead, West Chester, Pa.; Paul K. Horan, Downingtown, Pa.; Martin D. Summers, West Chester, Pa., and William Wong, Chadsford, Pa., assignors to Zynaxis, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 345,436, May 1, 1989, Pat. No. 5,256,532, which is a continuation-in-part of Ser. No. 189,192, May 2, 1988, abandoned. This application Nov. 29, 1990, Ser. No. 619,838

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **70 Claims**

34. A method for analyzing a subpopulation of cells, having at least one characteristic determinant, present within a mixed cell population, said subpopulation of cells including individual subsets of interest, each subset having at least one characteristic determinant, to determine the proportion of at least one selected subset of said subpopulation of cells, comprising:

(i) selectively binding to a portion of cells of said mixed cell population a detectable reporter substance, either by a) directly binding a specific binding substance which specifically binds to a determinant of said portion of cells and which is directly or indirectly conjugated to said detectable reporter substance or b) sequentially binding a first specific binding substance which specifically binds to a determinant of said portion of cells, and a second specific binding substance which specifically binds to said first specific binding substance and which is directly or indirectly conjugated to said detectable reporter substance, whereby said detectable reporter substance uniformly labels substantially all cells of said subpopulation;

(ii) contacting a first sample of said mixed cell population with a first reagent comprising at least one specific binding substance which specifically binds to said at least one characteristic determinant of said cell subpopulation, resulting in the formation of a first complex of cells and uncomplexed cells;

(iii) separating said first complex from said uncomplexed cells;

(iv) following the completion of steps (i), (ii), and (iii), detecting the occurrence of said detectable reporter substance in said first complex;

(v) contacting a second sample of said cell population from step (i), of equivalent volume and cell concentration to said first sample, with a second reagent comprising a specific binding substance which specifically binds to said at least one characteristic determinant of said selected subset of interest included in said subpopulation of cells, resulting in the formation of a second complex of cells and uncomplexed cells;

(vi) separating said second complex from said uncomplexed cells;

(vii) detecting the occurrence of said detectable reporter substance in said second complex; and

(viii) determining the proportion of said selected subset of interest in said cell subpopulation by quantitating the amount of said detectable reporter substance associated with said second complex relative to the amount of said detectable reporter substance associated with said first complex.

5,385,823

METHOD FOR ASSAYING NUCLEIC ACIDS AND PROTEINS USING ANTHRACENE DERIVATIVE PHOSPHATE

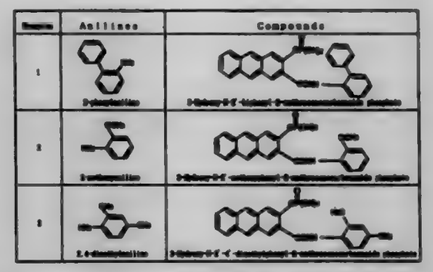
Satoshi Fujita; Masayoshi Momiyama; Naoto Kagiyama; Yasumitsu Kondo, and Hiroshi Hori, all of Sapporo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 22, 1992, Ser. No. 994,727

Claims priority, application Japan, Dec. 27, 1991, 3-347019; May 8, 1992, 4-115640

Int. Cl.[6] C12Q *1/68, 1/42;* G01N *33/533*

U.S. Cl. 435—6 **4 Claims**



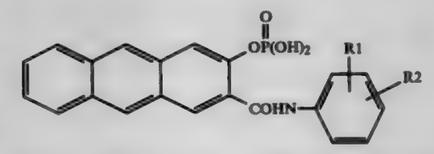
1. A method of detecting nucleic acids, proteins and other chemical compounds which comprises the steps of:

binding said nucleic acids, proteins, and other chemical compounds to a phosphatase,

reacting said phosphatase wherein said binding does not affect the catalytic activity of said phosphatase, bound with an anthracene derivative phosphate having the formula where "R" is a substituent bound to a phenyl group which is in turn bound to the N of the amide group,

irradiating the reaction produce with excited light; and

detecting the emitted fluorescence;



where R1 and optional R2 are selected from the group consisting of hydrogen, alkyl, alkoxyl, phenyl, and diphenyl, and are bound to a phenyl group which is in turn bound to the N of the amide group, to form a dephosphorylated anthracene derivative reaction product,

irradiation said reaction produce with ultraviolet light, and detecting emitted fluorescence, wherein the emission of fluorescence is indicitave of the presence of said nucleic acids, proteins, and other chemical compounds.

5,385,824

METHOD FOR DETECTION OF ANTI-RNA-ANTIBODIES

Rene M. A. Hoet, Cambridge, Great Britain, and Waltherus J. Van Venrooy, Nijmegen, Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

PCT No. PCT/EP92/00106, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993, PCT Pub. No. WO90/10229, PCT Pub. Date Sep. 7, 1990

PCT Filed Jan. 16, 1992, Ser. No. 90,147

Claims priority, application European Pat. Off., Jan. 22, 1991, 91200121

Int. Cl.[6] G01N *33/537, 33/543, 33/564*

U.S. Cl. 435—6 **9 Claims**

1. A method for monitoring a patient having connective

tissue autoimmune disease comprising contacting (U1)RNA with a fluid specimen from the patient and determining whether an immune complex has formed between the (U1)-RNA and any antibodies present in the specimen, wherein the level of reaction with the (U1)RNA correlates with connective tissue autoimmune disease activity.

5,385,825

COMPOSITION FOR PROCESSING BODYFLUIDS, METHOD OF PROCESSING BODYFLUIDS AND PRODUCTS MADE FROM BODYFLUIDS

Edward G. Ezrailson, The Woodlands, Tex., assignor to Emerald Biomedical Sciences, Inc., The Woodlands, Tex.

Filed Jul. 20, 1993, Ser. No. 94,512

Int. Cl.[6] G01N *33/574, 1/00;* C12N *9/00;* C12Q *1/37*

U.S. Cl. 435—7.23 **44 Claims**

9. A processing method for processing bodyfluids comprising contacting the bodyfluid with a processing composition to form a processed product, wherein the processing composition comprises ethylenediamine tetraacetic acid and at least one compound selected from the group of compounds consisting of N-tosyl-lysyl chloromethylketone and N-tosyl-phenylalanyl chloromethylketone in amounts sufficient to inhibit endopeptidases in the processed product.

5,385,826

DIAGNOSTIC ASSAY FOR LYME DISEASE

Ronald F. Schell, Madison, and Steven M. Callister, Onalaska, both of Wis., assignors to Gundersen Medical Foundation, Ltd., Lacrosse, Wis.

Continuation of Ser. No. 605,798, Oct. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 341,459, Apr. 21, 1989, abandoned. This application Aug. 9, 1993, Ser. No. 88,590

Int. Cl.[6] C12Q *1/00, 1/02;* G01N *33/53*

U.S. Cl. 435—7.32 **35 Claims**

1. A method of performing an assay to determine whether a patient has been exposed to *Borrelia burgdorferi,* said method comprising:

collecting serum from a patient which may have been exposed to *Borrelia burgdorferi;*

preparing a sample mixture, said sample mixture comprising a portion of said patient's serum and an inoculum of viable *Borrelia burgdorferi* organisms;

incubating said sample mixture;

determining the number of viable organisms remaining in said sample mixture after incubation; and

comparing said number with the quantity of viable organisms remaining in a control mixture.

5,385,827

METHOD OF GEOCHEMICAL PROSPECTING

John R. Clark, 7580 Deframe St., Arvada, Colo. 80005

Division of Ser. No. 788,543, Nov. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 409,752, Sep. 20, 1989, abandoned. This application Oct. 16, 1992, Ser. No. 962,477

Int. Cl.[6] C12Q *1/64, 1/54;* G01N *33/24*

U.S. Cl. 435—9 **20 Claims**

1. A method of geochemical prospecting comprising the steps of obtaining from a predefined geological area a sample of geological material containing amorphous or semi-amorphous manganese dioxide carrying therein trace metal elements and compounds, contacting said sample with a leach solution comprising water, glucose and glucose oxidase, said oxidase acting upon said glucose to produce gluconic acid and hydrogen peroxide, said leach solution reacting with said manganese dioxide to produce a sample residue and a leach reaction solution containing the trace metal elements and compounds, separating said leach reaction solution from the sample residue, analyzing said leach reaction solution to identify the trace metal elements and compounds contained therein, and predicting therefrom the location of a mineral deposit of said trace metal elements and compounds in the geological area from which said sample was obtained.

5,385,828

METHOD FOR DETERMINING THE RELATIVE AMOUNTS OF ALL CHOLESTEROL-CONTAINING LIPOPROTEINS IN BODY FLUIDS

Johannes Aufenanger, Hirschberg, Germany, assignor to "Immuno" Aktiengesellschaft fur chemisch-medizinische Produkte, Vienna, Austria

Continuation of Ser. No. 359,800, Jun. 1, 1989, abandoned. This application Nov. 24, 1992, Ser. No. 981,992

Int. Cl.[6] C12Q *1/60, 1/34, 1/44, 1/26*

U.S. Cl. 435—11 **20 Claims**

1. A method for simultaneously determining the amount of a cholesterol-containing lipoprotein selected from the group consisting of very low density lipoproteins, low density lipoproteins, and high density lipoproteins contained in a body fluid relative to the amount of at least one other of said cholesterol-containing lipoproteins or the total amount of cholesterol-containing lipoproteins present in said body fluid comprising the steps of:

(a) electrophoretically separating the cholesterol-containing lipoproteins contained in a body fluid from one another on a thin layer carrier matrix comprising albumin, said albumin being present in a concentration of UP to about 0.5 % by weight;

(b) incubating said carrier matrix, following separation of said cholesterol-containing lipoproteins, in the presence of a developer solution comprising cholesterol esterase at a concentration of 0.02–2.0 U/ml and cholesterol dehydrogenase at a concentration of 0.07–1.0 U/ml; and

(c) determining the relative amounts of said cholesterol-containing lipoproteins.

5,385,829

METHOD OF ASSAYING FOR ACYL-L-CARNITINES AND SHORT-CHAIN ACYL-CARNITINES

Mamoru Takahashi, and Shigeru Ueda, both of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 774,221

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Claims priority, application Japan, Oct. 9, 1990, 2-270784

Int. Cl.[6] A61K *37/00;* C12Q *1/44;* C12N *9/16, 1/20*

U.S. Cl. 435—19 **13 Claims**

1. A method of assaying for acyl-L-carnitines comprising short-chain acyl-carnitines in a biological or alimentary specimen whose acyl-L-carnitine content is to be determined, comprising subjecting a sample of said specimen to enzymatic hydrolysis with a first acyl-carnitine esterase which catalyzes the hydrolysis reaction of one mole of each of the acyl-L-carnitines with one mole of water to form one mole of the corresponding fatty acid and one mole of L-carnitine, and then determining the amount of the fatty acid and L-carnitine thus formed;

said first acyl-L-carnitine esterase having the following properties:

molecular weight of 63000±7000,

isoelectric point of pH 5.1±0.5,

optimum pH of about pH 8,

pH stability at least within a range of pH 7.5 to 8.5,

optimum temperature of about 70° C.

and substrate specificity for short-chain acyl-carnitines comprising acetyl-L-carnitine and propionyl-L-carnitine and medium-to-long-chain acyl-carnitines comprising hexanoyl-, octanoyl-, decanoyl-, lauroyl-, myristoyl-, palmitoyl-, and stearoyl-carnitine

said first acyl-L-carnitine esterase being that produced by *Alcaligenes sp.* FERM BP-2570.

5,385,830

APPARATUS FOR MEASURING FREE AND TOTAL SULFUROUS ACID AND METHOD OF MEASUREMENT

Yoshifumi Amano; Kazuo Nakamura; Hiroshi Kurosawa, all of Yamanashi; Takeshi Sato, Gifu; Hirofumi Akano, and Yoshiya Kawamura, both of Aichi, all of Japan, assignors to Nakano Vinegar Co., Ltd., Aichi, Japan

Filed Oct. 4, 1991, Ser. No. 771,632

Claims priority, application Japan, Oct. 5, 1990, 2-266614; Nov. 29, 1990, 2-325586; Jul. 18, 1991, 3-178152

Int. Cl.[6] C12S *3/00;* C12P *1/04, 11/00;* C12M *1/00*

U.S. Cl. 435—29 **15 Claims**

1. A method for measuring a total sulfurous acid content of a sample comprising the steps of:

a) converting any bound sulfurous acid present in the sample to free sulfurous acid by adjusting the pH of the sample within the range of from about 1 to 3, and holding the sample at a temperature of between 70° and 110° C. for between 2 and 25 minutes;

b) oxidizing any free sulfurous acid in the sample to sulfuric acid using *Thiobacillus thiooxidans* 20294 (FERN BP-3467); and

c) measuring the amount of free sulfurous acid oxidized in the sample.

5,385,831

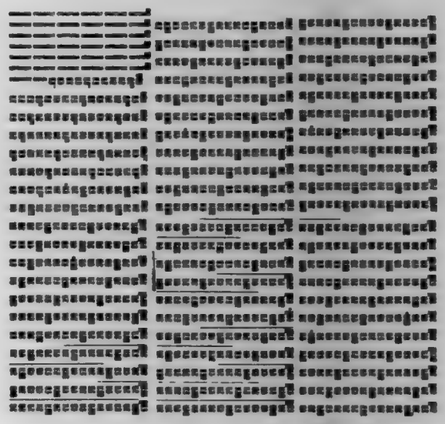
METHOD FOR PRODUCING A MAMMALIAN G PROTEIN COUPLED GLUTAMATE RECEPTOR

Eileen R. Mulvihill; Frederick S. Hagen; Khaled M. Houamed, and Wolfhard Almers, all of Seattle, Wash., assignors to Zymogenetics, Inc. and The Board of Regents of the University of Washington, both of Seattle, Wash.

Continuation of Ser. No. 648,481, Jan. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 626,806, Dec. 12, 1990, abandoned. This application Apr. 1, 1993, Ser. No. 41,538

Int. Cl.[6] C12P *21/06;* C12N *5/00, 15/00;* C07H *17/00*

U.S. Cl. 435—69.1 **17 Claims**



14. A method for producing a mammalian G protein coupled glutamate receptor having the amino acid sequence of SEQ ID NO: 2, which comprises:

growing eukaryotic cells transformed or transfected with a DNA construct which comprises a DNA sequence of SEQ ID NO: 1 coding for the expression of the G protein coupled glutamate receptor, and

isolating the receptor from the cells.

5,385,832

METHOD FOR OBTAINING HIGHLY PURE BETA 1,3-GLUCAN FROM EUGLENA

Daniel Tusé, Fremont; Leticia Márquez, Berkeley, and Leslie A. Hoksma, Mountain View, all of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation of Ser. No. 802,323, Dec. 4, 1991, abandoned, which is a continuation of Ser. No. 332,502, Mar. 31, 1989, Pat. No. 5,084,386. This application Mar. 22, 1993, Ser. No. 34,609

Int. Cl.[6] C12P *19/04;* D06M *16/00;* A01G *7/00*

U.S. Cl. 435—101 **3 Claims**

1. A process for obtaining substantially pure beta-1,3-glucan from a culture of Euglena cells in which the cells comprise about 70% to 90% beta-1,3-glucan on a dry weight basis comprising carrying out the following steps under aseptic conditions:

(a) separating the cells from the culture;

(b) lysing the cells and extracting the cells with an extractant that removes lipid and pigment from the cells and obtaining crystalline beta-1,3-glucan;

(c) separating the crystalline beta-1,3-glucan from the extractant;

(d) adding acid to the crystalline beta-1,3-glucan with heating and agitation to form an acid soluble and an acid insoluble portion, said acid insoluble portion containing the crystalline beta-1,3-glucan; and

(e) washing the acid insoluble portion containing the crystalline beta-1,3-glucan with sterile water to produce said substantially pure beta-1,3-glucan of at least about 95% purity containing less than about 0.08 endotoxin units per milliliter.

5,385,833

***PSEUDOMONAS SP.* ATCC NO. 49794 ALCOHOL DEHYDROGENASE**

Curt W. Bradshaw, San Diego; Chi-Huey Wong, Rancho Santa Fe, and Gwo-Jenn Shen, Carlsbad, all of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Feb. 26, 1992, Ser. No. 841,718

Int. Cl.[6] C12P *7/02, 7/00;* C12N *1/20;* C12R *1/38*

U.S. Cl. 435—156 **12 Claims**

1. A process of making an R-configured alcohol comprising the steps of

(a) forming a reaction mixture by admixing in a liquid medium (i) NADH, (ii) a catalytic amount of a PED alcohol dehydrogenase from *Pseudomonas sp.* ATCC No. 49794 and (iii) a carbonyl substrate of the formula I:

$$R—CO—R^1 \qquad I$$

wherein R is selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_1–C_6 acyl, C_1–C_6 alkoxy carbonyl, C_1–C_6 alkene and C_1–C_6 azaalkyl;

R^1 is selected from the group consisting of phenyl, benzoyl, pyridyl, C_1–C_3 alkylenephenyl, C_2–C_3 oxaalkylenephenyl, C_1–C_6 alkoxy carbonyl, C_1–C_6 alkenyl, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_1–C_6 oxoalkyl, C_1–C_6 halo oxoalkyl, C_1–C_3 alkyl C_1–C_3 alkylenecarboxylate, C_2–C_3 alkynyl, C_1–C_6 hydroxy alkyl, and C_1–C_6 thiaalkyl, or R and R^1 together form a 5–7-membered ring that is free from unsaturation except for the carbonyl of formula I; and

said carbonyl substrate has an overall chain length of three to about nine carbon atoms; and

(b) maintaining the reaction mixture under biological reaction conditions and for a time period sufficient to reduce the carbonyl substrate and form the R-configured alcohol.

5,385,834

MUTANT T7 RNA POLYMERASE GP1(LYS222)EXHIBITING ALTERED PROMOTER RECOGNITION

Richard A. Ikeda, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Aug. 13, 1993, Ser. No. 106,433
Int. Cl.[6] C07H *21/00*; C12N *9/12, 15/54*
U.S. Cl. 435—172.3 **4 Claims**

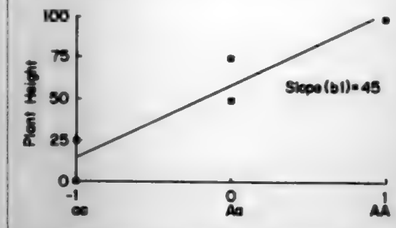
1. An isolated and purified mutant T7 RNA polymerase that carries the substitution of lysine for glutamic acid at amino acid 222.

5,385,835

IDENTIFICATION AND LOCALIZATION AND INTROGRESSION INTO PLANTS OF DESIRED MULTIGENIC TRAITS

Timothy Helentjaris, and James Nienhuis, both of Salt Lake City, Utah, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 94,621, Jul. 20, 1993, which is a continuation of Ser. No. 747,496, Aug. 19, 1991, which is a continuation of Ser. No. 534,196, Jun. 5, 1990, abandoned, which is a continuation of Ser. No. 81,989, Aug. 4, 1987. This application May 19, 1994, Ser. No. 252,371
Int. Cl.[6] C12N *15/01*; A01H *1/00*
U.S. Cl. 435—172.3 **7 Claims**



1. A breeding program comprising the steps of:
(a) determining the association between restriction fragment length polymorphisms and relative values of a quantitative trait in plants by hybridizing nucleic acid probes specific for the restriction fragment length polymorphisms to genetic material of the plants, determining the relative values of the quantitative traits, and calculating the degree of association between the restriction fragment length polymorphisms and the quantitative trait;
(b) selecting the restriction fragment length polymorphisms that have the highest degree of association with said quantitative trait relative to the restriction fragment length polymorphisms that have been tested;
(c) developing a mathematical model for partitioning the values of the traits among the selected restriction fragment length polymorphisms into linear or quadratic contrasts, or both;
(d) using said contrasts in a multiple regression analysis to determine the predictive value of the selected restriction fragment length polymorphisms for said relative value of the quantitative trait;
(e) manipulating said relative values of the quantitative trait in plants by selecting plants for breeding based on the predictive values of the restriction fragment length polymorphisms; and
(f) breeding said selected plants.

5,385,836

NONWOVEN FABRIC COATED WITH A MIXTURE OF SILK FIBROIN, GELATIN AND INSOLUBILIZED CHITOSAN FOR USE AS A CARRIER FOR ANIMAL CELLS

Fuminori Kimura; Shinjiro Mitsuda, both of Sai[illegible], and Yoshiaki Matsuda, Ibaraki, all of Japan, assignors to Japan Vilene Co. Ltd. and Snow Brand Milk Products, both of Tokyo, Japan

Filed May 18, 1992, Ser. No. 885,140
Claims priority, application Japan, May 17, 1991, 3-141348
Int. Cl.[6] C12N *11/02, 5/00, 11/12, 11/08*
U.S. Cl. 435—177 **6 Claims**

1. A carrier for immobilization of animal cells comprising
(a) a nonwoven fabric prepared by impregnating a nonwoven fabric web with a binder resin, and
(b) a coating on said nonwoven fabric of a mixture containing silk fibroin, gelatin, and insolubilized chitosan, said mixture being present on at least some of the surface of said nonwoven fabric in an amount of 1 to 100 g/m^2, and wherein said mixture is coated on said nonwoven fabric by contacting said nonwoven fabric with a solution prepared by adding silk fibroin and gelatin to an acidic aqueous solution of chitosan, to coat said nonwoven fabric, drying said coated nonwoven fabric, and treating said dried nonwoven fabric with an alkali to render said chitosan insoluble.

5,385,837

ALKALINE PROTEASES DERIVED FROM *BACILLUS PROTEOLYTICUS*

Ernest W. Boyer, Elkhart, Ind., and Graham S. Byng, Woodinville, Wash., assignors to Solvay Enzymes, Inc., Houston, Tex.

Continuation of Ser. No. 884,184, May 18, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 181,872
Int. Cl.[6] C12N *9/54, 9/52, 9/56*; C11D *7/42*
U.S. Cl. 435—221 **1 Claim**

1. A purified alkaline protease from a bacterium of the species *Bacillus proteolyticus* NRRL B-18964, *Bacillus proteolyticus* NRRL B-18963 or *Bacillus proteolyticus* NRRL B-18965 having:
an amino acid terminal sequen[illegible] corresponding to Seq. ID No.: 1 as follows:
Ala-Gln-Ser-Val-Pro-Trp-Gly-Ile-Ser-Arg-Val-Gln-Ala-Pro-Ala-Ala-His-Asn-Arg-Gly-;
a molecular weight of 28 Kdaltons and an isoelectric point from 10 to 11.5;
an optimal pH for proteolytic activity at a pH in the range of 8.5 through 11.5;
said alkaline protease retaining at least 70% of its original activity after being held at a pH of 8.0 at a temperature of 43° C. for a period of 11 days.

5,385,838

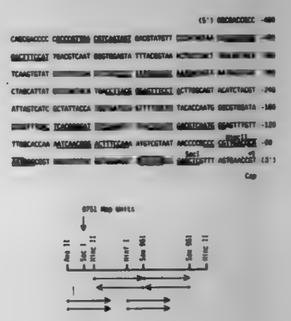
Patent Not Issued For This Number

5,385,839

TRANSFER VECTORS AND MICROORGANISMS CONTAINING HUMAN CYTOMEGALOVIRUS IMMEDIATE-EARLY PROMOTER REGULATORY DNA SEQUENCE

Mark F. Stinski, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa

Continuation of Ser. No. 582,130, Sep. 10, 1990, Pat. No. 5,168,062, which is a continuation of Ser. No. 256,134, Oct. 5, 1988, abandoned, which is a continuation of Ser. No. 58,662, May 22, 1987, abandoned, which is a continuation of Ser. No. 696,617, Jan. 30, 1985, abandoned. This application Jun. 17, 1992, Ser. No. 900,056
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[6] C12N *5/10, 1/21, 15/70, 15/85*
U.S. Cl. 435—240.2 **7 Claims**



1. A transfer vector comprising the immediate-early promoter-regulatory region of human cytomegalovirus.

5,385,840

DNA ENCODING ANALOGS OF HUMAN ALVEOLAR SURFACTANT PROTEIN SP-5

Bradley J. Benson, San Francisco; Robert T. White, Fremont; James W. Schilling, Jr., Palo Alto; Douglas I. Buckley, Woodside, and Robert M. Scarborough, Belmont, all of Calif., assignors to Scios Nova Inc., Mountain View, Calif.

Division of Ser. No. 699,960, May 14, 1991, Pat. No. 5,169,761, which is a division of Ser. No. 524,360, May 17, 1990, Pat. No. 5,104,853, which is a continuation-in-part of Ser. No. 266,443, Nov. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 117,099, Nov. 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 8,453, Jan. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 857,715, Apr. 30, 1986, Pat. No. 4,933,280, which is a continuation-in-part of Ser. No. 808,843, Dec. 13, 1985, Pat. No. 4,912,038, which is a continuation-in-part of Ser. No. 680,358, Dec. 11, 1984, Pat. No. 4,659,805. This application Oct. 23, 1992, Ser. No. 965,745
Int. Cl.[6] C12N *15/12, 1/21, 5/10, 15/63*
U.S. Cl. 435—240.2 **6 Claims**

1. A recombinant DNA in isolated form comprising DNA encoding a polypeptide having ASP activity and having the sequence
X-AA$_{28}$-AA$_{29}$-AA$_{30}$-AA$_{31}$-AA$_{32}$-AA$_{33}$-AA$_{34}$-AA$_{35}$-Leu-Ile-Z-Z-Z-Z-Z-Z-Leu-Ile-Z-Z-Z-Ile-Z-Gly-Ala-Leu-Leu-Met-Y,
wherein:
AA$_{28}$ is Cys,
AA$_{29}$ is Cys,
AA$_{30}$ is Pro or Ala,
AA$_{31}$ is Val or Gln,
AA$_{32}$ is His or Lys,
AA$_{33}$ is Leu or Ala,
AA$_{34}$ is Lys or Gln,
AA$_{35}$ is Arg or Gln,
Z is either Val or Ile,
Y is OH, Gly-OH, Gly-Leu-OH, Gly-Leu-His-OH, or Gly-Leu-His-Y$_1$, wherein Y$_1$ is a C-terminal extension sequence of 1–15 amino acids corresponding to amino acids 60–74 in FIG. 3, and
X is H or an amino acid sequence selected from the group consisting of H-AA$_{27}$, H-AA$_{26}$-AA$_{27}$, and X'-AA$_{26}$-AA$_{27}$,



wherein:
AA$_{27}$ is Pro or Ala,
AA$_{26}$ is Ile or Ser, and
X' is H or an N-terminal extension sequence of 1–25 amino acids corresponding to amino acids 1–25 in FIG. 3,
with the proviso that if X is H, H-Pro, H-Ile-Pro, or X'-Ile-Pro, and all Z are Val, then AA$_{28}$–AA$_{35}$ are not -Cys-Cys-Pro-Val-His-Leu-Lys-Arg.

5,385,841

PO438, A NEW CALCIUM-REGULATED PROMOTER

Jose D. Ortega, Sevilla; Jose A. Gil, Leon; Tomas V. Garcia, Leon, and Juan F. Martin, Leon, all of Spain, assignors to Laboratorios Serono S.A., Madrid, Spain

Filed Dec. 11, 1992, Ser. No. 989,363
Claims priority, application Spain, Dec. 12, 1991, 9102765
Int. Cl.[6] C12N *15/00, 1/21, 15/11*
U.S. Cl. 435—252.35 **10 Claims**

1. A DNA fragment comprising the calcium-regulated promoter contained in FIG. 4(SEQ ID NO:1) or a fragment thereof having calcium regulated promoter activity.

5,385,842

ANTHRAQUINONES AS INHIBITORS OF SULFIDE PRODUCTION FROM SULFATE-REDUCING BACTERIA

Paul J. Weimer, Madison, Wis.; James M. Odom, Avondale, Pa.; Frederick B. Cooling, III, and Albert G. Anderson, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 652,406, Feb. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 510,763, Apr. 18, 1990, abandoned. This application Aug. 13, 1993, Ser. No. 107,439

Int. Cl.[6] B09B *3/00;* **C12N** *1/00;* **A61L** *9/01;* **C10G** *32/00*

U.S. Cl. 435—262 **25 Claims**

18. A process for inhibiting sulfide production by sulfate-reducing bacteria, the process comprising contacting an anaerobic medium containing the bacteria with an anthraquinone, the anthraquinone selected from the group consisting of 9,10-anthraquinone, 1,8-dihydroanthraquinone, 1-chloroanthraquinone, 2-chloroanthraquinone, 2-bromoanthraquinone, and 1-fluoroanthraquinone, so that the final concentration of anthraquinone is at least 0.1 ppm.

5,385,843

Patent Not Issued For This Number

5,385,844

POLYMER CONTAINING CONTROL REAGENTS AND POLYMERS USEFUL IN CONTROL REAGENTS

Jim Kennamer, Indianapolis, Ind., and Arthur Usmani, University of Kuwait, Kuwait, assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Apr. 22, 1993, Ser. No. 51,149

Int. Cl.[6] G01N *31/00*

U.S. Cl. 436—13 **16 Claims**

1. Control reagent solution, comprising:

(i) a known concentration of an analyte to be determined, and

(ii) at least one member selected from the group consisting of

(a) a water soluble acrylic monomer based polymer, and

(b) a water soluble quaternary amine based polymer,

wherein (i) and (ii) are present together in said solution.

5,385,845

Patent Not Issued For This Number

5,385,846

BIOSENSOR AND METHOD FOR HEMATOCRIT DETERMINATION

Lance S. Kuhn; Mary L. Ochs, both of Fishers, and Gilbert C. Morris, Anderson, all of Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Jun. 3, 1993, Ser. No. 72,198

Int. Cl.[6] G01N *33/86*

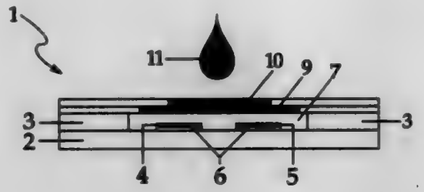
U.S. Cl. 436—70 **18 Claims**

1. An apparatus for measuring the hematocrit level of a blood sample, comprising:

(a) a first insulating substrate;

(b) working and counter electrodes affixed to the first insulating substrate;

(c) a second insulating substrate, which overlays the working and counter electrodes, has a window for exposing a portion of the working and counter electrodes, and has a cut out portion at one end to allow contact between the electrodes and a meter and a power source; and



(d) a porous substrate, which is impregnated with an electroactive compound, overlays the window, and is spatially displaced from the working and counter electrodes so that there is an empty space between the working and counter electrodes and the porous substrate prior to addition of the blood sample to the apparatus.

12. A method of measuring the hematocrit level of a blood sample, comprising:

(a) adding the blood sample to the porous substrate of the apparatus of claim 1, thereby forming a mixture of the electroactive compound and the blood sample, the mixture being deposited on a surface of the electrodes;

(b) applying a potential difference between the working and counter electrodes that is sufficient to oxidize or reduce the electroactive compound in the mixture at the surface of the working electrode, thereby generating a current; and

(c) measuring the current and correlating the current to hematocrit level.

5,385,847

METHOD FOR THE DETERMINATION OF URINARY PROTEIN AND CREATININE

Kin F. Yip; Amy H. Chu, and Brenda Tudor, all of Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

Filed Dec. 2, 1993, Ser. No. 160,239

Int. Cl.[6] G01N *33/546, 33/53, 33/557, 33/00*

U.S. Cl. 436—534 **7 Claims**

6. A method for the determination of a urinary protein and creatinine in a urine sample using a single reaction vessel which comprises the steps of:

a) providing a reaction vessel having a substantially horizontal axis of rotation and an analytical reagent reaction channel containing first and second reaction zones said first reaction zone incorporated with a dry antibody specific for the urinary protein and said second reaction zone incorporated with a dry indicator reagent for the colorimetric determination of creatinine and a dry basic reagent which raises the pH of a reaction fluid introduced into the reaction channel to a level of from about 11.5 to 12.5;

b) introducing a urine sample suspected of containing urinary protein and creatinine and buffered diluent fluid to provide an admixture at a pH of from about 7 to 9 into the reaction vessel and bringing it into contact with the dried antibody to thereby dissolve the antibody to form a second admixture and cause an increase in the turbidity of the second admixture by interaction of the antibody and the urinary protein;

c) determining the concentration of the urinary protein based on the change in turbidity as a function of time;

d) bringing the second admixture and the indicator reagent for the colorimetric determination of creatinine into contact with the dry basic reagent in the second reaction zone to thereby dissolve this basic reagent to form a third admixture and raise the pH of the third admixture to a level of from about 11.5 to 12.5; and

e) determining the concentration of creatinine by spectrophotometric photometric means within about 30 minutes of the addition of the indicator reagent to thereby determine the creatinine concentration.

5,385,848

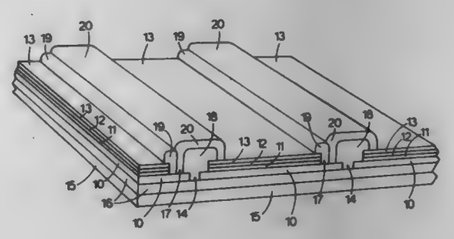
METHOD FOR FABRICATING AN INTERCONNECTED ARRAY OF SEMICONDUCTOR DEVICES

Derrick P. Grimmer, Fremont, Mo., assignor to Iowa Thin Film Technologies, Inc, Ames, Iowa

Filed Sep. 20, 1993, Ser. No. 123,169

Int. Cl.[6] H01L *31/18*

U.S. Cl. 437—2 **20 Claims**



1. A method for fabricating an interconnected array of semiconductor devices based on an electrically conductive substrate initially having on a surface thereof a conductive support layer which supports a semiconductor material layer thereon having first and second major surfaces with said support layer being in electrical contact with said semiconductor material layer second major surface, and said semiconductor material layer also having initially therewith a conductive interconnection layer on said semiconductor material layer first major surface, said method comprising:

dividing said conductive interconnection layer, and said semiconductor material layer, and said support layer and said electrically conductive substrate into a plurality of semiconductor devices by separating into portions said electrically conductive substrate together with said conductive interconnection layer, said semiconductor material layer and said support layer, to thereby form separating spaces between adjacent said semiconductor devices each of which devices comprises a corresponding portion of said electrically conductive substrate and a corresponding portion of said support layer and a corresponding portion of said semiconductor material layer having corresponding portions of said first and second major surfaces, and a corresponding portion of said conductive interconnection layer;

forming at divided-and-separated said electrically conductive substrate second major surface portions a lamination to an electrically insulating material film by means of an adhesive material layer whose said second major surface adheres to the first major surface of said insulating material film, and whose said first major surface adheres rigidly to the second major surface portions of said divided-and-separated said electrically conductive subatrate portions, said separating spaces between adjacent said semiconductor devices being maintained by said adhesive material layer, which layer having been sandwiched between said divided-and-separated said semiconductor devices and said insulating material film;

forming between each pair of adjacent said semiconductor devices an opening in said interconnection material layers and said semiconductor material layers and said support layers, by removing selected commonly located portions of said interconnection material layers and said semiconductor material layers and said support layers, said opening being on both sides of said separating spaces between each pair of adjacent said semiconductor devices, said devices having been laminated to said adhesive material layer and to said insulating material film, with said separating space distance maintained;

forming at each said opening between each pair of said semiconductor devices an electrically insulating intervening material in each said separating space extending through said electrically conductive substrate to said adhesive material layer, said insulating intervening material covering in said opening the exposed thickness and first major surface portions of the said electrically conductive substrate and the exposed thicknesses of said support layer and of said semiconductor material layer of said adjacent said semiconductor device, and said forming of said intervening material is accompanied by forming, simultaneously or alternatively, an electrically insulating flow blocking material, at said opening opposite from said adjacent said semiconductor device, covering the exposed thicknesses of said semiconductor material layer and the exposed thickness and a portion of the upper major surface of said interconnection layer of said semiconductor device, but leaving a portion of the upper major surface of said electrically conductive substrate of said semiconductor device, between said intervening material and said flow blocking material, uncovered by either said intervening material or said flow blocking material; and

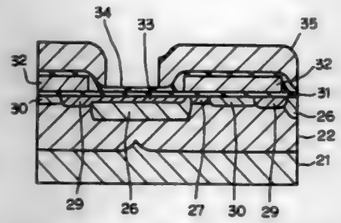
forming at each said opening a metal further comprising material in each said uncovered portion of said electrically conductive substrate, between said intervening material and said flow blocking material, said metal comprising material making electrical contact with said electrically conductive substrate, and covering over said intervening material to make electrical contact with the first major surface of said interconnection layer of said adjacent said semiconductor device.

5,385,849

PROCESS OF FABRICATING SOLID-STATE IMAGE PICK-UP DEVICE FREE FROM CRYSTAL DEFECTS IN ACTIVE REGION

Yasutaka Nakashiba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 16, 1994, Ser. No. 242,954
Claims priority, application Japan, May 17, 1993, 5-113553
Int. Cl.[6] H01L *31/18*
U.S. Cl. 437—3 8 Claims



8. A process of fabricating a solid-state image pick-up device having at least one photo-electric converting element and at least one charge transfer register, comprising the steps of:

a) preparing an n-type semiconductor substrate having a p-type well in a surface portion thereof;

b) covering a surface of said p-type well with a silicon oxide layer against a first etchant and a second etchant;

c) introducing n-type dopant impurities for forming an n-type impurity region beneath said silicon oxide layer;

d) covering said silicon oxide layer with a polysilicon layer;

e) providing a photo-resist mask on said polysilicon layer;

f) etching said polysilicon layer by using said first etchant so as to form a patterned polysilicon layer under said photo-resist mask;

g) laterally etching an outer peripheral portion of said patterned polysilicon layer by using said second etchant so as to inwardly offset an outer periphery of said patterned polysilicon layer to an outer periphery of said photo-resist mask;

h) introducing n-type dopant impurities into said p-type well by using said photo-resist mask for forming an n-type photo-electric converting region;

i) removing said photo-resist mask for exposing said patterned polysilicon layer;

j) introducing p-type dopant impurities into said p-type well by using said patterned polysilicon layer as a second mask for forming a p-type channel region contiguous to a surface portion of said n-type photo-electric converting region;

k) forming another photo-resist mask covering at least said p-type channel region;

l) introducing p-type dopant impurities by using said another photo-resist mask and said patterned polysilicon layer for forming heavily-doped p-type channel stopper regions, said p-type channel region and one of said heavily-doped p-type channel stopper regions causing a part of said n-type impurity region as an n-type charge transfer region;

m) removing said another photo-resist mask, said patterned polysilicon layer and said silicon oxide layer;

n) forming a gate insulating film on at least said p-type channel region and said n-type charge transfer region;

o) forming a gate electrode structure on said gate insulating film for transferring a charge packet through said p-type channel region to said n-type charge transfer region;

p) introducing p-type dopant impurities by using said gate electrode structure as a mask for forming a p-type photo-electric converting region overlapped with said n-type photo-electric converting region, said n-type photo-electric converting region and said p-type photo-electric converting region forming in combination said at least one photo-electric converting element for producing said charge packet;

q) forming a transparent inter-level insulating film over the entire surface; and

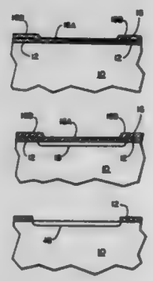
r) forming a photo-ahield plate on said transparent inter-level insulating film for covering said p-type channel region and said n-type charge transfer region, said photo-shield plate exposing said photo-electric converting element to an optical radiation.

5,385,850

METHOD OF FORMING A DOPED REGION IN A SEMICONDUCTOR SUBSTRATE UTILIZING A SACRIFICIAL EPITAXIAL SILICON LAYER

Jack O. Chu, Astoria; Chang-Ming Hsieh, Fishkill; Victor R. Nastasi, Hopewell Junction; Martin Revitz, Poughkeepsie, and Paul A. Rosnheim, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1991, Ser. No. 652,339
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 9 Claims



1. A method of forming a doped region in a semiconductor substrate, comprising the steps of:

providing a semiconductor substrate;

forming a layer of in situ doped epitaxial semiconductor material at a temperature of less than about 700 degrees centigrade over an area on said semiconductor substrate where said doped region is to be formed said in situ doping providing a substantially constant dopant concentration throughout the thickness of said layer;

heating in a nonoxidizing environment to drive dopant from said epitaxial semiconductor layer into said substrate so as to form said doped region;

oxidizing substantially said entire epitaxial semiconductor layer at a temperature of less than about 650 degrees centigrade; and

removing at least a portion of the oxidized layer to expose the surface of said doped region.

5,385,851

METHOD OF MANUFACTURING HEMT DEVICE USING NOVOLAK-BASED POSITIVE-TYPE RESIST

Hiroto Misawa, Yokohama, and Hitoshi Tsuji, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 14, 1993, Ser. No. 75,383
Claims priority, application Japan, Nov. 30, 1992, 4-319940
Int. Cl.[6] H01L *21/306, 21/28*
U.S. Cl. 437—40 1 Claim

1. A method of manufacturing a semiconductor apparatus, comprising the steps of:

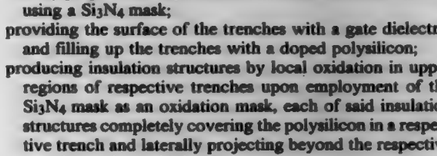
coating a novolak-based positive-type electron beam resist on a GaAs substrate and baking the resultant structure;

forming a first layer on the surface of the electron beam resist, by dipping the GaAs substrate in an alkali aqueous solution, washing the resultant structure with water and drying the resultant structure;

exposing the surface of the electron beam resist with ultraviolet rays through the first layer;

exposing the surface of the electron beam resist directly with an electron beam, following the step of exposing the surface of the electron beam resist with the ultraviolet rays;

forming an opening having an invertedly tapered shape in part of the surface of the electron beam resist, by developing the electron beam resist with an alkali aqueous solution, following which a step of water washing and drying is performed at least once;



subjecting the resultant structure to recess etching through the opening;

depositing on the entire surface of the resultant structure a metal wiring layer for forming an electrode;

leaving a portion of the metal wiring layer, which will serve as a straight-type gate electrode of an HEMT, and removing the electron beam resist and the metal wiring layer which are not needed; and

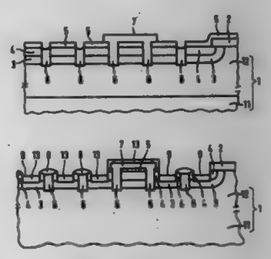
forming a source electrode and a drain electrode at predetermined locations on the semiconductor resultant structure.

5,385,852

METHOD FOR MANUFACTURING VERTICAL MOS TRANSISTORS

Klaus-Guenter Oppermann, Holzkirchen; Wolfgang Roesner, Munich, and Franz Hofmann, Suenching, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 9, 1993, Ser. No. 163,523
Claims priority, application Germany, Jan. 14, 1993, 4300806
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—40 20 Claims



1. A method for manufacturing vertical MOS transistors, comprising the steps of:

forming doped regions for a drain, well and source in a vertical sequence in a substrate of silicon;

etching trenches that isolate the source and well substantially perpendicularly relative to a surface of the substrate using a Si_3N_4 mask;

providing the surface of the trenches with a gate dielectric and filling up the trenches with a doped polysilicon;

producing insulation structures by local oxidation in upper regions of respective trenches upon employment of the Si_3N_4 mask as an oxidation mask, each of said insulation structures completely covering the polysilicon in a respective trench and laterally projecting beyond the respective trench so that said insulation structures are partly arranged above portions of the source neighboring respective trenches;

removing the Si_3N_4 mask;

etching via contact holes that extend into the well between neighboring trenches and using the insulation structure as an etching mask; and

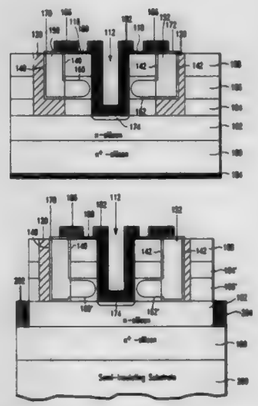
providing a metallization at least on a surface of the via contact holes for contacting the source and well.

5,385,853

METHOD OF FABRICATING A METAL OXIDE SEMICONDUCTOR HETEROJUNCTION FIELD EFFECT TRANSISTOR (MOSHFET)

S. Noor Mohammad, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1992, Ser. No. 984,607
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 14 Claims



1. A method of manufacturing a Metal Oxide Semiconductor Field Effect Transistor (MOSFET) having a source, a drain, and a gate, said method comprising the steps of:

(a) growing a layered wafer having at least four semiconductor layers;

(b) etching a plurality of first trenches through at least the top three of said semiconductor layers;

(c) growing an oxide layer on the top of said semiconductor layers, said oxide layer filling said first trenches;

(d) selectively etching a plurality of second trenches through said oxide layer, such that the side wall of at least one of said first trenches is exposed;

(e) insulating a portion of each said exposed side wall;

(f) filling each of said second trenches with a polysilicon plug and annealing said layered wafer;

(g) selectively etching at least one of said filled first trenches to form at least one gate trench and forming a gate therein; and

(h) forming a conductive contact for said gate and said polysilicon plugs.

5,385,854

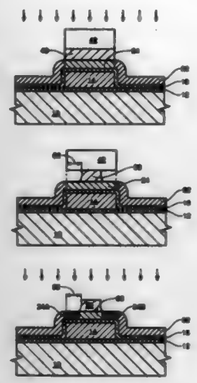
METHOD OF FORMING A SELF-ALIGNED LOW DENSITY DRAIN INVERTED THIN FILM TRANSISTOR

Shubneesh Batra, Boise, and Monte Manning, Kuna, both of Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Jul. 15, 1993, Ser. No. 92,295
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 26 Claims

1. A process for forming a semiconductor device having an inverted thin film transistor, comprising the following steps:

a) forming a first dielectric layer over a semiconductor substrate;
b) forming a thin film transistor gate over said first dielectric layer;
c) forming a second dielectric layer over said transistor gate;
d) forming a semiconductor layer over said second dielectric layer and over said thin film gate;
e) forming an implant masking layer over said semiconductor layer;
f) forming an etch mask layer over said transistor gate and over a portion of said implant masking layer, thereby covering portions of said implant masking layer and leaving portions of said implant masking layer exposed;



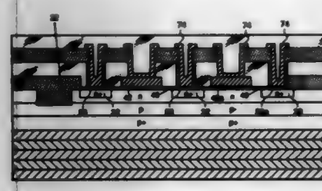
g) removing said exposed portions of said implant masking layer thereby forming exposed portions of said semiconductor layer;
h) doping said exposed portions of said semiconductor layer;
i) undercutting said etch mask to remove a portion of said implant masking layer from under said etch mask and further exposing said semiconductor layer; and
j) subsequent to step i), doping said semiconductor layer exposed during step i),
wherein said doping steps form thin film transistor source and drain regions, and said source and drain regions and said gate form portions of an inverted thin film transistor device.

5,385,855

FABRICATION OF SILICON CARBIDE INTEGRATED CIRCUITS

Dale M. Brown, Schenectady; Gerald J. Michon, Waterford; Vikram B. Krishnamurthy, Latham, and James W. Kretchmer, Ballston Spa, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 24, 1994, Ser. No. 201,494
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 **12 Claims**



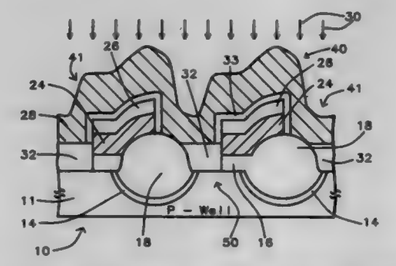
12. A method of fabricating two coupled MOSFETs as a silicon carbide (SiC) integrated circuit (IC) element, comprising the steps of:
providing a first layer comprising SiC doped to a first conductivity type;
applying a second layer comprising SiC doped to a second conductivity type over the first SiC layer;
forming at least three more heavily doped regions of said second conductivity type in the second SiC layer;
forming an isolation region in said second SiC layer around said more heavily doped regions;
applying an oxide layer over said second SiC layer, at least a first portion of said oxide layer being positioned over a portion of said second SiC layer that is between a first pair of said more heavily doped regions, at least a second portion of said oxide layer positioned over a portion of said second SiC layer that is between a second pair of said more heavily doped regions;
positioning a first gate electrode over said first portion of said oxide layer; and
positioning a second gate electrode over said second portion of said oxide layer.

5,385,856

MANUFACTURE OF THE FIELDLESS SPLIT-GATE EPROM/FLASH EPROM

Gary Y. Hong, Hsin-Chu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Dec. 2, 1993, Ser. No. 160,218
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—43 **8 Claims**



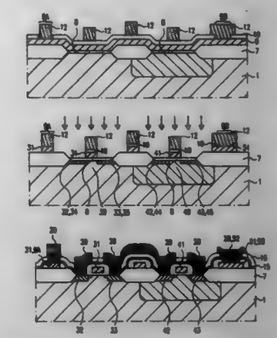
1. A method of manufacture of a self-aligned, split-gate EPROM/Flash EPROM array device, comprising the following steps:
a) implanting ions into locations in a doped well in a semiconductor substrate of said device to form buried bit lines,
b) forming a dielectric layer on the surface of said doped well forming a thicker dielectric over said implanted ions,
c) implanting a first threshold voltage V_{T1} dopant into said doped well,
d) forming a first polysilicon layer on said silicon dioxide layer,
e) forming an inter polysilicon layer on the surface of said first polysilicon layer on said device,
f) patterning said first polysilicon layer by forming a mask with openings and etching said polysilicon through said openings in said mask,
g) forming a second polysilicon layer on said inter polysilicon layer,
h) forming a photolithographic mask and etching portions of said second polysilicon layer to form word lines therein, and etching portions of said first polysilicon layer and said inter polysilicon dielectric to form a stacked gate beneath said word lines with a trough etched down into said well in the space defined within said buried bit lines and said second polysilicon layer, and
i) implanting an isolation implant into said trough, whereby preliminary manufacture of said device is completed.

5,385,857

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE WITH HIGH PACKING DENSITY AND HAVING FIELD EFFECT TRANSISTORS

José Solo de Zaldívar, Zürich, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1992, Ser. No. 995,101
Claims priority, application European Pat. Off., Dec. 23, 1991, 91203376
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 **8 Claims**



1. A method of manufacturing a semiconductor device whereby a field effect transistor is provided at a surface of a semiconductor body, which comprises the steps of:
providing a first insulating layer on the surface of the semiconductor body;
depositing a conductive layer on the first insulating layer;
providing a second insulating layer on the conductive layer;
selectively removing the second insulating layer from part of the conductive layer to expose a contact region of the conductive layer;
providing an etching mask which at least partly covers said contact region;
etching between portions of the etching mask and through the second insulating layer and the conductive layer to form a gate electrode;
implanting impurities on both sides of the gate electrode to form a source and a drain region of a first conductivity type mutually separated by a channel region of a second, opposite conductivity type under the gate electrode;
providing a third insulating layer over the resultant structure;
anisotropically etching the third insulating layer to form at least sidewalls on the gate electrode;
forming a contact window over the source and drain regions and a portion of the gate electrode; and
providing an electrical connection in the contact window.

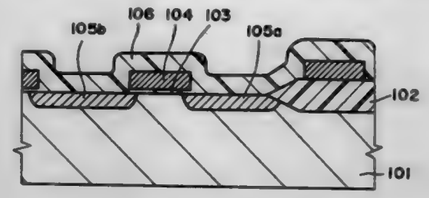
5,385,858

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE HAVING MEMORY CELL OF STACKED CAPACITOR TYPE

Kazutaka Manabe, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 23, 1993, Ser. No. 96,728
Claims priority, application Japan, Jul. 23, 1992, 4-217202
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—52 **4 Claims**

1. A method for fabricating a semiconductor device having a memory cell of a stacked capacitor type, said method comprising the steps of:
forming a MIS transistor having a gate electrode on a semiconductor substrate and a pair of first and second impurity diffusion layers constituting source/drain regions;
forming a contact hole by depositing a two-layered insulating film consisting of a lower insulating layer and an upper insulating layer to cover said MIS transistor and selectively etching said two-layered film to expose an upper surface of said first impurity diffusion layer;
forming a sidewall insulating film, which covers an inner wall of said contact hole and a tip of which projects from said upper insulating layer, by depositing an insulating material film using a material different from that for said upper insulating layer on an entire surface including said inner wall of said contact hole and etching-back in one step said insulating material film and said upper insulating layer as an etching stopper under an etching condition



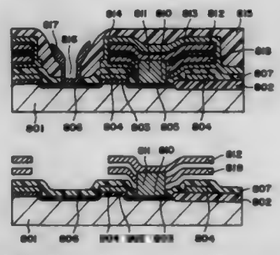
wherein an etching-back rate of said upper insulating layer is higher than that for said insulating material film and said lower insulating layer;
forming a first electrode, which is in contact with said first impurity diffusion layer and extends partially onto said upper insulating layer, by depositing a conductive material film inside said contact hole and patterning said conductive material film;
forming a dielectric film which covers a surface of said first electrode; and
forming a second electrode which covers said first electrode through said dielectric film.

5,385,859

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING A CAPACITOR WITH A CONDUCTIVE PLUG STRUCTURE IN A STACKED MEMORY CELL

Shuichi Enomoto, Tokyo, Japan, assignor to NEC Corporation, Japan

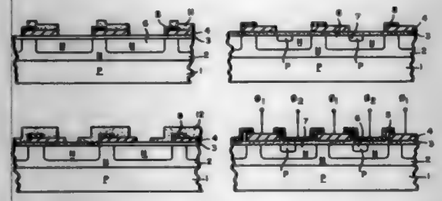
Filed Jul. 23, 1993, Ser. No. 97,395
Claims priority, application Japan, Jul. 23, 1992, 4-217201
Int. Cl.[6] H01L *21/70, 27/00*
U.S. Cl. 437—52 **4 Claims**



1. A method for fabricating a semiconductor device having a memory cell of a stacked capacitor type, said method comprising the steps of:
forming a MIS transistor which has a gate electrode formed on a semiconductor substrate through a gate insulating film, and a first source/drain region and a second source/drain region formed within a surface region respectively at two sides of said gate electrode on said semiconductor substrate, and which is covered by a first insulating film;
forming a pad material layer and a second insulating film in this order on said first insulating film;

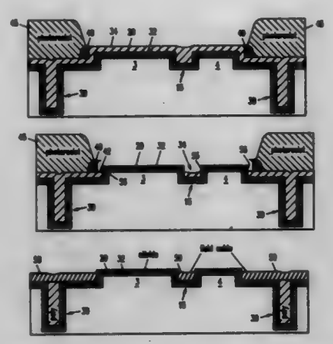
forming a contact hole in said first and second insulating films and said pad material layer so as to expose a surface of said first source/drain region;
forming a conductive plug which fills an inside of said contact hole and which is in contact with the surface of said first source/drain region;
removing said second insulating film;
forming a first electrode of a capacitor which is in contact with an upper surface of said conductive plug and which extends outwardly from an upper portion of said conductive plug;
forming, after a removal of said pad material layer under said first electrode, a dielectric film covering an entire surface of said first electrode and partial side portions of said conductive plug; and
forming a second electrode of said capacitor which fully surrounds said first electrode through said dielectric film.

5,385,860
CHARGE TRANSFER DEVICE
Takashi Watanabe, Soraku, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 798,709, Nov. 26, 1991, Pat. No. 5,286,987. This application Oct. 22, 1993, Ser. No. 142,792
Int. Cl.[6] H01L *21/339*
U.S. Cl. 437—53 **1 Claim**



1. A method of producing a charge transfer device, comprising the steps of
(a) forming a first electrode layer over a semiconductor substrate through an insulating layer;
(b) forming a first film and a first resist layer on said first electrode layer, said first film and said first resist layer having the same pattern;
(c) implanting a first impurity into said substrate through said first electrode layer and said insulating layer, with a high energy and using said first film and said first resist layer as a mask;
(d) removing said first resist layer;
(e) forming a second resist layer, said second resist layer extending from said first film at one end and to the center portion of gaps in said first film at the other end;
(f) etching said first electrode layer to form first transfer electrodes using said first film and second resist layer as a mask, said etching process being conducted so that the selectivity of said first electrode layer with respect to said first film is substantially great;
(g) removing said second resist layer;
(h) forming a third resist layer, said third resist layer extending from one of said first transfer electrodes at one end and to the center portion of gaps in said transfer electrodes at the other end;
(i) implanting a second impurity into said substrate through said insulating film, using said third resist layer and said first transfer electrodes as a mask;
(j) removing said third resist layer; and
(k) forming second transfer electrodes.

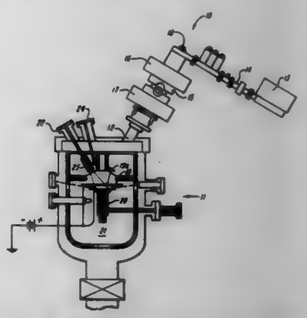
5,385,861
PLANARIZED TRENCH AND FIELD OXIDE AND POLY ISOLATION SCHEME
Rashid Bashir, Santa Clara; Francois Hebert, Sunnyvale, and Datong Chen, Fremont, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Mar. 15, 1994, Ser. No. 213,144
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—67 **13 Claims**



8. An isolation method for separating active regions on a semiconductor substrate by combining field oxide formation with trench isolation, the isolation method comprising the following steps performed in the following order:
etching shallow trench regions on the semiconductor substrate;
depositing a layer of pad oxide over the entire substrate;
depositing a layer of nitride over the layer of pad oxide;
depositing a layer of poly-silicon over the nitride layer;
forming oxide spacers on the poly-silicon;
aligning a photoresist mask, using the oxide spacers, to permit the selective etching of the poly-silicon layer, wherein the selective etching of the poly-silicon layer includes etching of a portion of the poly-silicon layer that overlies the active regions on the semiconductor substrate;
removing the photoresist mask and oxide spacers; and
oxidizing the poly-silicon layer.

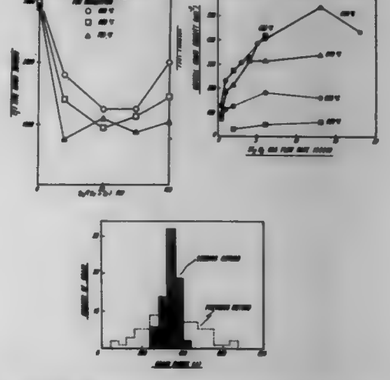
5,385,862
METHOD FOR THE PREPARATION AND DOPING OF HIGHLY INSULATING MONOCRYSTALLINE GALLIUM NITRIDE THIN FILMS
Theodore D. Moustakas, Dover, Mass., assignor to Trustees of Boston University, Mass.
Continuation of Ser. No. 670,692, Mar. 18, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,964
Int. Cl.[6] H01L *21/00, 21/02, 21/203*
U.S. Cl. 437—107 **27 Claims**

1. The method of preparing insulating monocrystalline GaN films comprising:
providing in a molecular beam epitaxial growth chamber, a single crystal substrate with an appropriate lattice match to a zincblende or wurtzite structure of GaN;
providing a molecular beam Ga source;
providing an activated nitrogen source; and
exposing said substrate to said Ga and nitrogen sources to deposit a GaN film using a two-step growth process comprising:
a low temperature nucleation step during which the substrate is maintained at a temperature between about 100° C. and 400° C. and during which a substantially constant Ga flux pressure and a substantially constant nitrogen pressure is maintained, and
a high temperature growth step during which the substrate is maintained at a temperature between about 600° C. and 900° C. and during which said substantially



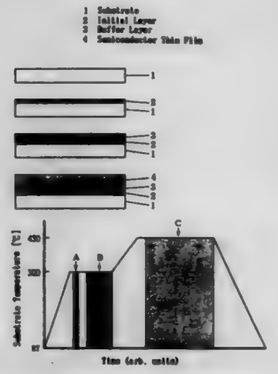
constant Ga flux pressure and said substantially constant nitrogen pressure are maintained.

5,385,863
METHOD OF MANUFACTURING POLYSILICON FILM INCLUDING RECRYSTALLIZATION OF AN AMORPHOUS FILM
Toru Tatsumi, and Akira Sakai, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jun. 19, 1992, Ser. No. 901,071
Claims priority, application Japan, Jun. 21, 1991, 3-149128; Jul. 10, 1991, 3-168541; Jul. 18, 1991, 3-178232
Int. Cl.[6] H01L *21/285, 21/324*
U.S. Cl. 437—109 **7 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:
forming a capacitance electrode made of a polysilicon film, said polysilicon film being formed by recrystallizing an amorphous silicon film, said recrystallizing being performed by depositing said amorphous silicon film on an insulating film covering a semiconductor substrate, generating a plurality of crystal nuclei at a plurality of portions of a substantially cleaned surface of said amorphous silicon film, respectively, and growing each of said plurality of crystal nuclei into a mushroom or hemisphere shaped crystal grain to thereby convert said amorphous silicon film into said polysilicon film, said polysilicon film thereby having a concavo-convex surface caused by said mushroom or hemisphere shaped crystal grains being separated apart from one another;
forming a dielectric film on said concavo-convex surface of said polysilicon film, said dielectric film thereby having a concavo-convex surface; and
forming another capacitance electrode by forming a conductive film on said concavo-convex surface of said dielectric film.

5,385,864
METHOD OF FABRICATING SEMICONDUCTOR THIN FILM AND A HALL-EFFECT DEVICE
Tetuo Kawasaki, Katano; Tetuhiro Koretika, Hirakata; Kitabatake, Nara, and Takasi Hirao, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 23, 1994, Ser. No. 247,655
Claims priority, application Japan, May 28, 1993, 5-126926; Jun. 18, 1993, 5-147422; Jan. 18, 1994, 6-003462
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—132 **14 Claims**



1. A method of fabricating a semiconductor thin film, comprising the steps of:
preparing a substrate having a surface consisting of a single crystal of Si;
removing an oxide film from the surface of the substrate and terminating dangling bonds of Si atoms on the surface with hydrogen atoms;
forming an initial layer of at least one selected from the group consisting of Al, Ga, and In on the substrate terminated with the hydrogen atoms;
forming a buffer layer containing at least In and Sb on the initial layer; and
forming a semiconductor thin film containing at least In and Sb on said buffer layer at a temperature higher than a temperature at which said buffer layer is started to be formed.

5,385,865

METHOD OF GENERATING ACTIVE SEMICONDUCTOR STRUCTURES BY MEANS OF STARTING STRUCTURES WHITH HAVE A 2D CHARGE CARRIER LAYER PARALLEL TO THE SURFACE

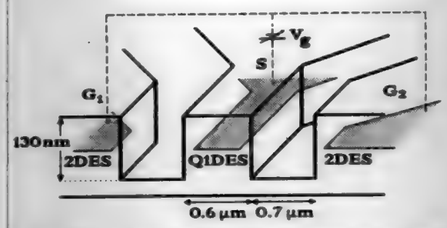
Johannes Nieder; Peter Grambow, both of Stuttgart; Herbert Lage, Bad Liebenzell; Klaus Ploog, Stuttgart; Andreas Wieck, Sindelfingen; Detlef Heitmann, Borstel-Hohenraden, and Klaus Von Klitzing, Stuttgart, all of Germany, assignors to Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften, Gottingen, Germany

Continuation-in-part of Ser. No. 513,995, Apr. 26, 1990. This application Jul. 3, 1991, Ser. No. 724,426

Claims priority, application European Pat. Off., Jul. 6, 1990, 90112970

Int. Cl.[6] H01L *21/306*

U.S. Cl. 437—133 **17 Claims**



1. A method of generating an active semiconductor structure from a starting structure having a surface and a two-dimensional charge carrier layer substantially parallel to said surface, the method comprising the steps of:

a) treating the starting structure by lithographic and etching techniques to form trenches extending into said starting structure from said surface, thus producing lateral potential barriers in said two-dimensional charge carrier layer, said lateral potential barriers acting as linelike insulating boundaries extending through said two-dimensional charge carrier layer, said starting structure being divided up regionally by said insulating boundaries and comprising at least one closed region having a first boundary line and a second boundary line lying opposite to said first boundary line, said second boundary line being spaced from said first boundary line to form a channel region between said first and second boundary lines, said channel region having first and second ends communicating with respective regions of said two-dimensional charge carrier layer, said at least one closed region comprising a gate region, and

b) forming contacts to said gate region and at said respective regions of said two-dimensional charge carrier layer at said first and second ends of said channel region.

5,385,866

POLISH PLANARIZING USING OXIDIZED BORON NITRIDE AS A POLISH STOP

Thomas A. Bartush, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1994, Ser. No. 263,969

Int. Cl.[6] H01L *21/28, 21/304*

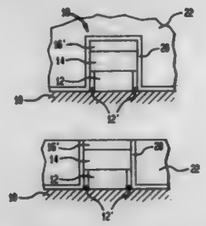
U.S. Cl. 437—186 **11 Claims**

1. A method of polishing a non-planar surface layer on a semiconductor substrate, comprising the steps of:

(a) providing a semiconductor substrate;

(b) providing an oxidized boron nitride polish stop layer on said semiconductor substrate wherein the oxidized boron nitride polish stop layer is substantially free of boron;

(c) forming a non-planar surface layer on said oxidized boron nitride polish stop layer, said oxidized boron nitride polish stop layer being polish selective relative to said non-planar surface layer; and



(d) polishing said non-planar surface layer until said oxidized boron nitride polish stop layer is reached.

5,385,867

METHOD FOR FORMING A MULTI-LAYER METALLIC WIRING STRUCTURE

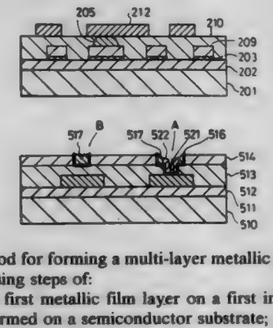
Tetsuya Ueda; Kousaku Yano; Tomoyasu Murakami; Michinari Yamanaka; Shuji Hirao, all of Osaka, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 24, 1994, Ser. No. 216,968

Claims priority, application Japan, Mar. 26, 1993, 5-068541

Int. Cl.[6] H01L *21/283, 21/31*

U.S. Cl. 437—195 **7 Claims**



3. A method for forming a multi-layer metallic wiring structure comprising steps of:

forming a first metallic film layer on a first insulating film layer formed on a semiconductor substrate;

forming a second metallic film layer on said first metallic film layer, said second metallic film layer being made of material different from that of said first metallic film layer;

forming a third metallic film layer on said second metallic film layer, said third metallic film layer being made of material different from that of said second metallic film layer;

Forming a resist pattern with wide-width and narrow-width pattern portions on said third metallic film layer, said wide-width pattern portion being provided at a position corresponding to a contact for connecting a first-layer metallic wiring and a second-layer metallic wiring and said narrow-width pattern portion being provided at a position corresponding to a wiring portion for said first-layer metallic wiring;

patterning said third metallic film layer by applying first etching on said third metallic film layer with a mask of said resist pattern, and patterning said second metallic film layer by applying second etching on said second metallic film layer with a mask of said patterned third metallic layer, thereby leaving only said wide-width pattern portion of said resist pattern through said first and second etchings;

applying etching on said third metallic film layer with a mask of said wide-width pattern portion of said resist pattern, so as to form a contact beneath said wide-width pattern portion by only leaving said third metallic film layer in the region of said wide-width pattern portion of said resist pattern;

accumulating a second insulating film layer, qualifying as an inter-layer insulating film layer, on said contact and said second metallic film layer;

etching said second insulating film layer to bare said contact; and

forming said second-layer metallic wiring on said second insulating film layer, so that said second-layer metallic wiring is connected with said contact.

5,385,868

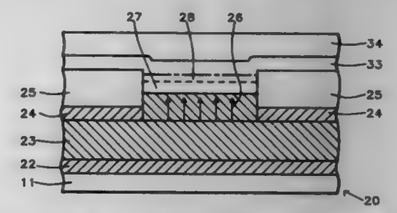
UPWARD PLUG PROCESS FOR METAL VIA HOLES

Ying-Chen Chao; Ting-Hwang Lin, and Jin-Yuan Lee, all of Hsin-Chu, , assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsinchu,

Filed Jul. 5, 1994, Ser. No. 270,668

Int. Cl.[6] H01L *21/44, 21/48*

U.S. Cl. 437—195 **18 Claims**



1. A method of manufacture of a semiconductor device on a silicon semiconductor substrate comprising

formation of a first stress layer on said semiconductor substrate,

formation of an interconnect layer over said first stress layer,

formation of a second stress layer on said interconnect layer,

formation of an inter-metal dielectric (IMD) layer over said second stress layer,

patterning and etching a via opening through said inter-metal dielectric layer and said second stress layer exposing a contact area on the surface of said metal interconnect layer, and

heating said device at a temperature sufficient to squeeze said metal interconnect layer up into said via.

5,385,869

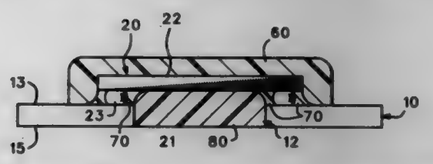
SEMICONDUCTOR CHIP BONDED TO A SUBSTRATE AND METHOD OF MAKING

Jay J. Liu, Chandler; Howard M. Berg, Scottsdale, and George W. Hawkins, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 22, 1993, Ser. No. 94,735

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **17 Claims**



1. A method of bonding a semiconductor chip to a substrate, comprising the steps of:

providing a semiconductor chip having a first major surface and a second major surface, and having electrical interconnection means formed on the first major surface of the semiconductor chip;

providing a substrate having a first major surface and a second major surface and a through hole formed therein having outer edges;

electrically coupling the semiconductor chip to the substrate through the electrical interconnection means and the first major surface of the substrate such that greater than 50% of the first major surface of the semiconductor chip is exposed by the through hole;

line of sight cleaning a portion of the first major surface of the semiconductor chip through the through hole; and

encapsulating the semiconductor chip with an encapsulation material after the step of line of sight cleaning, wherein the encapsulation material is disposed on the first major surface of the semiconductor chip and disposed in the through hole.

5,385,870

DETACHABLE ELECTRICAL PLUG CONNECTION

Hans-Heinrich Maue, Bietigheim-Bissingen; Werner Hofmeister, Mühlacker; Willi Gansert, Kornwestheim, and Thomas Heide, Essen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

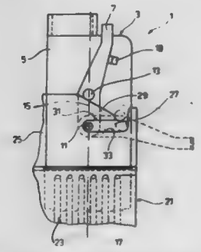
PCT No. PCT/DE92/00682, § 371 Date May 3, 1993, § 102(e) Date May 3, 1993, PCT Pub. No. WO93/05549, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 14, 1992, Ser. No. 50,104

Claims priority, application Germany, Sep. 3, 1991, 4129236

Int. Cl.[6] H01R *13/629*

U.S. Cl. 439—157 **14 Claims**



1. A detachable electrical plug connection, particularly for connecting a cable harness to an engine control device in a motor vehicle, the connection comprising at least two connection parts including at least one spring connector provided with contact carrier strips and at least one blade connector provided with contacts; locking means drawing said contacts of said blade connector into said contact carrier strips of said spring connector, said locking means including a locking lever provided at one of said connection parts, said locking lever being swivelable around a point of rotation and provided with a projection, said locking means also including a connecting link provided on another of said connection parts so that said projection cooperates with said connecting link, said connecting link having a stop bevel by which said locking lever is swivelable into its initial position for locking when said spring connector and said blade connector are joined.

5,385,871

FLUORINE-CONTAINING LEAD- AND CADMIUM-FREE GLAZES

Jaroslava M. Nigrin, and Paul L. Rose, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 7, 1994, Ser. No. 206,323

Int. Cl.[6] C03C *6/06*

U.S. Cl. 501—25 **3 Claims**

1. A glass frit composition essentially free from lead and

cadmium exhibiting a linear coefficient of thermal expansion (25° C.–300° C.) between about 75–85$\times 10^{-7}$/°C., good flow at temperatures between about 950°–1000° C., a softening point between about 650°–725° C., and excellent resistance to attack by alkaline detergent and hydrochloric acid, said frit consisting essentially, expressed in terms of weight percent on the oxide basis (except for the fluorine content), of

SiO_2	49–55	MgO	0–2
B_2O_3	13–20	CaO	1–7
Al_2O_3	4.5–7	SrO	0–8
Na_2O	5–8.5	BaO	0–11
K_2O	5–8.5	ZnO	0–2
$Na_2O + K_2O$	11–16	F	0.25–3.

5,385,872

ULTRAVIOLET ABSORBING GREEN TINTED GLASS

Joseph A. Gulotta, New Kensington, and Larry J. Shelestak, Bairdford, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 559,915, Jul. 30, 1990, Pat. No. 5,240,886. This application Mar. 26, 1992, Ser. No. 857,903
Int. Cl.[6] C03C *3/087*
U.S. Cl. 501—71 12 Claims

1. A green tinted, ultraviolet absorbing glass having a base glass composition comprising, on a weight basis, 66–75% SiO_2, 10–20% Na_2O, 5–15% CaO, 0–5% MgO, 0–5% Al_2O_3, 0–5% K_2O and a colorant portion consisting essentially of, on a weight percent basis,

iron (expressed as Fe_2O_3) in an amount greater than 0.7% with the ratio of FeO/total iron less than 0.35, and

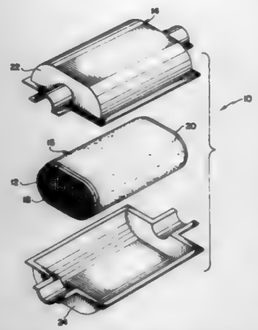
oxide selected from a group consisting of V_2O_5, MoO_3, CeO_2, TiO_2 and mixtures thereof, wherein said oxide includes at least V_2O_5 or MoO_3, and said oxide being in sufficient amount but less than 2% to produce glass exhibiting ultraviolet transmittance no greater than 31 percent (300 to 390 nanometers) and luminous transmittance (illuminant A) of at least 70 percent, both at a reference thickness of 3.9 millimeters.

5,385,873

HIGH TEMPERATURE RESISTANT MATERIAL

Gerald F. MacNeill, Bristol, R.I., assignor to ACS Industries, Inc., Woonsocket, R.I.

Continuation of Ser. No. 673,353, Mar. 22, 1991, Pat. No. 5,207,989. This application Apr. 7, 1993, Ser. No. 44,288
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[6] C04B *35/02*
U.S. Cl. 501—95 6 Claims



1. A solid, compressible, high temperature resistant material comprising between approximately 28 and 80 dry weight percent of ceramic fibers capable of withstanding continuous exposure to temperatures in excess of 2,000° F. and between approximately 20 and 50 dry weight percent of high aspect ratio vermiculite, said vermiculite having an aspect ratio of at least approximately 10 and a mean particle size of less than approximately 50 microns, said high aspect ratio vermiculite binding said ceramic fibers together to maintain said material in a substantially solid, compressible form.

5,385,874

CERAMIC COMPOSITIONS

Gary M. Renlund, and Mustafa A. Syammach, both of Salt Lake City, Utah, assignors to Triox Technologies, Inc., Murray, Utah

Continuation-in-part of Ser. No. 843,463, Feb. 28, 1992, Pat. No. 5,302,258. This application Aug. 26, 1993, Ser. No. 112,595
Int. Cl.[6] C04B *35/48, 35/50*
U.S. Cl. 501—103 23 Claims

1. A solid electrolyte permeable by oxygen ions comprising:
a ceramic oxide;
a first dopant incorporated within said ceramic oxide;
a second dopant incorporated within said ceramic oxide;
wherein the ratio of the mole percentages of said first dopant to said second dopant is in the range of from about 5.75:10 to about 11:10 and wherein the ionic radius of said ceramic oxide is within a factor of approximately 0.75 of the ionic radius of said dopants.

5,385,875

METHOD FOR STABILIZING RHODIUM COMPOUND

Hiroto Tanigawa, Hyogo, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 24, 1994, Ser. No. 184,981
Claims priority, application Japan, Mar. 31, 1993, 5-073375
Int. Cl.[6] B01J *31/40, 38/68;* C07C *51/573, 51/12*
U.S. Cl. 502—24 13 Claims

1. In a method of stabilizing a rhodium compound contained in a catalyst solution which is contaminated with tar formed as a by-product from a carbonylation reaction to produce acetic anhydride in which methyl acetate or dimethyl ether chemically reacts with carbon monoxide in the presence of a catalyst system comprising a rhodium compound and an alkali metal iodide, the improvement comprising contacting said catalyst solution with carbon monoxide, hydrogen and methyl iodide in an amount sufficient to obtain a methyl iodide concentration of 5 to 50 wt. % in said catalyst solution prior to separating the tar from the catalyst solution.

5,385,876

ACTIVATED CARBONS MOLECULARLY ENGINEERED

James A. Schwarz, Fayetteville; Karol Patyera, Syracuse; Jacek Jagiello, Syracuse, and Teresa J. Bandosz, Syracuse, all of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Jan. 27, 1993, Ser. No. 9,778
Int. Cl.[6] B01J *20/12, 20/10, 20/20;* F17C *11/00*
U.S. Cl. 502—80 9 Claims

1. A microporous carbon adsorbent material comprising an inorganic matrix and active carbon supported within said matrix, wherein said matrix is a pillared natural or synthetic clay material in the form of layers spaced from one another by pillars of an inorganic pillaring material that is selected to define slit-like microporous interstices therebetween molecularly engineered with a pore size that corresponds to a given target adsorbate, and said active carbon is intercalated between said layers of said matrix.

5,385,877

PRODUCTION OF ALPHA-OLEFIN POLYMERS

Takashi Fujita; Toshihiko Sugano, and Hideshi Uchino, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 832,322
Claims priority, application Japan, Feb. 7, 1991, 3-016583
Int. Cl.[6] C08F *4/602, 10/00*
U.S. Cl. 502—103 12 Claims

1. A catalyst for α-olefin polymerization which comprises the following components (A) and (B):

component (A), which is a transition metal compound represented by the formula

$$Q(C_5H_{4-m}R^1{}_m)(C_5H_{4-n}R^2{}_n)MeXY$$

wherein $(C_5H_{4-m}R^1{}_m)$ and $(C_5H_{4-n}R^2{}_n)$ respectively represent a conjugated five-membered ring ligand coordinating to a metal Me; R^1 and R^2, which may be the same or different and a plurality of each of which can be bonded together, respectively represent a hydrocarbyl group having 1 to 20 carbon atoms, a halogen atom, an alkoxy group, a silicon-containing hydrocarbyl group, a phosphorus-containing hydrocarbyl group, a nitrogen-containing hydrocarbyl group or a boron-containing hydrocarbyl group; Q represents a bonding group which crosslinks the two conjugated five-membered ring ligands; Me represents a transition metal of the IVB-VIB group in the Periodic Table; X and Y, which may be the same or different, respectively represent hydrogen, a halogen atoms, a hydrocarbyl group, an alkoxy group, an amino group, a phosphorus-containing hydrocarbyl group or a silicon-containing hydrocarbyl group; m denotes an integer of $0 \leqq m \leqq 4$ and n denotes an integer of $0 \leqq n \leqq 4$;

component (B), which is a methylisobutylalumoxane which satisfies the following conditions (a), (b) and (c):

(a) the molar ratio of a methyl group to an isobutyl group is in the range of 4:1 to 1:4,

(b) the chemical shift of ^{27}Al-NMR is in the range of 160 ppm to 250 ppm and the peak has a half-height width of no smaller than 3000 Hz, and

(c) it has a repeating unit of Al—O in an amount of 2 to 100.

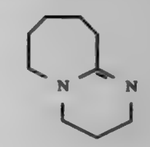
5,385,878

METHOD FOR PRODUCING MODIFIED POLYISOCYANURATE FOAMS

Satoshi Nakamura, and Hirokatsu Shirahata, both of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

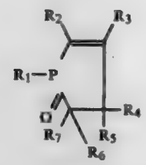
Division of Ser. No. 138,970, Oct. 21, 1993, Pat. No. 5,317,034. This application Mar. 14, 1994, Ser. No. 209,621
Claims priority, application Japan, Oct. 23, 1992, 4-307976
Int. Cl.[6] B01J *31/00;* C08G *18/00*
U.S. Cl. 502—167 1 Claim

1. A catalyst for use in polymerization of isocyanate, comprising a salt of 1,8-diaza-bicyclo[5.4.0] undecene-7 represented by formula (I)

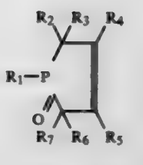


(I)

and a phosphorene oxide represented by formula (II) or (III)



(II)



(III)

wherein R_1 represents a substituted or unsubstituted alkyl, phenyl, naphthyl or benzyl group; R_2, R_3, R_4, R_5, R_6 and R_7 each represent independently H, Cl or a C_1–C_4 alkyl group.

5,385,879

CARBONLESS PAPER SOLVENT COMPRISING DIISOPROPYLMETHYLNAPHTHALENE AND PRODUCTS UTILIZING SAME

Harold W. Earhart, Corpus Christi, Tex.; Andrew P. Komin, and Dustin K. James, both of Wichita, Kans., assignors to Koch Industries, Inc., Wichita, Kans.

Filed Oct. 26, 1992, Ser. No. 966,295
Int. Cl.[6] B41M *5/12*
U.S. Cl. 503—213 2 Claims

1. A recording sheet comprising a support for carrying written or printed indicia having coated thereon a continuous layer of microcapsules containing a chromegnic substance and a solvent for said substance, said solvent comprising 75% to 95% by weight diisopropylmethylnaphthalene and 5% to 25% by weight triisopropylmethylnaphthalene.

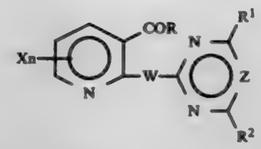
5,385,880

PYRIDINE DERIVATIVE HERBICIDAL COMPOSITION CONTAINING THE SAME, AND METHOD FOR KILLING WEEDS

Masahiro Miyazaki; Masafumi Matsuzawa; Keiji Toriyabe, all of Shizuoka, and Michiya Hirata, Kashiwa, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP92/00362, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO92/17468, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 26, 1992, Ser. No. 927,281
Claims priority, application Japan, Mar. 26, 1991, 3-084556
Int. Cl.[6] C07D *239/34, 239/60, 401/12;* A01N *43/54*
U.S. Cl. 504—243 9 Claims

1. A compound having the following formula or a herbicidally acceptable salt thereof:



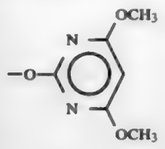
wherein R is selected from the group consisting of a hydrogen atom, a hydroxyl group, a C_1–C_7 alkoxy group, a C_1–C_7 alkoxy C_1–C_7 alkoxy group, a pivaloyloxymethoxy group, a benzyloxy group, a benzyloxy group substituted with a chlorine atom or a methoxy group, a trimethylsilylethoxy group, a methylsulfonylamino group, a methylthio group, a phenoxy group and a phenylthio group;

R^1 and R^2 which are the same or different, are selected from the group consisting of a hydrogen atom, a C_1–C_7 alkoxy group, a halogen atom, a C_1–C_3 alkylamino group, a di C_1–C_3 alkylamino group, a halo C_1–C_7 alkoxy group and a C_1–C_7 alkyl group;

W is an oxygen atom a NH group or a group of the formula, >NC(O)B, wherein B is a hydrogen atom or a C_1–C_7 alkoxy group;

Z is a methine group;

X is selected from the group consisting of a phenyl group, a phenyl group substituted with a substituent selected from the group consisting of a C_1–C_7 alkyl group, a halogen atom, a nitro group, a halo C_1–C_3 alkyl group, a halo C_1–C_7 alkoxy group, a C_1–C_7 alkoxy group, a piperidino group, a di C_1–C_3 alkylamino group, a phenoxy group, a methylphenoxy group, an ethoxymethoxy group, a methoxyethoxy group, a methoxymethoxy group, a cyano group, an ethynyl group, a C_1–C_3 alkylamino group, an ethoxycarbonyl C_1–C_2 alkoxy group, a methoxymethyl group, a methylthiomethoxy group, a methylthioethoxy group, an ethylthiomethoxy group, a benzyloxy group, and a hydroxyl group and a group having the formula;



and n is an integer of 1 to 3, and X may be a combination of different groups when n is at least 2.

5,385,881

HERBICIDAL AGENTS

Hans Schumacher, Flörsheim am Main; Hans P. Huff, Eppstein/Taunus, and Erwin Hacker, Hochheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

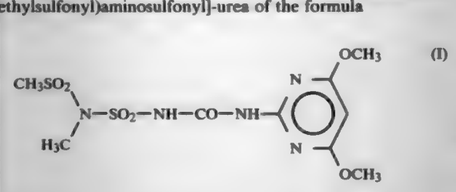
Filed Jun. 1, 1990, Ser. No. 531,926

Claims priority, application Germany, Jun. 5, 1989, 3918288

Int. Cl.[6] A01N *43/54*

U.S. Cl. 504—136 **12 Claims**

1. A herbicidal composition which contains a synergistic mixture of 3-(4,6-dimethoxy-2-pyrimidinyl)-1-[N-methyl-N-methylsulfonyl)aminosulfonyl]-urea of the formula



(I)

in combination with ioxynil (II) or bromoxynil (III) in a weight ratio of 1:2 to 1:60 of the compounds I:II or I:III.

5,385,882

PROCESS FOR PREPARING A THALLIUM-CONTAINING SUPERCONDUCTOR

Shyam S. Bayya; Robert L. Synder; Sudhakar Gopalakrishman, all of Alfred, and Walter A. Schulze, Alfred Station, all of N.Y., assignors to Alfred Univeristy, Alfred, N.Y.

Continuation-in-part of Ser. No. 684,309, Apr. 12, 1991, Pat. No. 5,270,293. This application Dec. 9, 1992, Ser. No. 966,019

Int. Cl.[6] H01B *12/00*; H01L *39/12*

U.S. Cl. 505—501 **9 Claims**

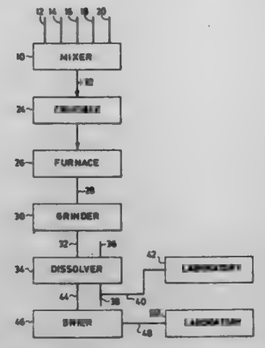
1. A process for preparing a thallium-containing superconductive composition, comprising the steps of:

(a) providing a mixture of an inorganic salt and a precursor powder composition, wherein said precursor powder composition has a stoichiometry corresponding to a formula selected from the group consisting of $A_2B_2CuO_6$, and $A_2B_2CaCuO_8$, and wherein:

1. A is thallium,
2. B is barium,
3. substantially all of the particles of said precursor powder composition are smaller than about 100 microns, and
4. said mixture is comprised of from about 30 to about 80 weight percent of said inorganic salt;

(b) charging said mixture of said inorganic salt and said precursor powder composition to a closed container;

(c) thereafter, while said mixture is within said closed container, raising the temperature of said mixture from ambient temperature to an elevated temperature of from about 800 to about 950 degrees Celsius at a rate of from about 100 to about 900 degrees Celsius per hour;



(d) thereafter, while said mixture is within said closed container, subjecting said mixture to said elevated temperature of from about 800 to about 950 degrees Celsius for from about 1 to about 12 hours;

(e) thereafter, cooling said mixture within said closed container from said elevated temperature to a temperature of 600 degrees Celsius at a rate of at least 300 degrees Celsius per hour, whereby said thallium-containing superconductive composition is produced.

5,385,883

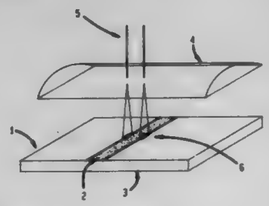
HIGH T_c SUPERCONDUCTING MICROSTRIP PHASE SHIFTER HAVING TAPERED OPTICAL BEAM PATTERN REGIONS

Erik H. Lenzing, Middletown, and Charles D. Hechtman, Hopewell, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 17, 1993, Ser. No. 64,383

Int. Cl.[6] H01P *1/18*; H01B *12/00*; H01L *39/00*

U.S. Cl. 505—182 **6 Claims**



1. A phase shifter comprising:

a dielectric substrate with a predetermined composition and thickness;

a superconducting microstrip line disposed on the dielectric substrate, the superconducting microstrip line having at least two opposites sides, an input end and an output end, and being of a predetermined composition, width, and thickness; and

an optical beam patterning means positioned over the superconducting microstrip line such that the optical beam patterning means can illuminate predetermined tapered portions of the superconducting microstrip line with an optical beam between the input end and the output end of the superconducting microstrip line;

wherein the superconducting microstrip line is biased and cooled to a superconducting critical current and wherein a local resistivity is established in the superconducting microstrip line at the predetermined tapered portions when illuminated by the optical beam patterning means.

5,385,884

LIPOPEPTIDE DERIVATIVES

Milton L. Hammond, Somerville; Robert E. Schwartz, Westfield, and James M. Balkovec, N. Plainfield, all of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

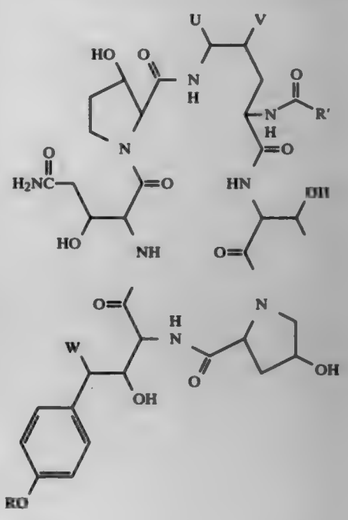
Filed Aug. 27, 1991, Ser. No. 750,380

The portion of the term of this patent subsequent to Nov. 29, 2011, has been disclaimed.

Int. Cl.[6] C07K *5/12, 7/06*; A61K *37/02*

U.S. Cl. 514—11 **16 Claims**

1. A compound having the formula (SEQ ID NOS: 1–4)



wherein

R is acyl, phosphono or sulfo radical which possesses a charged group at neutral pH;

R′ is a C_5–C_{23} alkyl, C_5–C_{23} alkenyl or C_5–C_{23} alkynyl or aryl

U, V and W are independently H or OH, and selected from those in which (1) U, V and W are all OH; (2) U and W are H and V is OH; (3) U and V are H and W is OH and (4) U is H and V and W are OH.

5,385,885

INHIBITION OF SMOOTH MUSCLE CELL PROLIFERATION BY ANTISTASIN AND TICK ANTICOAGULANT PEPTIDE

Gregory P. Gasic, 12224 Caminito Del Mar, San Diego, Calif. 92130; Gabriel J. Gasic, and Tatiana B. Gasic, both of 505 Hughes Rd., Gulph Mills, Pa. 19406

Continuation-in-part of Ser. No. 515,859, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 144,453, Jan. 15, 1988, abandoned. This application Jul. 16, 1991, Ser. No. 730,487

Int. Cl.[6] C07K *7/10, 15/08*; A61K *37/02*

U.S. Cl. 514—12 **20 Claims**

1. A method of inhibiting proliferation of smooth muscle cells in the wall of a blood vessel comprising the step of:

administering to an individual who has undergone balloon angioplasty, percutaneous translumninal coronary angioplasty or cardiac transplantation, a compound capable of inhibiting blood factor Xa in an amount effective to inhibit proliferation of said smooth muscle cells, said compound selected from the group consisting of antistasin and tick anticoagulant peptide.

5,385,886

Patent Not Issued For This Number

5,385,887

FORMULATIONS FOR DELIVERY OF OSTEOGENIC PROTEINS

Kalvin W. K. Yim, N. andover; Michael C. Huberty, Andover; Richard P. Northey, Jr., Ipswich, and Jay A. Schrier, Andover, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Filed Sep. 10, 1993, Ser. No. 119,772

Int. Cl.[6] A61K *37/02*; C07K *13/00*

U.S. Cl. 514—12 **7 Claims**

1. A composition comprising an osteogenic protein, about 0.1 to about 5.0% (w/v) of a sugar, about 1.0 to about 10.0% (w/v) glycine, and about 1 to about 20 mM of glutamic acid hydrochloride, wherein such composition has a pH of about 4.5.

5,385,888

CLASS I MHC MODULATION OR SURFACE RECEPTOR ACTIVITY

Robert S. Goodenow, and Lennart Olsson, both of Orinda, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 649,471, Feb. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 323,565, Mar. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 28,241, Mar. 20, 1987, abandoned. This application May 3, 1993, Ser. No. 57,184

Int. Cl.[6] A61K *37/02*; C07K *7/06*

U.S. Cl. 514—12 **2 Claims**

1. A method for modulating the response of the insulin receptor to a ligand comprising contacting, for a time and under conditions sufficient for binding, a mammalian cell comprising an insulin receptor on its cell surface with an effective amount of an oligopeptide consisting of at least eight amino acid residues of the MHC class I derived sequence NH_2-W E R E/I T Q I A K G N/Q E Q S/W F R V D/N L R T L L R Y Y—COOH, wherein said oligopeptide comprises at least the amino acid residues L R T L L R Y.

5,385,889

BRADYKININ ANTAGONIST PEPTIDES

Donald J. Kyle, Abingdon, and Roger N. Hiner, Baltimore, both of Md., assignors to Scios Nova Inc., Mountain View, Calif.

Continuation of Ser. No. 866,246, Apr. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,959, Apr. 19, 1991, abandoned. This application Dec. 16, 1993, Ser. No. 167,052

Int. Cl.[6] A61K *37/42;* **C07K** *7/18*

U.S. Cl. 514—15 **21 Claims**

1. A peptide having the formula:

N-A-B-C-D-E-F-G-H-I-J-Cn

wherein N is hydrogen;

A is selected from the group consisting of L-Arg, D-Arg, Lys-Lys, and Lys;

B is selected from the group consisting of L-Arg, D-Arg, and Lys;

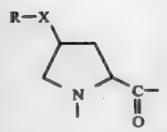
C and D are independently selected from the group consisting of Pro, dehydroPro, and 4Hyp;

E is Gly;

F is selected from the group consisting of Phe and Thi;

G is a direct bond or is selected from the group consisting of Ser and Thr;

H is a compound of the trans D-configuration having the formula:



wherein R is selected from the group consisting of methyl, ethyl, propyl, isobutyl, cyclohexylmethyl, allyl, methallyl, benzyl, prenyl, phenyl, nitrophenyl, naphthyl, chlorophenyl, methylphenyl, phenylpropyl, and methylbutyl, and where X is either sulfur or oxygen;

I is selected from the group consisting of Oic, Aoc, and Tic,

J is selected from the group consisting of Arg and Lys;

Cn is a hydroxyl group;

and pharmaceutically acceptable salts thereof.

5,385,890

ANTITHROMBIN III PREPARATION

Toshinobu Aoyama, Fukuoka, and Keizo Hirahara, Iruma, both of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 128,573

Claims priority, application Japan, Oct. 2, 1992, 4-264364

Int. Cl.[6] A61K *37/04*

U.S. Cl. 514—21 **6 Claims**

1. An antithrombin III preparation which comprises a lyophilized powder of antithrombin III and a polyoxyethylene glycol sorbitan alkyl ester.

5,385,891

POLYSULFATE OF β-CYCLODEXTRIN DERIVATIVE AND PROCESS FOR PREPARING THE SAME

Tamon Moriya, Takatsuki; Hironori Kurita, Warabi; Toru Otake, Kashiba; Haruyo Mori, Nara, and Motoko Morimoto, Hirakata, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

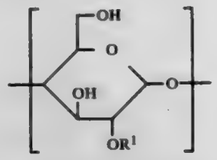
Filed Aug. 12, 1992, Ser. No. 928,319

Claims priority, application Japan, Aug. 29, 1991, 3-299983; Feb. 20, 1992, 4-085119

Int. Cl.[6] C08B *37/00*

U.S. Cl. 514—58 **7 Claims**

1. A polysulfate of a β-cyclodextrin in which at least one of 7 D-glucose units constituting the β-cyclodextrin is a unit represented by the formula (I-a):



(I-a)

wherein R^1 is an alkyl group having 1 to 8 carbon atoms, a lower alkyl group substitued by a phenyl group or a lower alkenyl group, or a salt thereof.

5,385,892

ETHYLAMINO PHENYL ETHERS HAVING ANTIFUNGAL ACTIVITY

Giovanni Camaggi, Novara; Lucio Filippini, Saronno; Marilena Gusmeroli, Monza; Carlo Garavaglia, Cuggiono, and Luigi Mirenna, Milan, all of Italy, assignors to Ministero Dell "Universita" E Dell Ricerca Scientifica E Tecnologica, Italy

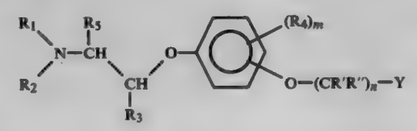
Continuation of Ser. No. 667,920, Mar. 11, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 1,919

Claims priority, application Italy, Mar. 13, 1990, 19653 A/90

Int. Cl.[6] C07D *295/088, 413/12;* **C07F** *7/10;* **A61K** *31/695*

U.S. Cl. 514—63 **19 Claims**

1. Antifungal compounds useful in agriculture having the formula:



(I)

wherein:

R_1 and R_2, taken together with each other and the N atom represent a morpholine or thiomorpholine group, which groups can be optionally substituted with at least one group selected from among (C_1–C_4)-alkyl, (C_6 or C_{10})-aryl, Ar—B groups, in which Ar is a phenyl group optionally halogenated and B is a (C_1–C_4) alkylene or (C_1–C_2)-alkyl-(C_1–C_4)-alkylene group and halogen atoms;

R_3 and R_5, which may be either the same, or different from, each other, represent H atoms, (C_1–C_3)-alkyl groups, or jointly form an either linear or branched (C_1–C_7)-alkylene group;

m is an integer of from 0 to 4;

R_4 represent a halogen atom, (C_1–C_3)-alkyl groups or (C_1–C_3)-halo-alkyl groups, and when m is greater than 1, R_4 as defined above, may be the same, or different from one another;

R′, R″, which may be the same, or different from, each other, represent H, (C_1–C_3)-alkyl groups, or halogen atoms;

n is an integer from 0 to 3;

Y represents a —CH=CH_2 group, a (C_3–C_6)-cycloalkyl group, pyridine or pyrimidine, and said groups can be optionally substituted with at least one group selected from halogen, (C_1–C_4)-alkyl groups, (C_1–C_2)-haloalkyl groups, (C_1–C_3)-alkoxy groups, and (C_1–C_3)-haloalkoxy groups; or represents a



group in which C, D, E, either the same, or different from, one another, represent H atoms, (C_1–C_4)-alkyl groups, (C_1–C_4)-haloalkyl groups, (C_1–C_4)-alkoxy groups, or (C_1–C_4)-haloalkoxy groups; their enantiomers and diastereoisomers.

5,385,893

TRICYCLOPOLYAZAMACROCYCLOPHOSPHONIC ACIDS, COMPLEXES AND DERIVATIVES THEREOF, FOR USE AS CONTRAST AGENTS

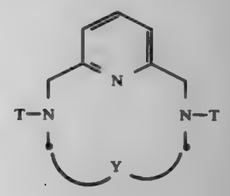
Garry E. Kiefer, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 6, 1993, Ser. No. 58,622

Int. Cl.[6] A61K *31/44, 31/675;* **C07D** *471/18, 471/22*

U.S. Cl. 514—80 **27 Claims**

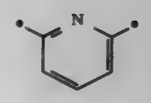
1. Tri- and tetra-cyclopolyazamacrocyclic compounds of the formula



(I)

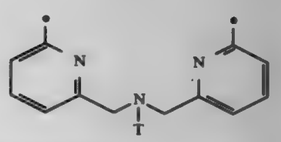
wherein:

Y is either



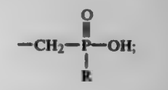
(A)

or

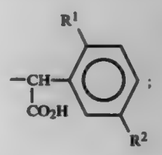


(B)

T is —CH_2—COOH or



where: R is OH, C_1-C_5 alkyl or —O—(C_1-C_5 alkyl); with the proviso that all T moieties are the same or one T moiety is



R^1 is OH or OCH_3;

R^2 is NO_2, NH_2, isothiocyanato, semicarbazido, thiosemicarbazido, maleimido, bromoacetamido or carboxyl; or

pharmaceutically-acceptable salts thereof.

5,385,894

DISUBSTITUTED 6-AMINOQUINAZOLINONES

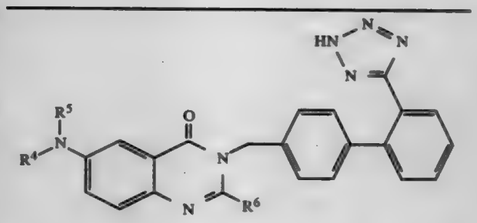
Stephen E. de Laszlo, Atlantic Highlands; Tomasz W. Glinka, Scotch Plains; William J. Greenlee, Teaneck; Prasun K. Chakravarty, Edison, and Arthur A. Patchett, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 912,458, Jul. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 665,389, Mar. 6, 1991, abandoned. This application Apr. 4, 1994, Ser. No. 222,354

Int. Cl.[6] A61K *31/505;* **C07D** *403/10, 239/91*

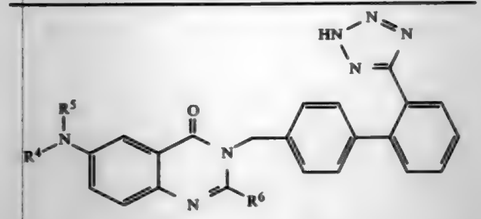
U.S. Cl. 514—80 **5 Claims**

1. A compound or a pharmaceutically acceptable salt thereof selected from the group consisting of the compounds in the following table:

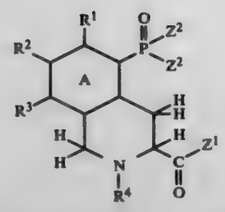


R^6	R^5	R^4
n-butyl	COO-i-butyl	benzyl
n-propyl	COO-i-butyl	n-butyl
n-propyl	COO-i-butyl	n-propyl
n-propyl	COO-i-butyl	allyl
n-propyl	COO-i-butyl	n-pentyl
n-propyl	COO-i-butyl	n-pentyl
n-propyl	COO-i-butyl	$(CH_2)_3$-phenyl
n-propyl	$COOCH_3$	benzyl
n-propyl	COO-i-butyl	benzyl
n-propyl	COO-n-propyl	benzyl
n-propyl	COO-n-butyl	benzyl
n-propyl	COO-benzyl	benzoyl
n-propyl	COO-n-hexyl	benzyl
n-propyl	COO—$(CH_2)_7OCH_3$	benzyl
n-propyl	COOn-propyl	CH_2-cHex
n-propyl	COOn-butyl	n-butyl
n-propyl	SO_2n-butyl	benzyl
n-propyl	CON(methyl)n-propyl	benzyl
n-propyl	CON(methyl)ethyl	benzyl
n-propyl	CO-phenyl	n-pentyl
n-propyl	CO-benzyl	n-pentyl
n-propyl	CO-4-pyridyl	n-pentyl
n-propyl	CO-phenyl-4-Cl	n-pentyl
n-propyl	CO-phenyl-4-OCH_3	i-hexyl
n-propyl	CO-2-furoyl	n-pentyl
n-propyl	CO-morpholinyl	benzyl
n-propyl	CO-n-butyl	benzyl
n-propyl	CO-phenyl-4-F	n-pentyl
n-propyl	CO-phenyl-4-F	n-butyl
n-propyl	CO-phenyl-4-CH_3	n-pentyl
n-propyl	CO-phenyl-3-Br	n-pentyl
n-propyl	COO-i-butyl	methyl
n-propyl	CO-n-butyl	n-butyl
n-propyl	COO-ethyl	benzyl
n-propyl	CO-phenyl-4-CF_3	n-pentyl
ethyl(2-n-butyl)	CO-phenyl-4-F	n-pentyl
c-propyl	CO-phenyl	n-pentyl
ethyl(benzyl)	CO-phenyl	benzyl
c-propyl	CO-phenyl	benzyl
n-propyl	CO-4-pyridyl	n-butyl
ethyl	CO-phenyl	benzyl
n-propyl	CO-3-pyridyl	n-pentyl
ethyl	CO-phenyl	CO-phenyl
n-propyl	CO-phenyl-4-SCH_3	n-pentyl
n-propyl	CO-phenyl	n-propyl
n-propyl	CO-phenyl	(CH_2)CHO
n-propyl	$COCH_3$	n-pentyl
n-propyl	CO-phenyl-4-F	n-propyl
n-propyl	CO-phenyl	i-butyl
n-propyl	CO-phenyl	$(CH_2)_3CO_2CH_2CH_3$
n-propyl	CO-phenyl	n-pentyl

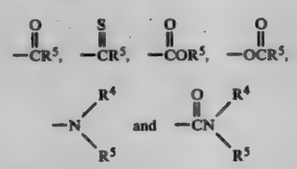
-continued



n-propyl	CO-phenyl	$CH_2CO_2CH_2CH_3$
methyl	CO-4-pyridyl	$CH_2CH{=}C(CH_3)_2$
n-propyl	CO-2-thienyl	n-pentyl
n-propyl	CO-2-thienyl	methyl
n-propyl	CO-4-pyridyl	$(CH_2)_2OCH_3$
n-propyl	CO-2-thienyl	ethyl
n-propyl	CO-phenyl-2-OCH_3	n-pentyl
n-propyl	CO-phenyl-4-Obenzyl	n-pentyl
n-propyl	CO-phenyl-4-Obenzyl	n-propyl
n-propyl	CO-phenyl-4-OH	n-pentyl
n-propyl	CO-phenyl-4-OH	n-propyl
n-propyl	CO-phenyl	CH_2-2-pyridyl
n-propyl	CO-phenyl	CH_2-2-pyridyl
n-propyl	CO-phenyl	CH_2-4-pyridyll
n-propyl	CO-phenyl-4-$OPO(Obenzyl)_2$	n-pentyl
n-propyl	CO-phenyl-4-OH	n-butyl
n-propyl	CO-4-pyridyl	CH_2-2-pyridyl
n-propyl	COphenyl-4-$OPO(OH)_2$	n-pentyl
n-propyl	COphenyl-4-OH	benzyl
n-propyl	CO-2-furoyl	CH_2-2-pyridyl
n-propyl	CO-phenyl-4-$OPO(ONa)_2$	n-butyl
ethyl	COO-t-butyl	benzyl
ethyl	COO-benzyl	benzyl
n-propyl	COO-n-propyl	CH_2-4-pyridyl
n-propyl	COO-n-propyl	CH_2-3-pyridyl
n-propyl	O-n-propyl	CH_2-2-pyridyl
CH_2OCH_3	COO-n-propyl	CH_2-2-pyridyl
n-propyl	COO-n-propyl	benzyl-4-NO_2
n-propyl	COO-n-propyl	benzyl-4-NH_2
n-propyl	COO-n-propyl	benzyl-4-$N(CH_3)_2$
H	COO-i-butyl	methyl
ethyl	SO_2-n-propyl	n-pentyl
ethyl	SO_2-n-butyl	n-pentyl
ethyl	CONH-n-propyl	benzyl
n-propyl	CON(methyl)-i-propyl	benzyl-4-F
n-propyl	CO-phenyl-2-Oethyl	benzyl
n-propyl	CO-phenyl-4-Omethyl	benzyl-4-OCH_3
n-propyl	CO-phenyl	CH_2-phenyl-4-OH
n-propyl	CO-phenyl-4-OH	CH_2-3-pyridyl
n-propyl	CO-phenyl	CH_2-phenyl-4-CO_2CH_3.

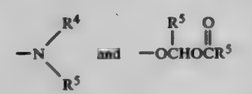


wherein each of R^1 through R^3 is independently selected from hydrido, alkyl, haloalkyl, halo, cyano, nitro and groups represented by —OR^5, SR^5,



wherein R^5 is selected from hydrido, alkyl, aryl and aralkyl; and wherein R^4 is hydrido or formyl;

and wherein each of z^1 and Z^2 is independently selected from —OR^5, SR^5,



wherein R^5 is defined as before; and wherein the A ring is saturated; or a pharmaceutically-acceptable salt thereof.

5,385,895

PHOSPHONO-HYDROISOQUINOLINE COMPOUNDS USEFUL IN REDUCING NEUROTOXIC INJURY

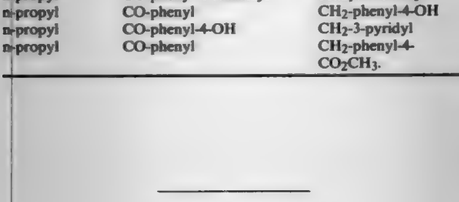
Alexis A. Cordi, 13393 Amiot Dr., St. Louis, Mo. 63146, and Michael L. Vazquez, 564 Running Creek, Ballwin, Mo. 63021

Continuation of Ser. No. 654,852, Feb. 13, 1991, abandoned, which is a division of Ser. No. 260,839, Oct. 21, 1988, Pat. No. 4,997,821. This application Oct. 5, 1992, Ser. No. 956,813

Int. Cl.[6] C07F *9/60, 9/62*; A61K *31/675*

U.S. Cl. 514—82 **16 Claims**

1. A compound of the formula



5,385,896

BIOCIDAL COMPOSITIONS AND TREATMENTS

Edward Bryan, Stourbridge; Malcolm A. Veale, Redditch; Robert E. Talbot, Cannock; Kenneth G. Cooper, Hagley, and Nigel S. Matthews, Horfield, all of England, assignors to Albright & Wilson Limited, Warley, England

Continuation of Ser. No. 985,362, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 863,465, Apr. 1, 1992, abandoned, which is a continuation of Ser. No. 711,356, Jun. 4, 1991, abandoned, which is a continuation of Ser. No. 486,787, Mar. 1, 1990, abandoned. This application May 9, 1994, Ser. No. 240,100

Claims priority, application United Kingdom, Mar. 3, 1989, 8904844

Int. Cl.[6] A01N *35/02, 57/00*

U.S. Cl. 514—129 **14 Claims**

1. A synergistic bactericide composition, said composition comprising effective synergistically active proportions of:

(i) tetrakis hydroxymethyl phosphonium sulphate and

(ii) formaldehyde,

wherein said tetrakis hydroxymethyl phosphonium sulphate and said formaldehyde are present in a relative weight proportion of from 20:1 to 1:20.

5,385,897

4-THIA-1-AZA-BICYCLO[4,2,0]OCT-2-ENE DERIVATIVES

Jean-Georges Teutsch, Pantin; Alain Bonnet, Livry-Gargan; Jozsef Aszodi, Choisy-le-Roi, and Solange Gouin d'Ambrieres, Paris, all of France, assignors to Roussel-UCLAF, France

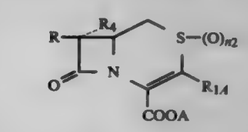
Continuation of Ser. No. 605,982, Oct. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 151,688, Feb. 2, 1988, Pat. No. 4,832,939, which is a continuation-in-part of Ser. No. 895,175, Aug. 11, 1986, abandoned. This application Mar. 20, 1992, Ser. No. 855,324

Claims priority, application France, Aug. 9, 1985, 85 12218; Feb. 6, 1987, 87 01456

Int. Cl.[6] C07D *417/12*; A61K *31/54*

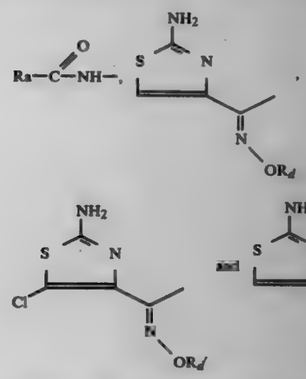
U.S. Cl. 514—210 **15 Claims**

1. A compound selected from the group consisting of a compound of the formula

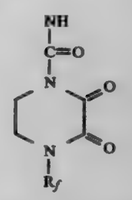


I

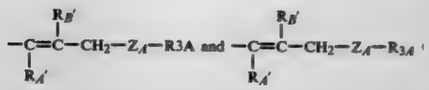
wherein R is selected from the group consisting of



R_d is selected from the group consisting of ArO—CH_2—, ArS—CH_2— and R_e—NH—, Ar and R_e are individually selected



from the group consisting of phenyl and phenyl substituted with at least one member of the group consisting of halogen, alkyl and alkoxy and alkylthio of 1 to 4 carbon atoms, alkylsulfinyl and alkylsulfonyl of 1 to 4 carbon atoms, —NH_2, nitro, —OH, aminoalkyl of 1 to 4 carbon atoms, —CN and —CF_3, R_f is alkyl of 1 to 4 carbon atoms, R_d is selected from the group consisting of a) hydrogen, b) alkyl of 1 to 6 carbon atoms, c) alkenyl and alkynyl of 2 to 6 carbon atoms, d) cycloalkyl of 3 to 8 carbon atoms unsubstituted or substituted with a member of the group consisting of halogen, acyl of 1 to 7 carbon atoms, —CN, carbamoyl, amino, —OH, —SH, alkylthio and alkoxy of 1 to 4 carbon atoms, oxo, carboxyl and salified or esterified carboxyl, R_{1A} is selected from the group consisting of



R_A and R_B are individually selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, Z_A is selected from the group consisting of a simple bond, —O—, —S— and oxidized sulfur, R_{3A} is quaternary ammonium optionally substituted with at least one member of the group consisting of a) alkyl of 1 to 4 carbon atoms unsubstituted or substituted with at least one member of the group consisting of carbocyclic aryl and carbocyclic aryloxy where the carbocyclic aryl is phenyl, diphenyl or naphthyl, alkyl, alkoxy, carbonyl, halogen, —OH, protected, —OH, carboxy, salified or esterified carboxy, —NH_2, acetamido monoalkylamino and dialkylamino, b) alkenyl and alkynyl of 2 to 4 carbon atoms, c) carbocyclic aryl, d) halogen, e) —NH_2, f) —NO_2, g) alkoxy and alkylthio of 1 to 4 carbon atoms, h) —OH or —SH, i) free salified or esterified carboxy, j) carbamoyl and k) cyclopentyl or cyclohexyl, R_4 is selected from the group consisting of hydrogen and methoxy, a is selected from the group consisting of hydrogen, alkali, metal, alkaline earth metal, magnesium, —NH_2, an organic amine selected form the group consisting of methylamine, propylamine, trimethylamine, diethylamine, triethylamine, N, N-dimethylthanolamine, tris(hydroxymethyl)amino methane, ethanolamine, pyridine, picoline, dicyclohexylamine, morpholine, benzylamine, procaine, lysine, arginine, histidine, and N-methylglucamine and esterified carboxy or —COOA is —COO^-, n_2 is an integer from 0 to 2 or a non-toxic, pharmaceutically acceptable acid addition salt.

5,385,898

PIPERIDINYL-TERMINATED ALKYLAMINO ETHYNYL ALANINE AMINO DIOL COMPOUNDS FOR TREATMENT OF HYPERTENSION

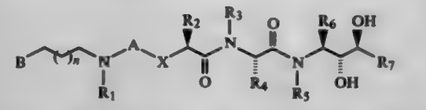
Gunnar J. Hanson, Skokie, Ill., assignor to G.D. Searle & Co., Chicago, Ill.

Division of Ser. No. 48,623, Apr. 16, 1993, Pat. No. 5,304,552, which is a division of Ser. No. 930,061, Aug. 14, 1992, Pat. No. 5,212,185. This application Mar. 14, 1994, Ser. No. 212,088

Int. Cl.[6] A61K *31/395*; C07D *205/04*

U.S. Cl. 514—210 **23 Claims**

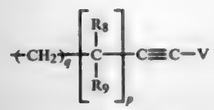
1. A compound of Formula I:



(I)

wherein A is selected from CO and SO_2; wherein X is selected from oxygen atom and methylene; wherein R_1 is selected from hydrido and alkyl; wherein B is a heterocyclic ring system of four ring members with one ring member being a nitrogen atom, wherein said ring system may be monocyclic or bicyclic and may be fully saturated or partially saturated and may be fused to a benzene or cyclohexane ring, wherein the point of attachment of B to the backbone of the structure of Formula I may be through a bond to any substitutable position on said heterocyclic ring system of B and wherein any substitutable position of B may be optionally substituted with one or more radicals selected from alkyl, alkoxy, alkenyl, alkynyl, halo, trifluoromethyl, oxo, cyano and phenyl, and wherein the said heterocyclic ring nitrogen atom may be combined with oxygen to form an N-oxide; wherein R_2 is selected from alkyl, cycloalkylalkyl, acylaminoalkyl, phenylalkyl and naphthylalkyl, and wherein the cyclic portion of any of said phenylalkyl,

cycloalkylalkyl and naphthylalkyl groups may be substituted by one or more radicals selected from halo, hydroxy, alkoxy and alkyl; wherein each of R_3 and R_5 is independently selected from hydrido and alkyl; wherein R_4 is selected from



wherein V is selected from hydrido, alkyl, benzyl and phenyl; wherein each of R_8 and R_9 is a radical independently selected from hydrido, alkyl, alkenyl and phenyl; wherein R_6 is selected from alkyl, cycloalkylalkyl and phenylalkyl, any one of which may be substituted with one or more groups selected from alkyl, hydroxy and alkoxy; wherein R_7 is selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl and alkenyl; wherein p is a number selected from zero through five, inclusive; wherein q is a number selected from zero through five, inclusive; and wherein n is a number selected from zero through five, inclusive; or a pharmaceutically-acceptable salt thereof.

5,385,899

AMINOALKYL-SUBSTITUTED 5,6-DIHYDRO-DIBENZ[B,E]AZEPINE-6,11-DIONE-11-OXIMES

Hanno Wild, Wuppertal; Wolfgang Roeben, Bergisch Gladbach; Gerd Aichinger, Wuppertal; Arnold Paessens, Haan, and Jörg Petersen-von Gehr, Bochum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

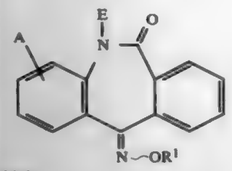
Filed Nov. 17, 1992, Ser. No. 977,379

Claims priority, application Germany, Nov. 27, 1991, 4138909

Int. Cl.[6] A61K *31/55*; C07D *223/16*

U.S. Cl. 514—217 **6 Claims**

1. An aminoalkyl-substituted 5,6-dihydrodibenz[b,e]-azepine-6,11-dione-11-oxime of the formula



(I)

in which

E is hydrogen, methyl or ethyl,

R^1 is straight-chain or branched alkyl or alkenyl each having 1 to 6 carbon atoms, each of which is always substituted by a group of the formula $—NR^2R^3$,

in which

R^2 and R^3 are identical or different and denote hydrogen or straight-chain or branched alkyl having 1 to 4 carbon atoms,

or

R^2 and R^3, together with the nitrogen atom, form a morpholine ring,

with the proviso that R^2 and R^3 are not ethyl, or a physiologically acceptable salt thereof.

5,385,900

QUINOLINE CARBOXYLIC ACID DERIVATIVES

Fujiko Konno, Chiba; Akihiro Shibata, Yachiyo; Hideaki Matsuda, Abiko; Takemitsu Asaoka, Narita; Ryuichi Kawahara, Ichikawa; Naokata Taido, Funabashi; Tadayuki Kuraishi, Chiba, and Sunao Takeda, Ichihara, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 842,191, filed as PCT/TP91/00954, Jul. 17, 1991, abandoned.

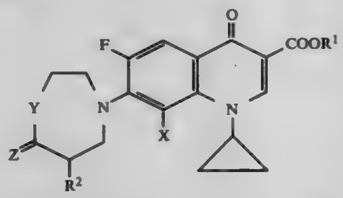
This application Nov. 8, 1993, Ser. No. 149,134

Claims priority, application Japan, Jul. 19, 1990, 191339; Apr. 12, 1991, 79774

Int. Cl.[6] A61K *31/55*; C07D *243/08*

U.S. Cl. 514—218 **24 Claims**

1. A quinolone carboxylic acid derivative having the formula (I),



(I)

wherein Z is an oxygen atom, Y is $N—R^3$, wherein R^3 is a hydrogen atom or a lower alkyl group, R^1 is a hydrogen atom, an alkyl group, an aralkyl group, or an ester residual group which can be hydrolyzed in living bodies, R^2 is a hydrogen atom or an amino group which may be substituted by one or two lower alkyl groups and X is a hydrogen atom or a halogen atom; or a salt thereof.

5,385,901

METHOD OF TREATING ABNORMAL CONCENTRATIONS OF TNF α

Gilla Kaplan, New York, N.Y., and Elisabeth P. Sampaio, Rio de Janeiro, Brazil, assignors to The Rockefeller University, New York, N.Y.

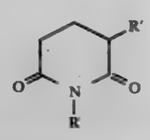
Division of Ser. No. 834,588, Feb. 12, 1992, abandoned, which is a continuation of Ser. No. 655,087, Feb. 14, 1991, abandoned.

This application Oct. 2, 1992, Ser. No. 955,936

Int. Cl.[6] A61K *31/535, 31/44, 31/445*

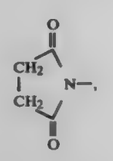
U.S. Cl. 514—231.5 **18 Claims**

1. The method of treating the toxic symptoms of high concentrations of TNF_α manifested in septic shock, cachexia, and HIV infection by inhibiting the production of TNF_α which comprises administering to a human susceptible to or exhibiting such symptoms an effective amount of a compound of the formula:

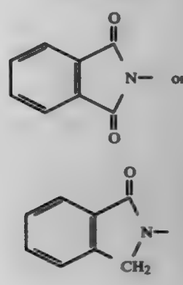


in which R is hydrogen, alkyl of 1 to 6 carbon atoms, phenyl, or benzyl, and

R′ is



-continued



5,385,902

IODOPROPARGYLATED OXALIC DERIVATIVES AS ANTIMICROBIAL AGENTS

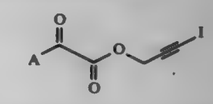
Adam C. Hsu, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 1, 1993, Ser. No. 116,171

Int. Cl.[6] A01N *37/14, 43/84*; C07C *69/36*; C07D *295/185*

U.S. Cl. 514—237.5 **9 Claims**

1. Compounds having the formula:



wherein A is selected from the group consisting of substituted or unsubstituted(C_1–C_{20})alkyl; substituted or unsubstituted phenyl; substituted or unsubstituted (C_7–C_{10})aralkyl; substituted or unsubstituted (C_1–C_{20}) alkoxy; substituted or unsubstituted phenoxy; substituted or unsubstituted benzyloxy; mono(C_1–C_{10})alkylamino: di(C_1–C_{10})-alkylamino; (C_5–C_7)cyclic amino, substituted or unsubstituted anilino; (C_5–C_7)heterocyclo; and amino substituted with heterocyclic ring.

5,385,903

PHARMACEUTICAL AGENT FOR TREATMENT OF WITHDRAWAL SYMPTOMS

Karin G. Steppuhn; Karin Bressler; Martin Gieseler; David N. Stephens, and Lechoslaw Turski, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Jul. 9, 1992, Ser. No. 910,873

Claims priority, application Germany, Jul. 9, 1991, 4123106

Int. Cl.[6] A61K *31/495, 31/675, 31/66*

U.S. Cl. 514—249 **11 Claims**

1. A method for the treatment of withdrawal caused by cessation of administration of a drug, said withdrawal having a first asymptomatic phase and a second symptomatic phase, comprising administering, during said first phase to a host in need thereof, an effective amount of a quisqualate or kainate receptor antagonist.

5,385,904

ORGANIC SALTS OF N, N′-DIACETYL CYSTINE

Carl-Magnus A. Andersson, Lund; Håkan S. A. M. Bergstrand, Bjärred; Edib Jakupovic, Nykvarn; Bo-Göran Josefsson; Magnus L. Lindvall, both of Lund; Bengt O. Sörnstrand, Bjärred, and Eric N. G. Teneberg, Södertälje, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

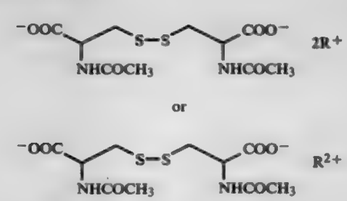
Filed Nov. 25, 1992, Ser. No. 981,373

Claims priority, application Sweden, Nov. 29, 1991, 9103572

Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—255 **6 Claims**

1. A salt of an organic base and N,N′-diacetyl cystine having the general formula



wherein R^+ and R^{2+} are a mono- and diprotonated amino organic base, respectively, and are selected from the group consisting of lysine, ethylenediamine, N,N′-dibenzylethylenediamine, adamantanamine or N-benzyl-2-phenylethylamine.

5,385,905

SUBSTITUTED PYRIDYLPYRIMIDINES

Ulrich Heinemann, Leichlingen; Thomas Himmler, Odenthal; Stefan Dutzmann, Hilden; Gerd Hänbler, Leverkusen, and Heinz-Wilhelm Dehne, Monheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

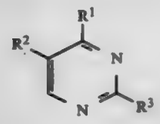
Filed Feb. 18, 1993, Ser. No. 19,989

Claims priority, application Germany, Feb. 28, 1992, 4206148

Int. Cl.[6] C07D *401/04*; A01N *43/54*

U.S. Cl. 514—256 **8 Claims**

1. A substituted pyridylpyrimidine of the formula



(I)

in which

R^1 represents straight chain or branched alkyl having 1 to 6 carbon atoms, straight-chain or branched halogenoalkyl having 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, or represents cycloalkyl which has 3 to 7 carbon atoms and which is optionally monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, straight-chain or branched alkyl having 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms,

R^2 represents phenyl which is optionally monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, straight-chain or branched alkyl having 1 to 4 carbon atoms, straight-chain or branched alkoxy having 1 to 4 carbon atoms, straight-chain or branched alkylthio having 1 to 4 carbon atoms, straight-chain or branched halogenoalkyl having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched halogenoalkoxy having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched halogenoalkylthio having 1 to 4 carbon atoms

and 1 to 9 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy part, straight-chain or branched alkoximinoalkyl having 1 to 4 carbon atoms in the alkoxy part and 1 to 4 carbon atoms in the alkyl part, and phenyl which is optionally monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen and straight-chain or branched alkyl having 1 to 4 carbon atoms, and

R^3 represents 2-pyridyl, 3-pyridyl or 4-pyridyl, each of which is optionally monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, straight-chain or branched alkyl having 1 to 4 carbon atoms, straight-chain or branched alkoxy having 1 to 4 carbon atoms, straight-chain or branched alkylthio having 1 to 4 carbon atoms, straight-chain or branched halogenoalkyl having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched halogenoalkoxy having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched halogenoalkylthio having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy part, straight-chain or branched alkoximinoalkyl having 1 to 4 carbon atoms in the alkoxy part and 1 to 4 carbon atoms in the alkyl part, and phenyl which is optionally monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen and straight-chain or branched alkyl having 1 to 4 carbon atoms.

5,385,906

ANTIBACTERIAL QUINOLONE COMPOUNDS

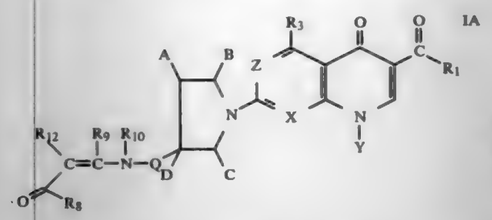
Ronald B. Gammill, Portage; Sharon N. Bisaha, Lawton; Joseph M. Timko, Kalamazoo; Thomas M. Judge, Kalamazoo; Michael R. Barbachyn, Kalamazoo, all of Mich., and Kyoung S. Kim, Lawrenceville, N.J., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 679,069, Jun. 3, 1991, Pat. No. 5,262,417, which is a continuation-in-part of Ser. No. 411,449, Sep. 25, 1989, abandoned, and Ser. No. 355,016, May 22, 1989, abandoned, and a continuation-in-part of Ser. No. 335,163, Apr. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 280,603, Dec. 6, 1988, abandoned, said Ser. No. 355,016, is a continuation-in-part of Ser. No. 326,907, Mar. 22, 1989, abandoned. This application Jul. 20, 1993, Ser. No. 94,829

Int. Cl.[6] A61K *31/47;* **C07D** *215/56*

U.S. Cl. 514—258 **9 Claims**

1. The compound which is structurally represented by the formula (IA):



IA

and therapeutically acceptable salts thereof wherein

R_1 is hydrogen or hydroxyl;

Y is C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl or heterocycloalkyl, a phenyl, or a substituted phenyl wherein the substituent on the phenyl group is one, two or three of C_1–C_{10} alkyl, halogen, hydroxyl, hydrogen or a combination thereof, or C_2–C_4 alkylene wherein each carbon atom may be substituted with fluorine;

R_3 is hydrogen, halogen, amine or hydroxyl;

A, B, C, D are independently hydrogen, hydroxyl, halogen, C_1–C_4 alkyl, ethenyl, ethynyl, C_3–C_6 cycloalkyl, fluoromethyl, difluoromethyl, difluoroethyl, trifluoromethyl, hydroxymethyl, C_1–C_{18} alkoxy methyl, phenoxymethyl, C_1–C_3 alkyl aminomethyl, C_1–C_3 dialkyl aminomethyl;

R_8 is hydrogen, hydroxyl, amine, C_1–C_4 alkoxy or aryloxy, —SH, C_1–C_6 thioalkyl or thioaryl;

R_9 is C_1–C_4 alkyl, C_6–C_{12} aryl, alkylaryl, heteroaryl, $-(CH_2)_n-CO_2-(CH_2)_m-R_{11}$, wherein R_{11} is hydrogen, hydroxyl, methyl, alkyloxy, aryloxy or an amine, n is 0–4 and m is 0–4;

R_{10} is hydrogen, CH_3, C_2–C_4 alkyl, C_6–C_{12} aryl, alkylaryl, heteroaryl, or acetyl,

R_{12} is hydrogen, CN, halogen, or R_9;

Z is nitrogen or a fluorine substituted carbon;

X is nitrogen, a carbon substituted with hydrogen, hydroxyl, cyano, nitro, halogen, C_1–C_4 alkyl, or an amine and Q is $(CH_2)_q$ where q is 0–2.

5,385,907

OINTMENTS CONTAINING FK-506 OR DERIVATIVES THEREOF

Sotoo Asakura, Kyoto; Yoshio Murakami, Kobe; Nobuto Kanagawa, Takaoka, and Toshiomi Nakate, Kobe, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 750,942, Aug. 28, 1991, abandoned. This application May 17, 1993, Ser. No. 62,330

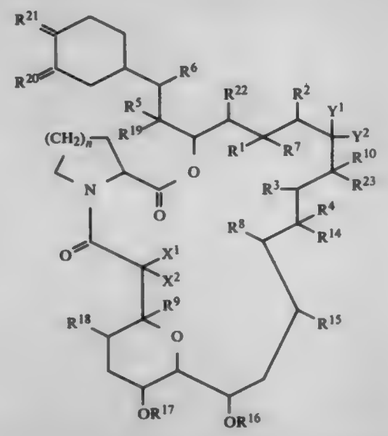
Claims priority, application Japan, Sep. 4, 1990, 2-235177

Int. Cl.[6] A61K *31/445, 31/40*

U.S. Cl. 514—291 **24 Claims**

1. An ointment consisting essentially of a tricyclic compound represented by the following formula (I):

(I)



wherein each of adjacent pairs of R^1 and R^2, R^3 and R^4 or R^5 and R^6 independently is

(a) two adjacent hydrogen atoms, or

(b) may form another bond formed between the carbon atoms to which they are attached,

and further, R^2 is an alkyl group;

R^7 is a hydrogen atom, a hydroxy group, a protected hydroxy group or an alkoxy group, or an oxo group together with R^1; R^8 and R^9 each is independently a hydrogen atom or a hydroxy group;

R^{10} is a hydrogen atom, and alkyl group, an alkyl group substituted by one or more hydroxy groups, an alkenyl group, an alkenyl group substituted by one or more hydroxy groups or an alkyl group substituted by an oxo group;

X^1 is a hydrogen atom or a hydroxy group;

X^2 is a hydrogen atom; or

X^1 and X^2 may together represent an oxo group or —CH_2O—;

Y^1 is a hydrogen atom or a hydroxy group;

Y^2 is a hydrogen atom; or

Y^1 and Y^2 may together represent an oxo group,



R^{11} and R^{12} each is independently a hydrogen atom, an alkyl group, an aryl group or a tosyl group; R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{22} and R^{23} each is independently a hydrogen atom or an alkyl group;

R^{20} and R^{21} each is an oxo group or independently (R^{20}a and a hydrogen atom) or (R^{21}a and a hydrogen atom) in which R^{20}a and R^{21}a each is a hydroxy group, an alkoxy group or a group represented by the formula —$OCH_2OCH_2CH_2OCH_3$, or R^{21}a is a protected hydroxy group, or R^2a and R^2a may together represent an oxygen atom in an epoxide ring;

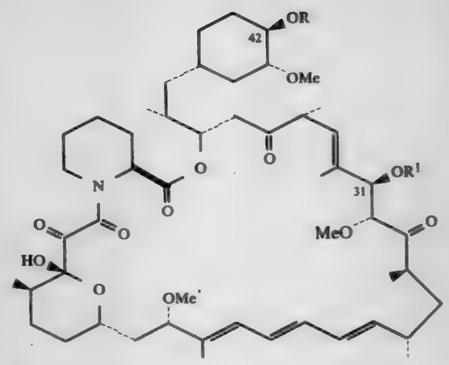
n is an integer of 1, 2 or 3;

in addition to their above definitions, four of Y^1, Y^2, R^{10} and R^{23}, together with the carbon atoms to which they are attached, may represent a saturated or unsaturated 5- or 6-membered nitrogen, sulfur and/or oxygen containing heterocyclic ring optionally substituted by one or more groups selected from the group consisting of an alkyl, a hydroxy, an alkyl substituted by one or more hydroxy, an alkoxy, benzyl and a group of the formula —$CH_2Se(C_6H_5)$;

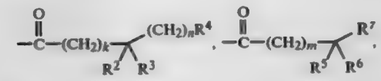
or a pharmaceutically acceptable salt thereof, a solubilizing and/or absorption-promoting agent selected from the group consisting of a lower alkanediol, a lower alkylene carbonate, an alkane dicarboxylic ester, a higher alkane carboxylic glycerin ester, a higher alkene carboxylic glycerin ester, a higher alkane carboxylic alkyl ester, a higher unsaturated alcohol and an azacycloalkane, and an ointment based selected from the group consisting of oil and fat bases;

in which the tricyclic compound (I) or a pharmaceutically acceptable salt thereof is contained therein in an amount of about 0.01 to 10% (w/w), and the solubilizing and/or absorption-promoting agent is contained therein in an amount of about 1 to 30% (w/w),

where optionally is present one or more of the following ingredients selected from the group consisting of colorants, preservatives, and higher alkene carboxylic acids.



wherein R and R^1 are each, independently,



or hydrogen;

R^2 and R^3 are each, independently, alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbons, or R^2 and R^3 may be taken together to form a cycloalkyl ring of 3–8 carbon atoms;

R^4 is a heterocyclic radical selected from the group consisting of furanyl, thiophenyl, pyrrolyl, isopyrrolyl, pyrazolyl, imidazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2-dithiolyl, 1,3-dithiolyl, 1,2,3-oxathiolyl, isoxazolyl, oxazolyl, thiazolyl, isothiazolyl, 1,2,3-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3,4-oxatriazolyl, 1,2,3,5-oxatriazolyl, 1,2,3-dioxazolyl, 1,2,4-dioxazolyl, 1,3,2-dioxazolyl, 1,3,4-dioxazolyl, 1,2,5-oxathiazolyl, 1,3-oxathiolyl, 1,2-pyranyl, 1,4-pyranyl, pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl, 1,3,5-triazinyl, 1,2,4-triazinyl, 1,2,3-triazinyl, 1,2,4-oxazinyl, 1,3,2-oxazinyl, 1,2,6-oxazinyl, 1,4-oxazinyl, isoxazinyl, 1,2,5-oxathiazinyl, 1,4-oxazinyl, o-isoxazinyl, p-isoxazinyl, 1,2,5-oxathiazinyl, 1,2,6-oxathiazinyl, 1,3,5,2-oxadiazinyl, azepinyl, oxepinyl, thiepinyl, 1,2,4-diazepinyl, benzofuranyl, isobenzofuranyl, thionaphthenyl, indolyl, indolenyl, 2-isobenzazolyl, 1,5-pyrindinyl, pyrano[3,4-b]pyrrolyl, benzpyrazolyl, benzisoxazolyl, benzoxazolyl, anthranilyl, 1,2-benzopyranyl, quinolinyl, tetrahydroisoquinolinyl, isoquinolinyl, cinnolinyl, quinazolinyl, naphthyridinyl, pyrido[3,4-b]pyridinyl, pyrido[4,3-b]pyridinyl, pyrido[2,3-b]pyridinyl, 1,3,2-benzozazinyl, 1,4,2-benzoxazinyl, 2,3,1-benzoxazinyl, 3,1,4-benzoxazinyl, 1,2-benzisoxazinyl, 1,4-benzisoxazinyl, carbazolyl, and purinyl which may be optionally mono-, di-, or tri- substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoromethoxy, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;

R^5 is alkyl of 1–6 carbon atoms or arylalkyl of 7–10 carbon atoms;

R^6 and R^7 are taken together to form a saturated heterocyclic ring selected from the group consisting of piperidine, morpholine, thiomorpholine, piperazine, pyrazolidine, imidazolidine, and pyrrolidine, which may be optionally mono-, di-, or tri-substituted with a group selected from

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5,385,908

HINDERED ESTERS OF RAPAMYCIN

Frances C. Nelson, and Guy A. Schiehser, both of Yardley, Pa., assignors to American Home Products Corporation, Madison, N.J.

Filed Nov. 22, 1993, Ser. No. 156,206

Int. Cl.[6] A61K *31/445;* **C07D** *471/04*

U.S. Cl. 514—291 **26 Claims**

1. A compound of the structure

alkyl of 1–6 carbon atoms, aroyl of 3–11 carbon atoms, and perfluoroalkyl of 1–6 carbon atoms;
wherein the aryl moiety of the arylalkyl group of R^2, R^3, R^4, and R^5 and the aryl moiety of the aroyl group of R^6 and R^7 is a phenyl, naphthyl, pyridinyl, quinolinyl, isoquinolinyl, thienyl, thionaphthyl, furanyl, benzofuranyl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, indolyl, thiazolyl, isoxazolyl, pyrimidinyl, pyrazinyl, benzopyranyl, or benzimidazolyl group;
k=0–1,
m=0–1;
n=1–6;
with the proviso that R and R^1 are not both hydrogen, or a pharmaceutically acceptable salt thereof.

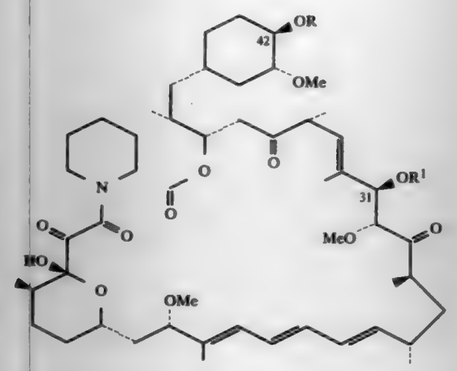
5,385,909

HETEROCYCLIC ESTERS OF RAPAMYCIN

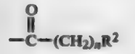
Frances C. Nelson, and Guy A. Schiehser, both of Yardley, Pa., assignors to American Home Products Corporation, Madison, N.J.

Filed Nov. 22, 1993, Ser. No. 156,208
Int. Cl.[6] A61K *31/495*; C07D *487/04*
U.S. Cl. 514—291 **15 Claims**

1. A compound of the structure

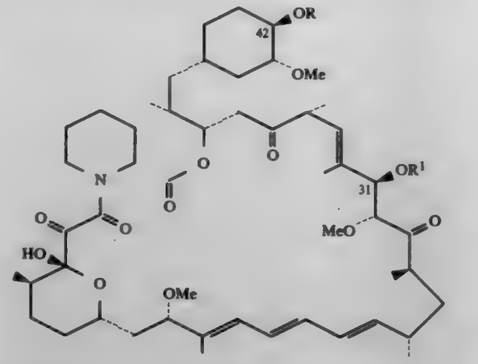


wherein R and R^1 are each, independently,

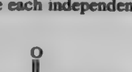


or hydrogen;
R^2 is a heterocyclic radical selected from the group consisting of furanyl, thiophenyl, pyrrolyl, isopyrrolyl, pyrazolyl, imidazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2-dithiolyl, 1,3-dithiolyl, 1,2,3-oxathiolyl, isoxazolyl, oxazolyl, thiazolyl, isothiazolyl, 1,2,3-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3,4-oxatriazolyl, 1,2,3,5-oxatriazolyl, 1,2,3-dioxazolyl, 1,2,4-dioxazolyl, 1,3,2-dioxazolyl, 1,3,4-dioxazolyl, 1,2,5-oxathiazolyl, 1,3-oxathiolyl, 1,2-pyranyl, 1,4-pyranyl, pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl, 1,3,5-triazinyl, 1,2,4-triazinyl, 1,2,3-triazinyl, 1,2,4-oxazinyl, 1,3,2-oxazinyl, 1,2,6-oxazinyl, 1,4-oxazinyl, isoxazinyl, 1,2,5-oxathiazinyl, 1,4-oxazinyl, o-isoxazinyl, p-isoxazinyl, 1,2,5-oxathiazinyl, 1,2,6-oxathiazinyl, 1,3,5,2-oxadiazinyl, azepinyl, oxepinyl, thiepinyl, 1,2,4-diazepinyl, benzofuranyl, isobenzofuranyl, thionaphthenyl, indolyl, indolenyl, 2-isobenzazolyl, 1,5-pyrindinyl, pyrano[3,4-b]pyrrolyl, benzpyrazolyl, benzisoxazolyl, benzoxazolyl, anthranilyl, 1,2-benzopyranyl, quinolinyl, isoquinolinyl, tetrahydroisoquinolinyl, cinnolinyl, quinazolinyl, naphthyridinyl, pyrido[3,4-b]pyridinyl, pyrido[4,3-b]pyridinyl, pyrido[2,3-b]pyridinyl, 1,3,2-benzozazinyl, 1,4,2-benzoxazinyl, 2,3,1-benzoxazinyl, 3,1,4-benzoxazinyl, 1,2-benzisoxazinyl, 1,4-benzisoxazinyl, carbazolyl, and purinyl, which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoromethoxy, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;
n=0–6;
with the proviso that R and R^1 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

12. A method of inducing immunosuppression in a mammal in need thereof, which comprises administering an immunosuppressive effective amount of a compound of the structure



wherein R and R^1 are each independently,



or hydrogen;
R^2 is a heterocyclic radical selected from the group consisting of furanyl, thiophenyl, pyrrolyl, isopyrrolyl, pyrazolyl, imidazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2-dithiolyl, 1.3-dithiolyl, 1,2,3-oxathiolyl, isoxazolyl, oxazolyl, thiazolyl, isothiazolyl, 1,2,3-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3,4-oxatriazolyl, 1,2,3,5-oxatriazolyl, 1,2,3-oxazolyl, 1,2,4-dioxazolyl, 1,3,2-dioxazolyl, 1,3,4-dioxazolyl, 1,2,5-oxathiazolyl, 1,3-oxathiolyl, 1,2-pyranyl, 1,4-pyranyl, pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl, 1,3,5-triazinyl, 1,2,4-triazinyl, 1,2,3-triazinyl, 1,2,4-oxazinyl, 1,3,2-oxazinyl, 1,2,6-oxazinyl, 1,4-oxazinyl, isoxazinyl, 1,2,5-oxathiazinyl, 1,4-oxazinyl, o-isoxazinyl, p-isoxazinyl, 1,2,5-oxathiazinyl, 1,2,6-oxathiazinyl, 1,3,5,2-oxadiazinyl, azepinyl, oxepinyl, thiepinyl, 1,2,4-diazepinyl, benzofuranyl, isobenzofuranyl, thionaphthenyl, indolyl, indolenyl, 2-isobenzazolyl, 1,5-pyrindinyl, pyrano[3,4-b]pyrrolyl, benzpyrazolyl, benzisoxazolyl, benzoxazolyl, anthranilyl, 1,2-benzopyranyl, quinolinyl, isoquinolinyl, tetrahydroisoquinolinyl, cinnolinyl, quinazolinyl, naphthyridinyl, pyrido[3,4-b]pyridinyl, pyrido[4,3-b]pyridinyl, pyrido[2,3-b]pyridinyl, 1,3,2-benzozazinyl, 1,4,2-benzoxazinyl, 2,3,1-benzoxazinyl, 3,1,4-benzoxazinyl, 1,2-benzisoxazinyl, 1,4-benzisoxazinyl, carbazolyl, and purinyl, which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoromethoxy, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;
n=0–6;
with the proviso that R and R^1 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

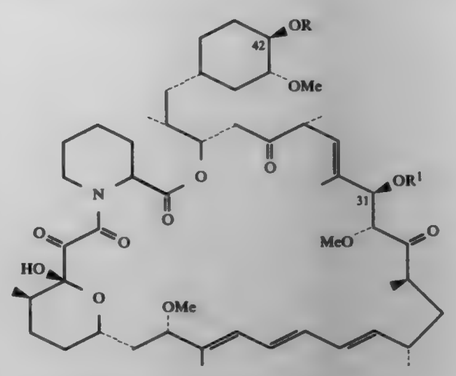
5,385,910

GEM-DISTRIBUTED ESTERS OF RAPAMYCIN

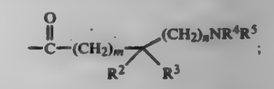
Timothy D. Ocain, Framingham, Mass., and Guy A. Schiehser, Yardley, Pa., assignors to American Home Products Corporation, Madison, N.J.

Filed Nov. 22, 1993, Ser. No. 156,334
Int. Cl.[6] A61K *31/445*; C07D *471/04*
U.S. Cl. 514—291 **31 Claims**

1. A compound of the structure

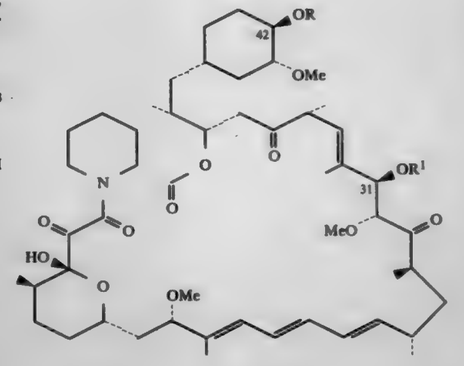


R and R^1 are each, independently, hydrogen, or

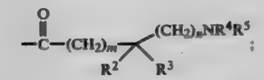


R^2 and R^3 are each, independently, alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, or may be taken together to form a cycloalkyl ring of 3–8 carbon atoms;
R^4 and R^5 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, or may be taken together to form a saturated heterocycle having 3–6 carbon atoms selected from the group consisting of piperidine, morpholine, thiomorpholine, piperazine, pyrazolidine, imidazolidine, and pyrrolidine, wherein the heterocyclic ring may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms and perfluoroalkyl of 1–6 carbon atoms;
wherein the aryl moiety of the arylalkyl group of R^2, R^3, R^4, and R^5 is a phenyl, naphthyl, pyridinyl, quionlinyl, isoquinolinyl, thienyl, thionaphthyl, furanyl, benzofuranyl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, indolyl, thiazolyl, isoxazolyl, pyrimidinyl, pyrazinyl, benzopyranyl, or benzimidazolyl group which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;
m=0–1; and
n=0–6;
with the proviso that R and R^1 are not both hydrogen, or a pharmaceutically acceptable salt thereof.

23. A method of treating transplantation rejection or graft vs. host disease in a mammal in need thereof which comprises administering an antirejection effective amount of a compound of the structure



R and R^1 are each, independently, hydrogen, or



R^2 and R^3 are each, independently, alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, or may be taken together to form a cycloalkyl ring of 3–8 carbon atoms;
R^4 and R^5 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, or may be taken together to form a saturated heterocycle having 3–6 carbon atoms selected from the group consisting of piperidine, morpholine, thiomorpholine, piperazine, pyrazolidine, imidazolidine, and pyrrolidine, wherein the heterocyclic ring may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms and perfluoroalkyl of 1–6 carbon atoms;
wherein the aryl moiety of the arylalkyl group of R^2, R^3, R^4, and R^5 is a phenyl, naphthyl, pyridinyl, quionlinyl, isoquinolinyl, thienyl, thionaphthyl, furanyl, benzofuranyl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, indolyl, thiazolyl, isoxazolyl, pyrimidinyl, pyrazinyl, benzopyranyl, or benzimidazolyl group which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;
m=0–1; and
n=0–6;
with the proviso that R and R^1 are not both hydrogen, or a pharmaceutically acceptable salt thereof.

5,385,911

ANTI-HERPES CASTANOSPERMINE ESTERS

Sai P. Sunkara, Cincinnati, Ohio; Paul S. Liu, Chevy Chase, Md.; A. Stanley Tyms, and Debra L. Taylor, both of London, United Kingdom, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

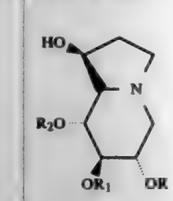
Continuation of Ser. No. 808,150, Dec. 16, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,532

Claims priority, application United Kingdom, Dec. 18, 1990, 9027433

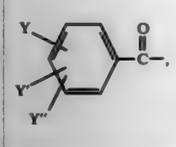
Int. Cl.[6] A61K *31/44*; G07D *211/46*

U.S. Cl. 514—299 **17 Claims**

1. A method of treating a Herpes viral infection in a patient in need thereof which comprises administering to the patient an anti-Herpes virally effective amount of a castanospermine ester of the formula:



wherein R, R_1 and R_2 are each independently hydrogen, C_{1-14} alkanoyl, C_{1-14} alkenoyl, cyclohexanecarbonyl, C_{1-8} alkoxyacetyl,



naphthalenecarbonyl optionally substituted by methyl or halogen; phenyl (C_{2-6} alkanoyl) wherein the phenyl is optionally substituted by methyl or halogen; cinnamoyl; pyridinecarbonyl optionally substituted by methyl or halogen; dihydropyridine carbonyl optionally substituted by C_1–C_{10} alkyl; thiophenecarbonyl optionally substituted by methyl or halogen; or furancarbonyl optionally substituted by methyl or halogen; Y is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogen, trifluoromethyl, C_{1-4} alkylsulfonyl, C_{1-4} alkylmercapto, cyano or dimethylamino; Y' is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogen or it is combined with Y to give 3,4-methylenedioxy; Y'' is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy or halogen; with R, R_1 and R_2 being selected in such a way that at least one of them, but not more than two of them, is hydrogen; or a pharmaceutically acceptable salt thereof.

5,385,912

MULTICYCLIC TERTIARY AMINE POLYAROMATIC SQUALENE SYNTHASE INHIBITORS

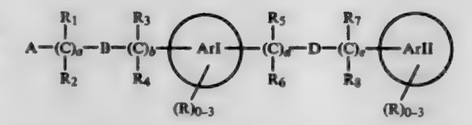
Kent Neuenschwander, Schwenksville; Dilip Amin, North Wales; Anthony C. Scotese, King of Prussia, and Robert L. Morris, Wayne, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation-in-part of Ser. No. 667,686, Mar. 8, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 959,898

Int. Cl.[6] C07D *453/02*; A61K *31/435*

U.S. Cl. 514—305 **12 Claims**

1. A compound of the formula

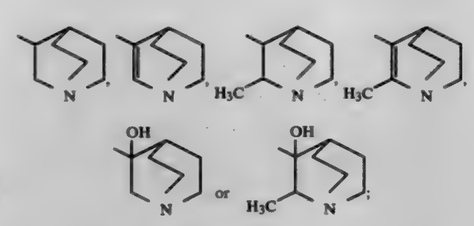


where:

Ar I is a substituted or unsubstituted phenylene or naphthylene and where the substituents may be located at any appropriate position of the ring system and are described by R;

Ar II is a substituted or unsubstituted phenyl or naphthyl and where the substituents may be located at any appropriate position of the ring system and are described by R;

A is



B is CR'R', O or a bond;

D is CR'R', R'C=CR', C≡C, C=CHR' or a bond;

R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are independently hydrogen or $(CH_2)_x$—X where x is 0–5 and X is hydrogen, alkyl, alkenyl, aralkyl, hydroxy, alkoxy, aralkoxy, aryloxy, acyloxy, aryl, halo, amino, mono- and di-alkylamino or acylamino;

R' is hydrogen, alkyl or aralkyl;

R is hydrogen, alkyl, aralkyl, hydroxy, alkoxy, aralkoxy, acyloxy, halo, haloalkyl, amino, mono- and di-amino or acylamino; and

a, b, d and e are 0–4; or

a pharmaceutically acceptable salt thereof.

5,385,913

1,4-DIHYDRO-4-OXO-3-QUINOLINE DERIVATIVES AS SELECTIVELY TOXIC MAMMALIAN ANTIBACTERIAL AGENTS

Paul R. McGuirk, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

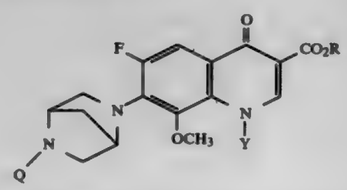
PCT No. PCT/US89/04438, § 371 Date Mar. 26, 1992, § 102(e) Date Mar. 26, 1992, PCT Pub. No. WO91/04972, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 6, 1989, Ser. No. 842,205

Int. Cl.[6] A61K *31/47*; C07D *401/10*

U.S. Cl. 514—312 **3 Claims**

1. A compound of the formula



wherein Q is methyl, Y is cyclopropyl and R is hydrogen, or a pharmaceutically acceptable salt or hydrate of said compound.

5,385,914

CARDIOTONIC CARBOSTYRIL AGENTS FOR TREATING HEART AILMENTS

Takafumi Fujioka, Itano; Shuji Teramoto, Tokushima; Michiaki Tominaga, Itano, and Yoichi Yabuuchi, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Company, Limited, Tokyo, Japan

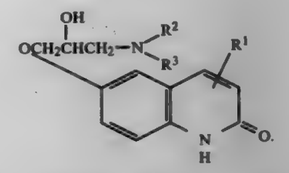
Continuation of Ser. No. 735,034, Jul. 24, 1991, abandoned, which is a division of Ser. No. 391,305, Aug. 9, 1989, Pat. No. 5,053,514. This application Nov. 12, 1993, Ser. No. 150,792

Claims priority, application Japan, Aug. 10, 1988, 200929; Feb. 14, 1989, 34688; Jun. 21, 1989, 160170

Int. Cl.[6] A61K *31/47*

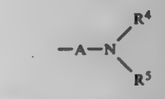
U.S. Cl. 514—312 **27 Claims**

1. A method for increasing coronary blood flow comprising administering a carbostyril derivative of the formula:



(I)

wherein R^1 is hydrogen atom or cyano group, and R^2 and R^3 are the same or different and are each hydrogen atom, a lower alkyl group being optionally substituted by hydroxy group, a cycloalkyl group, a lower alkenyl group, a phenyl group, a phenyl(lower)alkyl group which has optionally 1 to 3 substituents selected from the group consisting of a lower alkoxy(-lower)alkoxy group, a halogen atom, a lower alkoxy group, a nitro group, a lower alkyl group, a cyano group, a lower alkylthio group and a lower alkylsulfinyl group on the phenyl ring, a phenylsulfonyl(lower)alkyl group having optionally 1 to 3 lower alkoxy substituents on the phenyl ring, a phenylthio(lower)alkyl group, a phenylsulfinyl(lower)alkyl group having optionally 1 to 3 substituents selected from the group consisting of a halogen atom and a lower alkoxy group on the phenyl ring, a phenoxy(lower)alkyl group having optionally 1 to 3 substituents selected from the group consisting of a halogen atom and a lower alkoxy group on the phenyl ring, a pyridyl(lower)alkyl group having optionally 1 to 3 substituents selected from the group consisting of a halogen atom and a lower alkoxy group on the pyridine ring, a pyridyl group, a phenyl(lower)alkenyl group, or a group of the formula:



(wherein R^4 and R^5 are the same or different and are each a lower alkyl group or a phenyl group having optionally 1 to 3 substituents selected from the group consisting of a halogen atom and a lower alkoxy group on the phenyl ring, and A is a lower alkylene group, or a pharmaceutically acceptable salt thereof, in an amount effective for increasing coronary blood flow, to a patient in need thereof.

5,385,915

TREATMENT OF AMYLOIDOSIS ASSOCIATED WITH ALZHEIMER DISEASE USING MODULATORS OF PROTEIN PHOSPHORYLATION

Joseph D. Buxbaum, Flushing; Samuel E. Gandy, and Paul Greengard, both of New York, all of N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 809,174, Dec. 17, 1991, Pat. No. 5,242,932, and a continuation-in-part of Ser. No. 524,202, May 16, 1990, abandoned. This application Jun. 7, 1993, Ser. No. 73,112

Int. Cl.[6] A01N *43/16*, *43/42*; A61K *31/47*

U.S. Cl. 514—313 **36 Claims**

1. A method of regulating phosphorylation of proteins that control the processing of APP, tau and neurofilament proteins comprising introducing an effective amount of at least one modulator of protein kinase or phosphatase, said modulator capable of controlling the proteolytic processing or function of said proteins.

5,385,916

4-(1,2-BENZISOXAZOLYL)PIPERIDINE ANTIPSYCHOTIC AGENTS

Harry R. Howard, Jr., Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

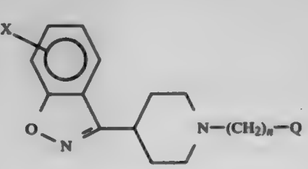
Division of Ser. No. 902,326, Jun. 22, 1992, Pat. No. 5,276,040, which is a division of Ser. No. 612,776, Nov. 14, 1990, Pat. No. 5,147,881. This application Oct. 1, 1993, Ser. No. 131,051

Int. Cl.[6] A61K *31/445*; C07D *413/14*

U.S. Cl. 514—321 **6 Claims**

1. A 4-(1,2-benzisoxazolyl)-piperidine compound of the formula

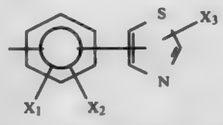
Formula I



and the pharmaceutically acceptable base salts thereof wherein X is H, halo, C_1–C_4 alkyl, C_1–C_4 alkoxyl or CFF_3;

n is 2, 3 or 4; and

Q is



wherein X_1 and X_2 are each independently H or halo; and X_3 is H, halo, C_1–C_4 alkyl, C_1–C_4 alkoxyl or CF_3.

5,385,917

CARBOXYLIC ACID DERIVATIVES

Hiroaki Ueno, San Diego, Calif.; Masahiko Morioka, Machida, and Fumiko Hatanaka, Yokohama, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

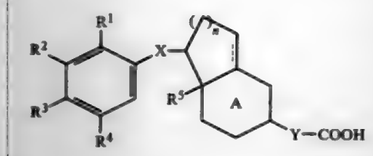
Filed Jul. 16, 1993, Ser. No. 92,055

Claims priority, application Japan, Jul. 17, 1992, 4-190991

Int. Cl.[6] A01N *43/40*; C07C *229/00*

U.S. Cl. 514—325 **6 Claims**

1. A compound of the following formula



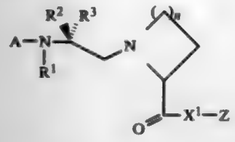
wherein
R^1, R^2, R^3 and R^4 each independently represent hydrogen, halogen, C_1–C_{14} alkyl or C_1–C_{14} alkoxy,
R^5 represents hydrogen or C_1–C_5 alkyl,
X represents —$CONR^{13}$— wherein R^{13} represents hydrogen or C_1–C_6 alkyl,
Y represents a single bond,
A ring represents a cyclohexene ring,
the dotted line represents a double bond, and
n represents 1 or 2, or a pharmaceutically acceptable salt thereof.

5,385,918
AMINOMETHYLENE-PEPTIDES AS IMMUNOSUPPRESSANTS

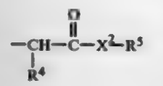
Richard D. Connell, New Haven; David G. Osterman, Glastonbury; Michael E. Katz, Wallingford, all of Conn.; Rudolf Hanko, Essen, Germany, and Stephan Schneider, Madison, Conn., assignors to Miles Inc., West Haven, Conn.

Filed Feb. 9, 1993, Ser. No. 15,688
Int. Cl.[6] A61K *31/445*; C07D *211/32, 207/10*
U.S. Cl. 514—330 **25 Claims**

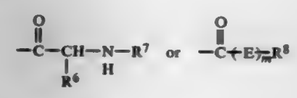
1. A compound having the structure:



wherein
n is an integer having a value of 2 or 3;
R^1 is hydrogen or methyl;
one of R^2 and R^3 is hydrogen, and the other is a straight or branched (C_1–C_8)alkyl optionally substituted with (C_3–C_8)cycloalkyl;
Z is hydrogen or (C_1–C_5)alkyl optionally substituted with phenyl, or Z is



wherein
R^6 is a straight or branched (C_1–C_8)alkyl optionally substituted with (C_3–C_8)-cycloalkyl or with phenyl optionally substituted with hydroxy, (C_1–C_4)alkoxy, or (C_1–C_4)alkyl;
X^2 is oxygen or NH; and
R^5 is (C_1–C_5)alkyl optionally substituted with phenyl;
A is hydrogen,



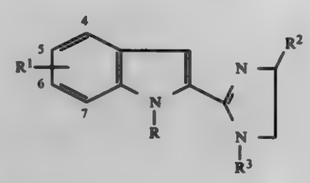
wherein
R^6 is (C_1–C_4)alkyl optionally substituted with C_6 cycloalkyl, (C_1–C_4)alkoxy, benzyloxy, caboxamido, or phenyl optionally substituted with hydroxy, (C_1–C_4)alkoxy, or (C_1–C_4)alkyl;
R^7 is hydrogen, acetyl, an alpha-aminomethylcarbonyl in which the nitrogen is unsubstituted, or alkoxycarbonyl of formula —CO_2R', where R' is a straight or branched (C_1–C_8)alkyl optionally substituted with phenyl or a (C_2–C_6) alkenyl group, or R^7 is an alpha-aminomethylcarbonyl unit in which the nitrogen is substituted with a straight or branched (C_1–C_6) alkoxycarbonyl optionally substituted with phenyl or a (C_2–C_6) alkenyl group;
E is oxygen;
m is an integer having a value of 0 or 1;
R^8 is hydrogen, or straight or branched (C_1–C_7)alkyl optionally substituted with (C_3–C_7)cycloalkyl, phenyl, (C_1–C_4)alkoxy, or benzyloxy;
X^1 is oxygen or NR^9, where R^9 is hydrogen or methyl;
or a pharmaceutically acceptable salt thereof.

5,385,919
IMIDAZOLINYL INDOLE DERIVATIVES USEFUL IN THE TREATMENT OF DIABETES

Christopher B. Chapleo, Swanland, and Gay P. Fagan, Brandesburton, both of United Kingdom, assignors to Reckitt & Colman Products Limited, London, England

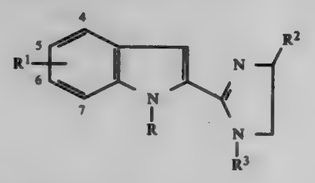
PCT No. PCT/GB91/01756, § 371 Date May 5, 1993, § 102(e) Date May 5, 1993, PCT Pub. No. WO92/06972, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 10, 1991, Ser. No. 39,232
Claims priority, application United Kingdom, Oct. 20, 1990, 9022858
Int. Cl.[6] A61K *31/415, 31/47*; C07D *401/04, 403/04*
U.S. Cl. 514—339 **16 Claims**

1. A compound of formula I:



wherein
R^1 is hydrogen or hydroxy;
R^2 is hydrogen or methyl;
R^3 is hydrogen or methyl; and
R is 2-pyridyl, 3-pyridyl or —C_6H_4—R^4, where R^4 is hydrogen or hydroxy, or a non-toxic salt thereof.

14. A method of treating diabetes which comprises administering to a patient in need thereof an effective amount of a compound of formula I:



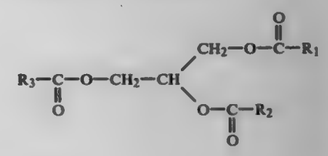
wherein:
R^1 is hydrogen or hydroxy;
R^2 is hydrogen or methyl;
R^3 is hydrogen or methyl; and
R is 2-pyridyl, 3-pyridyl or —C_6H_4—R^4, where R^4 is hydrogen or hydroxy, or a non-toxic salt thereof.

5,385,920
DIACYLGLYCEROL NICOTINATES

Alex Cordi, Suresnes; Jean-Michel Lacoste, Sevres; Jacques Duhault, Croissy sur Seine; Joseph Espinal, Paris, and Michelle Boulanger, Chatou, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Jun. 9, 1993, Ser. No. 73,894
Claims priority, application France, Jun. 10, 1992, 92 06951
Int. Cl.[6] A61K *31/44*; C07D *213/02*
U.S. Cl. 514—356 **7 Claims**

1. A compound of formula (I):



(I)

in which:
R_1 and R_2, which are identical or different, represent linear or branched (C_{11}–C_{19}) alkyl or linear or branched (C_{11}–C_{19}) alkenyl,
R_3 represents 3-pyridyl, 2-methyl-5-pyrazinyl or 2-methyl-5-pyrazinyl N-oxide,
or its enantiomers or optional diastereoisomers, or its addition salt with a pharmaceutically-acceptable acid.

5,385,921
PHARMACEUTICAL FORMULATIONS

Bernard R. Boar, Letchworth; Alan J. Cross, West Byfleet; Alfred R. Green, Southmoor, all of Great Britain, and Curt-Eric Hagberg, Upplands Väsby, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Filed Aug. 14, 1991, Ser. No. 744,914
Claims priority, application Sweden, Aug. 15, 1990, 9002659
Int. Cl.[6] A01K *31/425*
U.S. Cl. 514—365 **7 Claims**

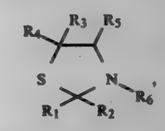
1. A method for the treatment of neurodegeneration involving loss of neuronal structure following a pathological insult in the brain of a human subject comprising administering to said subject a therapeutically effective amount of 5-(2-chloro-1-hydroxyethyl)-4-methylthiazole, an optical isomer thereof or a pharmaceutically acceptable salt or solvate thereof.

5,385,922
THIAZOLIDINE DERIVATIVES

Jan Bron, Giessenburg; Geert J. Sterk, Utrecht; Hendrik Timmerman, Voorschooten, and Jan. F. Van Der Werf, Amsterdam, all of Netherlands, assignors to Cedona Pharmaceuticals B.V., Haarlem, Netherlands

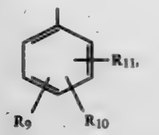
PCT No. PCT/EP91/01663, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO92/04337, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 3, 1991, Ser. No. 983,530
Claims priority, application Netherlands, Sep. 5, 1990, 9001955
Int. Cl.[6] C07D *377/04*; A61K *31/425*
U.S. Cl. 514—365 **4 Claims**

1. A thiazolidine derivative having at least one organic nitrate ester group and of formula 1,



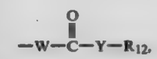
(1)

R_1 represents H or 1-4C-alkyl,
R_2 represents H, 1-6C-alkyl, 4-8C-cycloalkyl, phenyl-1-3C-alkyl or a group of formula 2,



(2)

wherein
R_9, R_{10}, and R_{11} simultaneously or separately represent H, 1-6C-alkyl, 1-6C-alkoxy, 4-8C-cycloalkyl, 4-8C-cycloalkoxy, F, Cl, Br, NO_2, nitroxy-2-6C-alkoxy, nitroxy-4-8C-cycloalkoxy, nitroxy-1-2C-alkyl-4-8C-cycloalkyl-1-2C-alkoxy or a group



wherein
W represents a bond or —OCH_2—,
Y represents an oxygen atom or an imino group and
R_{12} represents H, 1-4C-alkyl, 4-8C-cycloalkyl, nitroxy-2-6C-alkyl or nitroxy-4-8C-cycloalkyl,
R_3 and R_4 represent H or 1-4C-alkyl,
R_5 represents H or



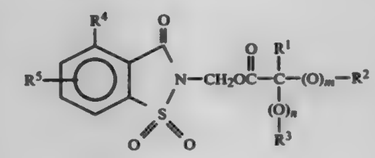
wherein
Z represents an oxygen atom or an imino group and
R_7 represents H, 1-4C-alkyl, 4-8C-cycloalkyl, nitroxy-2-6C-alkyl, nitroxy-4-8C-cycloalkyl, nitroxy-1-2C-alkyl-4-8C-cycloalkyl-1-2C-alkyl or 4-nitroxy-2,6-dioxabicyclo[3.3.-0]oct-8-yl, and
R_6 represents H or —X—R_8,
wherein
X represents carbonyl or sulfonyl and
R_8 represents 1-4C-alkyl, 4-8C-cycloalkyl, nitroxy-2-6C-alkyl, nitroxy-4-8C-cycloalkyl, phenyl or 1-4C-alkylphenyl,
or a salt thereof.

5,385,923
2-SACCHARINYLMETHYL ARYL AND ARYLOXY ACETATES USEFUL AS PROTEOLYTIC ENZYME INHIBITORS

Lee H. Latimer, Brighton, and Richard P. Dunlap, Penfield, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Continuation of Ser. No. 815,740, Dec. 30, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 109,849
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[6] C07D *275/04*; A61K *31/425*
U.S. Cl. 514—373 **13 Claims**

1. A compound having the formula:



wherein:
m is zero or one, n is zero, and the sum of m+n is zero or one;
R^1 is hydrogen or lower-alkyl;
R^2 is hydrogen or lower-alkyl;
R^3 is phenyl or phenyl substituted by from one to three, the same or different, members of the group consisting of lower-alkyl, perfluorolower-alkyl, lower-alkoxy and halogen;
R^4 is hydrogen, halogen, lower-alkyl, perfluorolower-alkyl, perchlorolower-alkyl, lower-alkenyl, lower-alkynyl, cyano, carboxamido, amino, lower-alkylamino, dilower-alkylamino, lower-alkoxy, benzyloxy, lower-alkoxycarbonyl, hydroxy or phenyl; and
R^5 is hydrogen or from one to two substituents in any of the 5-, 6- or 7-positions selected from halogen, cyano, nitro, N=B, lower-alkyl-2-pyrrolyl, lower-alkylsulfonyl-amino, polyfluorolower-alkylsulfonylamino, polychlorolower-alkylsulfonylamino, aminosulfonyl, lower-alkyl, polyfluoro-lower-alkyl, polychlorolower-alkyl, cycloalkyl, lower-alkoxy, hydroxy, carboxy, carboxamido, hydroxy-lower-alkyl, methylenedioxy, cycloalkyloxy, formyl, aminomethyl, polyfluorolower-alkylsulfonyl, polychlorolower-alkylsulfonyl, lower-alkylsulfonylaminosulfonyl, di(-lower-alkyl)phosphonoxy, lower-alkoxypoly-lower-alkyleneoxy, hydroxy-lower-alkoxy, polyhydroxy-alkoxy, polyalkoxy-alkoxy, —SR, —SOR, —SO_2R, —OCOR, —O—(C_1–C_{10} alkylene)—COOR, —O—(C_2–C_{10} alkylene)-N=B where R is lower-alkyl, phenyl, benzyl or naphthyl, or phenyl or naphthyl substituted by from one to two substituents selected from lower-alkyl, lower-alkoxy or halogen and where N=B in each instance is amino, lower-alkylamino, dilower-alkylamino, 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl, 1-imidazolyl or (carboxylower-alkyl)amino; or R^5 is a 5- or 6-membered saturated ring fused to the saccharin ring at the 5,6 or 6,7 positions, said ring containing two heteroatoms chosen from the group consisting of nitrogen, oxygen and sulfur or a methylated derivative of said ring;
or acid-addition salts of basic members thereof or base-addition salts of acidic members thereof.

5,385,924

Patent Not Issued For This Number

5,385,925

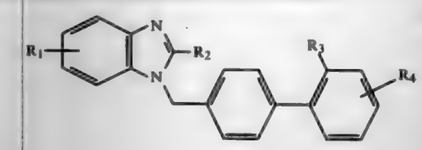
BENZIMIDAZOLES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS AND PROCESSES FOR PREPARING THEM

Berthold Narr; Norbert Hauel, both of Biberach; Jacques Van Meel, Mittelbiberach; Wolfgang Wienen, Apfingen; Michael Entzeroth, Warthausen, and Uwe Ries, Biberach, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

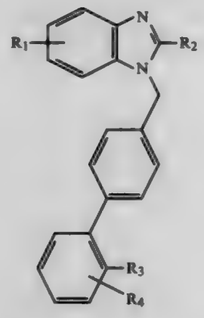
Continuation of Ser. No. 732,868, Jul. 19, 1991, abandoned. This application Mar. 30, 1994, Ser. No. 220,472
Claims priority, application Germany, Jul. 23, 1990, 4023369; Oct. 4, 1990, 4031287; Feb. 20, 1991, 4105324
Int. Cl.[6] A61K *31/42;* **C07D** *413/14, 413/04*
U.S. Cl. 514—382 **6 Claims**

1. A method for treating hypertension in a patient which comprises administering to the patient a therapeutically effective amount of a benzimidazole of the formula I

(I)



wherein
R_1 represents a benzoxazolyl group optionally substituted in the phenyl nucleus by a fluorine, chlorine or bromine atom, by a C_{1-3}-alkyl group, by a C_{1-3}-alkoxy or by a trifluoromethyl group;
R_2 represents a hydrogen atom or a straight-chained or branched C_{1-5}-alkyl group in which a methylene group may be replaced by a sulfur atom;
R_3 represents a carboxy, cyano, 1H-tetrazolyl or 1-triphenylmethyl-tetrazolyl group or an alkoxycarbonyl group with a total of 2 to 5 carbon atoms; and,
R_4 represents a hydrogen, fluorine, chlorine or bromine atom;
or, a pharmaceutically acceptable salt thereof.
4. A benzimidazole of the formula I



wherein
R_1 represents a benzoxazolyl group optionally substituted in the phenyl nucleus by a fluorine, chlorine or bromine atom, by a C_{1-3}-alkyl group, by a C_{1-3}-alkoxy or by a trifluoromethyl group;
R_2 represents a hydrogen atom or a straight-chained or branched C_{1-5}-alkyl group in which a methylene group may be replaced by a sulfur atom;
R_3 represents a carboxy, cyano, 1H-tetrazolyl or 1-triphenylmethyl-tetrazolyl group or an alkoxycarbonyl group with a total of 2 to 5 carbon atoms; and,
R_4 represents a hydrogen, fluorine, chlorine or bromine atom;
or, a pharmaceutically acceptable salt thereof.

5,385,926

MICROBICIDAL ACTIVE COMPOUND COMBINATIONS

Georg-Wilhelm Ludwig, Krefeld; Otto Exner, Ratingen; Wilfried Paulus, Krefeld; Karl-Heinz Büchel, Burscheid, and Graham Holmwood, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 973,357, Nov. 9, 1992, abandoned, which is a division of Ser. No. 867,955, Apr. 13, 1992, Pat. No. 5,200,421. This application Oct. 26, 1993, Ser. No. 143,410
Claims priority, application Germany, Apr. 23, 1991, 4113158
Int. Cl.[6] A01N *43/64, 47/10*
U.S. Cl. 514—383 **7 Claims**

1. A microbicidally active composition which comprises
A) (RS)-2-(2,4-dichlorophenyl)-1-(1H-1,2,4-triazo-2-yl)-hexan-2-ol or a salt thereof, and
B) 3-ido-2-propargyl n-butylcarbamate,
wherein the synergistic ratio of A:B is about 7:3.

5,385,927

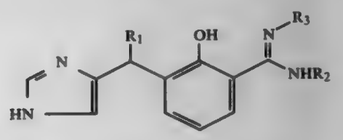
HYDROXY-3-[1-(1H-IMIDAZOL-4-YL)ALKYL]-BENZENECARBOXIMIDAMIDES AND THEIR USE IN TREATING GLAUCOMA

Philippe Michel, Beersel; Eric Cossement, Brussels; Jean Gobert, Brussels, and Ernst Wülfert, Brussels, all of Belgium, assignors to U C B, S.A., Brussels, Belgium

Filed May 24, 1994, Ser. No. 248,205
Claims priority, application Germany, May 27, 1993, 9310965
Int. Cl.[6] A61K *31/535;* **C07D** *413/10, 233/64*
U.S. Cl. 514—397 **12 Claims**

1. A substituted 2-hydroxy-3-[1-(1H-imidazol-4-yl)alkyl]-benzenecarboximidamide, its optically active isomers or racemic mixtures, of the formula

(I)



wherein
R_1 represents a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms,
R_2 represents a hydrogen atom, a hydroxyl group, an amino group or an alkyl radical having 1 to 4 carbon atoms,
R_3 represents a hydrogen atom, or
R_2 and R_3 taken together represent a —CH_2–CH_2— group;
or a non-toxic ophthalmologically acceptable acid addition salt thereof.

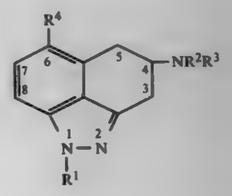
5,385,928

TETRAHYDROBENZ [CD] INDAZOLES, COMPOSITIONS AND USE

Michael E. Flaugh, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 18, 1994, Ser. No. 245,316
Int. Cl.[6] A61K *31/415;* **C07D** *231/54*
U.S. Cl. 514—403 **15 Claims**

1. A compound of the formula



I

R^1 is hydrogen, C_1–C_4 alkyl or a blocking group;
R^2 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl or aryl-(C_1–C_4 alkyl);
R^3 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, or cyclopropylmethyl;
R^4 is X-R^5 halo cyano, C_1–C_3 alkoxy, benzyloxy or acyloxy;
X is CO or CHOH;
R^5 is hydrogen, C_1–C_8 alkyl, substituted C_1–C_8 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, aryl, substituted aryl, aryl-(C_1–C_4 alkyl) , substituted aryl-(C_1–C_4 alkyl) , (C_3–C_7 cycloalkyl)-methyl, NR^6R^7, or C_3–C_7 cycloalkyl;
R^6 and R^7 are independently hydrogen, C_1–C_4 alkyl, phenyl-(C_1–C_4 alkyl), phenyl, or together with the nitrogen atom to which they are attached form a C_3–C_5 heterocyclic ring;
and the pharmaceutically acceptable salts thereof.

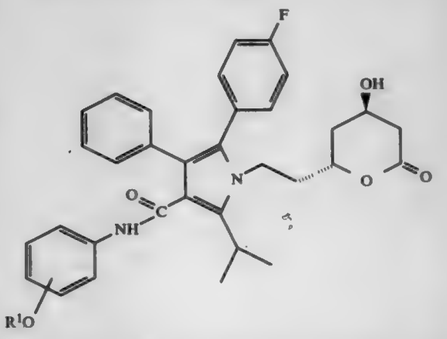
5,385,929

[(HYDROXYPHENYLAMINO) CARBONYL] PYRROLES

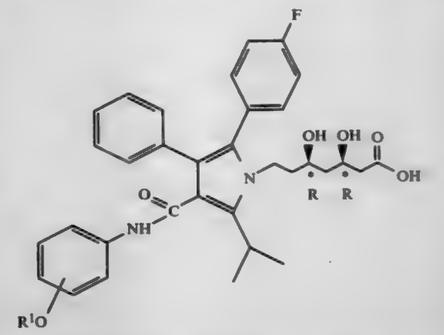
Susan M. Bjorge, Ann Arbor; Ann E. Black, Tecumseh; Bruce D. Roth, Ann Arbor, and Thomas Woolf, Dexter, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 4, 1994, Ser. No. 238,120
Int. Cl.[6] A61K *31/40;* **C07D** *405/06, 207/327*
U.S. Cl. 514—422 **18 Claims**

1. A compound of the formula



where R^1 is hydrogen or a hydroxy protecting group and solyates thereof or the open chain form of the formula



I

and the pharmaceutically acceptable salts and solyates thereof.

5,385,930

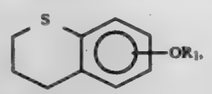
THIOCHROMAN COMPOUNDS

Gérald Guillaumet; Gérard Coudert, both of Orleans; Tchao Podona, Orleans la Source; Béatrice Guardiola-Lemaitre, Neuilly sur Seine; Pierre Renard, Versailles; Gérard Adam, Le Mesnil le Roi, and Daniel Henri-Caignard, Paris, all of France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 133,901, Oct. 12, 1993, which is a division of Ser. No. 62,424, May 17, 1993, Pat. No. 5,332,741. This application Jan. 14, 1994, Ser. No. 181,984
Claims priority, application France, May 18, 1992, 92 05960
Int. Cl.[6] A61K *31/38, 31/495, 31/505;* **C07D** *335/04*
U.S. Cl. 514—432 **11 Claims**

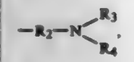
1. A compound selected from those of formula (I):

(I)



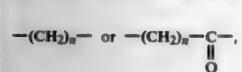
in which:

R_1 represents:
group of formula (B):

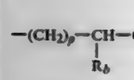


(B)

in which
R_2 is a group selected from:
—R'_2—, wherein R'_2 represents a group



wherein n is 1 to 6, inclusive R'_2 being unsubstituted or substituted in the alkylene moiety by lower alkyl, aryl or aryl-lower alkyl, and



wherein p is 1, 2 or 3 and R_b represents a radical selected from hydroxy, lower alkoxy, lower alkylcarbonyloxy, aryloxy, and aryl-lower alkoxy,
one of R_3 and R_4, which are identical or different, each independently of the other represents a radical selected from:
hydrogen, and
lower alkyl that is unsubstituted or substituted by one or more radicals selected from halogen, hydroxy, and lower alkoxy, the other of R_3 and R_4 being cycloalkyl, cycloalkyl-lower alkyl, or, di(cycloalkyl)-lower alkyl, each of which is unsubstituted or substituted in the cycloalkyl moieties by one or more radicals selected from halogen, oxo, lower alkyl, and lower alkoxy, or aryl or adamantyl, or aryl-lower alkyl or adamantyl-lower-alkyl, in each case unsubstituted or substituted in the cyclic nucleus by one or more radicals selected from halogen, hydroxy, lower alkyl, lower alkoxy, and trifluoromethyl,
wherein, unless indicated otherwise:
the term "aryl" means phenyl or naphthyl,
and the terms "lower alkyl" and "lower alkoxy" indicate linear or branched groups containing 1 to 6 carbon atoms inclusive, an optical isomer, in pure form or in the form of a mixture, and an addition salt thereof with a pharmaceutically-acceptable acid or base.

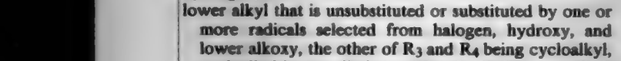
5,385,931

SULFONAMIDES DERIVED FROM BENZOCYCLIC OR BENZOHETEROCYCLIC ACIDS, THEIR PREPARATION AND APPLICATION IN THERAPEUTICS

Dennis Bigg; Alain Duflos, and Jean-Pierre Rieu, all of Castres, France, assignors to Pierre Fabre Medicament, Paris, France

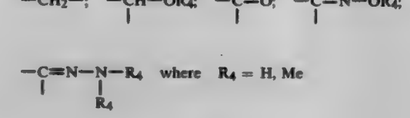
PCT No. PCT/FR90/00234, § 371 Date Dec. 28, 1990, § 102(e) Date Dec. 28, 1990, PCT Pub. No. WO90/12007, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 4, 1990, Ser. No. 613,842
Claims priority, application France, Apr. 5, 1989, 89 04470
Int. Cl.[6] A61K *31/34, 31/38;* **C07D** *307/81, 333/60*
U.S. Cl. 514—443 **33 Claims**

1. New sulphonamide derivatives of carbocyclic or benzoheterocyclic acids of general formula I



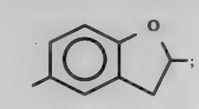
I

in which the radicals and substituents are defined as follows:
R represents a straight-chain or branched lower alkyl containing 1 to 9 carbon atoms, or phenyl or naphthyl radicals which are unsubstituted or substituted by one or more groups: lower alkyl (1 to 4 C), halogen, lower alkoxy (1 to 4 C), nitro, amino, dialkylamino or trifluoromethyl, or a thiophenyl radical;
R_1 represents hydrogen or a straight-chain or branched lower alkyl (1 to 4 C) or benzyl;
R_2 represents hydrogen or a straight-chain or branched lower alkyl (1 to 6 C), a phenyl group which is unsubstituted or substituted by a chlorine or a methoxy or an aralkyl group containing from 7 to 9 carbon atoms;
R_3 represents hydrogen or a straight-chain or branched lower alkyl (1 to 6 C);
—X— represents a divalent functional radical chosen from the following:

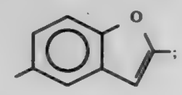


where R_4 = H, Me

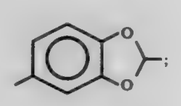
with the proviso, however, that X differs from $—CH_2—$ when —A— represents divalent radicals a, b, d and e below, —A— represents a benzo-cyclic or benzo-heterocyclic divalent radical chosen from the following: (a–e) and (h–j)



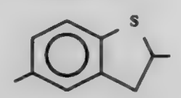
(a)



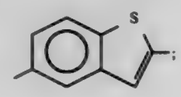
(b)



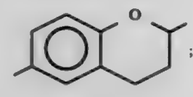
(c)



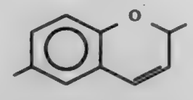
(d)



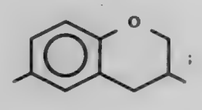
(e)



(g)

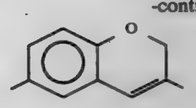


(h)



(i)

-continued



(j)

and n is 1 to 4 inclusive, the hydrated forms of acids of general formula I and the therapeutically acceptable organic or inorganic salts of I, it is being possible for the compounds of general formula I to be in the form of a racemic mixture or to be isolated in the form of enantiomers, diastereoisomers or their mixture in any proportions.

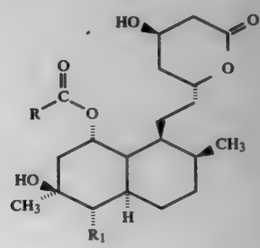
5,385,932

HMG-COA REDUCTASE INHIBITOR METABOLITES

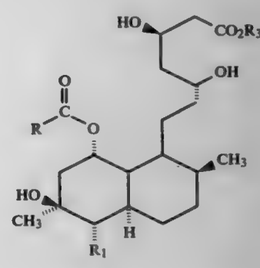
Stanley Vickers, Perkasie, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 577,184, Sep. 4, 1990, Pat. No. 5,112,857. This application Feb. 18, 1992, Ser. No. 834,948
Int. Cl.[6] A61K *31/365*
U.S. Cl. 514—460 **5 Claims**

1. A compound of structural formula (I) or (II):



(I)



(II)

wherein:
R is $C_{1\text{-}10}$alkyl;
R_1 is H; and
R_3 is H or $C_{1\text{-}5}$alkyl or a pharmaceutically acceptable salt of a compound of formula (II) wherein R_3 is H.

5,385,933

METHOD FOR THE TREATMENT OF CANCER BY USE OF THE COPPER COMPLEX OF S-(METHYLTHIO)-DL-HOMOCYSTEINE OR THE L-ENANTIOMORPH THEREOF

Marco Rabinovitz, and Joyce M. Fisher, both of Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 315,911, Feb. 27, 1989, Pat. No. 5,124,351. This application Jun. 19, 1992, Ser. No. 901,261
Int. Cl.[6] A61K *31/30, 31/195*
U.S. Cl. 514—499 **28 Claims**

1. A method of inhibiting in a mammal proliferation of non-quiescent cells susceptible to treatment with an effective amount of S-(methylthio)-homocysteine and a copper chelate, which method comprises administering to said mammal an effective amount of S-(methylthio)-homocysteine selected from the group consisting of the L stereoisomer and a racemic mixture of the D and L stereoisomers of S-(methylthio)-homocysteine and an effective amount of a copper chelate, the copper of which readily forms an inhibitory complex with S-(mehylthio)-homocysteine, such that an effective amount of the inhibitory complex forms in the mammal between said S-(methylthio)-homocysteine and the copper of said copper chelate so as to inhibit the proliferation of non-quiescent cells contacted by said effective amount of said inhibitory complex.

5,385,934

METHODS FOR PREVENTING PRECIPITATION OF COPPER FROM COPPER BASED BACTERICIDAL COMPOSITIONS CONTAINING IRON

Milton N. Schroth, Orinda; Yung-Ann Lee, Albany, and Mavis D. Chong, El Sobrante, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 644,997, Jan. 22, 1991, Pat. No. 5,202,353. This application Apr. 12, 1993, Ser. No. 46,581
Int. Cl.[6] A01N *55/02*
U.S. Cl. 514—500 **23 Claims**

1. A method for inhibiting aggregate and/or sediment formation upon the addition of Fe^{+3} to an aqueous fixed copper based bactericidal composition which method comprises:
(a) adding an amount of an aggregate inhibiting salt to an aqueous fixed copper based bactericidal composition which has a free Cu^{+2} ion concentration from 1 to 30 ppm so that upon the subsequent or simultaneous addition of up to 300 ppm of Fe^{+3} to this composition, the size and rate of aggregate and/or sediment formation in the composition is inhibited; and
(b) adding up to 300 ppm Fe^{+3} to the composition produced in (a) above.

5,385,935

METHOD FOR THE INHIBITION OF RESTENOSIS ASSOCIATED WITH CORONARY INTERVENTION

Hideo Tamai, Moriyama; Kinzo Ueda, Kusatsu, and Yung-sheng Hsu, Moriyama, all of Japan, assignors to Kissei Pharmaceutical Co., Ltd., Japan

Filed Sep. 7, 1993, Ser. No. 116,701
Claims priority, application Japan, Sep. 14, 1992, 4-288086
Int. Cl.[6] A61K *31/24*
U.S. Cl. 514—535 **8 Claims**

1. A method for the inhibition restenosis associated with coronary intervention in a human patient, which comprises administering to the patient 2-(3,4-dimethoxycinnamoyl-)aminobenzoic acid or a pharmaceutically acceptable salt thereof in a daily dose of about 300–1000 mg for a treatment period of at least three consecutive months after coronary intervention.

5,385,936

GOSSYPOL ACETIC ACID FOR THE TREATMENT OF CANCER

Mary R. Flack, Kensington; Richard Knazek, Bethesda, both of Md., and Marcus Reidenberg, Scarsdale, N.Y., assignors to The United States of America as represented by the Secretary of the Department of the Health and Human Services, Washington, D.C.

Filed Jul. 12, 1990, Ser. No. 551,353
Int. Cl.[6] A61K *31/225, 31/19*
U.S. Cl. 514—548 **7 Claims**

1. A method for treating cancer in a human, wherein said cancer is susceptible to treatment with gossypol acetic acid, or physiologically acceptable salts thereof, which comprises administering to said human an anti-cancer effective amount of a compound selected from the group consisting of gossypol

acetic acid, and physiologically acceptable salts thereof, and a pharmaceutically acceptable carrier.

5,385,937

NITROSATION OF HOMOCYSTEINE AS A METHOD FOR TREATING HOMOCYSTEINEMIA

Jonathan Stamler, Boston, and Joseph Loscalzo, Dedham, both of Mass., assignors to Brigham & Women's Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 683,415, Apr. 10, 1991, abandoned. This application Feb. 21, 1992, Ser. No. 839,188

Int. Cl.[6] A01N *37/00*; A61K *31/19*

U.S. Cl. 514—557 **4 Claims**

1. A method for treatment or prevention of hyperhomocysteinemia, comprising

administering an amount effective to treat or prevent hyperhomocysteinemia of a compound selected from the group consisting of S-nitroso-N-acetylcysteine, S-nitroso-glutathione, S-nitroso-cysteine, S-nitroso-homocysteine and S-nitroso-captopril to an individual who has or is to be prevented from having hyperhomocysteinemia.

5,385,938

METHOD OF USING GLYCOLIC ACID FOR TREATING WHINKLES

Rucy J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002, and Eugene J. Van Scott, 3 Hidden La., Abington, Pa. 19001

Continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Aug. 7, 1992, Ser. No. 925,877

Int. Cl.[6] A61K *7/48, 31/19*

U.S. Cl. 514—557 **15 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising 2-hydroxyethanoic acid (glycolic acid), or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,385,939

GABA-ERGIC MODULATION OF EYE GROWTH

Alan M. Laties, Philadelphia, and Richard A. Stone, Havertown, both of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Apr. 30, 1993, Ser. No. 56,056

Int. Cl.[6] A61K *31/195, 31/205*

U.S. Cl. 514—561 **4 Claims**

1. A method of controlling the abnormal postnatal growth of the eye of a maturing animal which comprises the ocular administration of a therapeutically effective amount of a $GABA_B$ receptor antagonist.

5,385,940

TREATMENT OF STROKE WITH NITRIC-OXIDE RELEASING COMPOUNDS

Michael A. Moskowitz, Belmont, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Filed Nov. 5, 1992, Ser. No. 972,267

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—565 **4 Claims**

1. A method for treatment of an ischemic stroke patient, comprising administering intraveneously to said patient an effective amount of a nitric oxide-releasing compound for treating the ischemic stroke.

5,385,941

SALTS/ION PAIRS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS IN VARIOUS DOSAGE FORMS

Mahdi B. Fawzi, Flanders, and Majid Mahjour, Netcong, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 942,108, Sep. 8, 1992, which is a continuation of Ser. No. 664,018, Mar. 4, 1991, abandoned. This application Jun. 15, 1993, Ser. No. 76,910

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—567 **14 Claims**

1. An improved pharmaceutical composition comprising the salt/ion pair of a non-steroidal anti-inflammatory drug and sympathomimetic drug combination.

5,385,942

QUINONE DERIVATIVES AND PHARMACOLOGICAL USE

Shinya Abe; Yasushi Okamoto; Katsuya Tagami; Shigeki Hibi; Junichi Nagakawa; Kazuo Hirota; Icharu Hishinuma; Kaname Miyamoto; Takashi Yamanaka; Hiromitsu Yokohama; Tsutomu Yoshimura; Tohru Horie; Yasunori Akita; Koichi Katayama, and Isao Yamatsu, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

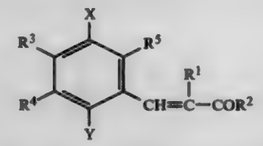
Division of Ser. No. 576,054, Aug. 31, 1990, Pat. No. 5,210,239. This application Mar. 1, 1993, Ser. No. 22,688

Claims priority, application Japan, Sep. 11, 1989, 1-232761

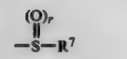
Int. Cl.[6] A61K *31/19*; C07D *265/30*

U.S. Cl. 514—568 **19 Claims**

1. A quinone derivative represented by the formula:



wherein X and Y may be the same or different from each other and each represents a hydroxyl group or a group represented by the formula $-(-OCH_2-)_n-OR^6$, where n is 0 or 1 and R^6 is a lower alkyl group or an acyl group; R^1 is an alkyl group having 2 to 20 carbon atoms; a cycloalkyl group; a cycloalkylalkyl group; an alkenyl group; an alkynyl group; an arylalkyl group; a group represented by the formula $-(-CH_2-)_p-CN$ where p is an integer from 1 to 10; an alkyl-substituted heteroaryl group, a group represented by the formula $-(-CH_2-)_q-B$ where q is an integer from 1 to 6 and B is a group of the formula



where r is 0, 1 or 2 and R^7 is a lower alkyl group, a cycloalkyl group or an aryl group, a group represented by the formula $-O-R^{11}$ where R^{11} is a lower alkyl group or an aryl group, or a group represented by the formula $-(-CH_2-CH_2-O-)_s-CH_3$ where s is an integer from 1 to 3; R^2 is a group represented by $-OR^8$ where R^8 is a hydrogen atom, a lower alkyl group, or a group represented by the formula



where R^9 and R^{10} is the same or different from each other and each is a hydrogen atom, a lower alkyl group, a hydroxyalkyl group or a heteroaryl group, or R^9 and R^{10} form a heterocyclic group with the adjacent nitrogen atom, said heterocyclic group optionally being substituted; and R^3, R^4 and R^5 are the same or different from each other and each is a hydrogen atom, a lower alkyl group or a lower alkoxy group or a pharmacologically acceptable salt thereof.

5,385,943

USE OF TOPICALLY APPLICABLE PREPARATIONS FOR TREATMENT OF PRESBYDERMA

Marcella Nazzaro-Porro, Rome, Italy, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Continuation of Ser. No. 892,878, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 604,403, Oct. 24, 1990, abandoned, which is a continuation of Ser. No. 330,046, Mar. 29, 1989, abandoned. This application Apr. 7, 1993, Ser. No. 43,955

Claims priority, application Germany, Mar. 30, 1989, 3811081

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—574 **21 Claims**

1. A method of treating keratoses in a patient in need of such treatment comprising topically administering to the affected skin of the patient an effective amount of a alpha,omega-n-C_{7-13}-alkanedicarboxylic acid, an ester thereof cleavable by skin enzymes or a pharmacologically acceptable salt thereof.

5,385,944

NAPHTHYLETHYLUREAS AND NAPHTHYLETHYLTHIOUREAS

Daniel Lesieur, Gondecourt; Said Yous, Lille; Patrick Depreux, Armentieres; Gérard Adam, Le Mesnil le Roi; Pierre Renard, Versailles; Bruno Pfeiffer, Eaubonne, and Béatrice Guardiola-Lemaitre, Neuilly sur Seine, all of France, assignors to Adir et Compagnie, Courbevoie, France

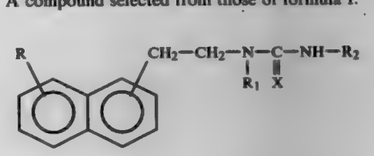
Division of Ser. No. 930,285, Aug. 14, 1992. This application Apr. 27, 1993, Ser. No. 53,911

Claims priority, application France, Aug. 23, 1991, 91 10547

Int. Cl.[6] A61K *31/17*; C07C *335/06*

U.S. Cl. 514—585 **13 Claims**

1. A compound selected from those of formula I:



(I)

in which:

R represents hydrogen or a group OR_3 wherein R_3 represents straight-chained or branched alkyl having 1 to 6 carbon atoms inclusive;

R_1 represents hydrogen or straight-chained or branched alkyl having 1 to 6 carbon atoms inclusive;

X represents sulphur;

R_2 represents linear or branched lower alkyl having 1 to 6 carbon atoms inclusive, unsubstituted or optionally-substituted cycloalkyl having 3 to 8 carbon atoms, inclusive, (C_3-C_8)-cycloalkyl-(C_1-C_6) alkyl,

addition salts thereof with a pharmaceutically-acceptable base, and

isomers, epimers and diastereoisomers thereof,

wherein:

the term "substituted" associated with the expressions "cycloalkyl" and "cycloalkylalkyl" indicates that the cyclic system may be substituted by one or more groups selected from halogen, linear or branched lower alkyl having 1 to 6 carbon atoms inclusive, and linear or branched lower alkoxy having 1 to 6 carbon atoms inclusive.

5,385,945

7-(5-SUBSTITUTED CYCLOPENTYL) AND (5-SUBSTITUTED CYCLOPENTENYL) HEPTYL ALCOHOLS, HEPTYLAMINES AND HEPTANOIC ACID AMIDES, AND METHOD OF LOWERING INTRAOCULAR PRESSURE IN THE EYE OF A MAMMAL BY ADMINISTRATION OF THESE NOVEL COMPOUNDS

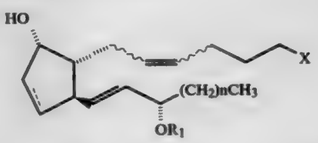
Michael E. Garst, Newport Beach, and Robert M. Burk, Irvine, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Oct. 21, 1992, Ser. No. 964,223

Int. Cl.[6] A61K *31/557*; C07C *405/00*

U.S. Cl. 514—613 **15 Claims**

1. A compound of the formula



where the dotted line represents a bond the wavy lines represent bonds which are either in cis or trans configuration;

R_1 represents H, or CO—R_2 where R_2 is lower alkyl of 1 to 6 carbons, carbocyclic aryl or heterocyclic aryl; or carbocyclic aryl or heteroaryl substituted lower alkyl group;

X represents CO—NR_3R_4 where R_3 and R_4 independently are H or lower alkyl, and

n is an integer between 0 and 8.

5,385,946

METHOD FOR TREATING HYPERTENSION WITH DISUBSTITUTED GRANIDINE COMPOUNDS

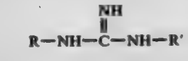
John Keana, Eugene, and Eckard Weber, Portland, both of Oreg., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon, Eugene, Oreg.

Division of Ser. No. 528,216, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 254,068, Oct. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 884,150, Jul. 10, 1986, Pat. No. 4,709,094, and a continuation-in-part of Ser. No. 346,494, May 2, 1989, abandoned. This application Feb. 23, 1993, Ser. No. 47,551

Int. Cl.[6] A61K *31/155*

U.S. Cl. 514—634 **26 Claims**

1. A method of treating hypertension which comprises administering to a hypertensive person, in an amount effective to ameliorate the hypertensive state, an N,N'-disubstituted guanidine of the following formula



wherein R and R' each is substituted or unsubstituted alkyl of at least 4 carbon atoms, a cycloalkyl group of 3 to 12 carbon atoms or a carbocyclic aryl of at least 6 carbon atoms, wherein at least one of said R or R' is adamantyl.

5,385,947

OCTAHYDROPHENANTHRENE DERIVATIVES

Thierry Godel, Basel, Switzerland, and Eva-Maria Gutknecht, Buggingen-Seefelden, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

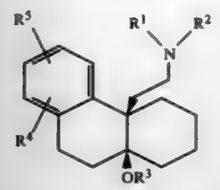
Continuation of Ser. No. 179,215, Jan. 10, 1994, abandoned. This application May 31, 1994, Ser. No. 252,131

Claims priority, application Switzerland, Jan. 15, 1993, 123/93

Int. Cl.[6] C07C *211/31, 67/02;* **A61K** *31/21, 31/135*

U.S. Cl. 514—654 **29 Claims**

1. A compound of the formula:



I

wherein

R^1 and R^2 each individually are hydrogen or lower alkyl optionally substituted by aryl or C_{3-6}-cycloalkyl;

R^4 and R^5 are both hydrogen or are both halogen or one is hydrogen and the other is halogen, hydroxy, lower alkoxy, aryloxy or amino; and

R^3 is hydrogen or, where no primary or secondary amino group is present, hydrogen or alkanoyl;

and pharmaceutically acceptable acid addition salts; with the proviso that all the groups R^1 through R^5 cannot simultaneously be hydrogen.

5,385,948

ALKOXYALKYL LACTAMS AS SOLVENTS FOR MACRO AND MICROEMULSIONS

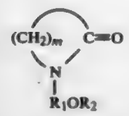
Ratan K. Chaudhuri, Butler; Kolazi S. Narayanan, Palisades Park, and Lowell R. Anderson, Morristown, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Feb. 16, 1993, Ser. No. 17,914

Int. Cl.[6] A01N *25/00, 43/00, 33/00*

U.S. Cl. 514—788 **26 Claims**

1. A stable emulsifiable concentrate comprising an agriculturally active chemical which is substantially insoluble in water, a surfactant, and a biodegradable alkoxyalkyl lactam solvent having the following formula:



where m=3–5, R_1 is an alkylene group having 1–6 carbon atoms, and R_2 is a C_1–C_{20} alkyl.

5,385,949

ALKALI OR ALKALINE EARTH METAL PROMOTED CATALYST AND A PROCESS FOR METHANOL SYNTHESIS USING ALKALI OR ALKALINE EARTH METALS AS PROMOTERS

John W. Tierney; Irving Wender, and Vishwesh M. Palekar, all of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Continuation of Ser. No. 823,127, Jan. 21, 1992, abandoned, which is a division of Ser. No. 675,140, Mar. 26, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 22,821

The portion of the term of this patent subsequent to Jan. 24, 2012, has been disclaimed.

Int. Cl.[6] C07C *27/06, 27/08*

U.S. Cl. 518—700 **20 Claims**

1. A process for the slurry synthesis of methanol from a gaseous mixture comprising carbon monoxide and hydrogen, the process comprising the step of the adding a copper chromite upon which there has been impregnated and reduced a material selected from the group consisting of basic alkali or alkaline earth compounds to a liquid carrier alcohol in an amount effective to promote the synthesis of methanol via a carbonylation/hydrogenolysis concurrent synthesis, in which the carrier alcohol undergoes a carbonylation reaction to yield a corresponding alkyl formate and the alkyl formate undergoes hydrogenation to yield methanol and the carrier alcohol, the carbonylation/hydrogenation concurrent synthesis occurring in a single reaction vessel at a reaction temperature in the range of approximately 100° C. to 160° C.

5,385,950

SEPARATION OF POLYMERS

Walter Mahler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 27, 1993, Ser. No. 68,463

Int. Cl.[6] B29B *17/00*

U.S. Cl. 521—45.5 **11 Claims**

1. A process for separating different polymers, comprising, subjecting a molten mixture of two or more different uncrosslinked polymers to a gravity field greater than that of the Earth's gravity field.

5,385,951

PROCESSES FOR PRODUCING FOAMABLE PARTS

Jan R. Soderberg, Overijse, Belgium, assignor to Exxon Chemical Patents Inc., Linden, N.J.

PCT No. PCT/EP91/01520, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/02574, PCT Pub. Date Feb. 2, 1992

PCT Filed Aug. 8, 1991, Ser. No. 983,581

Claims priority, application United Kingdom, Aug. 8, 1990, 9017405; Jan. 29, 1991, 9101934

Int. Cl.[6] B29C *67/22;* **C08J** *9/06*

U.S. Cl. 521—98 **8 Claims**

2. A process for filling cavities with a foamable composition, comprising the steps of:

a) blending;

(1) a blowing agent in the range of from about 1 to about 10 weight percent, based on the total weight of the foamable composition;

(2) a blowing agent activator in the range of from abut 0.5 to 5 weight percent, based on the total weight of the foamable composition;

(3) a crosslinking agent in the range of from about 1 to about 3 weight percent, based on the total weight of the foamable composition;

(4) a wax in the range of from about 0.2 to about 5 weight percent, based on the total weight of the foamable composition; and

(5) a paraffin up to about 1.5 weight percent, based on the total weight of the foamable composition;

b) blending the product of step (a) with a copolymer of ethylene and an acrylic acid ester, said copolymer having a melt index (MI) in the range of from about 0.2 to about 2, said copolymer containing in the range of from about 12 to about 18 weight percent of ester derived units, said copolymer having a melting point in the range of from about 80° to about 100° C.;

c) heating the product of step (a) and step (b) to a temperature in the range of from about the melting point of the polymer to about 10° C. above the melting point of said polymer;

d) shearing the product of step (a) and step (b) at a shear rate in the range of from about 100 seconds^{-1} to about 200 seconds^{-1};

e) placing the blended, heated, sheared product into a cavity; and

f) heating the product of step (e) to a temperature sufficient to cause foaming and crosslinking.

5,385,952

FLAME RESISTANT RIGID POLYURETHANE FOAMS CONTAINING PHOSPHORUS AND A HALOGEN

Thomas L. Fishback, Gibraltar, and Curtis J. Reichel, Southgate, both of Mich., assignors to BASF Corporation, Mount Olive, N.J.

Filed Aug. 17, 1994, Ser. No. 292,114

Int. Cl.[6] C08G *18/06, 18/08*

U.S. Cl. 521—131 **6 Claims**

1. A process for making a polyurethane foam comprising the reaction product of an organic aromatic isocyanate with a polyol composition, said polyol composition comprising:

a) a compound having at least two isocyanate reactive hydrogens, and

b) an organo-phosphorus compound having at least two isocyanate reactive hydrogens,

said isocyanate and polyol composition reacted in the presence of

c) a non-halogenated liquid hydrocarbon having five to seven carbon atoms, and

d) a secondary or tertiary mono-halogenated hydrocarbon having three to six carbon atoms.

5,385,953

MICROCELLULAR POLYURETHANE COMPOSITE

Thomas R. McClellan, Mission Viejo, Calif., assignor to Urethane Technologies, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 771,308, Oct. 2, 1991, Pat. No. 5,254,405. This application Oct. 18, 1993, Ser. No. 138,759

Int. Cl.[6] B32B *5/22;* **B60C** *5/01;* **C08L** *75/00*

U.S. Cl. 521—109.1 **25 Claims**

1. A microcellular polyurethane composite material comprising from 1 to 40 wt. % of desiccant dried rubber particles having a moisture content of less than 500 ppm incorporated in a polyurethane matrix, wherein said desiccant dried rubber particles have been dried prior to adding to said polyurethane by mixing rubber particles with desiccant.

5,385,954

ENERGY POLYMERIZABLE COMPOSITIONS CONTAINING ORGANOMETALLIC INITIATORS

Michael C. Palazzotto, and William A. Hendrickson, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 799,046, Nov. 26, 1991, Pat. No. 5,191,101, which is a division of Ser. No. 443,660, Nov. 22, 1982, Pat. No. 5,089,536. This application Jan. 27, 1993, Ser. No. 9,845

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[6] C08F *2/50, 4/44*

U.S. Cl. 522—29 **24 Claims**

1. An adhesive composition which is an energy polymerizable composition comprising a cationically polymerizable material selected from the group consisting of cyclic ethers, vinyl ethers, N-vinyl compounds, cyclic formals, and cyclic organosiloxanes, and a catalytically effective amount of an ionic salt of an organometallic complex cation and a halogen containing complex anion of a metal or metalloid, the metal in said organometallic complex cation being selected from elements of Periodic Groups IVB, VB, VIB, VIIB, and VIIIB, the total charge on said metal in said cation resulting in a net residual positive charge to said complex.

5,385,955

ORGANOSILANE COATING COMPOSITION FOR OPHTHALMIC LENS

Yassin Y. Tarshiani, Largo, and Steven A. Weber, St. Petersburg, both of Fla., assignors to Essilor of America, Inc., St. Petersburg, Fla.

Filed Nov. 5, 1992, Ser. No. 972,359

Int. Cl.[6] C08F *2/50;* **C08J** *7/06;* **C08K** *3/36, 5/54*

U.S. Cl. 522—31 **35 Claims**

1. Radiation-curable and abrasion resistant coating composition consisting essentially of a monoepoxysilane, colloidal silica, an alkyltrialkoxysilane or tetraalkoxysilane, and an ultraviolet actuated photoinitiator in an amount sufficient to initiate a cationic cure of such composition.

5,385,956

METHOD FOR THE PREPARATION OF A POLYMER COMPOSITION CONTAINING AN ELECTRICALLY CONDUCTIVE POLYMER

Ronald M. A. M. Schellekens, Meerssen, and Hans K. Van Dijk, Geleen, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

Continuation-in-part of Ser. No. 820,812, Jan. 15, 1993, abandoned. This application Jul. 15, 1993, Ser. No. 91,716

Claims priority, application Netherlands, Jul. 15, 1992, 9201273

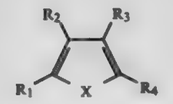
Int. Cl.[6] C08L *79/04*

U.S. Cl. 522—116 **11 Claims**

1. A method for preparing a polymer composition containing an electrically conductive polymer which comprises the steps of

converting a non-polymerizable precursor monomer into a polymerizable monomer with the aid of a sufficiently energy-intense light source, and polymerizing the monomer in the presence of a catalyst wherein,

the precursor monomers have a structure according to formula (I):



wherein:

X is —N—, —S— or —O—;

R^1 is hydrogen, —C(O)OH, —C(O)C(O)OH, —SO3H, —C(O)H, —I or —Br;

R^2 is hydrogen, a C_1–C_{10} alkyl group, —C(O)OH or a halogen;

R^3 is hydrogen, a C_1–C_{10} alkyl group, —C(O)OH or a halogen; and

R^4 is hydrogen, —C(O)OH, —C(O)C(O)OH, —SO3H, —C(O)H, —I or —Br, and

wherein R^1 and R^4 are not both hydrogen at the same time and R^2 and R^3 may form part of a closed ring structure.

5,385,957

HOTMELT INK JET COMPRISING IONOMERS HAVING MELTING POINTS FROM ABOUT 50° C. TO ABOUT 130° OR A SOFTENING POINT BELOW ABOUT 80° C., AND AN IMAGE-FORMING AGENT

Russell H. Tobias, Cary; Nicholas A. Davies, Elgin, Anthony J. Tortorello, Elmhurst, all of Ill., Robson F. Storey, Hattiesburg, Miss., assignors to Videojet Systems International, Inc., Wood Dale, Ill.

Filed Aug. 24, 1992, Ser. No. 934,561
Int. Cl.[6] C09D *5/00, 11/00*
U.S. Cl. 523—161 **23 Claims**

1. A hot melt ink comprising, ionomers and an image-forming agent, wherein the melting point of the ionomers is from about 50° C. to about 130° C., said ink exhibiting, in the molten stage, a viscosity from about 5 to about 60 centipoises (cps) at a temperature within the range from about 90° to 140° C.

5,385,958

ACTIVATOR FORMULATION AND COMPOSITION UTILIZING SAME

Andrew G. Bachmann, Harwinton, and Stephen E. Cantor, Cheshire, both of Conn., assignors to Dymax Corporation, Torrington, Conn.

Filed Mar. 5, 1993, Ser. No. 26,814
Int. Cl.[6] C08F *2/50, 4/34;* **C09J** *4/02*
U.S. Cl. 522—170 **17 Claims**

1. A multi-part, solvent-free composition that cures by chemical activation to an adhesive solid, comprising:

a polymerizable formulation including at least one polymerizable liquid acrylate ingredient; and

an activating formulation including about 0.5 to 80 percent by weight of a free radical-initiating ingredient that is capable of generating free radicals when reacted with an active oxygen compound and, conversely, about 20 to 99.5 percent of a reactive diluent, 20 to 100 weight percent of said diluent being a liquid vinyl ether compound and any remaining percentage thereof being a liquid epoxy compound, said composition further including an active oxygen compound that is reactive with said initiating ingredient to generate free radicals.

5,385,959

CAPSULE WHICH COMPRISES A COMPONENT SUBJECT TO DEGRADATION AND A COMPOSITE POLYMER

Liang S. Tsaur, Norwood, N.J., and Michael P. Aronson, West Nyack, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 875,914, Apr. 29, 1992, abandoned. This application Mar. 25, 1993, Ser. No. 36,766
Int. Cl.[6] C08L *89/00;* **C11D** *17/08;* **C12N** *9/96;* **B32B** *9/02*
U.S. Cl. 523—201 **3 Claims**

1. A polymer capsule for use in a detergent composition comprising:

(a) one or more enzymes;

(b) a composite polymer which comprises (i) hydrophobic polymer core particles; and (ii) a hydrophilic water soluble polymer or polymers chemically or physically attached to the hydrophobic core particles; and

(c) enzyme stabilizer;

wherein said hydrophilic polymer or polymers is not soluble in the detergent composition but is dissolved upon dilution of said composition with water and wherein said polymer is selected from the group consisting of synthetic nonionic water soluble polymers selected from the group consisting of polyvinyl alcohol, copolymers of polyvinyl alcohol and vinyl ester salts, polyvinyl pyrrolidone, copolymers of pyrrolidone with styrene and copolymers of pyrrolidone with vinyl ester salts; modified polysaccharides selected from the group consisting of cellulose acetate, alkyl cellulose and hydroxy alkyl cellulose; proteins and modified proteins; and acrylic polymers selected from the group consisting of polyacrylic acid, polymethacrylic acids and esters of salts acids;

wherein said hydrophobic polymer core particles are polymers derived from emulsion polymerizable monomers containing an ethylenically unsaturated group selected from the group consisting of styrene, methylstyrene, divinylbenzene, vinylacetate, esters of acrylic acid, esters of methacrylic acid, and mixtures of any of the monomers;

the ratio of said hydrophobic core particles to hydrophilic water soluble polymer being from about 2:8 to about 7:3;

wherein the enzyme is entrapped between the core particles and a web formed by said hydrophilic polymer or polymers;

wherein the enzyme stabilizer is added inside the capsule; and

wherein said polymer capsule comprises 0.1 to 10% by weight of the composition.

5,385,960

PROCESS FOR CONTROLLING ADSORPTION OF POLYMERIC LATEX ON TITANIUM DIOXIDE

William D. Emmons, Huntingdon Valley; William C. Finch, Blue Bell, and Meredith A. Morgan, Lansdale, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 801,974, Dec. 3, 1991, abandoned. This application May 20, 1993, Ser. No. 65,883
Int. Cl.[6] C08J *3/03;* **C08K** *3/22, 3/32;* **C08L** *43/02*
U.S. Cl. 523—205 **21 Claims**

1. A process for preparing an aqueous dispersion including selected polymeric latex particles and titanium dioxide pigment particles and for controlling the adsorption of the selected polymeric latex particles on the titanium dioxide particles, the process comprising:

a) dispersing titanium dioxide pigment particles in a first aqueous medium;

b) preparing a dispersion or suspension of selected polymeric latex particles in a second aqueous medium, the selected polymeric latex particles having at least one dihydrogen phosphate functional group;

c) mixing the aqueous media containing the titanium dioxide pigment particles and the selected polymeric latex particles;

d) permitting the selected polymeric latex particles to adsorb on the titanium dioxide particles to form composite particles, the composite particles not comprising a continuous layer of polymer enveloping the surface of the respective titanium dioxide particles; and

e) then providing an effective amount of dibasic phosphate to the mixture of selected polymeric latex particles and titanium dioxide particles.

5,385,961

AMINO SILICONE/PHOSPHITE COMPOSITIONS

Roger W. Avakian, and James A. Mahood, both of Parkersburgh, W. Va., assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 27, 1993, Ser. No. 9,510
Int. Cl.[6] C08K *9/06, 5/51;* **C08G** *77/04*
U.S. Cl. 523—213 **15 Claims**

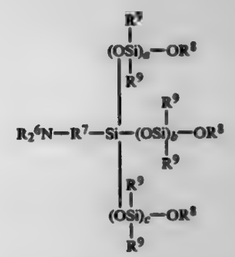
1. An organic phosphite composition comprising:

a. an organic phosphite particle comprising

i) a solid organic phosphite core, and

ii) an amino functional organo polysiloxane coating attached to said core, said coating protecting said phosphite core from moisture,

wherein said coating consists essentially of an amino polysiloxane of the formula:



wherein each R^6 is independently selected from hydrogen, substituted and unsubstituted organic radicals, and radicals of the formula—$R^7NR^6_2$, where R^6 is as previously defined; R^7 is a divalent organic radical; each R^8 is independently selected from substituted and unsubstituted alkyl radicals having from 1 to 30 carbon atoms; each R^9 is an independently selected organic radical having from 1 to 13 carbon atoms; and a, b and c are, independently, 0 or a positive integer, wherein at least one of a, b and c is a positive integer.

5,385,962

PHOTODEGRADATION-RESISTANT ELECTRODEPOSITABLE PRIMER COMPOSITIONS CONTAINING HINDERING AMINOETHER LIGHT STABILIZERS

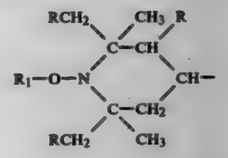
Victor G. Corrigan, North Olmstead; Gerald W. Graber, Westlake; Michael A. Polack, Medina, all of Ohio, and Robert R. Zwack, Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 745,797, Aug. 16, 1991, Pat. No. 5,260,135, which is a continuation-in-part of Ser. No. 736,199, Jul. 26, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 93,572
Int. Cl.[6] C08L *63/00*
U.S. Cl. 523—414 **8 Claims**

1. An electrodepositable film-forming primer composition, comprising:

(a) an aqueous dispersion of a cationic epoxy-based resin; and

(b) a hindered aminoether light stabilizer which has a group of the formula:



wherein R represents a hydrogen or methyl and R_1 represents C_1–C_{18} alkyl, C_1–C_6 hydroxyalkyl, C_3–C_8 alkenyl, C_3–C_8 alkynyl, C_7–C_{12} aralkyl which is unsubstituted or substituted in the alkyl moiety by hydroxyl, or C_1–C_{18} alkanoyl or C_3–C_5 alkenoyl; present in an effective amount to stabilize the electrodepositable film-forming primer composition against ultraviolet radiation.

5,385,963

UNSATURATED POLYESTER-MODIFIED FLEXIBLE COPOLYMERS FOR USE IN SHEET MOLDING COMPOSITIONS

Douglas S. McBain, Norton; Earl G. Melby, Uniontown, and Kevin P. LaJudice, Akron, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 828,080, Jan. 30, 1992. This application Jan. 7, 1993, Ser. No. 1,489
Int. Cl.[6] C08L *63/10, 67/06*
U.S. Cl. 523—436 **16 Claims**

1. A polymer composition, comprising:

a) an unsaturated polyester resin or vinyl ester resin,

b) one or more ethylenically unsaturated monomers, and

c) about 1 to about 50 parts by weight of an ABA block copolymer based upon 100 parts total weight of said unsaturated polyester resin or vinyl ester resin a) and said ethylenically unsaturated monomers b), said B blocks being a polyester free of internal unsaturation reactive in crosslinking reactions of unsaturated polyesters and having a Tg of 0° C. or less and said A blocks being a 100 to 600 molecular weight polyester consisting essentially of the condensation product of one or more alkyl diols or saturated alkylene oxides having up to 18 carbon atoms and one or more dicarboxylic acids or their anhydrides having 1 to 10 carbon atoms, with at least 50 mole percent of the combined moles of said one or more dicarboxylic acids and their anhydrides in said A blocks being unsaturated.

5,385,964

SILICA-FREE UV-ABSORBING ABRASION RESISTANT COATINGS

John D. Basil, Pittsburgh; Chia-Cheng Lin, Gibsonia, and Robert M. Hunia, Kittanning, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 2, 1990, Ser. No. 591,921
Int. Cl.[6] C08K *5/54*
U.S. Cl. 524—266 **2 Claims**

1. A silica-free optically transparent coating composition for protecting a substrate from ultraviolet radiation consisting essentially of:

a. a partially hydrolyzed alkoxide of the general formula $R_xM(OR')_{z-x}$ wherein R is an alkyl radical, M is selected from the group consisting of silicon, aluminum, titanium, zirconium, cerium and mixtures thereof, R' is a low molecular weight alkyl radical, z is the valence of M and x is less than z and may be zero;

b. an organoalkoxysilane of the general formula $R_ySi(OR')_{4-y}$ wherein R is an organofunctional radical, R' is a low molecular weight alkyl radical and y is at least one;

c. an organic compound which absorbs ultraviolet radiation selected from the group consisting of hydroxybenzotriazole and hydroxybenzophenone; and

d. polyvinylpyrrolidone.

5,385,965

REMOVABLE PRESSURE-SENSITIVE ADHESIVES FOR RECYCLABLE SUBSTRATES

Margaret M. Bernard, LaVerne, Calif., and Lawrence J. Schnieders, East Lake, Ohio, assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 813,354, Dec. 24, 1991, Pat. No. 5,183,841. This application Dec. 23, 1992, Ser. No. 996,019
Int. Cl.[6] C09J *109/06;* **C08L** *93/04, 9/06;* **C08F** *236/06, 220/00*
U.S. Cl. 524—272 **6 Claims**

1. A pressure-sensitive adhesive composition which comprises:

(a) a rubber-based emulsion polymer which is sufficiently polar to be compatible with a rosin-acid tackifier and a rosin-based surfactant, said polymer being a carboxylated

styrene-butadiene random copolymer containing from about 20 to about 50% by weight styrene, and

as additives for each 100 parts by weight of the polymer:

(i) from about 3 to about 20 parts by weight of a rosin acid tackifier, and

(ii) from about 1 to about 10 parts by weight of a rosin based surfactant, said pressure-sensitive adhesive composition when applied to a paper backing being capable of clean removability from a nonpaper surface of a polar or nonpolar substrate including polystyrene and polypropylene on exposure to the action of hot water or alkali for less than about 5 minutes.

5,385,966

FROZEN PREMIX, FILLET-HOLDING URETHANE ADHESIVES/SEALANTS

Ralph D. Hermansen, Northridge, and Steven E. Lau, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 837,382, Feb. 19, 1992, abandoned. This application Jan. 28, 1994, Ser. No. 188,667

Int. Cl.[6] C08J *3/20*; C08K *3/26*; C08L *75/00*; C08F *8/30*

U.S. Cl. 524—426 **21 Claims**

1. A premix urethane elastomer composition for storing at temperatures not exceeding about −40° F. (−40° C.) for at least about three months consisting of:

(a) 0 to about 60 volume percent of said composition of at least one filler;

(b) about 1 to 5 weight percent of said composition of a thixotrope;

(c) the balance of said composition a urethane matrix;

wherein said at least one filler is substantially water-free, said thixotrope consists essentially of hydrophobic fumed silica, and said urethane matrix consists of (1) a polyol component consisting of a first polyol consisting essentially of hydroxyl-terminated polybutadiene and, optionally, at least one second polyol selected from the group consisting of castor oil, polyoxypropylene, and polyoxytetramethylene in an amount such that said polyol component has less than about 20% by weight of ether and ester moieties, (2) at least one aliphatic polyisocyanate in at least stoichiometric amount with respect to said polyol, and (3) about 0.01 to 0.1 weight percent of said urethane matrix of an organo-metallic catalyst.

5,385,967

USE OF AQUEOUS DISPERSIONS AS HEAT-SEAL ADHESIVES

Gerhard Bauer, Weinheim; Karl-Heinz Schumacher, Neustadt; Hans-Joachim Fricke, Dirmstein; Eckehardt Wistuba, Bad Durkheim, and Hans J. Neumann, Wachenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 4, 1993, Ser. No. 70,971

Claims priority, application Germany, Jun. 16, 1992, 4219651

Int. Cl.[6] C08C *37/00*

U.S. Cl. 524—458 **3 Claims**

1. A process for preparing a heat-sealable substrate, comprising coating said substrate with an aqueous dispersion containing from 5 to 80% by weight of a copolymer A) having a glass transition temperature of from 50° to 150° C. and from 95 to 20% by weight of a copolymer B) having a glass transition temperature of from −50° to +50° C., the glass transition temperatures of the two copolymers differing by at least 5° C., at least one of the two copolymers containing from 3 to 70% by weight, based on the particular copolymer, of an ethylenically unsaturated C_3–C_5-mono- or dicarboxylic acid or of the anhydride thereof and the stated weights of the copolymers A) and B) being based on the sum of A) and B).

5,385,968

AQUEOUS COATING COMPOSITIONS FOR ANTISTAT LAYERS HAVING PRINT RETAINING QUALITIES

Wayne A. Bowman, Walworth; Mario D. DeLaura, and Norman S. Edgett, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 840,475, Feb. 24, 1992, Pat. No. 5,244,728. This application Jun. 8, 1993, Ser. No. 73,188

Int. Cl.[6] C08J *5/10*; C08K *3/34*; C08L *33/12*

U.S. Cl. 524—493 **8 Claims**

1. An aqueous coating composition for providing a print retaining layer to a surface consisting essentially of 4 to about 12 wt % of an aluminum modified colloidal silica, from about 0.6 to about 2.4 wt % of an antistatic agent, from about 3 to 18 wt % of a latex binder polymer consisting essentially of the addition product of from about 30 to about 78 mol % of an alkylmethacrylate wherein the alkyl group has from 3 to 8 carbon atoms, from about 2 to about 10 mol % of an alkali metal salt of a ethylenically unsaturated sulfonic acid and from 20 to about 65 mol % of a vinyl benzene monomer, said binder polymer having a T_g of from 30° C. to 65° C., from about 5 to about 10 wt % of a defoaming agent and the balance water.

5,385,969

RADIAL TIRE FOR PASSENGER CARS

Yuichi Saito, Kobe, and Naohiko Kikuchi, Nishinomiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Continuation-in-part of Ser. No. 616,914, Nov. 21, 1990, abandoned. This application Dec. 17, 1992, Ser. No. 992,459

Claims priority, application Japan, Nov. 28, 1989, 1-308232

Int. Cl.[6] C08K *3/04*

U.S. Cl. 524—496 **3 Claims**

1. A radial tire for passenger cars comprising a tread,

a pair of side walls,

a pair of bead portions, each of the pair of bead portions having a bead apex disposed therein,

a carcass, and

a breaker having a radially inner ply and a radially outer ply,

wherein said tread has a tan δ peak temperature (Tp) of −40° to −5° C., a one side half width (W/2) of 25° C. or less and a JIS-A hardness of 56 to 72; said tan δ peak temperature (Tp) and said one side half width being obtained from a viscoelasticity (tan δ) temperature distribution curve which is determined using a viscoelastic spectrometer at a frequency of 10 Hz, an initial strain of 10%, an amplitude of ±0.25% and a temperature elevating rate of 2° C./min, said one side half width (W/2) being the range of temperatures being equal to and greater than Tp to the temperature defined by the point of intersection of the line of tan $\delta = \frac{1}{2}P$, wherein P is the peak value of tan δ, with the distribution curve, said tread being obtained from a rubber composition comprising a rubber component, a reinforcing material and a vulcanizing agent, said rubber component containing at least 80% by weight of a solution-polymerized styrene butadiene rubber having a styrene content of 15 to 38% by weight, a vinyl content in the butadiene portion of 20 to 75% by weight and random styrene distribution, said reinforcing material being carbon black having a particle size of 15 to 35 micrometer, the tire has an aspect ratio of 70% or less, the aspect ratio being the height of the tire at pressure condition divided by the tire width W_T, the radially outer ply having an axial width W_B, the ratio W_B/W_T is 0.6 or greater, and the JIS-A hardness of the bead apex is 85 or more.

5,385,970

HALOGEN-FREE FLAME RETARDANT TERNARY BLENDS

Robert R. Gallucci, Mt. Vernon, Ind., and Ping Y. Liu, Naperville, Ill., assignors to General Electric Company, Pittsfield, Mass.

Filed Jul. 30, 1993, Ser. No. 100,658

Int. Cl.[6] C08L *51/00*

U.S. Cl. 524—538 **11 Claims**

1. An improved flame retardant thermoplastic molding composition comprising in combination a high molecular weight linear polyester and a flame retardant amount of a copolymer of polyetherimide and an organopolysiloxane wherein the polyester has an intrinsic viscosity of at least about 0.4 deciliters per gram as measured in a 60:40 phenol tetrachloroethane mixture at 30° C. and is selected from the group consisting of polybutylene terephthalate, polyethylene terephthalate, polypropylene terephthalate, blends thereof and copolymers thereof.

5,385,971

METHOD OF PRODUCING AQUEOUS POLYMER DISPERSIONS

Thomas Sauer, Haltern, and Bernhard Stiltzel, Marl, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Mar. 22, 1993, Ser. No. 35,203

Claims priority, application Germany, Apr. 16, 1992, 4212768

Int. Cl.[6] C08L *33/02*

U.S. Cl. 524—558 **10 Claims**

1. A method of producing a sterically stabilized polymer dispersion consisting essentially of polymerizing ethylenically unsaturated monomers in an aqueous dispersion medium in the presence of

a water-soluble macromonomer and

an initiator system;

wherein the macromonomer is an esterification product consisting essentially of maleic acid, fumaric acid, maleic anhydride, or mixture thereof and polyalkylene glycol or monoalkyl ether of polyalkylene glycol having a degree of esterification between 50% and 100%.

5,385,972

FILLER-CONTAINING RESIN COMPOSITION AND STRETCHED FILMS USING SAME

Koji Yamamoto; Hajime Ikeno, and Keiko Shichijo, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 166,076

Claims priority, application Japan, Dec. 28, 1992, 4-348304; Mar. 9, 1993, 5-048094

Int. Cl.[6] C08L *23/08, 39/00*; C08K *3/26, 5/10*

U.S. Cl. 524—579 **21 Claims**

1. A filler-containing resin composition, said composition containing component A and component B at a proportion wherein said component A is contained in a first amount and said component B is contained in a second amount, said first amount being within a range of from 20 to 80% and said second amount being within a range of from 80 to 20% of the weight of said component A and the weight of said component B, respectively, with respect to the total weight of said component A and said component B,

said component A comprising a copolymer of ethylene and olefin having a carbon number of not less than 3, said component A having the following properties (a) to (d):

(a) a melt flow rate (MFR) of 0.01 to 20 g/10 min.;

(b) a density D of not more than 0.935 g/cm^3;

(c) a single peak of elution volume indicated by an elution curve obtained by temperature rising elution fractionation (TREF), said peak corresponding to a temperature within a range of from 30° to 100° C., and said elution curve satisfying a relationship in which the ratio H/W is not less than 1 when H represents the height of said peak and W represents the width of said elution curve at half of said height H; and

(d) an elution volume Y (in percentage of the weight thereof with respect to the total weight of said component A) at an elution temperature of 50° C. in temperature rising elution fractionation, said elution volume Y satisfying the following condition ① or ②:

① $Y \leqq -4500D + 4105$ when the density D of said component A is less than 0.91 g/cm^3, but $Y \leqq 100$; or

② $Y \leqq 10$ when the density D of said component A is not less than 0.91 g/cm^3,

said component B comprising a particulate inorganic filler having an average particle size of not more than 10 μm, and a bulk density within a range of from 0.1 to 0.7 g/cm^3.

5,385,973

PROCESS FOR PREPARING FLOWABLE, STABLE AND HARDENABLE SUSPENSIONS, AND THUS-OBTAINED COMPOSITIONS

Franco Marciandi; Dario Giudici, both of Rho, and Marco Binaghi, Milan, all of Italy, assignors to Vedril S.p.A., Italy

Continuation of Ser. No. 963,289, Oct. 19, 1992, abandoned, which is a continuation of Ser. No. 760,832, Sep. 10, 1991, abandoned, which is a continuation of Ser. No. 288,975, Dec. 23, 1988, abandoned. This application Dec. 20, 1993, Ser. No. 169,534

Claims priority, application Italy, Dec. 17, 1987, 23050 A/87

Int. Cl.[6] C08K *5/54, 5/56*

U.S. Cl. 524—730 **21 Claims**

1. A process for preparing a stable, fluid and hardenable composition, consisting essentially of mixing:

a) at least one liquid polymerizable monomer selected from vinylic monomers and C_1–C_6 alkyl esters of acrylic or methacrylic acid;

b) a finely ground mineral filler in the amount of from 30 to 80% based upon the total composition;

c) a silanizing agent for the mineral filler; and

d) a hydrolysis catalyst of the silanizing agent selected from the ammonium salts of organic acids.

5,385,974

GRAFT COPOLYMER, PROCESS FOR PRODUCTION THEREOF, AND PLASTICIZER COMPRISING SAID COPOLYMER AS ACTIVE COMPONENT

Tadayuki Ohmae, Chiba; Hisao Tanaka, Ichihara, and Sumio Hara, Sodegaura, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 15, 1993, Ser. No. 91,564

Claims priority, application Japan, Jul. 21, 1992, 4-193837

Int. Cl.[6] C08L *29/04*

U.S. Cl. 525—58 **12 Claims**

1. A graft copolymer having a number-average molecular weight of about 1,500 to about 1,000,000, produced by graft-copolymerizing an alkylene oxide and a cyclic ester to a saponified ethylene-saturated carboxylic acid vinyl ester copolymer.

5,385,975

POLYSILOXANE-COMPOSITE POLYMER PARTICLES

Katsuhiro Nakamura; Minoru Kato; Yasuhisa Watanabe, all of Yokkaichi; Yasunori Matsubara, Kameyama; Yoriaobu Ikeda, Yokkaichi; Yoshiaki Yonekawa, Suzuka; Hiroyuki Miki, Yokkaichi; Akio Hirahara, Yokkaichi; Nobuyuki Ito, Yokkaichi; Osamu Kurita, Tsuchiura; Yasunobu Kaneko, Yokkaichi, and Shouzou Nishida, Chiba, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 673,337, Mar. 22, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 109,990

Claims priority, application Japan, Mar. 28, 1990, 2-079690; Jun. 28, 1990, 2-171024

Int. Cl.[6] C08L *47/00*

U.S. Cl. 525—101 **23 Claims**

1. Polysiloxane-composite polymer particles, comprising

organic polymer particles having a continuous organic polymer phase and a discontinuous polysiloxane phase, said discontinuous polysiloxane phase comprising localized regions of polysiloxane dispersed in said continuous organic polymer phase.

5,385,976

THERMOPLASTIC RESIN COMPOSITION

Motosobu Furuta; Hiroomi Abe, both of Chiba; Takeshi Fujii, Sodegaura, and Masashi Yamamoto, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 2, 1992, Ser. No. 867,191
Claims priority, application Japan, Nov. 2, 1990, 2-297582
Int. Cl.[6] C08F *255/02*; C08L *71/12*
U.S. Cl. 525—68 **19 Claims**

1. A thermoplastic resin composition comprising:

(A) 99 to 1% by weight of a modified polyphenylene ether to which a styrenic monomer and an amino group-containing monomer are grafted; and

(B) 1 to 99% by weight of a propylene polymer which is modified with a compound having a functional group reactive with an amino group in a molecule, provided that said styrenic monomer and said amino group-containing monomer are not an amino group-containing styrenic monomer.

5,385,977

POLYMERIC REACTION PRODUCTS

Dieter Paul, Duerkheim; Gerhard Hoffmann, Otterstadt; Klaus Huenike, Friedelsheim; Ulrich Heimann, Muenster, all of Germany, and John A. Gilbert, Beverly Hills, Mich., assignors to BASF Lacke + Farben AG, Muenster, Germany

Division of Ser. No. 979,313, Nov. 20, 1992, Pat. No. 5,336,722.
This application Mar. 31, 1994, Ser. No. 220,504
Claims priority, application Germany, Nov. 23, 1991, 4138586
Int. Cl.[6] C08L *63/00*
U.S. Cl. 525—113 **3 Claims**

1. Electrocoating bath additives with neutralized amino groups having a polymer content, which bath additives comprise from 1 to 40% by weight, based on the total polymer content of a polymeric reaction product which is obtained by reacting

I) prepolymers obtained from

A) polyoxyalkylenes which have an average molecular weight $\overline{M}_n$ of from 140 to 10,000 and contain on average from 1.5 to 3.0

a_1) primary or secondary amino groups or

a_2) epoxy groups

per molecule and

B) polymers which are based on conjugated dienes, which polymers have an average molecular weight $\overline{M}_n$ of from 250 to 50,000 and contain on average from 1.5 to 3.0

b_1 primary or secondary amino groups or

b_2) epoxy groups

per molecule, the components (a_1) and (b_2) or (a_2) and (b_1) being reacted with one so that from at least an amino equivalent excess to 3 amino equivalents of component (a_1) or (b_1) are present per epoxide equivalent of component (a_2) or (b_2), with

II) at least one compound which forms free radicals.

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5,385,978

CRIMPED ACRYLIC FIBERS HAVING IMPROVED THIXOTROPIC PERFORMANCE

Robert E. Evans, Huntington; Arutun Maranci, Westport, and Stanley S. Kaminski, Stamford, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 30,953, Mar. 12, 1993, Pat. No. 5,362,562.
This application Jun. 8, 1994, Ser. No. 255,689
Int. Cl.[6] D02G *3/22, 1/00*
U.S. Cl. 525—113 **8 Claims**

1. A composition comprising

(a) a curable resin selected from the group consisting of a polyester, a polyacrylate, a phenolic, a silicone, a polyurethane, a natural rubber, a synthetic rubber, a rubber latex, a polyimide, a polyepoxide, a polysulfide and combinations thereof, alone, or in further combination with:

(i) a pigment,
(ii) a dye,
(iii) a heat stabilizer,
(iv) an antioxidant,
(v) a plasticizer,
(vi) a lubricant,
(vii) a UV-stabilizer,
(viii) a flame-retardant agent,
(ix) a processing aid,
(x) a foaming agent, or
(xi) a mixture of any of the foregoing, and

(b) from about 0.05 to about 10.0 parts by weight per 100 parts by weight of (a) and (b) combined of a physical thixotrope comprising crimped acrylic fibers with a maximum diameter of less than about 100 micrometers, of a minimum length in the range of 0.5–3 mm, a minimum aspect ratio (L/D) in the 20–50 improvement in the viscosity or handling characteristics of the composition or the toughness of cured products made from the composition is achieved.

5,385,979

PRIMER AND ADHESIVE COMPOSITIONS BASED ON CHLORINATED POLYOLEFINS HAVING HIGH CHLORINE CONTENTS

Hiroyoshi Ozawa, Tokyo; Noboru Kamiya, Saitama, and Ryuji Futaya, Yamanashi, all of Japan, assignors to Lord Corporation, Erie, Pa.

Filed Jan. 11, 1994, Ser. No. 179,911
Int. Cl.[6] C08L *61/04, 61/10, 23/28*
U.S. Cl. 525—145 **21 Claims**

1. An adhesive composition comprising

a phenolic resin, and;

a chlorinated polyolefin wherein the chlorinated polyolefin has a chlorine content greater than about 60 percent and a molecular weight greater than about 500; and

wherein the chlorinated polyolefin is utilized in an amount ranging from 35% to 70% by weight, and the phenolic resin is utilized in an amount ranging from about 20% to 70% by weight.

5,385,980

CURABLE HALOBUTYL RUBBER/POLY-EPIHALOHYDRIN RUBBER BLENDS

Ronald J. Schaefer, Medina, Ohio, and Vernon L. Kyllingstad, Floyds Knobs, Ind., assignors to Zeon Chemicals U.S.A., Inc., Louisville, Ky.

Continuation of Ser. No. 897,352, Jun. 11, 1992, abandoned.
This application Mar. 22, 1994, Ser. No. 216,243
Int. Cl.[6] C08L *15/02, 9/00, 23/28, 71/03*
U.S. Cl. 525—187 **26 Claims**

1. A curable rubber composition comprising a blend of (A) from about 50 to 98 parts of a halobutyl rubber or a mixture of halobutyl rubber and hydrocarbon backbone rubber, wherein at least 50% by weight of the mixture is halobutyl rubber; and (B) from about 2 to 50 parts of an epihalohydrin rubber;

and a cure system, for each 100 parts by weight of the blend, consisting of:

(a) from about 0.1 to about 3 parts of sulfur;
(b) from about 0.3 to about 4 parts of a sulfur accelerator;
(c) from about 0.2 to about 10 parts of a zinc-containing promoter;
(d) from about 0.05 to about 5 parts of a vulcanization accelerator selected from the group consisting of urea, oil treated urea, a urea salt or a urea derivative; and
(e) up to about 5 parts of a di- or tri-mercapto nonsulfur curative material.

14. A process of curing a blend comprising (A) from about 50 to 98 parts of a halobutyl rubber or a mixture of halobutyl rubber and hydrocarbon backbone rubber, wherein at least 50% by weight of the mixture is halobutyl rubber, and (B) from about 2 to about 50 parts of a epihalohydrin rubber, which comprises heating the composition at a temperature of 100°–200° C. with a cure system, for each 100 parts by weight of the blend consisting of:

(a) from about 0.1 to about 3 parts of sulfur;
(b) from about 0.3 to about 4 parts of a sulfur accelerator;
(c) from about 0.2 to about 10 parts of a zinc-containing promoter;
(d) from about 0.05 to about 5 parts of a vulcanization accelerator selected from the group consisting of urea, oil treated urea, a urea salt or a urea derivative; and
(e) up to about 5 parts di- or tri-mercapto nonsulfur curative material.

5,385,981

THERMOPLASTIC FLUOROELASTOMERS PRODUCED BY GRAFT COPOLYMERIZATION

Ralf Krüger, Bergisch Gladbach; David B. Harrison, and Leo Morbitzer, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 20, 1993, Ser. No. 95,458
Claims priority, application Germany, Jul. 27, 1992, 4224768
Int. Cl.[6] C08F *259/08, 271/02*
U.S. Cl. 525—276 **2 Claims**

1. A fluorine-containing graft copolymer having the properties of a thermoplastic elastomer formed from an uncrosslinked fluorine-containing rubber having a T_g<0° C. and containing double bonds as a graft base onto which is grafted at least one fluorine-containing unsaturated monomer or a mixture of fluorine-containing unsaturated monomers and non-fluorine-containing unsaturated monomers or a mixture of fluorine-containing unsaturated monomers wherein the monomers are such as to give an at least partly crystalline polymer or copolymer.

5,385,982

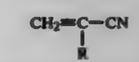
MATERIAL FOR REFRIGERATOR LINERS

Joseph P. McCaul, Mentor, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 670,099, Mar. 15, 1991, abandoned.
This application Jan. 21, 1994, Ser. No. 184,403
Int. Cl.[6] C08F *265/08, 279/02*; B32B *1/00*
U.S. Cl. 525—310 **10 Claims**

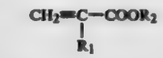
1. A refrigerator liner comprising a thermoplastic polymeric composition resulting from the polymerization in an aqueous medium of 100 parts by weight of

(A) at least 50% by weight based on the combined weight of (A) and (B) of an alpha, beta-olefinically unsaturated mononitrile having the structure



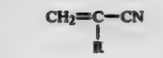
wherein R is a member selected from the group consisting of hydrogen, a lower alkyl group having from 1 to 4 carbon atoms and a halogen and

(B) up to 50% by weight based on the combined weight of (A) and (B) of an ester of an olefinically unsaturated carboxylic acid having the structure



wherein R_1 is a member selected from the group consisting of hydrogen, an alkyl group having from 1 to 4 carbon atoms and a halogen and R_2 is an alkyl group having from 1 to 2 carbon atoms in the presence of

(C) from 16 to 20 parts by weight of a copolymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and an olefinically unsaturated nitrile having the structure



wherein R has the foregoing designation, said copolymer containing from 50 to 95% by weight of polymerized conjugated diene monomer and from 50 to 5% by weight of polymerized olefinically unsaturated nitrile.

5,385,983

PROCESS FOR PREPARING A WATER-ABSORBENT POLYMER

Andrew T. Graham, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 12, 1992, Ser. No. 975,171
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—330.1 **14 Claims**

1. A process for preparing an aqueous fluid absorbent material comprising the following sequential steps:

(a) contacting a hydrogel comprising from about 20 to about 95 percent water-absorbent resin bearing carboxyl moieties and from about 5 to about 80 percent water with a surface crosslinking composition comprising an organic surface crosslinking agent in the absence of a surfactant, the surface crosslinking composition optionally further comprising additional water and/or a water miscible polar solvent, under conditions such that the organic surface crosslinking agent coats the hydrogel without substantial penetration into the interior of absorbent resin particles of the hydrogel to form a coated hydrogel;

(b) drying the coated hydrogel, such that the water, and optional additional water and optional solvent if present, are substantially removed and such that the organic surface crosslinking agent does not significantly react with the carboxyl moieties to form a dried coated resin;

(c) reducing the particle size of the dried coated resin by mechanical means to form dried coated particles; and

(d) heating the dried coated particles under conditions such that the organic surface crosslinking agent reacts with the carboxyl moieties so as to crosslink the surface of the dried coated particles.

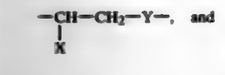
5,385,984

POLYARYLENE ETHER-ORGANOPOLYSILOXANE COPOLYMERS

Margaret L. Biohm; Sterling B. Brown, both of Schenectady; George T. Seeger, Scotia, all of N.Y., and Patricia P. Anderson, Williamstown, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 21, 1993, Ser. No. 139,140
Int. Cl.[6] C08G *65/48*
U.S. Cl. 525—393 **6 Claims**

1. Polyarylene ether-organopolysiloxane copolymers having polyarylene ether blocks joined to organopolysiloxane blocks by a connecting divalent structural unit selected from,



where X and Y are monovalent or divalent radicals, and when X is monovalent, Y is divalent, and when Y is monovalent, X is divalent, and when X and Y are monovalent, they are hydroxy, and when X and Y are divalent, they are members selected from the group consisting of



the polyarylene ether-organopolysiloxane copolymers result from the reaction between,

(A) an epoxy group functionalized polyarylene ether and an amino or carboxy group functionalized organopolysiloxane and,

(B) an epoxy group functionalized organopolysiloxane and an amino or carboxy group functionalized polyarylene ether, and the polyarylene ether-organopolysiloxane copolymers comprise by weight, from 80 to 99.9% of polyarylene ether and from 20 to 0.1% of organopolysiloxane.

5,385,985

CYCLIC UREA DERIVATIVE

Tsubouwa Noriyuki, Higashiosaka; Urano Satoshi, Tsuzuki; Umemoto Hirotoshi, Uji; Sakamoto Hiroyuki, Nishinomiya; Tobinaga Kenshiro, Kawanishi, and Tsuchiya Yasuyuki, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

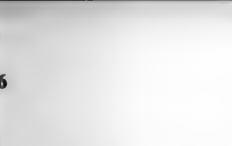
Continuation of Ser. No. 456,651, Dec. 29, 1989, abandoned. This application Sep. 17, 1992, Ser. No. 947,092

Claims priority, application Japan, Dec. 29, 1988, 63-331997

Int. Cl.[6] C08L *77/00*

U.S. Cl. 525—420 **11 Claims**

1. A cyclic urea derivative represented by formula (A)



(A)

wherein,

(a) when n is 0 or 1, m is 1, and X is oxygen, R is a C_{3-27} cycloalkyl, C_{6-27} aryl, C_{7-27} aralkyl, C_{7-27} alkaryl, C_{3-27} glycidyl group or a C_{3-27} alkyl, C_{3-27} cycloalkyl, C_{6-27} aryl, C_{7-27} aralkyl, C_{7-27} alkaryl group containing at least one radical selected from the group consisting of



O, S and N and having a molecular weight of 15 to 500, said groups being unsubstituted or substituted with at least one substituent selected from the group consisting of glycidyl, hydroxyl, nitro, halogen, cyano, formyl, amino, polyesters of a molecular weight 500 to 100,000, polyethers of molecular weight 500 to 100,000, polyurethanes of molecular weight 500 to 100,000, and polyamides of molecular weight of 500 to 100,000;

(b) when n is 0, m is 1, and X is sulfur, R is a C_{3-27} cycloalkyl, C_{6-27} aryl, C_{7-27} aralkyl, C_{7-27} alkaryl, C_{3-27} glycidyl group, or a C_{3-27} alkyl, C_{3-27} cycloalkyl, C_{6-27} aryl, C_{7-27} aralkyl, C_{7-27} alkaryl group having a molecular weight of 15 to 500 and containing at least one radical selected from the group consisting of



O, S and N, said groups being unsubstituted or substituted with at least one substituent selected from the group consisting of glycidyl, hydroxyl, nitro, halogen, cyano, formyl, amino, polyesters of molecular weight 500 to 100,000, polyethers of molecular weight 500 to 100,000, polyurethanes of molecular weight 500 to 100,000, and polyamides of molecular weight of 500 to 100,000;

(c) when n is 0, m is 1, and X is $—NR_1—$(R_1 is hydrogen or a C_{1-5} alkyl), R is a C_{7-27} alkaryl or C_{3-27} glycidyl group containing at least one radical selected from the group consisting of



O, S and N and having a molecular weight of 15 to 500, said groups being unsubstituted or substituted with at least one substituent selected from the group consisting of glycidyl, hydroxyl, nitro, halogen, cyano, formyl, amino, polyesters of molecular weight 500 to 100,000, polyethers of molecular weight 500 to 100,000, polyurethanes of molecular weight 500 to 100,000, and polyamides of molecular weight 500 to 100,000;

(d) when n is 1, m is 1, and X is sulfur or $—NR_1—$(R_1 is hydrogen or a C_{1-15} alkyl), R is a C_{1-27} alkyl, C_{3-27} cycloalkyl, C_{6-27} aryl, C_{7-27} aralkyl, C_{7-27} alkaryl, C_{3-27} glycidyl group, or a C_{1-27} alkyl, C_{3-27} cycloalkyl, C_{6-27} aryl, C_{7-27} aralkyl, C_{7-27} alkaryl group containing at least one radical selected from the group consisting of



O, S and N and having a molecular weight of 15 to 500, said groups being unsubstituted or substituted with at least one substituent selected from the group consisting of glycidyl, hydroxyl, nitro, halogen, cyano, formyl, amino, polyesters of molecular weight 500 to 100,000, polyethers of molecular weight 500 to 100,000, polyurethanes of molecular weight 500 to 100,000, and polyamides of molecular weight of 500 to 100,000;

(e) when n is 0 or 1, m is an integer of 2 to 15, and X is oxygen, sulfur or $—NR_1—$(R_1 is hydrogen or C_{1-5} alkyl), R is a residue of a C_{1-27} alkyl, C_{3-27} cycloalkyl, C_{6-27} aryl, C_{7-27} aralkyl, C_{7-27} alkaryl group, or a C_{1-27} alkyl, C_{3-27} cycloalkyl, C_{6-27} aryl, C_{7-27} aralkyl, C_{7-27} alkaryl, C_{3-27} glycidyl group containing at least one radical selected from the group consisting of



O, S and N and having a molecular weight of 15 to 500, said groups being unsubstituted or substituted with at least one substituent selected from the groups consisting of glycidyl, hydroxyl, nitro, halogen, cyano, formyl, amino, polyesters of molecular weight 500 to 100,000, polyethers of molecular weight 500 to 100,000, polyurethanes of molecular weight 500 to 100,000, and polyamides of molecular weight of 500 to 100,000.

5,385,986

ADHESIVE OF AMINE-TERMINATED POLYAMIDE AND EPOXY RESIN

Charles R. Frihart, Lawrenceville, N.J., and Ronald L. Gordon, Springfield, Ga., assignors to Union Camp Corporation, Princeton, N.J.

Continuation of Ser. No. 824,748, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 479,830, Feb. 14, 1990, abandoned. This application May 5, 1994, Ser. No. 238,583

Int. Cl.[6] C08L *63/02, 63/04, 63/08*

U.S. Cl. 525—420.5 **6 Claims**

1. An improved two-component hot-melt thermoset adhesive composition comprising:

(1) a thermoplastic, substantially amine terminated piperazine containing polyamide resin, said polyamide resin having a softening point above 50° C., having an amine plus acid number greater than about 1 and less than about 50 and having an excess of amine to acid groups;

wherein said piperazine containing polyamide resin is derived from 30–100 equivalent percent of a polymerized fatty acid, 0–70 equivalent percent of a 6 to 22 carbon atom linear dicarboxylic acid, 0–10 equivalent percent of a 2 to 22 carbon atom monocarboxylic acid, 12–95 equivalent percent of a 2 to 12 carbon atom linear or branched aliphatic polyamine, and 7–90 equivalent percent of a piperazine-containing polyamine, and wherein said piperazine-containing polyamine has secondary amine groups and excludes primary amine groups; and

(2) an epoxy resin, said epoxy resin having at least two epoxy groups per molecule of epoxy resin;

the initial ratio of epoxy groups of said epoxy resin to the free amine groups of said polyamide resin being greater than about 1 to 1 and less than about 10 to 1.

5,385,987

RESIN COMPOSITION AND ADHESIVE USING THE SAME

Hirohide Hamazaki, and Akira Fujiwara, both of Ichihara, Japan, assignors to Du Pont-Mitsui Polychemical, Co., Ltd., Tokyo, Japan

Division of Ser. No. 25,065, Mar. 2, 1993, Pat. No. 5,322,900. This application Mar. 8, 1994, Ser. No. 207,214

Claims priority, application Japan, Mar. 4, 1992, 4-046792

Int. Cl.[6] C08L *51/06, 67/00*; C09J *151/06, 167/00*

U.S. Cl. 525—445 **2 Claims**

1. A resin composition comprising:

20 to 90 parts by weight of an ethylene/(meth)acrylic ester/-carbon monoxide terpolymer having been graft modified with an unsaturated carboxylic acid or its anhydride in an a mount of 0.01 to 5% by weight and having a melt flow rate of 0.1 to 3,000 g/10 min at 190° C. under a load of 2,160 g, said terpolymer comprising 30 to 94% by weight of ethylene constituent units, 3 to 20% by weight of carbon monoxide constituent units and 3 to 50% by weight of (meth)acrylic ester constituent units and

80 to 10 parts by weight of a polyester elastomer, the total amount of said graft modified ethylene/(meth)acrylic ester/carbon monoxide terpolymer and said polyester elastomer being 100 parts by weight.

5,385,988

COMPOSITE COMPOSITION HAVING HIGH TRANSPARENCY AND PROCESS FOR PRODUCING SAME

Naoki Yamamoto; Akira Nakata; Hiroki Hatakeyama, and Hiroyuki Watanabe, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 948,421

Claims priority, application Japan, Sep. 24, 1991, 3-243397; Sep. 24, 1991, 3-243398; Sep. 24, 1991, 3-243401; Sep. 24, 1991, 3-243402; Sep. 24, 1991, 3-243403

Int. Cl.[6] C08F *292/00*; C08G *77/02*

U.S. Cl. 525—479 **17 Claims**

1. A composite composition obtained by polymerizing a radical-polymerizable vinyl compound (A) in the presence of (B) a silica polycondensate formed by hydrolysis and polycondensation of at least one silane compound of the formula

$$SiR^1_aR^2_b(OR^3)_c$$

where R^1 and R^2 are hydrocarbon radicals of 1 to 10 carbon atoms optionally having an ether linkage, ester linkage or carbon-to-carbon double bond, R^3 is a hydrogen atom or a hydrocarbon radical of 1 to 10 carbon atoms optionally having an ether linkage, ester linkage or carbon-to-carbon double bond, a and b are whole numbers of 0 to 3, and c is equal to (4—a—b) and represents a whole number of 1 to 4, in a dispersion system of colloidal silica, wherein said silica polycondensate (B) is dissolved in said radical polymerizable vinyl compound (A).

5,385,989

THERMAL RESISTANCE RESIN DUST FOR FRICTION MATERIAL

Kazuyuki Ohya, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 25,052, Mar. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 868,359, Apr. 14, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 274,378

Claims priority, application Japan, Apr. 15, 1991, 3-109902

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—502 **16 Claims**

1. A thermal resistance resin dust for friction material obtained by a process which comprises

a step of preparing a composition consisting essentially of

(I) 60–90% by weight of an aromatic hydrocarbon-formaldehyde resin modified novolak type epoxy resin and

(II) 40–10% by weight of a cyanate ester resin composition comprising (a) polyfunctional cyanate esters, prepolymers of said cyanate ester, or prepolymers of said cyanate ester and an amine; or (a) in combination with (b) a monofunctional or polyfunctional maleimide, a prepolymer of said maleimide or a prepolymer of said maleimide and an amine,

a step of curing the composition at a final curing temperature of not less than 200° C. and

a step of grinding the cured product.

5,385,990

STRUCTURAL ADHESIVE COMPOSITION HAVING HIGH TEMPERATURE RESISTANCE

Kirk J. Abbey, Raleigh; Stephen E. Howe, Apex, and Beth C. Munoz, Cary, all of N.C., assignors to Lord Corporation, Erie, Pa.

Filed Nov. 2, 1992, Ser. No. 970,322

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—534 **27 Claims**

1. An adhesive composition comprising

an epoxy component;

an amine hardener, selected from the group consisting of polyamidoamines, aliphatic polyamines, alicyclic polyamines, tertiary amines and mixtures thereof; and

a hydroxy-substituted aromatic compound having a pKa ranging from about 5 to 9.7 and a boiling point greater than about 210° C., wherein the hydroxy-substituted aromatic compound corresponds to the following formula:



wherein ◎ is a 5- or 6-membered, heterocyclic or non-heterocyclic, monocyclic or multicyclic aromatic ring; X is an electron-withdrawing group; and n is 0, 1, 2 or 3 with the proviso that (1) n cannot be zero when the aromatic ring is benzene and (2) the locations of OH and X on the aromatic ring are such that the overall compound has a pKa within the range from about 5 to 9.7.

5,385,991

METHOD FOR PRODUCING POLYOLEFIN

Yoshihisa Yamaguchi; Shinjiro Suga, both of Kawasaki; Masutoshi Morikawa, Setagaya; Kunimichi Kubo, Meguro; Motokazu Watanabe, Kawasaki, and Yasuhiko Sano, Katsushika, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

PCT No. PCT/JP91/01010, § 371 Date Mar. 27, 1992, § 102(e) Date Mar. 27, 1992, PCT Pub. No. WO92/02563, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 26, 1991, Ser. No. 844,590

Claims priority, application Japan, Jul. 27, 1990, 2-200008; Jul. 27, 1990, 2-200009; Jul. 27, 1990, 2-200010; Sep. 3, 1990, 2-232723

Int. Cl.[6] C08F *2/34, 10/00*

U.S. Cl. 526—74 **10 Claims**

1. In the homopolymerization reaction of ethylene or copolymerization reaction of ethylene with an α-olefin or α-olefins in the presence of titanium and/or vanadium based compounds as catalysts together with an organic aluminum compound as a co-catalyst, using a vapor-phase fluidized bed, the improvement comprising that said reaction is started by feeding said catalyst together with said co-catalyst after filling a reactor with polyolefin particles that have been brought into contact with a gas containing moisture, said particles being able to form a fluidized-bed, and said particles containing 20 to 80 ppm by weight of moisture.

5,385,992

METHOD FOR THE DOSAGE OF A FLUIDIZED POLYMERIZATION CATALYST INTO A POLYMERIZATION REACTOR

Jukka Koskinen, Espoo; Klaus Nyfors, Porvoo, and Pauli Leskinen, Helsinki, all of Finland, assignors to Borealis Holding A/S, Lyngby, Denmark

PCT No. PCT/FI92/00080, § 371 Date Oct. 26, 1993, § 102(e) Date Oct. 26, 1993, PCT Pub. No. WO92/16747, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 20, 1992, Ser. No. 119,150

Claims priority, application Finland, Mar. 21, 1991, 911388

Int. Cl.[6] C08F *2/14*

U.S. Cl. 526—79 **15 Claims**

1. A method for the dosage of a fluidized polymerizing catalyst into a polymerization reactor by means of a dosage pump having a cylinder and a piston therein, said piston movable in a back-and-forth motion defining a piston-swept space, said piston-swept space including an inlet opening and an outlet opening, said cylinder including a freely rotating intermediate pipe arranged tightly between said cylinder and said piston and having at least one transmission opening therein, each of said cylinder and said piston having an axis, wherein the method comprises mixing polymerization catalyst with wax and feeding the flowing catalyst-wax mixture to the dosage pump, opening said inlet opening of said cylinder, drawing the flowing catalyst-wax mixture through said inlet opening by means of the back motion of said piston, closing said inlet opening and opening said outlet opening, pressing flowing catalyst-wax mixture from said piston-swept space through said outlet opening by means of the motion of the piston and closing said outlet opening, whereby the opening and closing of said inlet and outlet openings is carried out by rotating said intermediate pipe so that said at least one transmission opening in said intermediate pipe moves upon said inlet opening or said outlet opening, the whole intermediate pipe surface always covering one of said inlet or said outlet openings, conducting dosage pump sealing liquid for sealing and lubrication of said dosage pump between said cylinder and said intermediate pipe and between said intermediate pipe and said piston.

5,385,993

PRODUCTION OF OLEFIN POLYMERS

Takashi Fujita, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Continuation of Ser. No. 842,631, Feb. 27, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,732

Claims priority, application Japan, Feb. 27, 1991, 3-033107

Int. Cl.[6] C08F *4/654, 10/06*

U.S. Cl. 526—119 **5 Claims**

1. A process for producing a stereoregular propylene polymer, which comprises contacting propylene at a temperature of 150° C. to 300° C. with a catalyst thereby polymerizing the olefin, said catalyst consisting of:

Component (A) which is a solid catalyst component for a Ziegler catalyst which solid catalyst component is a contact product of the following Sub-components (i) to (iii) and the contact product being washed with an inert hydrocarbon solvent, said Sub-component (i) being a product prepared by one of the three following methods:

(a) a method in which a solid product obtained by contacting a magnesium halide with a titanium tetraalkoxide and a polymeric silicon compound is contacted with a titanium halide compound, a silicon halide compound or a mixture thereof, the polymeric silicon compound having the formula:



wherein R is a hydrocarbyl group having about 1 to 10 carbon atoms, and n is a polymerization degree such that the viscosity of the polymeric silicon compound may be 1 to 100 centistokes, thereby preparing a solid component;

(b) a method in which a magnesium compound is dissolved in a titanium tetraalkoxide and an electron donor, and then a halogenating agent is added thereto which precipitates a solid component from the solution, said halogenating agent being selected from the group consisting of a silicon halide, an aluminum halide and halogen compound of phosphorus, which solid component is then contacted with a titanium compound; and

(c) a method in which an alkoxy magnesium compound is contacted with a halogenating agent and/or a titanium compound in the presence or absence of an electron donor, said halogenating agent being selected from the group consisting of a silicon halide, an aluminum halide and a halogen compound of phosphorus;

Sub-component (ii) which is a silicon compound represented by the formula:

$R^1_mX_nSi(OR^2)_{4-m-n}$

wherein R^1 is a branched hydrocarbyl group of 3 to 20 carbon atoms whose α-carbon atom is secondary or tertiary, R^2 which may be the same or different from R^1, is a hydrocarbyl group of 1 to 4 carbon atoms, X is a halogen atom, and m and n are each numbers which satisfy the expressions:

$0 \leqq m \leqq 3$, $0 \leqq n \leqq 3$ and $0 \leqq (m+n) \leqq 3$;

and

Sub-component (iii) which is an organoaluminum compound; wherein the Si/Ti atomic ratio of Sub-component (ii)/Sub-component (i) ranges from 0.1 to 100 and wherein the Al/Ti atomic ratio of Sub-component (iii)/Sub-component (i) ranges from 0.1 to 30; and

Component (B), which is an organoaluminum compound represented by the formula: $R^3_{3-p}H_pAl$, wherein R^3 is a hydrocarbyl group of up to 5 carbon atoms and p is a number satisfying the expression $0 \leqq p \leqq 1$; the mole ratio of Al/Ti of Component (B) to Component (A) being 0.01 to 0.5.

5,385,994

2,5-SUBSTITUTED TETRAHYDROFURANS AS ANIONIC INITIATOR MODIFIERS

Daniel F. Graves, Clinton; James E. Hall, Mogadore, and William J. Shuttleworth, Akron, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,667

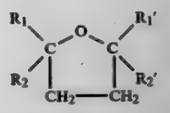
Int. Cl.[6] C08F *4/48, 297/04*

U.S. Cl. 526—181 **15 Claims**

1. A method for preparing a polymer or block copolymer comprising polymerizing 15 to 100 percent by weight of a vinyl aromatic hydrocarbon monomer and 0 to 85 percent by weight of a diene monomer in a hydrocarbon solvent in the presence of a catalytically effective amount of a catalyst composition comprising:

(a) an organolithium initiator; and

(b) a 2,5-substituted tetrahydrofuran having the structural formula:



wherein R_1 and R_1' are independently selected from the group consisting of H and alkyl groups containing from 1 to 4 carbon atoms and R_2 and R_2' are independent and are alkyl groups containing from 1 to 4 carbon atoms.

5,385,995

PROCESS FOR THE PREPARATION OF AN ALKYL VINYL ETHER/MALEIC ANHYDRIDE COPOLYMER

Hisao Fujikawa; Hideo Katsui, both of Otake, and Hiroshi Ogawa, Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 906,410

Int. Cl.[6] C08F *2/06, 222/06, 216/12*

U.S. Cl. 526—216 **11 Claims**

1. In a process for the preparation of an alkyl vinyl ether/maleic anhydride copolymer by copolymerizing an alkyl vinyl ether with maleic anhydride, the improvement which comprises conducting the copolymerization in a solvent admixture comprising an ester and a hydrocarbon linear or branched aliphatic.

5,385,996

CONTROL OF MOLECULAR WEIGHT AND END-GROUP FUNCTIONALITY OF POLYMERS

Ezio Rizzardo, Wheelers Hill; Gordon F. Meijs, Elsternwick, and San H. Thang, Oakleigh South, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

Continuation of Ser. No. 731,393, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 372,357, filed as PCT/AU87/412, Dec. 4, 1987, abandoned. This application Jun. 7, 1993, Ser. No. 72,687 Claims priority, application Australia, Dec. 5, 1986, PH9351/86/AU; Aug. 19, 1987, PI3813/87

Claims priority, application Australia, Dec. 5, 1986, PH9351/86/AU; Aug. 19, 1987, PI3813/87

Int. Cl.[6] C08F *2/38*

U.S. Cl. 526—240 **20 Claims**

1. An improved process for the production of polymers or oligomers of controllably reduced molecular weight by the free radical polymerization of monomers in the presence of an initiator and a chain transfer agent which is present in an effective amount to control the molecular weight thereof; wherein said chain transfer agent terminates the growth of the polymer chain by addition to the propagating polymer radical followed by expulsion of a radical which then initiates another polymer chain; wherein the improvement comprises the use of; a chain transfer agent selected from the group consisting of:

α-(carboxyalkanethiomethyl) acrylic acid;
alkyl α-(carboxyalkanethiomethyl) acrylate;
α-(t-butanethiomethyl) acrylonitrile;
ethyl α-(t-butanethiomethyl) acrylate
ethyl α-(trimethylsilylmethyl) acrylate;
ethyl α-(benzyenesulphonylmethyl) acrylate; and
ethyl α-(tri-n-butylstanylmethyl) acrylate.

5,385,997

BIDENTATE CHELATING MONOMERS AND POLYMERS

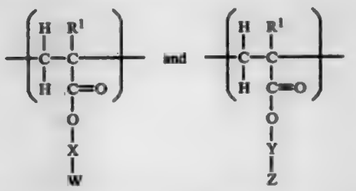
Gavin M. Buchan, Harlow, and Ian J. Ferguson, Ickleton, both of England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 675,127, Nov. 17, 1984, Pat. No. 5,026,860, which is a continuation-in-part of Ser. No. 527,333, Aug. 29, 1983, abandoned. This application Apr. 5, 1991, Ser. No. 680,823

Int. Cl.[6] C08F *26/06, 120/10*; C07D *235/04*

U.S. Cl. 526—259 **14 Claims**

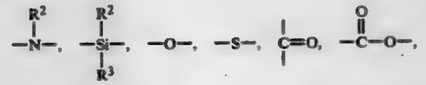
1. A polymer having chelating monomer units selected from



wherein

R^1 is hydrogen, lower alkyl, CN, or Cl;

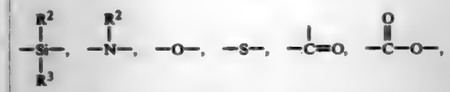
X is an organic connecting linkage selected from a single bond and a branched or straight chain aliphatic group of up to 22 carbon atoms long, providing that groups of 2 or more carbon atoms may be interrupted by one phenylene,



or $—SO_2—$, wherein R^2 and R^3 are independently H or lower alkyl of 1 to 4 carbon atoms, providing that the total

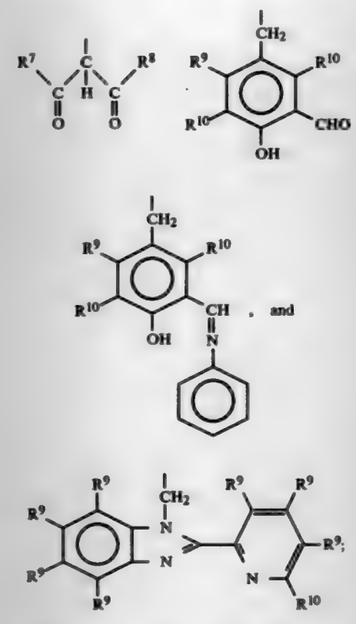
number of atoms of the connecting linkage X is not more than 75, and providing that X does not react with W, nor enter into any chelating action, nor has polymerizing units within it: and

Y is an organic connecting linkage selected from a single bond and the group $—CH_2L—$, wherein L is a branched or straight chain aliphatic group of up to 21 carbon atoms long, providing that groups of two or more carbon atoms may be interrupted by up to one phenylene,



or $—SO_2—$, wherein R^2 and R^3 are independently H or lower alkyl of 1 to 4 carbon atoms, providing that the total number of atoms in connecting linkage Y is not more than 75, and providing that Y does not react with Z, nor enter into any chelating action, nor has polymerizing units within it; and

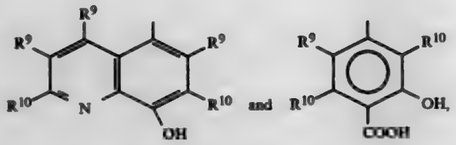
W is a bidentate chelating moiety selected from the group



R^9 is independently selected from a hydrogen atom, a halogen atom selected from fluorine, chlorine, bromine and iodine, an NO_2 group, an alkyl group having 1 to 10 carbon atoms, an alkoxy group having 1 to 10 carbon atoms, an alkylthio group having 1 to 10 carbon atoms, a phenyl group, and a phenyl group substituted with up to 3 groups chosen from a halogen atom, an NO_2 group, and lower alkyl group having 1 to 4 carbon atoms; and

R^{10} is independently selected from a hydrogen atom, a halogen atom selected from fluorine, chlorine, and bromine, an NO_2 group, an alkyl group having 1 to 10 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms, and a phenyl group;

Z is a bidentate chelating moiety selected from the group consisting of



wherein R^9 and R^{10} are as defined above,

said polymer having a molecular weight in the range of 5,000 to 1,000,000.

5,385,998

RANDOM 1-BUTENE/ETHYLENE COPOLYMER

Masaki Kohyama, Ichihara; Takeshi Muranaka, Iwakuni; Kunisuke Fukui, Hiroshima, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 961,854, Oct. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 860,123, Mar. 31, 1992, abandoned, which is a continuation of Ser. No. 175,391, Mar. 30, 1988, abandoned, which is a division of Ser. No. 792,668, Oct. 29, 1985, Pat. No. 4,778,870. This application Feb. 4, 1994, Ser. No. 191,962

Claims priority, application Japan, Nov. 2, 1984, 59-230392

The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.

Int. Cl.[6] C08F *210/16*

U.S. Cl. 526—348.6 **5 Claims**

1. A highly crystalline semi-rigid random 1-butene/ethylene copolymer consisting of 1-butene and ethylene, said copolymer having the following characteristics (A) to (K)

(A) it consists of from 99 to more than 90 mole % of the 1-butene component and from 1 to less than 10 mole % of the ethylene component;

(B) it has an intrinsic viscosity (η), measured in decalin at 130° C., of from 0.5 to 6 dl/g;

(C) it has a DSC melting point (Tm) measured by a differential scanning calorimeter, of from 100° to 120° C.;

(D) it has a crystallinity, measured by X-ray diffractometry, of from 20 to 58%;

(E) the amount (W_1 in % by weight) of that portion of it which is soluble in boiling methyl acetate is not more than 2%;

(F) the amount (W_2 in % by weight) of that portion of it which is soluble in a 1:1 volume mixture of acetone and n-decane at 10° C. is less than $5\times(\eta)^{-1.2}$;

(G) it has a yield strength of 30 to 180 kg/cm^2;

(H) it has a tensile strength at break of 200 to 800 kg/cm^2;

(I) it has an elongation at break of from 350 to 800%;

(J) it has a torsional rigidity of 200 to 2000 kg/cm^2; and

(K) it has a Young's modulus of 400 to 4000 kg/cm^2.

5,385,999

POLYSILOXANES HAVING FLUOROALIPHATIC- AND CARBOXYL-CONTAINING TERMINAL GROUPS, THEIR PREPARATION, AND THEIR USE IN TREATMENT OF FIBROUS SUBSTRATES

Claude D'Anvers, and Dirk M. Coppens, both of Brussels, Belgium, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

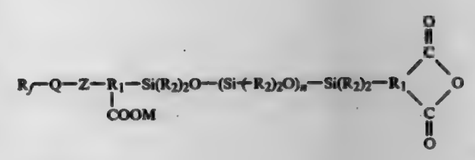
Filed Nov. 3, 1993, Ser. No. 147,338

Claims priority, application Germany, Dec. 1, 1992, 4240274

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—21 **17 Claims**

1. A polysiloxane wherein said polysiloxane has either the formula



or the formula

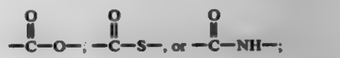


wherein

R_f represents a fluoroaliphatic group;

Q represents a covalent bond or a linking group;

Z is



each R_1 and R_2 is independently a linear, branched, or cyclic aliphatic group, or an aromatic group;

n is an integer greater than 1;

M is H, Na, K, Li, or $NR_3R_4R_5R_6$ with R_3, R_4, R_5, R_6 being independently H, a linear, branched or cyclic saturated aliphatic group or an aromatic group.

5,386,000

LOW TEMPERATURE FLEXIBLE DIE ATTACH ADHESIVE AND ARTICLES USING SAME

My N. Nguyen, San Diego, Calif., assignor to Johnson Matthey Inc., Valley Forge, Pa.

Continuation of Ser. No. 843,738, Feb. 28, 1992, abandoned, and a continuation-in-part of Ser. No. 602,504, Oct. 24, 1990, Pat. No. 5,150,195. This application Dec. 3, 1993, Ser. No. 162,389

The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.

Int. Cl.[6] C08G *63/44*

U.S. Cl. 528—362 **9 Claims**

1. A flexible adhesive formulation having a ROC value of about 1 meter or above comprising the reaction product of a cyanate ester-containing material and at least one flexibilizer miscible with cyanate ester in the uncured state selected from the group consisting of elastomeric and thermoplastic modifiers selected from the group consisting of hydroxyl, amine, and epoxide reactive functional group containing compounds and mixtures thereof, said cyanate ester comprising a least 15 wt. % of the mixture to be reacted and said flexibilizer having a glass transition temperature less than about 25° C.

5,386,001

TRANSITION METAL COMPLEXES OF POLYARYLENE OXIDES AND SULFIDES

Alexa A. Denbek, Wilmington, Del., and Marianne Marsi, Washington, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 990,201, Dec. 14, 1992. This application May 31, 1994, Ser. No. 251,422

Int. Cl.[6] C08G *75/16*

U.S. Cl. 528—373 **9 Claims**

1. A process for the production of a transition metal complexed polyarylene sulfide, comprising, contacting, in the presence of a solvent, an arylene dihalide π-arene complex with a transition metal containing moiety, with a dianion of the formula $^-S—Ar^1—S^-$, wherein Ar^1 is arylene.

5,386,002

FLUORENE BASED BISIMIDES AND THERMOPLASTIC POLYMERS THEREOF

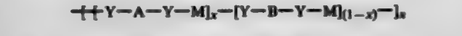
Muthiah N. Inbasekaran; Daniel J. Murray; Michael N. Mang, and James L. Brewbaker, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1993, Ser. No. 161,969

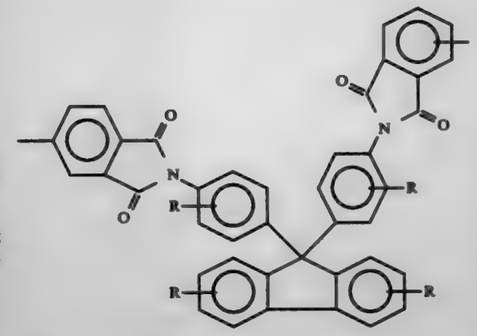
Int. Cl.[6] C08G *73/10*

U.S. Cl. 528—170 **28 Claims**

1. A thermoplastic, polymeric material containing a repeating unit corresponding to Formula I:



wherein A is a bisimide of Formula IIA:



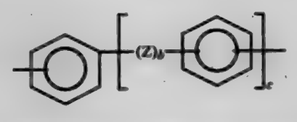
wherein R is independently in each occurrence hydrogen, alkyl of from 1 to 20 carbons, aryl or aralkyl of from 1 to 20 carbons, halogen, or NO_2;

x is from about 0.1 to 1;

n is from about 5 to about 1000;

Y is independently in each occurrence a covalent bond or CO;

B is independently in each occurrence a divalent hydrocarbylene moiety optionally substituted with halogen, alkyl, aryl, aralkyl, wherein the entire divalent hydrocarbylene moiety contains from 1 to 50 carbons; or wherein B is a divalent moiety of Formula III:



wherein Z is CH_2, CH_2CH_2, $C(CH_3)_2$, CF_2, $C(CF_3)_2$, OCH_2O, OCH_2CH_2O, CO_3, O, S, SO, SO_2, SO_3; b is 0 or 1; and c is 0, 1, or 2;

wherein M is independently in each occurrence —O—B—O—, —O—CH_2CHOHCH_2—O—B—O—CH_2CHOHCH_2—O—, —O—CH_2CHOHCH_2—O—, —O—CO—O—, or —O—CO—B—CO—O— with the proviso that M is not —O—CO—O— or —O—CO—B—CO—O— when Y is —CO—.

5,386,003

OIL ABSORBING POLYMERS

Carol J. Greene, and Stephen H. Wu, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Mar. 15, 1993, Ser. No. 33,198

Int. Cl.[6] C08G *63/02, 63/68*; C08L *77/00*

U.S. Cl. 528—272 **14 Claims**

1. A powder comprising a water-dissipatable polyester and/or polyester-amide polymer powder having a particle size of

about 0.1 to 100 microns and a T_2 of 50° C. or greater, said powder obtained by spray-drying an aqueous dispersion of said powder.

5,386,004

POLYHYDROXYCARBOXYLIC ACID AND PURIFICATION PROCESS THEREOF

Shoji Obuchi, and Masahiro Ohta, both of Fukuoka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Oct. 1, 1993, Ser. No. 130,442
Claims priority, application Japan, Oct. 9, 1992, 4-271477
Int. Cl.[6] C08G *63/08*
U.S. Cl. 528—354 **7 Claims**

1. A purification process of a polyhydroxycarboxylic acid having an inherent viscosity of 0.1～5.0 dl/g comprising contacting the solid polyhydroxycarboxylic acid with an acid substance in the presence of an organic solvent.

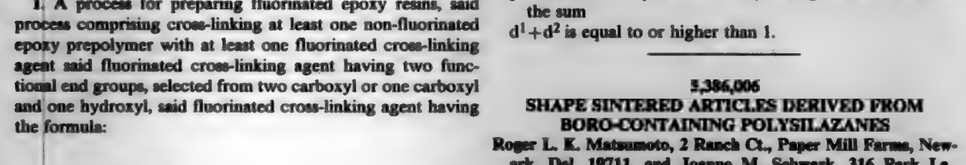
5,386,005

PREPOLYMERS CONTAINING A PERFLUOROPOLYETHEREAL CHAIN AND CARBOXYLIC END GROUPS, SUITABLE AS CROSS-LINKING AGENTS FOR EPOXY PREPOLYMERS

Leao Mascia, Loughborough, Great Britain; Claudio Tonelli, Concorezzo, and Giovanni Simeone, Milan, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Feb. 19, 1993, Ser. No. 19,788
Claims priority, application Italy, Feb. 20, 1992, MI92 A 0361
Int. Cl.[6] C08G *59/42, 59/62*
U.S. Cl. 528—110 **11 Claims**

1. A process for preparing fluorinated epoxy resins, said process comprising cross-linking at least one non-fluorinated epoxy prepolymer with at least one fluorinated cross-linking agent said fluorinated cross-linking agent having two functional end groups, selected from two carboxyl or one carboxyl and one hydroxyl, said fluorinated cross-linking agent having the formula:



(XII)

wherein Q is a perfluoropolyethereal or fluoropolyethereal chain having an average molecular weight ranging from 500 to 10,000, Q being selected from the group consisting of:

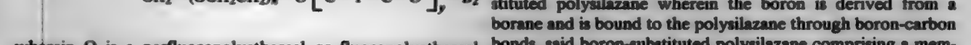
1)



(V)

wherein units (CF_2CF_2O) and (CF_2O) are randomly distributed along the chain and m/p ranges from 0.2 to 2;

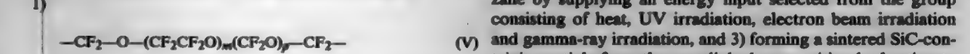
2)



(VI)

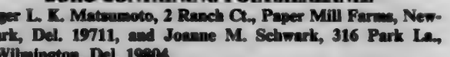
in which R^1 is a fluoroalkylene radical containing 1 to 10 carbon atoms and r/s ranges from 0.8 to 1.2;

3)



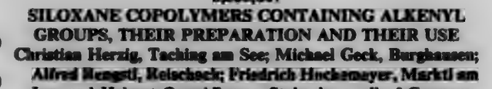
(VII)

in which units



are randomly distributed along the chain,
X=F or CF_3,
t/u=0.6–2.0, and
u/v is higher than 10; and

4)



(VIII)

in which R^2 is a perfluoroalkylene radical containing 1 to 10 carbon atoms and c/f=0.8–1.2;
T is a divalent aliphatic, aromatic, cycloalkylene or cycloalkene hydrocarbon radical optionally containing chlorine atoms, derived from an anhydride of a bicarboxylic or tetracarboxylic acid;
n ranges from 0 to 5;
x and y, like or different from each other, are equal to 0 or 1, provided that x+y is equal to 1 or 2;
B_1=H or $[(CH_2)_z—C(O)—O]_{d^1}—H$
B_2=H or $[(CH_2)_z—C(O)—O]_{d^2}—H$
in which z is an integer ranging from 3 to 11;
d^1 and d^2, like or different from each other, are integers ranging from 0 to 8;
provided that only one out of B_1 and B_2 can be H and that the sum
d^1+d^2 is equal to or higher than 1.

5,386,006

SHAPE SINTERED ARTICLES DERIVED FROM BORO-CONTAINING POLYSILAZANES

Roger L. K. Matsumoto, 2 Ranch Ct., Paper Mill Farms, Newark, Del. 19711, and Joanne M. Schwark, 316 Park La., Wilmington, Del. 19804

Continuation of Ser. No. 772,524, Oct. 7, 1991, Pat. No. 5,206,327. This application Apr. 26, 1993, Ser. No. 53,890
Int. Cl.[6] C08G *79/08*; F27B *9/10*; H05B *6/02*; C04B *35/64*
U.S. Cl. 528—4 **12 Claims**

1. A process for preparing a sintered SiC-containing article comprising 1) shaping a composition comprising a boron-substituted polysilazane wherein the boron is derived from a borane and is bound to the polysilazane through boron-carbon bonds, said boron-substituted polysilazane comprising a member selected from the group consisting of alkenyl groups and alkynyl groups, 2) crosslinking said boron-substituted polysilazane by supplying an energy input selected from the group consisting of heat, UV irradiation, electron beam irradiation and gamma-ray irradiation, and 3) forming a sintered SiC-containing article from the crosslinked composition by heating to a temperature of greater than or equal to 1600° C.

5,386,007

SILOXANE COPOLYMERS CONTAINING ALKENYL GROUPS, THEIR PREPARATION AND THEIR USE

Christian Herzig, Taching am See; Michael Geck, Burghausen; Alfred Hengstl, Reischach; Friedrich Hockemeyer, Marktl am Inn, and Helmut Oswaldbauer, Stubenberg, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jan. 10, 1994, Ser. No. 179,408
Claims priority, application Germany, Jan. 14, 1993, 4300809
Int. Cl.[6] C08G *77/06*
U.S. Cl. 528—12 **9 Claims**

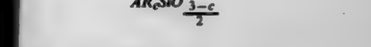
1. A siloxane copolymer containing alkenyl groups, comprising

(a) siloxane units of the formula



(I)

in which
R is identical or different and represents aliphatically saturated organic radicals,
$R^1$is identical or different alkyl radicals, which can be substituted by ether oxygen atoms, or a hydrogen atom,
a is 0, 1, 2 or 3,
b is 0, 1 or 2
wherein the sum of a+b is not greater than 3, and at least two siloxane units (a) where a+b=0 are present per molecule
(b) at least one siloxane unit per molecule of the formula



(II)

in which
R is the same as above
c is 0, 1 or 2 and
A represents a radical of the formula $—CH_2CHR^3—R^2—CR^3=CH_2$ in which
$R^2$is a divalent hydrocarbon radical having 1 to 25 carbon atoms and
R^3 is a hydrogen atom or an alkyl radical, and
(c) an average of at least one siloxane unit per molecule of the formula



(III)

in which
R and c are the same as above and
A^1 represents a radical of the formula $—CH_2CHR^3—R^2—CHR^3CH_2—$ where
R^2 and R^3 are the same as above.

5,386,008

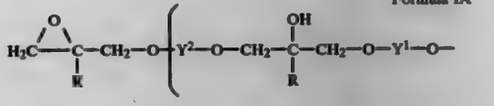
ADVANCED AND UNADVANCED COMPOSITIONS, NUCLEOPHILIC DERIVATIVES THEREOF AND CURABLE AND COATING COMPOSITIONS THEREOF

Robert A. Dubois, Houston; Allyson Malzman, Lake Jackson; Duane S. Treybig, Lake Jackson; Pong S. Sheih, Lake Jackson, and Alan R. Whetten, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

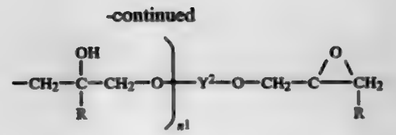
Division of Ser. No. 900,210, Jun. 17, 1992, Pat. No. 5,244,998, which is a division of Ser. No. 691,881, May 1, 1991, Pat. No. 5,147,905, which is a continuation-in-part of Ser. No. 523,613, May 15, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 90,859
Int. Cl.[6] C08G *59/06*
U.S. Cl. 528—87 **8 Claims**

1. A curable composition comprising
(I) an advanced resin or an unadvanced compound or mixture of such advanced resins and/or unadvanced compounds in any combination represented by the following formulas IA, IB, IC, ID, IE, or IF

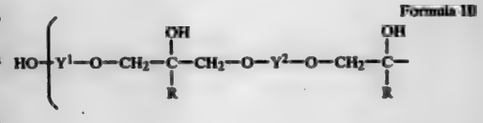
Formula IA



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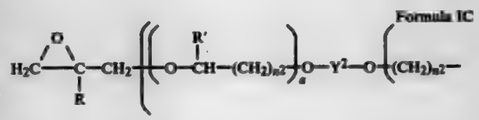


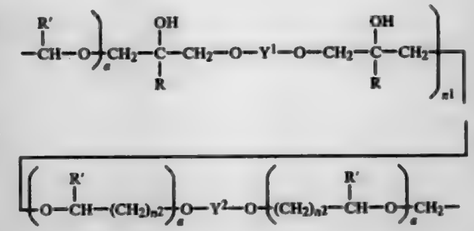
Formula IB





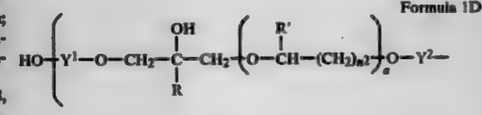
Formula IC

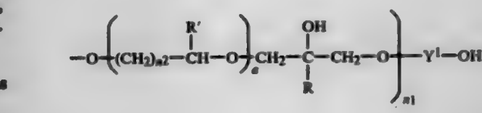




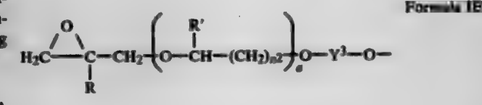


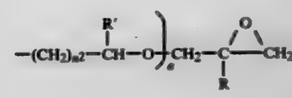
Formula ID





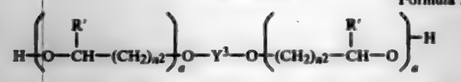
Formula IE



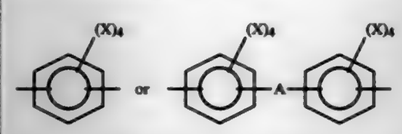


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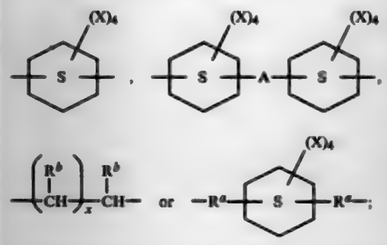
Formula IF



wherein each A is independently a single bond, —O—, —S—, —S—S—, —SO—, —SO_2—, —CO—, —O—CO—, —O—R^1—O—, —(O—CH_2—CHR^2)$_n$—O— or —R^3—; each Q is independently a divalent group represented by the formulas



each Q′ is independently a divalent aliphatic or cycloaliphatic group having from 2 to about 20 carbon atoms or Q′ is a group represented by the formulas



each Q^1 is independently a divalent group represented by the formula

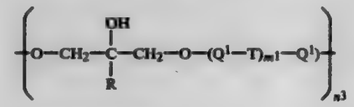


each Q^2 is a group represented by the formula



each R is independently hydrogen or a C_1 to C_4 alkyl group; each R′ is independently hydrogen or an alkyl group having from 1 to about 6 carbon atoms; each R^a is independently a divalent hydrocarbyl group having from 1 to about 6 carbon atoms; each R^b is independently hydrogen or monovalent hydrocarbyl group having from 1 to about 6 carbon atoms; R^1 is a divalent hydrocarbyl group having from 1 to abut 36 carbon atoms; R^2 is hydrogen, methyl, ethyl or phenyl; R^3 is a divalent hydrocarbyl group having from 1 to about 36 carbon atoms; each X is independently hydrogen, a halogen, —SO—R^4, —SO_2—R^4—, —CO—R^4—, —CO—O—R^4—, —O—CO—R^4—, —S—R^4, —OR^4, or —R_4, R^4 is a monovalent hydrocarbyl group having from 1 to about 12 carbon atoms; each Y^1 is independently —(Q—T)m—Q—; each Y^2 is independently —(Q—T)$_m$—Q— or —(Q;—T)m—Q′—, or —(Q—T)$_m$—Q—(O—CH_2—C(OH)(R)—CH_2—O—(Q—T)m—Q)$_{n3}$—; each Y^3 is independently a divalent group represented by the formulas

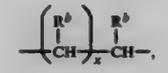
—(Q^1—T)$_{m1}$—Q^1—, —(Q^1—T)$_{m1}$—Q1—,



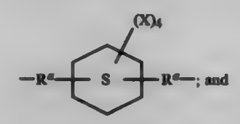
or

—(Q^2—T)$_{m1}$—Q^2—;

each T is independently an —OR^1O— or —(O—CH_2—CHR^2)m—O— group; each a independently has a value from 1 to about 25; each m independently has a value from zero to about 25; M^1 has a value from 1 to about 25; n has a value from 1 to about 10; n^1 has a value from 1 to about 100; n^2 has a value of 1 or 3; n^3 has a value from zero to about 10; and x has a value from 2 to about 19; with the proviso that at least one of said advanced resins or unadvanced compounds contains at least one —O—R^1— or (O—CH_2—CHR^2)n—O— group is present as a bridge between two groups selected independently from the group consisting of (1) a saturated or unsaturated cycloaliphatic group, (2) an aromatic group, (3) a group represented by the formula



or (4) a group represented by the formula



(II) a curing amount of a suitable curing agent therefor.

5,386,009

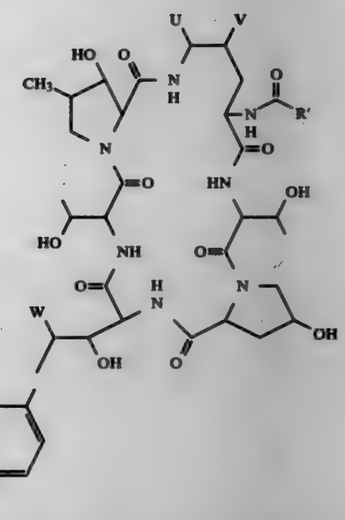
LIPOPEPTIDE DERIVATIVES

Milton L. Hammond, Somerville; Robert E. Schwartz, Westfield, and James M. Balkovec, North Plainfield, all of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Mar. 19, 1990, Ser. No. 495,200
Int. Cl.[6] A61K *37/02*; C07K *5/12, 7/06*
U.S. Cl. 530—317 7 Claims

1. A compound having the formula:

-continued



wherein
R is acyl, phosphono or sulfo radical which possesses a charged group at neutral pH;
R′ is a C_5–C_{23} alkyl, C_5–C_{23} alkenyl or C_5–C_{23} alkynyl or aryl;
U, V and W are independently H or OH.

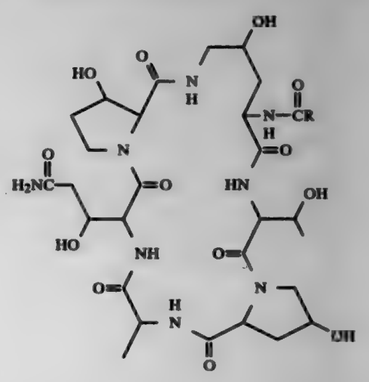
5,386,010

LIPOPEPTIDE COMPOUNDS

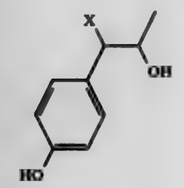
James M. Balkovec, N. Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 495,878, Mar. 19, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 901,720
Int. Cl.[6] A61K *37/02*; C07K *5/12, 7/06*
U.S. Cl. 530—317 15 Claims

1. A compound having the formula: (Seq. ID Nos. 1 & 2)



-continued



wherein
X is H or OH,
R is
(a) a straight or branched chain alkyl from 5 to 23 carbon atoms,
(b) a straight or branched chain alkenyl from 5 to 23 carbon atoms,
(c) phenyl and substituted phenyl wherein the substituent is C_1 to C_{10} alkyl, C_1 to C_{10} alkoxy, C_1 to C_{10} alkylamino, or C_1 to C_{10} thioalkoxy; or
(d) heteroaryl selected from the group consisting of pyrryl, thiophenyl, furyl, indolyl, benzothiophenyl, benzofuryl, imidazolyl, benzimidazolyl, and pyridinyl and optionally substituted with C_1 to C_{10} alkyl, alkoxy or thioalkoxy.

5,386,011

HEXAPEPTIDE ANAPHYLATOXIN-RECEPTOR LIGANDS

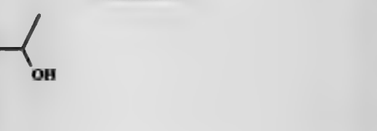
Paul E. Wiedeman; Megumi Kawai; Jay R. Luly; Yat S. Or, all of Libertyville, and Rolf Wagner, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 27, 1990, Ser. No. 634,641
Int. Cl.[6] A61K *37/00, 37/02*; C07K *5/00, 7/00*
U.S. Cl. 530—329 12 Claims

1. A C5a anaphylatoxin activity modulating compound selected from the group consisting of

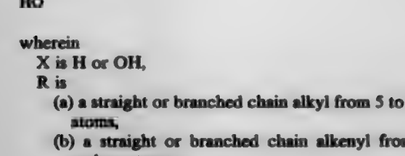


A B D E

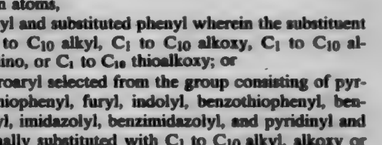


G J L Q

and



A B D E



G J L Q

wherein
n is 0, 1 or 2;
A is R_1-R_2-R_3 where
R_1 is selected from the group consisting of
aryl,
lower alkyl,
arylalkyl, and
hydrogen;
R_2 is selected from the group consisting of
$>CR_{99}R_{100}$
where R_{99} is selected from hydrogen, lower alkyl, and arylalkyl and R_{100} is hydrogen or lower alkyl, and
oxygen, with the proviso that when R_2 is oxygen, R_1 cannot be hydrogen; and
R_3 is selected from the group consisting of $>C=O$ and $>CH_2$ with the proviso that when R_3 is $>CH_2$ then R_2 cannot be oxygen; or
R_1 and R_2 taken together represent hydrogen or aryl;
R_1, R_2, and R_3 taken together represent hydrogen, lower alkyl, alkenyl, arylalkyl or an N-terminal protecting group;
R_{101} is selected from the group consisting of hydrogen, lower alkyl, arylalkyl, and alkenyl;
R_{201}, R_{210}, R_{220}, and R_{230} are independently selected from the group consisting of
hydrogen
lower alkyl,
alkenyl,
aryl,
arylalkyl,
(cycloalkyl)alkyl,
aminoalkyl,
amidoalkyl,
amidinoalkyl,
hydroxyalkyl,
guanidinoalkyl,
carboxyalkyl,
(carboxyamido)alkyl,
(carboxyhydrazino)alkyl,
ureidoalkyl,
(heterocyclic)alkyl,
(thioalkoxy)alkyl, and
sulfhydrylalkyl;
R_{202}, R_{211}, R_{221}, R_{231}, R_{302}, and R_{311} are independently selected from the group consisting of
hydrogen,
lower alkyl, and
arylalkyl, with the proviso that for R_{302}, arylalkyl is not 3-phenylpropyl;
R_{301} is selected from the group consisting of
hydrogen,
lower alkyl,
alkenyl,
aryl,
arylalkyl,
(cycloalkyl)alkyl,
aminoalkyl where the amine nitrogen is unsubstituted,
amidoalkyl,
hydroxyalkyl,
guanidinoalkyl,
carboxyalkyl,
(carboxyamido)alkyl,
(carboxyhydrazino)alkyl,
ureidoalkyl,
(heterocyclic)alkyl,
(thioalkoxy)alkyl, and
sulfhydrylalkyl, with the provisos that when R_{311} is hydrogen and R_{310} is
3-guanidinopropyl such that residue L is L-arginyl, then
a) arylalkyl is limited to benzyl,
b) amidoalkyl may not be N-benzoylamidoalkyl,
c) (carboxyamido)alkyl may not be aniline amides of aspartyl residues, and
d) in (heterocyclic)alkyl, the heterocyclic moeity is separated from the α-carbon of the amino acid residue by one methylene unit;
R_{310} is selected from the group consisting of
hydrogen
lower alkyl,
alkenyl,
aryl,
arylalkyl,
(cycloalkyl)alkyl,
aminoalkyl,
amidoalkyl,
amidinoalkyl,
hydroxyalkyl,
guanidinoalkyl,
(carboxyamido)alkyl,
(carboxyhydrazino)alkyl,
ureidoalkyl,
(heterocyclic)alkyl,
sulfhydrylalkyl; and
Q is R_{25}-R_{26}-R_{27} where
R_{25} is selected from the group consisting of oxygen and $>NR_{109}$ where R_{109} is hydrogen, lower alkyl or arylalkyl;
R_{26} is selected from the group consisting of
hydrogen,
lower alkyl,
arylalkyl, and
$>NR_{110}$ where R_{100} is hydrogen, lower alkyl, aryl, and arylalkyl, with the provisos that
a) when R_{25} is oxygen, then R_{26} is lower alkyl, and
b) when R_{26} is hydrogen, lower alkyl or arylalkyl, then R_{27} is absent; and
R_{27} is hydrogen or aryl, or
R_{26} and R_{27}, taken together, represent hydrogen with the proviso that when R_{25} is oxygen, R_{26} and R_{27} taken together are hydrogen, lower alkyl, or arylalkyl.

5,386,012

GROWTH FACTOR IN CONNECTION WITH ARTIFICIAL IMPLANTS

Lars Strid, Raketgatan 5, S-413 20 Göteborg, Sweden

Continuation of Ser. No. 916,126, Jul. 30, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,497
Claims priority, application Sweden, Feb. 6, 1990, 9000409
Int. Cl.[6] A61K *37/02*; A61L *27/00*
U.S. Cl. 530—331 **18 Claims**

1. An artificial implant material having the ability to increase natural collagen synthesis comprising a copper complex of the tripeptide glycyl-L-histidyl-L-lysine, which is bound to a biocompatible polymer through a covalent bond to the carboxyl group of the lysine.

5,386,013

TUMOR NECROSIS FACTOR-INDUCED PROTEIN TSG-6

Tae H. Lee, Piscataway, N.J.; Hans-Georg Wisniewski, Spring Valley, and Jan Vilcek, New York, both of N.Y., assignors to New York University, New York, N.Y.

Continuation of Ser. No. 642,312, Jan. 14, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,868
Int. Cl.[6] C07K *13/00*; C12P *21/06*
U.S. Cl. 530—350 **2 Claims**

1. An isolated tumor necrosis factor stimulated gene 6 (TSG-6) protein having hyaluronic acid binding activity and inducible by tumor necrosis factor, wherein said protein comprises the amino acid sequence of FIG. 3 (SEQ ID NO:2).

5,386,014

CHEMICALLY MODIFIED HEMOGLOBIN AS AN EFFECTIVE, STABLE, NON-IMMUNOGENIC RED BLOOD CELL SUBSTITUTE

Kwang Nho, Highland Park; Shmuel Zalipsky, Edison, both of N.J., and Frank Davis, Berkeley, Calif., assignors to Enzon, Inc., Piscataway, N.J.

Continuation of Ser. No. 440,553, Nov. 22, 1989, abandoned. This application May 22, 1992, Ser. No. 888,039
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[6] C07K *13/00, 17/08*
U.S. Cl. 530—385 **17 Claims**

1. A method of producing a chemically modified hemoglobin comprising:
(i) reducing and deoxygenating bovine hemoglobin; and
(ii) conjugating the reduced, deoxygenated bovine hemoglobin of step (i) to an activated polyalkylene oxide in the presence of from about 0.01 to about 2.0 M chloride anions so that a polyalkylene oxide conjugated hemoglobin is obtained having a P_{50} greater than that of normal human hemoglobin in whole red blood cells, when the P_{50} of said polyalkylene oxide conjugated hemoglobin and said normal human hemoglobin in whole red blood cells are measured under the same conditions.

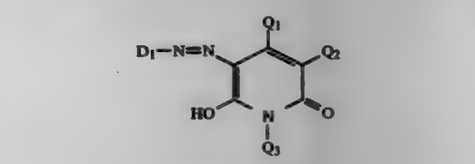
5,386,015

MONOAZO AND DISAZO COMPOUNDS HAVING 5-CYANO-2,4-AND 4,6-DICHLOROPYRIMIDYL GROUPS

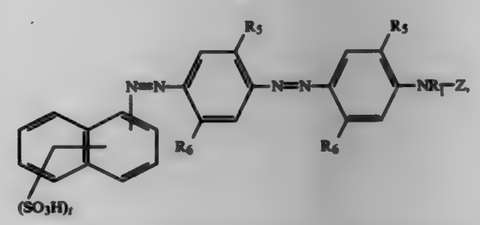
Paul Doswald, Münchenstein, and Werner Koch, Oberwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 685,095, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 565,586, Aug. 10, 1990, abandoned, which is a continuation of Ser. No. 424,623, Oct. 20, 1989, abandoned. This application Jul. 9, 1993, Ser. No. 90,227
Claims priority, application Germany, Oct. 20, 1988, 3835659; Oct. 20, 1988, 3835724; Oct. 20, 1988, 3835725; Jan. 4, 1989, 3900098; Mar. 21, 1989, 3909235
Int. Cl.[6] C09B *62/24*; D06P *1/382*
U.S. Cl. 534—637 **20 Claims**

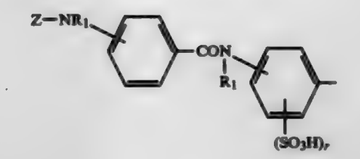
1. A compound of the formula



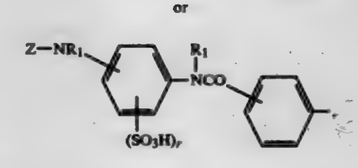
or



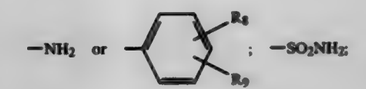
or a water-soluble salt thereof each cation of which is independently a non-chromophoric cation, or a mixture of such compounds or water-soluble salts,
wherein
D_1 is

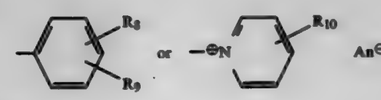


or

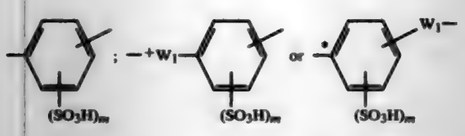


wherein
r is 1 or 2,
Q_1 is hydrogen; C_{1-4}alkyl; C_{5-6}cycloalkyl; phenyl; phenyl substituted by 1 to 3 substituents selected from C_{1-4}alkyl, C_{1-4}alkoxy, halo, —COOH and —SO_3H; phenyl(C_{1-4}alkyl); phenyl(C_{1-4}alkyl) the phenyl ring of which is substituted by 1 to 3 substituents selected from C_{1-4}alkyl, C_{1-4}alkoxy, halo, —COOH and —SO_3H; —COR_7; or C_{1-4}alkyl monosubstituted by —SO_3H, —OSO_3H or —COR_7,
Q_2 is hydrogen; cyano; nitro; —SO_3H; —COR_7; C_{1-4}alkyl; C_{1-4}alkyl monosubstituted by hydroxy, halo, cyano, C_{1-4}alkoxy, —SO_3H, —OSO_3H, —COR_7,

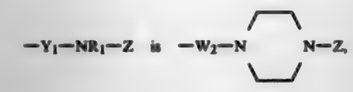




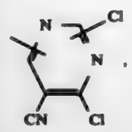
wherein
R_8 is hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkoxy, —COOH or —SO_3H,
R_9 is hydrogen, —SO_3H or —NR_1—Z, and
R_{10} is hydrogen, C_{1-4}alkyl or C_{2-4}hydroxyalkyl,
Q_3 is hydrogen; —Y_1—NR_1—Z; C_{1-6}alkyl; C_{2-4}alkenyl; C_{2-4}alkynyl; C_{5-6}cycloalkyl; —W—Y_2; phenyl; phenyl monosubstituted by —NR_1—Z; phenyl substituted by 1 to 3 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, —SO_3H, —COOH and —NH_2; phenyl substituted by one —NR_1—Z and by 1 to 3 substituents selected from halo C_{1-4}alkyl, C_{1-4}alkoxy, —SO_3H, —COOH and —NH_2; phenyl(C_{1-4}alkyl); phenyl(C_{1-4}alkyl) the phenyl ring of which is monosubstituted by —NR_1—Z; phenyl(C_{1-4}alkyl) the phenyl ring of which is substituted by 1 to 3 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, —SO_3, —COOH and —NH_2; or phenyl(C_{1-4}alkyl) the phenyl ring of which is substituted by one —NR_1—Z and by 1 to 3 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, —SO_3H, —COOH and —NH_2,
wherein
W is linear or branched C_{1-6}alkylene,
Y_1 is linear or branched C_{2-6}alkylene; linear or branched C_{3-6}alkylene monosubstituted by hydroxy; linear or branched C_{2-6}alkylene interrupted by —O— or —NR_1—;



wherein
W_1 is linear or branched C_{1-4}alkylene,
the asterisk denotes the carbon atom attached to the nitrogen atom of the pyridone ring, and
m is 0 or 1, or



wherein
W_2 is linear or branched C_{2-4}alkylene, and
Y_2 is —COOH, (C_{1-4}alkoxy)carbonyl, —SO_3H, —OSO_3H, hydroxy, cyano, C_{1-4}alkoxy, —$NR_{11}R_{12}$ or $^{\oplus}NR_{13}R_{14}R_{15}$ $An^{\ominus}$,
wherein
each of R_{11} and R_{12} is independently hydrogen; C_{1-4}alkyl; C_{1-4}alkyl monosubstituted by hydroxy, C_{1-4}alkoxy, —COOH, —SO_3H, C_{1-4}alkylamino or N,N-di-(C_{1-4}alkyl)amino; cyclohexyl; cyclohexyl substituted by 1 to 3 methyl groups; phenyl; phenyl substituted by 1 or 2 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, —SO_3H and —COOH; phenyl(C_{1-4}alkyl) or phenyl(C_{1-4}alkyl) the phenyl ring of which is substituted by 1 or 2 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, —SO_3H and —COOH, or
—$NR_{11}R_{12}$ is piperidino, morpholino, piperazino or piperazino substituted by 1 to 3 methyl groups,
each of R_{13} and R_{14} is independently C_{1-4}alkyl; C_{1-4}alkyl monosubstituted by hydroxy, C_{1-4}alkoxy, —COOH, —SO_3H, C_{1-4}alkylamino or N,N-di-(C_{1-4}alkyl)amino; cyclohexyl; cyclohexyl substituted by 1 to 3 methyl groups; phenyl; phenyl substituted by 1 or 2 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, —SO_3H and —COOH; phenyl(C_{1-4}alkyl) or phenyl(C_{1-4}alkyl) the phenyl ring of which is substituted by 1 or 2 substituents selected from halo, C_{1-4}alkyl, C_{1-4}alkoxy, —SO_3H and —COOH, and
R_{15} is C_{1-4}alkyl or benzyl, or
—$^{\oplus}NR_{13}R_{14}R_{15}$ is N—R_{15}-piperidinium, N—R_{15}-morpholinium, N—R_{15}-piperazinium, N—R_{15}-piperazinium substituted by 1 to 3 methyl groups, pyridinium or pyridinium substituted by one or two methyl groups,
wherein
R_{15} is C_{1-4}alkyl or benzyl,
each R_5 is independently hydrogen, C_{1-4}alkyl or C_{1-4}alkoxy,
each R_6 is independently hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkoxy, (C_{1-4}alkyl) carbonylamino or —$NHCONH_2$, and
t is 2 or 3,
wherein
each $R_7$is independently hydrogen or C_{1-4}alkyl,
each $R_7$is independently hydroxy, C_{1-4}alkoxy or —NH_2,
each Z is independently



and
each $An^{\ominus}$ is independently a non-chromophoric anion,
with the proviso that Q_2 and Q_3 together contain a maximum of one —NR_1—Z group.

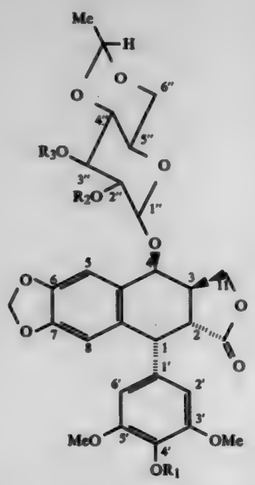
5,386,016

2'',3'',4'-TRI(ACETYL)-4'',6''-ETHYLIDINE-β-D-GLUCOPYRANOSIDES, THEIR PREPARATION AND THEIR USE FOR THE PREPARATION OF 4'-DEMETHYLEPIPODOPHYLLOTOXING ETHYLIDENE-β-D-GLUCOPYRANOSIDE

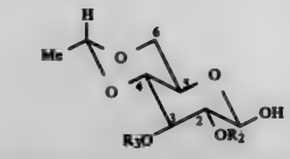
Jean-Pierre Robin, and Valerie Lenain, both of LeMans, France, assignors to Pierre Fabre Medicament, France

Continuation of Ser. No. 2,098, Jan. 8, 1993, abandoned, which is a continuation of Ser. No. 661,853, Feb. 27, 1991, abandoned. This application Nov. 19, 1993, Ser. No. 156,863
Claims priority, application France, Feb. 27, 1990, 90 02408
Int. Cl.[6] C07H *15/24*
U.S. Cl. 536—18.1 **8 Claims**

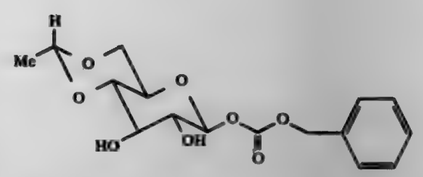
1. A process for the preparation of compounds of the formula 1



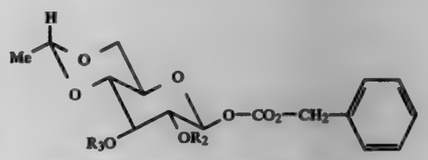
in which R_1, R_2, and R_3, are identical or different, represent acyl radicals in which the carbon in α of the carbonyl function bears at least one heteroatom selected from the group consisting of O and S, which comprises the following stages:
1) The preparation of β glycosyl derivative of the formula 1



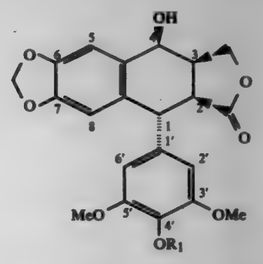
in which R_2 and R_3 have the meaning given above, by reacting at least one acid chloride R_2Cl or R_3Cl in which the carbon in α of the carbonyl function bears at least one heteroatom selected from the group consisting of O and S with β glycosyl derivative of the formula 2',



followed by hydrogenolysis at atmospheric pressure of the intermediate compound 6 obtained, catalyzed by palladized carbon;



2) The preparation of an aglycone of the formula 3,



in which R_1 has the meaning given above, by reacting 4'-demethylepipodophyllotoxin with an acid chloride R_1Cl in which the carbon in α of the carbonyl function bears at least one heteroatom selected from the group consisting of O and S, the reaction being carried out in a neutral medium; the order in which the stages 1) and 2) are carded out being unimportant;
3) The coupling of a crude derivative 2 prepared from step 1 with an aglycone 3 in the presence of a Lewis acid in solution in a chlorine-containing hydrocarbon.

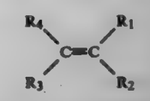
5,386,017

ALKENES FOR PRODUCING CHEMILUMINESCENT 1, 2-DIOXETANE COMPOUNDS

Arthur P. Schaap, Detroit, Mich., assignor to Board of Governors of Wayne State University, Detroit, Mich.

Division of Ser. No. 290,373, Dec. 29, 1988, Pat. No. 4,962,192, which is a continuation of Ser. No. 887,139, Jul. 17, 1986. This application Feb. 26, 1990, Ser. No. 484,923
The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.
Int. Cl.[6] C07H *15/24*; C07D *311/80*
U.S. Cl. 536—18.1 **14 Claims**

1. An alkene compound of the formula



which can be converted to a 1,2-dioxetane compound by the addition of oxygen wherein R_1 is selected from alkyl, alkoxy, aryloxy, dialkyl or aryl amino, trialkyl or aryl silyloxy groups and R_2 is an aryl group substituted with an X oxy-group, wherein the 1,2-dioxetane forms an unstable oxide intermediate 1,2-dioxetane compound when triggered to remove X by an activating agent selected from acids, bases, salts, enzymes, inorganic and organic catalysts and electron donors so that the unstable 1,2-dioxetane compound decomposes to form light and two carbonyl containing compounds of the formula:



wherein X is a chemically labile group which is removed by the activating agent to form the unstable oxide intermediate and wherein R_3 and R_4 are selected from aryl and alkyl groups which can be joined together as spirofused polycyclic alkyl and polycyclic aryl groups.

5,386,018

PROCESS OF PREPARING N-SUBSTITUTED ALDONAMIDES

Van Au, Congers, N.Y.; Bijan Harichian, South Orange; Michael I. Hill, Ridgewood, both of N.J.; Mikhail Raykh, Brooklyn, N.Y., and Jerry J. Krapa, Rockaway Township, Morris County, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 23,529, Feb. 26, 1993, and a continuation-in-part of Ser. No. 958,402, Oct. 8, 1992, Pat. No. 5,296,588, each is a continuation-in-part of Ser. No. 816,422, Dec. 31, 1991, abandoned. This application Nov. 4, 1993, Ser. No. 147,699
Int. Cl.[6] C07G *3/00*; C07H *15/04*
U.S. Cl. 536—185 **21 Claims**

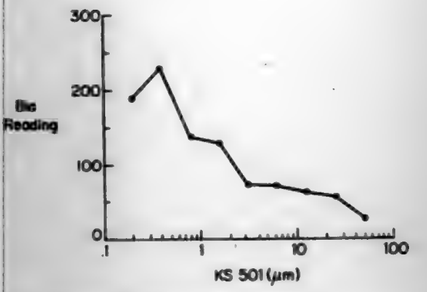
1. A process of preparing an N-substituted aldonamide, the process comprising the steps of:
i) preparing a homogeneous mixture comprising an aldonocompound, from about 0.05% to about 2% by total weight of an aldonocompound and an amine of an external acid, an organic polar solvent comprising a solvent having an alcohol functionality, and an amine HNR^1R^2, wherein R^1 and R^2 are the same or different and may contain heteroatoms and are selected from the group consisting of hydrogen, an aliphatic hydrocarbon radical, an aromatic radical, a cycloaliphatic radical, an amino acid ester, an ether amine and mixtures thereof, except that R^1 and R^2 are not both hydrogen at the same time, and
ii) reacting the homogeneous mixture at a temperature not greater than 100° C. to obtain the aldonamide.

5,386,019

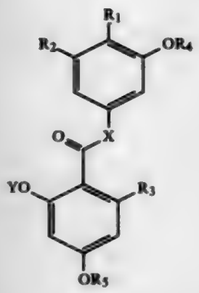
SYNTHESIS OF INHIBITORS OF CALMODULIN-MEDIATED ENZYMES INCLUDING KS-501, KS-502 AND THEIR ENANTIOMERS

Samuel J. Danishefsky, New Haven, Conn.; Russell Dushin, Peekskill, N.Y., and William N. Halt, North Haven, Conn., assignors to Yale University, New Haven, Conn.

Filed Jan. 15, 1992, Ser. No. 821,719
Int. Cl.[6] C07H *1/00, 13/02*
U.S. Cl. 536—18.6 43 Claims



1. A method for producing the compound



wherein:

R_1 is selected from the group consisting of H, CO_2H, CO_2-lower alkyl, and CO_2-benzyl;

R_2 and R_3 are independently H or a C_1–C_{20} saturated or unsaturated straight- or branched-chain alkyl group;

R_4 and R_5 are independently selected from the group consisting of H, Si-alkyl, Si-alkoxy, Si-aryl, and benzyl;

X is either oxygen or sulfur; and

Y is a glycoside; said method comprising the steps:

a) initially combining a derivative of Y, wherein said derivative is a sugar glycal, with a first 2,4-dihydroxybenzoic acid derivative which has said R_3 and R_5substituents, said initial combining occurring under conditions appropriate for covalent attachment of said sugar glycal to said first 2,4-dihydroxybenzoic acid derivative through an oxygen atom at the 2 position of said first 2,4-dihydroxybenzoic acid derivative, thereby producing an arylglycoside, and

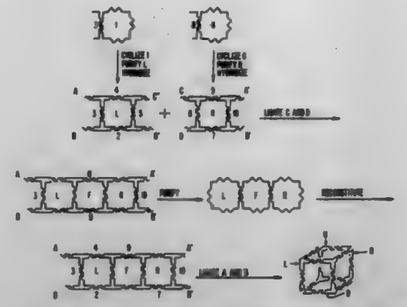
b) subsequently combining the arylglycoside produced in step a) with an aryl compound which has said R_1, R_2 and R_4 substituents, said subsequent combining occurring under conditions appropriate for a covalent attachment reaction to occur through X between said arylglycoside and said aryl compound, thereby forming said compound.

5,386,020

MULTIPLY CONNECTED, THREE-DIMENSIONAL NUCLEIC ACID STRUCTURES

Nadrian C. Seeman, New York, N.Y.; Junghuei Chen, Berkeley, Calif., and Neville R. Kallenbach, New York, N.Y., assignors to New York University, New York, N.Y.

Filed Jan. 10, 1991, Ser. No. 639,684
Int. Cl.[6] C07H *21/02, 21/04*
U.S. Cl. 536—23.1 14 Claims



1. A closed three-dimensional oligonucleotide structure comprising y junctions, each junction comprising n double-stranded oligonucleotide arms, wherein: y=8 and n=3, said arms form 12 edges, and every nucleotide residue in said structure is covalently bonded at its 5′ and 3′ ends to another nucleotide residue.

5,386,021

MAMMALIAN GUANINE NUCLEOTIDE BINDING PROTEIN WITH AN ADP-RYBOSYLATION FACTOR DOMAIN

Joel Moss, Bethesda; Koichi Mishima, Rockville; Maria S. Nightingale, Bethesda, all of Md., and Mikako Tsuchiya, Izumo, Japan, assignors to The United States of America, as represented by the Department of Health & Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 49,252, Apr. 16, 1993, abandoned. This application Apr. 19, 1993, Ser. No. 49,473
Int. Cl.[6] C07H *17/00*
U.S. Cl. 536—23.1 5 Claims

1. An isolated polynucleotide encoding the ARD1 protein, said polynucleotide having the nucleotide sequence of SEQ ID NO:1.

5,386,022

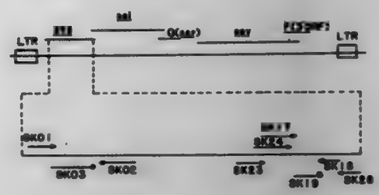
PRIMES AND PROBES FOR THE AMPLIFICATION AND DETECTION OF AIDS ASSOCIATED NUCLEIC ACIDS

John J. Sninsky, El Sobrante; Shirley Y. Kwok, San Ramon, both of Calif.; David Mack, Chicago, Ill.; Henry A. Erlich, Oakland, and Kary B. Mullis, LaJolla, both of Calif., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Continuation of Ser. No. 918,907, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 639,103, Jan. 9, 1991, abandoned, which is a continuation of Ser. No. 394,276, Aug. 15, 1989, Pat. No. 5,008,182, which is a continuation of Ser. No. 935,581, Nov. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 818,127, Jan. 10, 1986, abandoned, which is a continuation-in-part of Ser. No. 828,144, Feb. 7, 1986, Pat. No. 4,683,195, which is a continuation of Ser. No. 824,044, Jan. 30, 1986, abandoned, which is a division of Ser. No. 791,308, Oct. 25, 1985, Pat. No. 4,683,202, which is a continuation-in-part of Ser. No. 716,975, Mar. 28, 1985, abandoned. This application Jul. 16, 1993, Ser. No. 92,767
Int. Cl.[6] C07H *21/04;* C12Q *1/70, 1/68;* C12P *19/34*
U.S. Cl. 536—24.32 8 Claims

1. A pair of oligonucleotide primers for a polymerase chain reaction, which primers are sufficiently complementary to conserved regions among the nucleic acid sequences of AIDS viruses to hybridize therewith and not sufficiently complementary to HTLVI nucleic acids to hybridize therewith, wherein said conserved regions are at least 20 nucleotides long, wherein said primer pair consists of a member that comprises a nucleic acid sequence at least 14 nucleotides in length, which nucleic acid sequence is contained within a sequence selected from the group of nucleic acid sequences consisting of

5′-ATGAGAGAACCAAGG-3′,



5′-CCAGTAGGAGAAAT-3′,

5′-ATCCCAGTAGGAGAA-3′,

and 5′-ATAATCCACCTATCCCAG-3′,

and a member that comprises a nucleic acid sequence at least 14 nucleotides in length, which nucleic acid sequence is contained within a sequence selected from the group of nucleic acid sequences consisting of

5′-CCTTGTCTTATGTCCAG-3′, and 5′-TTATGTCCAGAATGC-3′.

5,386,023

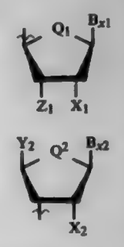
BACKBONE MODIFIED OLIGONUCLEOTIDE ANALOGS AND PREPARATION THEREOF THROUGH REDUCTIVE COUPLING

Yogesh S. Sanghvi, and Phillip D. Cook, both of Carlsbad, Calif., assignors to Isis Pharmaceuticals, Carlsbad, Calif.

Continuation-in-part of Ser. No. 903,160, Jun. 24, 1992, which is a continuation-in-part of Ser. No. 703,619, May 21, 1991, which is a continuation-in-part of Ser. No. 566,836, Aug. 13, 1990, Pat. No. 5,223,618, and Ser. No. 558,663, Jul. 27, 1990, Pat. No. 5,138,045. This application Mar. 31, 1993, Ser. No. 40,903
Int. Cl.[6] C07H *1/00*
U.S. Cl. 536—25.3 20 Claims

1. A method for forming between adjacent sugar moieties a covalent linkage having structure CH═N—R_A—CH_2, CH_2—R_A—N═CH, or R_A—N═CH—CH_2 where R_A is O or NR_1, comprising the steps of:

(a) providing synthons having structure:



(b) contacting said synthons for a time and under reaction conditions effective to form said covalent linkage;

wherein:

Z_1 and Y_2 are selected such that

(i) Z_1 is C(O)H and Y_2 is $CH_2R_ANH_2$; or

(ii) Z_1 is $CH_2R_ANH_2$ and Y_2 is C(O)H; or

(iii) Z_1 is R_ANH_2 and Y_2 is $H(O)CCH_2$;

R_1 is H or alkyl having 1 to about 10 carbon atoms;

B_{X1} and B_{X2} are, independently, nucleosidic bases;

Q_1 and Q_2 are O; and

X_1 and X_2 are, independently, H; OH; F; or O-alkyl having 1 to about 10 carbon atoms.

5,386,024

METHOD TO PREPARE NUCLEIC ACIDS FROM A BIOLOGICAL SAMPLE USING LOW PH AND ACID PROTEASE

Daniel L. Kacian, and Kiyotada Nunomura, both of San Diego, Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Filed Feb. 10, 1993, Ser. No. 15,729
Int. Cl.[6] C07H *23/00;* C12Q *1/68*
U.S. Cl. 536—25.4 14 Claims

1. A method for making available a desired nucleic acid(s) contained in a biological sample, comprising significant nuclease activity, for analysis, comprising the steps of:

acidifying said biological sample to a pH at which endogenous nucleases capable of degrading the desired nucleic acid(s) are inactive,

contacting said biological sample with an exogenous acid protease active to said pH,

incubating said biological sample until endogenous nuclease activities are reduced to insignificant levels, and

raising the pH of said biological sample to a pH sufficient to render said exogenous protease less active; wherein said nucleic acid(s) is made available for said analysis.

5,386,025

CALCIUM CHANNEL COMPOSITIONS AND METHODS

Scott D. Jay, Iowa City, Iowa; Steven B. Ellis; Michael M. Harpold, both of San Diego, Calif., and Kevin P. Campbell, Iowa City, Iowa, assignors to The Salk Institute Biotechnology/Industrial Associates, San Diego, Calif.

Filed Feb. 20, 1990, Ser. No. 482,384
Int. Cl.[6] C07H *21/02, 21/04;* C12Q *1/68;* C12N *5/10*
U.S. Cl. 536—23.5 6 Claims

1. An isolated DNA fragment, comprising a sequence of nucleotides that encodes the γ-subunit of a rabbit skeletal muscle calcium channel that has the amino acid sequence set forth in FIG 1.

5,386,026

Patent Not Issued For This Number

5,386,027

CARBOHYDRATE RECEPTOR FOR BACTERIA AND METHOD FOR USE THEREOF

Howard C. Krivan, Rockville; Victor Ginsburg, Bethesda, and David D. Roberts, Rockville, all of Md., assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Continuation of Ser. No. 226,445, Aug. 1, 1988, Pat. No. 5,217,715. This application May 13, 1993, Ser. No. 60,134
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[6] C08B *37/00;* A61K *39/02*
U.S. Cl. 536—123.1 4 Claims

1. A composition of matter, comprising

a carrier, and

a purified receptor containing a carbohydrate moiety of the structure N-acetylgalactoseamine-β-1-4-galactose-β-1-4-glucose.

5,386,028

PROCESS FOR THE PRODUCTION OF N-β-HYDROXYALKYL-TRI-N-CARBOXYALKYL-1,4,7,10-TETRAAZACYCLODODECANE AND N-β-HYDROXYALKYL-TRI-N-CARBOXYALKYL-1,4,8,11-TETRAAZACYCLOTETRADECANE DERIVATIVES AND THEIR METAL COMPLEXES

Ulf Tilstam; Helmut Börner; Klaus Nickisch; Heinz Gries, and Johannes Platzek, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Continuation of Ser. No. 987,468, Dec. 7, 1992, abandoned. This application Feb. 11, 1993, Ser. No. 16,452

Claims priority, application Germany, Jun. 4, 1992, 4218744

Int. Cl.[6] C07D *257/02*; C08F *4/64*; A61K *49/02*

U.S. Cl. 540—474 **16 Claims**

1. A process for production of a N-β-hydroxyalkyl-tri-N-carboxyalkyl-1,4,7,10-tetraazacyclododecane or N-β-hydroxyalkyl-tri-N-carboxyalkyl-1,4,8,11-tetraazacyclotetradecane compound of formula I



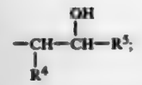
(I)

wherein

R^1 is $-(CH_2)_{1-6}$-COOY optionally substituted by R^3;

R^3 is hydrogen, C_1–C_6-alkyl, benzyl, benzyloxyalkyl or phenyl;

Y is, in each case, hydrogen or a metal ion equivalent of an element of atomic numbers 21–29, 31, 32, 37–39, 42–44, 49 or 57–83;



n is, in each case, 2 or 3;

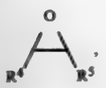
R^4 and R^5, independent of one another, are each hydrogen, C_1–C_{20}-alkyl optionally interrupted by 1 to 10 oxygen atoms, a phenylene, phenylenoxy or phenylenedioxy group, which optionally is substituted by 1 to 3 C_1–C_6-alkyl, 1 to 3 trifluoromethyl, 1 to 7 hydroxy, 1 to 3 C_1–C_7-alkoxy, 1 to 3 C_7–C_{10}-aralkoxy, 1 to 2 CO_2R^6, and/or 1 to 2 phenoxy or phenyl groups optionally substituted by 1 to 2 chloro, bromo, nitro or C_1–C_6-alkoxy;

R^6 is hydrogen, C_1–C_6-alkyl, C_6–C_{10}-aryl, or C_6–C_{10}—Ar(-C_1–C_4)alkyl;

wherein hydroxy or carboxy groups are optionally in protected form;

said process comprising:

reacting 1,4,7,10-tetraazacyclododecane or 1,4,8,11-tetraazacyclotetradecane, optionally in the form of a salt, in the presence of a base, with an epoxide of formula II



(II)

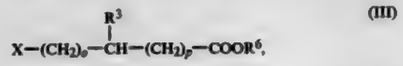
wherein

R^4 and R^5 have the above-indicated meanings and optionally present hydroxy or carboxy groups are optionally protected, in a polar solvent or without solvent, at a temperature of 0° C.–220° C. within 0.5–48 hours;

separating impurities, optionally, if necessary after adding acids;

isolating product;

reacting resultant product, optionally in the presence of a base, with a compound of formula III



(III)

wherein

R^3 and R^6 have the above-indicated meanings,

X is a leaving group; and

o and p, independent of one another, are each 0–5, and o+p is less than 6;

optionally after protection of hydroxy or carboxy groups in R^2 with protecting groups, in a polar solvent at −10° C.–170° C. within 1–100 hours;

optionally cleaving protecting groups; and

the resultant product of formula I, wherein each Y is hydrogen, is optionally reacted with at least one metal oxide or metal salt of an element of atomic numbers 21–29, 31, 32, 37–39, 42–44, 49 or 57–83, and acid hydrogen atoms, optionally, are substituted by cations of inorganic and/or organic bases, amino acids or amino acid amides, or corresponding acid groups, optionally, are converted, completely or partially, to esters or amides.

5,386,029

PROCESS FOR THE MANUFACTURE OF 4-ACYLOXY-3-HYDROXYETHYL-AZETIDINONES

Peter Schneider, Bottmingen, and Gerardo Ramos, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

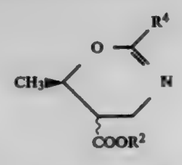
Division of Ser. No. 740,685, Aug. 6, 1991, Pat. No. 5,274,188, which is a division of Ser. No. 491,145, Mar. 9, 1990, Pat. No. 5,064,761, which is a division of Ser. No. 186,547, Apr. 27, 1988, Pat. No. 4,927,507. This application Jul. 16, 1993, Ser. No. 92,736

Claims priority, application Switzerland, May 4, 1987, 1683/87

Int. Cl.[6] C07D *265/06, 265/08*

U.S. Cl. 544—88 **8 Claims**

1. A compound of the formula



(IV)

in which R^2 is an esterifying radical and R^4 is selected from the group consisting of lower alkyl, cycloalkyl, aryl, lower alkoxy, aryloxy, and aryl-lower alkoxy, a pure diastereomer thereof or a salt thereof.

5,386,030

ANTIVIRAL (PHOSPHONOMETHOXY)METHOXY PURINE/PYRIMIDINE DERIVATIVES

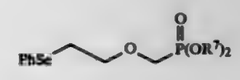
Choung U. Kim, Madison; John C. Martin, Cheshire; Bing Y. Luh, Killingworth, and Peter F. Misco, Durham, all of Conn., assignors to Institute of Organic Chemistry and Biochemistry of the Academy of Science of the Czech Republic, Czech Rep. and Rega Stichting v.z.w., Belgium

Division of Ser. No. 619,856, Nov. 29, 1990, Pat. No. 5,208,221. This application Feb. 11, 1993, Ser. No. 16,401

Int. Cl.[6] C07F *9/02*

U.S. Cl. 544—243 **13 Claims**

1. An intermediate having the formula



wherein R^7 is alkyl C_{1-4} or aryl.

5,386,031

PROCESS FOR THE SYNTHESIS OF 2-AMINO-3,5-DIHYDRO-7-SUBSTITUTED-4H-PYRROLO[3,2-D]PYRIMIDIN-4-ONES

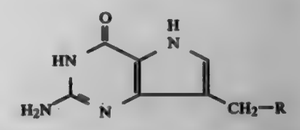
Randall L. De Jong, Zealand; Ronald E. Seamans, and James R. Zeller, both of Holland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 15, 1993, Ser. No. 167,751

Int. Cl.[6] C07D *487/04*; C07B *31/00*

U.S. Cl. 544—280 **18 Claims**

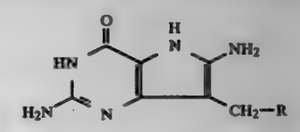
1. A process for the preparation of a compound of Formula I



I

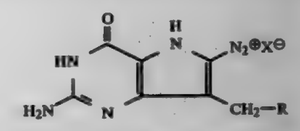
and pharmaceutically acceptable acid addition salts thereof wherein R is aryl or heteroaryl which comprises:

Step (a) treating a compound of Formula III



III

wherein R is as defined above with a diazotization reagent in a solvent to afford a compound of Formula II



II

wherein X is Cl, Br, I, BF_4, PF_6, or HSO_4 and R is as defined above;

Step (b) treating a compound of Formula II with hydrogen in the presence of a catalyst and a solvent to afford a compound of Formula I;

Step (c) and, if desired, converting the resulting compound of Formula I to a corresponding pharmaceutically acceptable acid addition salt by conventional means, and if so desired, converting the corresponding pharmaceutically acceptable acid addition salt to a compound of Formula I by conventional means.

5,386,032

METHOD OF SYNTHESIS OF 5-METHOXY-2-[(4-METHOXY-3,5-DIMETHYL-2-PYRIDINYL)-METHYL]SULFINYL-1H-BENZIMIDAZOLE (OMEPRAZOLE)

Arne E. Brändström, Gothenburg, Sweden, assignor to Aktiebolaget Astra, Sodertalje, Sweden

Continuation of Ser. No. 708,345, May 31, 1991, abandoned. This application May 25, 1993, Ser. No. 67,406

Claims priority, application Sweden, Jun. 7, 1990, 9002043

Int. Cl.[6] C07D *401/00*

U.S. Cl. 546—271 **11 Claims**

1. An improved method for the production of omeprazole which comprises reacting 5-methoxy-2-[(4-methoxy-3,5-dimethyl-2-pyridinyl)-methylthio]-1H-benzimidazole (Compound I) with m-chloroperoxybenzoic acid in a methylene chloride solution at a substantially constant pH of about 8.0 to 8.6; extracting the reaction mixture with aqueous NaOH; separating the aqueous phase from the organic phase; and adding an alkyl formate to the aqueous phase, resulting in the crystallization of omeprazole.

5,386,033

2-AMINOPYRIDINE COMPOUNDS

Shoichi Kusumoto, Osaka; Sumihiro Hase, Hyogo, and Koichi Fukase, Osaka, all of Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Tokyo, Japan

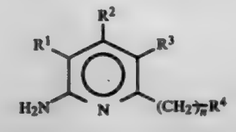
Filed Mar. 15, 1993, Ser. No. 31,476

Claims priority, application Japan, Mar. 13, 1992, 4-088314

Int. Cl.[6] C07D *213/02*

U.S. Cl. 546—309 **1 Claim**

1. A 2-aminopyridine of the formula (a)



(a)

wherein R^1, R^2 and R^3 are the same or different and each represents a hydrogen atom or a lower alkyl group containing 1 to 4 carbon atoms, R^4 represents a cyanoalkyl group of the formula $-(CH_2)_mCN$, an aminoalkyl group, an alkyloxycarbonylamino group, a maleimido group, or a halogen atom, n is an integer of 2 to 20 and m is 0 or an integer of 1 to 3.

5,386,034

2-(ALKOXY BENZOTHIAZOLINON-3YL) ETHYLAMINES

Said Yous, Lille; Isabelle Lesieur, Gondecourt; Patrick Depreux, Armentieres; Daniel H. Caignard, Paris; Béatrice Guardiola, Neuilly sur Seine; Gérard Adam, Le Mesnil le Roi, and Pierre Renard, Versailles, all of France, assignors to Adir et Compagnie, Courbevoie, France

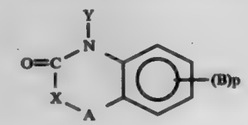
Division of Ser. No. 848,373, Mar. 9, 1992, Pat. No. 5,240,919. This application Jun. 15, 1993, Ser. No. 78,001

Claims priority, application France, Mar. 25, 1991, 91 03538

Int. Cl.[6] C07D *277/68*

U.S. Cl. 548—169 **3 Claims**

1. A compound selected from those of formula (Ia)



(Ia)

in which Y is $-CH_2-CH_2R'$a, wherein R'a is NH—R_1 with

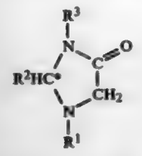
R_1 being hydrogen or alkyl having 1 to 6 carbon atoms, inclusive,
X is or a single bond,
A is sulfur,
B is alkoxy having 1 to 6 carbon atoms, inclusive, and
p is 1, and
soluble acid addition salts thereof when R'a is —NH—R_1.

5,386,035
METHOD OF PRODUCING OPTICALLY ACTIVE 1,3-IMIDAZOLIDINE-4-ONES

Dieter Seebach, Zürich, Switzerland; Karlheinz Drauz, Freigericht, Germany; Matthias Kottenhahn, Hanau, Germany; Hermann Lotter, Hainburg, Germany, and Michael Schwarm, Alzenau, Germany, assignors to Degussa Aktiengesellschaft, Germany

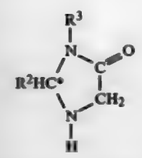
Filed Nov. 12, 1992, Ser. No. 974,422
Claims priority, application Germany, Nov. 12, 1991, 4137186; Nov. 15, 1991, 4137663
Int. Cl.[6] C07D *233/38, 233/32, 233/30*; C07K *5/00*
U.S. Cl. 548—316.4 **11 Claims**

1. In a method of producing enantiomerically pure 1,3-imidazolidine-4-ones having the formula:



I

in which * is a center of asymmetry to which the enantiomeric purity refers, R_1 is H, R_2 is a sterically hindering group containing at least 3 carbon atoms and R_3 is an alkyl or aralkyl group containing 1–10 carbon atoms by racemic resolution of a racemic 1,3-imidazolidine-4-one having the formula:



II

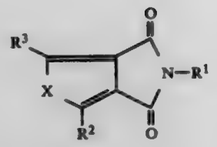
in which R_2 and R_3 have the meaning already indicated;
the improvement which comprises contacting a salt of the 1,3-imidazolidine-4-one of Formula II with a base and a solvent in which the 1,3-imidazolidine-4-one of Formula II is soluble, thereby precipitating a salt of the cation of said base and the anion of said salt of said 1,3-imidazolidine-4-one, and separating the precipitated salt.

5,386,036
DICARBOXIMIDES, THEIR PREPARATION AND THEIR USE AS HERBICIDES

Peter Muenster, Neuhausheim; Wolfgang Freund, Neustadt; Gerd Steiner, Kirchheim; Helmut Walter, Obrigheim; Karl-Otto Westphalen, Speyer, and Matthias Gerber, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

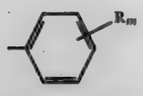
Division of Ser. No. 732,794, Jul. 19, 1991, Pat. No. 5,276,009. This application Aug. 23, 1993, Ser. No. 110,008
Claims priority, application Germany, Jul. 20, 1990, 4023048
Int. Cl.[6] C07D *491/048, 495/04*
U.S. Cl. 548—453 **2 Claims**

1. A dicarboximide of the formula Ib



Ib

where
X is oxygen or sulfur;
R^1 is hydrogen or hydroxyl;
C_3–C_8-cycloalkyl which may carry from one to three of the following radicals: halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy or C_1–C_4-haloalkoxy;
C_1–C_6-alkyl which may carry from one to three of the following radicals: hydroxyl, halogen, cyano, C_3–C_8-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino or C_3–C_6-cycloalkylamino or a radical of the formula:



in which R is cyano, nitro, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_2–C_4-alkynyloxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_4–C_6-alkoxycarbonylalkoxy, C_1–C_4-alkoxycarbonyl, 2-alkoxycarbonyl-prop-1-enyl, C_1–C_4-alkanoyl, C_1–C_4-haloalkanoyl, formyl, dioxolanyl or phenyl, m is 0, 1, 2 or 3, and the radicals R may be different when m is 2 or 3;
C_1–C_4-alkoxy, C_2–C_6-cyanoalkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, phenyl or naphthyl, where these groups may carry from one to three of the radicals stated for R;
R^2 and R^3 are each independently nitro; cyano; halogen;
amino which may carry one or two C_1–C_4-alkyl groups or a C_1–C_4-alkylcarbonyl group;
C_1–C_4-alkoxy or C_1–C_4-alkylthio, were these groups may carry from one to nine halogen atoms;
C_1–C_4-alkylsulfonyl; C_1–C_4-haloalkylsulfonyl;
C_2–C_6-alkenyl, C_2–C_6-alkynyl, phenyl, phenoxy or phenylthio, where these groups may carry from one to three of the radicals stated for R, or
one of the groups stated for R^1;
and agriculturally useable salts of the compounds Ib, with the provisos that:
(i) when X is oxygen, R^1, R^2 and R^3 are not simultaneously methyl or phenyl, and
(ii) when X is sulfur,
(a) when R^2 and R^3 are each phenyl, R^1 is not phenyl 2-phenylethyl, ethyl, hexyl, 2-hydroxyethyl or 2-hdyroxypropyl,
(b) when R^2 and R^3 are each 4-chlorophenyl, R^1 is not 3-methoxypropyl, and
(c) when R^2 and R^3 are each hydrogen, R^1 is not phenyl or hydrogen.

5,386,037
TRISSTANNOXANES USEFUL FOR POLYMERIZING MACROCYCLIC POLY(ALKYLENE DICARBOXYLATE) OLIGOMERS

Tohru Takekoshi, Scotia, and Eric J. Pearce, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 20, 1994, Ser. No. 262,793
Int. Cl.[6] C07F *7/22*
U.S. Cl. 549—206 **5 Claims**

1. A trisstannoxane having the formula

wherein R^2 is a C_{1-4} primary alkyl radical and R^3 is a C_{1-10} alkyl radical.

5,386,038
WATER TREATMENT AGENT

Keith P. Davis; Peter A. T. Hoye, both of Stourbridge; Michael J. Williams, Bridgnorth; Gary Woodward, Kidderminster, and Martin P. Greenhall, Northfield, all of England, assignors to Albright & Wilson Limited, West Midlands, England

Continuation-in-part of Ser. No. 809,960, Dec. 18, 1991, abandoned. This application Sep. 17, 1992, Ser. No. 947,094
Claims priority, application United Kingdom, Dec. 18, 1990, 9027357; May 8, 1991, 9109861; Nov. 6, 1991, 9123501; Jun. 16, 1992, 9212748
Int. Cl.[6] C07D *307/36*
U.S. Cl. 549—262 **3 Claims**

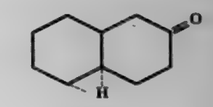
1. 2,3-dphosphonopropan-1-ol and its salts.

5,386,039
PROCESS FOR THE PREPARATION OF A BICYCLIC DECALIN KETONE

Roger L. Snowden, Viry, France; Cyril Mahaim, Echichens, Switzerland, and Dana P. Simmons, Jamestown, N.C., assignors to Firmenich SA, Geneva, Switzerland

Filed Jul. 20, 1993, Ser. No. 94,679
Claims priority, application Switzerland, Jul. 24, 1992, 2341/92
Int. Cl.[6] C07C *45/65*
U.S. Cl. 568—355 **9 Claims**

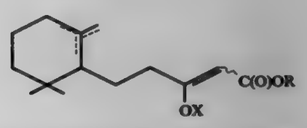
1. A process for the preparation of perhydro-5,5,8a-trimethyl-2-napthalenone essentially in its isomeric form of formula



(Ia)

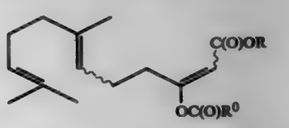
(±) trans

which process comprises treating with an acidic cyclization agent, in an inert organic solvent, at a temperature of about 0° to 25° C.;
a. a carboxylic ester of formula



(II)

having a double bond in one of the positions indicated by the dotted lines and wherein the symbol R designates a C_1–C_6 alkyl radical, X is an oxygen protecting group comprising a monovalent radical of formula $P(O)(OR^1)_2$ or $C(O)R^2$, R^1 represents a C_1–C_6 alkyl group and R^2 is either a linear or branched alkyl group or a substituted or unsubstituted phenyl radical, and wherein the wavy line represents a C—C bond of cis or trans configuration, or
b. a carboxylic ester of formula



(III)

wherein the wavy lines and symbol R are defined as above, and R^6 represents a C_3–C_6 alkyl radical, preferably branched, and decarboxylating then the thus obtained cyclization product by treating it with a base;
wherein the proportion of the cyclization agent relative to the ester is at least stoichiometric.

5,386,040
LOW MOLECULAR WEIGHT POLYACETALS AND POLYALDEHYDES

Gary T. Martino, Plainsboro, and Martin M. Tessler, Edison, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation of Ser. No. 889,548, May 27, 1992, abandoned. This application Jun. 8, 1993, Ser. No. 74,278
Int. Cl.[6] C07C *45/45, 47/12*
U.S. Cl. 568—483 **8 Claims**

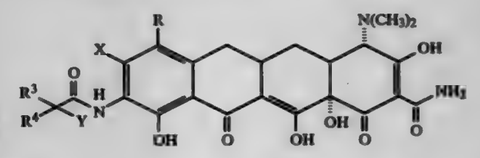
1. A polyaldehyde having a molecular weight of about 200–3000 and the formula R_1—$(O—R_2—CHO)_x$, wherein R_1 is the residue from a polyalcohol containing three to nineteen alcohol groups, R_2 is a divalent organic group and x is 3 to less than 20.

5,386,041
7-(SUBSTITUTED)-8-(SUBSTITUTED)-9-[(SUBSTITUTED GLYCYL) AMIDO]-6-DEMETHYL-6-DEOXYTETRACYCLINES

Phaik-Eng Sum, Pomona; Ving J. Lee, Monsey; Joseph J. Hlavka, Tuxedo Park, all of N.Y., and Raymond T. Testa, Cedar Grove, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 928,578, Aug. 13, 1992. This application Feb. 8, 1994, Ser. No. 193,828
Int. Cl.[6] C07C *235/66*
U.S. Cl. 552—205 **29 Claims**

1. A compound of the formula



wherein:
Y is $—(CH_2)_nX'$, n=0–5, X' is halogen selected from bromine, chlorine, fluorine and iodine; X is halogen or trifluoromethanesulfonyloxy, the halogen is selected from bromine, chlorine, fluorine and iodine;
R is selected from hydrogen; and halogen selected from bromine, chlorine, fluorine and iodine; or R=—NR^1R^2 and R^1 is selected from hydrogen, methyl, ethyl, n-propyl, 1-methylethyl, n-butyl and 1-methylpropyl and R^2 is selected from methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl and 1,1dimethylethyl with the proviso that when R^1=hydrogen, R^2=methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl or 1,1-dimethylethyl;
and when R^1=methyl or ethyl,
R^2=methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl or 2-methylpropyl;
and when R^1=n-propyl, R^2=n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl or 2-methylpropyl;
and when R^1=1-methylethyl, R^2=n-butyl, 1-methylpropyl or 2-methylpropyl;
and when R^1=n-butyl, R^2=n-butyl, 1-methylpropyl or 2-methylpropyl;
and when R^1=1-methylpropyl, R^2=2-methylpropyl; R^3 is selected from hydrogen; straight or branched (C_1–C_8)alkyl group selected from methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, hexyl, heptyl and octyl; α-mercapto(C_1–C_4)alkyl group selected from mercaptomethyl,

α-mercaptoethyl, α-mercapto- 1-methylethyl, α-mercaptopropyl and α-mercaptobutyl; α-hydroxy-(C_1–C_4)alkyl group selected from hydroxymethyl, α-hydroxyethyl, α-hydroxy-1-methylethyl, α-hydroxypropyl and α-hydroxybutyl; carboxyl (C_1–C_8)alkyl group; (C_6–C_{10})aryl group selected from phenyl, α-naphthyl and β-naphthyl; substituted(C_6–C_{10})aryl group with substitution selected from hydroxy, halogen, (C_1–C_4)alkoxyl, trihalo(C_1–C_3)alkyl, nitro, amino, cyano, (C_1–C_4)alkoxycarbonyl, (C_1–C_3)alkylamino and carboxy; (C_7–C_9)aralkyl group selected from benzyl, 1-phenylethyl, 2-phenylethyl and phenylpropyl; and substituted (C_7–C_9)aralkyl group with substitution selected from halo, (C_1-C_4)alkyl, nitro, hydroxy, amino, mono- or di-substituted C_1–C_4)alkylsulfonyl, cyano and carboxy; R^4 is selected from hydrogen and (C_1–C_6)alkyl selected from methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl and hexyl;

when R^3 does not equal R^4 the stereochemistry of the carbon bearing the Y substituent may be either the racemate (DL) or either of the individual enantiomers (L or D); or the pharmacologically acceptable organic and inorganic salts or metal complexes.

5,386,042

PREPARATION OF 1,4-DIAMINOANTHRAQUINONE-2,3-DISULFONIC ACID AND 1,4-DIAMINOANTHRAQUINONE-2,3-DINITRILE

Matthias Dust, Ludwigshafen; Udo Bergmann, Bensheim, and Gerd Schwantje, Wachenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 8, 1993, Ser. No. 88,740
Claims priority, application Germany, Jul. 8, 1992, 4222302
Int. Cl.[6] C07C *303/00*
U.S. Cl. 532—239 **6 Claims**

1. A process for the preparation of 1,4-diaminoanthraquinone-2,3-disulfonic acid (I) by reacting a 1,4-diamino-2,3-dihaloanthraquinone (II) with boric acid in an inert organic solvent and further reacting the resulting reaction product (IIa) with an aqueous sulfite solution, wherein the inert organic solvent used is a nonpolar solvent having a boiling point of ≧130° C. and a density of ≦0.95 g/cm^3.

5,386,043

NON-AQUEOUS NEUTRALIZATION OF N-ACYL SARCOSINES

Joseph J. Crudden, Hudson, N.H., assignor to Hampshire Chemical Corp., Lexington, Mass.

Filed Jun. 7, 1994, Ser. No. 255,183
Int. Cl.[6] C07C *231/12*
U.S. Cl. 554—68 **5 Claims**

1. A process for the non-aqueous neutralization of N-acyl sarcosines, comprising neutralizing said N-acyl sarcosine with caustic under the application of high shear.

5,386,044

POLYHALOAROMATIC RUTHENIUM COMPLEXES AND REACTIONS THEREOF

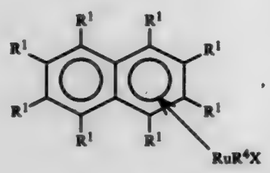
Alexa A. Dombek, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1993, Ser. No. 159,152
Int. Cl.[6] C07F *15/00, 17/02*
U.S. Cl. 556—13 **11 Claims**

1. A pi-polyhaloarene complex of the formula

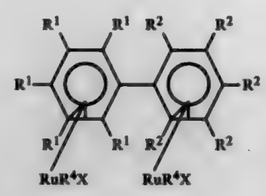


(I)



(II)

or



(III)

wherein:

each R^1 and each R^2 is independently hydrogen, halogen R^3;

R^3 is an inert monovalent radical having a Hammett sigma constant which is greater than −0.35 and less than −0.12;

R^4 is cyclopentadienyl or pentamethylcyclopentadienyl;

X is perfluoroalkylsulfonate or hexafluorophosphate;

and provided that:

at least three of R^1 and at least three of R^2 are halogen;

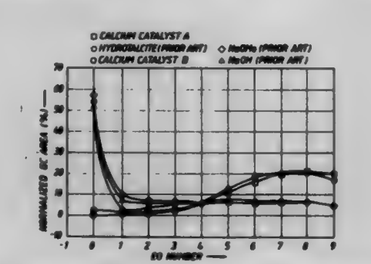
and no more than two of R^1, and no more than two of R^2, are R^3.

5,386,045

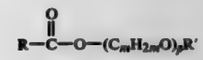
PROCESS FOR ALKOXYLATION OF ESTERS AND PRODUCTS PRODUCED THEREFROM

Upali Weerasooriya; Donald T. Robertson, both of Austin; John Liu, Cedar Park; Bruce E. Leach, Austin; Cynthia L. Aeschbacher, Austin, and Tonyette S. Sandoval, Austin, all of Tex., assignors to Vista Chemical Company, Houston, Tex.

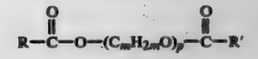
Continuation-in-part of Ser. No. 748,449, Aug. 22, 1991, Pat. No. 5,220,046. This application Aug. 5, 1992, Ser. No. 924,952
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[6] C07C *69/96*
U.S. Cl. 554—149 **25 Claims**



1. A process for producing alkoxylated esters selected from the group consisting of alkoxylated monoesters having the formula:

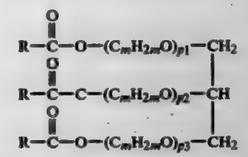


alkoxylated ethylene glycol diesters having the formula:



(II)

and alkoxylated triesters having the formula:



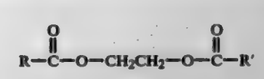
(III)

wherein m is from 2 to 4, p, p_1, p_2 and P3 are each from about 1 to about 50, and R and R′ are each an organic radical containing from about 1 to about 30 carbon atoms, comprising reacting an alkylene oxide containing from 2 to 4 carbon atoms with an ester starting material containing a compound selected from the group consisting of mono-esters having the formula:



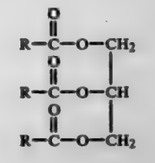
(IV)

ethylene glycol diesters having the formula:



(V)

and triesters having the formula:



(VI)

respectively, said reaction being conducted at a temperature of from about 80° C. to about 200° C. and in the presence of a catalytically effective amount of a catalyst selected from the group consisting of (1) Calcium Catalyst A formed by reacting a reactant mixture comprising an alkoxylated alcohol mixture containing compounds having the general formula:

$$R_1—O—(C_mH_{2m}O)_pH \quad \text{(VII)}$$

wherein R_1 is an organic radical containing from about 1 to about 30 carbon atoms, a calcium-containing compound which is at least partially dispersible in said alkoxylated alcohol mixture, an inorganic acid compound, and a metal alkoxide of a Lewis acidic metal, said calcium-containing compound and said alkoxylated alcohol mixture being mixed prior to addition of said metal alkoxide, said reactant mixture being heated to a temperature and for a time sufficient to effect at least a partial exchange reaction between the alkoxide groups of said metal alkoxide and said hydroxyl groups of said alkoxylated alcohol, (2) Calcium Catalyst B formed by solubilizing, at least partially, a calcium-containing compound with an activator having the formula:

$$Z_a—X—Q—Y—Z'_b \quad \text{(IX)}$$

wherein X and Y are the same or different electronegative, hetero-atoms selected from the group consisting of oxygen, nitrogen, sulfur and phosphorus, a and b are the same or different integers satisfying the valency requirements of X and Y, Q is an organic radical which is electropositive or essentially neutral relative as to X and/or Y, and Z and Z′ are the same or different and are either hydrogen or an organic radical which does not prevent said solubilizing and (3) mixtures of Calcium Catalyst A and Calcium Catalyst B.

5,386,046

METHOD FOR THE PREPARATION OF PURE CARBOXYETHYL GERMANIUM SESQUIOXIDE

Michael J. Arnold, Irvine, Calif., assignor to Viva America Marketing, Inc., Costa Mesa, Calif.

Filed Mar. 2, 1994, Ser. No. 204,548
Int. Cl.[6] C07F *7/30*
U.S. Cl. 556—89 **8 Claims**

1. A method of preparing organic germanium in the absence of any toxic level of germanium dioxide or metallic germanium comprising;

preparing trichlorogermane propionic acid as a crude reaction product from germanium tetrachloride;

forming high purity crystals of trichlorogermane propionic acid from the said crude reaction product of trichlorogermane propionic acid by a crystallization process;

forming a germanium acrylate moiety as a reaction product from hydrolysis of the high purity crystals of trichlorogermane propionic acid;

forming carboxyethyl germanium sesquioxide as a reaction product from acidification of the germanium acrylate moiety.

2. A method of preparing organic germanium in the absence of any toxic level of germanium dioxide or metallic germanium comprising;

reacting germanium tetrachloride, acrylic acid and tetramethly disiloxane to obtain first reaction products in a first mixture;

removing volatiles from the first mixture to obtain a second mixture;

reacting the second mixture with at least an effective amount of hydrochloric acid to obtain a third mixture consisting essentially of trichlorogermane propionic acid and hydrochloric acid;

separating by extraction with an organic solvent trichlorogermane propionic acid from hydrochloric acid in the third mixture to form a fourth mixture;

removing the extraction solvent from the fourth mixture to form a crude reaction product of trichlorogermane propionic acid;

dissolving the crude reaction product with a non-polar alkyl solvent to form high purity crystals of trichlorogermane propionic acid;

hydrolyzing the high purity crystals of trichlorogermane propionic acid in ammonium hydroxide to form a fifth mixture;

reacting the fifth mixture with slow addition of concentrated sulfuric acid to form carboxyethyl germanium sesquioxide.

5,386,047

DI-α-CYANOPENTADIENOATE DISILOXANE COMPOUNDS FOR USE IN ADHESIVES

Steven T. Nakos, Andover, and John G. Woods, Farmington, both of Conn., assignors to Loctite Corporation, Hartford, Conn.

Filed Mar. 11, 1994, Ser. No. 209,785
Int. Cl.[6] C07F *7/10*; C08F *30/08*
U.S. Cl. 556—416 **15 Claims**

1. A silicon containing di-α-cyanopentadienoate disiloxane compound of the formula:

$$\{CH_2{=}CH{-}CH{=}C(CN){-}C(=O){-}O{-}CH_2{-}R{-}Si(R'')_2\}_2{-}O$$

where R is —CH=CH— or —C(=CH_2)— and the R'' groups are the same or different hydrocarbon or halo substituted hydrocarbon groups.

5,386,048

HYDROSILYLATION OF FULLERENES

Robert C. West, Madison, Wis., and Kunio Oka, Osaka, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

PCT No. PCT/US93/01762, § 371 Date Nov. 24, 1993, § 102(e) Date Nov. 24, 1993, PCT Pub. No. WO94/19300, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 26, 1993, Ser. No. 157,002
Int. Cl.[6] C07F 7/08, 7/18
U.S. Cl. 556—430 5 Claims

1. A chemical compound having the following moiety:

$$C_n{-}A{-}C_m$$

where C_n and C_m are ball-shaped, n and m are numbers above 59 and below 267, and A is a linker in which Si on the linker is directly attached to both C_n and C_m.

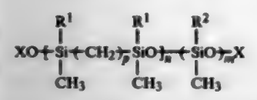
5,386,049

ORGANIC SILICON COMPOUNDS

Hirofumi Kishita; Shinichi Sato, both of Annaka; Kouichi Yamaguchi, Takasaki; Noriyuki Koike, Gunma, and Takashi Matsuda, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,510
Claims priority, application Japan, Feb. 17, 1992, 4-061165
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—434 9 Claims

1. Organic silicon compounds of the following formula (1):



(1)

wherein R^1 is a substituted or unsubstituted alkyl group with 1 to 4 carbon atoms, R^2 is a substituted or unsubstituted monovalent hydrocarbon group, X is either a hydrogen atom or a triorganosilyl group of the following formula (2):



(2)

wherein R^3, R^4 and R^5 are independently a substituted or unsubstituted monovalent hydrocarbon group with 1 to 8 carbon atoms, p is an integer from 6 to 16, m is 0 or an integer from 1 to 1000, and n is an integer from 1 to 1000, with the proviso that, when m is 0, and X is a hydrogen atom, p is an integer 10–16.

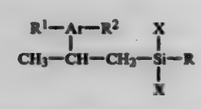
5,386,050

(2-ARYLPROPYL)ALKYLSILANES AND THEIR PREPARATION METHODS

Il N. Jung; Bok R. Yoo; Bong W. Lee, all of Seoul, and Seung H. Yeon, Kyungki-do, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

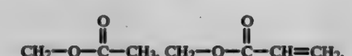
Filed Jan. 3, 1994, Ser. No. 176,433
Int. Cl.[6] C07F 7/08, 7/18
U.S. Cl. 556—435 31 Claims

1. 2-Arylpropyl)alkylsilanes represented by the formula III;

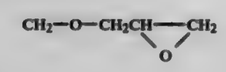


(III)

wherein, R^1 and R^2 represent independently hydrogen, alkyl (C_1–C_4), fluoro, chloro or bromo; Ar represents a phenyl ring, naphthalene ring or biphenyl ring; X represents hydrogen, chloro, or methoxy; R represents —(CH_2CH_2)—R^3, sec-butyl or cyclohexyl wherein R^3 is Ph, CH_2Cl, $C_nH_{2n}CH_3$ (n=0–15), $CH_2Si(Me)_m$ Cl_{3-m} (m=0–3), $(CH_2)_2Si(Me)_m$ $(OMe)_{3-m}$ (m=0–3), $(CH_2)_3Si(Me)_m$ $(OMe)_{3-m}$ (m=0–3), $Si(Me)_mCl_{3-m}$ (m=0–3), CF_3, CN, CH_2CN,



$CH{=}CH_2$, or $(CH_2)_4CH{=}CH_2$,



or $Ph{-}CH_2Cl$.

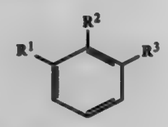
5,386,051

PROCESS FOR THE PREPARATION OF 1,2,3-TRICYANOBENZENE, PHTHALOCYANINES WHICH ARE OBTAINABLE FROM 1,2,3-TRICYANOBENZENE, AND THEIR USE AS PIGMENTS

Gunther Beck, and Bernd Kaletta, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 971,029, Nov. 3, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,329
Claims priority, application Germany, Nov. 13, 1991, 4137270
Int. Cl.[6] C07C 253/14
U.S. Cl. 558—343 1 Claim

1. Process for the preparation of 1,2,3-tricyanobenzene by reaction of compounds of the formula



(I)

wherein R^1, R^2 and R^3 independently of one another denote F or CN, with the proviso that at least 1 F and at least 1 CN radical are present, with an alkali metal cyanide.

5,386,052

PROCESS FOR PRODUCING ACRYLIC OR METHACRYLIC ESTERS

Yasuyuki Sakakura, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,019
Claims priority, application Japan, Mar. 31, 1993, 5-108674
Int. Cl.[6] C07C 69/52
U.S. Cl. 560—205 6 Claims

1. A process for producing an acrylic or methacrylic ester, comprising the steps of:

(a) reacting acrylic or methacrylic acid with an alcohol having 4 or more carbon atoms in the presence of an acid catalyst to synthesize the corresponding ester;

(b) washing the reaction liquid obtained in step (a) with water, followed by separation into the reaction liquid and an aqueous solution containing the acid catalyst; and

(c) recycling the aqueous solution obtained in step (b) to step (a).

5,386,053

MULTISTEP, CONTINUOUS PREPARATION OF ORGANIC POLYISOCYANATES

Andreas Otterbach, Frankenthal, Germany; Hans V. Schwarz, Baton Rouge, La.; Franz Merger, Frankenthal, Germany; Wolfgang Schwarz, Otterstadt, Germany; Eckhardt Brandt, Schifferstadt, Germany; Peter Magnussen, Bad Durkheim, Germany, and Otto Mattner, Speyer, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 8, 1993, Ser. No. 28,009
Claims priority, application Germany, Apr. 21, 1992, 4213099
Int. Cl.[6] C07C 263/06
U.S. Cl. 560—344 10 Claims

1. A multistep process for the continuous preparation of organic polyisocyanates by reacting the corresponding organic polyamines with carbonic acid derivatives and alcohols to give polyurethanes, and thermolysis thereof, which comprises

a) reacting organic polyamines with urea and alcohols in the presence or absence of dialkyl carbonates and/or alkyl carbamates and in the presence or absence of catalysts to give polyurethanes, and simultaneously removing the resultant ammonia,

b) removing the alcohol, the dialkyl carbonates and/or alkyl carbamates from the resultant reaction mixture,

c) dividing the polyurethane-containing reaction mixture into a first part and a second part, separating the first part of said reaction mixture by distillation into: (i) a mixture of the polyurethanes and the relatively low-boiling by-products and (ii) a residue, which is removed from the preparation process, and combining the mixture (i) with the second part of the polyurethane-containing reaction mixture,

d) continuously pyrolizing some of the combined, polyurethane-containing reaction mixture in the liquid phase in the absence of solvents in the presence of catalysts at a temperature of from 200° to 300° C. and at a pressure of from 0.1 to 200 mbar, and removing the unthermolyzed component of the reaction mixture together with the resultant by-products and recycling these into reaction step a),

e) separating the thermolysis products into a crude polyisocyanate mixture and alcohol by rectification, and

f) purifying the crude polyisocyanate by distillation.

5,386,054

PROCESS FOR THE PURIFICATION OF POLYISOCYANATES, THE POLYISOCYANATES THUS PURIFIED AND USE THEREOF

Hans J. Scholl, Cologne; Hanns-Peter Müller, Odenthal, and Rainer Welte, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 17, 1992, Ser. No. 916,773
Claims priority, application Germany, Jul. 23, 1991, 4124318
Int. Cl.[6] C07C 263/18
U.S. Cl. 560—352 3 Claims

1. A process for the purification of organic polyisocyanates, comprising mixing

A) organic polyisocyanates at temperatures of from 20° to 150° C., with

B) a total of from 0.001 to 1% by weight, based on the quantity of polyisocyanates, of compounds containing trimethyl silyl groups corresponding to the formulae (Ia) and/or (Ib), and (II)

$$(CH_3)_3Si{-}NH{-}Si(CH_3)_3 \quad \text{(Ia)}$$

$$(CH_3)_3Si{-}NH{-}CO{-}NH{-}Si(CH_3)_3 \quad \text{(Ib)}$$

$$X{-}[Si(CH_3)_3]_n \quad \text{(II)},$$

wherein the molar ratio of compounds (Ia) and/or (Ib) to compounds of formula (II) is from 1:0 to 1:1, and in formula (II)

X represents the neutral acid group as obtained by removal of the acidic hydrogen atoms from an n-basic, oxygen-containing acid having a pKa-value of at most 2, and

n represents an integer from 1 to 3;

and separating the resultant mixture of organic polyisocyanates and compounds containing trimethy silyl groups by either

1) degasification under vacuum, or

2) distillative working up,

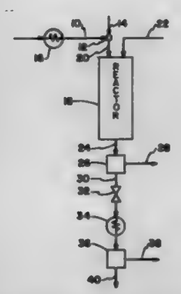
after a dwell time of at least 5 minutes, during which time the mixture is kept at temperatures of from 20° to 150° C.

5,386,055

DEPOLYMERIZATION PROCESS

Sunggyu Lee, Akron; Mehmet A. Gencer, Brecksville; Kathy L. Fullerton, Cuyahoga Falls, and Fouad O. Azzam, Canton, all of Ohio, assignors to The University of Akron, Akron, Ohio

Filed Aug. 11, 1993, Ser. No. 105,885
Int. Cl.[6] C07C 1/00
U.S. Cl. 562—512.2 29 Claims



1. A process for depolymerizing polymeric material to obtain high product yields of low molecular weight compounds, the process comprising the steps of:

a) forming a reaction mixture of polymeric material, water at or near supercritical conditions, and an oxidant; and

b) reacting the mixture at or near the supercritical condition for water to effect selective partial oxidation of the polymer contained within the polymeric material.

5,386,056

PROCESS FOR PRODUCING 2-HYDROXY-4-METHYLTHIOBUTANOIC ACID

Kazuyuki Matsuoka, Kanmakicho, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/00659, § 371 Date Jan. 12, 1994, § 102(e) Date Jan. 12, 1994, PCT Pub. No. WO93/23372, PCT Pub. Date Nov. 25, 1993

PCT Filed May 20, 1993, Ser. No. 178,315

Claims priority, application Japan, May 21, 1992, 4-155802

Int. Cl.[6] C07C *323/52, 319/00*

U.S. Cl. 562—526 **13 Claims**

1. A process for producing 2-hydroxy-4-methylthiobutanoic acid which comprises (1) the first step of hydrating 2-hydroxy-4-methylthiobutyronitrile for the formation of 2-hydroxy-4-methylthiobutanamide, (2) the second step of reacting the 2-hydroxy-4-methylthiobutanamide obtained in said first step with methyl formate for the formation of methyl 2-hydroxy-4-methylthiobutanoate and formamide and (3) the third step of hydrolyzing the methyl 2-hydroxy-4-methylthiobutanoate obtained in said second step for the formation of 2-hydroxy-4-methylthiobutanoic acid and methanol.

5,386,057

PROCESS FOR THE PREPARATION OF ACYL ISOCYANATES

Philippe Le Goff, Villebon sur Yvette; Danièle Dewilde, Nandy, both of France; Noriyuki Tsuboniwa, Osaka, and Satoshi Urano, Kyoto, both of Japan, assignors to Societe Nationale des Poudres et Explosifs, Paris, France and Nippon Paint Co. Ltd., Osaka, Japan

Filed Aug. 2, 1993, Ser. No. 100,177

Claims priority, application France, Aug. 18, 1992, 92 10101

Int. Cl.[6] C07C *249/00*

U.S. Cl. 562—871 **13 Claims**

1. A process for preparing an acyl isocyanate comprising (a) reacting oxalyl chloride with a salt selected from the group consisting of a carboxamide hydrohalide, a carbamate hydrohalide, a carboxamide sulphate, a carbamate sulphate and a mixture thereof, wherein the nitrogen atom of said carboxamide and said carbamate is unsubstituted and (b) heating the resulting reaction mixture at a temperature ranging from 30° C. to 150° C.

5,386,058

METHOD OF PRODUCING POLYMETHINE DYES

Roger A. Mader, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

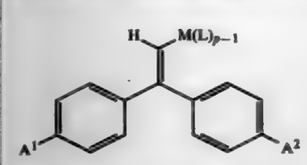
Filed Oct. 29, 1993, Ser. No. 145,789

Int. Cl.[6] C07C *209/78*

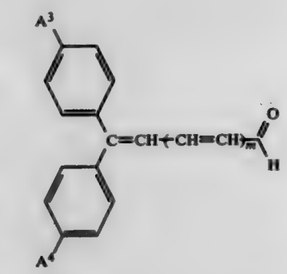
U.S. Cl. 564—330 **11 Claims**

1. A process comprising the steps of:

(a) reacting a 1, 1-diaryl-2-metallo-ethene of the formula:



with an ω, ω-diaryl-polyalkene-aldehyde of the formula:



wherein:

A^1, A^2, A^3, and A^4 are independently selected from: hydrogen, alkyl groups of up to 10 carbon atoms, cycloalkyl groups of up to 10 carbon atoms, alkoxy and alkylthio groups of up to 10 carbon atoms, NR^1R^2, and NR^3R^4;

R^1 to R^{α} are each independently selected from: alkyl groups of up to 20 carbon atoms, alkenyl groups of up to 20 carbon atoms, and aryl groups of up to 14 carbon atoms;

R^1 and R^2 together and/or R^3 and R^4 together may represent the necessary atoms to complete a 5-, 6-, or 7-membered heterocyclic ring group; or one or more of R^1 to R^4 may represent the atoms necessary to complete a 5- or 6-membered heterocyclic ring group fused to the phenyl ring on which the NR^1R^2 or NR^3R^4 group is attached with the proviso that NR^1R^2 or NR^3R^4 do not react with the 1,1-diaryl-2-metallo-ethene;

M is magnesium, lithium, zinc, tin, or copper-lithium;

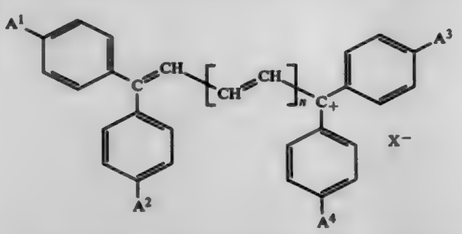
p is the valence of the metal M;

m is 0, 1, or 2; and

L is Cl, Br, or I;

in an anhydrous solvent under an inert atmosphere; and

(b) neutralizing the reaction mixture from step (a) with an acid thereby producing a reaction product comprising:



wherein: n is 1, 2, or 3; and X^- is the conjugate base of said acid.

5,386,059

PROCESS FOR PREPARING POLYAMINES FOR LIGHTER COLOR POLYISOCYANATE BASED FOAM

Jeffrey S. Bolton; Ramon Kalyanaraman, both of Wheeling; Steven L. Schilling, Glen Dale, all of W. Va., and Clarence D. Blue, Dormagen, Germany, assignors to Miles Inc., Pittsburgh, Pa.

Filed Dec. 10, 1991, Ser. No. 805,407

Int. Cl.[6] C07C *209/78*

U.S. Cl. 564—331 **7 Claims**

1. An improved process for preparing a polyamine by reacting aniline with formaldehyde in the presence of an acid catalyst, followed by neutralizing the resultant polyamine with a base, the improvement comprising effectively acidifying the polyamine in an amount sufficient to produce an acidic polyamine after the neutralization.

5,386,060

PALLADIUM CATALYST AND ITS USE IN THE PREPARATION OF A MIXTURE OF OPTIONALLY SUBSTITUTED CYCLOHEXYLAMINE AND OPRIONALLY SUBSTITUTED DICYCLOHEXYLAMINE

Otto Immel; Gerhard Darsow, both of Krefeld; Helmut Waldmann, Leverkusen, and Gerd-Michael Petruck, Erkrath, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 843,473, Feb. 28, 1992, abandoned. This application Oct. 23, 1992, Ser. No. 966,127

Claims priority, application Germany, Mar. 8, 1991, 4107395

Int. Cl.[6] C07C *209/72, 209/60, 209/64*

U.S. Cl. 564—450 **16 Claims**

1. A process for the preparation of a mixture of optionally substituted cyclohexylamine and optionally substituted dicyclohexylamine by hydrogenation of optionally substituted aniline with hydrogen in the presence of a palladium/Al_2O_3 supported catalyst, wherein the the reaction is carried out at 150° to 300° C. and 50 to 500 bar, the catalyst having been produced by first treating α- or γ-Al_2O_3 with at least one compound of (A) the rare earth metals (subgroup III of the periodic table of the elements or scandium or yttrium) and with at least one compound of (B) manganese, the amount of the metal (A) and of the manganese (B) altogether being 0.05 to 8% by weight, relative to the total weight of the catalyst, and the weight ratio of metal (A) and manganese (B) being 5:1 to 1:5, and then treating the Al_2O_3 with an amount of at least one palladium compound such that the Pd content is 0.05 to 5% by weight, relative to the total weight of the catalyst.

5,386,061

CHIRAL PHOSPHOLANES VIA CHIRAL 1, 4-DIOL CYCLIC SULFATES

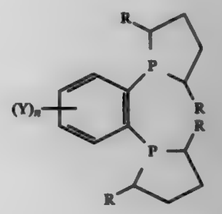
Mark J. Burk, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 978,215, Jul. 27, 1992, Pat. No. 5,329,015, which is a division of Ser. No. 725,121, Jul. 2, 1991, Pat. No. 5,171,892. This application Apr. 4, 1994, Ser. No. 222,750

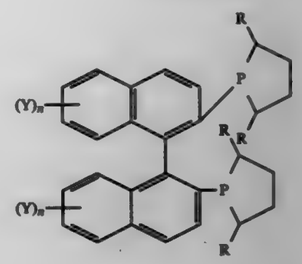
Int. Cl.[6] C07F *9/50*

U.S. Cl. 568—12 **9 Claims**

1. A process for the preparation of a chiral ligand of formulae II, IIIc, IVc, Vc, VIc or VII:

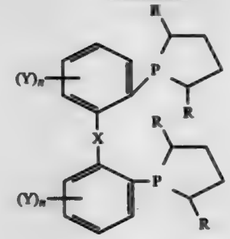


II

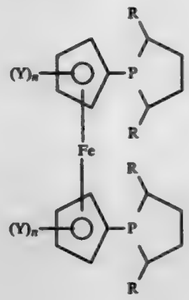


IIIc

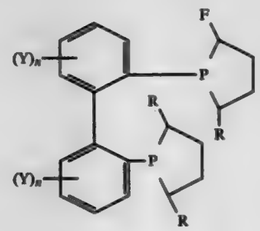
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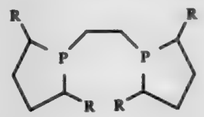
IVc



Vc



VIc



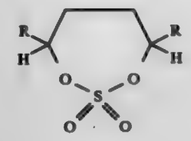
VII

wherein:

R is an alkyl, fluoroalkyl or perfluoroalkyl, each containing up to about 8 carbon atoms; aryl; substituted aryl; aralkyl; and

each Y is independently hydrogen, halogen, alkyl, alkoxy, nitro, amino, vinyl, substituted vinyl, alkynyl or sulfonic acid, and n is an integer from 1 to 6 equal to the number of unsubstituted aromatic ring carbons,

comprising reacting a bis(primary phosphine) in the presence of a strong base with a cyclic sulfate compound of formula I:



I

wherein:

R is defined as above.

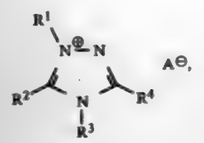
5,386,062

CATALYTIC PREPARATION OF CONDENSATION PRODUCTS OF FORMALDEHYDE

Joaquim H. Teles, Ludwigshafen; Johann-Peter Melder, Mannheim; Eugen Gehrer, Lugwigshafen; Wolfgang Harder, Weinheim; Klaus Ebel; Carsten Groening, both of Ludwigshafen, and Regina Meyer, Fussgoenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

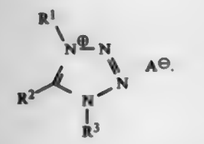
Filed Sep. 7, 1993, Ser. No. 117,314
Claims priority, application Germany, Sep. 11, 1992, 4230466
Int. Cl.[6] C07C *45/72*
U.S. Cl. 568—463 **6 Claims**

1. A process for the preparation of glycolaldehyde, glyceraldehyde, dihydroxyacetone or tetroses or mixtures thereof by the autocondensation of formaldehyde, wherein formaldehyde or a formaldehyde-forming compound is caused to undergo reaction in the presence of a catalyst which has been produced, in the presence of an auxiliary base, from triazolium salts of formula I



(I)

or tetrazolium salts of formula II



(II)

in which

R^1 and R^3 are the same or different and are selected from the group consisting of aliphatic groups having from 1 to 30 carbon atoms, substituted or unsubstituted aryl groups, substituted or unsubstituted aralkyl groups, and substituted or unsubstituted heteroaryl groups,

R^2 represents hydrogen, the hydroxymethylene group —CH_2OH or the hydroxy-hydroxymethylene-methylidyne group —$CH(OH)(CH_2OH)$, and

R^4 denotes hydrogen, a halogen atom, a nitro or cyano group, an aliphatic group having from 1 to 30 carbon atoms, a substituted or unsubstituted a aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted heteroaryl group, an alkoxy group —OR^5, a thioether group —SR^6, an amino group —NR^7R^8, an acyl group —COR^9 or an ester group —$COOR^{10}$, where R^5, R^6, R^8, and R^9 stand for radicals stated above for R^1, and R^{10} is a C_1–C_{30}alkyl group or a substituted or unsubstituted aryl or aralkyl group, or

R^3 and R^4 together form a C_3–C_5alkylene group or a CC_6–C_{14}arylene group, or C_7–C_{14}aralkylene bridging member or a C_8–C_{14}aralkenylene bridging member, and is the

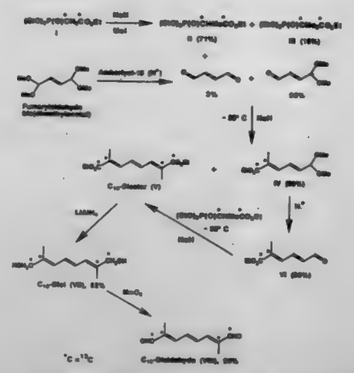
A the equivalent of an anion having one or more negative charges for electrical neutralization of the charge on the triazolium cation.

5,386,063

SYNTHESIS OF (ALL-E)-2,7,-DIMETHYLOCTA-2,4,6-TRIENE-1,8-DIAL[13]C_4

Frederick Khachik, Beltsville; Gary R. Beecher, Laurel, and Betty W. Li, Mitchellville, all of Md., assignors to The Catholic University of America and The United States of America as represented by the Secretary of Agriculture, both of Washington, D.C.

Filed Jun. 16, 1993, Ser. No. 76,970
Int. Cl.[6] C07C *47/21, 45/00*
U.S. Cl. 568—494 **20 Claims**



1. A method of producing (all-E)-2,7-dimethylocta-2,4,6-triene-1,8-dial comprising the steps of reacting triethyl-2-phosphonopropionate with fumarylaldehyde and/or fumaryaldehyde dimethylacetal to produce (all-E)-2,7 dimethylocta-2,4,6-triene-1,8-diacid ethyl ester, and converting the diester to said dialdehyde.

5,386,064

PRODUCTION OF BIS(FLUOROMETHYL) ETHER AND DIFLUOROMETHANE

Duncan C. Woodcock, Frodsham, and Brian T. Grady, Widnes, both of Great Britain, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 19, 1993, Ser. No. 47,494
Claims priority, application United Kingdom, Apr. 23, 1992, 9208769
Int. Cl.[6] C07L *41/01, 17/33*
U.S. Cl. 568—683 **15 Claims**

1. A process for the production of bis(fluoromethyl)ether which comprises contacting formaldehyde with hydrogen fluoride to produce an aqueous phase comprising water and bis(fluoromethyl)ether wherein the contact is effected in the presence of a solvent for the ether which is essentially water-immiscible and unreactive towards the aqueous phase whereby said ether is preferentially extracted into said solvent.

5,386,065

METHYL TERTIARY BUTYL ETHER PROCESS

Charles J. Krause, Cypress; Kyle L. Preston, Port Arthur, and Brian L. Benac, San Marcos, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 21, 1993, Ser. No. 170,963
Int. Cl.[6] C07C *41/09*
U.S. Cl. 568—698 **4 Claims**

1. A continuous process for reacting tertiary butyl alcohol with methanol to produce methyl tertiary butyl ether comprising the steps of:

a) passing a feed mixture comprising methanol and tertiary butyl alcohol in a molar ratio of 2 to 3 moles of methanol per mole of tertiary butyl alcohol through a first etherification reaction zone containing etherification catalyst under etherification conditions at a liquid hourly space velocity of 1 to 10 volumes feed mixture per catalyst volume per hour to form a first reaction product mixture comprising unreacted methanol, unreacted tertiary butyl alcohol, water, isobutylene and methyl tertiary butyl ether;

b) passing the first reaction product mixture to a first distillation zone and separating into a first lighter distillate fraction comprising isobutylene, methanol and methyl tertiary butyl ether and a second heavier distillate fraction comprising methanol, tertiary butyl alcohol and water,

c) passing the second heavier distillate fraction to a second etherification reaction zone containing etherification catalyst under etherification conditions at a liquid hourly space velocity of about 0.5 to 4 volumes feed mixture per catalyst volume per hour to form a second reaction product mixture comprising unreacted methanol, unreacted tertiary butyl alcohol, water, isobutylene and methyl tertiary butyl ether,

d) passing the second reaction product mixture to a second distillation zone and separating into a third lighter distillate fraction comprising isobutylene, unreacted methanol and methyl tertiary butyl ether and a fourth heavier distillate fraction comprising unreacted methanol, tertiary butyl alcohol and water.

5,386,066

CATALYST AND PROCESS FOR HYDROGENATION OF CARBOXYLIC ACID ALKYL ESTERS TO HIGHER ALCOHOLS

Michael Schneider, Ottobrunn; Karl Kochloefl, Brückmuhl-/Heufeld, and Gerhard Maletz, Brückmuhl, all of Germany, assignors to Sud-Chemie AG, Munich, Germany

Continuation of Ser. No. 993,422, Dec. 21, 1992, abandoned. This application Mar. 11, 1994, Ser. No. 212,686
Claims priority, application Germany, Dec. 23, 1991, 4142899
Int. Cl.[6] C07C *29/149, 31/125;* B01J *23/32*
U.S. Cl. 568—885 **10 Claims**

1. A process for producing higher alcohols which comprises contacting carboxylic acid alkyl esters having about 5 to about 24 carbon atoms in the carboxylic acid portion and hydrogen with a catalyst corresponding in the oxide form to the formula

$$CuZn_{0.5\text{-}2}Mn_{0.01\text{-}0.50}O_x$$

wherein x is the number of oxygen atoms needed per formula unit for electrical neutrality wherein the process is carried out at a temperature of about 150° C., to about 250° C., and a pressure of about 200 to about 400 bar to a saponification number not greater than 5.

5,386,067

PROCESS FOR SEPARATING MIXTURES OF M- AND P-DICHLOROBENZENE

Ursula Peatling, Kempen; Hans-Josef Bayoch, Krefeld; Lothar Puppe, Burscheid; Kai Röhlk, Bergisch Gladbach; Rolf Grosser, Leverkusen, and Hans-Ingolf Paul, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 71,739, Jun. 3, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 252,154
Claims priority, application Germany, Jun. 9, 1992, 4218841
Int. Cl.[6] C07C *17/38*
U.S. Cl. 570—211 **9 Claims**

1. Process for separating mixtures of m- and p-dichlorobenzene having at least 50% by weight of m-dichlorobenzene, by treating such mixtures in the liquid phase with a pentasil zeolite, the amount of dichlorobenezene treated being 0.05 to 2 times the amount of pentasil zeolite used, wherein the mixture is treated in from 50 to 25% by weight of a dichlorobenzene mixture of a solvent from the group of cyclic saturated hydrocarbons having 5 to 15 carbon atoms, alkyl-substituted aromatic hydrocarbons having 8 to 12 carbon atoms, and halogen-substituted aromatic hydrocarbons having 6to 10 carbon atoms and 1 to 3 halogen atoms or a mixture of a plurality thereof, with the exception of the solvents ethylbenzene, chlorobenzene, p-xylene, p-chlorotoluene and dichlorobenzene, at from 20° to 200° C. and wherein said pentasil zeolite contains, as exchangeable cations, protons, cations of the first or second main group of the Mendeleev Periodic System of the Elements, cations of the rare earth metals or a mixture of a plurality thereof, the enriched m-dichlorobenzene is removed as filtrate, and p-dichlorobenzene is obtained by desorption of the pentasil zeolite.

5,386,068

STABILIZATION OF 1,1-DICHLORO-1-FLUOROETHANE

Andre Lantz, Vernaison; Rene Bertocchio, Vourles par Vernaison, and Patrick Lambert, Caluire, all of France, assignors to d'Elf Atochem S.A., France

Filed Oct. 8, 1992, Ser. No. 957,841
Claims priority, application France, Oct. 11, 1991, 91 12542
Int. Cl.[6] C07C *17/42, 19/02*
U.S. Cl. 570—122 **9 Claims**

1. Process for stabilization of 1,1-dichloro-1-fluoroethane containing traces of vinylidene chloride, comprising adding a sufficient quantify of at least one acyclic or cycloaliphatic ethylenic hydrocarbon containing at least 4 carbon atoms.

5,386,069

PROCESS FOR PREPARATION OF DIFLUORO-TETRAIODOBENZENE

Jerry S. Fauver, and David R. Fagerburg, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 57,926, May 7, 1993, abandoned. This application Aug. 30, 1993, Ser. No. 113,466
Int. Cl.[6] C07C *25/13*
U.S. Cl. 570—147 **2 Claims**

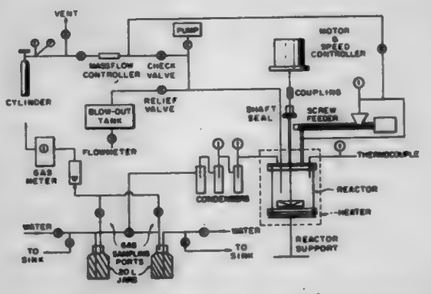
1. A process for preparation of difluoro-tetraiodobenzene comprising contacting difluorobenzene with molecular iodine in the presence of fuming sulfuric acid.

5,386,070

PYROLYSIS OF POLYSTYRENE - POLYPHENYLENE OXIDE TO RECOVER STYRENE AND USEFUL PRODUCTS

Robert J. Evans, Lakewood, and Helena L. Chum, Arvada, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Division of Ser. No. 711,546, Jun. 7, 1991, Pat. No. 5,216,149. This application Oct. 27, 1992, Ser. No. 943,535
Int. Cl.[6] C07C *4/22*
U.S. Cl. 585—241 **8 Claims**



1. A process of using fast pyrolysis in a carrier gas to convert

a plastic waste feed stream containing a mixture of polystyrene and polyphenylene oxide in a manner such that pyrolysis of a given polystyrene and polyphenylene oxide and its monomeric constituent and derived product occurs prior to pyrolysis of other plastic components therein comprising:

a) selecting a first temperature program range of from about 250° to about 550° C. to cause pyrolysis of said given polystyrene and polyphenylene oxide and its monomeric constituent prior to a temperature range that causes pyrolysis of other plastic components;

b) selecting a catalyst and a support and treating said feed stream with said catalyst to affect acid or base catalyzed reaction pathways to maximize yield or enhance separation of said monomeric constituent of styrene from said polystyrene and polyphenylene oxide in said first temperature program range;

c) differentially heating said feed stream at a heat rate within the first temperature program range to provide differential pyrolysis for selective recovery of quantities of said monomeric constituent of styrene from said polystyrene and polyphenylene oxide prior to pyrolysis of other plastic components therein;

d) separating said monomeric constituent of styrene;

e) selecting a second temperature program range of from about 350° to about 700° C. to cause pyrolysis to a different derived product of polyphenylene oxide from said plastic waste and differentially heating said feed stream at said second temperature program range to cause pyrolysis of said plastic into a polyphenylene oxide derived product; and

f) separating said different polyphenylene oxide derived product.

5,386,071

PROCESS FOR PRODUCING AROMATICS FROM A C_5/C_6 FEEDSTREAM

Paul J. Kuchar, Hinsdale, and Christopher D. Gosling, Roselle, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Nov. 19, 1993, Ser. No. 154,893
Int. Cl.[6] C07C *1/00, 15/00*
U.S. Cl. 585—313 **6 Claims**

1. A process for the production of aromatic hydrocarbons comprising:

a) flowing a C_5/C_6 feedstream into a first reaction zone where said feedstream is contacted with a first solid catalyst at a temperature of about 300° C. to about 500° C., a pressure of about 68 kPa to about 689 kPa, and at a liquid hourly space velocity of about 0.5 to about 10 hr^{-1}, thereby converting the feedstream to a first product stream containing aromatics and C_3—C_4 hydrocarbons;

b) mixing the first product stream from step a) with a second product stream from step d) to give a mixed product stream and flowing it to a separation zone where the mixed product stream is separated into a bottom stream containing C_5^+ hydrocarbons and an overhead product stream containing hydrogen and C_1—C_4 hydrocarbons;

c) flowing the overhead stream from step (b) into a cryogenic separation zone in order to separate the overhead product stream into a C_3—C_4 recycle stream and a hydrogen stream and a C_1—C_2 fuel gas stream;

d) flowing the C_3—C_4 recycle stream from step (c) to a second reaction zone where the recycle C_3—C_4 stream is contacted with a second solid catalyst at a temperature of about 400° C. to about 600° C., a pressure of about 68 kPa to about 689 kPa and a liquid hourly space velocity of about 0.5 to about 10 hr^{-1}, thereby producing a second product stream comprising benzene, toluene, xylenes, C_9^+ aromatics, C_1—C_4 aliphatic hydrocarbons and hydrogen;

e) flowing the bottom stream from step (b) to a second separation zone operated at conditions effective to separate the bottom stream of step (b) into a C_6^+ final product stream and a second overhead stream containing fuel gas.

5,386,072

PROCESS FOR THE PREPARATION OF LINEAR ALKYLBENZENES

Pierluigi Cozzi, Nerviano; Giuseppe Giuffrida, Caronno Pertusella; Tullio Pellizzon, Paderno Dugnano, and Pierino Radici, Turate, all of Italy, assignors to Enichem Augusta S.p.A., Palermo, Italy

Filed Jan. 29, 1993, Ser. No. 10,816
Claims priority, application Italy, Feb. 3, 1992, MI92 A 00201
Int. Cl.[6] C07C *2/66, 2/70, 2/64*
U.S. Cl. 585—456 **10 Claims**

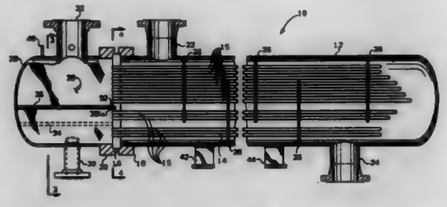
1. Process for the preparation of linear alkylbenzene which comprises reacting benzene with a mixture composed of n-olefins having from 7 to 20 carbon atoms and chloroparaffins having from 7 to 20 carbon atoms wherein the molar ratio of n-olefins/chloroparaffins is between 70:30 and 99:1 in the presence of a catalyst selected from the group consisting of aluminum chloride or aluminum in powder form.

5,386,073

HF ALKYLATION PROCESS

Tai W. Kwok, and Scott D. Love, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 870,203, Apr. 13, 1992, Pat. No. 5,296,199, which is a continuation of Ser. No. 521,876, May 11, 1990, abandoned. This application Nov. 3, 1993, Ser. No. 145,120
Int. Cl.[6] C07C *2/60*
U.S. Cl. 585—464 **4 Claims**



1. A method of operating an HF alkylation process system having

a settler vessel having an upper end portion, a lower end portion, and a medial portion;

a riser-reactor having an upper end portion, a lower end portion, and a medial portion;

a catalyst cooler having an inlet means and an outlet means, with the outlet means thereof in fluid flow communication with the lower end portion of said riser-reactor;

a first conduit in fluid flow communication between the lower end portion of said settler vessel and said inlet means of said catalyst cooler;

a second conduit having a first end portion and a second end portion, with the first end portion thereof in fluid flow communication with the medial portion of said settler vessel and the second end portion thereof in fluid flow communication with the upper end portion of said riser-reactor;

an acid rerun column having an upper end portion, a lower end portion and a medial portion, with the upper end portion thereof in fluid flow communication with the medial portion of said settler vessel;

a third conduit having a first end portion and a second end portion, with the first end portion thereof in fluid flow communication with the outlet means of said catalyst cooler;

a pump having an inlet end and an outlet end, with the inlet end thereof in fluid flow communication with the second end portion of said third conduit,

a fourth conduit having a first end portion and a second end portion, with the first end portion thereof in fluid flow communication with the outlet end of said pump;

a fifth conduit having a first end portion and a second end portion, with the second end portion thereof in fluid flow communication with the medial portion of said acid rerun column;

a shell-and-tube heat exchanger, comprising:

a shell having an open first end portion and a closed second end portion;

a first tube sheet securable to the open first end portion of said shell and having a first face and a second face and a plurality of apertures communicating between said first and second faces;

a plurality of U-shaped tubes having opposite open ends and operatively connected to said first tube sheet and extending away from the second face of said first tube sheet with the open ends of said U-shaped tubes in fluid flow communication with the first face of said first tube sheet via corresponding said apertures;

a vertical partition groove formed in the first face of said tube sheet in the center thereof thereby forming symmetrical halves of the first face of said first tube sheet disposed on either side of said vertical partition groove whereby the opposite open ends of each of said U-shaped tubes communicate with the corresponding symmetrical halves of the first face of said first tube sheet;

at least one horizontal partition groove formed in the first face of said first tube sheet extending from said vertical partition groove to an outside edge of said first tube sheet, positioned to divide the first face of said first tube sheet into asymmetrical portions;

a bonnet head having an inlet, and outlet, an open first end portion and a closed second end portion and securable at the open first end portion thereof to said first tube sheet and the open first end portion of said shell;

a vertical partition formed within said bonnet head in the center thereof thereby forming symmetrical chambers within said bonnet head on either side of said vertical partition, said vertical partition being sized and shaped to be closely received within said vertical partition groove when said bonnet head is secured to said first tube sheet and said shell;

at least one horizontal partition formed within said bonnet head extending between said vertical partition and said bonnet head thereby dividing one of said symmetrical chambers within said bonnet head to form additional chambers having unequal numbers of tubes per pass, said at least one horizontal partition being sized and shaped to be closely received within a corresponding at least one said horizontal partition grooves when said bonnet head is secured to said first tube sheet and said shell;

means operatively related to said shell and said bonnet head for mutually securing the open first end portion of said bonnet head, said first tube sheet and the open first end portion of said shell together;

inlet means in fluid flow communication between one of said additional chambers in said bonnet head and the second end portion of said fourth conduit; and

an outlet means in fluid flow communication between another of said additional chambers in said bonnet head and the first end portion of said fifth conduit, said method comprising the steps of:

removing HF acid from said catalyst cooler;

charging said HF acid to said inlet means of said shell-and-tube heat exchanger; and

vaporizing said HF acid within said plurality of U-shaped tubes to form a vaporized HF acid.

5,386,074

CATALYTIC DEHYDROGENATION OF ALKANES

Vincent A. Durante, West Chester; James E. Lyons, Wallingford, both of Pa., and Darrell W. Walker, Visalia, Calif., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Continuation-in-part of Ser. No. 995,637, Dec. 17, 1992, Pat. No. 5,276,241, which is a division of Ser. No. 906,066, Jun. 29, 1992, Pat. No. 5,227,565. This application Jul. 30, 1993, Ser. No. 100,595
Int. Cl.[6] C07C *5/327*
U.S. Cl. 585—658 **18 Claims**

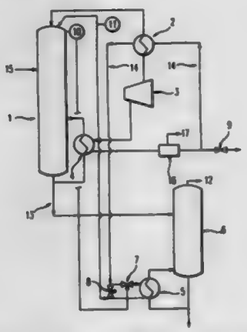
1. A dehydrogenation process which comprises contacting an organic compound having at least one saturated carbon-carbon bond and an oxidant with a catalyst in a reaction zone under conditions sufficient to dehydrogenate said organic compound, wherein said catalyst comprises barium peroxide and compounds of metal selected from the group consisting of Groups IIIA through VIIIA elements and Groups IB through IIB elements of the Periodic Table, indium, tin, lead and bismuth.

5,386,075

PROCESS FOR SEPARATING ETHYLBENZENE AND STYRENE BY DISTILLATION

Thomas Keil, Bottrop; Wilhelm Hüwels, and Georg Doll, both of Essen, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Oct. 7, 1993, Ser. No. 132,905
Claims priority, application Germany, Oct. 21, 1992, 4235431
Int. Cl.[6] C07C *7/00*; B01D *3/00, 3/42*
U.S. Cl. 585—800 **19 Claims**



1. A process for separating ethylbenzene and styrene comprising:

(a) feeding a mixture including ethylbenzene and styrene to a distillation system comprising a first distillation column having a reboiler;

(b) withdrawing low boilers comprising ethylbenzene from a top part of the first distillation column and high boilers comprising styrene from a bottom part of the distillation column;

(c) passing the high boilers to a second distillation column having a reboiler;

(d) passing the low boilers to a compressor and then through the reboiler of the first distillation column, whereby at least a portion of the low boilers pass from a vapor to a liquid;

(e) dividing the liquid into a first part and a second part, the first part being withdrawn through an outlet valve and out of the distillation system, and the second part being divided into two streams, whereby:

the first stream passes through a first valve to a reflux line, and the second stream passes through a second valve, through a heat sink, and then the second stream is passed to the reflux line,

said reflux line then returning the two streams to the first distillation column.

5,386,076

REGENERATION OF HF-BASED ALKYLATION CATALYST

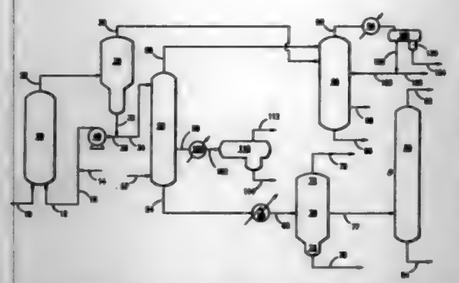
Jonathan E. Child, and Tomas R. Melli, both of Sewell, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 991,918, Dec. 17, 1992, Pat. No. 5,262,579, Ser. No. 991,919, Dec. 17, 1992, Pat. No. 5,264,650, Ser. No. 991,920, Dec. 17, 1992, Pat. No. 5,264,651, Ser. No. 991,921, Dec. 17, 1992, Pat. No. 5,264,652, and Ser. No. 991,922, Dec. 17, 1992, Pat. No. 5,276,243, each is a continuation-in-part of Ser. No. 833,684, Feb. 11, 1992, Pat. No. 5,191,150. This application Aug. 23, 1993, Ser. No. 111,221

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[6] C07C *2/62, 7/10*

U.S. Cl. 585—802 **10 Claims**



1. A method for separating conjunct polymers which are formed as byproducts of acid catalyzed isoparaffin-olefin alkylation and sulfolane from a mixture containing conjunct polymers, sulfolane, and hydrofluoric acid comprising the sequential steps of:

(a) gravitationally separating a mixture containing hydrofluoric acid, sulfolane, conjunct polymers formed as byproducts of acid catalyzed isoparaffin-olefin alkylation, and alkylate product formed by acid catalyzed isoparaffin-olefin alkylation to provide a less-dense stream containing alkylate product and unreacted isoparaffin and a more dense stream containing sulfolane, conjunct polymers and hydrofluoric acid;

(b) stripping hydrofluoric acid from said more dense stream of step (a) with isoparaffin in a multistage stripper column to provide a stripper bottoms stream containing less than about 30 percent hydrofluoric acid by weight, a stripper overhead stream containing HF, isoparaffin, and a fraction of said conjunct polymers having a lower end boiling point than the conjunct polymers contained in said more dense stream of step (a), and a water-enriched side stream; and

(c) gravitationally separating said stripper bottoms stream into a more dense sulfolane-enriched stream and a less dense conjunct polymer-enriched stream.

5,386,077

METHOD FOR REMOVING RADIOACTIVE SCALE FROM FLUID CARRYING EQUIPMENT

Trevor F. Cuthill, 1533-Windsor Street, N.W., Calgary, Alberta, Canada T2N 3X2 , and John G. DeCook, P.O. Box 41099, Edmonton, Alberta, Canada T6J 6M7

Filed Feb. 8, 1993, Ser. No. 14,515

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—1 **20 Claims**

1. A method for removing radioactive scale from fluid carrying equipment comprising the steps of:

applying a cryogenic liquid to the scale and the equipment;

applying an aqueous solution to at least the scale to freeze some of the aqueous solution onto the scale; and

impacting the scale or the equipment to remove the scale from the equipment.

5,386,078

PROCESS FOR DECONTAMINATING RADIOACTIVE METAL SURFACES

Jozef Hanulik, Zürich, Switzerland, assignor to Deco-Hanulik AG, Canada

Filed Jan. 28, 1994, Ser. No. 188,250

Claims priority, application Switzerland, Feb. 1, 1993, 00285/93

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—18 **18 Claims**

1. In a method for decontaminating radioactive metal surfaces with an aqueous solution containing formic acid, the improvement comprising: contacting a radioactively contaminated metallic object with an aqueous solution consisting essentially of 0.05%–5.0% volume formic acid until the formic acid is nearly completely stoichiometrically depleted thereby forming an aqueous, stoichiometrically depleted solution comprising radtoactively charged metallic oxides and metallic hydroxides; repeating the contacting of the metallic object with an additional amount of the aqueous solution until the radioactively contaminated metallic object has a residual radioactivity level below a permissible threshold level; sedimenting out said radioactively charged metallic oxides and metallic hydroxides from the aqueous, stoichiometrically depleted solution, forming a radioactive sediment: separating the aqueous, stoichiometrically depleted solution from the radioactive sediment; and solidifying the radioactive sediment.

5,386,079

WASTEWATER TREATMENT PROCESS

Robert E. Munson, Baton Rouge, La., and Robert D. Macdonald, Houston, Tex., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 19, 1992, Ser. No. 885,413

Int. Cl.[6] A62D *3/00*; B09B *3/00*; A61L *11/00*; C02F *1/68*

U.S. Cl. 588—205 **14 Claims**

1. A process for the treatment of wastewaters which are contaminated with heterocyclic aromatic organic compounds to destroy the heterocyclic aromatic rings thereof, which comprises adjusting the pH of said wastewaters to 2.5 or less and heating in a sealed vessel at a temperature of 130° C. to 175° C., and adding additional acid as needed during the wastewater treatment process to maintain the pH of the wastewaters at 2.5 or less for an effective length of time.

5,386,080

APPARATUS AND METHODS FOR CONTROLLING HIGH TEMPERATURE GASES

David F. Brashears, Belle Isle, Fla., assignor to Thermotech Systems Corporation, Orlando, Fla.

Filed Dec. 22, 1992, Ser. No. 994,921

Int. Cl.[6] A62D *3/00*; F28F *27/00*; B01J *8/00*; C22B *26/10*

U.S. Cl. 588—208 **8 Claims**

3. A method of controlling the magnitude of exhaust gases flowing through a heat exchanger receiving an exhaust gas stream from which volatilized contaminants separated from material containing volatilizable contaminants are burned in an afterburner comprising the steps of:

heating material containing volatilizable contaminants to a temperature to volatilize the contaminants and provide a particle and volatilized contaminant-laden exhaust gas stream, leaving the material substantially free of the contaminants;

separating the volatilized contaminants and the particles in the particle and volatilized contaminant-laden exhaust gas stream from one another to provide a stream of volatilized contaminant-laden exhaust gas;

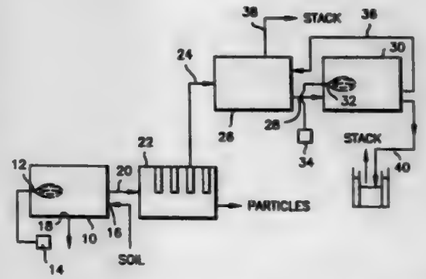
burning the volatilized contaminants in the volatilized contaminant-laden gas stream in an afterburner to create substantially clean exhaust gases;

passing the clean exhaust gases from the afterburner in heat exchange relation with the volatilized contaminant-laden exhaust gas stream prior to introducing the volatilized contaminant-laden exhaust gas stream into the afterburner to raise the temperature of the volatilized contaminant-laden exhaust stream entering said afterburner and cool the clean exhaust gases;

bypassing a portion of the clean exhaust gases exiting the afterburner from the heat exchanger;

variably controlling the magnitude of the portion of the clean exhaust gases bypassing the heat exchanger, thereby to control the temperature of the heat exchanger; and

disposing an end of a bypass conduit in communication with the clean exhaust gases of the afterburner below the level of fluid in a tank in communication with a stack and including the further step of forming an opening in the end of the bypass conduit for disposition partially above and below the level of the fluid in the tank, and adjusting the relative height of the end of the bypass conduit and the level of fluid such that a greater or lesser extent of the opening is occluded by the fluid and a respective lesser or greater extent of the opening lies above the level of fluid in the tank.



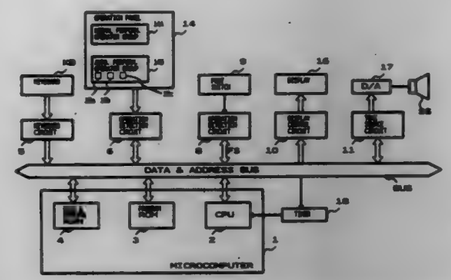
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5,386,081

AUTOMATIC PERFORMANCE DEVICE CAPABLE OF SUCCESSIVE PERFORMANCE OF PLURAL MUSIC PIECES

Takuya Nakada; Hiroyuki Iwase, and Hiromu Miyamoto, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 14, 1993, Ser. No. 4,518
Claims priority, application Japan, Jan. 16, 1992, 4-025720
Int. Cl.[6] G10H *1/00*
U.S. Cl. 84—609 14 Claims



9. An automatic performance device comprising: memory means for storing automatic performance data for a plurality of different music pieces;

performance means for reading the automatic performance data of a desired music piece from said memory means and automatically performing the music piece on the basis of the read out automatic performance data;

instruction means for instructing a change of a music piece to be performed during performance of a certain music piece of the plurality of different music pieces; and

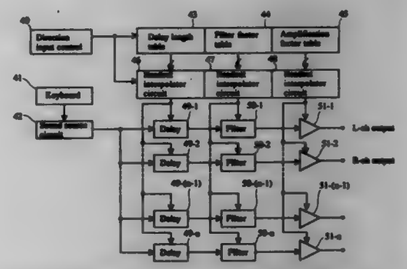
control means responsive to the instruction by said instruction means for controlling said performance means so as to shift to performance of another music piece at a predetermined timing after said instruction has been made.

5,386,682

METHOD OF DETECTING LOCALIZATION OF ACOUSTIC IMAGE AND ACOUSTIC IMAGE LOCALIZING SYSTEM

Iwao Higashi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 696,219, May 6, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 969,560
Claims priority, application Japan, May 8, 1990, 2-119343; May 8, 1990, 2-119344
Int. Cl.[6] G10H *7/00, 1/02*
U.S. Cl. 84—630 22 Claims



2. An acoustic signal processing unit comprising:

an acoustic signal processing circuit for processing a digital tone signal input thereto and having a plurality of channels, each of which includes a delay circuit, a filter, and an amplifier; and control means for controlling delay time of the delay circuit, filtration characteristics of the filter, and gain of the amplifier, for each channel, in accordance with stored digital transmission data,

wherein said control means includes direction specifying means for specifying direction of acoustic image localization, and the acoustic signal processing circuit includes readout means for reading out stored digital transmission data corresponding to the direction specified by the direction specifying means, and delay time of said delay circuit, filtration characteristics of said filter, and gain of the amplifier are controlled according to the direction specified by the direction specifying means, and

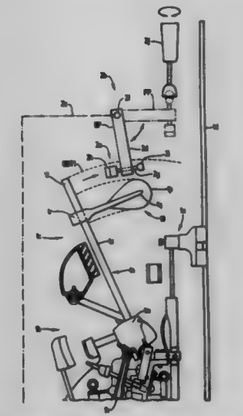
wherein the acoustic signal processing unit is connected to an electronic musical instrument, so that a digital musical tone signal formed by the electronic musical instrument is input to the acoustic signal processing circuit, and the direction of acoustic image localization of the musical tone signal is controlled by the control means.

5,386,083

KEYBOARD INSTRUMENT HAVING HAMMER STOPPER OUTWARDLY EXTENDING FROM HAMMER SHANK AND METHOD OF REMODELING PIANO INTO THE KEYBOARD INSTRUMENT

Kiyoshi Kawamura, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Filed Nov. 30, 1993, Ser. No. 160,606
Int. Cl.[6] G10C *3/12, 5/00;* G10D *15/00;* G10H *1/34*
U.S. Cl. 84—719 15 Claims



14. A keyboard instrument selectively entering a mechanical sound producing mode and an electronic sound producing mode, comprising:

a) an acoustic piano including

a-1) a keyboard having a plurality of keys turnable with respect to a stationary board member, said plurality of keys being selectively depressed in both mechanical and electronic sound producing modes by a player,

a-2) a plurality of key action mechanisms respectively coupled with said plurality of keys, and having respective jacks, said plurality of key action mechanisms being selectively actuated by said plurality of keys when said player depresses,

a-3) a plurality of hammer mechanisms having respective butts respectively associated with said jacks, respective hammer shanks respectively projecting from said butt and respective hammer heads projecting from leading end portions of said hammer shanks substantially in normal with respect to said hammer shanks, respec-

tively, each of said jacks being escaped from the associated butt for rotating the associated hammer head when said player depresses the associated key, and

a-4) a plurality of strings struck by said hammer heads in said mechanical sound producing mode when the player selectively depresses said plurality of keys;

b) an electronic sound producing means deciding what keys are depressed by said player in said electronic sound producing mode, and operative to electronically produce sounds corresponding to the keys depressed by said player; and

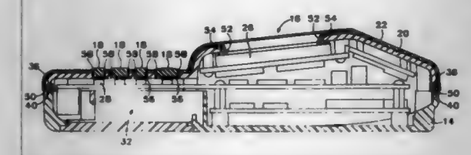
c) a silent means having a plurality of detachable bracket members radially outwardly extending with respect to said hammer heads, respectively, a movable stopper moved into and outof orbits of said detachable bracket members, a pedal means manipulated by said player, a link mechanism connected between said peal means and said movable stopper for changing said movable stopper between a free position in said mechanically sound producing mode and a blocking position in said electronically sound producing mode, said detachable bracket members being freely moved together with the associated hammer mechanisms without an interruption of said movable stopper while said movable stopper is staying in said free position, each of said detachable bracket member being brought into contact with said movable stopper in said blocking position between an escape of said jack from said butt and a strike of the associated hammer head at the associated strings, said movable stopper being protectable and retractable for regulating timings when said detachable bracket members are brought into contact therewith.

5,386,084

ELECTRONIC DEVICE ENCLOSURE

John J. Risko, Stayton, Oreg., assignor to II Morrow Inc., Salem, Oreg.

Filed Jul. 22, 1993, Ser. No. 96,605
Int. Cl.[6] H05K *5/06*
U.S. Cl. 174—52.3 18 Claims



1. An enclosure for an electronic device, comprising:

a top having an upper portion and a side portion each having an outer surface, said side portion having an inner surface and a lower edge;

a bottom adapted to be attached to said top so as to abut said lower edge; and

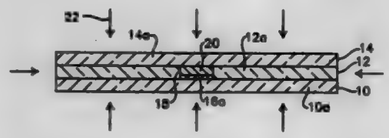
an elastomeric cover adapted to be placed over said top so as to cover said outer surface of said upper portion and said side portion, and wrap around and cover said lower edge and a portion of said inner surface of said top, and thereby act as a seal between said top and said bottom.

5,386,085

MULTILAYER ELECTRICAL CIRCUIT STRUCTURE INCLUDING PARTIALLY EMBEDDED PINS FOR EXTERNAL CONNECTION

David J. Michels, Placentia; Felipe J. Martin, Trabuco Canyon, and Ramona G. Pond, Downey, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 785,859, Oct. 31, 1991, Pat. No. 5,249,355.
This application Jul. 2, 1993, Ser. No. 88,964
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—250 4 Claims



1. A multilayer electrical circuit structure, comprising:

a first sheet of electrically nonconductive ceramic tape having an electrically conductive stripline formed thereon, a portion of the stripline extending adjacent to an edge of the first sheet;

a second sheet of electrically nonconductive ceramic tape having a cavity formed therethrough, the cavity opening at an edge of the second sheet;

a third sheet of electrically nonconductive ceramic tape having an edge aligned with the edges of the first sheet and the second sheet; wherein

the first, the second and the third sheets are adhered together with said edges aligned, and wherein the cavity is aligned with and exposing said portion of the stripline and the cavity is enclosed by the first sheet and the third sheet except at the edge where the cavity is open, which provides an opening in the structure; and

an electrically conductive pin having a first portion extending through the opening and into the cavity and being ohmically adhered to said portion of the stripline and a second portion remaining external of the structure for making external electrical interconnection of the structure with other elements.

5,386,086

COMPOSITE THERMOPLASTIC FILLER FOR BALLAST CANS FOR USE WITH FLUORESCENT LIGHTS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 6, 1994, Ser. No. 178,725
Int. Cl.[6] H01L *23/28*; H05K *5/06*; B29C *67/16*
U.S. Cl. 174—52.2 4 Claims

1. A process for fabrication of filler for a ballast container used with fluorescent lighting, said process comprising:

(i) providing said ballast container containing conventional electrical components as required for use in a fluorescent light circuit, said ballast container having an open top for receiving filler materials for filling unfilled space volume within said ballast container;

(ii) loading said unfilled space volume within said ballast container with said filler materials, said filler material comprising a mixture of high-density polyethylene in powdered form and dry sand;

(iii) providing said loaded and filled ballast container with a top closure means to close said ballast container;

(iv) heating said loaded and closed ballast container to about 300° F. for a predetermined time period to achieve melting of said high-density polyethylene and dry sand mixture; and,

(v) allowing said melted, high-density polyethylene to cool and fuse into a solid mass comprised of said high-density polyethylene and dry sand.

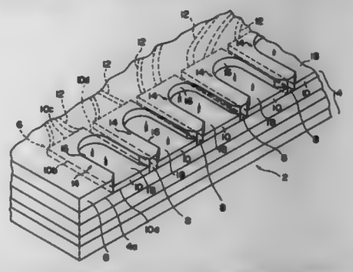
3. The ballast with filler as fabricated in accordance with the process as defined in claim 1, wherein said fillers for said ballast container comprises a fused mixture of high-density polyethylene and dry sand.

5,386,087

PRINTED CIRCUIT BOARD HAVING U-SHAPED SOLDER MASK LAYER SEPARATING RESPECTIVE CONTACTS

Chen W. Lee; Fong P. Chang, and Chou L. Chen, all of Chung-li, Taiwan, Prov. of China, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1993, Ser. No. 17,921
Claims priority, application Japan, Feb. 17, 1992, 4-006211[U]
Int. Cl.[6] H05K *1/09*
U.S. Cl. 174—261 3 Claims



1. A printed circuit board for electrically connecting to a connector having a plurality of contacts, comprising:

a laminated board;

a print circuit pattern layer provided over a surface of the laminated board, formed of conductive film and having a circuit pattern and a plurality of connection land portions formed continuous with the circuit pattern, the connection land portions being arranged with reference to an edge of the surface of the laminated board, one end of the connection land portions being situated a predetermined distance from the edge of the surface of the laminated board; and

a solder mask layer covering the surface of the printed circuit pattern layer and covering the surfaces of the connection land portions at edges of the connection land portions excluding an edge at said one end of the connection land portions, said solder mask layer having, at the surface of the connection land portions, U-shaped recesses which are opened at said edge of the surface of said laminated board, and exposed portions of the connection land portions and portions of the solder mask layer being alternately arranged along the edge of the surface of said laminated board, whereby each connection land portion is soldered at exposed areas thereof to a corresponding contact of the connector.

5,386,088

EMBEDDED GROUND PLANE AND SHIELDING STRUCTURES USING SIDEWALL INSULATORS IN HIGH FREQUENCY CIRCUITS HAVING VIAS

Donald S. Gardner, Mountain View, Calif., assignor to Intel Corporation, Santa Clara, Calif.

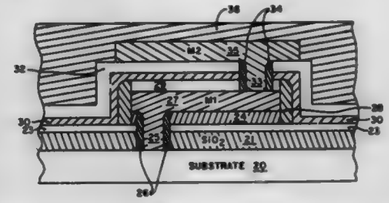
Continuation of Ser. No. 815,234, Dec. 31, 1991. This application Sep. 28, 1993, Ser. No. 127,820
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[6] H05K *01/00*
U.S. Cl. 174—261 47 Claims

1. An embedded ground plane structure formed on a substrate, comprising:

a first dielectric layer deposited upon said substrate;

a first electrically conductive layer deposited upon said first dielectric layer, said first electrically conductive layer comprising a first ground plane layer;

a second dielectric layer deposited upon said first electrically conductive layer; and,



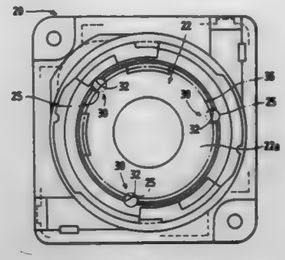
at least one first opening formed in said first dielectric layer, said first electrically conductive layer and said second dielectric layer, said first opening having a sidewall, said sidewall having a third dielectric layer deposited thereon.

5,386,089

TRACK BALL COORDINATE DATA INPUTTING DEVICE

Shuichi Tooi, Tochigi, Japan, assignor to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1993, Ser. No. 144,539
Claims priority, application Japan, Oct. 30, 1992, 4-081406[U]
Int. Cl.[6] G09G *5/00*; G08C *21/00*
U.S. Cl. 178—18 15 Claims



1. A track ball coordinate data inputting device, comprising:

a coordinate data inputting ball;

a frame including:

a semi-spherical accommodating member opened upwardly to accommodate the coordinate data inputting ball;

a plurality of supporting ball elements for rotatably supporting the coordinate data inputting ball:

supporting ball dement support means for rotatably supporting the supporting ball elements such that outer surfaces of respective ones of the supporting ball elements are partially exposed inwardly of the spherical inner wall of the semi-spherical accommodating member, the supporting ball dement support means being integrally formed to the frame; and

detecting means for detecting coordinate data from an amount of rotation and direction of rotation of the coordinate data inputting ball, the detecting means being mounted on the frame,

wherein the supporting ball element support means includes:

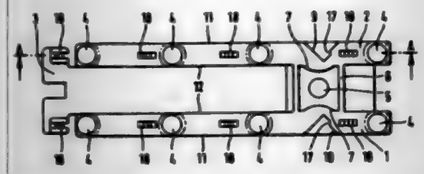
a plurality of inserting grooves, each of which is engraved in a spherical inner wall surface of the semi-spherical accommodating member in such a manner that the groove is extended downwardly from an upper edge of the spherical inner wall surface and is wide enough to allow a passage of a supporting ball element.

5,386,090

ELECTRIC SWITCH UNIT FOR THE CONTROL OF AIR CONDITIONING UNITS IN AUTOMOTIVE VEHICLES

Georg Hofmann, Heilbronn-Horkheim, Germany, assignor to SWF Auto-Electric GmbH, Germany

Filed Aug. 11, 1993, Ser. No. 105,080
Claims priority, application Germany, Aug. 20, 1992, 4227468
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—308 **10 Claims**



1. An electric switch unit of the type including indicating bezels furnished with symbols, comprising:

a transparent light guiding member adapted to guide light emanating from a central source of light to said indicating bezels, said light guiding member including at least one light-guiding bar having projections molded to said bar adjacent said indicating bezels, said projections having a front face disposed such that the light exits toward said indicating bezels and thereby illuminates the indicating bezels

wherein said front faces of said projections being concavely curved;

wherein said light-guiding member further includes surfaces having the shape of focusing lenses;

wherein said light-guiding member further includes deviating surfaces for guiding the light into said at least one light-guiding bar; and

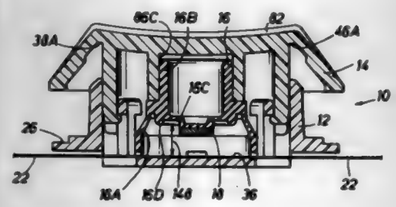
wherein said light-guiding member further includes totally reflecting surfaces in said light-guiding bars proximate said projections, said totally reflecting surfaces having a preselected size, inclination and shape such that into each of said projections an equal quantity of light is emittable, wherein the cross section of said light-guiding bars is tapered stepwise in the direction of light propagation said stepwise tapers proximate said projections, wherein a first said totally reflecting surface is positioned in said light-guiding bar and adjacent said source of light and has a circular configuration.

5,386,091

LOW PROFILE KEYSWITCH

Kevin F. Clancy, Cypress, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 44,593, Apr. 8, 1993, abandoned. This application Jun. 29, 1994, Ser. No. 267,581
Int. Cl.[6] H01H *1/10*
U.S. Cl. 200—517 **23 Claims**



1. A keyswitch, comprising

a switch chimney including a first upright member, a second upright member and a membrane support member;

said first upright member having an inner bearing surface;

said second upright member having an outer bearing surface, said first upright member being disposed radially outwardly and fixed relative to said second upright member;

said membrane support member disposed radially inwardly of said second upright member;

a plunger having a top end and a bottom end movable between an extended position and a depressed position and having an inner bearing surface and outer bearing surface, said plunger inner bearing surface slidably engaging said second upright outer bearing surface and said plunger outer bearing surface slidably engaging said first upright inner bearing surface; and

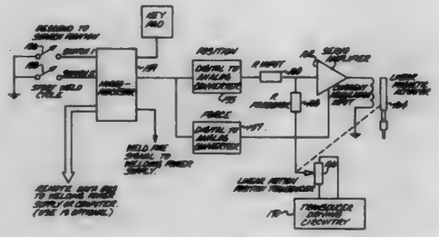
a membrane received on said membrane support member having at least one opening, wherein said plunger bottom end extends through said membrane opening when said plunger is in said depressed position.

5,386,092

FAST RESPONSE WELD HEAD

Gerald Dufresne, LaVerne, Calif., assignor to Unitek Equipment Inc., Monrovia, Calif.

Continuation-in-part of Ser. No. 787,010, Nov. 4, 1991, Pat. No. 5,225,647. This application Dec. 28, 1992, Ser. No. 998,781
Int. Cl.[6] B23K *11/24*
U.S. Cl. 219—86.32 **23 Claims**



1. A method of rapid precision welding of an object comprising the steps of:

(a) providing a movable electrode;

(b) moving the electrode into contact with the object using a fast response weld head on which the electrode is mounted;

(c) increasing the force exerted by the electrode to a first predetermined level;

(d) applying electrical welding energy through the electrode to the object for a predetermined duration of time;

(e) holding the force exerted at said first level for a first length of time as the object softens;

(f) increasing the force exerted to a second predetermined level for a second shorter length of time; and

(g) returning the electrode force to said first predetermined level during the remaining portion of the interval of application of weld energy wherein the electrode maintains contact with the object at all times during welding eliminating expulsion of material.

5,386,093

METHOD FOR ELECTROEROSIVE CUTTING AND WIRE EDM MACHINE

Claudio Borsari, Tegna, Switzerland, assignor to AGIE, A.G. für industrielle Elektronik, Losone

Filed May 4, 1992, Ser. No. 878,382
Claims priority, application Germany, May 3, 1991, 4114510
Int. Cl.[6] B23H *7/06, 7/20*
U.S. Cl. 219—69.12 **8 Claims**

1. A method for electric discharge cutting of at least one shaped piece in at least one workpiece with a wire cutting electrode, in which at least one shaped piece is machined by at least one solid cut along a first path, at least one parting cut along a second path and at least one finish cut along the first and second paths, wherein the sequence of the cuts is time variable in accordance with operating conditions, wherein one



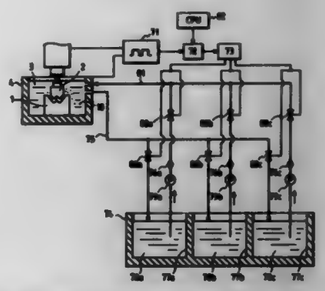
of the operating conditions is the presence of an operator who fixes the time of the operating condition at the start of the cutting operation, and the parting cut is carried out upon the presence of the operator.

5,386,094

ELECTRICAL DISCHARGE MACHINE WITH AUTOMATIC FILTERING

Hideki Kawai, and Hidehiko Tanaka, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,414
Claims priority, application Japan, Jan. 10, 1992, 4-002996
Int. Cl.[6] B23H *1/10, 7/36*
U.S. Cl. 219—69.14 **14 Claims**



2. A method of machining a workpiece under a plurality of machining conditions by energizing a current between an electrode and said workpiece opposed with each other in a dielectric fluid, comprising:

identifying at least one of said machining conditions; and

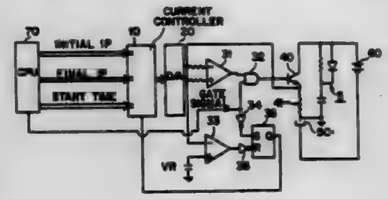
automatically selecting the filtering condition for removing sludge from the dielectric fluid in response to said identifying step.

5,386,095

ELECTRIC DISCHARGE MACHINE POWER SUPPLY WITH CURRENT CONTROL AT VARIABLE LEVELS

Yuji Kaneko, and Shinji Ito, both of Yokohama, Japan, assignors to Sodick Co., Ltd., Yokohama, Japan

Division of Ser. No. 818,536, Jan. 9, 1992, Pat. No. 5,298,709, which is a division of Ser. No. 429,794, Oct. 31, 1989, Pat. No. 5,126,525. This application Nov. 23, 1993, Ser. No. 156,067
Claims priority, application Japan, Nov. 1, 1988, 63-276957; Nov. 1, 1988, 63-276958; Nov. 16, 1988, 63-289837
Int. Cl.[6] B23H *1/02*
U.S. Cl. 219—69.18 **25 Claims**



14. A power supply for an electric discharge machine comprising:

a machining gap formed between a tool electrode and a workpiece electrode;

a power source for supplying machining current to said gap;

gate signal generating means for generating a gate signal comprising pulses having values indicative of an ON time and an OFF time;

switch means connected between said power source and said gap and responsive to said gate signal for controlling the flow of current through said gap, said switch means being open when said gate signal is at said value indicative of OFF time;

current detecting means for detecting the magnitude of the machining current flowing through said gap;

comparing means for comparing the magnitude of the machining current to a variable reference level to generate an output signal;

gating means responsive to said gate signal and to said comparing means output signal for operating said switch means, whereby said switch means is closed when the machining current is below said variable reference level and said gate signal is at said value indicative of ON time; and

current controlling means for varying said variable reference level to thereby control the magnitude of the machining current flowing through said gap.

5,386,096

PROGRESSIVE CURRENT LIMIT CONTROL FOR A RESISTANCE WELDER

Paul R. Buda, Raleigh, N.C., and Mark A. Hinton, Elgin, S.C., assignors to Square D Company, Palatine, Ill.

Filed Dec. 23, 1993, Ser. No. 173,835
Int. Cl.[6] B23K *11/24*
U.S. Cl. 219—110 **23 Claims**

1. A weld controller system for controlling the operation of a welder including a weld transformer and at least one pair of contact tips that apply current to create weld heat between at least two workpieces, said weld controller having a plurality of welding cycles, said weld controller system comprising:

A. a microprocessor;

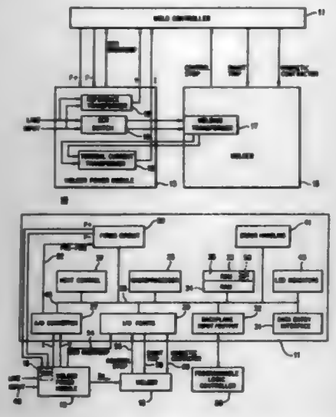
B. welder power means controlled by a program operating in said microprocessor and operatively connected to said weld transformer for supplying weld current to said contact tips to create said weld heat in said workpieces, said program for increasing said weld heat in increments following a predetermined stepper program having a

plurality of weld cycles to provide compensation for deterioration of said contact tips wear;

C. a current sensor for sensing current supplied by said welder power means to said weld transformer, said current sensor for providing weld current data for use by said program;

D. a current limit control having an upper current threshold and a lower current threshold, said current limit for comparing said sensed weld current data with a current profile at each of said plurality of weld cycles, said current limit control for indicating an event condition if said sensed weld current data exceeds said upper current threshold or is below said lower current threshold; and

E wherein said upper current threshold and said lower current threshold track said current profile by a predetermined current offset at each of said plurality of weld cycles.



5,386,098

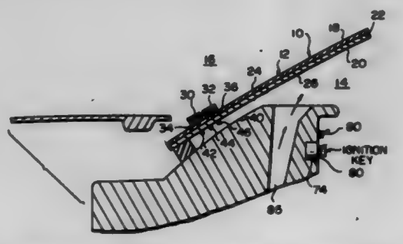
ARRANGEMENT FOR ELECTRICALLY HEATING PARKING AREAS FOR WINDSHIELD WIPERS

William Knudsen, Livonia, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 22, 1993, Ser. No. 168,495

Int. Cl.[6] H05B *3/84*

U.S. Cl. 219—203 **7 Claims**



1. In combination, a windshield for an automotive vehicle having an outside surface exposed to the environment and an inside surface shielded from the environment, wherein the outside surface has a parking area thereon against which a pair of windshield wiper blades rest when in a parked mode with a first wiper blade being disposed below a second wiper blade, a windshield wiper heater comprising a single electric grid disposed in direct contact with the inside surface at an area substantially coextensive with the parking area of the outside surface, and a power circuit for supplying electric current connected to the grid, whereby upon applying electric current through the electric grid, the parking area of the windshield is heated for the purpose of melting ice or snow accumulated around the windshield wiper blades.

5,386,097

DEVICE FOR MACHINING THIN-WALLED HOLLOW CYLINDERS USING A LASER BEAM

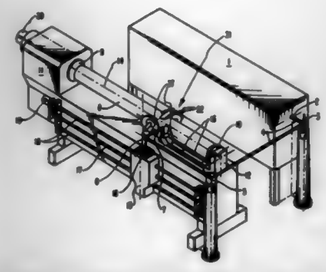
Siegfried Rücki, Langkampfen, Austria, assignor to Schablonentechnik, Kufstein, Gesellschaft, Kufstein, Austria

Filed Mar. 25, 1993, Ser. No. 38,294

Claims priority, application European Pat. Off., Mar. 27, 1992, 92105351

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.68 **26 Claims**



1. A device for machining the surface of a thin-walled hollow cylinder using a laser beam, comprising:

bed means for rotatably holding the hollow cylinder;

focusing means for directing the laser beam onto the surface of the hollow cylinder so as to produce a machined surface thereon;

carriage means, carrying the focusing means and slidably mounted to the bed means, for providing movement of the focusing means along the length of the hollow cylinder as it is rotated thereby directing the laser beam onto the surface of the hollow cylinder as the cylinder is rotated and as the focusing means moves along the cylinder's length; and

bearing means, held by the carriage means, for providing moveable support around the hollow cylinder's circumference by moving the bearing means with the focusing means and carriage means, and wherein the bearing means is held stationary around the cylinder's circumference and comprises an opening which extends in a radial direction and is positioned with respect to the laser beam such that the laser beam runs through the opening to the surface of the hollow cylinder.

5,386,099

SELF-CLEANING PROCESS UTILIZING FUZZY LOGIC AND STOVE FOR CARRYING OUT THE PROCESS

Uwe Has, Schwindegg, Germany, assignor to Bosch-Siemens Hausgeraete GmbH, Munich, Germany

Filed Jul. 19, 1993, Ser. No. 93,387

Claims priority, application Germany, Jul. 17, 1992, 4223656

Int. Cl.[6] F24C *14/02*

U.S. Cl. 219—413 **17 Claims**

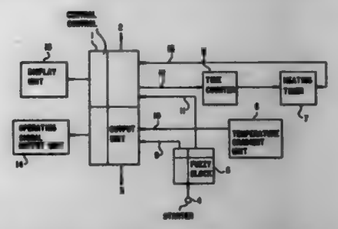
1. A pyrolytic self-cleaning method for stoves, which comprises on-line optimizing a definable pyrolysis temperature range up to approximately 500° C., by:

fuzzy-controlling a transient state for a temperature starting value with a regulating device, to avoid a heating startup peak with a fuzzy control step;

recognizing subsiding of the transient state and initializing heating time which is optimized with reference to the fuzzy control step, with the regulating device;

updating, with the regulating device, a minimum heating time for the next control step on the basis of particular temperature gradient being recognized, while constantly monitoring an optimal turn-on temperature for pyrolytic oven chamber heating at a minimum heating time referred to an applicable control step; and

continuously optimizing turn-off temperature with the regulating device through a closed control loop.



5,386,100

CONTROL ARRANGEMENT FOR IMMERSION LIQUID HEATERS

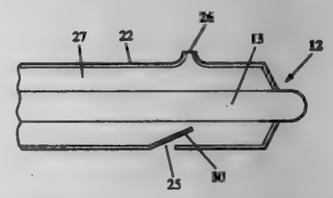
John D. McNair, Victoria, Australia, assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 25, 1993, Ser. No. 142,525

Claims priority, application Australia, Oct. 30, 1992, PL5615

Int. Cl.[6] H05B *3/82*

U.S. Cl. 219—437 **5 Claims**



1. An arrangement in an electric immersion liquid implement comprising:

a heating element having two opposed end sections joined by an intermediate portion, said intermediate portion being adapted for location within a vessel capable of holding a liquid to be heated, each end section being adapted to pass through a wall of said vessel, and temperature responsive switch means in thermal communication with an outer surface portion of a respective one of said end sections of said heating element outwardly of said vessel, and means communicating steam from within said vessel to a thermally conductive position relative to said temperature responsive switch means whereby said switch means is adapted to disconnect power from said heating element upon a predetermined temperature level indicative of a boil condition on said intermediate portion of said element being sensed, said heating element including an inner part and jacket means forming a space at least partially surrounding said inner part of the heating element, said inner part and said jacket means being located inwardly of and adjacent to the wall of said vessel, with said space within said jacket means forming said means communicating steam, said space also extending through the vessel wall and terminating outwardly of said vessel wall, said jacket means being thermally conductive and said temperature responsive switch means being in thermal contact with said jacket means outwardly of said vessel, means permitting liquid access from said vessel to said space, and means permitting escape of vapor from said space, said liquid access means comprising at least one opening in a wall of said jacket means, said opening forming liquid access means including valve means to allow liquid into said space, said valve means being closed by vapor pressure in said space upon a liquid boil condition occurring.

5,386,101

METHOD AND APPARATUS FOR WELDING TUBULAR PARTS

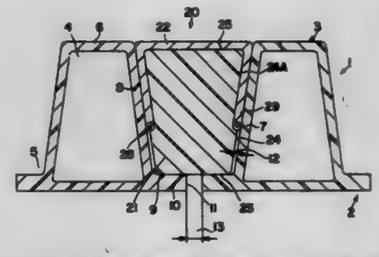
Hans W. Steinmetz, Schaffhausen, and Dirk A. Petry, Feuerthalen, both of Switzerland, assignors to Georg Fischer Rohrleitungssysteme AG, Schaffhausen, Switzerland

Filed Jul. 2, 1993, Ser. No. 87,231

Claims priority, application Switzerland, Jul. 2, 1992, 02084/92

Int. Cl.[6] F16L *13/02*

U.S. Cl. 219—535 **15 Claims**



1. A method for end welding of two tubular plastic parts having ends wherein said ends each have a projection with an inner end face extending from the inner circumference, providing the steps of:

providing a plastic welding element having an outer contour provided with a heating coil for electrical resistance heating applied between the ends of the tubular parts;

placing the two tubular parts onto the welding element with simultaneous mutual centering with the projections, a gap being formed between the projections;

supplying current to the heating coil in the plastic welding element at least in one partial region of adjacently lying surfaces of the tubular parts;

melting the welding element such that no melting of the inner end faces occurs;

pressing the tubular parts during heating against each other until the end faces act as a firm stop and abut each other;

switching off the current; and

retaining the tubular parts next to each other until the welded region is hardened by cooling.

5,386,103

COOKER

Hiroyoshi Takikawa; Yoshida Yoshio; Nobuko Kakimoto, and Shinsuke Ise, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP90/01636, § 371 Date Aug. 13, 1991, § 102(e) Date Aug. 13, 1991, PCT Pub. No. WO91/09508, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 14, 1990, Ser. No. 752,998

Claims priority, application Japan, Dec. 14, 1989, 1-32215; Dec. 14, 1989, 1-322609; Dec. 14, 1989, 1-322610; Dec. 14, 1989, 1-322611; Dec. 14, 1989, 1-322613; Dec. 25, 1989, 1-332776; Dec. 25, 1989, 1-332777; Dec. 25, 1989, 1-332779; Jul. 23, 1990, 2-193100; Aug. 7, 1990, 2-209500; Nov. 28, 1990, 2-323113

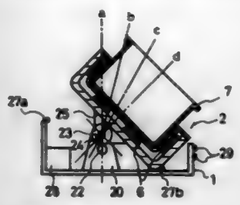
Int. Cl.[6] H05B 6/12

U.S. Cl. 21—620 **15 Claims**

13. A cooker having a receptacle for receiving a pot for holding ingredients and a heater for heating said pot by induction, wherein the receptacle is supported by a main unit so that the pot is inclinable, the cooker comprising:

an angle control unit which provides a driving force for inclining said receptacle; and

a controller for controlling said angle control unit wherein the pot has a bottom portion and side portions, wherein the heater comprises: heating coils including



a first coil for heating the bottom portion of the pot, and

a second coil for heating the side portions of the pot; and

means for controlling and switching the coils so that the first and second coils are operable separately or simultaneously.

5,386,103

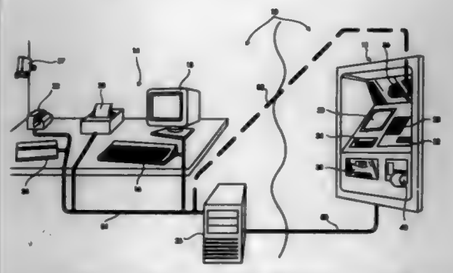
IDENTIFICATION AND VERIFICATION SYSTEM

Abdou F. DeBan; Tianning Xu, both of Dayton; David M. Tumey, Huber Heights, and Craig M. Arndt, Dayton, all of Ohio, assignors to Neurnetics Ltd., Dayton, Ohio

Filed Jul. 6, 1993, Ser. No. 87,657

Int. Cl.[6] G06F *15/30*

U.S. Cl. 235—379 **14 Claims**



1. A non-invasive human user identification and verification system, comprising:

user means for presenting and storing a human facial image projection character; and

means for retrieving said human facial image projection character from said user means and capable of manipulating said projection character to produce an output signal indicative of a human facial feature for use in verification of the user, said retrieving means includes universal face space memory indicative of facial features for a non-homogeneous population and wherein said output signal is generated by projecting said human facial image projection character into said universal face space memory.

5,386,104

SYSTEM AND METHOD FOR DETECTING USER FRAUD IN AUTOMATED TELLER MACHINE TRANSACTIONS

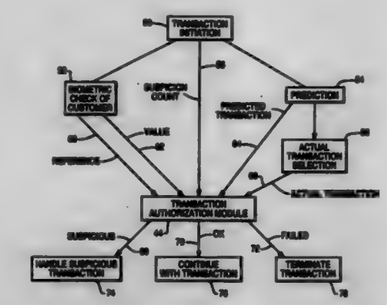
Iain R. F. Sime, Tayside, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 27, 1993, Ser. No. 173,035

Claims priority, application United Kingdom, Nov. 8, 1993, 9323489

Int. Cl.[6] G06F *15/30*

U.S. Cl. 235—379 **34 Claims**



1. A system for detecting user fraud in connection with automated teller machine transactions, comprising:

means for measuring at least one biometric value for a user;

means for comparing that value to a reference biometric value for that user;

means for predicting the type of transaction to be requested by said user;

means for comparing the predicted transaction with the transaction actually requested by said user; and

means for determining whether the user is valid, based upon the biometric value comparison and the result of comparing the predicted transaction with the actual transaction if said biometric value comparison is not conclusive.

5,386,105

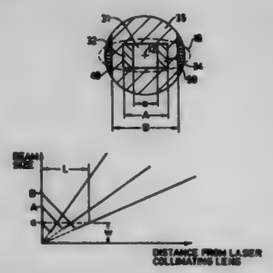
DIFFRACTIVE OPTICAL BEAM SHAPING METHODS AND APPARATUS FOR PROVIDING ENHANCED DEPTH OF WORKING RANGE OF BAR CODE SCANNERS

Anna M. Quinn, Rochester, and Jay M. Eastman, Pittsford, both of N.Y., assignors to PSC Inc., Webster, N.Y.

Filed Jun. 7, 1993, Ser. No. 73,368

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **28 Claims**



1. The method of producing a pattern of generally monochromatic light having a predetermined configuration pattern and orientation over a range of distances which comprises projecting a beam of light along a path extending over said range, and forming said light to produce said configuration and orientation in planes perpendicular to said path within said range by far field diffraction of said light by a mask having a plurality of apertures through all of which said beam passes which provides far field diffraction in successive overlapping distances which comprise said range.

5,386,106

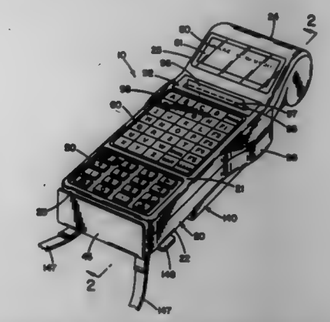
INTEGRATED PORTABLE DEVICE FOR POINT OF SALE TRANSACTIONS

Rajendra Kumar, Akron, Ohio, assignor to Khyber Technologies Corporation, Fairlawn, Ohio

Continuation of Ser. No. 767,270, Sep. 27, 1991, Pat. No. 5,294,782. This application Mar. 15, 1994, Ser. No. 213,489

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **18 Claims**



1. A portable device for processing point of sale transactions, the portable device having a plurality of components carried and oriented to facilitate handsfree operation by a user, comprising:

housing means for carrying the components, said housing means having an operational orientation relative to the user;

reader means carried by said housing for reading credit card information;

scanner means for generating a scanning beam and scanning product identification information with said beam, said scanner means carried within said housing at a location such that when said housing is in said operational orientation said scanner beam is projected substantially away from the eyes of the user; and

printer means for printing a customer receipt, said printer means carried within said housing at a location such that when said housing is in said operational orientation said printer receipt is visible to the user and said housing is substantially balanced for handsfree operation.

5,386,107

SCANNING ARRANGEMENT AND METHOD IN WHICH THE FOCUS IS VARIED IN OPERATIVE CORRELATION WITH THE SCANNING ANGLE

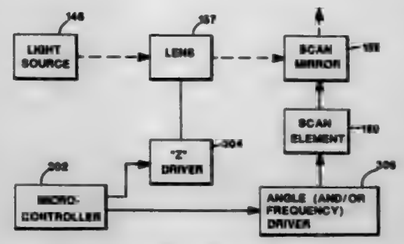
Paul Dvorkis, and Joseph Katz, both of Stony Brook, N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,604

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **19 Claims**

1. A device for reading indicia on a target in which the indicia has regions of differing light reflectivity comprising means for directing a light beam from said device toward said indicia; means for focusing said light beam being directed on said indicia to set the location of the beam waist and collecting reflected light from said indicia; means for scanning said light beam along a selectable maximum angle; means for continually varying the location of the beam waist and the maximum scanning angle as to enable said scanning device to read said indicia at various working distances between said scanning device and indicia, wherein the variation in the location of the



beam waist is in dependent relationship with the variation in the maximum scanning angle of the light.

5,386,108

PHOTOELECTRIC CONVERSION DEVICE FOR AMPLIFYING AND OUTPUTTING PHOTOELECTRICALLY CONVERTED SIGNAL, AND A METHOD THEREOF

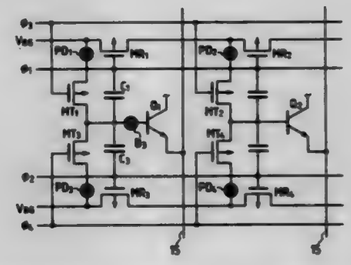
Shiro Arikawa, Hiratsuka; Isamu Ueno, Hadano, and Toshiki Nakayama, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,499

Claims priority, application Japan, Jun. 25, 1992, 4-190303

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **10 Claims**



1. A photoelectric conversion device comprising a photoelectric conversion cell, as an individual pixel, comprising:

a first transistor having a control electrode region consisting of a semiconductor of one conduction type, and first and second main electrode regions consisting of a semiconductor of opposite conduction type of said one conduction type, for outputting a signal from said first main electrode region based on carriers transferred to said control electrode region;

a carrier storage region provided adjacent said first transistor, consisting of a semiconductor of said one conduction type for storing carriers generated by light energy being received; and

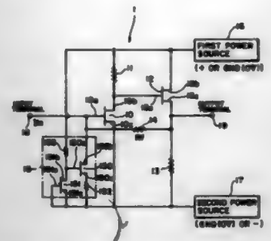
a second transistor, with said carrier storage region and the control electrode region of said first transistor as the source and drain regions, for transferring carriers stored in said carrier storage region to the control electrode region of said first transistor.

5,386,109

PRE-AMPLIFIER FOR OPTICAL RECEIVING AND OPTICAL RECEIVER USING THE SAME

Tadashi Ikeuchi; Kazuyuki Mori, and Nobuhiro Fujimoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 17, 1993, Ser. No. 108,059
Claims priority, application Japan, Aug. 19, 1992, 4-219906
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214 R **29 Claims**



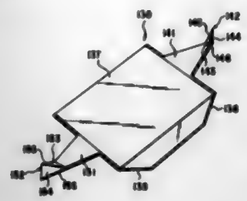
1. An optical receiving pre-amplifier comprising:
an input field effect transistor having a gate terminal receiving a current signal converted from an optical signal by a light receiving element, one signal terminal connected to a first power source via a resistance element, and an other signal terminal connected to a second power source;
an output field effect transistor having a gate terminal connected to said one signal terminal of said input field effect transistor, one signal terminal connected to said first power source, and an other signal terminal connected to said second power source via a resistance element, for amplifying the current signal into a predetermined voltage signal to issue from an output terminal;
a feedback resistor connected between the gate terminal of said input field effect transistor and the output terminal of said output field effect transistor, for feeding an output signal of said output field effect transistor back to the gate terminal of said input field effect transistor; and
a constant current source connected between the gate terminal of said input field effect transistor and said second power source, for amplifying a change in an amplitude of the output potential of said output field effect transistor in response to a change in an optical signal.

5,386,110

METHOD OF MAKING CANTILEVER CHIP FOR SCANNING PROBE MICROSCOPE

Akitoshi Toda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 872,895, Apr. 23, 1992, Pat. No. 5,264,696.
This application Aug. 9, 1993, Ser. No. 104,375
Claims priority, application Japan, May 20, 1991, 3-115068; May 20, 1991, 3-115069; Apr. 16, 1992, 4-96404
Int. Cl.[6] G01B *7/34*
U.S. Cl. 250—216 **18 Claims**



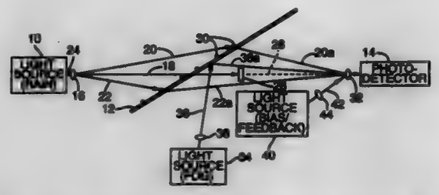
1. A method of manufacturing a plurality of cantilever chips for a scanning probe microscope simultaneously, each of said cantilever chips comprising:
a cantilever portion,
a probe portion formed at a free end of said cantilever portion, and
a support portion for supporting a proximal end of said cantilever portion, the method comprising the steps of:
preparing a starting wafer, said starting wafer including an etching stop layer, a first semiconductor layer arranged on to an upper surface of said etching stop layer, and a second semiconductor layer arranged on to a lower surface of said etching stop layer;
etching part of said second semiconductor layer of said wafer until reaching said etching stop layer, and decreasing a thickness of a portion of said wafer corresponding to said etched portion to fabricate a membrane;
etching and removing an exposed part of said etching stop layer;
depositing a constituent material of said cantilever portion on an exposed portion of said first semiconductor layer which is exposed by removing part of said etching stop layer, and part of said second semiconductor layer on two sides thereof, thereby forming a prospective cantilever portion layer;
patterning part of a resultant structure to form a hole extending through said membrane;
oxidizing a surface portion of said second semiconductor layer exposed in the hole to form an oxide film;
etching said first semiconductor layer until etching is stopped by said prospective cantilever portion layer and said oxide film, thereby forming a needle-like portion on said prospective cantilever portion layer; and
removing said oxide film.

5,386,111

OPTICAL DETECTION OF WATER DROPLETS USING LIGHT REFRACTION WITH A MASK TO PREVENT DETECTION OF UNREFRACTED LIGHT

H. Allen Zimmerman, 6490 S.W. 154th Pl., Beaverton, Oreg. 97007

Filed Oct. 8, 1993, Ser. No. 134,407
Int. Cl.[6] H01J *5/16*
U.S. Cl. 250—227.25 **20 Claims**



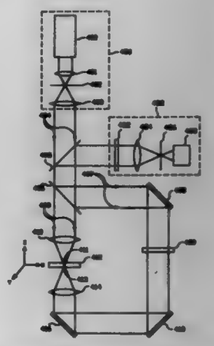
1. An optical droplet detector apparatus for determining the degree of vision impairment through a window due to an accumulation of water or other precipitation on the window comprising:
a first light source for illuminating water droplets on said window with a first light beam transmitted through said window to the inside of said window;
a photo-detector located inside said window; and
a masking device positioned in front of said photo-detector to effectively block the direct transmission of light rays from said first light source to said photo-detector, but allowing said photo-detector to receive light rays from said first source which have been refracted by droplets on said window for the purpose of determining the amount of water on said window so that the output signal of said photo-detector increases with an increase in water droplets on said window.

5,386,112

APPARATUS AND METHOD FOR TRANSMITTED-LIGHT AND REFLECTED-LIGHT IMAGING

Arthur E. Dixon, Dept. of Physics, U. of Waterloo, Waterloo, Ontario, Canada N2L 3G1

Filed Dec. 23, 1992, Ser. No. 995,989
Claims priority, application United Kingdom, Jun. 29, 1990, 9014570; 06281991, Jun. 28, 1991, PCT/CA91/00243; WIPO, Jun. 28, 1991, PCT/CA91/00243
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—234 **24 Claims**



1. A confocal scanning beam optical transmission, reflection and luminescence microscope comprising means for supporting a specimen to be observed and measured, an illumination source producing a light beam directed along an optical path toward said specimen, a first microscope objective in said optical path for focusing said light beam to produce an illuminated spot in a prescribed specimen plane, means for scanning the light beam to move said focused illuminated spot in a predetermined scan pattern on said specimen plane, transmission arm whereby the light beam transmitted through said specimen is collected, and said transmitted light beam is injected back into said optical path above said microscope objective and between said microscopy objective and said scanning means so that the injected light beam is exactly parallel with, coaxial with and travelling in the same direction as the reflected light beam from the specimen that has been collected by said microscope objective, means for confocal detection of said reflected and transmitted light.

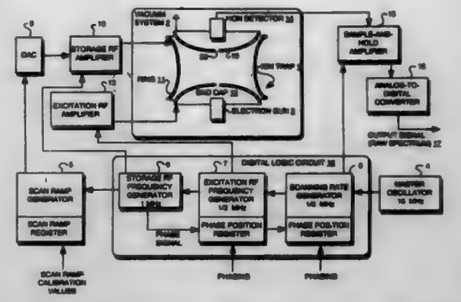
5,386,113

METHOD AND DEVICE FOR IN-PHASE MEASURING OF IONS FROM ION TRAP MASS SPECTROMETERS

Jochen Franzen, Bremen; Gerhard Heinen, Grasberg; Gerhard Weiss, Weyhe, and Reemt-Holger Gabling, Bremen, all of Germany, assignors to Bruker-Franzen Analytik GmbH

Filed Dec. 23, 1992, Ser. No. 996,008
Claims priority, application Germany, Dec. 23, 1991, 4142870
Int. Cl.[6] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—292 **34 Claims**

14. Apparatus for recording a mass spectrum of ions comprising:
a storage ion trap;
means for placing ions in the storage ion trap;
means for collecting the ions near the center of the trap;
a storage RF signal generator for producing an ion storage field in the storage ion trap;
an excitation RF signal generator for producing an excitation RF signal and an excitation field in the storage ion trap; and
a signal generator responsive to ions leaving the storage ion trap and substantially synchronized with the excitation RF signal for generating an ion stream signal only while ion pulses are being ejected from the storage ion trap.

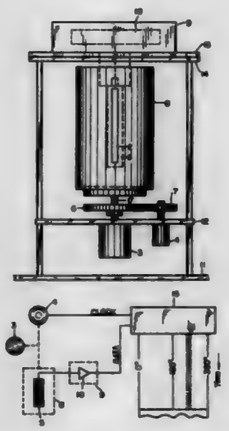


5,386,114

DETECTOR FOR ACTIVITY DIRECTION OF MAGMA

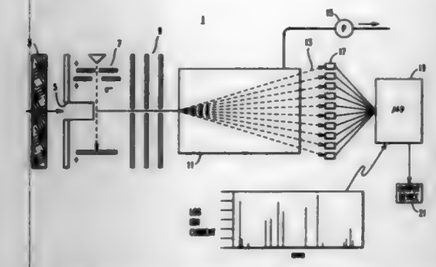
Soichiro Yasunaga, Tokyo, Japan, assignor to Riken Denshi Co., Ltd., Japan

Filed Dec. 17, 1993, Ser. No. 169,612
Claims priority, application Japan, Dec. 25, 1992, 4-361930
Int. Cl.[6] G01J *5/00*; G01T *3/00*
U.S. Cl. 250—253 **8 Claims**



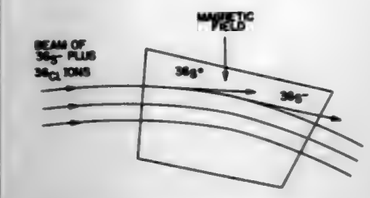
1. Apparatus for detecting the activity of underground magma to help predict the occurrence of an earthquake or volcanic eruption that includes,
a neutron sensor for providing an output signal when irradiated by a neutron generated in underground magma,
a rotatable cadmium shield surrounding said sensor, said shield having a window for permitting neutrons to enter said shield and irradiate said sensor,
drive means for rotating said shield through 360°,
detecting means for plotting the angular position of said window and recording the occurrence of an output signal from said sensor in regard to said angular position of said cadmium shield whereby the intensity and the direction of flow of the underground magma activity are detected.

5,386,115
SOLID STATE MICRO-MACHINED MASS SPECTROGRAPH UNIVERSAL GAS DETECTION SENSOR
Carl B. Freidhoff, Murrysville; Robert M. Young, Pittsburgh, and Sapthurishi Sriram, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sep. 22, 1993, Ser. No. 124,873
Int. Cl.[6] D01D *59/44*; H01J *49/00*
U.S. Cl. 250—281 20 Claims



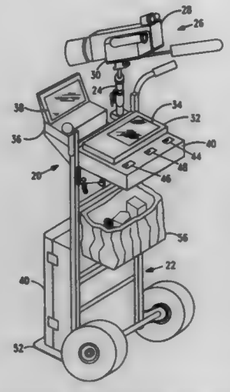
1. A solid state mass spectrograph for analyzing a sample gas, said mass spectrograph comprising:
a semiconductor substrate having a cavity therein with an inlet, a gas ionizing section adjacent said inlet, a mass filter section adjacent said gas ionizing section, and a detector section adjacent said mass filter section;
vacuum means evacuating said cavity and drawing said sample gas into said cavity through said inlet;
gas ionizing means in said gas ionization section of said cavity ionizing sample gas drawn into said cavity through said inlet to generate ionized sample gas;
mass filter means generating an electromagnetic field in said mass filter section of said cavity filtering by mass/charge ratio said ionized sample gas; and
detector means detecting said filtering of said ionized sample gas.

5,386,116
METHOD FOR REDUCING ISOBARIC INTERFERENCES IN ACCELERATOR MASS SPECTROMETRY
Linas R. Kilius, 30 Rosemount Avenue, Thornhill L3T-6S7, and Albert E. Litherland, C3 Hawthorn Gardens, Toronto M4W 1P4, both of Canada
Filed Sep. 24, 1993, Ser. No. 125,910
Int. Cl.[6] H01J *49/28*
U.S. Cl. 250—288 5 Claims



1. A method for eliminating an unwanted component of a negative ion beam in an accelerator mass spectrometer comprising the step of directing said negative ion beam through a cell containing atoms or molecules which have an electron affinity within 100 electron volts of the electron affinity of said negative ions to eliminate said unwanted component in said negative ion beam.

5,386,117
INFRARED THERMOGRAPHY SYSTEM INCLUDING MOBILE UNIT
Kenneth R. Piety; Brian D. Heise; Rexford A. Batteaberg, all of Knoxville, and Willie T. King, Powell, all of Tenn., assignors to Computational Systems Incorporated, Knoxville, Tenn.
Filed Jun. 7, 1993, Ser. No. 73,132
Int. Cl.[6] G01N *25/72*
U.S. Cl. 250—330 26 Claims



1. A mobile infrared thermography unit comprising:
an infrared camera;
a visible image camera;
a storage device for recording at least images;
a switch for selectively connecting either said infrared camera or said visible image camera to said storage device for thermographic or visible image recording; and
a data processing device interfaced to at least one of said infrared camera, said visible image camera and said storage device for at least maintaining a record of identifying information related to recorded images;
said data processing device being interfaced to said switch for monitoring whether an infrared or a visible image is being recorded.

5,386,118
METHOD AND APPARATUS FOR DETERMINATION OF INTERSTITIAL OXYGEN CONCENTRATION IN SILICON SINGLE CRYSTAL
Yutaka Kitagawara; Hiroshi Kubota; Masaro Tamatsuka; Takao Takenaka, all of Gunma, and Kazuhisa Takamizawa, Fukushima, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Mar. 29, 1993, Ser. No. 38,694
Claims priority, application Japan, May 11, 1992, 4-144879; May 19, 1992, 4-151407
Int. Cl.[6] G01N *21/35*
U.S. Cl. 250—338.1 5 Claims

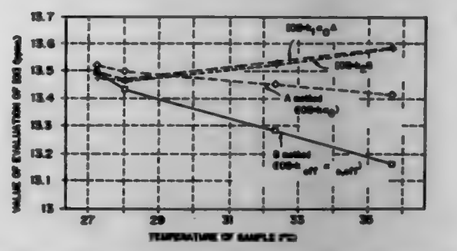
1. A method for the determination of an interstitial oxygen concentration in a silicon single crystal by means of the absorption in the infrared local vibration mode of the interstitial oxygen in said silicon single crystal, which method is characterized by obtaining the absorption peak of said interstitial oxygen at 1106 cm^{-1}, calculating the value of:

(Light absorption coefficient)×{1+ax (half width of peak)}

or the value of:

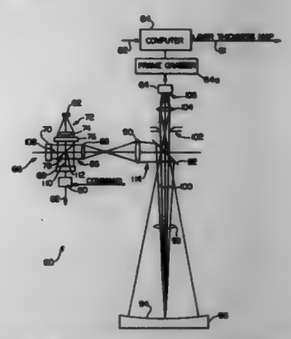
(Light absorption coefficient)×{1+bx (peak area)/(peak height)}

(wherein a or b stands for a parameter whose value depends on the conditions of determination or the apparatus for determination and should be empirically fixed with respect to specific



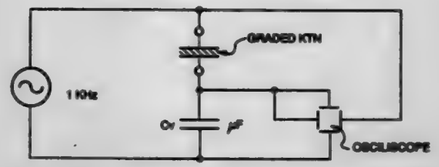
conditions of determination or the apparatus used therefor) concerning the absorption peak, and determining said interstitial oxygen concentration in said silicon single crystal on the basis of said value.

5,386,119
APPARATUS AND METHOD FOR THICK WAFER MEASUREMENT
Anthony Ledger, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Mar. 25, 1993, Ser. No. 37,069
Int. Cl.[6] G01B *11/06*
U.S. Cl. 250—341.1 14 Claims



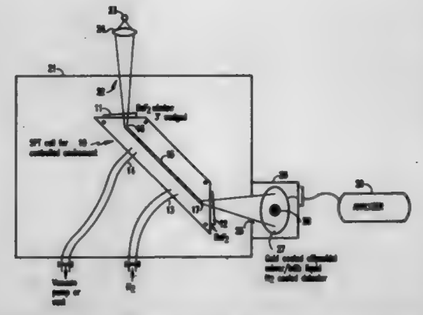
1. A method for determining thickness of a semiconductor layer, comprising the steps of:
combining an input light image of an infrared source with an output reflected light image of the source from the semiconductor layer which input and output light images traverse a variable length image path; and
detecting, for each of a plurality of areas of a surface of the semiconductor, a signal burst in the combined input and output light images at a discrete length in the variable length image path corresponding to the thickness of the semiconductor layer.

5,386,120
TRANSPACITOR
Adolph L. Michell, Mt. Clemens; Joseph V. Mantese; Norman W. Schubring, both of Troy, and Antonio B. Catalan, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 77,280, Jun. 17, 1993, which is a division of Ser. No. 699,635, May 16, 1991, Pat. No. 5,272,341. This application May 9, 1994, Ser. No. 239,791
Int. Cl.[6] G01J *5/20*
U.S. Cl. 250—338.2 10 Claims



1. A device comprising:
a layer of ferroelectric material;
an electrical contact on opposite faces of the layer of ferroelectric material;
a graded dipole moment in the direction of the thickness of the layer that is at least adjacent one of the faces.

5,386,121
IN SITU, NON-DESTRUCTIVE CVD SURFACE MONITOR
Steven G. Barbee, Dover Plains; Tony F. Heinz, Chappaqua; Leping Li, Poughkeepsie, and Victor J. Silvestri, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1993, Ser. No. 173,314
Int. Cl.[6] G01N *21/09*
U.S. Cl. 250—341.8 14 Claims



1. An apparatus for monitoring the presence and extent of surface species on an introduced sample, the apparatus comprising:
a single pass trapezoidal cell equipped with an input window and an output window, the cell further being equipped with an input port and an output port, the cell still further being adapted for receiving a substrate the surface of which is to be spectroscopically analyzed for the presence and extent of chemical species, being of a shape suitable for multiple internal reflections, and the opposing edges of which can be aligned to face the said input and output windows of the cell;
a gas source connected to the input port of said cell, and a vacuum source connected to the output port of said cell to allow the measurement to be made in an inert, non-radia-

tion absorbing environment, or an intentionally reactive environment;

a light source chosen such that the substrate and windows are transparent to it, positioned for providing light to the input window of said cell, the light passing through the input window for entering a first bevelled edge of the substrate, the light thereafter being internally reflected within the substrate and exiting at a second opposing bevelled edge of the substrate, the light thereupon being exited through the output window;

a detector receiving light exited through the output window and generating a signal proportional to detected light; and

an analyzer analyzing the signal proportional to detected light and providing an indication of the presence of chemical species present upon the substrate.

5,386,122

RADIATION DETECTOR AND METHOD FOR MAKING THE SAME

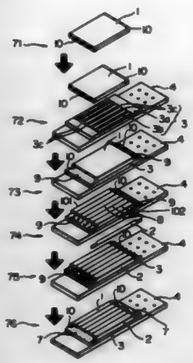
Minoru Yoshida, Tokyo; Manabu Nakagawa, Kanagawa, and Tomonori Yoshioka, Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 82,978

Claims priority, application Japan, Jun. 30, 1992, 4-172568

Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—368 **20 Claims**



1. A radiation detector comprising:

a multi-channel photodiode formed on a substrate and having individual channels isolated from each other by a plurality of channel isolation lines respectively;

a scintillator having at least two ends and cut along said isolation lines to be formed with a plurality of grooves in which a plurality of isolation plates isolating said channels respectively are inserted; and

light shielding means coated on or bonded to the at least two ends of said scintillator located in the direction of groove cutting, said light shielding means having a light absorption factor which is greater than a light reflection factor thereof.

5,386,123

BEAM STEERING SENSOR FOR A RASTER SCANNER USING A LATERAL EFFECT DETECTING DEVICE

Fred F. Hubble, III; James P. Martin, both of Rochester; Edward A. Powers, Penfield, and Kenneth R. Ossman, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 20, 1992, Ser. No. 932,525

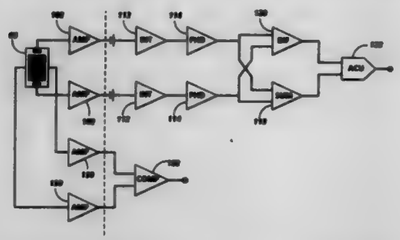
Int. Cl.[6] G01N *21/86*; H01J *40/14*

U.S. Cl. 250—561 **20 Claims**

1. An apparatus suitable for sensing the position of a radiant energy beam, comprising:

a lateral-effect photodiode including a pair of electrodes spaced in opposition to one another so as to produce electrical signals therein in response to the radiant energy beam traversing an active region of the photodiode interposed between the electrodes;

means for integrating the electrical signals produced by each of the electrodes during a portion of the period in which



the radiant energy beam impinges upon the active region of the photodiode; and

differentiating means for determining the position of the radiant energy beam as a function of the difference between the integrated electrical signals produced by each of the electrodes.

5,386,124

IMAGE SCANNING APPARATUS

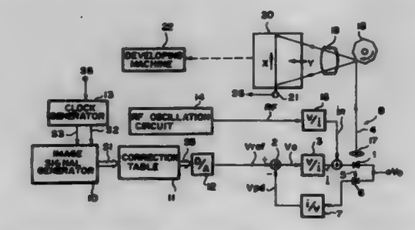
Hiroaki Yasuda, and Tetsuya Kojima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 12, 1993, Ser. No. 45,085

Claims priority, application Japan, Apr. 10, 1992, 4-090458; Apr. 10, 1992, 4-090459

Int. Cl.[6] G03B *42/02*; H01S *3/098*

U.S. Cl. 250—585 **6 Claims**



1. An image scanning apparatus, wherein a recording material is scanned with a laser beam produced by a semiconductor laser operating in a single longitudinal mode at any given time such that an image recorded on the recording material may be read out therefrom or an image may be recorded on the recording material, and a single picture element read-out period or a single picture element recording period is defined in accordance with a predetermined picture element clock pulse, further comprising:

means for superimposing a radio-frequency current on a drive current for the semiconductor laser, said radio-frequency current having a frequency higher than a reciprocal of the single picture element read-out period or a reciprocal of the single picture element recording period and falling within a frequency range of 50 MHz or lower where the semiconductor laser does not simultaneously oscillate in a plurality of modes.

5,386,125

ENTRANCE GUIDES FOR CASSETTE AUTOLOADER

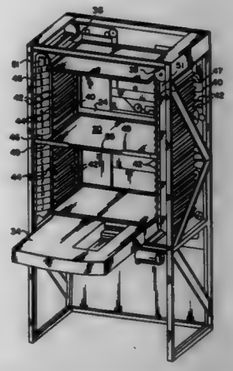
John C. Boutet, Rochester; Stephen G. Dowe, Holley, and Blaise P. Pelligra, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 27, 1993, Ser. No. 97,825

The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.

Int. Cl.[6] G03B *42/02*

U.S. Cl. 250—589 **26 Claims**



1. In an apparatus for storing and automatically delivering cassettes and/or pallets containing cassettes to a reader comprising:

a storage and delivery mechanism having a plurality of cassette retaining sites;

a body encasing said storage and delivery mechanism, said body having a portal adjoining said cassette retaining sites for allowing cassettes to be placed on or removed from the storage and delivery mechanism; and

a pair of guide panels, one on each side of the portal, said guide panels having a guide surface, said guide surface having a shock absorbing protective layer.

5,386,126

SEMICONDUCTOR DEVICES BASED ON OPTICAL TRANSITIONS BETWEEN QUASIBOUND ENERGY LEVELS

Gregory H. Henderson, 3510 Buford Hwy., Apt. N1, Atlanta, Ga. 30329; Lawrence C. West, 4 Quail Hill, Clarksburg, N.J. 08510; Thomas K. Gaylord, 3180 Verdun Dr., NW., Atlanta, Ga. 30305; Charles W. Roberts, 484 Shrewsbury Ave., Tinton Falls, N.J. 07701; Elias N. Glytsis, 3510 Buford Hwy., R-19, Atlanta, Ga. 30329, and Moses T. Asom, 7619 Brandywine Cir., P.O. Box 733, Trexlertown, Pa. 18087

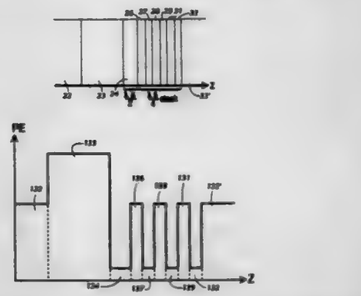
Filed Jan. 29, 1993, Ser. No. 11,010

Int. Cl.[6] H01L *29/161, 27/14, 27/12*

U.S. Cl. 257—15 **45 Claims**

1. A solid state, electronic, optical transition emitter device comprising:

a multiple-layer structure of semiconductor material which supports substantially ballistic electron transport at energies above the conduction band edge, said multiple-layer structure of semiconductor material comprising filter means for admitting electrons at a first quasibound energy level above the conduction band edge for at least one layer and for depleting electrons at a second quasibound energy level , being lower than said first energy level, said filter means providing for an optical transition from said



first quasibound energy level to said second quasibound energy level whereupon light is emitted.

5,386,127

SEMICONDUCTOR DEVICE HAVING GROUPS OF PADS WHICH RECEIVE THE SAME SIGNAL

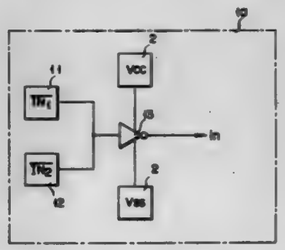
Tohru Furuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 64,368, May 21, 1993, abandoned, which is a continuation of Ser. No. 691,420, Apr. 25, 1991, abandoned. This application May 24, 1994, Ser. No. 248,536

Claims priority, application Japan, Apr. 25, 1990, 2-107542

Int. Cl.[6] H01L *27/02*

U.S. Cl. 257—48 **24 Claims**



1. A semiconductor device comprising:

a first bonding pad which receives a signal during a test of said device;

a second bonding pad which is used during the assembly process of said device, said first and second bonding pads comprising a first group of pads;

an input buffer circuit having an input coupled to said first and second bonding pads and an output coupled to a remaining portion of said semiconductor device;

a bonding pad serving as a power supply terminal;

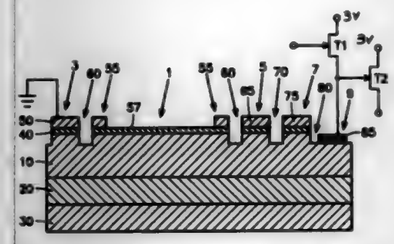
first and second n-channel enhancement type MOS transistors each having gates which are connected to said first and second bonding pads respectively, having sources which are connected to a ground potential, and having drains which are connected to said input of said input buffer circuit; and

first and second resistors each having a high resistance and connected between said first and second bonding pads respectively and the ground potential.

5,386,128
MONOLITHIC IN-BASED III-V COMPOUND SEMICONDUCTOR FOCAL PLANE ARRAY CELL WITH SINGLE STAGE CCD OUTPUT

Eric R. Fossum, La Crescenta; Thomas J. Cunningham, Pasadena; Timothy N. Krabach, Valencia, and Craig O. Staller, Tujunga, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 21, 1994, Ser. No. 186,185
Int. Cl.[6] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—183.1 **19 Claims**

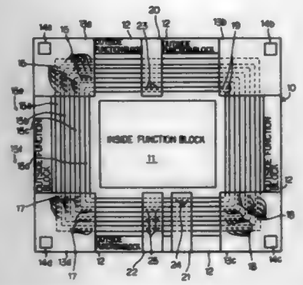


1. A monolithic semiconductor imager comprising:
a monolithic active layer comprising an indium-based III-V compound semiconductor of a first conductivity type;
an array of focal plane cells on said active layer, each of said focal plane cells comprising:
(a) a photogate over a top surface of said active layer;
(b) a readout circuit dedicated to said focal plane cell comprising plural transistors formed monolithically with said monolithic active layer; and
(c) a single-stage charge coupled device formed monolithically with said active layer between said photogate and said readout circuit for transferring photo-generated charge accumulated beneath said photogate during an integration period to said readout circuit.

5,386,129
POWER SUPPLY SYSTEM OF SEMICONDUCTOR CHIP FOR OPTIMIZING IMPEDANCES OF POWER SUPPLY SUB-SYSTEMS ASSOCIATED WITH OUTSIDE AND INSIDE FUNCTION BLOCKS

Yuuji Koizumi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,528
Claims priority, application Japan, Sep. 13, 1991, 3-235058
Int. Cl.[6] H01L *27/02, 27/10, 27/15*
U.S. Cl. 257—207 **8 Claims**

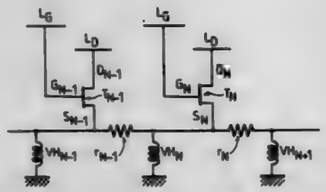


1. A power supply system incorporated in a semiconductor integrated circuit having an outside function block and an inside function block and fabricated on a semiconductor chip, comprising:
a) a plurality of wiring loops arbitrary broken down into an outer wiring loop group and an inner wiring loop group for appropriately distributing external electric power to said outside function block and said inside function block, said outer wiring loop group being isolated from said inner wiring loop group;
b) conductive corner blocks associated with said plurality of wiring loops and selectively connected with said outer wiring loop group and said inner wiring loop group, said external electric power being supplied through said conductive corner blocks to said outer wiring loop group and said inner wiring loop group; and
c) a plurality of conductive blocks associated with said plurality of wiring loops and selectively connected between said outer wiring loop group and said outside function block and between said inner wiring loop group and said inside function block.

5,386,130
SEMICONDUCTOR DEVICE COMPRISING A BROADBAND AND HIGH-GAIN MONOLITHIC INTEGRATED CIRCUIT FOR A DISTRIBUTED AMPLIFIER

Patrice Gamand, Yerres, and Christian Caux, La Garenne Colombes, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1993, Ser. No. 146,765
Claims priority, application France, Nov. 4, 1992, 92 13242
Int. Cl.[6] H01L *29/80*
U.S. Cl. 257—275 **11 Claims**



1. A semiconductor device comprising a distributed-type monolithic integrated circuit disposed on a substrate for operating at frequencies lying within at least one of a high frequency band and a microwave-frequency band, said circuit including a plurality of coupled stages each having a transistor including first and second electrodes, each said first electrode being AC-coupled to ground through first and second branches, said first branch being directly electrically connected to a first ground stub and said second branch being electrically connected to a second ground stub through a resistor.

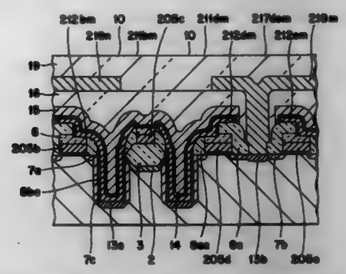
5,386,131
SEMICONDUCTOR MEMORY DEVICE

Natsuki Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,241
Claims priority, application Japan, Sep. 13, 1991, 3-262839
Int. Cl.[6] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—301 **3 Claims**

1. A semiconductor memory device including a plurality of memory cells formed in a semiconductor substrate of a first conductivity type, each of said memory cells comprising a transistor and a capacitor connected to said transistor; said transistor including first and second regions of a second conductivity type selectively formed in said semiconductor substrate to define a channel region of said transistor therebetween, said second conductivity type being opposite to said first conductivity type; said capacitor including a trench selectively formed in said semiconductor, said trench having a side surface and a bottom surface, a third region of said second

conductivity type formed in said semiconductor substrate along said side and bottom surfaces of said trench in contact with said first region of said transistor, an insulating film formed on said side and bottom surfaces of said trench, a hole formed in a part of said insulating film to expose a part of said third region, a first conductive layer formed in contact with

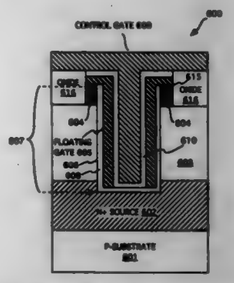


said part of said third region through said hole and extended over said insulating film, said third region and said first conductive layer serving as a first electrode of said capacitor, a dielectric film formed on said first conductive layer, and a second conductive layer formed on said dielectric film and serving as a second electrode of said capacitor.

5,386,132
MULTIMEDIA STORAGE SYSTEM WITH HIGHLY COMPACT MEMORY DEVICE

Chun C. D. Wong, 4260 Newberry Ct., Palo Alto, Calif. 94306

Filed Nov. 2, 1992, Ser. No. 970,728
Int. Cl.[6] H01L *29/06, 29/68*
U.S. Cl. 257—316 **39 Claims**

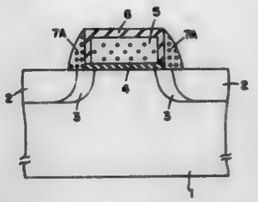


1. A vertical memory cell formed in a trench in a substrate, said vertical memory cell comprising:
a buried source region;
a drain region;
a channel region formed between said buried source region and said drain region;
a floating gate positioned in operative relation to said buried source region, said drain region and said channel region; and
a control gate insulated from said floating gate,
wherein said floating gate includes a first segment positioned vertically in said trench and a second segment positioned horizontally, said first segment being spaced from said drain region by a first distance and said second segment being spaced from said drain region by a second distance less than said first distance.

5,386,133
LDD FET WITH POLYSILICON SIDEWALLS

Akira Hiroki, Osaka; Shinji Odanaka, Hirakata, and Kazumi Kurimoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 830,365, Jan. 31, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 225,098
Claims priority, application Japan, Feb. 5, 1991, 3-014570
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—344 **2 Claims**

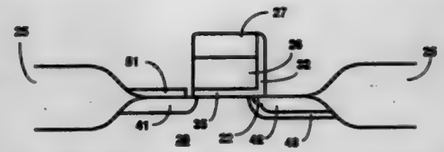


1. A MOS semiconductor device comprising:
a semiconductor substrate of a first conductivity type and having a main surface;
two high concentration source-drain diffusion regions of a second conductivity type formed on the main surface of the semiconductor substrate, each one of said two high concentration source-drain diffusion regions having a side;
two low concentration diffusion regions of the second conductivity type contacting the main surface of the semiconductor substrate between the source-drain diffusion regions, each one of said two low concentration diffusion regions contacting the side of a respective one of the source-drain diffusion regions;
a gate insulating film formed on the main surface between the two low concentration diffusion regions;
a gate electrode formed on the gate insulating film, the gate electrode having two sides;
a thin insulating film formed on the sides of the gate electrode; and
two sidewall regions of the second conductivity type formed on the respective sides of the gate electrode above and directly in contact with the low concentration diffusion regions and free of any other material between the two sidewall regions and the low concentration diffusion regions.

5,386,134
ASYMMETRIC ELECTRO-STATIC DISCHARGE TRANSISTORS FOR INCREASED ELECTRO-STATIC DISCHARGE HARDNESS

Tiao-Yuan Huang, Cupertino, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Nov. 23, 1993, Ser. No. 156,156
Int. Cl.[6] H01L *29/06, 29/78*
U.S. Cl. 257—360 **15 Claims**



1. A buffer transistor constructed as part of an integrated circuit, the transistor comprising:
a substrate;
a gate region on the substrate, the gate region including a polysilicon gate region placed over a dielectric layer;

a drain region within the substrate, the drain region including

a first drain region implanted with atoms of a first conductivity type at a first concentration, the first drain region extending under the gate region, and

a second drain region adjacent to the first drain region and larger in area than the first drain region, the second drain region being implanted with atoms of the first conductivity type at a second concentration, the second concentration being greater than the first concentration; and,

a source region within the substrate, the source region extending under the gate region, wherein the source region and the drain region are asymmetric in that the entire source region is uniformly implanted with atoms of the first conductivity type at the second concentration.

5,386,135

SEMICONDUCTOR CMOS MEMORY DEVICE WITH SEPARATELY BIASED WELLS

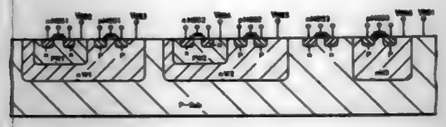
Shiaji Nakazato; Hideaki Uchida; Yoshikazu Saito; Masahiro Yamamura, all of Takasaki; Yutaka Kobayashi, Katsuta; Takahide Ikeda, Tokorozawa; Ryoichi Hori; Goro Kitsukawa, both of Hinode; Kiyoo Itoh, Higashikurume, all of Japan; Nobuo Tanba, Palo Alto, Calif.; Takao Watanabe, New Haven, Conn.; Katsuhiro Shimohigashi, Musashimurayama, and Noriyuki Homma, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 769,680, Oct. 2, 1991, Pat. No. 5,324,982, which is a continuation of Ser. No. 645,351, Jan. 23, 1991, Pat. No. 5,148,255, which is a continuation of Ser. No. 262,030, Oct. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 899,405, Aug. 22, 1986, abandoned, Ser. No. 87,256, Jul. 13, 1987, abandoned, and Ser. No. 29,681, Mar. 24, 1987, abandoned. This application Apr. 12, 1994, Ser. No. 229,340

Claims priority, application Japan, Sep. 25, 1985, 60-209971; Nov. 20, 1985, 60-258506; Mar. 24, 1986, 61-64055; Mar. 26, 1986, 61-65696; Aug. 1, 1986, 61-179913

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—369 **12 Claims**



1. A semiconductor integrated circuit device comprising:

(1) a substrate having a main surface;

(2) a first semiconductor region of a first conductivity type formed in a first portion of said main surface of said substrate, a first voltage being provided to said first semiconductor region;

(3) a second semiconductor region of said first conductivity type formed in a second portion of said main surface of said substrate, said second portion being different from said first portion, a second voltage being provided to said second semiconductor region;

(4) a third semiconductor region of a second conductivity type formed in a third portion in a main surface of said substrate and within said first semiconductor region, said second conductivity type being different from said first conductivity type, a third voltage being provided to said third semiconductor region;

(5) a fourth semiconductor region of said second conductivity type formed in a fourth portion of said main surface of said substrate, said fourth portion being different from said first and second portions, a fourth voltage being provided to said fourth semiconductor region;

(6) a first MISFET of a second conductivity type channel formed in said first semiconductor region;

(7) a second MISFET of a second conductivity type channel formed in said second semiconductor region;

(8) a third MISFET of a first conductivity type channel formed in said third semiconductor region; and

(9) a fourth MISFET of said first conductivity type channel formed in said fourth semiconductor region;

wherein said first and second voltages are different from each other, and wherein said third and fourth voltages are different from each other.

5,386,136

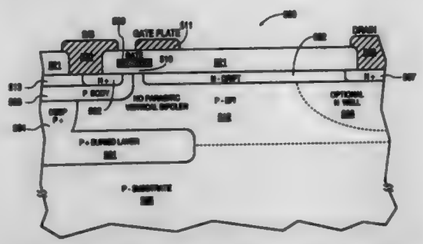
LIGHTLY-DOPED DRAIN MOSFET WITH IMPROVED BREAKDOWN CHARACTERISTICS

Richard K. Williams, Cupertino, and Michael E. Cornell, Campbell, both of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Filed May 6, 1991, Ser. No. 697,356

Int. Cl.[6] H01L *29/76, 29/94, 29/88*

U.S. Cl. 257—409 **18 Claims**



1. A lateral DMOS transistor structure, comprising:

an epitaxial layer of a first conductivity formed on a surface of a substrate of said first conductivity;

a source region formed in said epitaxial layer, said source region having a conductivity opposite said first conductivity;

a body region of said first conductivity formed in said epitaxial layer adjacent said source region having a portion of said body region exposed on a surface of said epitaxial layer away from said surface of said substrate;

a drift region of said second conductivity formed in said epitaxial layer and spaced from said source and said body regions by an exposed portion of said epitaxial layer on the surface of said epitaxial layer away from said surface of said substrate, such that said exposed portion of said body region and said exposed portion of said epitaxial layer form a channel region between said source region and said drift region;

a drain region of said second conductivity formed in said epitaxial layer adjacent said drift region away from said channel region;

a gate region formed above said channel region; and

a buried layer of said first conductivity having a dopant concentration substantially higher than the dopant concentration of said substrate, and having a portion located underneath the interface between said channel and said drift regions.

5,386,137

ELECTRO-OPTIC DEVICE

John M. Dell, Blackurn South, Australia, and Gideon W. Yoffe, Eindhoven, Netherlands, assignors to Australian & Overseas Telecommunications Corp. Ltd., Melbourne, Australia

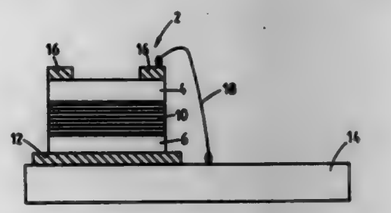
PCT No. PCT/AU91/00147, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO91/16729, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 19, 1991, Ser. No. 941,429

Claims priority, application Australia, Apr. 20, 1990, 9739/90

Int. Cl.[6] H01L *27/14, 31/00*

U.S. Cl. 257—458 **20 Claims**



1. An electro-optic device having:

a first part including an opto-electronic hereto-structure fabricated using opto-electronic technology based on group III-V compounds; and

a second part fabricated separately from said first part using integrated circuit technology based on a semiconductor selected from the group consisting of group IV elements and group III-V compounds, said second part including a reflective pad;

said first part being bonded onto said reflective pad such that the pad completely covers the opto-electronic heterostructure to form said device.

5,386,138

SEMICONDUCTOR DEVICE WITH DIODES CONNECTED IN SERIES

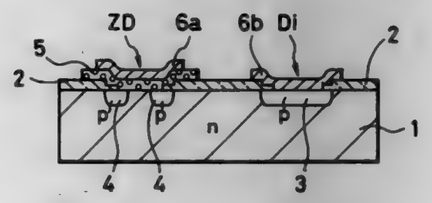
Isao Yoshino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 3, 1994, Ser. No. 253,865

Claims priority, application Japan, Jun. 10, 1993, 5-165239

Int. Cl.[6] H01L *29/90*

U.S. Cl. 257—551 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

an insulator film covering a main surface of said substrate, said insulator film having a first window and a second window;

a first patterned conductive film of a second conductivity type, said first conductive film being in contact with said main surface of said substrate through said first window of said insulator film;

said first conductive film and said substrate forming a p-n junction of a first diode at their interface;

a second patterned conductive film acting as one of electrodes of said semiconductor device, said second conductive film being formed on said first conductive film;

a first conductive region of said second conductivity type, said first conductive region being formed in a surface area of said substrate adjacent to said main surface;

said first conductive region and said substrate forming a p-n junction of a second diode at their interface; and

a third patterned conductive film acting as the other of said electrodes of said semiconductor device, said third conductive film being in contact with said first conductive region through said second window of said insulator film;

wherein said first diode and said second diode are connected in series through said substrate.

5,386,139

SEMICONDUCTOR LIGHT EMITTING ELEMENT WITH IMPROVED STRUCTURE OF GROOVE THEREIN

Yasuo Idei, Tama, and Toshio Shimizu, Zama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Apr. 15, 1993, Ser. No. 46,973

Claims priority, application Japan, Apr. 16, 1992, 4-096400

Int. Cl.[6] H01L *27/14, 31/00, 33/00*; H01S *3/19*

U.S. Cl. 257—466 **6 Claims**



1. A semiconductor light emitting element comprising a GaAlAs current restriction layer disposed over a GaAs semiconductor substrate and having conductive regions provided therein and a p-n junction, including a light emitting region, disposed over the current restriction layer, the light emitting element further comprising:

a plurality of grooves extending in substantially perpendicular relation to the p-n junction from openings in a surface of the light emitting element through the light emitting region to form a plurality of light emitting diodes in electrically isolated interrelation; and

opposed end faces of the light emitting region exposed at opposed sidewalls of each of the grooves, the opposed end faces of the light emitting region having an angular relationship with the p-n junction such that leakage light is emitted by the opposed end faces into the grooves, the opposed end faces of the light emitting region having a greater lateral spacing than a corresponding lateral dimension of the surface openings, and the opposed sidewalls having surface configurations effective to inhibit the leakage light from escaping the grooves through the surface openings.

5,386,140

BIPOLAR JUNCTION TRANSISTOR EXHIBITING IMPROVED BETA PUNCH-THROUGH CHARACTERISTICS

James A. Matthews, Milpitas, Calif., assignor to MicroUnity Systems Engineering, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 780,640, Oct. 23, 1991, abandoned. This application Aug. 31, 1993, Ser. No. 114,980

Int. Cl.[6] H01L *29/73, 29/70*

U.S. Cl. 257—592 **17 Claims**

1. A homojunction bipolar transistor comprising:

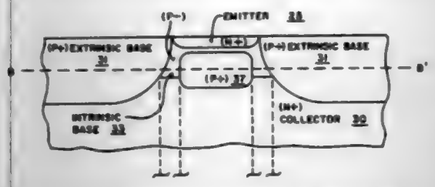
an emitter of a first conductivity type;

a collector of said first conductivity type;

a base of a second conductivity type having an extrinsic region disposed laterally about said emitter and an intrin-

sic region which vertically separates said emitter from said collector;

said intrinsic region having side areas adjacent to said extrinsic region and a central area disposed generally beneath said emitter, the lateral doping profile of said base being such that the doping concentrations in said extrinsic re-

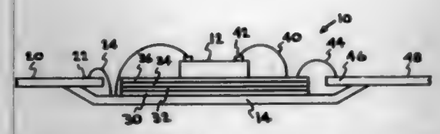


gion and said central area are relatively high compared to the doping concentration of said side areas of said intrinsic base, the dimension of said side areas between said extrinsic region and said central area being no greater than about 0.10 micron, so as to constrain the extension of depletion regions formed therein.

5,386,141
LEADFRAME HAVING ONE OR MORE POWER/GROUND PLANES WITHOUT VIAS

Louis H. Liang, Los Altos, and Tsing-Chow Wang, San Jose, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 31, 1992, Ser. No. 860,810
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—676 **18 Claims**

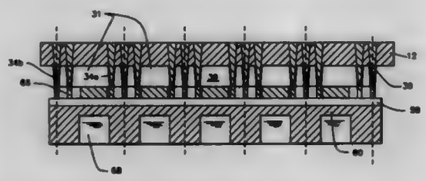


1. An integrated-circuit package arrangement for distributing power to an integrated-circuit die, comprising:
a leadframe having a plurality of inwardly extending bonding fingers and a die-attach paddle, said inwardly extending bonding fingers disposed peripherally surrounding said die-attach paddle,
a dielectric layer fixed to said die-attach paddle of said leadframe, said dielectric layer having at least one low-inductance conductive plane formed thereupon, said low-inductance conductive plane comprised of at least one electrically conductive trace, said dielectric layer comprised of a dielectric tape having upper and lower sides, said low-inductance conductive plane disposed on said upper side of said tape, and an adhesive layer disposed on said lower side of said tape, said adhesive layer attached to said die-attach paddle of said leadframe such that said adhesive layer of said dielectric tape is disposed between said die-attach paddle and said upper side of said dielectric tape,
an integrated-circuit die, having a plurality of bonding pads disposed thereon, attached to said upper side of said dielectric tape, such that said dielectric tape is disposed between said integrated-circuit die and said die-attach paddle of said leadframe, and such that at least a portion of said integrated circuit die is peripherally surrounded by said said at least one electrically conductive trace,
a first set of at least one bonding wire connected between respective at least one bonding pad on said integrated-circuit die and said low-inductance conductive plane,
a second set of at least one bonding wire connected between respective at least one inwardly extending bonding finger of said leadframe and said low-inductance conductive plane, wherein said at least one inwardly extending bonding finger of said second set is adapted to be coupled to a voltage supply for said integrated-circuit die to thereby provide said voltage to said integrated-circuit die through said low-inductance conductive plane formed on said dielectric layer.

5,386,142
SEMICONDUCTOR STRUCTURES HAVING ENVIRONMENTALLY ISOLATED ELEMENTS AND METHOD FOR MAKING THE SAME

Anthony D. Kurtz, Teaneck, N.J.; Joseph S. Shor, Flushing, N.Y., and Alexander A. Ned, Bloomingdale, N.J., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.

Filed May 7, 1993, Ser. No. 58,016
Int. Cl.[6] H01L *23/16*
U.S. Cl. 257—690 **21 Claims**

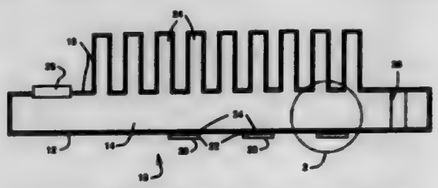


1. A semiconductor structure comprising:
a first semiconductor wafer having a semiconductor element located on a surface thereof;
a second wafer coupled to said first wafer, said second wafer having electrically isolated regions of monocrystalline semiconductor material of a given conductivity which extend between opposed surfaces thereof; and
wherein said first semiconductor wafer and said monocrystalline regions of said second wafer define cavity means for enclosing said semiconductor element.

5,386,143
HIGH PERFORMANCE SUBSTRATE, ELECTRONIC PACKAGE AND INTEGRATED CIRCUIT COOLING PROCESS

John S. Fitch, Newark, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 783,613, Oct. 25, 1991, abandoned. This application Sep. 30, 1993, Ser. No. 130,151
Int. Cl.[6] H01L *25/04*
U.S. Cl. 257—715 **23 Claims**

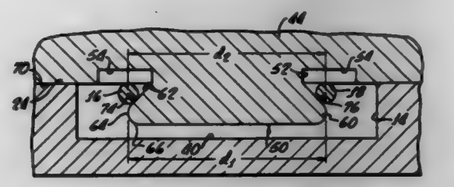


1. A substrate for an electronic package comprising:
a body of a single solid ceramic material having a heat receiving surface and a heat removal region, with the ceramic material of said body having a uniform porous structure;
a heat transfer fluid residing in said uniform porous structure of said body; and
a unitary impermeable layer forming a hermetic seal around said body to confine said heat transfer medium within said body.

5,386,144
SNAP ON HEAT SINK ATTACHMENT

Patrick Variot, San Jose; Qwai H. Low; Maniam Alagaratnam, both of Cupertino, and Teresa Dalao, Milpitas, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 18, 1993, Ser. No. 79,489
Int. Cl.[6] H01L *23/02*
U.S. Cl. 257—718 **10 Claims**

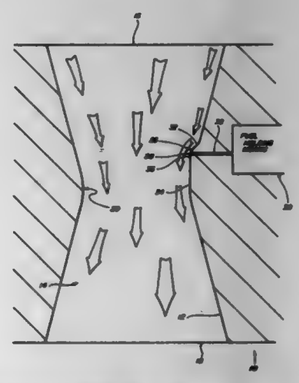


1. An electronic component assembly comprising
an electronic component package,
a heat sink having an outwardly projecting latching member, and
spring means on said electronic component package for resiliently clamping said latching member to said electronic component package, wherein
said latching member includes an outwardly sloping shoulder engaging said spring means, and
said spring means comprises a resilient rod fixed to said electronic component package and contacting said shoulder, said rod being resiliently deformed by its contact with said shoulder.

5,386,145
FUEL DELIVERY MEANS FOR CARBURETORS FOR INTERNAL COMBUSTION ENGINES AND METHOD FOR INSTALLING SAME

George A. Boswell, 23 N. 9th St., East Alton, Ill. 62095

Filed May 14, 1993, Ser. No. 62,054
Int. Cl.[6] F02M *19/03*
U.S. Cl. 261—41.1 **25 Claims**

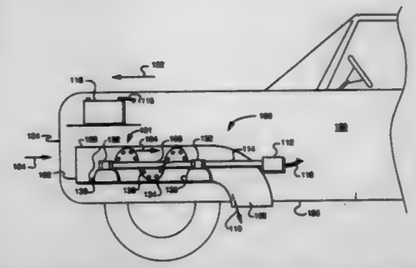


1. A carburetor comprising chamber means for receiving and holding fuel, a side wall forming a passageway for the flow of air therethrough, the air flow passageway including inlet and outlet openings and a constricted portion therebetween, an air flow surface disposed in said passageway adjacent a portion of said side wall intermediate said inlet opening and said constricted portion such that a stream of air flowing through said passageway over the adjacent side wall portion also flows over said air flow surface, the air stream flowing over said air flow surface having a free stream velocity at some location spaced from said air flow surface, said air flow surface providing for air flow velocity over a region thereof greater than said free stream velocity, said air flow surface having a substantially flat cross-sectional shape transverse to the direction of air flow through said passageway, an orifice located in the vicinity of the greater velocity region of said air flow surface, said orifice communicating with said passageway and means for communicating said orifice with said chamber means.

5,386,146
IN-LINE AUGER DRIVEN CHARGING SYSTEM

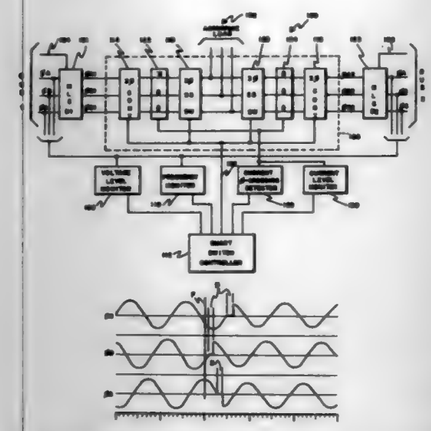
John J. Hickey, 27 Bowdoin St., Apt. 4A, Boston, Mass. 02114

Continuation-in-part of Ser. No. 52,123, Apr. 22, 1993. This application May 2, 1994, Ser. No. 236,993
Int. Cl.[6] B60K *8/00*; F03D *9/00*; F03B *11/00*
U.S. Cl. 290—55 **9 Claims**



1. An in-line auger driven charging system for charging a battery in a moving vehicle, comprising:
a fluid medium flow inlet, disposed proximate a front surface of said moving vehicle, for receiving a flow of a fluid medium and for directing said flow though a fluid medium directing tube;
an auger driven electrical generator, coupled to said battery in said moving vehicle, said auger driven electrical generator including an auger shaped, fluid medium engaging member, said auger shaped, fluid medium engaging member disposed within said fluid medium directing tube and coupled to said electrical generator, said electrical generator adapted for providing a source of electrical energy to said battery,
said auger shaped, fluid medium engaging member including a helically shaped outer region disposed about a longitudinal axis which passes through a central region of said auger shaped, fluid medium engaging member, said helically shaped outer region establishing at least one helically shaped, fluid medium engaging surface, said at least one helically shaped, fluid medium engaging surface including a plurality of surface deviations arranged in a plurality of deviation sets, for enhancing rotational movement of said auger shaped, fluid medium engaging member effected by said flow of fluid medium, said auger shaped, fluid medium engaging member adapted for rotational movement about said longitudinal axis, said flow of a fluid medium effecting said rotational movement of said auger shaped, fluid medium engaging member and said electrical generator upon striking said at least one helically shaped, fluid medium engaging surface; and
a fluid medium flow outlet, disposed proximate a bottom surface of said moving vehicle for discharging said flow of a fluid medium from said fluid medium directing tube.

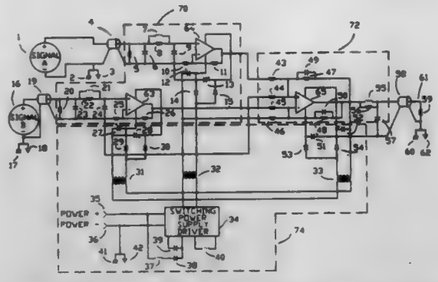
5,386,147
AEROSPACE POWER CONTROL SYSTEM FOR MONITORING AND RELIABLY TRANSFERRING POWER BUSES
Victor B. Bouneou, Yellow Springs; Gary M. Kuzkin, Oakwood; Robert G. Wagoner, Troy, and John A. Overman, Huber Heights, all of Ohio, assignors to Leland Electrosystems Inc., Vandalia, Ohio
Continuation of Ser. No. 678,650, Apr. 1, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 184,774
Int. Cl.[6] H02J *3/06, 9/06*
U.S. Cl. 307—64 20 Claims



15. A method of controlling the connection of an aerospace load to one of at least a first ac power bus having at least two phases and a second ac power bus having a like number of phases in response to fault conditions of said load and said at least first and second ac power buses with substantially no power interruption, said method comprising the steps of:
monitoring the voltage level of all phases of ac power on said at least first and second ac power buses;
monitoring the frequency of all phases of ac power on said at least first and second ac power buses;
detecting zero-crossing points of all phases of ac current drawn by said load; and
breaking the connection of said load from a currently connected one of said at least first and second ac power buses before making a connection to another one of said at least first and second ac power buses at a first zero-crossing point of each phase of ac current drawn by said load after detection of a fault in the voltage level or frequency of ac power provided by said currently connected one of said at least first and second ac power buses.

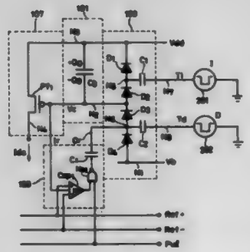
5,386,148
SIGNAL CONDITIONING APPARATUS
David Fiori, Jr., P.O. Box 266, Yardley, Pa. 19067
Filed May 8, 1992, Ser. No. 879,941
Int. Cl.[6] H04B *3/28*
U.S. Cl. 307—89 20 Claims

1. A signal conditioning apparatus, which comprises:
an input portion configured to receive an electrical signal from a single conductor and a corresponding reference signal from a single conductor and for generating an intermediate electrical signal proportional to the potential difference between said received electrical signal and said reference signal; and
an output portion operatively connected to said input portion to receive said intermediate electrical signal and said reference signal, and having means for generating a destination signal and providing a corresponding destination reference signal such that said destination signal is the resultant of said intermediate electrical signal minus said



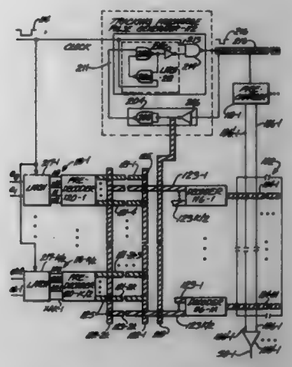
received reference signal plus said destination reference signal, said output portion having an output connection to facilitate transmission of said destination signal.

5,386,149
DATA SYNAPSE EXPRESSING UNIT CAPABLE OF REFRESHING STORED SYNAPSE LOAD
Yutaka Arima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 961,288
Claims priority, application Japan, Oct. 22, 1991, 3-273789
Int. Cl.[6] H03K *19/08*
U.S. Cl. 395—24 14 Claims



1. A synapse expressing unit for electronically expressing a synapse for coupling neurons through a predetermined coupling strength in a neural network, comprising:
synapse load storage means for storing synapse load value information representative of the coupling strength, said synapse load storage means including capacitance means for storing the synapse load value information in a form of electronic charges, and said capacitance means including a first electrode for providing the synapse load value; and
refreshing means responsive to a refresh instruction, for refreshing the synapse load value information in said synapse load storage means, said refreshing means including
comparison means for comparing a potential at said first electrode of said capacitance means and a first reference potential, and
adjusting means responsive to said comparison means for recovering the electric charges in said capacitance means at said first electrode through a charge pumping operation.

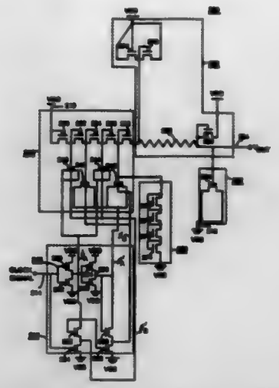
5,386,150
TRACKING PULSE GENERATOR AND RAM WITH TRACKING PRECHARGE PULSE GENERATOR
Ryuji Yonemoto, San Jose, Calif., assignor to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 20, 1991, Ser. No. 795,103
Int. Cl.[6] H03K *5/13;* G11C *8/00*
U.S. Cl. 327—141 9 Claims



1. A memory on a common integrated circuit chip comprising:
a plurality of memory cells;
a tracking pulse generator for applying and removing a precharge signal to the memory cells; and
at least one decoder responsive to an initiating condition for applying a selection signal to the memory cells for thereby selecting memory cells for an operation, the at least one decoder being characterized in that it comprises a time delay characteristic between the time of the initiating condition and the time of the selection signal that may vary,
the tracking pulse generator comprising a mimicking circuit responsive to the receipt of a synchronizing pulse for removing the precharge signal to the memory cells, the mimicking circuit being characterized for providing a time delay characteristic between the time of the occurrence of the synchronizing pulse and the time of the removal of the precharge signal which mimics the variation in time delay characteristic of the at least one decoder so that the removal of the precharge signal and the application of the selection signal will occur substantially coincidentally,
a loading line on the integrated circuit chip coupled to the at least one decoder, and
a load line on the same integrated circuit chip coupled to the mimicking circuit for loading the mimicking circuit substantially the same as the loading on the at least one decoder.

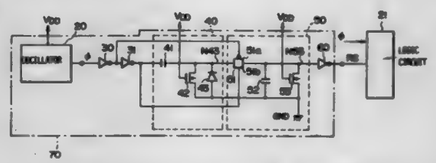
5,386,151
LOW VOLTAGE CHARGE PUMPS USING P-WELL DRIVEN MOS CAPACITORS
Alan C. Folmsbee, Santa Clara, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Aug. 11, 1993, Ser. No. 105,825
Int. Cl.[6] H03K *3/01, 19/01*
U.S. Cl. 327—536 14 Claims

1. A low voltage charge pump for receiving a clock signal, a first supply voltage and a second supply voltage, comprising:
voltage generating means for receiving the first supply voltage and for generating an output voltage which is at a first predetermined voltage above the first supply voltage, the voltage generating means including a plurality of MOS devices, each MOS device being coupled as capacitor, each of the capacitor including a p-well, each p-well receiving one of a plurality of timing signals and acting as a plate of the respective capacitor; and



timing signals means for receiving the clock signal and the second supply voltage and for providing the plurality of timing signals to the voltage generating means.

5,386,152
POWER-ON RESET CIRCUIT RESPONSIVE TO A CLOCK SIGNAL
Toshinari Naraki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Mar. 17, 1993, Ser. No. 32,298
Claims priority, application Japan, Mar. 18, 1992, 4-062301
Int. Cl.[6] H03K *17/22*
U.S. Cl. 327—143 13 Claims



1. A power-on reset circuit operably coupled between an oscillator and a logic circuit for generating a reset signal comprising:
(a) a first inverter connected to the oscillator for inverting a clock signal from the oscillator;
(b) a second inverter connected in series with the first inverter, said second inverter re-inverting the clock signal inverted by said first inverter to provide a re-inverted clock signal;
(c) a differentiator circuit connected to the second inverter for differentiating the re-inverted clock signal from the second inverter;
(d) a sample-hold circuit connected to the differentiator circuit for sampling and holding an output from the differentiator circuit, the sample-hold circuit having an analog switch which comprises an NMOS transistor and a PMOS transistor connected to an output node of the differentiator circuit, the PMOS transistor having a gate which is connected to the output of the first inverter and the NMOS transistor having a gate which is connected to the output of the second inverter; and
(e) a reset signal generating circuit having a predetermined

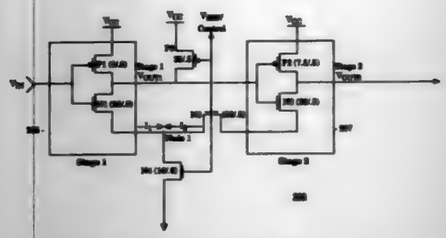
threshold voltage connected between the sample-hold circuit and the logic circuit for generating the reset signal until an electric potential at an output of the sample-hold circuit exceeds the threshold voltage of said reset signal generating circuit.

5,386,153

BUFFER WITH PSEUDO-GROUND HYSTERESIS

Peter H. Voss, Watsonville, and Shahryar Aryani, Santa Clara, both of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Sep. 23, 1993, Ser. No. 126,065
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—34 **15 Claims**



1. A buffer with hysteresis comprising:
a first stage switching element comprising a first DC voltage trip point;
a second stage switching element comprising a second DC voltage trip point, said second stage switching element being coupled to said first stage switching element such that transition of said first stage switching element results in subsequent transition of said second switching element; and
voltage generation means coupled to a ground path of said first and second stage switching elements for generating a voltage for hysteresis, said voltage generation means generating a first voltage at said ground path as an input voltage, applied to said first stage switching element, transitions from a first logic state to a second logic state, and generating a second voltage at said ground path when said input voltage transitions from said second logic state to said first logic state, wherein said first stage switching element transitions when said input voltage transitions from said first logic state to said first DC voltage trip point, and said first stage switching element transitions when said input voltage transitions from said second logic state to a voltage level being offset from said first DC voltage trip point in accordance with a difference between said second voltage and said first voltage.

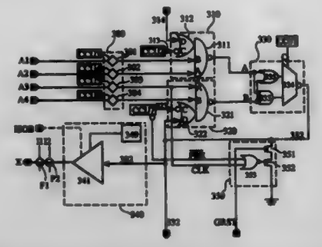
5,386,154

COMPACT LOGIC CELL FOR FIELD PROGRAMMABLE GATE ARRAY CHIP

F. Erich Goetting, Cupertino, Calif.; David B. Parlour, Pittsburgh, Pa., and Stephen M. Trimberger, San Jose, Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Jul. 23, 1992, Ser. No. 919,352
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—44 **8 Claims**

1. A programmable logic structure comprising:
an interconnect structure comprising a plurality of interconnect lines;
a plurality of logic cells, each logic cell comprising:
at least three optional inverters, each of which has an optional inverter input terminal;
means for connecting each of said optional inverter input terminals to one of said interconnect lines to receive an input signal from said interconnect structure, each optional inverter providing as an optional inverter output signal one of said input signal and the complement of said input signal;
logic gates for generating two functions of said optional inverter output signals, said two functions being the



AND function and the sum-of-products function of said optional inverter output signals; and
a function selector which causes a selected one of said two functions to be provided as an output signal of said logic cell.

5,386,155

APPARATUS AND METHOD FOR SELECTING POLARITY AND OUTPUT TYPE IN A PROGRAMMABLE LOGIC DEVICE

Randy C. Steele, Folsom, and Mike Allen, Rescue, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 30, 1993, Ser. No. 39,899
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—37 **9 Claims**

1. An apparatus providing for selection of output type and polarity for a sum of product term produced by a programmable logic device, said apparatus comprising:
a register including a first output enable means, wherein said sum of product term is coupled to said register, and when enabled, said register outputs a registered sum of product term, and a complement of said registered sum of product term;
a driver including a second output enable means, wherein said sum of product term is coupled to said driver, and when enabled, said driver outputs said sum of product term;
an inverter including a third output enable means, wherein said sum of product term is coupled to said inverter, and when enabled, said inverter outputs a complement of said sum of product term; and
an output buffer for selectively outputting one of a group of four signals, said group of four signals comprising said registered sum of product term, said complement of said registered sum of product term, said sum of product term,

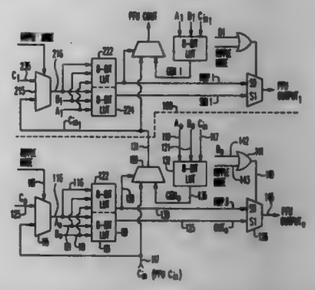
and said complement of said sum of product term, said output buffer including a polarity select signal, wherein selection of said one of a group of four signals is determined by said first output enable means, said second output enable means and said third output enable means and said polarity select signal, said output buffer coupled to said register, said driver, said inverter and said polarity select signal.

5,386,156

PROGRAMMABLE FUNCTION UNIT WITH PROGRAMMABLE FAST RIPPLE LOGIC

Barry K. Britton, Schnecksville, and Wai-Bor Leung, Wescosville, both of Pa., assignors to AT&T Corp., Murray Hill, N.J.

Filed Aug. 27, 1993, Ser. No. 113,154
Int. Cl.[6] H03K *19/173*
U.S. Cl. 326—37 **10 Claims**



1. An integrated circuit comprising at least one programmable function unit block having:
a look-up table having at least three inputs, one of which is termed a carry-in signal and producing at least two outputs, one of said outputs being termed a propagate signal; and one of said outputs being termed an output signal;
programmable means for generating a function of at least a subset of said inputs to said look-up table, said means producing an output termed a generate signal;
a multiplexer, operating under the control of said propagate signal, said multiplexer having at least two inputs, one of said inputs being said generate signal and one of said inputs being said carry-in signal and said multiplexer producing at least one output signal termed the carry-out signal.

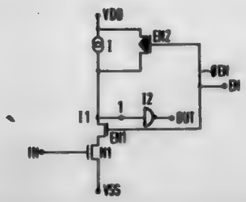
5,386,157

MOS OUTPUT BUFFER CIRCUIT WITH CONTROLLED CURRENT SOURCE

Brian Murphy, Brombach, and Martin Zibert, Heufeld, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 17, 1993, Ser. No. 123,648
Claims priority, application European Pat. Off., Sep. 18, 1992, 92116034
Int. Cl.[6] H03K *19/0175, 19/017*
U.S. Cl. 326—33 **23 Claims**

1. An integrated buffer circuit, comprising:
a first inverter having an input for receiving an input signal, and at least one constant current source; said first inverter including said at least one constant current source and a transistor connected in series with said at least one constant current source;
a second inverter connected in cascade with said first inverter, said second inverter having an output issuing an output signal of the buffer circuit, and a circuit node connected between said first and second inverters;
said transistor having a gate forming said input of said first inverter;
said transistor having a source connected to a first supply potential;
said transistor having a drain; and means for connecting said drain to said constant current source, said connecting means being in the form of a current-carrying path of a first enable transistor electrically connected between said transistor of said first inverter and said circuit node;



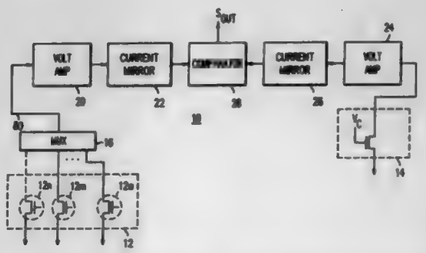
a second enable transistor having a gate and a current-carrying path connected in parallel to said constant current source; and
an enable input of the buffer circuit, said gates of said first and second enable transistors being connected to said enable input.

5,386,158

SENSING CIRCUIT FOR A FLOATING GATE MEMORY DEVICE

Ping Wang, Saratoga, Calif., assignor to Silicon Storage Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 33,978, Mar. 19, 1993, abandoned, which is a continuation of Ser. No. 851,477, Mar. 13, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 149,152
Int. Cl.[6] G11C *7/00*; H03K *3/01*
U.S. Cl. 327—51 **6 Claims**



1. A sensing circuit for sensing the binary state of a first floating gate memory device having two states, comprising
a first line coupled to said first memory device;
a voltage amplifier means coupled to said first line comprising:
a first transistor having a source, a drain, and a gate; said source connected to a first voltage source, and said gate connected to a second voltage source;
a control transistor having a source, a gate, and a drain, with the drain connected to the gate, and to the drain of the first transistor, and providing a first output voltage said first output voltage being a first voltage in response to said first memory device being in one binary state, and being a second voltage in response to said first memory device being in another binary state;
a second transistor having a source, a drain and a gate, said drain connected to said source of said control transistor, said gate connected to said first line, and said source connected to a third voltage source;
a first current amplifier means for receiving said first output voltage and for generating a first output current in re-

sponse thereto said first output current being a first current in response to said first output voltage being a first voltage, and being a second current in response to said first output voltage being a second voltage;

a second floating gate memory device substantially identical to said first device;

a second line coupled to said second device;

a second voltage amplifier means coupled to said second line for generating a second output voltage, said second output voltage being between said first voltage and said second voltage;

a second current amplifier means for receiving said second output voltage and for generating a second output current in response thereto said second output current having an amount between said first current and said second current; and

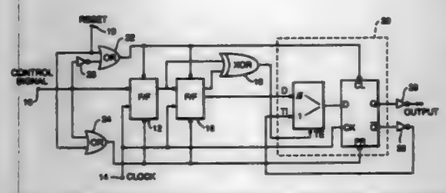
means for receiving said first and second output currents for comparing said first and second output currents for determining the greater of said first and second output currents to sense the binary state of said first memory device, wherein in the event said first output current is greater, said first memory device is in one state, and in the event said second output current is greater, said first memory device is in another state.

5,386,159

GLITCH SUPPRESSOR CIRCUIT AND METHOD

Jean L. Dupré, Boisbriand, Canada, assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 30, 1993, Ser. No. 83,517
Int. Cl.[6] H03K *5/05*
U.S. Cl. 327—310 **6 Claims**



1. In a glitch suppression circuit containing plural bistable devices which receives a binary control signal over two or more clock cycles and which does not change the state of a binary output signal unless the control signal remains at the same state for two or more clock cycles, a selective bypass comprising means operatively connected to the bistable devices for selectively propagating said control signal through the glitch suppression circuit during a single clock cycle.

5,386,160

TRIM CORRECTION CIRCUIT WITH TEMPERATURE COEFFICIENT COMPENSATION

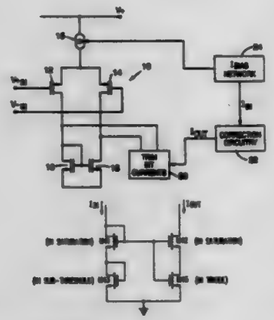
Donald M. Archer, Sunnyvale, and Jung S. Hoei, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 794,960, Nov. 20, 1991, Pat. No. 5,200,654. This application Apr. 2, 1993, Ser. No. 42,130
Int. Cl.[6] H03F *1/30*
U.S. Cl. 327—513 **7 Claims**

1. An operational amplifier bias system that provides input offset voltage trim current to an operational amplifier with minimum offset thermal drift, the bias system comprising:

a bias generator that provides bias generator current to the operational amplifier; and

correction circuitry connected to receive the bias generator current and to provide an input offset trim current to the operation amplifier that compensates for offset drift error of the input offset voltage of the operational amplifier with change in temperature, the correction circuitry including a resistive element, an input current mirror connected to receive the bias generator current and to provide a reference current to the resistive element, the resistive element responding to the reference current by providing a temperature coefficient conversion current having a predetermined temperature coefficient, and voltage reference circuitry connected to provide a voltage reference signal that sets the resistance of the resistive element.

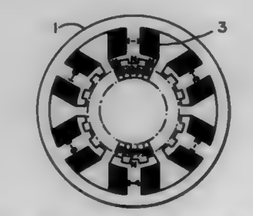


5,386,161

PERMANENT MAGNET STEPPING MOTOR

Masafumi Sakamoto, Kiryu, Japan, assignor to Japan Servo Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 52,242
Claims priority, application Japan, Apr. 20, 1992, 4-032722[U]; Apr. 15, 1993, 5-111178
Int. Cl.[6] H02K *37/14*
U.S. Cl. 310—49 R **9 Claims**



1. An inner-rotor type permanent magnet stepping motor comprising:

a rotor constituted by a cylindrical permanent magnet having an outer circumferential surface which is magnetized so as to have equivalent N and S magnetic poles arranged alternately; and

a stator disposed in opposition to said outer circumferential surface of said rotor through an air gap, said stator having equidistantly formed six salient poles and having a three-phase winding wound on said salient poles, each of said salient poles of said stator having at its inner circumferential surface at least two magnetic teeth so that said magnetic teeth of said salient poles are equal to each other in circumferential width or substantially equal in circumferential pitch to the respective N and S magnetic pole pairs of said rotor; and

the total number P of said magnetic poles of said rotor being selected so as to satisfy the following conditional equation:

$$P=12n\pm4$$

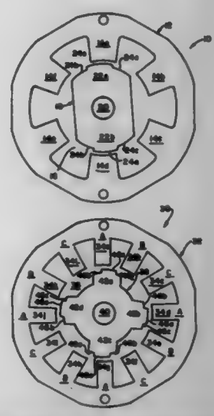
[with n being defined as a positive integer not smaller than 1

5,386,162

REDUNDANT SWITCHED RELUCTANCE MOTOR

Gary E. Horst, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 884,149, May 18, 1992, Pat. No. 5,239,217. This application Apr. 6, 1993, Ser. No. 43,294
Int. Cl.[6] H02K *5/24, 1/24*
U.S. Cl. 310—51 **20 Claims**



1. A multi-phase switched reluctance motor comprising:

a stator assembly having a number of stator poles, including redundant poles, for each motor phase; and,

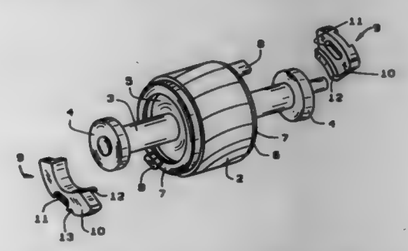
a rotor assembly mounted for rotation with respect to said stator assembly, said rotor assembly also having a number of poles for each motor phase, the motor having a stator pole/rotor pole ratio, including the redundant stator poles, which is one of the following: ((6:2)×n) where n is a positive whole integer, ((6:8)×n) where n is a positive whole integer greater than 1, and ((8:10)×n), where n is a positive whole integer, whereby the motor has quiet start-up capability and is a quietly running motor.

5,386,163

COUNTERWEIGHTED ROTOR

Raymond D. Heilman, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 7, 1993, Ser. No. 1,322
Int. Cl.[6] H02K *1/22*
U.S. Cl. 310—51 **7 Claims**



1. A counterweight for use with a counterweighted rotor in an electric motor, the rotor including a pair of end rings, at least one end ring having a coining lug integrally cast with said rotor, each end ring having an inside diameter and an outside diameter, said counterweight comprising:

a generally arcuate body portion having a first end and a second end, said body having an aperture formed along the radial edge and positioned to engage the coining lug integrally east on the rotor end ring, said body aperture being formed intermediate of said first and second ends of said body;

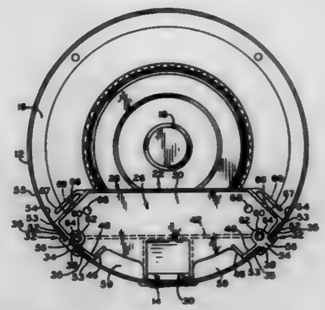
said body including an outwardly extending lip integrally formed therewith, said lip being contoured to conform to the inside diameter of said rotor end ring.

5,386,164

MOTOR ASSEMBLY WITH REMOVABLE LEAD GUARD

James A. Butcher, Fort Wayne, and Timothy W. Carey, Grabill, both of Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jan. 19, 1993, Ser. No. 6,043
Int. Cl.[6] H02K *5/22, 5/04*
U.S. Cl. 310—71 **43 Claims**



1. An electric motor assembly, comprising:

a motor housing;

a stator mounted within the motor housing;

a pair of end shields mounted adjacent opposing ends of the motor housing having bearings disposed therein for rotatably supporting a rotor adjacent the stator; and

a lead guard removably mounted within the motor housing adjacent a conductor receiving opening in the housing, said lead guard including a generally flat portion having first and second ends and first and second sides and an upstanding wall coupled to said first and second ends and said first side of said generally flat portion so that said second side is open and said generally flat portion and upstanding wall define a space within the motor housing wherein external and internal electrical conductors are connected to each other and shielded from the rotating components of the motor assembly.

5,386,165

ELECTRIC MOTOR, ESPECIALLY FOR A WINDSHIELD WIPING SYSTEM OF A MOTOR VEHICLE

Rainer Bruhn, Karlsruhe, and Bernd Walther, Bietigheim-Bissingen, both of Germany, assignors to SWF Auto-Electric GmbH, Germany

PCT No. PCT/EP92/01511, § 371 Date Mar. 18, 1993, § 102(e) Date Mar. 18, 1993, PCT Pub. No. WO93/02499, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 3, 1992, Ser. No. 30,298
Claims priority, application Germany, Jul. 18, 1991, 4123785
Int. Cl.[6] H02K *7/10*
U.S. Cl. 310—75 R **9 Claims**

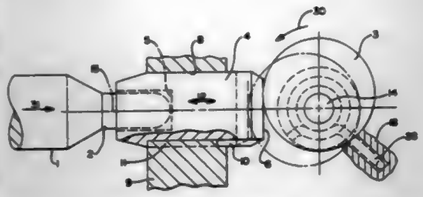
1. An electric motor, for driving at least one upper arm of a windshield wiping system of a motor vehicle, comprising:

a rotatably mounted armature spindle having a first axis of rotation and first and second ends,

a cap attached to said first end of said armature spindle,

a rotatably mounted prestressing member having a second axis of rotation generally perpendicular to said first axis of rotation, and having an eccentric surface which urges against said cap along said first axis of rotation,

a spring having first and second legs, said first leg bearing against said prestressing member and said second leg bearing against a cover associated with said motor, and



wherein said spring urges said prestressing member to rotate about said second axis of rotation thereby causing said eccentric surface of said prestressing member to bear against said cap thereby urging said spindle along said first axis of rotation.

5,386,166

MAGNETIC BEARING CELL

Peter Reimer, Hürth; Helmut Schneider, Zülpich, and Johan K. Fremerey, Bonn, all of Germany, assignors to Leybold AG, Germany

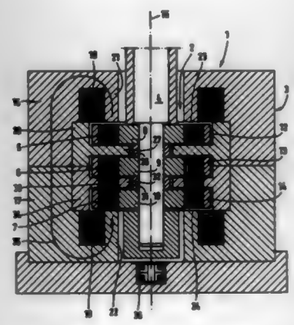
PCT No. PCT/EP92/00314, § 371 Date Oct. 28, 1993, § 102(e) Date Oct. 28, 1993, PCT Pub. No. WO92/15795, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 13, 1992, Ser. No. 108,561

Claims priority, application Germany, Feb. 27, 1991, 4106063

Int. Cl.[6] H02K *7/09*

U.S. Cl. 310—90.5 **6 Claims**



1. A magnetic bearing cell that is rotationally symmetric about a central axis, comprising:

a rotor for rotation about said central axis, said rotor having a shaft and two axially magnetized permanent ring magnets that are secured to the shaft for rotation therewith and axially separated from one another to define a first gap therebetween;

a stator having two ring coils, pole elements, and a first ring disk, said first ring disk being fabricated of a non-magnetizable material having high electrical conductivity, said first ring disk projecting into said first gap of said rotor;

structural elements of said rotor and said stator being disposed relative to one another to generate a toroidal magnetic flux that surrounds said central axis;

a further permanent ring magnet disposed between said pole elements of said stator and secured to said shaft, and separated from said two axially magnetized permanent ring magnets by a second gap;

a second ring disk secured to said stator that projects into said second gap said second ring disk carrying an axially magnetized stator permanent ring magnet that is disposed in a vicinity of said two axially magnetized permanent ring magnets.

5,386,167

PLANAR CARBON SEGMENT COMMUTATOR

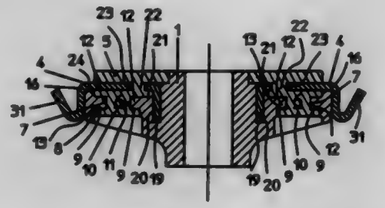
Georg Strobl, Stuttgart, Germany, assignor to Johnson Electric S.A., Switzerland

Filed Aug. 13, 1993, Ser. No. 106,087

Claims priority, application United Kingdom, Aug. 14, 1992, 9217259

Int. Cl.[6] H02K *13/04*

U.S. Cl. 310—237 **9 Claims**



1. A planar carbon segment commutator for an electric motor, the commutator comprising:

a base member of insulating material having a rotational axis, a front surface extending, at least in part, transversely to the rotational axis, and a plurality of apertures formed therein and extending rearwardly from the front surface, each aperture provided with a first part and, rearwardly of the first part, with a second part having an abutment surface laterally offset from the first part;

a plurality of circumferentially spaced contact members mounted on the front surface; and

a plurality of circumferentially spaced overmolded carbon segments, respectively formed on the contact members, each carbon segment being aligned with a respective aperture and having an integral anchor means which extends rearwardly into its respective aperture and having locking means disposed within the second part of its respective aperture and engaging an abutment surface of its respective aperture to thereby resist axial withdrawal of the anchor means from its respective aperture.

5,386,168

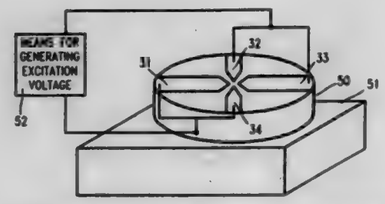
POLARIZATION-SENSITIVE SHEAR WAVE TRANSDUCER

John A. Kosinski, Wall Township, Monmouth County, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1994, Ser. No. 236,902

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—365 **17 Claims**



1. A Polarization-Sensitive Shear Wave Transducer Structure comprising:

a piezoelectric plate substrate, being a transducer, having a top surface, a bottom surface, predetermined X_1' and X_3' axes, and a substrate orientation along a shear wave degeneracy locus, said axes being at right angles to each other;

a Multiply Segmented Lateral-Field Excitation (MuSLE) electrode, having a plurality of segments disposed on said top surface of the substrate to form a body, said segments being mutually separated by a plurality of electrode gaps;

said electrode gaps being aligned along said X_1' and X_3' axes of the substrate;

means for bonding said body to a test object; and

means for generating an excitation voltage across said segments wherein a lateral-field excitation voltage along one of said preselected axes generates a correspondingly polarized acoustic shear wave.

5,386,169

DEVICE FOR CAUSING AN UNTUNED STRUCTURE TO VIBRATE ULTRASONICALLY

Dominique Dubraque, 644 chemin des Farnaises, 74380 Bonne-Sur-Menoge, France

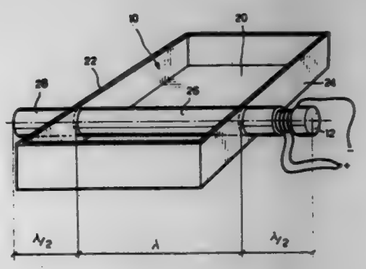
PCT No. PCT/FR92/00033, § 371 Date Jul. 19, 1993, § 102(e) Date Jul. 19, 1993, PCT Pub. No. WO92/12807, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 16, 1992, Ser. No. 90,134

Claims priority, application France, Jan. 17, 1991, 91-00496

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—323 **15 Claims**



1. Device for causing an untuned screening structure to vibrate at an ultrasonic frequency comprising at least one electro-acoustic converter adapted to vibrate in a given vibration direction and fixed rigidly to said screening structure by metal fixing members tuned to the frequency of the converter, the couplings with the structure being disposed in a region of maximum amplitude of said fixing members, the metal fixing members being disposed in said vibration direction of the converter and, said structure being untuned at said ultrasonic frequency, the whole is caused to resonate by fixing a nut or any metal assembly tuned to an integer multiple of half the wavelength.

5,386,170

HIGH-POWER RADIATOR

Ulrich Kogelschatz, Hausen, Switzerland, assignor to Heraeus Noblelight GmbH, Kleinostheim, Germany

Filed Nov. 13, 1992, Ser. No. 976,418

Claims priority, application Germany, Dec. 9, 1991, 4140497

Int. Cl.[6] H01J *7/24, 61/52*

U.S. Cl. 313—17 **11 Claims**

1. A high-power ultraviolet light radiator comprising:

a hollow cylindrical discharge chamber filled with a filling gas which emits radiation under discharge conditions, walls of said discharge chamber being formed by an internal dielectric and an external dielectric;

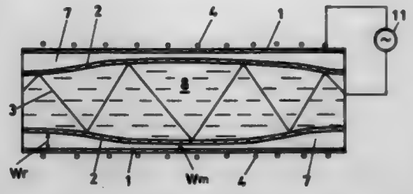
a first electrode provided on an outer surface of said external dielectric;

a second electrode provided on an inner surface of said internal dielectric such that said second electrode does not lie within said discharge chamber;

an alternating current source connected to said first and second electrodes for feeding a discharge; and

means for modifying a radiation characteristic of said high power ultraviolet light radiator in a direction along a longitudinal axis of said discharge chamber by varying a gap width thereof which locally alters an operating voltage of said discharge, or by varying an effective capacitance of said dielectrics in a direction of said longitudinal axis, and for modifying a radiation characteristic of said high power ultraviolet light radiator in a radial direction of said discharge chamber by varying said effective capacitance of said dielectrics in a direction perpendicular to said longitudinal axis, wherein said second electrode is effectively coupled to said discharge chamber via a liquid which surrounds said second electrode and has a permittivity

which is greater than a permittivity of said dielectrics by at least a factor of 10 and simultaneously serves to cool said high power ultraviolet light radiator.



5,386,171

Patent Not Issued For This Number

5,386,172

MULTIPLE ELECTRODE FIELD ELECTRON EMISSION DEVICE AND METHOD OF MANUFACTURE

Hiroshi Komatsu, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,436

Claims priority, application Japan, May 13, 1991, 3-107505; Jul. 4, 1991, 3-164636; Jul. 25, 1991, 3-186203; Aug. 7, 1991, 3-222088; Oct. 29, 1991, 3-309757; Mar. 2, 1992, 4-80380

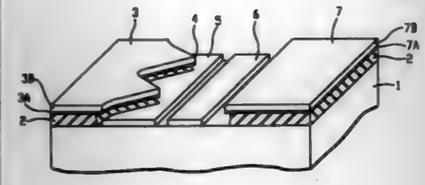
Int. Cl.[6] H01J *1/02, 1/16*

U.S. Cl. 313—309 **24 Claims**

1. A multiple electrode field electron emission device comprising:

a cathode that ejects electrons by means of an established field effect and comprising two layers of mutually different materials;

a gate electrode disposed adjacent to said cathode for applying an electric field on said cathode;



an anode disposed adjacent to said gate electrode for collecting ejected electrons, wherein said gate electrode is arranged between said anode and said cathode; and

a control electrode formed between said gate electrode and said anode for controlling the amount of said ejected electrons reaching said anode.

5,386,173

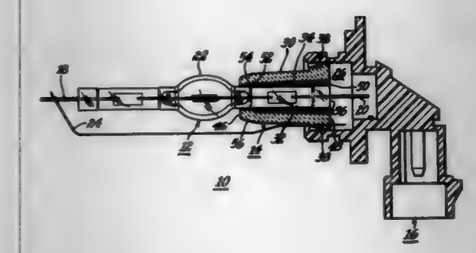
ONE-PIECE THERMALLY RESISTANT GIMBAL DEVICE FOR A REPLACEABLE HEADLAMP BULB

Walter J. Kosmatka, Highland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 28, 1992, Ser. No. 936,469

Int. Cl.[6] H01J *5/50*

U.S. Cl. 313;318 **22 Claims**



1. A lamp and mounting arrangement thereof for achieving precise alignment of the lamp comprising,

a light source;

a lamp holder wherein said light source is mounted, said lamp holder being constructed in a one-piece configuration of a high temperature resistant and insulating material;

a lamp base with an internal opening wherein said lamp holder is engaged and through which energy for energizing the light source is introduced;

wherein said lamp holder and said light source are movable within said internal opening of said lamp base during an alignment stage to achieve such precise alignment of said light source with respect to said lamp base;

means for receiving electrical energy and generating heat in a uniform manner around the periphery of a portion of said lamp holder, said portion of said lamp holder being engaged inside the internal opening of said lamp base, thereby locking said lamp holder rigidly to said lamp base; and

wherein said material of said one-piece lamp holder includes mica, such that following alignment, by introduction of electrical energy to said electrical energy receiving means, the mica material reacts to lock said lamp holder in place.

5,386,174

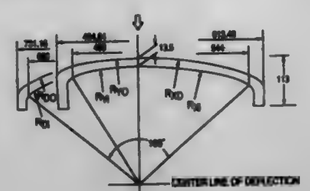
PANEL FOR COLOR CATHODE-RAY TUBE

Eiji Iahii, 1-4-307, Komone 1-chome, Itabashi-ku, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,198

Int. Cl.[6] H01J *29/86*

U.S. Cl. 313—408 **3 Claims**



1. A front panel for a color cathode-ray tube having an X-axis, a Y-axis and an internally disposed shadow mask, said front panel consisting of a transparent glass material and having an outer surface and an inner surface formed to be curved surfaces with a radius of curvature along the Y-axis of the curved surface forming the outer surface of said front panel greater than the radius of curvature along the X-axis.

5,386,175

THIN-TYPE PICTURE DISPLAY DEVICE

Gerardus G. P. Van Gorkom; Petrus H. F. Trompenaars; Siebe T. De Zwart, and Nicolaas Lambert, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 939,387, Aug. 31, 1992, abandoned, which is a continuation of Ser. No. 715,073, Jun. 13, 1991, abandoned, and a continuation-in-part of Ser. No. 830,951, Feb. 6, 1992, Pat. No. 5,313,136, which is a continuation of Ser. No. 528,677, May 24, 1990, abandoned. This application Jan. 19, 1994, Ser. No. 183,568

Claims priority, application Netherlands, Jul. 5, 1990, 9001529

Int. Cl.[6] H01J *29/70, 29/72*

U.S. Cl. 313—422 **41 Claims**

1. A picture display device comprising an evacuable envelope and including a face plate bearing a luminescent screen and means for selectively directing electrons toward the screen for producing a picture composed of pixels, said means comprising:

a. at least one electron source;

b. a plurality of adjacent, longitudinally extending transport ducts having respective walls comprising an electrically insulating material having a predetermined secondary emission coefficient, said ducts each having:

(1) an input portion in communication with the at least one electron source for receiving electrons; and

(2) means for affecting the transport of the electrons longitudinally through the duct by means of secondary emission to establish a substantially uniform electron current within a predefined length of said duct; and

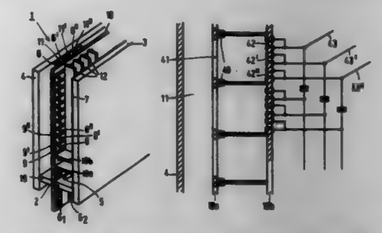
c. selection plate means including:

(1) a first plurality of apertures disposed along said predefined lengths and providing respective passageways for withdrawal of electrons from the transport ducts;

(2) first selection means for effecting the passage of electrons from the ducts through selected ones of the first plurality of apertures for transport toward the screen;

(3) a second plurality of apertures providing respective passageways to the transport ducts from the at least one electron source; and

(4) second selection means for effecting the passage of electrons from the at least one electron source through selected once of the second plurality of apertures and into the ducts.



5,386,176

CATHODE-RAY TUBE CONTAINING AN INDIUM BORATE PHOSPHOR

Miyuki Sumitomo, and Katsunori Uchimura, both of Anan, Japan, assignors to Nuchia Kagaku Kogyo K.K., Tokushima, Japan

Continuation of Ser. No. 879,066, May 1, 1992, abandoned, which is a continuation of Ser. No. 497,585, Mar. 22, 1990, abandoned. This application Sep. 27, 1993, Ser. No. 126,733

Claims priority, application Japan, Mar. 31, 1989, 1-82644

Int. Cl.[6] H01J *29/20*

U.S. Cl. 313—468 **1 Claim**

1. A cathode ray tube comprising a phosphor film which emits a green light upon excitation by an electron beam and exhibits improved current-brightness and burning characteristics, said phosphor film containing an indium borate phosphor represented by the formula:

$(In_{1-a-d}Tb_aTi_d)BO_3$

wherein,

$1\times10^{-6}\leq a\leq1\times10^{-1}$

$1\times10^{-7}\leq d\leq1\times10^{-2}$.

5,386,177

PLASMA KLYSTRON AMPLIFIER

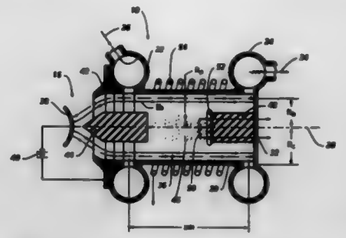
Han S. Uhm, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1993, Ser. No. 64,321

Int. Cl.[6] H01J *25/18, 25/20*

U.S. Cl. 315—5.39 **5 Claims**

5. In combination with a source of microwave energy and an electron gun from which an electron beam is emitted, a klystron amplifier having a drift tube extending between resonator cavities, the microwave energy applied from the source interacts with the election beam emitted from said electron gun at said drift tube, said klystron amplifier including means for establishing a body of plasma within the drift tube and means for propagating said electron beam through the drift tube in spaced relation to the body of plasma, wherein said body of plasma comprises ionized gas particles of predetermined density confined to a column centrally located between said resonator cavities, the beam of electrons being in radially spaced relation thereto by a predetermined distance thereby surrounding the body of plasma.



5,386,178

ELECTRON GUN FOR A COLOR CATHODE RAY TUBE

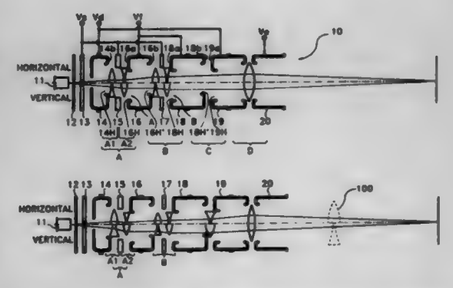
Wan-Jae Son, and Yu-Seon Kim, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 16, 1993, Ser. No. 46,809

Claims priority, application Rep. of Korea, May 19, 1992, 92-8469

Int. Cl.[6] H01J *29/46*; G09G *1/04*

U.S. Cl. 315—15 **6 Claims**



1. An electron gun for a color cathode ray tube comprising:

a triode including a cathode, a control electrode and a screen electrode;

first, second and third focus electrodes forming a first unipotential prefocus lens;

fourth and fifth focus electrodes forming a second unipotential prefocus lens together with said third focus electrode;

a sixth focus electrode forming a bipotential prefocus lens together with said fifth electrode; and

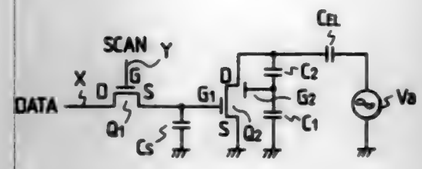
an accelerating electrode for forming a bipotential main focus lens together with said sixth focus electrode, wherein vertically-elongated electron beam passing holes are respectively formed in outgoing planes of said first, third and fifth electrodes and horizontally-elongated electron beam passing holes are respectively formed in incoming planes of said third, fifth and sixth focus electrodes, said second and fourth focus electrodes being supplied with a predetermined first static focus voltage and said third and fifth focus electrodes being supplied with a second focus voltage which is higher than the first static focus voltage, and said first and sixth focus electrodes being supplied with a dynamic focus voltage which is synchronized with a deflection signal and which includes a negative peak that is equal to said second focus voltage.

5,386,179

AC POWER DRIVEN ELECTROLUMINESCENT DEVICE

Yoshihide Sato, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 717,415, Jun. 17, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 40,569
Claims priority, application Japan, Jun. 20, 1990, 2-159693
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.3 6 Claims



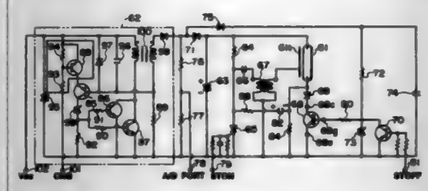
1. An electroluminescent device comprising:
an electroluminescent cell connected between an AC power supply and a first node;
first and second capacitors, said first capacitor being connected between said first node and a second node, and said second capacitor being connected to said second node; and
a switching element comprising:
first and second electrodes, said first electrode being connected to said first node;
a first gate spaced apart from said first electrode and overlapping said second electrode and forming an offset area between said .first gate and said first electrode; and
a second gate for applying an AC voltage to said offset area, said .second gate being connected to said second node.

5,386,180

STROBO APPARATUS

Yukio Nakajima, Okaya; Muneaki Yoshida, Hachioji; Hiroshi Yamada, Hachioji, and Satoshi Kawakami, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 642,239, Jan. 16, 1991, abandoned. This application Mar. 10, 1993, Ser. No. 33,055
Claims priority, application Japan, Jan. 17, 1990, 2-8589; Jan. 29, 1990, 2-20000; Jun. 5, 1990, 2-147600; Sep. 4, 1990, 2-235073
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—241 S 53 Claims



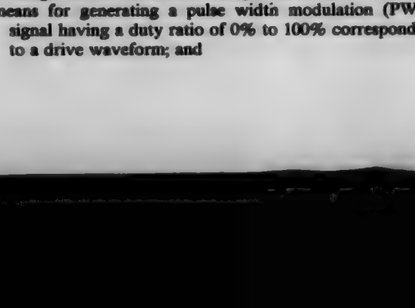
1. A strobo apparatus comprising:
a power source voltage boosting circuit;
a main condenser to be charged with a boosted voltage by said power source voltage boosting circuit;
a series circuit connected in parallel with said main condenser and comprising a flash discharge tube and a gate-controlling type first switching device having a gate electrode;
a trigger circuit for exciting said flash discharge tube to be conductive in response to a flash starting signal;
a bias condenser connected to said first switching device and charged with a discharge current flowing through said flash discharge tube;
a voltage dividing circuit connected in parallel with said bias condenser and dividing and applying the charge voltage of said bias condenser to the gate electrode of said gate-controlling type first switching device; and
a second switching device connected to said gate electrode, receiving a flash stopping signal and preventing the application of the voltage by said voltage dividing circuit to said gate electrode.

5,386,181

SWEPT FREQUENCY SWITCHING EXCITATION SUPPLY FOR GAS DISCHARGE TUBES

Edward D. Orenstein, Edina, Minn., assignor to Neon Dynamics Corporation, Minnetonka, Minn.

Filed Jan. 24, 1992, Ser. No. 825,629
Int. Cl.[6] H05B *41/29, 41/36, 41/44*
U.S. Cl. 315—287 5 Claims



1. An excitation power supply device for use with a two electrode gas discharge robe having an impedance, comprising:
oscillator means for electrically producing a switching signal having a selectable frequency;
function generator means electrically connected to the oscillator means for continuously and repeatably sweeping the selectable frequency and for producing therefrom a switching signal having a swept frequency at a first voltage;
conversion means including a transformer electrically connected to the generator means for electrically receiving the switching signal said conversion means operable for producing second voltage higher than the first voltage wherein the second voltage being affected by the swept frequency and the impedance of the gas discharge tube; and
means for electrically connecting the conversion means between the electrodes of the gas discharge tube.

5,386,182

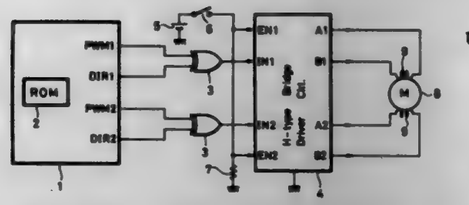
APPARATUS FOR DRIVING A STEPPING MOTOR

Akira Nikami, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed May 17, 1993, Ser. No. 61,270
Claims priority, application Japan, May 21, 1992, 4-128853
Int. Cl.[6] H02P *7/29*
U.S. Cl. 318—293 13 Claims

1. A motor driving apparatus comprising:
a bridge driver circuit in which an electric current supplied to a coil of a motor is inverted in direction in response to a high potential and a low potential of an input signal, said bridge driver circuit for driving said motor;
means for generating a pulse width modulation (PWM) signal having a duty ratio of 0% to 100% corresponding to a drive waveform; and

means for supplying said PWM signal to said bridge driver circuit as said input signal,
wherein said PWM signal having a duty ratio of 0% to 100% is formed by processing drive waveform data of a period



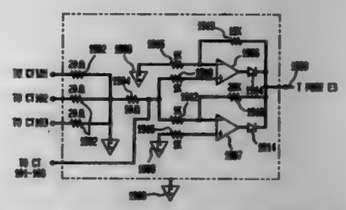
of 0° to 180°, formed from a PWM signal having a duty ratio of 50% to 100% and signals representative of a period of 0° to 180°, and a period of 180° to 360° in an exclusive-OR fashion.

5,386,183

METHOD AND APPARATUS FOR SENSING A GROUND FAULT IN A MOTOR CONTROL SYSTEM

James T. Crouvich, Harahan, La.; Samir F. Farag, Roswell, Ga.; Daniel J. De Cicco, Glen Burnie, Md., and John J. Culligan, Alpharetta, Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Continuation of Ser. No. 714,282, Jun. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 462,934, Jan. 3, 1990, Pat. No. 5,206,572. This application Jan. 18, 1994, Ser. No. 183,106
Int. Cl.[6] H02P *3/00*
U.S. Cl. 318—434 23 Claims



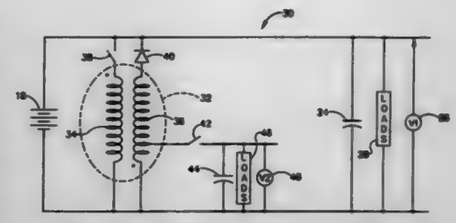
1. A method for sensing a ground fault in a motor control system including a motor coupled to at least two conductors, the method comprising the steps of:
generating a first unrectified signal indicative of the current level in a first conductor;
generating a second unrectified signal indicative of the current level in a second conductor;
summing the first and second unrectified signals to generate an unrectified sum signal indicative of the sum of the current levels;
rectifying the sum signal to produce a rectified sum signal and data representative thereof;
comparing the data to a predetermined limit; and
generating indicia of a ground fault in response to the data exceeding the predetermined limit for more than a predetermined time period.

5,386,184

SYSTEM FOR USE WITH AN ELECTRONICALLY COMMUTATED ELECTRICAL MACHINE

William D. Jones, Swampscott, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 23, 1993, Ser. No. 97,546
Int. Cl.[6] H02P *1/46*
U.S. Cl. 318—701 16 Claims



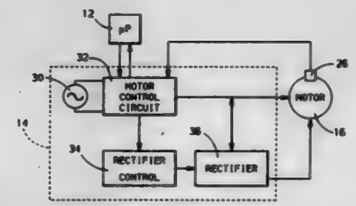
1. A method for providing multiple voltage levels from a single device, the method comprising the steps of:
using an inverter/converter unit to electronically commutate a switched reluctance machine, the switched reluctance machine having internal first and second windings;
inducing a voltage in the second winding of the switched reluctance machine to establish a first voltage level;
using at least one power switching transistor to apply an exciting current to the first and second windings in the switched reluctance machine to generate power at at least one additional voltage level.

5,386,185

HIGH SPEED AC MOTOR CONTROLLER

Lawrence R. Beck, Girard; Joseph J. Franko, Niles, and Daniel L. King, Warren, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 17, 1993, Ser. No. 62,859
Int. Cl.[6] H02P *3/24*
U.S. Cl. 318—762 5 Claims



1. In combination:
a. an AC motor;
b. a solid state switch controlling the AC motor, the solid state switch switchable between an on state in which an electric current flows through the solid state switch and an off state in which the electric current does not flow through the solid state switch, the solid state switch characterized by a turn off time period such that, when the solid state switch is switched between the on state and the off state, at least a portion of the electric current flows through the solid state switch during the turn off time period;
c. means for switching off the solid state switch to prevent the electric current from flowing to the AC motor;
d. a diode bridge coupled across the AC motor;
e. switch means for controllably switching the diode bridge between an active state in which the electric current may flow through the diode bridge and an inactive state in which the electric current may not flow through the diode bridge;

control means for controlling the switch means to switch the diode bridge into an active state a predetermined time period after the solid state switch is turned off, said predetermined time period longer than the turn off time period of the solid state switch and shorter than an EMF degradation time period, wherein back EMF of the AC motor is rectified into a DC current and injected back to the AC motor to provide high torque braking of the AC motor while avoiding a short circuit condition.

5. For an AC motor that is controllably switched between an on state and an off state by a controllable solid state switch also having an on state and an off state, a method comprising the steps of:

(a) commanding the solid state switch to an off state to switch off the motor;

(b) pausing for a first predetermined time period representative of a turn-off time of the solid state switch;

(c) switching on a rectifier after the first predetermined time period and before a second predetermined time period representative of a degradation time of a back EMF current generated by the AC motor, wherein the rectifier rectifies the back EMF current into a DC current;

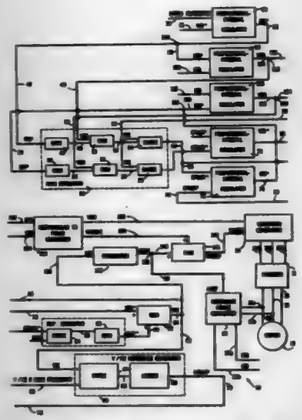
(d) applying the DC current to the motor to achieve DC injection braking of the motor, wherein the rectifier is not turned-on for the first predetermined time period to avoid a short circuit condition through the solid state switch and the rectifier and wherein the rectifier is turned on within the second predetermined time period so that sufficient back EMF is present to generate braking current for the motor.

5,386,186

STATOR FLUX ORIENTED CONTROL

David J. Gritter, Racine, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 4, 1993, Ser. No. 101,854
Int. Cl.[6] H02P 5/28
U.S. Cl. 318—798 21 Claims



1. In an AC drive, a method for stator flux oriented control of a waveform generator providing switching signals to an inverter supplying pulse width modulated current to a three phase, variable frequency induction motor, comprising:

generating a quadrature axis stator voltage signal;

generating a direct axis stator voltage signal; and

generating a stator frequency signal; and

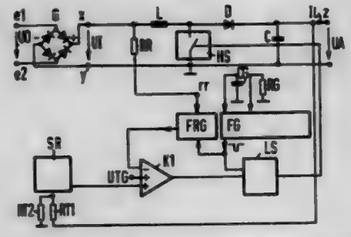
generating switching signals from the waveform generator to the inverter in response to the quadrature axis stator voltage signal, the direct axis stator voltage signal, and the stator frequency signal.

5,386,187

METHOD FOR ANTICIPATORY CONTROL OF A SWITCHED-MODE POWER SUPPLY FOR COMPENSATING FOR FLUCTUATIONS IN FEED VOLTAGE AND CIRCUIT CONFIGURATION FOR PERFORMING THE METHOD

Helmut Bichler, Graefelfing, and Michael Herfurth, Gilching, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 30, 1993, Ser. No. 129,977
Claims priority, application Germany, Sep. 30, 1992, 4232835
Int. Cl.[6] G0F5 1/10
U.S. Cl. 323—222 4 Claims



1. In a method for anticipatory control of a switched-mode power supply for compensating for fluctuations in a feed voltage, wherein the switched-mode power supply includes:

at least one electronic switch; and

a control circuit with a frequency generator, a comparator circuit, and a trigger circuit;

the trigger circuit furnishing a trigger signal for the at least one electronic switch as a function of an output signal of the comparator circuit and an output signal of the frequency generator;

the comparator circuit having a switching threshold being defined as a function of a load current of the switched-mode power supply;

the comparator circuit having a signal input being triggered with a periodically rising and falling control signal having a frequency defined by the frequency generator; and

the control signal having a signal shape being varied as a function of an instantaneous value of a feed voltage of the switched-mode power supply, the improvement which comprises:

defining a relatively higher frequency of the control signal with the signal generator, as compared with a frequency of the feed voltage; and

varying only a direct voltage component of the periodically rising and falling control signal having a direct voltage component and an alternating voltage component, as a function of fluctuations of the feed voltage of the switched-mode power supply.

5,386,188

IN-CIRCUIT CURRENT MEASUREMENT

Michael Mitzeman, Hudson; Kenneth A. Reindel, Broadview Heights; John G. Banaska, Brunswick; Gary K. Bish, Cleveland; Andy J. Creque, Macedonia, and Michael Atwell, Broadview Heights, all of Ohio, assignors to Keithley Instruments, Inc., Cleveland, Ohio

Filed Jan. 15, 1993, Ser. No. 5,227
Int. Cl.[6] G01R 19/00
U.S. Cl. 324—126 14 Claims

1. A method for measuring current I_0 in a circuit, comprising:

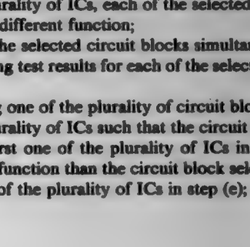
selecting an element in said circuit having a low resistance with respect to a remainder of the circuit, said element remaining connected in said circuit;

connecting a current source in parallel with said element, said current source having an output current and a current control input for controlling said output current;

connecting a voltage measuring device in parallel with both said element and said current source, said voltage measuring device having a voltage measurement output for providing a voltage measurement across said element and a voltage measurement control input for controlling said voltage measurement;

providing a control device connected to said current control input and said voltage measurement control input;

providing a calculation device having a calculation control input connected to said control device;



driving a first current I_1 through the element with said current source and measuring a first voltage V_1 across the element with said measuring device, all in response to said control device, said first current being at or near zero;

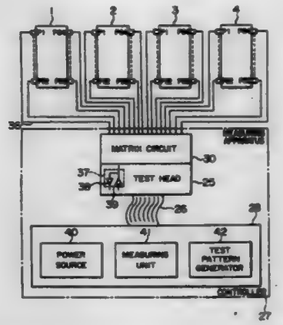
driving a second current I_2 through the element with said current source and measuring a second voltage V_2 across the element with said measuring device, all in response to said control device, said second current being greater than said first current;

calculating a value for the current I_0 with said calculation device in response to said control device according to

$$I_0 = \frac{V_1 \cdot (I_2 - I_1)}{v_2 - v_1}\text{; and}$$

providing the calculated value to a user or to an automated test system in response to said control device.

(f) testing the circuit blocks selected in step (e) simultaneously; and



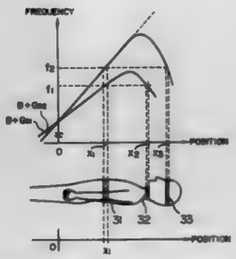
(g) measuring test results for each of the circuit blocks tested in step (f).

5,386,190

SELECTIVE EXCITATION METHOD OF NUCLEAR SPINS IN MAGNETIC RESONANCE IMAGING AND MRI APPARATUS USING THE SAME

Hiroyuki Takeuchi, 22-4, Toyoganicho, Kashiwa-shi, and Katsunori Suzuki, 682-2, Abiko, Abiko-shi, both of Japan

Continuation of Ser. No. 922,474, Jul. 31, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 209,486
Claims priority, application Japan, Jul. 31, 1991, 3-213165
Int. Cl.[6] G01R 33/20
U.S. Cl. 324—309 19 Claims



1. A selective excitation method of nuclear spins in a magnetic resonance imaging comprising:

(*a*) a first step of applying a first gradient magnetic field ($B+G_{z1}$) at a first intensity to a patient in a predetermined direction, and exciting nuclear spins in a first slice selection region of said patient by a first radio frequency pulse; and

(*b*) a second step of applying a second gradient magnetic field ($B+G_{z2}$) at a second intensity different in intensity from said first gradient magnetic field ($B+G_{z1}$) in said predetermined direction after said first step, and exciting nuclear spins in a second slice selection region overlapping at least partially with said first slice selection region by irradiating a second radio frequency pulse, said first intensity and said second intensity of said first and second gradient magnetic fields being determined so that a first portion of said patient excited by said first radio frequency pulse in an undesired region of said patient and a second portion of said patient excited by said second radio frequency pulse in said undesired region of said patient do not overlap.

5,386,189

IC MEASURING METHOD

Kazuhiro Nishimura, and Kiyotoshi Ueda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,719
Claims priority, application Japan, Jul. 23, 1991, 3-182444
Int. Cl.[6] G01R 31/28
U.S. Cl. 324—158.1 6 Claims

1. An IC measuring method comprising the steps of:

(a) positioning a plurality of ICs, each including a plurality of circuit blocks each circuit block having a distinct function;

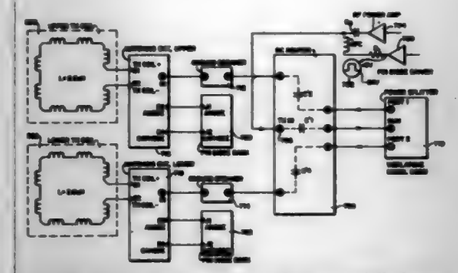
(b) selecting one of the plurality of circuit blocks from each of the plurality of ICs, each of the selected circuit blocks having a different function;

(c) testing the selected circuit blocks simultaneously;

(d) measuring test results for each of the selected first circuit blocks;

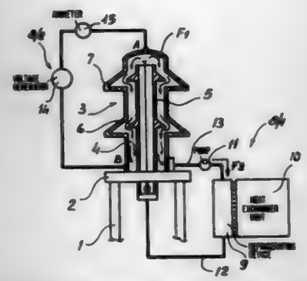
(e) selecting one of the plurality of circuit blocks from each of the plurality of ICs such that the circuit block selected from a first one of the plurality of ICs in step.(b) has a different function than the circuit block selected from the first one of the plurality of ICs in step (e);

5,386,191
RF COIL PROVIDING REDUCED OBSTRUCTION ACCESS TO IMAGE VOLUME IN TRANSVERSE MAGNET MRI SYSTEM
Barry McCartea, Palo Alto; Joseph W. Carlson, Kensington; Mitsuaki Arakawa, Hillsborough, and Leon Kaufman, San Francisco, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Mar. 1, 1993, Ser. No. 25,418
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—318 18 Claims



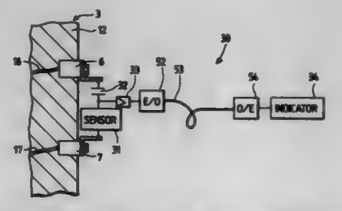
1. An RF coil for the generation of a substantially homogeneous RF magnetic field for use in an MRI system having opposed magnet poles, said RF coil comprising:
a pair of spaced apart flat pancake-like structures disposed on opposite sides of an imaging volume of the MRI system, each structure having a plurality of serially-connected turns including a plurality of juxtaposed conductor lengths having commonly directed current flows therein.

5,386,192
APPARATUS FOR CHECKING THE CONTAMINATION CONDITION OF ELECTRIC INSULATORS
Giovanni Marrone, Cologno Monzese, Italy, assignor to ENEL-Ente Nationale per l'Energia Elettrica, Cologno Monzese, Italy
PCT No. PCT/EP92/02062, § 371 Date Jun. 11, 1993, § 102(e) Date Jun. 11, 1993, PCT Pub. No. WO93/06471, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 7, 1992, Ser. No. 39,495
Claims priority, application Italy, Sep. 13, 1991, MI91 A 002435
Int. Cl.[6] G01N *27/06*
U.S. Cl. 324—439 4 Claims



1. An apparatus for checking the contamination conditions of electric insulators by measuring the quantity of contaminator material deposited on the external surface of a probe-insulator (3), which apparatus comprises: a probe-insulator (3) in a fixed position featuring an internal cavity (4); a first system (8/1) that circulates within the cavity (4) a cold fluid for cooling the probe-insulator (3) to a temperature such that the outside humidity condenses on the external surface of the probe-insulator; a second system (8/2) to measure the surface conductivity of the probe-insulator cooled by said first system (8/1); a third system that generates an alarm signal at the moment in which the surface conductivity measured on said cooled probe-insulator (3) reaches a pre-set critical conductivity value and hence activates an automatic washing plant for the insulators installed in that same area or commands a cleaning operation with insulators disconnected.

5,386,193
PARTIAL DISCHARGE DETECTING DEVICE FOR RESIN-MOLDED TRANSFORMER
Takao Maeda; Tatsuo Nishizawa, and Kenji Watanabe, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan
Continuation-in-part of Ser. No. 824,540, Jan. 23, 1992, Pat. No. 5,233,305. This application May 19, 1993, Ser. No. 63,575
Claims priority, application Japan, Feb. 15, 1991, 3-021219; May 20, 1992, 4-126525
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[6] G01R *31/06*
U.S. Cl. 324—547 5 Claims

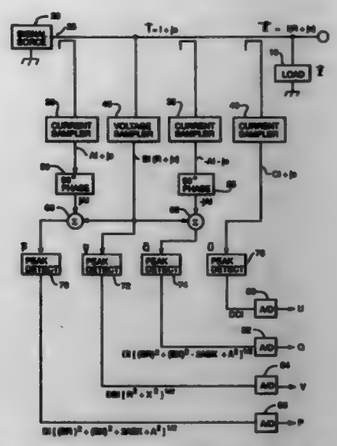


1. A partial discharge detecting device for a resin-molded transformer having no-load switching tap terminals on a high voltage winding thereof, the tap terminals having a potential with respect to ground, comprising:
a partial discharge detecting sensor connected between the tap terminals for providing a partial discharge detection signal;
an amplifier for amplifying the partial discharge detection signal;
an electro-optic converter for converting the amplified partial discharge detection signal into an optical signal;
an optical fiber for transmitting the optical signal from the electro-optic converter; and
an opto-electric converter for converting the optical signal transmitted by the optical fiber into an electrical signal and for applying the electrical signal to an indicator,
the partial discharge detecting sensor, the amplifier circuit, and the electro-optic converter being held at a potential corresponding to the potential of the tap terminals.

5,386,194
DIGITAL IMPEDANCE DETERMINATION USING PEAK DETECTION OF CURRENT AND VOLTAGE SAMPLERS
Richard H. Moehlmann, Rochester, N.Y., assignor to Harris Corporation, Melbourne, Fla.
Continuation-in-part of Ser. No. 779,046, Oct. 18, 1991, Pat. No. 5,206,600. This application Apr. 27, 1993, Ser. No. 52,729
The portion of the term of this patent subsequent to Apr. 27, 2000, has been disclaimed.
Int. Cl.[6] G01R *27/02*
U.S. Cl. 324—650 16 Claims

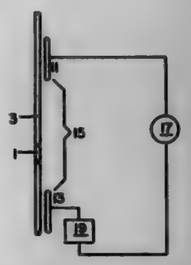
1. A system to compute the parameters of a complex load impedance comprising:
a signal source;
a load;
a transmission path for transmitting an RF signal from said signal source to said load;

quadrature current samplers for providing measures of the current in the RF signal;
a voltage sampler for providing a measure of the voltage in the RF signal;
plural peak detectors to detect the peak of the measures of current and voltage;



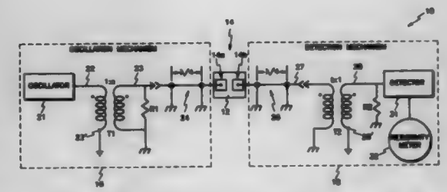
analog to digital converters to convert the signals output from the peak detectors to digital signals;
a digital computational unit to compute the parameters of the impedance of the load from the digital signals and from a signal indicating the frequency of said RF signal sources, wherein the digital computation unit comprises a digital look-up table.

5,386,195
METHOD AND APPARATUS FOR MONITORING AN ELECTRICAL PROPERTY OF A CONDUCTIVE COATING
David V. Hayes, Campbell, and Robert S. Wagner, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Continuation of Ser. No. 959,726, Oct. 13, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 163,582
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—662 22 Claims



1. An apparatus for monitoring an electrical property of a conductive coating on an optical fiber, the apparatus comprising:
generating means for generating an alternating electrical signal of between 250 KHz and 1 MHz;
capacitive coupling means for capacitively coupling the alternating electrical signal into the conductive coating at a first point and out of the conductive coating at a second point, the conductive coating being less than 3000 Angstroms thick, the first point and the second point being separated from each other by a predetermined distance, and the capacitive coupling means being electrically connected to the generating means; and
measuring means for measuring an electrical property of the conductive coating carrying the alternating electrical signal, the measuring means being electrically connected to the capacitive coupling means.

5,386,196
SYSTEM AND METHOD FOR ACCURATE CONTACTLESS MEASUREMENT OF THE RESISTIVITY OF A TEST MATERIAL
Dennis R. Jones, Acworth, Ga.; James E. Lutz, Carson City, Nev.; Richard H. Campbell, Carson City, Nev., and Denys D. Overholser, Carson City, Nev., assignors to Desmar, Inc., Carson City, Nev.
Filed Aug. 23, 1993, Ser. No. 110,580
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—667 18 Claims



1. A system for accurate contactless measurement of the resistivity of a material via capacitive coupling, comprising:
a first induction transformer having a first primary coil and a first secondary coil, said first primary coil for receiving a periodic signal;
a first transmission line stub connected to said first secondary coil;
a transmission electrode connected to said first transmission line stub, said transmission electrode for capacitively coupling to a material when said material is disposed in close proximity to said transmission electrode;
a reception electrode for capacitively coupling to said material when said material is capacitively coupled to said transmission electrode;
a second transmission line stub connected to said reception electrode; and
a second induction transformer having a second primary coil and a second secondary coil, said second primary coil being connected to said second transmission line stub, said second secondary coil for generating a resistivity signal indicative of the resistivity of said material.

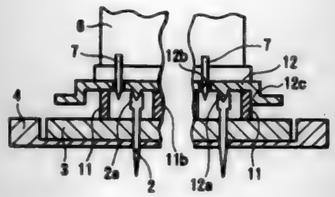
5,386,197
SLIDABLE ADAPTER FOR SIMULTANEOUS CONNECTION OF A PLURALITY OF CONTACTS OF A BACKBOARD TEST MODULE TO CONDUCTORS OF A BACKBOARD
Koichi Saito, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 23, 1993, Ser. No. 35,695
Claims priority, application Japan, Mar. 24, 1992, 4-065605
Int. Cl.[6] G01R *15/12*
U.S. Cl. 324—757 7 Claims

6. A test adapter for effecting electrical connection between a plurality of conductive pins of a test module and a plurality of test points of a backboard to be tested comprising:
a printed board;
a plurality of contact pins each having a contact portion at one end thereof to facilitate electrical contact with said

conductive pins and each being inserted so as to protrude through the printed board to facilitate electrical contact with said test points, said contact pins being arranged at positions corresponding to the positions of said conductive pins;

a honeycombed housing arranged on said printed board and having an upper surface and a plurality of storing holes for respectively storing said contact portions of said contact pins;

a slidable connector means for simultaneously bringing said conductive pins into contact with said contact portions of said contact pins, respectively, and for mounting said test module, said slidable connector means having pin holes for guiding said conductive pins into said storing holes and



being slidably arranged on the upper surface of said honeycombed housing so as to slide in a predetermined linear direction;

a plurality of projections formed on said slidable connector means and offset from said pin holes in substantially the same predetermined linear direction; and,

whereby, when said slidable connector means is slid to a first position the projections engage the contact portions of said contact pins and when said slidable connector means is slid to a second position the projections disengage the contact portions and the pin holes are aligned with said contact portions, thereby facilitating simultaneous electrical contact between the plurality of conductive pins and the plurality of test points through said plurality of contact pins.

5,386,198

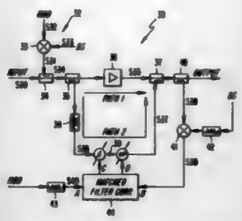
LINEAR AMPLIFIER CONTROL

Krister I. Ripstrand, Uppsala, and Thorsten Nygren, Taby, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 28, 1993, Ser. No. 10,274

Int. Cl.[6] H03F *1/32*

U.S. Cl. 330—52 **44 Claims**



21. A method for controlling a feed forward compensated power amplifier system, comprising the steps of:

generating a spread spectrum composite signal from control signals using spread spectrum techniques;

injecting the frequency spread spectrum composite signals into the feed forward amplifier system where the distortion originates;

remapping the spread spectrum composite signal at the output of the amplifier system;

correlating the remapped signal with said control signals;

controlling the cancellation of the frequency spread control signals and the distortion introduced by the amplifier at the output of the feed forward amplifier system.

5,386,199

COMPRESSOR CAPABLE OF COMPRESSING LARGE INPUT SIGNAL WITH MINIMAL DISTORTION

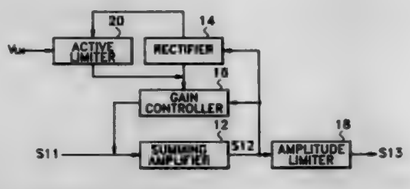
Hee-cheol Yeom, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Mar. 25, 1994, Ser. No. 217,900

Claims priority, application Rep. of Korea, Mar. 25, 1993, 93-4670

Int. Cl.[6] H03G *7/08*

U.S. Cl. 330—279 **17 Claims**



1. A compressor, comprising:

means for compressing an input signal and for producing a compressed output signal which is a compressed version of said input signal;

means for full-wave rectifying said compressed output signal and for converting said rectified compressed output signal to a direct current voltage output and for converting said direct current voltage output to a first direct current output;

active limiter means for comparing said direct current voltage output with a prescribed limit voltage, said active limiter means being enabled when said direct current voltage output is greater than said prescribed limit voltage to produce a second direct current output proportional to the difference between said direct current voltage output and said prescribed limit voltage; and,

gain controller means for receiving, at a first input, the sum of said first and second direct current outputs, and, at a second input, said compressed output signal, and for producing a gain control signal in response thereto, said gain control signal being combined with said signal to thereby increase or decrease the amplitude of said input signal by an amount dependent upon the amplitude of said compressed output signal.

5,386,200

IGFET CURRENT MIRROR AMPLIFIERS WITH NESTED-CASCODE INPUT AND OUTPUT STAGES

Allen L. Limberg, Ringoes, N.J., assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 14, 1993, Ser. No. 165,935

Int. Cl.[6] H03F *3/16, 3/45*

U.S. Cl. 330—288 **35 Claims**

1. A current mirror amplifier comprising:

first and second and third and fourth field effect transistors of the same conductivity type, each having a respective gate electrode, a respective source electrode, a respective drain electrode, and a respective channel between its source and drain electrodes that has a width-to-length ratio in prescribed proportions to the width-to-length ratios of the channels of the others of said first and second and third and fourth field effect transistors, the drain electrode of said first field effect transistor connected to the source electrode of said second field effect transistor

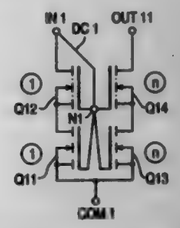
so that identical current flows through the channels of said first and second field effect transistors, the drain electrode of said third field effect transistor connected to the source electrode of said fourth field effect transistor so that identical current flows through the channels of said third and fourth field effect transistors;

an input terminal for receiving input current, to which input terminal the drain electrode of said second field effect transistor connects, and at which input terminal an input potential appears responsive to said input current;

means for applying said input potential to the gate electrodes of said first and third field effect transistors;

a first output terminal to which the drain electrode of said fourth field effect transistor connects;

a common terminal to which the source electrodes of said



first and third field effect transistors connect without substantial intervening impedance;

an interconnection of the gate electrodes of said first and second and third and fourth field effect transistors;

structural differences between said first and second field effect transistors which are the only means for causing the source-to-gate voltage of said first transistor to be larger in predetermined amount than the source-to-gate voltage of said second transistor in response to serial conduction of current through their respective channels; and

structural differences between said third and fourth field effect transistors which are the only means for causing the source-to-gate voltage of said third transistor to be larger in predetermined amount than the source-to-gate voltage of said fourth transistor in response to serial conduction of current through their respective channels.

5,386,201

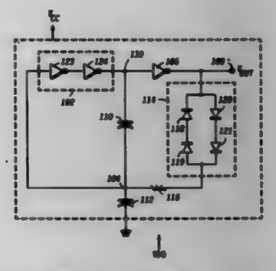
TEMPERATURE STABLE SQUARE WAVE OSCILLATOR

Paul T. Bennett, Phoenix; Randall C. Gray, Tempe, and John Pigott, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 26, 1993, Ser. No. 157,545

Int. Cl.[6] H03L *1/02*

U.S. Cl. 331—176 **13 Claims**



1. An oscillator circuit, comprising:

a plurality of serially coupled inverters each having an input coupled to an output of a previous one of said plurality of serially coupled inverters, an output of a last one of said plurality of serially coupled inverters for providing an output signal;

a first capacitor coupled between an input of said last one of said plurality of serially coupled inverters and an input of a first one of said plurality of serially coupled inverters;

circuit means coupled between said output of said last one of plurality of serially coupled inverters and said first capacitor for providing temperature compensation; and

capacitive means coupled to said first capacitor for reducing a voltage swing thereat.

5,386,202

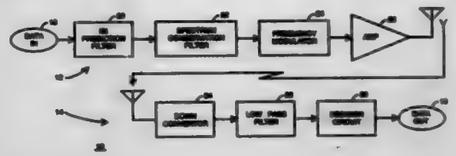
DATA COMMUNICATION MODULATION WITH MANAGED INTERSYMBOL INTERFERENCE

Bruce A. Cochran, Mesa, and Ronald D. McCallister, Scottsdale, both of Ariz., assignors to Sicom, Inc., Scottsdale, Ariz.

Filed Nov. 3, 1993, Ser. No. 146,925

Int. Cl.[6] H03C *3/00*; H03D *3/00*; H04L *27/10, 1/00*

U.S. Cl. 332—100 **23 Claims**



1. A method for modulating data communications comprising the steps of:

obtaining a first data code to be communicated during a first symbol and a second data code to be communicated during a second symbol;

predicting intersymbol interference between said first and second symbols in response to said first and second data codes;

generating a trajectory signal which is responsive to at least one of said first and second data codes and to said predicted intersymbol interference; and

changing a carrier frequency in response to said trajectory signal.

5,386,203

ANTENNA COUPLER

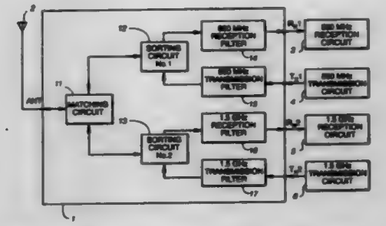
Jinsei Ishihara, Toyama, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 14, 1993, Ser. No. 166,439

Claims priority, application Japan, Dec. 16, 1992, 4-336226

Int. Cl.[6] H04B *1/54*

U.S. Cl. 333—129 **3 Claims**



1. An antenna-coupler for allowing a first communication system operating in a first frequency band and a second communication system operating in a second frequency band to use a single antenna in common, being interposed between said communication systems and said antenna, said first frequency band being separable into a first reception band and a first transmission band, said second frequency band being separable

into a second reception band and a second transmission band, said antenna coupler comprising:

a first sorting means for sorting signals between said first reception band and said first transmission band;

a second sorting means for sorting signals between said second reception band and said second transmission band;

a matching means for allowing signals in said first frequency band to be transmitted only between said antenna and said first sorting means and signals in said second frequency band to be transmitted only between said antenna and said second sorting means;

a first reception filter means for guiding a reception signal in said first frequency band received from said antenna through said matching means and said first sorting means by limiting said reception signal within said first reception band;

a first transmission filter means for guiding a transmission signal received from said first communication system operating in said first frequency band to said first sorting means by limiting said transmission signal within said first transmission band;

a second reception filter means for guiding a reception signal in said second frequency band received from said antenna through said matching means and said second sorting means by limiting said reception signal within said second reception band; and

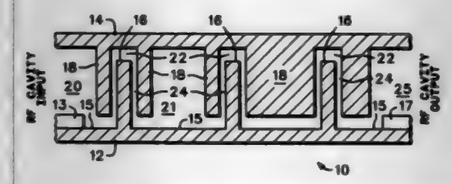
a second transmission filter means for guiding a transmission signal received from said second communication system operating in said second frequency band to said second sorting means by limiting said transmission signal within said second transmission band.

5,386,204

HIGH ISOLATION MICROWAVE MODULE

Warren L. Seely, Chandler; Joseph H. Kao, Mesa, and James H. Fleming, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1993, Ser. No. 101,165
Int. Cl.[6] H01P *1/208*
U.S. Cl. 333—208 **18 Claims**



1. A module for providing high microwave signal isolation, the module comprising:

a housing including a housing floor with a plurality of mounting surfaces for placing microwave components and a plurality of housing walls ending in a plurality of housing wall ends coupled to and projecting from the housing floor; and

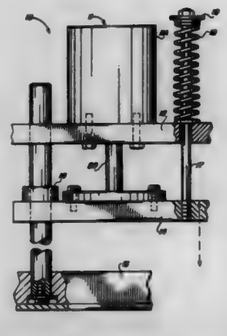
a lid including a lid plate and a plurality of lid walls ending in a plurality of lid wall ends projecting from the lid plate, wherein the lid and the housing are positioned such that the plurality of lid walls extend from the lid plate toward the housing floor and the plurality of housing walls extend from the housing floor toward the lid plate, but neither the plurality of lid wall ends nor the plurality of housing wall ends are coupled to the housing floor or lid plate, respectively, and a plurality of cavities exist in a first plurality of spaces between the adjacent lid walls of the plurality of lid walls between the housing and the lid plate and a plurality of irises exist comprising a second plurality of spaces between immediately adjacent housing walls of the plurality of housing walls and corresponding lid walls of the plurality of lid walls, the plurality of irises and the plurality of cavities providing attenuation to a microwave signal passing through the plurality of irises and the plurality of cavities.

5,386,205

HIGH IMPACT ELECTRO PRESS

William C. Burt, 1711 S. Extension Rd., #1039, Mesa, Ariz. 85210, and Winfield W. Salisbury, Sun City, Ariz., assignors to William C. Burt, Mesa, Ariz.

Filed Jul. 9, 1992, Ser. No. 911,027
Int. Cl.[6] H01F *3/00*
U.S. Cl. 335—255 **11 Claims**



1. An electro-magnetically actuated press having:

(a) a piston axially reciprocable between a first inoperative and second operative position;

(b) a first magnetic core formed as a multiplicity of plates arranged in a generally annular array about the axis of said piston;

(c) a second magnetic core formed as a multiplicity of plates arranged in a generally annular array about the axis of the piston;

(d) one of said cores being coupled to said piston;

(e) an electro-magnet coil magnetically coupled to said first and said second magnetic cores whereby energization of said coil causes said piston to move from said first to said second position; and

(f) said at least one of said cores being configured to generally enclose said coil when said piston moves to said second position producing a closed magnetic field, having increased flux area within the cores.

5,386,206

LAYERED TRANSFORMER COIL HAVING CONDUCTORS PROJECTING INTO THROUGH HOLES

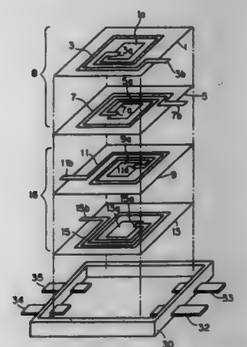
Hidetoshi Iwatani; Masakazu Kazama, and Masato Fujino, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 2, 1992, Ser. No. 955,837
Claims priority, application Japan, Oct. 3, 1991, 3-256798
Int. Cl.[6] H05K *1/11*
U.S. Cl. 336—200 **19 Claims**

9. A layered coil comprising a layered product formed by a plurality of coil conductors which are alternately arranged with a plurality of insulators,

ends of said coil conductors having outlet portions, at least parts of said outlet portions projecting from surfaces of said layered product,

a first outlet portion of a first coil conductor being connected with a first outlet portion of a second coil conductor, said first outlet portion of said first coil conductor being adjacent to said first outlet portion of said second coil conductor, and



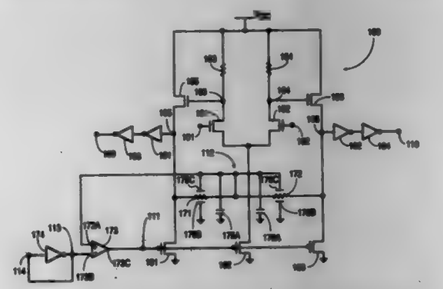
said insulators having through holes, said first outlet portions of said respective coil conductors projecting from peripheral portions of said through holes.

5,386,207

COMPARATOR WITH APPLICATION IN DATA COMMUNICATION

San L. Lin, San Jose, Calif., assignor to Winbond Electronics North America Corporation, San Jose, Calif.

Filed Jun. 23, 1992, Ser. No. 902,632
Int. Cl.[6] G06F *7/02*
U.S. Cl. 340—146.2 **27 Claims**



1. A comparator for use with a data communications system, comprising:

a first stage which accepts a differential voltage as comparator input, buffers the differential voltage, and produces first and second voltages;

a voltage averaging network that averages the first and second voltages to produce a third voltage;

feedback control circuitry which compares the third voltage to a reference voltage and produces a fourth voltage, wherein the fourth voltage controls the flow of current in the first stage such that the third voltage is maintained equal to the reference voltage; and

a second stage which amplifies the first voltage and produces an output voltage as comparator output;

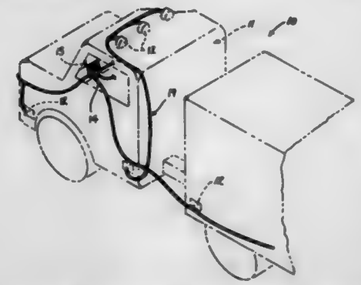
wherein the reference voltage is equal to a voltage approximately centered within a high gain region of the second stage.

5,386,208

VEHICLE LIGHT MONITORING APPARATUS

Richard L. Coan, III, HC65, Box 309, Moorefield, W. Va. 26836

Filed Apr. 19, 1993, Ser. No. 48,312
Int. Cl.[6] B60Q *1/00*; G09F *9/00*
U.S. Cl. 340—461 **2 Claims**



1. A vehicular light monitoring apparatus, comprising in combination with a vehicle having a predetermined number of vehicle light members, and a passenger compartment, wherein the apparatus further comprises,

an indicator panel plate mounted within the passenger compartment, having a panel plate front wall and a panel plate rear wall, and

a rigid collar mounted to the indicator panel plate in a spaced relationship relative to the panel plate rear wall, with the rigid collar including at least one collar leg fixedly mounted to the collar and extending from the collar to the panel plate rear wall, and

the panel plate including a plurality of panel plate apertures directed therethrough, equal to a predetermined number, wherein each of the apertures includes a transparent dome member projecting from the panel plate front wall over said apertures, and

a cable member mounted within the rigid collar, the cable member having a plurality of fiber optic cables therewithin equal to said predetermined number, with each of the fiber optic cables including a cable first end directed through said aperture and received within one of said dome members, and

each of the fiber optic cables is directed through said cable member and includes a cable second end positioned in adjacency to one of said light members, and

each of said light members having an adjacent support housing, with each said cable second end directed through the support housing in facing relationship housing includes a support collar fixedly securing the support housing, and the support collar including a mounting plate affixed to the vehicle, and

the vehicle further including a first cab light and a second cab light, and a fiber optic cable sheath mounted to said vehicle in adjacency to said first cab light and second cab light, wherein the fiber optic cable sheath includes a matrix of sheath fiber optic cable members directed therethrough, wherein the sheath fiber optic cable members includes sheath fiber optic cable members first ends and sheath fiber optic cable members second ends, wherein the sheath fiber optic cable members first ends are directed through a sheath first end, and the sheath fiber optic cable members second ends are directed through a sheath second end, and the fiber optic cable sheath includes a first support strap and a second support strap mounted to the vehicle securing the fiber optic cable sheath, and the first cab light includes a first support ring mounted in adjacency relative to the first cab light, and a second support ring mounted in adjacency relative to the second cab light, wherein the sheath first end is arranged for reception through the first support ring, and the sheath second

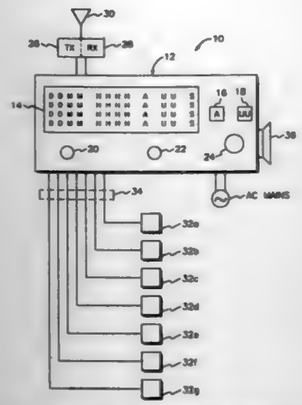
end is arranged for reception through the second support ring.

5,386,209

CLUSTER ALARM MONITORING SYSTEM

Winston M. H. Thomas, 3709 Woodrail Dr., Plano, Tex. 75074

Continuation-in-part of Ser. No. 827,086, Jan. 21, 1992, abandoned. This application Nov. 30, 1992, Ser. No. 985,164
Int. Cl.[6] G08B *1/08*
U.S. Cl. 340—539 10 Claims



1. An alarm unit adapted to co-operate by radio transmission with a plurality of other such units arranged in a cluster, said alarm unit comprising:
a radio transmitter and receiver;
a modulator coupled to the transmitter and a demodulator coupled to the receiver;
an identifying pre-settable switch for identifying a particular alarm unit in the cluster;
means for connection to a plurality of alarm sensors for identifying a particular one of a plurality of types of alarms;
a clock for generating a signal from which real time and date may be derived;
an encoder coupled to the clock, the pre-settable switch and the alarm sensor connection means for controlling the modulator, whereby the transmitter can transmit an encoded transmission identifying a particular alarm unit, the type of an alarm event and the real time and date of occurrence of an alarm event;
a decoder for decoding the identification of another of the units in the cluster which is transmitting, the type of a present alarm event and the real time and date of occurrence of a present alarm event; and
a display for displaying the other unit's identification, the type of alarm event and the time and date of occurrence of the alarm event.

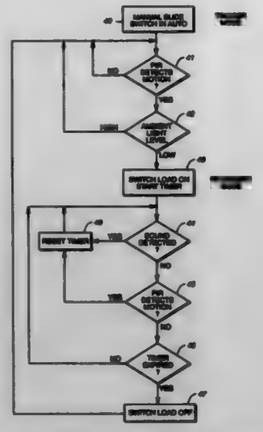
5,386,210

METHOD AND APPARATUS FOR DETECTING ENTRY

Wade Lee, Alamo, Calif., assignor to Intelectron Products Company, Hayward, Calif.

Continuation of Ser. No. 750,868, Aug. 28, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 93,978
Int. Cl.[6] G08B *13/18*
U.S. Cl. 340—567 5 Claims

2. A sensing method, comprising the steps of:
monitoring for a first predetermined configuration of a first and second environmental condition respectively indicated by a first sensor and a second sensor;
activating a load when said first and second sensors indicate said first predetermined configuration exists;
starting a timer measuring a lapse of a predetermined interval;
monitoring for a second predetermined configuration, different from said first predetermined configuration, of said first environmental condition and a third environmental condition indicated by a third sensor while said timer measures said predetermined interval;



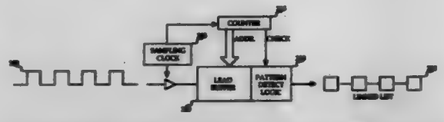
resetting said timer if said first and third sensors indicate said second predetermined condition exists prior to lapse of said predetermined interval to retrigger said lapse of said predetermined interval;
deactivating said load when said timer lapses; and
returning to a trigger mode to monitor for said first predetermined configuration of said first and second environmental conditions.

5,386,211

METHOD AND APPARATUS FOR RECORDING AND RECONSTRUCTING BINARY DATA IN A COMPRESSED FORM

Melvyn A. Goveas, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1993, Ser. No. 128,875
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 28 Claims



1. A method for storing binary data, each bit of data having a first state or second state, said method comprising the steps of:
receiving a string of binary input data;
incrementing a count for each bit of data received;
reviewing the received binary input data when the count reaches a determined count value n to determine the number of transitions between a first and second state and the position of the transitions in the string;
if the number of transitions is greater than a minimum number of transitions indicative of a pattern,

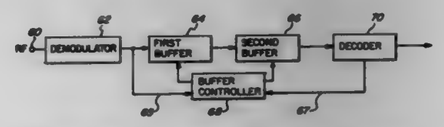
determining a pattern code for the string of binary input data,
accessing a previous output node of a list containing a previous pattern code representative of a previous string of input data,
if the pattern code in the previous output node is equal to the pattern code of determined, incrementing the previous output node's length parameter by one, said length parameter identifying the number of sequential repetitions of the pattern identified by the pattern code, and
if the pattern code in the previous output node is not equal to the pattern code of determined, generating a pattern node to add to the stored list, said node comprising the pattern code and the length of the parameter, set initially to a value of one;
if the number of transitions is less than/equal to the minimum number of transitions, generating at least one bit node to add to the stored list, each bit node sequentially identifying the state of the bits and the number of sequential occurrences of the same state in string of binary input data;
wherein the amount of data required to store the input binary data is decreased.

5,386,212

DOUBLE BUFFER SCHEME FOR VARIABLE LENGTH DECODER

Paul Shen; Edward A. Krause, both of San Diego, and Adam Tom, La Jolla, all of Calif., assignors to General Instrument Corporation, Hatboro, Pa.

Filed Nov. 19, 1992, Ser. No. 973,429
Int. Cl.[6] H03M *7/40*
U.S. Cl. 341—67 20 Claims



1. A variable length codeword decoder comprising:
first buffer means for receiving and storing data from data blocks containing variable length codewords;
second buffer means for receiving and storing data from said first buffer means;
means for determining data block boundaries for the data stored in said first buffer means;
means responsive to said determining means for transferring a set of data delineated by said boundaries from said first buffer means to said second buffer means for storage in said second buffer means, wherein said set of data is a subset of the data stored in said first buffer means; and
means coupled to receive said set of data from said second buffer means, for decoding said set to recover information.

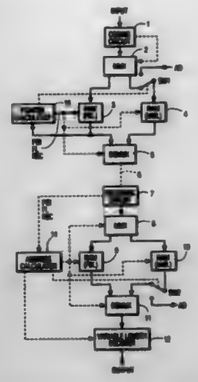
5,386,213

CODER AND DECODER APPARATUS FOR A DATA TRANSMISSION SYSTEM

Delter Haupt, Springe; Friedhelm Holtz, and Heinz W. Keesen, both of Hanover, all of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Jun. 8, 1993, Ser. No. 74,579
Claims priority, application Germany, Jun. 9, 1992, 4218695
Int. Cl.[6] H03M *7/40*
U.S. Cl. 341—67 12 Claims

1. Encoding apparatus for use in a data processing system, said apparatus comprising
a coding circuit for converting an input signal into a digital signal having variable length words;
a memory for storing said digital signal in data blocks of constant average word length, said blocks containing DC information and other predetermined information, with blocks of less than average word length being filled with data separated from blocks of greater than average word length;
an address generator coupled to said memory for providing write/read address information to facilitate the storage and subsequent recovery of stored block data including said separated data; wherein said address information includes



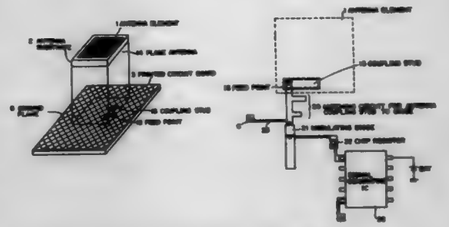
(a) full word width Group Address information preceding each group of a predetermined number of data blocks; and
(b) less than full word width Block Address information associated with respective individual data blocks and comprising a number of least significant bits representing a difference between a predetermined word length and said average word length; and
output means for conveying said data blocks together with said address information as an output datastream.

5,386,214

ELECTRONIC CIRCUIT DEVICE

Hideo Sugawara, Ohtawara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 479,532, Feb. 13, 1990, abandoned. This application Apr. 5, 1993, Ser. No. 43,605
Claims priority, application Japan, Feb. 14, 1989, 1-034677
Int. Cl.[6] H01Q *1/38, 13/08*
U.S. Cl. 343—700 MS 6 Claims



1. The electronic circuit device comprising:
a printed circuit board having a first surface on which a circuit pattern is formed and a second surface on which a ground plane is formed, a coupling stub being formed in a plane of said ground plane, said coupling stub being electrically isolated from said ground plane and electrically connected to said circuit pattern by an electrical conduc-

tor extending through said printed circuit board, and components including a modulating element mounted on said first surface of said printed circuit board and electrically connected to said circuit pattern;

a plane antenna having an antenna element, formed on a first surface of a dielectric substrate,

said printed circuit board and said plane antenna being attached to each other such that the second surface of said printed circuit board and a second surface of said dielectric substrate are juxtaposed to each other and said coupling stub is electromagnetically coupled to said antenna element; and

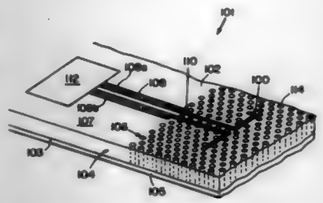
signal modulating means for producing a modulated signal by modulating a non-modulated signal received by said antenna element, said non-modulated signal being electromagnetically coupled from said antenna element to said coupling stub and inputted from said coupling stub to said modulating element, said modulated signal being outputted from said modulating element to said coupling stub and electromagnetically coupled from said coupling stub to said antenna element, said signal modulating means includes means for changing a capacitance of said modulating element and a signal generating integrated circuit driven by a battery, said modulating element being operatively connected to said signal generating integrated circuit so as to receive a code output from said signal generating integrated circuit and to modulate said non-modulated signal according to said code output.

5,386,215

HIGHLY EFFICIENT PLANAR ANTENNA ON A PERIODIC DIELECTRIC STRUCTURE

Elliott R. Brown, Billerica, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 20, 1992, Ser. No. 979,291
Int. Cl.[6] H01Q *9/28*
U.S. Cl. 343—795 **53 Claims**



1. An apparatus for transmission or reception of electromagnetic radiation along a path of propagation comprising:

a substrate having a spatially periodic dielectric lattice structure in which the lattice dimensions are proportioned to produce a band gap at a band of electromagnetic radiation frequencies such that radiation at such frequencies is substantially prevented from propagating in at least one dimension within the substrate; and

an antenna overlying said substrate and exposed to said path of propagation for transmitting or receiving radiation at said band of frequencies.

5,386,216

INDICATION DISPLAY UNIT FOR VEHICLES

Tadashi Iino, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

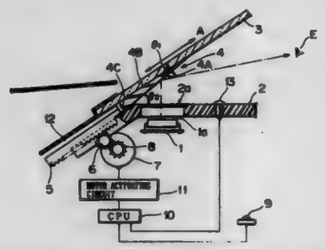
Filed Jan. 13, 1993, Ser. No. 2,759
Claims priority, application Japan, Jan. 14, 1992, 4-000892
Int. Cl.[6] G09G *3/02*
U.S. Cl. 345—7 **3 Claims**

1. An indication display unit for vehicles comprising:

indicating means for displaying an image concerning operational information and disposed in a vehicle dashboard;

a movable prism having a first position located at a lower portion of a vehicle windshield completely within the driver's field of vision for reflecting said displayed image toward the driver's eyes, a sectional surface of the bottom portion of said prism having a dark-colored coating applied thereto; and

position shifting means for changing the position of said



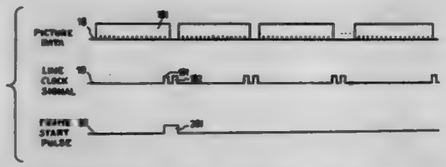
prism from said first position to a second position located completely outside the driver's field of vision; the displayed image being always reflected outside the dashboard regardless of the position of said prism, and when said prism is in said second position, the displayed image is reflected on the inner surface of the windshield and directed to the driver's eyes.

5,386,217

METHOD FOR CONTROLLING A LIQUID CRYSTAL DISPLAY MODULE TO SHOW INTERLACED PICTURE DATA THEREON

Hsiung-Hao Liu; Der-Cing Shyu; Lioe-Shun Cheng, and Chen-Tsu Chiu, all of Hsinchu, Taiwan, Prov. of China, assignors to Winbond Electronic Corp., Hsinchu, Taiwan, Prov. of China

Filed Aug. 16, 1993, Ser. No. 106,889
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—99 **6 Claims**



1. A method for controlling an LCD module to show interlaced picture data thereon, comprising the steps of:

(a) providing a data field of said interlaced picture data to said LCD module, said data field including a series of line picture data;

(b) providing twin line clock pulses to said LCD module to control latching of each said line picture data by said LCD module; and

(c) providing a frame start pulse to said LCD module whenever a first one of said line picture data is provided to said LCD module, said frame start pulse having a first width sufficient to control said LCD module to show said first one of said line picture data on a first even line of said LCD module when said data field is an even data field, and a second width sufficient to control said LCD module to show said first one of said line picture data on a first odd line of said LCD module when said data field is an odd data field;

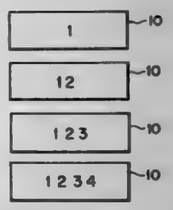
whereby, said twin line clock pulses and said frame start pulse ensure that said line picture data of said even and odd data fields are shown alternately and respectively on even and odd lines of said LCD module.

5,386,218

DISPLAY SYSTEM

Haruto Yano; Yoshiaki Hirase; Toshimichi Tokunaga, all of Hiroshima; Hirofumi Goto, Hyogo; Chisato Yoshida, Hyogo, and Kazuhiro Yokouchi, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 931,452, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 601,139, Oct. 23, 1990, abandoned. This application Nov. 22, 1993, Ser. No. 155,540
Claims priority, application Japan, Oct. 24, 1989, 1-277558
Int. Cl.[6] G09G *1/06*
U.S. Cl. 345—129 **12 Claims**



1. A display device for displaying characters in a form of dot patterns comprising:

input means for inputting characters one at a time;

display means for displaying a dot pattern corresponding to each inputted character as each character is inputted;

count means for counting a number of characters inputted and for generating a count after the input of each character; and

character generating means, operatively connected to said count means and said input means, for generating the dot pattern to be displayed according to each inputted character;

said character generating means generating and re-generating dot patterns having distinct sizes such that the size of the dot pattern for displaying a first character is larger than the size of the dot pattern for displaying said first character and a second character and the size of the dot pattern for displaying said first and second characters and a third character is smaller than a dot pattern for displaying said first and second characters;

said display means displaying and re-displaying said dot patterns having said distinct sizes;

said character generating means reducing the size of the dot pattern in response to the inputting of each character until a predetermined number of characters have been inputted.

5,386,219

TOUCH OVERLAY FOR IMPROVED TOUCH SENSITIVITY

Evon C. Greanias, Chevy Chase, Md.; Guy F. Verrier, Reston, Va., and Robert L. Donaldson, Annapolis, Md., assignors to International Business Machines Corp., Armonk, N.Y.

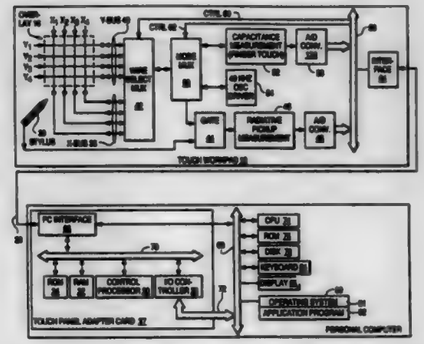
Continuation of Ser. No. 778,431, Oct. 16, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 97,582
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—174 **28 Claims**

1. A touch overlay for a viewing surface of a display for detecting both finger touch or stylus location comprising:

a set of transparent, lower conductors in a parallel arrangement on a surface of a lower flexible, transparent, insulating substrate;

a set of transparent, upper conductors in a parallel arrangement on a surface of an upper flexible, transparent, insulating substrate, the upper conductors oriented orthogonally from the lower conductors and spaced at a distance greater than 3 mils to reduce the ambient capacitance of the overlay and increase speed of operation in finger touch mode;

a protective top cover of a flexible, transparent, insulating material disposed over said upper substrate to protect the upper conductors during contact by a stylus, the top cover having a top surface for contact by a finger and a stylus; and



at least one adhesive layer to bond the lower substrate and upper substrate together;

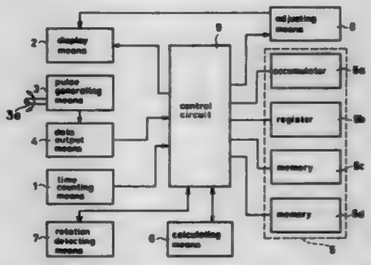
wherein the separation between the top surface and the upper conductors is no more than 3 mils.

5,386,220

DIGITAL DISPLAY VALUE ADJUSTING DEVICE

Maki Kubota, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Nov. 16, 1992, Ser. No. 977,130
Claims priority, application Japan, Nov. 15, 1991, 3-300050
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—184 **19 Claims**



1. A digital value adjusting device, comprising: display means for displaying a digital value; pulse generating means including a rotatable input member for generating at least two partially overlapping pulse strings having a generation order varied depending on a direction of rotation of the input member; data output means for generating and outputting current pulse state data indicative of a state of each of the pulse strings; storing means for storing the current pulse state data from the data output means as prior pulse state data; calculating means for calculating a change in state of each of the pulse strings when the current pulse data is generated by the the data output means, the change in state being calculated from the current pulse state data and the prior pulse state data stored in the storing means; rotation detecting means for detecting the direction of rotation of the input member on the basis of the change in state calculated by the calculating means, the direction of the input member being detected only when a change in state of one of the pulse strings is successively followed by a change in state of another of the pulse strings before another change in state of said one of the pulse strings occurs; and adjusting means for adjusting the digital display value dis-

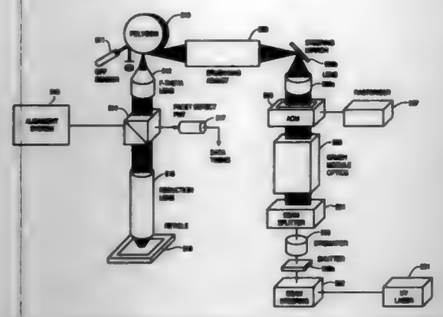
played by the display means in accordance with the direction of rotation detected by the rotation detecting means so that the digital display value is adjusted only when a change of state occurs successively in the at least two partially overlapping pulse strings.

5,386,221

LASER PATTERN GENERATION APPARATUS

Paul C. Allen; Matthew J. Jolley, both of Beaverton; Robin L. Teitzel; Michael Rieger, both of Portland; Michael Bohan, and Timothy Thomas, both of Beaverton, all of Oreg., assignors to Etec Systems, Inc., Beaverton, Oreg.

Filed Nov. 2, 1992, Ser. No. 970,480
Int. Cl.[6] B41J *2/435*
U.S. Cl. 346—108 **28 Claims**



1. An apparatus for generating a pattern on a workpiece which includes a film responsive to radiant energy comprising:
a) a laser for providing a radiant energy beam;
b) beam steering means for aligning said radiant energy beam,
c) a beam splitting means for splitting said radiant energy beam into a plurality of beams organized into a first set of beams and a second set of beams, said first set of beams separated from said second set of beams by a distance greater than one and less than two times a distance between individual beams;
d) a modulation means for varying the intensity of each of said plurality of beams responsive to signals defining said pattern;
e) a rotating mirror having a plurality of facets for causing said plurality of beams to scan said workpiece;
f) a timing means for timing the provision of signals to said modulation means; and
g) a stage for holding and moving said workpiece.

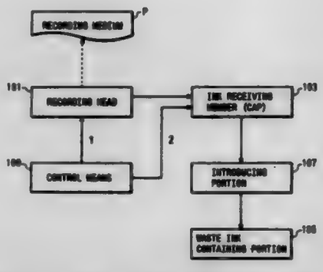
5,386,222

INK JET RECORDING SYSTEM AND RECOVERY DEVICE USED WITH SAME

Kazuya Iwata, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 762,362, Sep. 19, 1991, abandoned. This application Mar. 9, 1994, Ser. No. 208,087
Claims priority, application Japan, Sep. 19, 1990, 2-251453; Sep. 25, 1990, 2-254641; Sep. 25, 1990, 2-255942
Int. Cl.[6] B41J *2/165*
U.S. Cl. 347—89 **13 Claims**

1. An ink jet recording system comprising:
an ink receiving member for receiving ink discharged from a recording head;
introducing means for directing the ink from said ink receiving member to a waste ink containing portion; and
control means for controlling a relative position between the recording head and said ink receiving member so that said ink receiving member is disposed in confronting relation to the recording head during a receiving process effected by said ink receiving member and said ink receiving member is not disposed in confronting relation to the recording head during an introducing process effected by said introducing means with an inside of said ink receiving member communicated with the atmosphere.

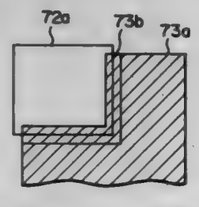


5,386,223

METHOD OF APPARATUS FOR RECORDING COLOR IMAGE BY OVERLAPPING TONER IMAGES OF DIFFERENT COLORS

Masahiko Saitoh, Kitaibaraki, and Hiroyuki Tadokoro, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 594,976, Oct. 10, 1990, abandoned. This application Jan. 14, 1993, Ser. No. 4,647
Claims priority, application Japan, Oct. 12, 1989, 1-264002
Int. Cl.[6] G01D *15/06*; H04N *5/272*
U.S. Cl. 346—157 **4 Claims**



1. An apparatus for producing color image data in response to video signals supplied from an information processor from which two contiguous images of different colors will be recorded by a two-color image recording apparatus on a sheet of recording paper so as to at least partially overlap each other, comprising:
a first video signal storing means for storing first video signals in a form of a pixel bit map representing color image data of a first color image;
a second video signal storing means for storing Second video signals in a form of a pixel bit map representing color image data of a second color image;
contiguous pixel pair detecting means coupled to said first video signal-storing means and said second video signal storing means for extracting a video signal portion of said first color image, which video signal portion represents a part of said first color image which is contiguous to a boundary of said first and second color images;
video signal modifying means coupled to said contiguous pixel pair detecting means for extending the extracted video signal portion of said first color image so as to enlarge said video signal portion by a predetermined amount in a direction of said boundary and for storing the extended video signal portion in said first video signal storing means together with said first video signals; and
video signal read-out means for addressing said first video signal storing means and said second video signal storing means to read-out said first and second video signals and said extended video signal portion stored therein to said

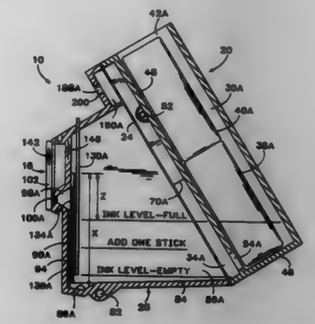
two-color image recording apparatus for recording said first and second color images on recording paper so as to at least partially overlap each other.

5,386,224

INK LEVEL SENSING PROBE SYSTEM FOR AN INK JET PRINTER

Ted E. Deur, Hillsboro; Clark W. Crawford, Wilsonville; Brian J. Wood; Richard Marantz, both of Portland, and James D. Buehler, Troutdale, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Division of Ser. No. 965,812, Oct. 23, 1992, Pat. No. 5,276,468, which is a continuation of Ser. No. 674,232, Mar. 25, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 34,915
Int. Cl.[6] B41J *2/175*
U.S. Cl. 347—7 **11 Claims**



1. A ink level sensing system for use with an ink jet printer, the system comprising:
a reservoir containing electrically conductive ink having a variable upper ink surface level, the reservoir having an electrically conductive casing connected to a first electrical potential;
a level sensing probe placed in the reservoir and comprising upper and lower conductive pads and a resistive element electrically connected between the upper and lower conductive pads, the upper and lower conductive pads being electrically connected through the ink to the first electrical potential when the pads are in contact with the electrically conductive ink;
support means connected to the reservoir and spatially arranged in relation to the level-sensing probe to prevent ink motion from adversely affecting the sensing of the electrical parameter value; and
electrical parameter sensing means electrically connected to the upper conductive pad for sensing a value of an electrical parameter.

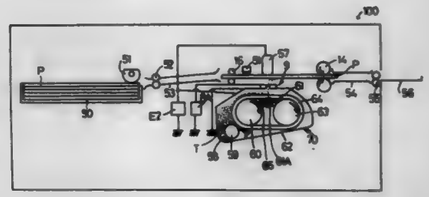
5,386,225

IMAGE RECORDING APPARATUS FOR ADJUSTING DENSITY OF AN IMAGE ON A RECORDING MEDIUM

Eiji Shibata, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 31, 1991, Ser. No. 815,039
Claims priority, application Japan, Jan. 24, 1991, 3-007087
Int. Cl.[6] G01D *15/16*
U.S. Cl. 347—55 **24 Claims**

1. An image recording apparatus comprising:
a carrying means for carrying charged particles, said carrying means including means for forming a suspension the charged particles;
control electrode means having at least one row apertures through which the charged particles carried by said carrying means can pass;
back electrode means facing said carrying means through said control electrode means, said back electrode means being spaced from the control electrode means by a space enabling passage of a support medium on which an image is recorded; and



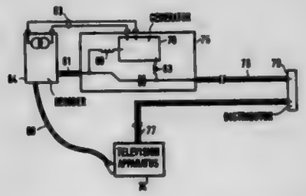
adjusting means for controlling the carrying means to adjust the density of the suspension of the charged particles formed by the carrying means, whereby the density of the image recorded on the support medium is varied.

5,386,226

CONNECTION UNIT FOR A TELEVISION SIGNAL DISTRIBUTION SYSTEM

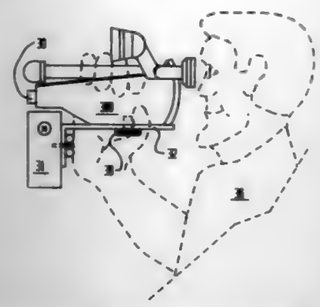
Pierre Chanteau, La Haye Malherbe, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1993, Ser. No. 107,493
Claims priority, application France, Aug. 19, 1992, 9210127
Int. Cl.[6] H04N *7/10*
U.S. Cl. 348—10 **6 Claims**



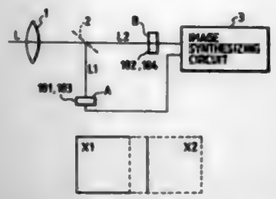
1. A connection and control unit for use at a user installation which selectively receives any one of a plurality of satellite television signals transmitted from respective sources via a television signal distribution system, said connection and control unit comprising:
a. a first connection for coupling said unit to a television signal output of a switching means which is adapted to selectively connect said television signal output to any one of said plurality of satellite television signals in response to a control signal;
b. a second connection for coupling said unit to a television signal input of a satellite decoder which is adapted to provide at said input DC control voltages representing different selections of said satellite television signals;
c. a third connection for coupling said unit to a control current output of the satellite decoder which is adapted to provide at said output control currents representing different selections of said satellite television signals;
d. connection means coupling the first and second connection for enabling propagation of selected satellite television signals from the output of the switching means to the input of the satellite decoder; and
e. signal generator means coupled to at least the third connection and the first connection for producing said control signal as a function of at least said control currents.

5,386,227
PROMPTER FOR VIDEO CAMERAS
Roy Zeper, 1704 Chippewa Ridge, Ambler, Pa. 19002
Filed Sep. 3, 1992, Ser. No. 940,178
Int. Cl.[6] H04N *5/222, 5/225*
U.S. Cl. 348—61 6 Claims



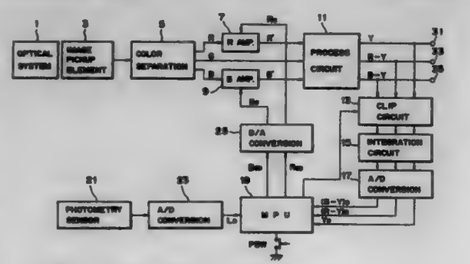
1. A prompter for a video camera comprising a mounting plate of rigid material, means to secure said mounting plate to the base of said video camera wherein said video camera with said prompter secured thereto does not require any support means and is hand-held by a user, a script-housing supported by said mounting plate including means for movably adjusting the position of said script-housing in relation to said video camera, a take-up roller supported horizontally in said script-housing, a length of script material including textual information imposed thereon, one end which is attached to said take-up roller and the other end hanging down free unattached, said mounting plate secured to and positioning said script-housing so that it reposes adjacent to and in close proximity to the lens as well as under the lens of said video camera, said script material and its imposed textual information directly visible to a person in front of said video camera, an electric motor for winding said script material onto said take-up roller.

5,386,228
IMAGE PICKUP DEVICE INCLUDING MEANS FOR ADJUSTING SENSITIVITY OF IMAGE PICKUP ELEMENTS
Tadashi Okino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1992, Ser. No. 900,471
Claims priority, application Japan, Jun. 20, 1991, 3-148442; Jun. 21, 1991, 3-149144; Sep. 5, 1991, 3-225499; Sep. 5, 1991, 3-225500; Sep. 5, 1991, 3-225501; Sep. 5, 1991, 3-225502; Sep. 20, 1991, 3-240758; Nov. 11, 1991, 3-294451
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348—218 19 Claims



1. An image pickup device comprising:
split means for splitting image pickup light from an object into a plurality of beams in equal light amounts, and forming an object image which is split into a plurality of image portions on a plurality of image formation planes;
a plurality of image pickup elements, light-receiving portions of which are arranged at positions which are not adjacent to each other on each image formation plane when the object image is split into the plurality of image portions on each image formation plane, so that each of the light-receiving portions on an image formation plane partially overlaps the light-receiving portion of at least a neighboring position of another image formation plane;
an image synthesizing circuit for receiving information from said image pickup elements, and synthesizing the object image; and
a correction circuit for comparing outputs from the overlapped portions of the light-receiving portions of said image pickup elements, and adjusting sensitivity levels of said image pickup elements.

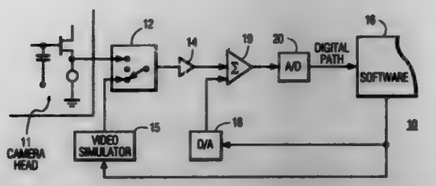
5,386,229
IMAGE PICKUP DEVICE WITH WHITE BALANCE FUNCTION
Masao Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 14, 1993, Ser. No. 4,681
Claims priority, application Japan, Jan. 20, 1992, 4-007552
Int. Cl.[6] H04N *9/73*
U.S. Cl. 348—227 8 Claims



1. An image pickup device comprising:
image pickup means;
a clipping circuit for clipping large amplitude components of plural color signals obtained from the output of said image pickup means;
white balance control means for controlling, utilizing the output of said clipping circuit, the white balance of a video signal obtained from the output of said image pickup means;
photometry means for measuring the luminance of external light; and
clipping range varying means for varying the clipping range of said clipping circuit, according to the output of said photometry means.

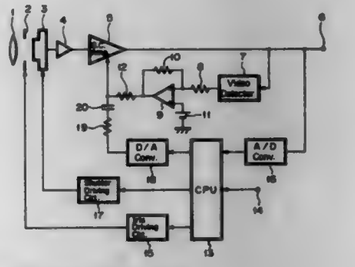
5,386,230
CHARGED-COUPLED DEVICE CAMERA WITH VOLTAGE ADJUSTMENT CONTROL
Peide Jeng, Tucson, Ariz., assignor to Photometrics, Ltd., Tucson, Ariz.
Filed Mar. 5, 1993, Ser. No. 26,677
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—241 3 Claims

1. A modular electronic camera, said camera including a camera head and a camera body, said head including a CCD array having a first output for providing a first voltage signal, said body including a video simulator for providing a reference voltage signal and having a second output, said body also including a switch having first and second inputs connected to said first and second outputs and also having a third output, said switch also including means for controllably connecting said first or said second input to said third output, said body also including an amplifier and a summation circuit, said summation circuit having first and second inputs and an output, said amplifier having an input connected to said third output and having an output connected to said first input of said summation circuit, said body also including means connected to said second input of said summation circuit for adjusting the



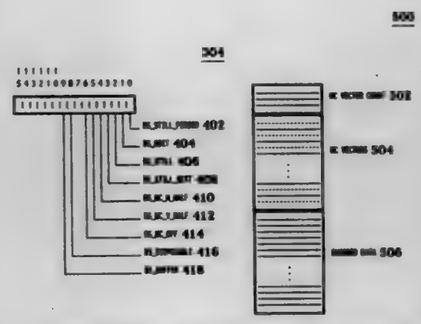
amplitude of the voltage at said output of said summation circuit to compensate for the difference between said first voltage signal and said reference signal.

5,386,231
VIDEO CAMERA
Shuji Shimizu; Toshiaki Isogawa, and Joichi Sato, all of Kanagawa, Japan, assignors to Sony Corporation, Japan
Continuation of Ser. No. 679,312, Apr. 2, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,251
Claims priority, application Japan, Apr. 9, 1990, 2-093705
Int. Cl.[6] H04N *5/335, 3/14*
U.S. Cl. 348—296 7 Claims



1. A video camera, comprising:
a solid state image pickup element having a variable storage time related to shutter speed of the video camera;
means for controlling the storage time of said solid state image pickup element to present a variable shutter effect including means for selectively changing the storage time of the solid state image pickup element at a preset frequency and by a preset unit amount; and
output control means coupled to the solid state image pickup element for providing a stable output from the solid state image pickup element by adjusting the output of the solid state image pickup element according to the preset frequency and the preset unit amount;
wherein the output control means includes means for providing a correcting voltage to the output from the solid state image pickup, the correcting voltage being a pulsing voltage with a frequency related to the preset frequency and an amplitude related to the preset unit amount.

5,386,232
METHOD AND APPARATUS FOR ENCODING IMAGES USING A SPECIFIED DATA FORMAT
Stuart Golia, Hillsboro; Brian Nickerson, Aloha; Michael Keith, Beaverton, and Rohan Coelho, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Filed Jun. 16, 1993, Ser. No. 78,126
Int. Cl.[6] H04N *11/04*
U.S. Cl. 348—391 54 Claims



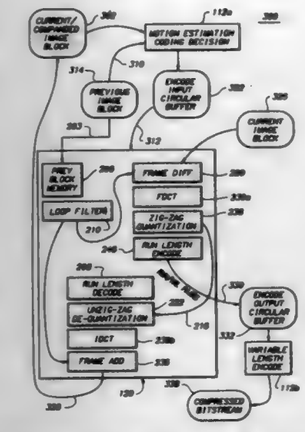
1. A method for encoding image data, comprising the steps of:
(a) receiving said image data;
(b) generating an OPERATING SYSTEM header for said image data;
(c) generating a BITSTREAM header in accordance with said image data;
(d) generating at least one image component data field in accordance with said image data; and
(e) transmitting said OPERATING SYSTEM header, said BITSTREAM header, and said at least one image component data field, wherein step (d) comprises the steps of:
(1) generating a Y-COMPONENT DATA field in accordance with said image data;
(2) generating a U-COMPONENT DATA field in accordance with said image data; and
(3) generating a V-COMPONENT DATA field in accordance with said image data, wherein:
step (d) (1) comprises the steps of:
(A) generating a Y-component four-byte MC VECTOR COUNT field;
(B) generating a Y-component MC VECTORS field; and
(C) generating a Y-component ENCODED DATA field, comprising interleaved binary tree codes and region codings;
step (d) (2) comprises the steps of:
(A) generating a U-component four-byte MC VECTOR COUNT field;
(B) generating a U-component MC VECTORS field; and
(C) generating a U-component ENCODED DATA field, comprising interleaved binary tree codes and region codes; and
step (d) (3) comprises the steps of:
(A) generating a V-component four-byte MC VECTOR COUNT field;
(B) generating a V-component MC VECTORS field; and
(C) generating a V-component ENCODED DATA field, comprising interleaved binary tree codes and region codes.

5,386,233

METHOD FOR EFFICIENT MEMORY USE

Michael Keith, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 13, 1993, Ser. No. 61,390
Int. Cl.[6] H04N 7/133, 7/137
U.S. Cl. 348—407 **38 Claims**



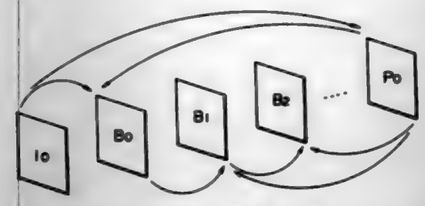
1. A method for encoding and decoding data in a video processor system having a block of memory locations and image data values representative of a plurality of successive current images, comprising the steps of:
(a) storing a first current image of said plurality of successive current images in said block of memory locations;
(b) reading a first plurality of image data values of said first current image from said block of memory locations;
(c) encoding said first plurality of image data values of said first current image to provide encoded image data values;
(d) decoding said encoded image data values to provide companded image data values of a companded image; and
(e) storing said companded image data values in said block of memory locations whereby said block of memory locations contains a portion of said first current image and a portion of said companded image simultaneously.

5,386,234

INTERFRAME MOTION PREDICTING METHOD AND PICTURE SIGNAL CODING/DECODING APPARATUS

Markus H. Veltman, and Ryuichi Iwamura, both of Tokyo, Japan, assignors to Sony Corporation, Japan

Filed Nov. 5, 1992, Ser. No. 972,315
Claims priority, application Japan, Nov. 13, 1991, 3-297431
Int. Cl.[6] H04N 7/133, 7/137
U.S. Cl. 348—409 **10 Claims**



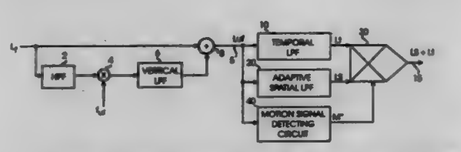
1. In an interframe motion predicting method for prediction of motion in a first bidirectionally predictive-coded frame from an intra-coded frame and a predictive-coded frame the improvement comprising the step of:
predicting motion in a second bidirectionally predictive-coded frame from said first bidirectionally predictive-coded frame and said predictive-coded frame wherein, when at least three bidirectionally predictive-coded frames including the first and second bidirectionally predictive-coded frames are existent between said intra-coded frame and said predictive-coded frame, the motion in the bidirectionally predictive-coded frames other than the first is predicted from the preceding adjacent bidirectionally predictive-coded frame and said predictive-coded frame.

5,386,235

MOTION SIGNAL DETECTING CIRCUIT

Jung-Wan Ko, Lawrenceville, N.J., assignor to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Jun. 7, 1991, Ser. No. 711,980
Claims priority, application Rep. of Korea, Nov. 19, 1990, 90-18737
Int. Cl.[6] H04N 9/64, 7/12
U.S. Cl. 348—427 **22 Claims**



1. A motion signal detecting circuit for an image signal reproducing system having frequency-unfolding means for generating unfolded luminance signals by unfolding regenerated image signals having a high frequency component folded onto a low frequency component, said regenerated image signals having a high frequency component folded onto a low frequency component which high frequency component as so folded exhibits differences from one frame to the next in the absence of image motion, which said differences from one frame to the next in the absence of image motion will interfere with frame-to-frame detection of motion, said unfolded luminance signals at times being undesirably accompanied by a folding carrier signal that exhibits differences from one frame to the next as are apt to be mistaken for image motion, said motion signal detecting circuit comprising:
means, receiving said unfolded luminance signals, for eliminating folding carrier signal contained in said unfolded luminance signals;
comb filter means for detecting differences between frames of said unfolded luminance signals; and
means for applying said unfolded luminance signals to said comb filter means as input signals thereto.

5,386,236

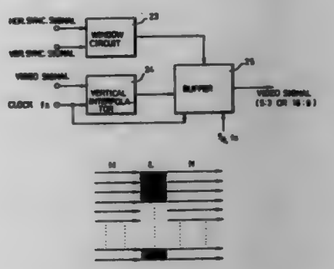
TELEVISION SCREEN ASPECT RATIO CONVERTING METHOD AND THE DEVICE THEREOF

Sung H. Hong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 28, 1992, Ser. No. 997,231
Claims priority, application Rep. of Korea, Dec. 28, 1991, 91-24816
Int. Cl.[6] H04N 7/01, 5/46
U.S. Cl. 348—445 **2 Claims**

1. A television screen aspect ratio converting device comprising:
window means for receiving horizontal and vertical synchronizing signals separated from an input video signal, extracting a predetermined number of active lines to be displayed on a screen having an aspect ratio of 16:9 from a vertically interpolated signal, and outputting a control signal for positioning an image having a screen aspect

ratio of 5:3 in the middle of a screen having an aspect ratio of 16:9;
vertical interpolation means for vertically interpolating an input video signal having a screen aspect ratio of 4:3 by a predetermined ratio; and
buffer means for time-compressing by a predetermined rate the video signal vertically interpolated by said vertical interpolation means and then outputting said interpolated video signal according to said control signal of said window means;



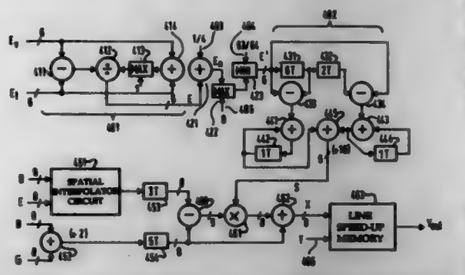
wherein said vertical interpolation means comprises:
a plurality of ROMs where a plurality of filter coefficients used in vertical interpolation are recorded;
a plurality of line memories for delaying by one line said input video signals; and
a plurality of adders for adding multiplied outputs of said filter coefficients of said ROMs and said delayed signals, respectively, and outputting at the same time the respective added outputs.

5,386,237

METHOD AND APPARATUS FOR ADAPTIVE PROGRESSIVE SCAN CONVERSION

Michael Knee, Strasbourg, France, assignor to Thomson Consumer Electronics S.A., Courbevoie, France

Filed Nov. 19, 1993, Ser. No. 155,113
Claims priority, application European Pat. Off., Nov. 23, 1992, 92403150
Int. Cl.[6] H04N 7/01
U.S. Cl. 348—458 **18 Claims**



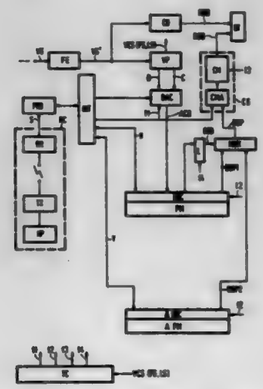
1. A method for calculating sample values of interpolated lines for each sample for adaptive proscan conversion of interlaced lines, comprising:
calculating a spatial error estimate from spatially and temporally adjacent pixels of adjacent fields;
calculating a temporal error estimate from spatially and temporally adjacent pixels of adjacent fields;
calculating a normalized error estimate from the spatial error estimate and the temporal error estimate;
controlling a soft switch in accordance with the normalized error estimate for mixing a spatially interpolated estimate value and a temporally interpolated estimate value for said sample to generate the final value for said sample;
calculating said spatially interpolated estimate value from spatially adjacent pixels of the current field; and
calculating said temporally interpolated estimate value from temporally adjacent pixels of adjacent fields.

5,386,238

COMBINATION TV RECEIVER AND TELETEXT PROCESSOR WITH ON-SCREEN MESSAGE CAPABILITY

John R. Kinghorn, Brockenhurst; Jeremy R. Stevens, Lymington, and David R. Tarrant, Romsey, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1993, Ser. No. 2,434
Claims priority, application United Kingdom, Jan. 9, 1992, 9200426
Int. Cl.[6] H04N 7/08, 7/087
U.S. Cl. 348—468 **19 Claims**



1. A television receiver comprising: a teletext processor including means for receiving, decoding and displaying teletext data, said teletext processor also including a character generator and a teletext page memory, means for generating an on-screen message display, the on-screen message display generating means including a further memory means for storing the required data for the on-screen message display, and microprocessor means for controlling the teletext processor and the on-screen message display generating means, and selection means for selectively reading data from the teletext page memory and the further memory means to the character generator.

5,386,239

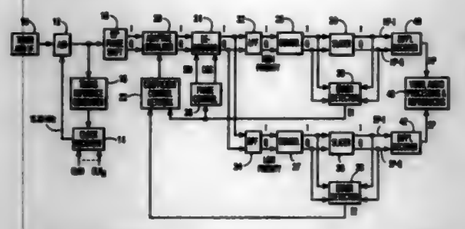
MULTIPLE QAM DIGITAL TELEVISION SIGNAL DECODER

Tian J. Wang, and Laurea A. Christopher, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 55,338, May 3, 1993, abandoned. This application Mar. 14, 1994, Ser. No. 209,357
Int. Cl.[6] H04N 7/00, 7/06
U.S. Cl. 348—472 **14 Claims**

13. In a system for processing a television signal, digital signal processing apparatus comprising:
input means for receiving a multiple carrier composite PAM signal;
signal conditioning means, including adaptive equalizer means, responsive to said composite signal for providing a conditioned composite signal at an output, said equalizer means including a single equalizing device having a wide-

band response encompassing more than one of said carriers and defined by one set of coefficients for equalizing said more than one carriers without separating said more than one carriers from the spectrum of said composite signal prior to equalization;



means for deriving an error signal representing a condition of said PAM signal; and

means for coupling said error signal to said signal conditioning means.

5,386,240

ENCODER/DECODER OF INFORMATION UPON/FROM A VIDEO SIGNAL

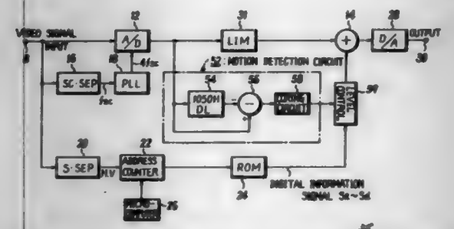
Akihiro Hori, Tokyo, Japan, assignor to Nippon Television Network Corporation, Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 933,499

Claims priority, application Japan, Sep. 6, 1991, 3-227414; Oct. 18, 1991, 3-271091; May 25, 1992, 4-132656; Aug. 4, 1992, 4-207996

Int. Cl.[6] H04N *7/08, 7/16*

U.S. Cl. 348—473 **26 Claims**



1. An encoder for inserting special information into a video signal, said encoder comprising:

a first input for receiving said video signal representative of a predefined video image and having associated alternating field portions of respective interlacing lines and a chrominance modulated color subcarrier;

means for providing an information modulated signal, the modulation thereof being representative of said special information;

motion detection means for determining image movement of the video image represented by said video signal; and

means for inserting the information modulated signal into said video signal in accordance with the image movement determined by the motion detection means wherein the insertion level is set to a higher relative level upon determination of image movement.

5,386,241

SIGNAL TRANSFORMATION SYSTEM AND METHOD FOR PROVIDING PICTURE-IN-PICTURE IN HIGH DEFINITION TELEVISION RECEIVERS

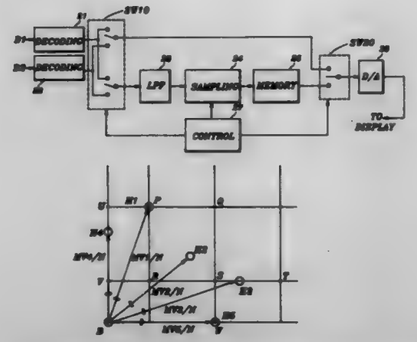
Hak-Jae Park, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 7, 1993, Ser. No. 133,665

Claims priority, application Rep. of Korea, Oct. 7, 1992, 92-18393

Int. Cl.[6] H04N *5/262, 7/12*

U.S. Cl. 348—565 **10 Claims**



1. A method for use in a digitized video signal decoder having first and second decoding means, for providing a main picture and a picture-in-picture simultaneously on a screen from a plurality of digital video signals received from transmitters, wherein each of the digital video signals received has been compressed by using a coding technique involving a motion-compensated differential pulse code modulation and two dimensional discrete cosine transform, the first decoding means includes a first frame memory for storing current and previous frames of the main picture, and the second decoding means includes a second frame memory for storing current and previous frames of the picture-in-picture, said method comprising the steps of:

selecting a main picture signal and a picture-in-picture signal from the plurality of digital video signals;

decoding the main picture signal at the first decoding means;

decoding the picture-in-picture signal at the second decoding means by using a set of reduced motion vectors and a reduced number of transform coefficients; and

providing a composite image of the main picture and the picture-in-picture from the first and the second frame memories.

5,386,242

SELF KEYER WITH BACKGROUND GAP FILL

Daniel J. Chaplin, Nevada City, Calif., assignor to The Grass Valley Group, Inc., Nevada City, Calif.

Filed Mar. 14, 1994, Ser. No. 209,764

Int. Cl.[6] H04N *5/275*

U.S. Cl. 348—591 **8 Claims**

1. A self keyer comprising:

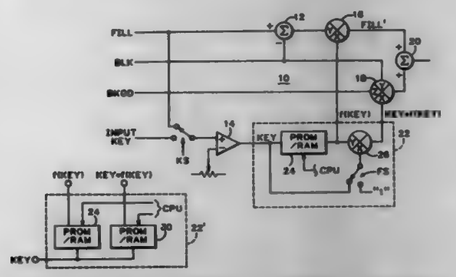
means for deriving a key signal from a fill video signal;

means for generating a control signal from the key signal according to a transfer function and for generating a mixer control signal that is a function of the control signal and the key signal;

means for shaping the fill video signal with the control signal to produce a shaped fill video signal;

means for cutting a hole in a background video signal with the mixer control signal to produce a shaped background video signal; and

means for combining the shaped fill and background video signals to form a composite video signal;



whereby the background video signal fills a gap in the composite video signal between the shaped fill and background video signals.

5,386,243

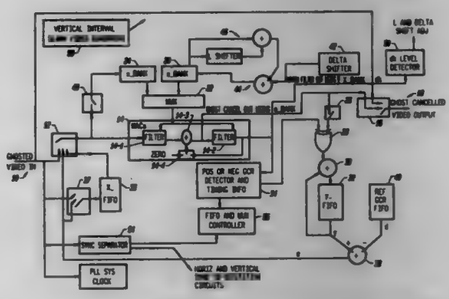
GHOST SIGNAL CANCELLATION SYSTEM FOR TELEVISION SIGNALS

Jinshi Huang, San Jose, and Robert F. Casey, Santa Clara, both of Calif., assignors to Zoran Corporation, Santa Clara, Calif.

Filed Jul. 22, 1993, Ser. No. 96,156

Int. Cl.[6] H04N *5/213*

U.S. Cl. 348—607 **16 Claims**



1. A method of cancelling ghosts in video signals comprising the steps of

a) providing an active filter having a ghost cancelling filtering function defined by a first set of coefficients (ak_{old}), said active filter having a signal input and a signal output, a feedforward FIR filter and an adder serially connected between said input and said output, a feedback IIR filter and a switch serially connected between an output of said adder and an input of said adder, said feedforward FIR filter and said feedback IIR filter having filtering functions defined by said new set of coefficients,

b) applying a transmitted ghost cancellation reference (GCR) signal to said input of said active filter during a vertical blanking period to generate a filtered GCR signal at said output of said active filter, said step of applying being repeated a plurality of times to obtain an average value of said filtered GCR signal,

c) comparing said filtered GCR signal to a ghostless GCR signal to obtain an error signal,

d) adjusting said coefficients based on said error signal to obtain a first set of new coefficients (ak_{new}), and

e) filtering video signals with said active filter using said new coefficients.

5,386,244

BRIGHTNESS SIGNAL/COLOR SIGNAL SEPARATION FILTER INCLUDING AN IMAGE CORRECTION JUDGING CIRCUIT

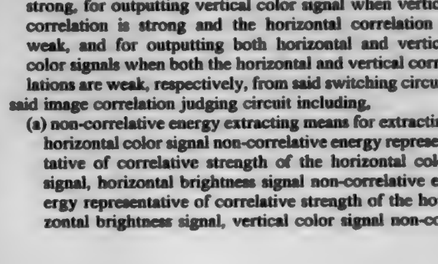
Toshihiro Gai, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 3,946, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 825,786, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 623,088, Dec. 6, 1990, abandoned. This application Feb. 3, 1994, Ser. No. 193,360

Claims priority, application Japan, Dec. 8, 1989, 1-319550; Mar. 14, 1990, 2-63131; Jul. 11, 1990, 2-184640

Int. Cl.[6] H04N *9/78*

U.S. Cl. 348—610 **50 Claims**



1. A brightness signal/color signal separating filter for separating a brightness signal and a color signal from an input composite color television signal, comprising:

a first delay circuit for outputting a first delay composite television signal generated by delaying the input composite color signal by a predetermined number of lines;

a second delay circuit for outputting a second delay composite color television signal generated by further delaying the input composite color signal delayed by said first delay circuit by an equal number of lines as delayed in said first delay circuit;

a vertical color signal extracting filter for extracting vertical color signal from the input composite color television signal, first delay composite color television signal, and second delay composite color television signal;

a horizontal color signal extracting filter for extracting horizontal color signal from the first delay composite color television signal;

a horizontal/vertical color signal extracting filter for extracting horizontal and vertical color signals from said input, first delay and second delay composite color television signals;

a switching circuit for selectively outputting any one of outputs from said vertical color signal extracting filter, horizontal color signal extracting filter, and horizontal/-vertical color signal extracting filter; and

an image correlation judging circuit for comparatively judging correlation of an image by said input, first delay and second delay composite color television signals in the vertical and horizontal directions, and for outputting horizontal color signal when horizontal correlation in strong, for outputting vertical color signal when vertical correlation is strong and the horizontal correlation is weak, and for outputting both horizontal and vertical color signals when both the horizontal and vertical correlations are weak, respectively, from said switching circuit;

said image correlation judging circuit including,

(a) non-correlative energy extracting means for extracting horizontal color signal non-correlative energy representative of correlative strength of the horizontal color signal, horizontal brightness signal non-correlative energy representative of correlative strength of the horizontal brightness signal, vertical color signal non-cor-

relative energy representative of correlative strength of the vertical color signal, and vertical brightness signal non-correlative energy representative of correlative strength of the vertical brightness signal;

(b) comparative signal generating means for generating four comparative signals representative of vertical and horizontal correlative strengths of the composite color television signal, one based on horizontal color signal non-correlative energy, horizontal brightness signal non-correlative energy, vertical color signal non-correlative energy, and vertical brightness signal non-correlative energy, respectively,

(c) comparative judging means for comparatively judging the horizontal and vertical correlative strengths of the composite color television signal, and for controlling said switching circuit to output horizontal color signal extracted by the horizontal color signal extracting circuit when the horizontal correlation is strong, vertical color signal extracted by the vertical color signal extracting filter when vertical correlation is stronger than horizontal correlation, and horizontal/vertical color signals extracted by the horizontal/vertical color signal extracting filter when both the horizontal and vertical correlations are weak.

5,386,245

APPARATUS AND METHOD FOR PROCESSING A DIGITAL VIDEO SIGNAL WHICH PREVENTS DISCONTINUITIES AND EROSION OF THE PICTURE AREA

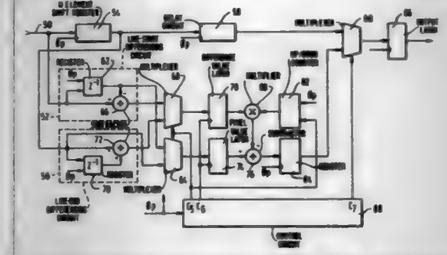
John W. Richards, Stockbridge, and Jonathan M. Soloff, Basingstoke, both of United Kingdom, assignors to Sony United Kingdom Ltd.

Filed Aug. 25, 1992, Ser. No. 934,319

Claims priority, application United Kingdom, Sep. 6, 1991, 9119091

Int. Cl.[6] H04N 5/46

U.S. Cl. 348—629 36 Claims



1. An apparatus for processing a digital video signal, comprising:

(a) means for receiving an input sequence of units of active pixel data;

(b) means for forming from said input sequence a delayed sequence of units of the active pixel data;

(c) means for producing at least one additional start pixel data unit derived from at least one unit at or adjacent the start of said input sequence;

(d) means for producing at least one additional end pixel data unit derived from at least one unit at or adjacent the end of said input sequence; and

(e) control means for forming an output sequence of pixel data units by supplying said at least one additional start pixel data unit, followed by at least part of said delayed sequence, and then by said at least one additional end pixel data unit.

26. A method of processing a digital video signal in which an input frame has a predetermined number of active pixels, comprising the steps of:

(a) forming from said input frame a first intermediate frame having a larger number of active pixels than said input frame by extrapolating the values of pixels of the input frame at or adjacent at least one edge of the input frame;

(b) processing said first intermediate frame to form a second intermediate frame in which the value of each pixel is derived from the values of the pixels in a respective patch of pixels in said first intermediate frame; and

(c) outputting said second intermediate frame or a portion thereof as an output frame having the same number of active pixels as said input frame.

5,386,246

Patent Not Issued For This Number

5,386,247

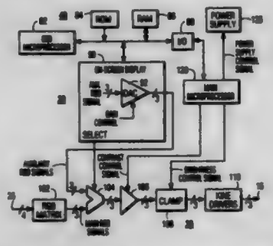
VIDEO DISPLAY HAVING PROGRESSIVELY DIMMED VIDEO IMAGES AND CONSTANT BRIGHTNESS AUXILIARY IMAGES

Kirk E. Shafer, Carmel; Aaron H. Dinwiddie, Fishers, and David J. Duffield, Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 2, 1993, Ser. No. 71,650

Int. Cl.[6] H04N 5/57, 5/44

U.S. Cl. 348—687 15 Claims



1. Apparatus for generating an on-screen display in an image display system, comprising:

a main image signal source;

an auxiliary image signal source, including circuitry for varying the perceived brightness of the image represented by the auxiliary image signal in response to a first control signal;

a video signal processor, coupled to the main image signal source and the auxiliary image signal source, and including circuitry for combining the main image signal and the auxiliary image signal to produce a combined image signal, and circuitry for varying the perceived brightness of the image represented by the combined image signal in response to a second control signal; and

a control signal generator for generating the first and the second control signals so that the perceived brightness of the image represented by the auxiliary image signal remains substantially constant when the perceived brightness of the main image signal is varied, said first and second control signals varying inversely to one another.

5,386,248

METHOD AND APPARATUS FOR REDUCING MOTION ESTIMATOR HARDWARE AND DATA TRANSMISSION CAPACITY REQUIREMENTS IN VIDEO SYSTEMS

Gerard De Haan, and Hendrik Huijgen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

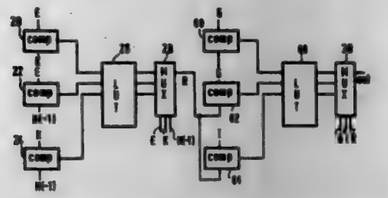
Continuation of Ser. No. 747,219, Aug. 19, 1991. This application Nov. 1, 1993, Ser. No. 146,468

Claims priority, application European Pat. Off., Aug. 28, 1990, 90202298

Int. Cl.[6] H04N 7/18

U.S. Cl. 348—699 6 Claims

1. Apparatus for determining motion vectors for each of a first group of image blocks together constituting a television image, comprising: first means for computing first motion vectors based on a second group of image blocks, said second group of image blocks comprising fewer image blocks than



said first group of image blocks, and second means for interpolating second motion vectors based on a third group of image blocks not included in said second group of image blocks, based at least in part on said first motion vectors.

5,386,249

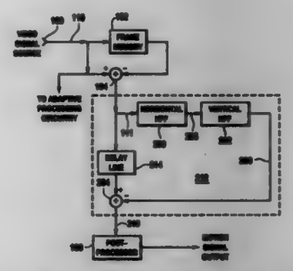
VIDEO MOTION DETECTOR WITH FULL-BAND RESPONSE EXCEPT FOR DIAGONAL SPATIAL FREQUENCIES

Christopher H. Strolle, Glenside, Pa., and Jung W. Ko, Lawrenceville, N.J., assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 22, 1992, Ser. No. 824,212

Int. Cl.[6] H04N 9/64

U.S. Cl. 348—701 43 Claims



1. A motion detector for use with a video signal source supplying a raster-scanned composite video signal descriptive of successive television image fields, said composite video signal including component luminance and chrominance signals, said motion detector comprising:

an input terminal for connection to said video signal source;

a comb filter connected for responding to said composite video signal as supplied via said input terminal, said comb filter being of a type for generating as its response a derivative primarily with respect to time of said composite video signal;

a chroma-suppressing filter, which filter is of a type that suppresses only diagonal high frequencies in the spatial-frequency domain and is connected for responding to the response of said comb filter to provide a corresponding response in which any said component chrominance signal is suppressed; and

a post-processor for performing an absolute value detection process and a signal spreading process on the output signal of said chroma-suppressing filter.

5,386,250

TWO-SOURCE ILLUMINATION SYSTEM

William F. Guerinot, Yorktown Heights, N.Y., assignor to Philips Electronics North America Corp., New York, N.Y.

Filed Aug. 9, 1993, Ser. No. 103,941

Int. Cl.[6] H04N 9/31

U.S. Cl. 348—770 12 Claims



1. A two-source illumination system comprising:

(a) a DMD (deformable micromirror device) having a planar array reflective deflection elements, and an axis normal to the plane of the array, the elements being deflectable to a first position in response to a first drive voltage, and being deflectable to a second position in response to a second drive voltage;

(b) voltage drive means for causing the elements to cycle periodically between the first and second positions;

(c) a first illumination source in a first off-axis position for illuminating the DMD when the elements are in the first position;

(d) a second illumination source in a second off-axis position for illuminating the DMD when the elements are in the second position; and;

(e) means for alternately illuminating the sources synchronously with the drive means so that the first source is on when the elements are in the first position and the second source is on when the elements are in the second position, whereby illumination reflected from the DMD is a combination of illumination from both sources.

5,386,251

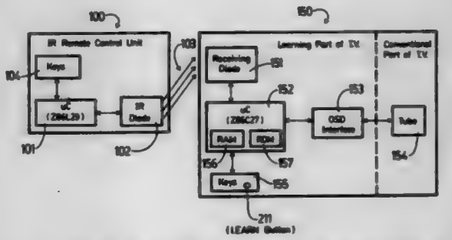
TELEVISION RECEIVER WITH LEARNING REMOTE CONTROL SYSTEM CAPABLE OF BEING CONTROLLED BY A REMOTE CONTROL DEVICE MANUFACTURED BY DIFFERENT COMPANIES

Aleksandr Movshovich, Santa Clara, Calif., assignor to Zilog, Inc., Campbell, Calif.

Filed Jun. 3, 1993, Ser. No. 72,180

Int. Cl.[6] H04N 5/44

U.S. Cl. 348—734 10 Claims



1. A system for operating an electronic device through the use of a remote control device, the operation of the electronic device being implemented via execution of plurality of executable routines stored within the electronic device, the remote control device being capable of generating a plurality of pre-

defined remote control signals, the electronic device being pre-programmed by a manufacturer to identify and respond to each of said pre-defined remote control signals, wherein at least one predefined remote control signal has assigned to it a corresponding executable routine, and wherein reception of one of said predefined remote control signals causes the electronic device to execute the corresponding executable routine assigned to the one signal, the electronic device further being capable of generating a video signal for use in conjunction with a video display device, said system comprising:

receiving means in communication with the electronic device and responsive to the plurality of remote control signals generated from the remote control device for receiving said plurality of control signals one at a time;

assigning means for assigning to a received pre-defined remote control signal a different corresponding executable routine than that originally assigned by the manufacturer, and

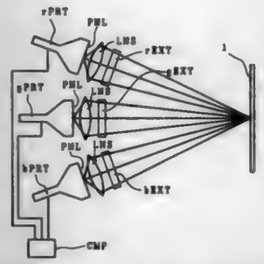
executing means responsive to said assigning means for executing the different corresponding executable routine assigned to said received remote control signal.

5,386,252

PROJECTION SYSTEM AND DISPLAY APPARATUS FOR COMPRESSING AND EXPANDING ASPECT RATIO OF A PICTURE

Kentaro Oku, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,011
Claims priority, application Japan, Aug. 27, 1991, 3-215032
Int. Cl.[6] H04N *5/74, 9/31*
U.S. Cl. 348—746 **12 Claims**



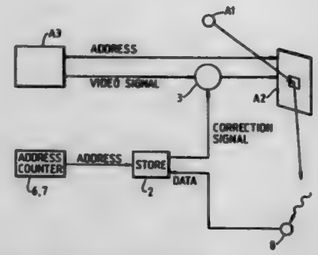
1. A projection system for a picture comprising means for generating source pictures, projection optical system means for magnifying the source pictures formed in said means for generating source pictures and for projecting the magnified source pictures, and a projection means for receiving the magnified and projected source pictures from the projection optical system means, the means for generating source pictures forming source pictures so that an aspect ratio of an original picture is varied so as to become substantially closer to 1, and the projection system for magnifying and projecting the source pictures onto the projection means including means for expanding the source pictures so as to expand the aspect ratio of the source pictures projected onto the projection means to an aspect ratio substantially corresponding to the aspect ratio of the original picture.

5,386,253

PROJECTION VIDEO DISPLAY SYSTEMS

Raymond G. Fielding, Middletown, Great Britain, assignor to Rank Brimar Limited, Great Britain

Filed Nov. 12, 1992, Ser. No. 934,507
Claims priority, application United Kingdom, Apr. 9, 1990, 9008031
Int. Cl.[6] H04N *9/34, 5/74, 9/64, 9/73*
U.S. Cl. 348—745 **17 Claims**



1. A projection system comprising:

a light source;

a two-dimensional spatial light modulator device comprising a plurality of individually controllable modulation elements arranged as an array;

control means for receiving a video signal representative of an image to be projected;

means for individually accessing said modulation elements in response to said video signal;

means for directing a beam of light from said light source onto said modulator device;

a screen positioned to receive the beam from said light source after modulation by said light modulator device so as to display a projected image; and

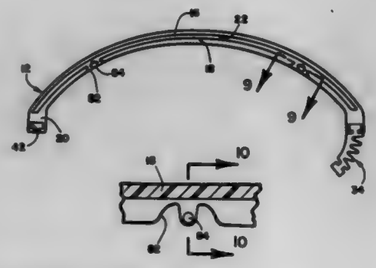
means for varying the video signal so as to change the modulation characteristics of chosen ones of said modulation elements so that the projected image will be perceived by an observer viewing the projected image on the screen as being of substantially uniform intensity over the area of the screen.

5,386,254

SUNGLASSES ASSEMBLY

Alan Kahaney, 2212 Place Monaco, Del Mar, Calif. 92014

Filed Jul. 19, 1993, Ser. No. 93,563
Int. Cl.[6] G02C *1/00*
U.S. Cl. 351—60 **6 Claims**



1. A sunglasses assembly comprising:

an elongated lens support frame having a left end and a right end, a front surface, a rear surface, a top surface and a bottom surface;

a one-piece sunglasses lens having a top edge, a bottom edge, a front surface and a rear surface, said bottom edge having a nose-pad cutout portion for detachably receiving a nose-pad assembly;

means for detachably connecting the top edge of said sunglasses lens to the bottom surface of said lens support frame comprising a groove in the bottom surface of said lens support frame for detachably receiving said sunglasses lens, said groove thereby forming a front wall having a bottom edge and a rear wall having a bottom edge in said lens support frame, a pair of laterally spaced relieved portions are formed in said rear wall and extend upwardly from its bottom edge, a finger extends downwardly from each of said relieved portions and said fingers have a front surface and a rear surface, a protrusion extends from the front surface of each of said fingers, said sunglasses lens has a pair of laterally spaced recesses in its rear surface adjacent its top edge that detachably receives the respective protrusions on the fingers of said lens support frame;

a left temple member having a front end and a rear end;

a right temple member having a front end; and

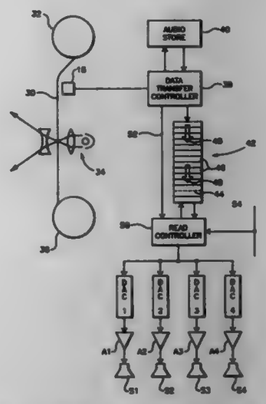
means for detachably connecting the front ends of said respective temple members to the respective left and right ends of said lens support frame.

5,386,255

MOTION PICTURE DIGITAL SOUND SYSTEM AND METHOD WITH PRIMARY SOUND STORAGE EDIT CAPABILITY

Terry D. Beard, Westlake Village; Joseph Dellaria, Agoura Hills, and James S. Ketcham, Woodland Hills, all of Calif., assignors to Digital Theater Systems, L.P., Westlake Village, Calif.

Continuation-in-part of Ser. No. 620,825, Nov. 29, 1990, and a continuation-in-part of Ser. No. 842,789, Feb. 26, 1992, which is a continuation of Ser. No. 590,294, Sep. 28, 1990, abandoned.
This application Aug. 12, 1992, Ser. No. 928,956
Int. Cl.[6] G03B *31/00*
U.S. Cl. 352—5 **17 Claims**



1. In a movie projection system having a projector for projecting visual images from a movie film, and means for advancing a movie film past the projector, the improvement comprising a movie sound system that comprises:

a time code reader for reading a time code on the movie film,

a digital audio store for storing sound for the movie in a digital format that corresponds to the movie time code,

a FIFO digital memory having a data input and a data output,

a digital data transfer controller that responds to the time code read from the movie film by accessing the digital audio store and transmitting to the FIFO memory's data input the digital sound data that corresponds to said time code, the digital data transfer controller's access time being less than the film travel time from the time code reader to the projector, said digital data transfer controller responding to a jump in the time code read by the time code reader by making a corresponding access jump in the digital audio store, without any jump being made in the digital sound data in the FIFO memory,

means for reading digital sound data out from the FIFO memory data output at a substantially constant rate that corresponds to the film advancement rate, with said FIFO memory providing a substantially continuous and uninterrupted sound data output rate during access jumps in the digital audio store, and

digital-to-analog converter (DAC) means for converting the digital sound data read out from the FIFO memory to an analog format,

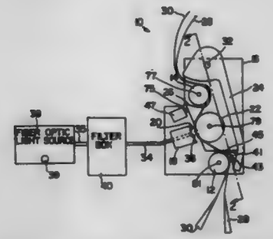
said digital audio store having a data output rate capability that is greater than the rate at which digital sound data is read out from said FIFO memory.

5,386,256

PRINTER MODULE FOR RECORDING A DIGITAL SOUNDTRACK

Jeffrey E. Taylor, Chatsworth; Lane R. Stewart, La Puente; Thomas Tate, Valverde; Richard Weisman, Hollywood; Dana Wood, Los Angeles, and LeRoy H. Reese, Burbank, all of Calif., assignors to Sony Dynamic Digital Sound, Inc., Culver City, Calif.

Filed Apr. 28, 1993, Ser. No. 54,765
Int. Cl.[6] G03B *31/02, 27/32, 27/08*
U.S. Cl. 352—27 **15 Claims**



1. A module for a contact printer used to manufacture a motion picture, wherein a sound negative having a negative digital soundtrack is placed in contact with motion picture film, comprising:

a baseplate affixed to said contact printer;

first and second guide rollers rotatably mounted to said baseplate;

a pivot arm rotatably mounted to said baseplate;

a main roller located in a first position between said first and second guide rollers and rotatably mounted to said pivot arm, wherein when said main roller is in said first position said film contacts said main roller and said sound negative contacts each of said first and second guide rollers and wherein rotation of said pivot arm moves said main roller away from said first and second guide rollers into a loading position to enable installation of said film and said sound negative between said main roller and said first and second guide rollers; and

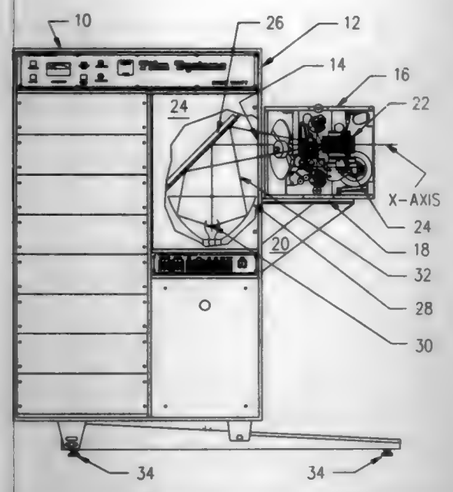
light means for providing light for exposing said film positioned adjacent said sound negative, wherein said light impinges on said sound negative and transmits therethrough thereby forming a positive digital optical soundtrack on said film.

5,386,257

APPARATUS FOR ALIGNING THE OPTICAL SYSTEM OF A LAMPHOUSE AND A MOVIE PROJECTOR

Troy Swartwood, 779 N. Benson, Upland, Calif. 91786

Filed Sep. 27, 1993, Ser. No. 126,399
Int. Cl.[6] G03B *21/00*
U.S. Cl. 352—198 **4 Claims**



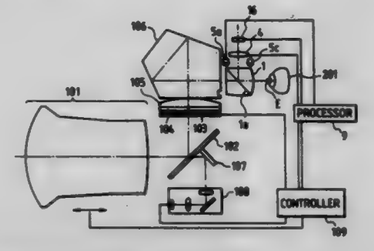
1. Apparatus for aligning the optical system of a lamphouse and a movie projector comprising:
a movie projector having a center beam optical axis;
a lamphouse cabinet having a front wall with means for allowing light beams to pass through said front wall;
a mirror having a front surface mounted in said lamphouse cabinet so that said front surface is intersected by said center beam optical axis;
means for adjusting the alignment of said mirror;
a reflector having a front surface mounted in said lamphouse cabinet with its front surface facing the front surface of said mirror;
means for adjusting the alignment of said reflector;
said reflector having a focal point identified as the lamp arc position;
a laser alignment tool comprising; a tubular sleeve housing having a front end and a rear end, a front end cap having a central aperture and a rear end, said front end cap being removably received in the front end of said tubular sleeve; a first ball bearing race removably received in the rear of said front end cap; a beam splitter diffraction grating for splitting the beam into multiple beams of equal intensity consisting of a center beam and beams to either side at equal angles; said beam splitter diffraction grating being removably mounted in a grating cover and they are secured in a fixed relationship to a center gear having a neck that is removably received in a second ball bearing race; a DC motor having a drive gear mounted on a drive shaft and said drive gear meshes with said center gear; means for mounting said DC motor in sad tubular sleeve housing; a laser diode module mounted in said tubular sleeve housing in alignment with the aperture in said front end cap so that a beam of light can pass therethrough; a battery mounted in said laser alignment tool for powering sad laser diode module and said motor; and
means for removably mounting said laser alignment tool in said movie projector on said center beam optical axis.

5,386,258

OPTICAL APPARATUS HAVING A VISUAL AXIS DIRECTION DETECTING DEVICE

Akihiko Nagano, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 148,425, Nov. 8, 1993, abandoned, which is a continuation of Ser. No. 821,622, Jan. 16, 1992, abandoned. This application Jun. 22, 1994, Ser. No. 264,183
Claims priority, application Japan, Jan. 17, 1991, 3-017092; Jan. 17, 1991, 3-017093
Int. Cl.[6] G03B *3/00, 13/02, 29/00*
U.S. Cl. 354—400 **19 Claims**



1. An optical apparatus comprising:
a viewer for viewing an object
light receiving means for receiving a reflected light beam from an eyeball of an observer looking into said viewer;
display means for displaying a plurality of index marks at a plurality of positions, wherein one of said plurality of index marks is selectively conspicuously displayed; and
means for obtaining at least one optical constant of the anterior part of the eyeball from an electrical signal of said light receiving means, for effecting correction of the calculation of the direction of the visual axis of the eyeball by the use of the optical constant, and for producing a signal indicative of the direction of the visual axis,
wherein the electrical signal of said light receiving means is produced when the observer looks at the index mark conspicuously displayed by said display means.

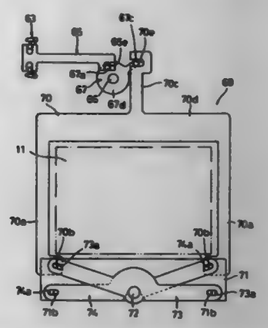
5,386,259

COORDINATING MECHANISM FOR PICTURE IMAGE AREA AND FIELD FRAME SIZE ADJUSTING APPARATUS OF CAMERA

Yuichi Ichikawa, and Kosei Kosako, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1993, Ser. No. 150,865
Claims priority, application Japan, Jan. 18, 1993, 5-000923[U]
Int. Cl.[6] G03B *13/10, 37/00*
U.S. Cl. 354—94 **22 Claims**

1. An apparatus of a camera for adjusting the size of a picture image area and a field frame of a view finder in an associated manner, comprising:
a picture image area restricting member that is linearly movable into and out of a photographing aperture;
a field frame restricting member movable into and out of said field frame;
a driven member for moving said field frame restricting member;
a rotatable operating member connected to said picture image area restricting member and said driven member whereby a rotation of said rotatable operating member



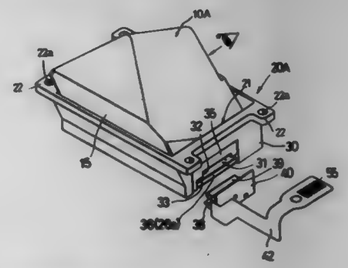
causes linear motion of both said picture image area restricting member and said driven member, respectively.

5,386,260

CAMERA HAVING INDICATOR WITH FINDER

Tadayuki Kirigaya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 792,889, Nov. 15, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,492
Claims priority, application Japan, Nov. 15, 1990, 2-119697[U]
Int. Cl.[6] G03B *17/00, 13/02*
U.S. Cl. 354—289.12 **17 Claims**



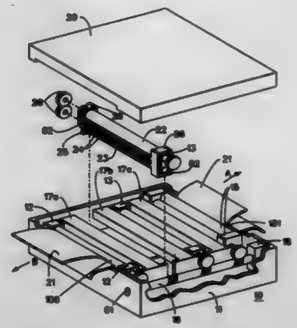
1. A camera comprising:
a camera body
a viewfinder optical system;
a mirror receptacle;
an insertion slot on one side of said mirror receptacle, said insertion slot being formed with a wide opening and a narrow opening;
indicator means for indicating photographic information inserted in said insertion slot and engaged therein so as to form a subassembly with said mirror receptacle prior to attachment of said mirror receptacle to said camera body, said indicator means including a light source, a photographic information indicating plate, and a light reflecting surface for reflecting light emitted from said light source for illuminating said indicating plate with light emitted from said light source; and,
means for supporting said mirror receptacle/indicator means subassembly by said camera body, with said indicator means supported within said view finder optical system.

5,386,261

VERTICAL AND HORIZONTAL POSITIONING AND COUPLING OF AUTOMATIC TRAY PROCESSOR CELLS

David L. Patton, Webster; Joseph A. Maulco, Rochester; John H. Rosenburgh, Hilton, and Ralph L. Piccinino, Jr., Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 57,131, May 3, 1993, Pat. No. 5,347,337. This application Mar. 10, 1994, Ser. No. 209,754
Int. Cl.[6] G03D *3/02*
U.S. Cl. 354—324 **20 Claims**



1. An apparatus for processing photosensitive materials, said apparatus comprising:
a processing module comprising a container, at least one processing assembly placed in said container and at least one trapsport assembly disposed adjacent said at least one processing assembly, said at least one processing assembly and said at least one transport assembly forming a substantially continuous processing channel through which a processing solution flows, said processing channel comprising at least 40% of the total volume of processing solution available for the processing module and having a thickness equal to or less than about 100 times the thickness of the photosensitive material to be processed in said processing channel, at least one discharge opening is provided in said at least one transport assembly or said at least one processing assembly for introducing processing solution to said channel, wherein two or more modules may be interconnected so that the photosensitive material may transported from one of the modules to the next module; and
means for circulating the processing solution from said small volume provided in said module directly to said at least one discharge opening.

5,386,262

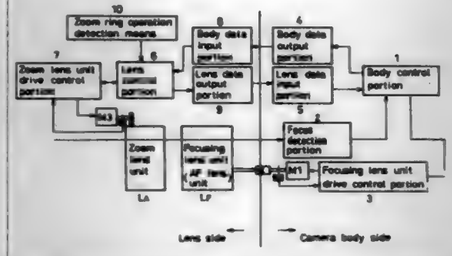
CAMERA

Kenji Ishibashi, Sakai; Yoshihiro Hara, Kishiwada; Kazuhiko Yukawa, Wakayama; Akihiko Fujino, Sakai; Yasuo Maeda, Kawachinagano; Shigeto Ohmori, Sakai; Fumiaki Ishito, Sakai; Hiroshi Ootsuka, Sakai, and Masayuki Miyazawa, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 743,241, Aug. 9, 1991, Pat. No. 5,319,411. This application Apr. 28, 1994, Ser. No. 233,943
Claims priority, application Japan, Aug. 11, 1990, 2-212675; Aug. 11, 1990, 2-212676; Aug. 11, 1990, 2-212677; Aug. 11, 1990, 2-212678; Aug. 11, 1990, 2-212679; Sep. 11, 1990, 2-241979; Sep. 11, 1990, 2-241980; Nov. 2, 1990, 2-298624
Int. Cl.[6] G03B *13/00*
U.S. Cl. 354—402 **4 Claims**

1. A single-lens reflex camera comprising:
a finder whose angle of view is determined according to a focal length of the taking lens;

a taking lens having a zooming optical system;
a zooming mechanism which changes the focal length of said taking lens by driving said zooming optical system;
an operation member which is operated to start an exposure;
a mode selecting mechanism which selects between a first mode where an exposure control is started at a focal length when said operation member is operated and a second mode where the exposure control is started after a zooming operation is performed in the telephoto direction from the focal length when said operation member is operated;



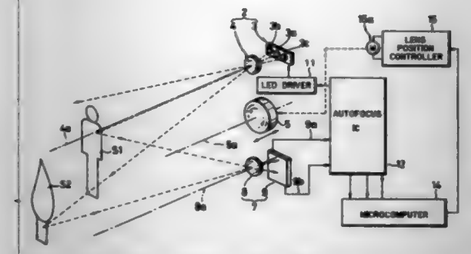
a focus detecting device which detects a focus condition of said taking lens with respect to an object situated in a plurality of focus detection areas on an image plane, wherein one of said plurality of focus detection areas is situated in the center; and
a focusing device which adjusts the focus of said taking lens based on a plurality of focus detection data with respect to said plurality of focus detection areas in said first mode and for adjusting the focus of said taking lens based on a focus detection data with respect to said focus detection area situated in the center of the image plane in said second mode.

5,386,263

METHOD AND APPARATUS FOR RANGEFINDING

Takaaki Kotani; Seiji Takada, both of Tokyo; Shigenori Goto, and Tatsuo Saito, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 779,882, Oct. 21, 1991. This application Nov. 26, 1993, Ser. No. 157,436
Claims priority, application Japan, Oct. 20, 1990, 2-282920; Nov. 14, 1990, 2-307976; Dec. 14, 1990, 2-410843; Dec. 17, 1990, 2-411155
Int. Cl.[6] G03B *3/00, 13/18*
U.S. Cl. 354—403 **27 Claims**



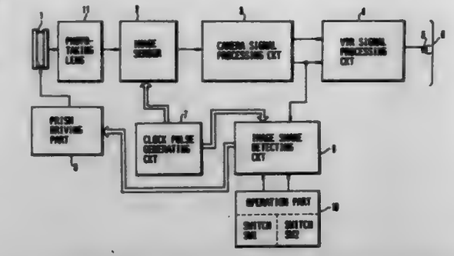
1. A method of measuring an object distance using an active-type rangefinding device comprising light projecting means, light receiving means comprising a position sensitive detector (PSD) and a first lens disposed in front of said PSD, at least one gain control amplifier, and calculating means, said method having a gain determining procedure and a rangefinding procedure, said gain determining procedure comprising the steps of:
projecting light toward an object using said light projecting means;
receiving light reflected from said object with said light receiving means comprising said PSD, said PSD outputting two channel currents varying as a function of a position and intensity of light incident on said PSD;
amplifying said two channel currents output from said PSD of said light receiving means using two gain control amplifiers each amplifying a respective one of said two channel currents, said gain control amplifiers outputting two channel measurement signals;
determining whether said signals output from said gain control amplifiers are within a predetermined range;
adjusting the gain of said gain control amplifiers when said signals output from said gain control amplifiers are outside said predetermined range; and
upon adjusting said gain, delaying commencement of said rangefinding procedure for a predetermined time period during which the operation of said gain control amplifier stabilizes;
said rangefinding procedure comprising the steps of:
sequentially performing said projecting, receiving and amplifying steps; and
calculating a distance signal using said calculating means, said distance signal being representative of said object distance in accordance with said signals output from said gain control amplifiers.

5,386,264

IMAGE SHAKE DETECTING DEVICE

Masayoshi Sekine; Toshiyuki Nakajima, both of Tokyo; Takashi Kai, Kanagawa; Katsuji Yoshimura, Shizuoka, and Masamichi Toyama, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 970,652, Oct. 30, 1992, abandoned, which is a continuation of Ser. No. 621,294, Jan. 23, 1991, abandoned, which is a division of Ser. No. 319,658, Mar. 6, 1989, Pat. No. 5,012,270. This application Apr. 26, 1993, Ser. No. 53,961
Claims priority, application Japan, Mar. 10, 1988, 63-057670; Apr. 15, 1988, 63-092695; Apr. 15, 1988, 63-092697; May 19, 1988, 63-123625; Oct. 27, 1988, 63-269554; Feb. 6, 1989, 1-027038
Int. Cl.[6] G03B *7/08*
U.S. Cl. 354—430 **29 Claims**



1. A camera having an image movement detecting device for detecting a movement of an image on an image sensing plane on the basis of an image signal output from image sensing means, comprising:
a) detection means for detecting the displacement of the image on the basis of image signals corresponding to a plurality of detection areas set on said image sensing plane;
b) means for computing representative displacement information of the image on the basis of the output of said detection means;

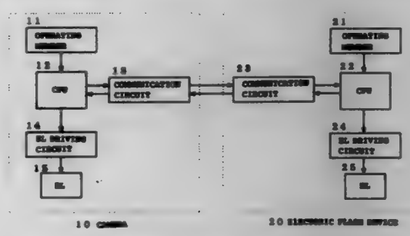
c) compensating means for outputting an image signal, in which a representative displacement of said image has been compensated, on the basis of the representative displacement information obtained by said computing means; and
d) recording means for recording the signal outputted from said compensating means on a recording medium, said plurality of detection areas including at least first and second detection areas, an image located within said first area corresponding to a main object image in said image sensing plane and said second detection area corresponding to a background of said main object image in said image sensing plane.

5,386,265

DISPLAY LIGHTING DEVICE

Hiroshi Sakamoto, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,763
Claims priority, application Japan, Jan. 27, 1992, 4-012342
Int. Cl.[6] G03B *7/26*
U.S. Cl. 354—484 **11 Claims**



1. In a camera system having a camera and an accessory equipment, each of said camera and said accessory equipment comprising:
a display unit including a lighting device to light a display screen of said display unit,
an operating member to be operated by a user of the camera system, and
a control circuit responsive to said operating member to control said lighting device and to output a turning on signal and a turning off signal;
said camera and said accessory equipment defining first and second devices, and said control circuits of said camera and of said accessory equipment defining first and second control circuits that communicate between said first and second devices in order to transfer said turning on signal and said turning off signal between said first and second devices, said first control circuit of said first device turning on said lighting device of said first device in response to said turning on signal from said second control circuit of said second device, and said second control circuit of said second device turning off said lighting device of said second device in response to said turning off signal from said first control circuit of said first device.

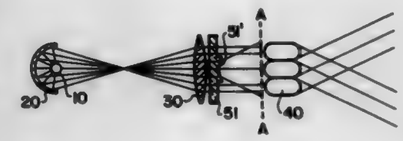
5,386,266

PROJECTION EXPOSURE SYSTEM

Ho-young Kang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 22, 1993, Ser. No. 155,003
Claims priority, application Rep. of Korea, Nov. 21, 1992, 21977/92
Int. Cl.[6] G03B *27/54*
U.S. Cl. 355—67 **4 Claims**

1. A projection exposure system comprising:
a light source for producing light;
a fly's eyes lens which receives light from said light source to illuminate a mask; and
a light dispersing lens placed between said light source and said fly's eyes lens along a light traveling path for diverging centrally incident light toward a periphery of said fly's eyes lens.

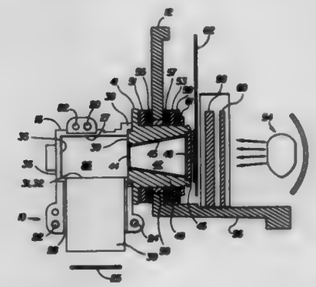


5,386,267

LIGHT INTEGRATING CAVITY FOR A FILM SCANNER

Robert S. Jones, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1994, Ser. No. 197,775
Int. Cl.[6] F21V *7/00*; G01J *1/00*
U.S. Cl. 355—7 **19 Claims**



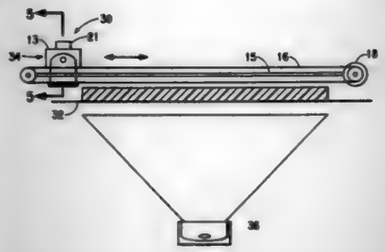
1. A linear light integrator of the type employed in a film scanner for integrating light from a light source of diverging illumination and forming a line of uniform intensity, diffuse illumination at a film scanning plane comprising:
an elongated generally cylindrical light integrating cavity having diffusely reflecting walls defining an input port in one end thereof through which light from said light source is introduced into said cavity, and a longitudinal slit in a side wall extending parallel to the longitudinal axis of said cavity through which reflected and integrated diffuse light exits said cavity;
an elongated light conducting bar associated with said elongated slit for conducting light exiting said slit in a direction extending away from said cavity and for emitting the conducted light in a line of uniform intensity, diffuse illumination from a sealed end face of said elongated light conducting bar at a predetermined distance from said exit slit adjacent said scanning plane;
a light input member for concentrating and conducting diverging light from said light source into said input port of said light integrating cavity; and
a seal formed over said light input member formed of a material transparent to light emitted by said light source for sealing said light integrating cavity from the infiltration of contaminants.

5,386,268

EXPOSURE UNIT AND METHOD FOR EXPOSING PHOTOSENSITIVE MATERIALS

Albert H. Ohlig, Costa Mesa; Steven W. Nelson, Orange, both of Calif.; Robert J. Verbiar, West Chester, Pa., and Stephen Cushner, Lincroft, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 26, 1993, Ser. No. 97,145
Int. Cl.[6] G03B *27/54*
U.S. Cl. 355—70 **13 Claims**



1. An exposure unit for imaging a photosensitive material comprising:
- means for exposing the photosensitive material to actinic radiation such that the radiation strikes the photosensitive material at a plurality of angles of incidence;
- means for moving the exposing means relative to and in a plane parallel to the photosensitive material; and
- means for controlling (1) the proportion of (a) radiation having perpendicular angles of incidence to (b) radiation having non-perpendicular angles of incidence, such that the radiation having non-perpendicular angles is increased, and (2) the distribution of non-perpendicular angles of incidence.

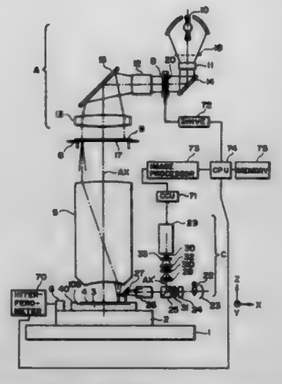
5,386,269

ALIGNMENT AND EXPOSURE APPARATUS

Masao Kosugi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 962,052, Oct. 16, 1992, abandoned, which is a continuation of Ser. No. 795,259, Nov. 19, 1991, abandoned, which is a continuation of Ser. No. 700,932, May 13, 1991, abandoned, which is a continuation of Ser. No. 598,820, Oct. 17, 1990, abandoned, which is a continuation of Ser. No. 349,222, May 9, 1989, abandoned. This application Mar. 21, 1994, Ser. No. 215,979
Claims priority, application Japan, May 12, 1988, 63-115534
Int. Cl.[6] G03B *27/52*
U.S. Cl. 355—43 **14 Claims**

1. A step-and-repeat type projection exposure apparatus for projecting a device pattern of a reticle on different zones of a workpiece in sequence through a projection optical system, wherein said apparatus comprises:
- a reticle holder for holding the reticle;
- a workpiece holder for holding the workpiece;
- a movable stage for holding the workpiece holder;
- wherein said workpiece holder has a plurality of recording areas each being provided by a magneto-optical material, a photochromic material, or a photosensitive material, the recording areas being located around the periphery of the workpiece held by said workpiece holder,
- wherein said movable stage is adapted to move said workpiece holder so that on each of the recording areas an image of a mark of the reticle is projected and thus recorded through the projection optical system; and
- detecting means for detecting the images recorded on the recording areas of said workpiece holder and means for determining, on the basis of obtained data, the coordinates



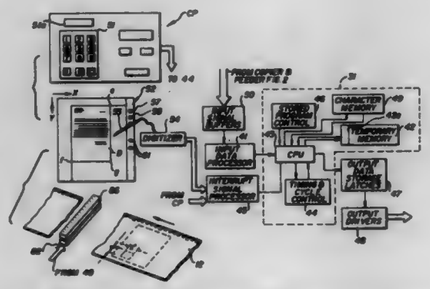
of the pattern array on the workpiece for step-and-repeat exposures of the workpiece.

5,386,270

ELECTROSTATOGRAPHIC REPRODUCTION APPARATUS WITH ANNOTATION FUNCTION

Edward M. Housel, Gates, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1990, Ser. No. 525,928
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—202 **9 Claims**



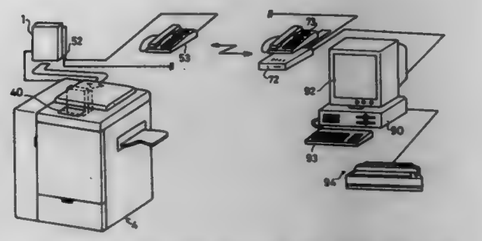
1. An electrostatographic reproduction apparatus comprising:
- means for designating a dimension parameter of an area on an original document to be reproduced with an annotation and generating first signals related to same;
- means for storing data to be used to form an annotation;
- means responsive to the first signals for determining an orientation of the annotation on a reproduction to be produced of the original document;
- means for scaling the data to a size related to the dimension parameter of the area and generating second signals representing same;
- an electrostatic recording element;
- means for modulating charge on the recording element with image information from an original document to be reproduced;
- means responsive to said second signals for modulating charge on the recording element to record the annotated information;
- means for developing the information recorded on the recording element; and
- means for transferring the developed information to a copy sheet to form a reproduction of the original document with an annotation in the area of a size corresponding to a dimension parameter of the area.

5,386,271

CENTRALIZED CONTROL SYSTEM FOR AN IMAGE FORMING APPARATUS WHICH EMPLOYS FUZZY LOGIC TO IDENTIFY ABNORMAL CONDITIONS

Kazunobu Maekawa, Toyokawa; Sumiaki Hirata, Aichi, and Ikunori Yamaguchi, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 12, 1992, Ser. No. 928,359
Claims priority, application Japan, Aug. 30, 1991, 3-244797
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—204 **18 Claims**



1. A control system for an image forming apparatus of the type including an image forming apparatus for forming an image on paper and a control unit connected to the image forming apparatus through a communication line, wherein
said image forming apparatus includes:
- image forming means for implementing an image forming operation according to a pre-set value for determining picture quality,
- a plurality of detecting means for detecting respectively different physical quantities with respect to an operational condition of said image forming means, and
- means for transmitting to said control unit through said communication line a result detected by said detecting means, and wherein

said control unit includes:
- means for receiving said detected result transmitted from said image forming apparatus,
- storing means storing a plurality of membership functions representing possibilities of occurrence of certain abnormalities corresponding to said respective physical quantities,
- diagnosing means for determining the possibilities of occurrence of plural kinds of abnormalities corresponding to said detected result received by said receiving means on the basis of the plurality of membership functions stored in said storing means, and
- a display means for displaying the content of a diagnosis determined by said diagnosing means.

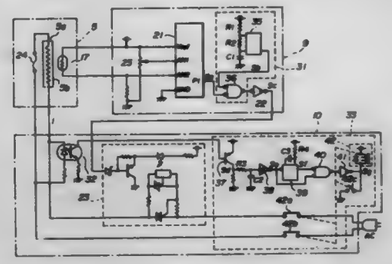
5,386,272

APPARATUS AND METHOD FOR PROTECTING FIXING UNIT IN IMAGE FORMING SYSTEM AGAINST DAMAGE

Yasushi Nakazato, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 23, 1991, Ser. No. 763,930
Claims priority, application Japan, Sep. 28, 1990, 2-257025
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—207 **22 Claims**

22. A system for protecting a fixing unit in an image forming system against damage, said fixing unit comprising a fixing roller heated with an electrically driven heater supplied with electrical power from a power source, and said system comprising:
- a first detector unit detecting a fixing temperature of said fixing roller at which toner is fixed on a copy sheet;
- a switching circuit coupled with first detector and said power source to selectively apply electrical current from said source to said heater in response to the fixing temperature detected by said first detector unit;
- a control signal generator generating a control signal which alternates between a first state that has a relatively short time duration and a second state that has a relatively long time duration, said control signal being applied to said switching circuit to command the switching circuit not to



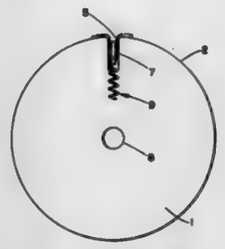
apply current to the heater during times corresponding to said relatively short time duration but to apply current to the heater during times corresponding to said relatively long time duration;
- a second detector unit detecting the duration of time during which current is being supplied to the heater without interruption after each of said times corresponding to said relatively short time duration; and
- a current cut-off circuit coupled to said second detecting unit to cut off the application of current to the heater if the duration of time detected by the second detecting unit exceeds a time longer than said relatively long time duration.

5,386,273

BELT PHOTORECEPTOR ON CYLINDRICAL MANDREL

Larry M. Wood, Rochester, and Lam F. Wong, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 5, 1993, Ser. No. 13,902
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—212 **11 Claims**



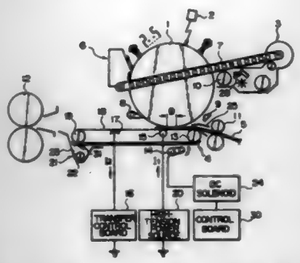
1. A photoreceptor apparatus comprising:
- a mandrel having a cylindrical axis and a slot running generally parallel to said cylindrical axis;
- a continuous photoreceptor belt; and
- a releasable key positioned in said slot tensionally securing said photoreceptor belt to a periphery of said mandrel.

5,386,274

IMAGE FORMING APPARATUS HAVING A TONER COLLECTING MECHANISM FOR REMOVING FOREIGN PARTICLES FROM THE COPIER ENVIRONMENT

Atsushi Sanpe, Yokohama, and Naomi Misago, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 23, 1993, Ser. No. 125,306
Claims priority, application Japan, Sep. 28, 1992, 4-257766; Nov. 19, 1992, 4-310066; Jun. 21, 1993, 5-148747
Int. Cl.[6] G03G *21/00, 15/16*
U.S. Cl. 355—215 3 Claims



1. An image forming apparatus for providing impurity free toner remaining on a photoconductive element after image transfer, said apparatus comprising:

a latent image forming means for electrostatically forming a latent image on said photoconductive element;

developing means for developing said latent image to produce a corresponding toner image;

transferring means for transferring said toner image to a paper, said transferring means including an elastic transfer belt, roller means for driving said belt, a bias roller contacting said belt over a nip width and a power source for providing a high-power transfer bias to said bias roller, a contact plate located downstream of said bias roller wherein said power source provides a first current and said contact plate provides a second current wherein the difference between said first current and said second current is a predetermined value resulting in a reduction in the reverse charging during image transfer so that residual toner retains an original polarity, said transferring means also including a paper guide means and a belt cleaning means for removing impurities.

5,386,275

FLUID-FILLED ELASTIC MOUNT HAVING OSCILLATING PLATE DRIVEN BY ELECTROMAGNETIC MEANS INCLUDING MAGNET FIXED TO MOVABLE INNER YOKE MEMBER, AND ANNULAR COIL FIXED TO STATIONARY OUTER YOKE MEMBER

Reutaro Kato, Kasugai, and Masahiko Nagasawa, Kani, both of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Sep. 23, 1993, Ser. No. 125,228
Claims priority, application Japan, Sep. 30, 1992, 4-286809
Int. Cl.[6] H01F *1/00*; F16M *1/00*
U.S. Cl. 335—219 14 Claims

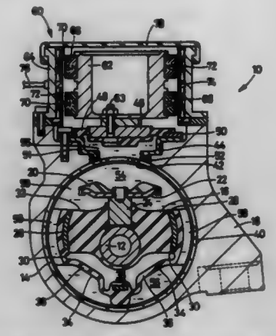
1. A fluid-filled elastic mount comprising:

a first and a second support member which are spaced apart from each other by a predetermined distance;

an elastic body interposed between said first and second support members and elastically connecting said first and second support members, said elastic body partially defining a fluid chamber filled with a non-compressible fluid;

an oscillating plate partially defining said fluid chamber and supported by said second support member such that said oscillating plate is displaceable to control a pressure of said fluid in said fluid chamber and thereby change vibration damping and isolating characteristics of the elastic mount; and

an electromagnetic drive device including (a) an inner yoke member fixed to one of opposite sides of said oscillating plate remote from said fluid chamber, (b) an annular outer yoke member disposed radially outwardly of said inner yoke member and fixed to said second support member, said annular outer yoke member being exposed to ambient atmosphere at an outer circumferential surface thereof to facilitate radiation of heat from said annular outer yoke member into the atmosphere, (c) at least one moving



permanent magnet fixed to said inner yoke member, cooperating with said inner and outer yoke members to define a closed magnetic circuit, and cooperating with said outer yoke member to define an annular magnetic gap in said closed magnetic circuit, and (d) at least one annular stationary coil disposed in said annular magnetic gap and fixed to said annular outer yoke member, said at least one moving permanent magnet being displaced in an axial direction of said annular magnetic gap together with said inner yoke member to thereby oscillate said oscillating plate upon energization of said at least one annular stationary coil.

5,386,276

DETECTING AND CORRECTING FOR LOW DEVELOPED MASS PER UNIT AREA

Michael G. Swales, Sodus, and John D. Sotack, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

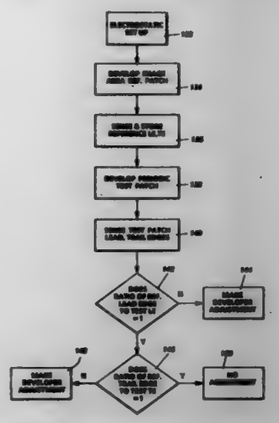
Filed Jul. 12, 1993, Ser. No. 89,208
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—246 21 Claims

18. In a machine having an imaging surface, a projecting system for projecting an image onto the imaging surface, a developer controlled by a given set point for application of developer material to the image projected onto the imaging surface, the method of adjustment of the developer set point comprising the steps of:

developing a test patch on the imaging surface,

determining toner concentration of a first portion and a second portion of the test patch developed on the imaging surface,

comparing the toner concentration of the first portion and the second portion of the test patch, and



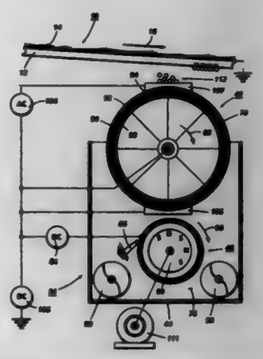
selectively adjusting the set point in response to said comparing.

5,386,277

DEVELOPING APPARATUS INCLUDING A COATED DEVELOPER ROLLER

Dah A. Hays, Fairport; Joseph Mammino, Penfield; Damodar M. Pai, Fairport; Donald S. Sypula, Penfield; William H. Wayman, Ontario; John F. Yanus, Webster, and Paul J. DeFeo, Sodus Point, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1993, Ser. No. 37,836
Int. Cl.[6] G03G *15/06*
U.S. Cl. 355—259 14 Claims



1. An apparatus for developing a latent image recorded on a surface, including

a housing defining a chamber storing a supply of developer material comprised of carrier and toner;

a coated toner donor member spaced from the surface and being adapted to transport toner to a region opposed from the surface, and wherein said coated donor member contains as a part thereof a dielectric core roll;

means for advancing developer material in the chamber of said housing, said advancing means and said donor member cooperating with one another to define a region wherein a substantially constant quantity of toner having a substantially constant triboelectric charge is deposited on said donor member; and

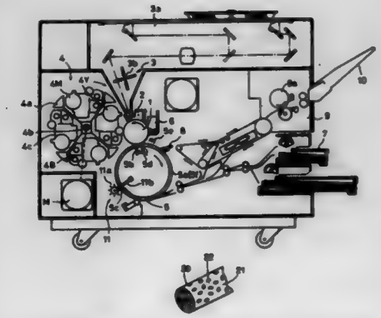
electrode members positioned near the surface of said dielectric core roll, said electrodes being electrically biased to detach toner from said donor member as to form a toner cloud for developing the latent image, and wherein the coated toner member is comprised of a core with a coating comprised of an oxidized polyether carbonate.

5,386,278

CLEANING FIBER, CLEANING BRUSH AND IMAGE FORMING APPARATUS USING THE SAME

Ryuichiro Maeyama, Yokohama, and Takahiro Kubo, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1994, Ser. No. 198,778
Claims priority, application Japan, Feb. 22, 1993, 5-032216
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—271 15 Claims



1. A cleaning fiber comprising inorganic porous particles dispersed in the fiber thereof.

5,386,279

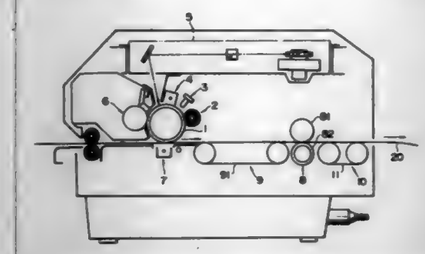
TRANSFER DEVICE IN AN IMAGE-FORMING APPARATUS

Toshiyuki Fukami, and Masashi Tanaka, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 25, 1994, Ser. No. 202,365
Claims priority, application Japan, Feb. 26, 1993, 5-038997
Int. Cl.[6] G03G *15/16*
U.S. Cl. 355—271 3 Claims

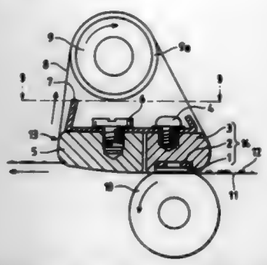
1. A transfer device in an image-forming apparatus which has an image carrier and a transfer roller, and permits a transfer material to pass therethrough so that the toner on the image carrier is transferred onto the transfer material, wherein said image carrier is an organic photosensitive material containing a charge-generating agent and a charge-transporting agent, said transfer roller is made of an electrically conducting polyurethane rubber composition which is so cured as to exhibit a rubber hardness of higher than 50° (JIS A), and said image carrier and said transfer roller are disposed being spaced apart maintaining a small gap which is greater than the thickness of the transfer material enabling the toner to be transferred onto the transfer material.

5,386,280
ELECTROPHOTOGRAPHIC IMAGING APPARATUS WITH CONTINUOUS FORM FEEDER LOCATED AFTER FIXING DEVICE
Tomoyuki Nishikawa, Matsudo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 15, 1991, Ser. No. 775,902
Claims priority, application Japan, Oct. 13, 1990, 2-274198
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—282 **13 Claims**



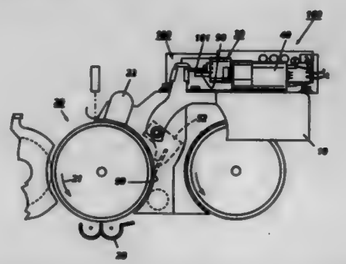
1. An electrophotographic imaging apparatus using a continuous form recording sheet, comprising:
a fixing device for fixing an image formed on said continuous sheet to said continuous sheet, said fixing device comprising a pair of rollers for feeding said continuous sheet through a nip formed therebetween;
means defining a paper discharge side located on a downstream side of said fixing device;
means for feeding said continuous sheet towards said fixing device at a first predetermined speed; and
means for transporting said continuous sheet fed from said fixing device at a second predetermined speed, said transporting means being disposed on the paper discharge side of said fixing device, said second predetermined speed being substantially equal to a speed of said pair of rollers.

5,386,281
THERMAL FIXING DEVICE
Masao Mitani, and Kazuo Shimizu, both of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan
Filed May 21, 1993, Ser. No. 64,805
Claims priority, application Japan, Jun. 5, 1992, 4-145868
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—290 **7 Claims**



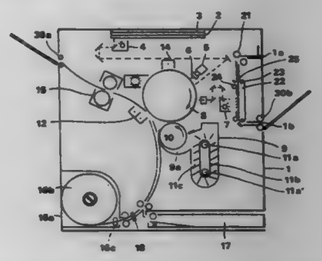
1. A thermal fixing device comprising a pair of rotating rollers including a drive roller, a heating/cooling section associated with at least the drive roller, and an image supporter having an unfixed toner image which image supporter is passed through a gap between the rollers so that the unfixed toner image is thermally fixed by melting, the heating/cooling section having an integral structure type heating and cooling device comprising a supporter, a cooler and a heater, said cooler and said heater being secured to said supporter, said thermal fixing device further comprising a thin endless metal belt which rotates while contacting the integral structure type heating/cooling device and which belt has a non-adhesive film on an outer surface thereof which is in pressure-contact with the image supporter, said drive roller drives the endless metal belt for rotation while applying tension to the endless metal belt, wherein a surface temperature at a portion of the endless metal belt where said endless metal belt is in pressure-contact with the image supporter is first increased to a temperature (Tm) near the melting point of said toner and subsequently cooled so that the image supporter can be removed from pressure contact with the endless metal belt, and so that the temperature of the toner is higher than a glass transition point of the toner and lower than a softening point thereof, and further wherein said cooler is secured to the supporter at a rotation axis of said cooler so that said cooler can rotate about the rotation axis.

5,386,282
BLADE CONTROLLER ASSEMBLY WITH MODIFIED CAM
John M. Palmer; Kris J. Walker, both of Webster; Dennis P. Eidem, Fairport, and Bernard J. Dunham, Walworth, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 15, 1993, Ser. No. 152,356
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—299 **8 Claims**



1. An apparatus for cleaning particles from a surface, comprising:
a cleaning blade contacting the surface to remove particles therefrom;
a controller assembly for moving said cleaning blade between a first position and a second position, said controller assembly having a movable cam and said cam having a first end and a second end opposite one another, said controller assembly having a motor drivingly coupled to said second end of said cam;
a weight adapter engaging said cam, said cam being adjacent to said adapter, said cam moving out of contact with said adapter to move said cleaning means to the first position and said cam moving into contact with said adapter to move said cleaning means to the second position;
a weight coupled to said weight adapter, said weight being lowered by said adapter, said weight causing said cleaning means to move to the first position and said weight being raised by said adapter, said weight causing said cleaning blade to move to the second position;
a printed wiring board assembly located adjacent to said controller assembly, said wiring board assembly having a plurality of switches, including a first switch and a second switch, thereon; and
at least two lobes on said cam, a first lobe and a second lobe, said lobes oppose one another and are adjacent to said switches, such that when one lobe of said cam is in contact with one switch on the printed wiring board assembly to activate the one switch, the other switch is out of contact with the other lobe to inactivate the other switch and, said lobes separately contacting said switches moving said cleaning blade between the first position and the second position.

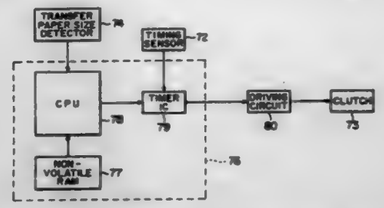
5,386,283
APPARATUS TO FORM PICTURES FROM LARGE ORIGINALS
Boag won Yang, and Myung Ho Noh, both of Seoul, Rep. of Korea, assignors to Hyundai Electronics Industries, Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 23, 1992, Ser. No. 903,035
Claims priority, application Rep. of Korea, Jun. 24, 1991, 91-10517
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—308 **6 Claims**



1. A picture forming apparatus capable of printing picture images on paper comprising:
a normal picture image forming part comprising:
a transparent manuscript die on which the manuscript of size below A3 size may be placed,
a movable light source section that reads a subject image, and
a photosensitive light receiving body that transfers a developing agent according to the image to a printing apparatus; and
a large picture image forming part comprising:
a large size manuscript feeding path consisting of a manuscript inlet port, a discharge port and a fixed light source section 7,
a developing agent container section 9 that supplies developing agent to a developing cylinder by an orbital movement of transporting blades,
a large size printing paper section in which the printing paper is continuously wound in a reel form, and
a cutting section that cuts said printing paper to a proper length of the manuscript as it passes through said large size manuscript feeding path.

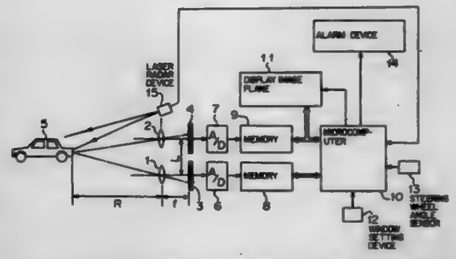
5,386,284
IMAGE FORMING APPARATUS
Seitaro Kasahara; Haruo Itakura; Susumu Kurihara, and Hiroshi Ishii, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan
Continuation of Ser. No. 729,899, Jul. 15, 1991, Pat. No. 5,278,623, which is a continuation of Ser. No. 536,467, Jun. 12, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 93,002
Claims priority, application Japan, Jun. 21, 1989, 1-159086; Jun. 29, 1989, 1-167890; Jul. 10, 1989, 1-177590; Jul. 10, 1989, 1-177591
Int. Cl.[6] G03G *15/01, 21/00*
U.S. Cl. 355—311 **1 Claim**

1. An apparatus comprising:
scanning means for scanning a document at a scanning speed to produce a document image having a length;
a first paper source having a first roller;
a second paper source having a second roller;
a paper conveying roller for conveying paper at a first speed from the first roller or at a second speed, different than the first speed, from the second roller to an image forming unit;
means for selecting either the first paper source or the second paper source; and



control means for changing the scanning speed of the scanning means depending on the paper conveying speed, so that the length of the document image is independent of the paper conveying speed.

5,386,285
OBSTACLE DETECTING DEVICE FOR A VEHICLE
Yoshiaki Asayama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 3, 1993, Ser. No. 13,092
Claims priority, application Japan, Feb. 28, 1992, 4-043065
Int. Cl.[6] G01C *3/00, 3/08;* B60T *7/16*
U.S. Cl. 356—1 **8 Claims**



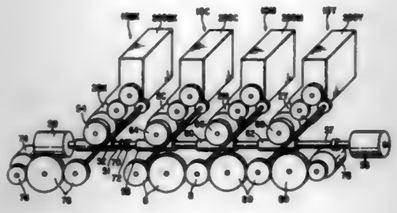
1. An obstacle detecting device for a vehicle comprising:
first and second image sensors for sensing an environment, including an object, external to said vehicle and outputting first and second image data, respectively, representative thereof;
a display image plane for displaying said first image data as a display image including an image of said object;
means for designating a plurality of regions of said display image on said display image plane;
optical detecting means for detecting distances from said vehicle to said object when said image of said object is in at least one of said regions of said display image;
a device mounted on said vehicle for radiating a beam to said object and receiving a reflected beam therefrom to detect distances from said vehicle to said object; and
and
microprocessor means for causing, based on a predetermined condition, either said optical detecting means or said device to detect the distances from said vehicle to said object.

5,386,286

IMAGE FORMING APPARATUS

Satoshi Kinouchi, Tokyo; Takashi Shiraishi, Sagamihara; Koichi Hiruta, Miura, and Kazuhisa Kimura, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 21, 1993, Ser. No. 124,193
Claims priority, application Japan, Sep. 24, 1992, 4-280527
Int. Cl.[6] G03G *15/01*
U.S. Cl. 355—326 R 9 Claims



1. An image forming apparatus comprising:
first drive means for rotating a plurality of rotatable image carriers, the first drive means having a first image carrier drive motor for driving at least one of said image carriers, and a second image carrier drive motor for driving the image carriers other than said at least one of said image carriers;
means for forming electrostatic latent images on the image carriers;
developing means having a plurality of developing rollers arranged in contact with the image carriers, respectively, for developing the electrostatic latent images by rotations of the image carriers and the developing rollers;
second drive means for rotating the developing rollers;
first transmitting means for, when the developing means performs a development with respect to one or some of the image carriers, transmitting the drive force of the first drive means to only the image carrier or image carriers used for the development;
second transmitting means for, when the developing means performs a development with respect to one or some of the image carriers, transmitting the drive force of the second drive means to only the developing roller or rollers contacting said one or some of the image carriers; and
transfer means for transferring the developed image or developed images from the image carrier or image carriers, on which the electrostatic latent images are developed, to a transfer material.

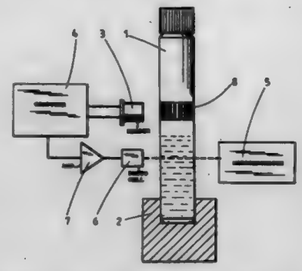
5,386,287

DEVICE FOR AUTOMATICALLY EVALUATING A PLURALITY OF PROBE INGREDIENTS BY MEANS OF CHEMICAL SENSORS

Johannes Berwes; Clemens Hanschke, both of Berlin; Michael Kacsor, Kaarst; Hermann-Josef Klein, Schwalmtal; Michael Maczkowiak, and Wolfgang Schmitt, both of Berlin, all of Germany, assignors to Dr. Bruno Lange GmbH, Germany

Continuation of Ser. No. 853,786, Mar. 19, 1992, abandoned.
This application Feb. 8, 1994, Ser. No. 193,623
Claims priority, application Germany, Mar. 20, 1991, 4109118
Int. Cl.[6] G01J *3/42;* G01N *21/03*
U.S. Cl. 356—326 13 Claims

1. Device for the automatic evaluation of a plurality of test sample components, comprising at least one sensor (1) in which the test sample component(s) is/are placed, and a measuring device to determine the measurable variables which are characteristic for the test sample components, characterized in that said sensor (1) has an axis and a rotating device (2) is provided to rotate the sensor about said axis through a predetermined angular range during a determination by said measuring device; each sensor (1) is provided with a coding region (8) for information concerning the measurable variable to be determined; and a reading device, for the evaluation of the coding region (8), and a monitoring device (4), which is connected to the reading device (3) and the measuring device (5, 6, 7) are



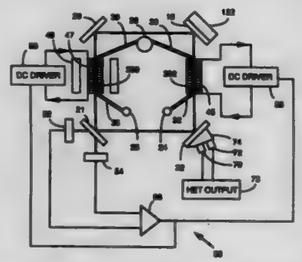
provided, wherein the monitoring device (4), on the basis of the reading supplied by the reading device (3), adapts the measuring device (5, 6, 7) to the measurable variable to be determined.

5,386,288

SPLIT GAIN MULTIMODE RING LASER GYROSCOPE AND METHOD

Graham J. Martin, Canoga Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 28, 1987, Ser. No. 115,018
Int. Cl.[6] G01B *9/02;* H01S *3/083*
U.S. Cl. 356—350 74 Claims



1. A Sagnac ring rotation sensor including a resonant cavity that defines a closed optical path and a gain medium therein, comprising:
means for producing four multioscillator lasing modes in the cavity, such that the gain medium provides a corresponding gain curve for each lasing mode;
means for adjusting the gain medium to split each gain curve into two parts separated in frequency; and
means for positioning a pair of consecutive longitudinal mode sets, each set including the four multioscillator lasing modes, relative to the two parts of the gain curve such that only two modes from each of the two mode sets are allowed to lase.

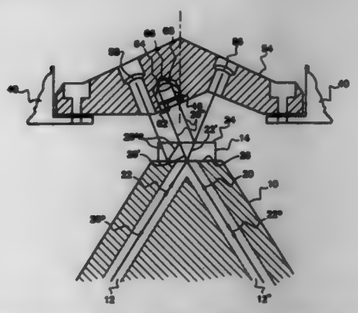
5,386,289

CASE MOUNTED READOUT FOR PROVIDING A RING LASER GYRO WITH LOW BACKSCATTER

Rodney H. Thorland, Shoreview, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 5, 1993, Ser. No. 775
Int. Cl.[6] G01C *19/66*
U.S. Cl. 356—350 28 Claims

1. A readout apparatus which is for use with a ring laser gyroscope which outputs a first optical signal and a second optical signal, the first and second optical signals propagating within a single lasing plane, the readout apparatus comprising:
a corner cube means for receiving a first optical signal, translating the first optical signal and directing the first optical signal back in the general direction from which it came;
readout sensor means for receiving a combined optical signal comprised of the first optical signal and the second optical signal, and outputting an electrical signal indicative of the combined optical signal, the readout sensor means having a planer surface for receiving the combined optical signals; and



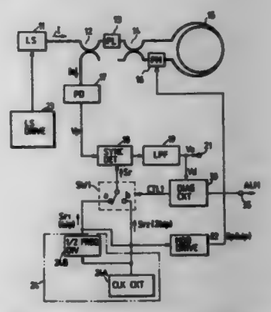
a case mounted optics holder means for holding the readout sensor means such that the combined optical signal intersects the surface of the readout sensor means while the readout sensor surface is tilted with respect to a plane normal to the lasing plane, the optics holder means also for positioning the corner cube means so as to receive the first optical signal while having any planar surfaces of the corner cube means tilted with respect to a plane normal to the lasing plane in which the first and second optical signals are propagating.

5,386,290

OPTICAL INTERFEROMETRIC ANGULAR RATE METER WITH A SELF-DIAGNOSTIC CAPABILITY

Kenichi Okada, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,995
Claims priority, application Japan, Apr. 30, 1992, 4-111575; May 15, 1992, 4-123450; May 15, 1992, 4-123451
Int. Cl.[6] G01C *19/72*
U.S. Cl. 356—350 15 Claims



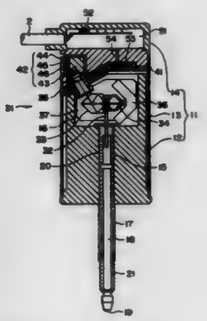
1. An optical interferometric angular rate meter comprising:
an optical path forming at least one loop;
branch means for splitting a light beam into two beams that propagate through said optical path as clockwise and counterclockwise light beams;
means for causing the clockwise and counterclockwise light beams that have propagated through said optical path to interfere with each other;
phase modulator means provided in cascade between said branch means and one end of said optical path, for phase modulating said clockwise and counterclockwise light beams at a predetermined frequency;
photodetector means responsive to the intensity of interference light resulting from the interference of said beams for producing an electrical signal;
reference signal generator means for generating a first reference signal of an odd harmonic frequency component of said predetermined frequency and a second reference signal of an even harmonic frequency component of said predetermined frequency;
switching means for selectively outputting either one of said first and second reference signals;
synchronous detector means supplied with said electrical signal from said photodetector means and one of said reference signals from said switching means for synchronously detecting said odd harmonic frequency component in said electrical signal when said first reference signal is supplied to said synchronous detector means from said switching means to output a signal corresponding to an input angular rate and for synchronously detecting said even harmonic component in said electrical signal when said second reference signal is supplied to said synchronous detector means to output a signal corresponding to said input angular rate; and
diagnosis means for selectively supplying a diagnosis instruction signal to said switching means to cause said switching means to select said second reference signal and to compare the level of said even harmonic frequency component from said synchronous detector means with a predetermined reference level during the generation of said diagnosis instruction signal to output an alarm signal if said level of said even harmonic frequency component is not within a predetermined range.

5,386,291

DISPLACEMENT SENSOR INCLUDING A HEAT INSULATING MEMBER PARTITIONING THE MOVING SCALE AND THE SEMICONDUCTOR LASER

Soichi Sato; Masaki Tomiya, and Tatsuo Itabashi, all of Kawasaki, Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Nov. 22, 1993, Ser. No. 156,257
Claims priority, application Japan, Nov. 25, 1992, 4-314949
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—356 15 Claims



1. A displacement sensor, comprising:
a housing,
a displaceable member disposed for displacement in said housing,

a scale secured to said displaceable member and having optical lattices,

a semiconductor laser disposed in said housing and projecting a laser beam onto said scale,

transducer means disposed in said housing for converting light from said scale into an electric signal, and

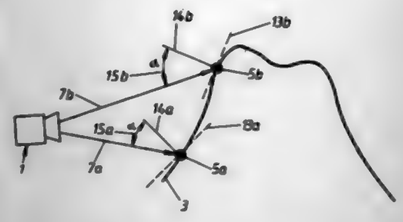
a heat insulation arrangement disposed between said semiconductor laser and said scale, said heat insulation arrangement serving to prevent transmission of heat from said semiconductor laser to said scale, said heat insulation arrangement including a heat insulation member partitioning the interior of said housing into a first chamber accommodating said scale and a second chamber accommodating said semiconductor laser, a heat insulation cylinder provided on said heat insulation member such that its opposite ends open into said first and second chambers with said semiconductor laser being oriented in said second chamber at a corresponding end of said heat insulation cylinder, and a heat insulation cover fitted on a corresponding end of said heat insulation cylinder in said first chamber and having a hole therethrough which has a diameter slightly greater than the diameter of the laser beam emitted from said semiconductor laser.

5,386,292

OPTICAL MEASUREMENT OF TEETH

Robert Massen, Wangen/Öhningen; Joachim Gassler, Geisingen; Christian Konz, Radolfzell, and Harald Richter, Constance, all of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Germany

Filed Apr. 27, 1993, Ser. No. 53,712
Claims priority, application Germany, May 5, 1992, 4214876
Int. Cl.[6] G01B *11/03, 11/24*
U.S. Cl. 356—376 12 Claims



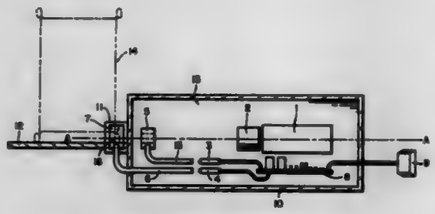
1. A method of optical measurement of teeth, comprising a first step of optically measuring a surface of a tooth to determine measured coordinate values of a plurality of measured points on said tooth surface, and a second step of performing error correction upon at least some of said measured co-ordinate values to determine corrected co-ordinate values of said tooth surface wherein a correction value used for the error correction in said second step is determined using a value which depends upon the position of the point to be corrected and the position of a projection system used in said first step.

5,386,293

SEAM INSPECTION DEVICE

Ronald G. Barnard, 36 Tanglewood Rd., Albany, N.Y. 12205, and William H. Creitz, 120 W. Main St., Cambridge, N.Y. 12816

Filed Feb. 22, 1994, Ser. No. 200,284
Int. Cl.[6] G01N *21/90*
U.S. Cl. 356—397 10 Claims



1. A seam inspection device comprising:

an optical display device;

means for supporting a container along an optical axis of said optical display device; and

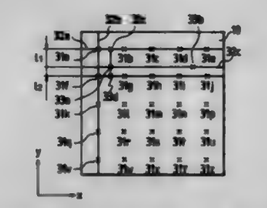
dual means for illuminating a seam on said container.

5,386,294

PATTERN POSITION MEASURING APPARATUS

Taro Ototake, Kamakura; Yasuko Maeda, Yokohama, and Takakazu Ueki, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 723,428, Jun. 28, 1991, abandoned.
This application Mar. 21, 1994, Ser. No. 210,768
Claims priority, application Japan, Jul. 5, 1990, 2-178229
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—401 36 Claims



1. A pattern position detection apparatus for obtaining the position of a pattern of a sample placed on a stage, by detecting the position of a pattern edge, said pattern position detection apparatus comprising:

distortion detection means for detecting distortion of substantially the whole sample surface by measuring height of the sample placed on said stage at points distributed over to dimensions of the whole sample surface before detection of a pattern edge position and without regard to the position of the pattern edge;

means for detecting the position of the pattern edge;

slope calculating means for calculating, from an output from said distortion detection means, slope of a sample surface at a detected position of the pattern edge; and

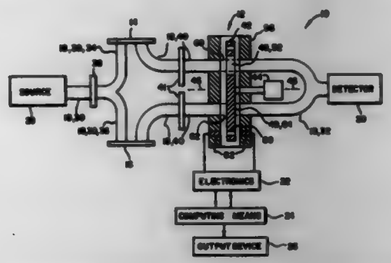
correction means for correcting the detected position of the pattern edge in accordance with an output from said slope detection means.

5,386,295

POSTACQUIRED SPECTROPHOTOMETERS

Steven C. Switalski, Rochester; David S. Uerz, Ontario; Alan J. Lowne, Victor; James R. Sandifer, and Hsue-Yang Liu, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 951,607, Sep. 28, 1992, Pat. No. 5,357,343, which is a continuation of Ser. No. 737,824, Jul. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 591,204, Oct. 1, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 5,321
Int. Cl.[6] G01J *3/02*; G01N *21/64, 21/65*
U.S. Cl. 356—418 26 Claims



1. A postacquired spectrophotometer, for use with a sample and a reference, said spectrophotometer comprising:

a filter unit defining an axis of movement, said filter unit having a plurality of designated sites and a plurality of dark sites disposed in uniform relation to said axis, said designated sites and said dark sites being disposed in alternation, alternating ones of said designated sites having apertures and filters covering said apertures, said filters each transmitting only light of preselected wavelengths, said filter unit having a plurality of actuator pairs each said pair having an integration actuator and a clamping actuator, said actuators being disposed in substantially uniform relation to said axis, said integration actuators each being associated with a respective said designated site,

a main member coaxial with said filter unit, said main member having sample and reference beam paths, said beam paths being intersected by said sites, said beam paths each having a cross-section at said filter unit interposable within each said site, said main member having an actuator sensor disposed in operative relation to said actuators, said actuator sensor generating an integration actuator signal upon alignment with each said integration actuator and a clamping actuator signal upon alignment with each said clamping actuator,

a drive for continuously moving said filter unit relative to said axis and said beam paths,

a detector for producing a signal responsive to light received,

a light distribution system directing light separately from said sample and reference to respective said beam paths, and from said beam paths to said detector, and

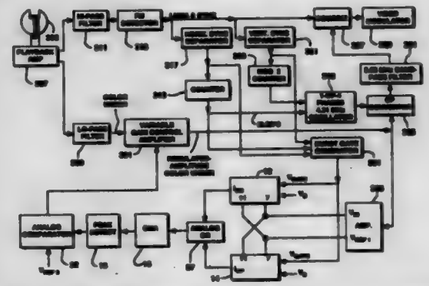
means for processing said signals, said means for processing further comprising a clamping circuit, a plurality of integrators, and a demultiplexer, said clamping circuit in response to each said clamping actuator signal setting a restoration signal proportional to said detector signal, said clamping circuit in response to each said integration actuator signal clamping said detector signal to said restoration signal, said demultiplexer distributing said clamped detector signal to said integrators, said demultiplexer having a single output, said output advancing from one of said integrators to another in repeating sequence in response to one of the members of each said pair of actuator signals.

5,386,296

CHROMA BURST DETECTION SYSTEM

Jack Craft, Bridgewater, N.J., assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Continuation of Ser. No. 967,424, Oct. 28, 1992, abandoned.
This application Mar. 18, 1994, Ser. No. 210,416
Int. Cl.[6] H04N *9/79*
U.S. Cl. 358—316 11 Claims



10. In a video playback apparatus reproducing luminance information and with chroma information at frequencies below those in a standard broadcast television signal and generating horizontal and vertical synchronizing signals, the chroma information including during burst intervals color burst signals at a frequency below that in said standard broadcast television signal line information, and a reference chroma signal of a predetermined frequency, said chroma information being supplied to an up-converter producing an up-converted chroma signal via a low pass filter and a variable gain control amplifier, said variable gain control amplifier being directly connected to said up-converter, a control loop comprising:

the variable gain control amplifier receiving a filtered chroma signal from said low pass filter and generating a gain controlled chroma signal supplied to said up converter, wherein said amplifier includes a gain control terminal for reception of, a gain control voltage, and wherein gain of said gain controlled chroma signal is controlled in response to said gain control voltage signal;

a rectifier circuit receiving said gain controlled chroma signal and generating at least one rectified chroma signal responsive to said horizontal and said vertical synchronizing signals applied to said rectifier circuit so as to enable said rectifier circuit during the burst intervals in the chroma information; and

a peak detector receiving a detector input signal representative of said rectified chroma signal for generating said gain control voltage signal responsive to detected peaks in said detector input signal.

5,386,297

COMBINED OUTPUT SYSTEM FOR CODE DATA AND IMAGE DATA IN A MESSAGE HANDLING PROCESSOR

Natsuro Tanaka, Hadano; Tokuji Tanada, and Yoshihiro Nakajima, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Software Engineering Co., Ltd., Yokohama, both of Japan

Continuation of Ser. No. 786,308, Nov. 1, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 135,752
Claims priority, application Japan, Nov. 1, 1990, 2-293538
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—402 8 Claims

1. A mailing system comprising:

a message handling processor capable of storing code data and image data and for transferring data;

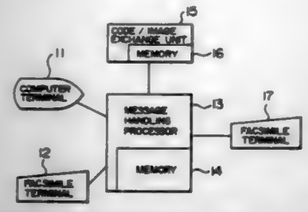
a code data terminal capable of generating code data;

an image data terminal capable of generating first image data; and

a code/image exchange unit connected to said message

handling processor, said code/image exchange unit including,

means for converting said code data from said code data terminal into second image data; and



means for producing third image data to be transferred from said message handling processor to another image data terminal by combining the second image data with said first image data.

5,386,298

AUTOMATED PORM HANDING AND GENERATING SYSTEM AND A FORM SHEET ASSOCIATED TO SAID SYSTEM

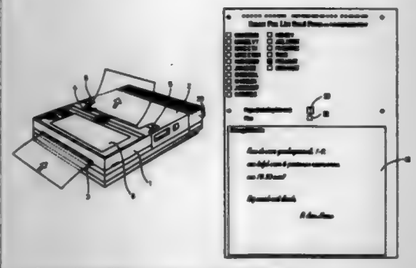
Wilhelmus J. H. J. Bronnenberg, and Petrus A. M. Den Haan, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 26, 1993, Ser. No. 53,947

Claims priority, application European Pat. Off., Apr. 27, 1992, 92201169

Int. Cl.[6] H04N *1/00*; G06K *19/06*

U.S. Cl. 358—403 **18 Claims**



1. A form handling system, comprising

acceptance means for physically accepting a form sheet with respect to said system,

optical scanning means for scanning said form sheet,

form processing means including

data storage means interconnected to said scanning means for storing data for generating a set of forms of respective types,

first recognizing means for

detecting a plurality of physically sparse format calibrating items at a perimeter of said form sheet,

measuring a separation between said items, and

calibrating the form processing means to an expected form appearance based on the separation between said items;

second recognizing means fed by said first recognizing means for detecting and recognizing directly machine-readable form identifier data, which identifies a selected form from the set, the form identifier data being in a prescribed identifier field of said form sheet, said prescribed identifier field being located according to said expected form appearance;

third recognizing means, fed by said first and second recognizing means, for locating, according to said expected form appearance, one or more user indicia boxes proper to the selected form and forwarding indicia data of those indicia boxes for processing by said data processing means.

5,386,299

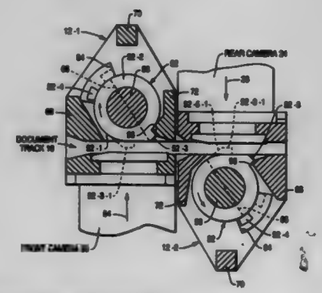
METHOD AND APPARTUS FOR AUTOMATICALLY CALIBRATING CAMERAS USED FOR DOCUMENT SCANNING

Owen H. Wilson, Breslau, and Geoffrey G. Marlow, Kitchener, both of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 12, 1993, Ser. No. 31,300

Int. Cl.[6] H04N *1/00, 1/46*

U.S. Cl. 358—406 **15 Claims**



1. An apparatus comprising:

a generally cylindrical shaped moveable member (hereinafter referred to as moveable member) moveable via a pivoting movement in first and second opposing directions between first and second positions relative to an optical axis of an imaging device positioned at a document track;

said moveable member having a first reference member thereon positioned relative to said optical axis when said moveable member is positioned in said first position, and said moveable member having a second reference member thereon positioned relative to said optical axis when said moveable member is positioned in said second position; and

an actuator mechanism for moving said moveable member between said first and second positions;

said first reference member having a portion of said second reference member thereon, with said first reference member and said portion of said second reference member being located on a same side facing said optical axis, with portion of said second reference member being surrounded by said first reference member, and with said portion of said second reference member being positioned on said first reference member between a midpoint of said moveable member and one end thereof.

5,386,300

PICTURE PROCESSING SYSTEM FOR A NATURAL PICTURE IN A FACSIMILE DEVICE

Sachiko Kitawaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 29, 1993, Ser. No. 158,698

Claims priority, application Japan, Nov. 27, 1992, 4-318071

Int. Cl.[6] H04N *1/41*

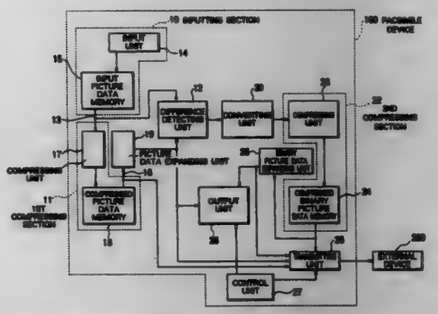
U.S. Cl. 358—426 **7 Claims**

1. A picture processing system for processing an input picture data signal representative of an original picture into a processed picture data signal, said system comprising:

first compressing means supplied with said input picture data signal for compressing said input picture data signal into a compressed picture data signal;

a picture data expanding unit connected to said first compressing means for expanded said compressed picture data signal into an expanded picture data signal;

a detecting unit supplied with said input picture data signal and connected to said picture data expanding unit for detecting a difference between said input picture data signal and said expanded picture data signal to produce a difference picture data signal representative of said difference;



a converting unit connected to said detecting unit for converting said difference picture data signal into a binary picture data signal; and

second compressing means connected to said converting unit for compressing said binary picture data signal into a compressed binary picture data signal which is for use as said processed picture data signal.

5,386,301

APPARATUS FOR PRODUCING A BILEVEL IMAGE SUITABLE FOR A PRINTING CHARACTERISTIC OF A PRINTING UNIT

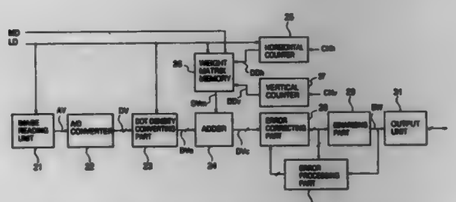
Kazuhiro Yuasa, Zama, and Kazumasa Koike, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 18, 1993, Ser. No. 108,503

Claims priority, application Japan, Aug. 21, 1992, 4-243991

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—445 **26 Claims**



1. An apparatus for processing multilevel image data of an image by using a binarizing process based on an error scattering method to produce a bi-level processed image suitable for a predetermined printing characteristic of a printing unit that prints the bi-level processed image, said apparatus comprising:

reading means for reading an image by raster scanning of a document and for producing multilevel image data relating to one pixel of said image;

memory means for storing a plurality of predetermined weight matrix patterns, each weight matrix pattern having N×N weight coefficients arranged in an N×N formation;

selecting means for selecting one of the plurality of predetermined weight matrix patterns stored in said memory means based on said printing characteristic of said printing unit;

processing means, coupled to said reading means and said memory means, for adding a weight coefficient read from said selected weight matrix pattern to said multilevel image data relating to one pixel from said reading means, so that a weighted multilevel image data is produced; and

binarizing means for processing the weighted multilevel image data output from said processing means by using the binarizing process based on the error scattering method to produce a bi-level signal relating to one dot of a processed image, and for supplying the bi-level signal to the printing unit so that the processed image is printed by the printing unit in accordance with the bi-level signal;

wherein the printing characteristic of the printing unit is determined by a dot density of images printed by the printing unit.

5,386,302

IMAGE PROCESSING APPARATUS

Atsushi Kashihara, Hachioji; Takashi Kawase, Yokohama; Tetsuo Saito; Hiroshi Mano, both of Tokyo; Kiyoshi Kawaiwa, Kawasaki, and Kaoru Seto, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

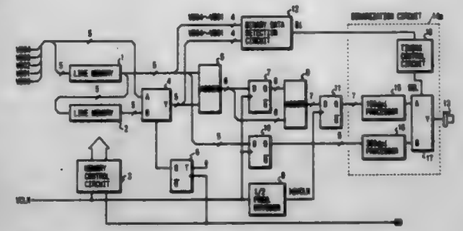
Continuation of Ser. No. 689,554, Apr. 23, 1991, abandoned.

This application Nov. 26, 1993, Ser. No. 157,432

Claims priority, application Japan, Apr. 25, 1990, 2-109329; Jan. 23, 1991, 3-006273

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—448 **36 Claims**



1. An image processing apparatus comprising:

input means to input multi-valued image data;

addition means to add multi-valued image data of a plural number of pixels input by said input means, thereby to obtain image data for one pixel;

means to output the image data which are the results of said addition, a first pulse width modulator which generates a pulse width modulation signal having a pulse width corresponding to a value of the multi-valued image data input by the input means, and

second pulse width modulator which generates a pulse width modulation signal having a pulse width corresponding to a value of the image data which is the result of addition by said addition means.

5,386,303

FACSIMILE APPARATUS WITH CODE MARK RECOGNITION

Osamu Kihara, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 12, 1992, Ser. No. 974,949

Claims priority, application Japan, Dec. 11, 1991, 3-327220

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—453 **2 Claims**

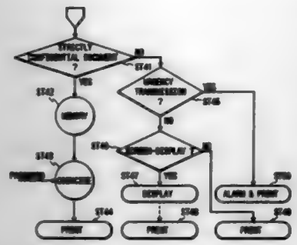
1. A facsimile apparatus comprising:

first means for judging whether or not a predetermined recognition mark is given in a predetermined area of received manuscript data comprising a mark storage device for storing said predetermined recognition mark in advance, an area data storage device for storing said predetermined area of said received manuscript data, and a comparison device for comparing data in a specific area of said manuscript data matching the area stored in said area

data storage device with any one of said recognition marks stored in said mark storage device;

second means for judging whether or not said manuscript data is strictly confidential information when said predetermined recognition mark is recognized with said first means;

third means for storing the manuscript data in a memory



when said manuscript data is judged to be strictly confidential information with said second means, and for instructing said manuscript data stored in said memory to be printed only if a predetermined password code is entered; and

fourth means for executing normal printing when said predetermined recognition mark is not recognized with said first means.

5,386,304

QUANTIZING CIRCUIT

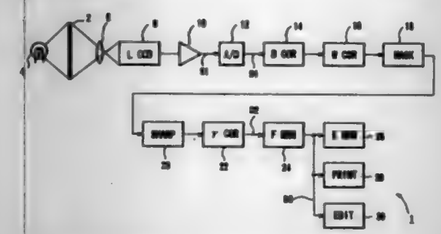
Kiyosuke Suzuki, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 90,925

Claims priority, application Japan, Jul. 17, 1992, 4-213585

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—458 **3 Claims**



1. An image scanning apparatus, comprising:

an image sensor operative to scan an object for generating an analog image signal representative of an image density of the object;

converting means connected to said image sensor for converting said analog image signal into a first digital image signal having a first gradation;

processing means connected to said converting means for processing said first digital image signal to provide a second digital image signal which has a second gradation that is less than said first gradation, said processing means operating during a first scan of said image sensor to form said second digital image signal by applying a linear function to said first digital image signal;

means for detecting a maximum level of said second digital image signal obtained during the first scan of said image sensor;

means for detecting a minimum level of said second digital image signal obtained during the first scan of said image sensor; and

means for detecting an average level of said second digital image signal obtained during the first scan of said image [illegible];

said processing means operating during a second scan of said image sensor to form said second digital image signal by applying a nonlinear function to said first digital image signal such that a maximum value of said second digital image signal obtained during the second scan of said image sensor is determined in accordance with the maximum level of said second digital image signal obtained during the first scan, a minimum value of said second digital image signal obtained during the second scan of said image sensor is determined in accordance with the minimum level of said second digital image signal obtained during the first scan, and a nonlinear characteristic of said nonlinear function applied to said first digital image signal is determined in accordance with the average level of said second digital image signal obtained during the first scan.

5,386,305

COLOR IMAGING PROCESSING METHOD AND APPARATUS FOR SUPPRESSING COLOR BLURS

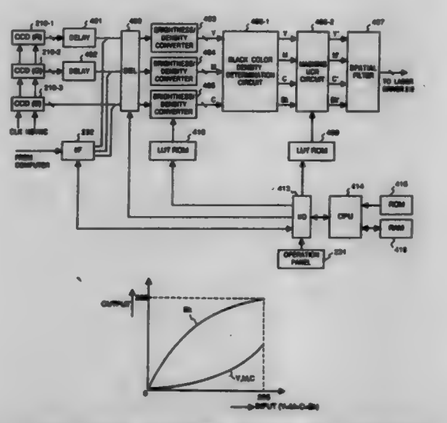
Akihiro Usami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,968

Claims priority, application Japan, Mar. 26, 1992, 4-068055

Int. Cl.[6] H04N *1/46*; G03F *3/08*

U.S. Cl. 358—518 **15 Claims**



3. A color image processing apparatus for converting a multivalued brightness image signal into a multivalued density image signal, comprising:

input means for inputting a color image as a brightness image signal;

first conversion means for converting the brightness image signal to a first density image signal;

extraction means for extracting a black component from the first density image signal;

second conversion means for converting the first density image signal to a second density image signal by performing UCR processing based upon the black component so as to express the color image by using the black component, in an area where a signal density value of the first density image signal is in a low or intermediate density area, in a manner such that a level of the black component for expressing the color image is convexly and montonically increased with respect to an increase of the density value; and

output means for outputting the color image using said second density image signal,

wherein a UCR (under color removal) amount ratio in UCR processing applied to the intermediate density area is greater than that in UCR processing applied to a high density area.

5,386,306

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY ELEMENT AND PROJECTION TYPE ACTIVE MATRIX LIQUID CRYSTAL DISPLAY DEVICE

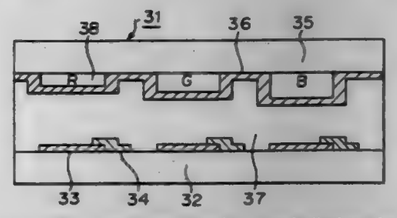
Tomoki Gunjima, Yokohama; Masanori Yuki, Hatano; Masaya Kunigita; Yoshinori Hirai, both of Yokohama; Yukio Yoshikawa, Kawasaki, and Eiji Shidoji, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 413,072, Sep. 27, 1989, Pat. No. 5,150,232. This application May 22, 1992, Ser. No. 886,946

Claims priority, application Japan, Oct. 4, 1988, 63-249020; Jul. 27, 1989, 1-192760

Int. Cl.[6] G02F *1/13*

U.S. Cl. 359—52 **13 Claims**



1. An active matrix type liquid crystal display element wherein liquid crystal polymer composite in which a nematic liquid crystal is dispersed and held in a polymer matrix having a refractive index which is substantially equal to an ordinary refractive index (n_0) of the liquid crystal is held between a first substrate on which at least a pixel electrode with an active element is provided and a second substrate on which at least a counter electrode is provided, wherein said polymer matrix is made of a light curable type polymer, said liquid crystal polymer composite layer is obtained by irradiating light to the solution in which the liquid crystal and the light curable type polymer are dissolved uniformly to cause the solution to cure, a specific resistance of said liquid crystal polymer composite is higher than 5×10^9 Ωcm, an average particle diameter R(μm) of the liquid crystal dispersively contained in the polymer matrix is substantially uniform and is 1.5 to 2.5 μm, an electrode substrate distance d_0 is substantially 8 to 13 μm, and a maximum root mean square of applied voltage for said liquid crystal polymer composite is lower than or equal to 10 volts.

5,386,307

METHOD OF MANUFACTURING MULTI-LAYERED LIQUID CRYSTAL USING WELLS FOR COLUMNS AND DISSOLVABLE LAYERS BETWEEN LIQUID CRYSTAL LAYERS

In-sik Jang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 20, 1993, Ser. No. 169,283

Claims priority, application Rep. of Korea, Dec. 26, 1992, 1992-25632

Int. Cl.[6] G02F *1/133, 1/1335, 1/1333*

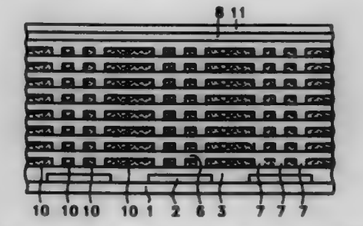
U.S. Cl. 359—53 **7 Claims**

1. A method of manufacturing a multi-layered liquid crystal for a liquid crystal display device in which an electric-field effect type liquid crystal layer is placed between opposing upper and lower electrodes, a plurality of insulating layers which divide said liquid crystal layer into a plurality of layers are alternately stacked with said liquid crystal layer, and columns for maintaining the distance between said electric insulating layers are provided therebetween, said method comprising the steps of:

forming a dissolvable layer which provides a space for filling said liquid crystal and has wells for forming said columns;

coating an insulating material on said dissolvable layer, so as to form said columns of said insulating material filling said wells and an insulating layer which is integrated with said columns and formed on said dissolvable layer by a predetermined thickness;

alternatively and repeatedly performing said steps of forming said dissolvable layer and insulating layer so as to



obtain a multi-layered stack made up of a dissolvable layer/insulating layer;

forming a multitude of liquid-crystal injecting wells of a predetermined diameter in said stack and removing said dissolvable layer through said liquid-crystal injecting wells so as to form cavities between said insulating layers; and

injecting liquid crystal into said cavities through said liquid-crystal injecting wells so as to form a liquid crystal layer.

5,386,308

WEAPON AIMING DEVICE HAVING MICROLENSES AND DISPLAY ELEMENT

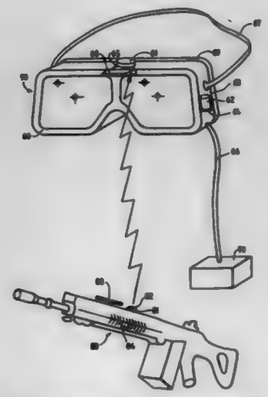
Claude Michel, Asnieres, and Jean-Pierre Le Pesant, Gif S/Yvette, both of France, assignors to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 978,775, Nov. 19, 1992. This application Jun. 3, 1994, Ser. No. 253,342

Claims priority, application France, Nov. 19, 1991, 91 14221

Int. Cl.[6] F41G *11/00*; G02F *1/13*

U.S. Cl. 359—83 **8 Claims**



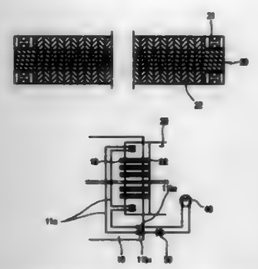
1. A control system for a barreled weapon, comprising:

goggles including

(a) a first layer of transparent material having opposite surfaces, the material having its optical characteristics alterable under the influence of a changeable electric field applied thereacross;

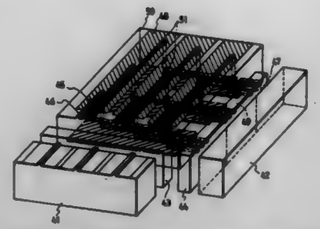
(b) arrays of electrodes formed on each of the surfaces for generating the electric field thereacross;
(c) a third layer, spaced from the first layer and having opposite surfaces and an intermediate transparent polymer matrix therebetween in which micro-cavities are enclosed which serve as micro-lenses having optical axes perpendicular to the two-third layer surfaces;
(d) the micro-cavities made from a transparent material different from that of the polymer matrix and having refractive indices which, is selectably changeable in response to changes in an electric field passing between the two third layer surfaces;
(e) the material of the micro-cavities having the same refractive index as the matrix material for a first electric field value, and a greater refractive index than the matrix material for a second electric field value;
(f) arrays of electrodes formed on each of the third layer surfaces for generating the electric field thereacross;
(g) a second intermediate layer interposed between the first and third layers and fabricated from a transparent polymer;
means located on the weapon for measuring the direction in which it is pointed;
means, mounted on the weapon, for transmitting data from the measuring means;
means mounted on the goggles for receiving direction measurement data;
means connected to a receiving means output for communicating direction measurement data to a computer; and
communication means for linking an output of the computer to the electrode arrays.

5,386,309
LIQUID CRYSTAL DISPLAY MODULE WITH POSITIONING MARKS ON CIRCUIT SUBSTRATE AND HEAT SEAL
Geung W. Nam, Kyungsangbook-Do, Rep. of Korea; assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 18, 1991, Ser. No. 808,930
Claims priority, application Rep. of Korea, Dec. 20, 1990, 20302/1990
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 359—88 7 Claims



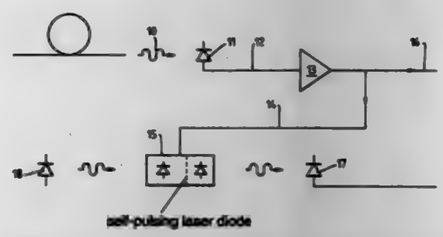
1. A liquid crystal display module comprising:
a circuit substrate provided with a first signal pattern of electrodes adapted to receive an external liquid crystal drive signal;
a liquid crystal display unit fixedly mounted on the circuit substrate and adapted to display the information corresponding to the external liquid crystal drive signal;
a heat seal provided with a second signal pattern of electrodes adapted to connect the first signal pattern of electrodes of the circuit substrate with the liquid crystal display unit; and
alignment indicating means for indicating when the heat seal has been properly aligned with the circuit substrate in response to the first signal pattern of electrodes corresponding to the second signal pattern of electrodes, wherein said alignment indicating means comprises,
first positioning marks provided on the circuit substrate,
second positioning marks provided on the heat seal and adapted to be overlapped with the first positioning marks when the heat seal aligns with the circuit substrate, wherein each of the first positioning marks on the circuit substrate has an II-shape conductive structure which is electrically shorted when each of the first positioning marks is overlapped with the corresponding second positioning mark on the heat seal,
a conductive pattern formed on the circuit substrate and adapted to connect the first positioning marks in series, the conductive pattern having output terminals at both ends, respectively, and
a pair of external output terminals formed on the circuit substrate and adapted to connect the output terminals of the conductive pattern to external display means so that the first positioning marks and said external display means form a closed circuit when said first and second positioning marks overlap and contact for displaying that the heat seal has been properly aligned with the circuit substrate.

5,386,310
PARALLEL OPTICAL SWITCHING APPARATUS
Makoto Haneda, Takasaki; Yuuichi Ono, Nishitama, and Katsuki Chiba, Akikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 3, 1992, Ser. No. 984,751
Claims priority, application Japan, Dec. 6, 1991, 3-322854
Int. Cl.[6] G06K *9/74*
U.S. Cl. 365—107 8 Claims



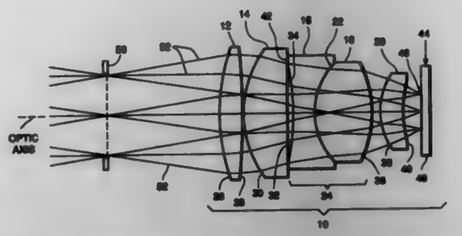
1. A parallel optical switching apparatus wherein in a system where at least one m-channel light emission element array and one n-channel light receiving element array are optically connected via an m×n optical conversion element array, the optical conversion element array has an optical amplification function and a modulation function by inductive discharge of input light for each element of the optical conversion element array and performs optical arithmetic or optical conversion in parallel for input light from the light emission element array by the amplification and modulation function, wherein said optical conversion element array has a substrate and a reflection mirror on the substrate, and the light emission element array and light receiving element array are interconnected into an optical free space coupling system on one side of the optical conversion element array, and a layer with an optical amplification function or an active layer with an MQW structure and light input and output wave guides are mounted on one side or both sides of the substrate in parallel with a surface of the substrate.

5,386,311
CLOCK RECOVERY
James A. Shields, Carrickfergus, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada
Filed Sep. 9, 1993, Ser. No. 118,928
Claims priority, application United Kingdom, Sep. 9, 1992, 9219127
Int. Cl.[6] H04B *10/06*
U.S. Cl. 359—189 7 Claims



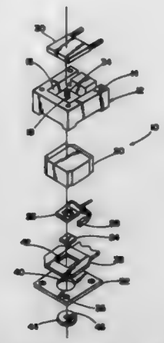
1. An optical clock recovery circuit for recovering an optical clock from a received optical signal containing both data and clock information, said circuit including a photodetector for the application thereto of said received optical signal, said photodetector including means for generating an electrical output, and including signal coupling means for coupling said electrical output to one electrical input of a frequency controllable semiconductor self-pulsating laser diode device.

5,386,312
COLLIMATING LENS HAVING DOUBLET ELEMENT BETWEEN POSITIVE-POWER ELEMENTS
Harvey M. Spencer, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Aug. 3, 1992, Ser. No. 923,759
Int. Cl.[6] G02B *9/12, 11/10, 13/22, 26/10*
U.S. Cl. 359—215 17 Claims



1. A collimating lens assembly having an optical axis and comprising:
a first lens group disposed along said optical axis at a first end of said assembly;
a second lens group disposed along said optical axis at a second end of said assembly opposite said first end;
a doublet lens element disposed along said optical axis between said first lens group and said second lens group;
wherein said first lens group and said second lens group each comprise at least one singlet positive-power optical lens element;
wherein said doublet lens element includes a first negative-power lens element and a second positive-power lens element, said first lens element having a higher index of refraction than said second lens element for chromatic correction of said collimating lens; and
wherein said assembly is operative to form a telecentric pupil along said optical axis external to said second end of said assembly.

5,386,313
REFLECTIVE MAGNETO-OPTIC SPATIAL LIGHT MODULATOR ASSEMBLY
Nicholas J. Szegedi, 229 Goldenwood Cir., Wood Ranch, Calif. 93065; Lawrence I. Garett, 10910 Dempsey Ave., Granada Hills, Calif. 91344; Theodore R. Maki, 18631 Citronia, Northridge, Calif. 91324, and Dennis N. Smith, 1461 Alexander St., Simi Valley, Calif. 93065
Filed Mar. 11, 1993, Ser. No. 29,719
Int. Cl.[6] G02B *26/08;* H01L *25/00*
U.S. Cl. 359—280 11 Claims

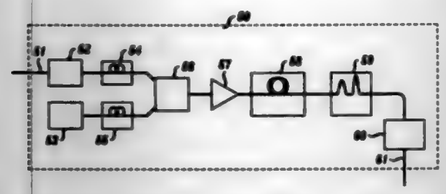


1. A reflective, magneto-optic spatial light modulator (MOSLM) assembly comprising:
a) nonmagnetic housing means defining a bounded inner chamber,
b) at least one MOSLM chip positioned and protected within said chamber, said chip having a planar reflective surface,
c) temperature or thermal sensor means sensing the ambient temperature within said chamber and generating a corresponding ambient temperature signal,
d) cooler means responsive to said ambient temperature signal extracting thermal energy from said chamber to maintain a predetermined temperature operating range within said chamber where said range includes operating temperatures less than the Curie point temperature of said MOSLM chip,
e) electrical interconnect means providing signal input and output paths to and from said chip, and
f) aperture means penetrating said housing means exposing said chip so that incident electromagnetic radiation has an entrance and exit means through said aperture means to and from said MOSLM chip.

5,386,314
POLARIZATION-INSENSITIVE OPTICAL FOUR-PHOTON MIXER WITH ORTHOGONALLY-POLARIZED PUMP SIGNALS
Robert M. Jopson, Rumson, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Sep. 10, 1993, Ser. No. 120,118
Int. Cl.[6] G02F *1/39*
U.S. Cl. 359—326 25 Claims

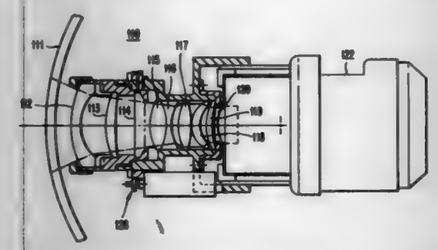
14. A polarization-insensitive optical mixer comprising:
a signal input for receiving an input optical signal;
a pump signal input for receiving two substantially orthogonally-polarized pump signals; and
a first nonlinear mixing device for four-photon mixing said input optical signal and said two substantially orthogonal-

ly-polarized pump signals to produce a mixing product related to said input optical signal and having a power



level substantially insensitive to variations in polarization of said input optical signal.

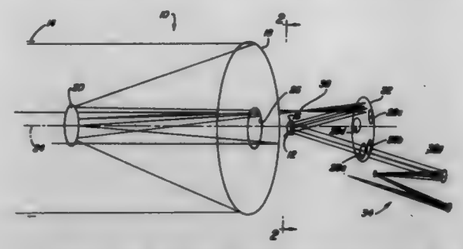
5,386,315
IR FAST LOW LIGHT LEVEL LENS SYSTEM
Max Amon, Maitland, and John Tejada, Oviedo, both of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.
Continuation of Ser. No. 749,716, Aug. 26, 1991, abandoned. This application Jun. 4, 1993, Ser. No. 71,610
Int. Cl.[6] G02B *15/16*
U.S. Cl. 359—350 **6 Claims**



1. A low light level lens system, comprising:
a multiple element lens system designed to operate in the near-infrared region of 0.7 to 0.9 μm,
wherein at least one element comprises a zinc selenide lens element, said lens system having a wide field of view, and wherein the multiple element lens system comprises, in order of their appearance on a chief ray, a first negative meniscus lens, a first positive meniscus lens, a null planar window, a positive double convex lens in contact with a negative double concave lens, a positive double convex lens followed by contact with a positive meniscus lens, a second positive meniscus lens, and a second negative meniscus lens.

5,386,316
OPTICAL SYSTEMS HAVING MULTIPLE SIMULTANEOUS FUNCTIONS
Lacy G. Cook, El Segundo, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 694,963, May 2, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 18,905
Int. Cl.[6] G02B *17/00*
U.S. Cl. 359—365 **9 Claims**

1. An all-reflective optical system comprising:
an entrance pupil region;
an afocal three-mirror anastigmat telescope including:
a primary mirror for reflecting light from a viewed scene passing through said entrance pupil;
a secondary mirror for reflecting light from said primary mirror; and
a tertiary mirror for reflecting light from said secondary mirror to an exit pupil, said tertiary mirror including a plurality of apertures for enabling passage of light therethrough; and
reflecting means for reflecting light from said tertiary

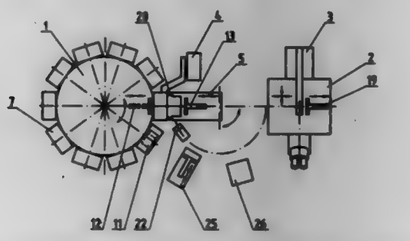


mirror, said reflecting means positioned at said exit pupil such that the light reflected by said reflecting means passes through said apertures in said tertiary mirror to a plurality of regions for viewing.

5,386,317
METHOD AND APPARATUS FOR IMAGING DENSE LINEWIDTH FEATURES USING AN OPTICAL MICROSCOPE
Timothy R. Corle, Palo Alto; Younus Vora, San Jose, and Kamran Sarmadi, Milpitas, all of Calif., assignors to Prometrix Corporation, Santa Clara, Calif.
Filed May 13, 1992, Ser. No. 882,499
Int. Cl.[6] G02B *21/06, 27/00*
U.S. Cl. 359—386 **26 Claims**

1. A polarizing optical microscope for imaging a sample including a dense array of strips on a substrate, said microscope including:
a variable retarder positioned near the sample, said variable retarder having a retardation characteristic;
a means for directing a polarized illuminating beam to the variable retarder, wherein the variable retarder is positioned to transmit a portion of the illuminating beam to the sample and to transmit a reflected beam from the sample, wherein the reflected beam comprises radiation from the illuminating beam that has been reflected from the sample;
an analyzer positioned to receive the reflected beam and transmit a portion of said reflected beam; and
means for controlling the retardation characteristic to cause the variable retarder to transmit said portion of the illuminating beam with an elliptical polarization, and to cause the reflected beam to have a second polarization for enhancing transmission through the analyzer of a component of said reflected beam comprising radiation reflected from the substrate.

5,386,318
APPARATUS FOR HANDLING BIOLOGICAL SPECIMENS
Jürgen Kühnert; Peter Zimmermann; Armin Baumann, and Wolfgang Krämer, all of Jena, Germany, assignors to Jenoptron Gesellschaft Für Optoelektronik Und Handling mbH, Jena, Germany
Filed May 12, 1993, Ser. No. 60,815
Claims priority, application Germany, Sep. 20, 1991, 4131360
Int. Cl.[6] G02B *21/26*; B65G *29/00, 65/00*
U.S. Cl. 359—394 **19 Claims**



1. Apparatus for handling biological specimens and for providing the biological specimens to a biological diagnostic device for examination of the biological specimens, which biological specimens are disposed on a plurality of biological receptacle means, said apparatus comprising:
means for storing the biological receptacle means;
means for, moving the biological receptacle means from said storing means to the biological diagnostic device;
means for transferring the biological receptacle means from said storing means to said moving means;
means for transferring the biological receptacle means from said moving means to the biological diagnostic device;
said moving means comprising means for rotatably moving the biological receptacle means between said storing means and the biological diagnostic device;
said storing means comprises a plurality of compartments;
each of said plurality of compartments being configured to hold therewithin a plurality of the biological receptacle means; and
said moving means comprising:
means for removing a preselected one of the biological receptacle means from one of said plurality of compartments;
means for receiving the preselected one of the biological receptacle means; and
said receiving means for being pivotably mounted between said storing means and the biological diagnostic device.

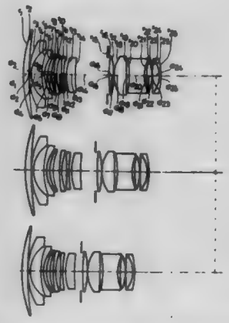
5,386,319
HIGH RESOLUTION IMAGERY SYSTEMS AND METHODS
Theodore R. Whitney, 5500 Fenwood Ave., Woodland Hills, Calif. 91367
Division of Ser. No. 520,629, May 8, 1990, Pat. No. 5,156,943, which is a division of Ser. No. 108,435, Oct. 13, 1987, Pat. No. 4,936,665. This application Jun. 11, 1992, Ser. No. 897,248
The portion of the term of this patent subsequent to Jun. 25, 2010, has been disclaimed.
Int. Cl.[6] G02B *5/18*
U.S. Cl. 359—575 **45 Claims**

1. A plate for use in an optical system, for selectively phase delaying different areal components of a substantially monochromatic illuminating beam throughout a cross sectional area, comprising:
a substantially flat, light transmissive, substrate having a plurality of light bending rings thereon defining a base spherical bending characteristic, each of the rings being degined by a succession of plateaus relative to a nominal surface of the substrate, the plateaus varying in height by increments related to a wavelength of optical delay of monochromatic light incident thereon, the maximum



height being less than one wavelength or an integral multiple thereof, and the rings varying nonlinearly in width relative to a central axis of the rings, and wherein the rings have a minimum radial width of the order of 10 microns.

5,386,320
WIDE ANGLE ZOOM LENS SYSTEM
Katsuhiro Takada, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 12, 1992, Ser. No. 975,015
Claims priority, application Japan, Nov. 13, 1991, 3-324062
Int. Cl.[6] G02B *5/14*
U.S. Cl. 359—689 **12 Claims**



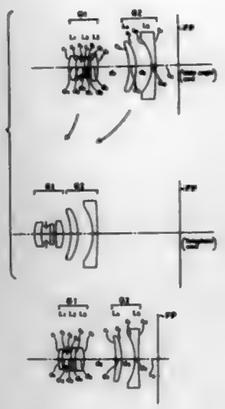
1. A wide angle zoom lens system consisting of:
a first lens unit having a negative refractive power disposed in an object side of said wide angle zoom lens system,
a second lens unit having a negative refractive power disposed adjacent to said first lens unit on an image side of said first lens unit, and
a third lens unit having a positive refractive power disposed adjacent to said second lens unit on an image side of said second lens unit,
wherein a focal length of the wide angle zoom lens system as a whole is varied by changing a first airspace between said first lens unit and said second lens unit and a second airspace between said second lens unit and said third lens unit.

5,386,321
ZOOM LENS
Kazuteru Kawamura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 21, 1992, Ser. No. 964,258
Claims priority, application Japan, Oct. 22, 1991, 3-273985
Int. Cl.[6] G02B *15/14, 13/18*
U.S. Cl. 359—692 **40 Claims**

1. A zoom lens system including, in order from the object side, a first lens (L_1), a second lens (L_2) of negative power and a third lens (L_3) of positive power and comprising a first lens group (G1) having positive power as a whole and a second lens

group (G2) of negative power, said first lens (L_1) conforming to the following condition (1):

$$-5<f_T^2/(f_1 \cdot F)<5 \quad (1)$$



where

f_T is the focal length of the total system at the telephoto end,

f_1 is the focal length of the first lens (L_1), and

F is the F-number at the telephoto end.

5,386,322

MIRROR ATTACHMENT

Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Appleton, Wis.

Filed Sep. 4, 1991, Ser. No. 754,791

Int. Cl.[6] G02B *7/18*

U.S. Cl. 359—872 **6 Claims**



1. A quick connect mirror for a police baton, and the mirror attachment comprising:

a. a frame;

b. a mirror mounted in the frame;

c. a holder secured to and extending from the frame and including a channel adapted for receiving an end of the police baton;

d. a retainer on the holder adapted for engaging and gripping the baton when the baton is received in said channel; and

e. a flashlight holder secured to the frame and adapted for securing an elongated flashlight to the frame, wherein the flashlight holder includes a flashlight channel extending along the back of the mirror in an axial direction with respect to the receiving channel.

5,386,323

METHOD AND APPARATUS FOR REPRODUCING INDEPENDENTLY RECORDED MULTI-CHANNEL DIGITAL AUDIO SIGNALS SIMULTANEOUSLY AND IN SYNCHRONIZATION WITH VIDEO SIGNALS

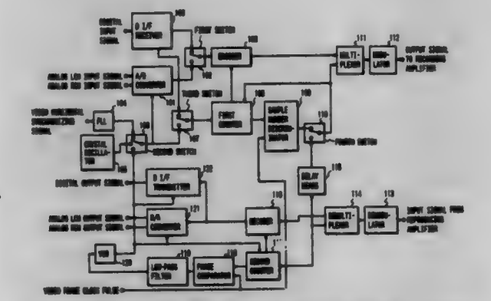
Tetsuo Ishiwata, Osaka, and Susumu Yamaguchi, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 28, 1992, Ser. No. 920,730

Claims priority, application Japan, Jul. 30, 1991, 3-189897

Int. Cl.[6] G11B *5/02, 5/09*; H04N *5/78*

U.S. Cl. 360—19.1 **6 Claims**



1. In a digital VTR in which digital audio signals of a plurality of channels sampled at a predetermined frequency are recorded on helical tracks of a magnetic recording tape together with video signals, the video signals being recorded in predetermined groups of tracks for processing each group of tracks as a unit, a method for recording and reproducing said digital audio signals comprising the steps of:

separately recording the digital audio signals of different channels at different times;

for each channel, at the same time as recording the digital audio signals thereof, recording sample number discriminating signals representing sample numbers of the digital audio signals;

reproducing first clock signals using a digital audio interface for digital input signals;

generating second clock signals using a crystal oscillator;

generating third clock signals using a phase locked loop synchronized with a first synchronizing signal of the recorded video signals;

generating fourth clock signals by comparing a second synchronizing signal for a specific unit of video signals with an output of a divider for a reproduced sample number discriminating signal for audio signals of said unit of video signals;

said second synchronizing signal representing unit timing for each group of tracks of the video signal and being separate from said first synchronizing signal;

switchably selecting from among said first, second, third and fourth clock signals to provide specific clock signals for performing a recording operation, for performing a rerecording operation, and for performing a reproduction operation;

simultaneously reproducing the audio signals of a plurality of channels in synchronism with units of the video signals associated therewith, by detecting said sample number discriminating signals of each of the channels.

5,386,324

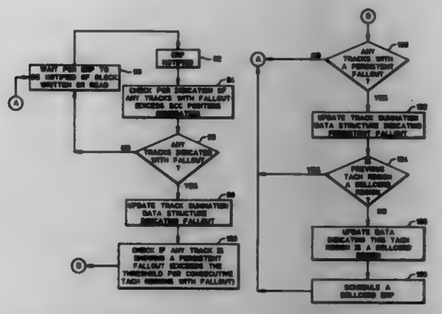
APPARATUS AND METHOD FOR ANTICIPATED ERROR RECOVERY USING DEBRIS PROFILES

Scott M. Fry; Pamela R. Nylander-Hill, and Sushama M. Paranjape, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1993, Ser. No. 99,974

Int. Cl.[6] G11B *5/09, 27/36*

U.S. Cl. 360—53 **20 Claims**



1. In a tape drive data storage apparatus including a control system for reading and writing data on a streaming tape medium, an error correction coding (ECC) system for detecting and correcting data transfer errors, and an error recovery system for performing non-ECC correctable error recovery, a method for dynamically anticipating and resolving potential data error conditions comprising the steps of:

performing read and/or write data transfer operations on one or more data tracks of a tape medium loaded in the tape drive;

generating during said data transfer operations a track performance database representing a map of ECC error correction locations occurring on the tape;

determining from said track performance database whether one or more track fallout thresholds have been reached in one or more regions of the tape; and if so

performing an error recovery bellcord action to minimize subsequent data error recovery.

5,386,325

VIDEO SIGNAL PROCESSING SYSTEM FOR DOUBLE DECK TAPE RECORDER

Dong-Young Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 807,641, Dec. 13, 1991, abandoned, which is a continuation of Ser. No. 634,963, Jan. 3, 1991, abandoned, which is a continuation of Ser. No. 903,032, Sep. 2, 1986, abandoned. This application Jun. 1, 1993, Ser. No. 69,678

Claims priority, application Rep. of Korea, Jun. 27, 1986, 5205/1986; Jun. 28, 1986, 5239/1986

Int. Cl.[6] H04N *5/78*; G11B *5/86*

U.S. Cl. 360—33.1 **20 Claims**

1. A video signal processing system for a double deck video tape recorder, said system comprising:

a video tuner for converting an input radio frequency signal into an input video signal;

a first video deck for generating a first playback signal and having a play mode, a record mode, and auxiliary modes;

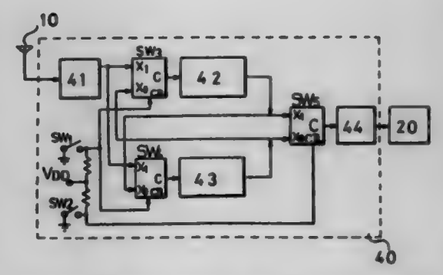
a second video deck for generating a second playback signal and having said play mode, said record mode, and said auxiliary modes;

a radio frequency converter for receiving and converting said first playback signal and said second playback signal into an output radio frequency signal for transmission to a television receiver;

an input select switch having a first terminal connectable to a reference potential and a second terminal connectable to a power supply, for producing an input control signal indicative of user selection between a first mode and a second mode;

an output control device for automatically producing an output control signal in correspondence with current modes of said first video deck, said second video deck, and said input select switch;

input analog switching means for connecting said first video deck to receive said second playback signal and said second video deck to receive said first playback signal in response to said input control signal indicating said second



mode and for connecting said first video deck and said second video deck to receive said input video signal in response to said input control signal indicating said first mode, said input control signal being commonly applied to said output control device and to said input analog switching means; and

an output analog switch for alternatively connecting said radio frequency converter to receive one of said first playback signal and said second playback signal in response to said output control signal;

wherein said output control device operates in accordance with the following truth table:

Operating modes of each video deck			Input signals to the output control device				
first deck	second deck	Select video deck	A	B	C	D	E
PLAY	X	first deck	S1	S2	S2	S2	d
X	PLAY	second deck	S2	S2	S1	S2	d
REC	X	first deck	S2	S1	S2	S2	d
X	REC	second deck	S2	S2	S2	S1	d
PLAY	REC	second deck	S1	S2	S2	S1	S1
REC	PLAY	first deck	S2	S1	S1	S2	S1

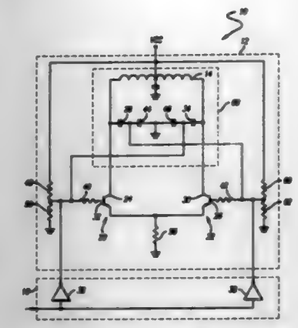
where: first deck indicates said first video deck, second deck indicates said second video deck, "X" indicates one of said auxiliary modes, "REC" indicates the record mode, "PLAY" indicates said play mode, input signal A is provided when said first video deck is in said play mode, input signal B is provided when said first video deck is in said record mode, input signal C is provided when said second video deck is in said play mode, input signal D is provided when said second video deck is in said record mode, input signal E is provided when said first mode is selected, "d" indicates that the mode is immaterial, S1 indicates the input signals in a first state and S2 indicates the input signals in a second state.

5,386,326

OSCILLATING ERASE CURRENT CIRCUIT

Jefferson H. Harman, Thousand Oaks, Calif., assignor to Wangtek, Inc., Simi Valley, Calif.

Filed Feb. 25, 1993, Ser. No. 23,028
Int. Cl.[6] G11B *5/09, 5/03*
U.S. Cl. 360—66 **20 Claims**



1. A magnetic information recording system for transferring information to and from magnetic media, comprising:

means for transferring information to and from said magnetic media;

erase head inductance means;

capacitance means coupleable with said erase head inductance means to form a tank circuit having a natural resonant frequency; and

oscillator means for causing said tank circuit to oscillate at said natural resonant frequency to apply an ac magnetic field to said magnetic media, wherein said oscillator means further comprises a self-oscillating circuit and feedback means for causing oscillation at a frequency determined by and equal to said natural resonant frequency of said tank circuit.

5,386,327

RECORDING AND REPRODUCING APPARATUS

Shigeo Yamagata, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 883,187, May 15, 1992, which is a continuation of Ser. No. 807,947, Dec. 10, 1991, Pat. No. 5,142,423, which is a continuation of Ser. No. 682,398, Apr. 5, 1991, abandoned, which is a continuation of Ser. No. 532,116, May 31, 1990, abandoned, which is a continuation of Ser. No. 289,446, Dec. 20, 1988, abandoned, which is a continuation of Ser. No. 34,404, Apr. 3, 1987, abandoned. This application Nov. 17, 1993, Ser. No. 154,155
Claims priority, application Japan, Apr. 9, 1986, 61-081541
Int. Cl.[6] G11B *5/03*
U.S. Cl. 360—66 **16 Claims**

1. A recording and/or reproducing apparatus, comprising:

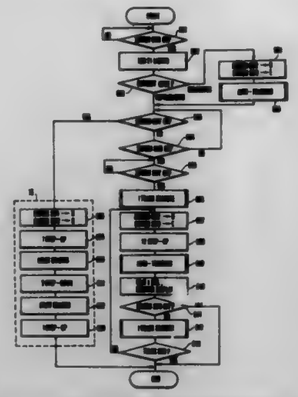
(a) erasing means for erasing signals in a predetermined position on a recording medium;

(b) triggering means for making said erasing means to start executing the erasing operation to erase the signals in said predetermined position in said recording medium;

(c) reproducing means for reproducing the signals in said predetermined position in response to an erasing operation by said triggering means;

(d) adjusting means for adjusting a relative position of said erasing means to said predetermined position; and

(e) control means for controlling an operation of said adjusting means according to whether or not an operation mode



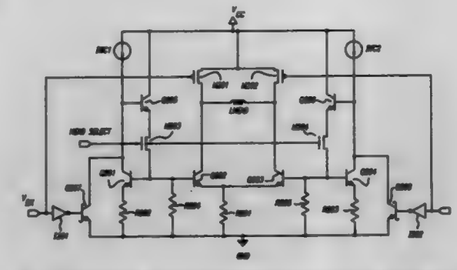
before an operation of said trigger means is a reproducing mode.

5,386,328

CURRENT MIRROR BASED WRITE DRIVER

Chi-Fa Chiou, Lake Forest, Calif., and Yuji Isobe, Kawasaki, Japan, assignors to Silicon Systems, Inc., Tustin, Calif.

Filed Jun. 18, 1993, Ser. No. 79,326
Int. Cl.[6] G11B *5/09, 5/02*
U.S. Cl. 360—68 **28 Claims**



1. A circuit for operating inductive recording heads comprising:

an inductive recording means for magnetically recording data;

first write driver means comprising first and second FETs, said inductive recording means coupled between first and second outputs of said first write driver means, said first and second outputs of said first write driver means being selectably enabled by first and second input signals;

second write driver means having first and second inputs coupled to said first and second outputs of said first write driver means, respectively, said second write driver means comprising first and second current mirrors;

first and second bandgap current sources coupled to said second write driver means; and,

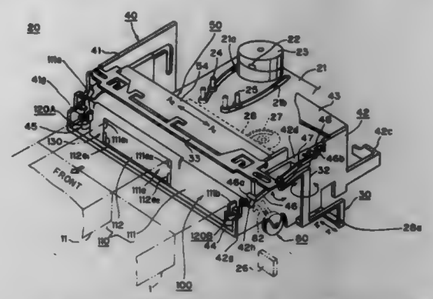
switching means coupled to said first and second bandgap current sources and to said second write driver means, said first and second input signals provided to said switching means for selectably sinking current through said first and second inputs of said second write driver means.

5,386,329

TAPE CASSETTE LOADING SYSTEM

Masaki Ikegawa, Kawasaki, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Sep. 18, 1992, Ser. No. 947,768
Claims priority, application Japan, Sep. 20, 1991, 3-084413[U]; Sep. 30, 1991, 3-278296; Sep. 30, 1991, 3-278306
Int. Cl.[6] G11B *5/008, 15/675*
U.S. Cl. 360—94 **1 Claim**



1. A tape cassette loading system for selectively mounting and taking out one of a standard tape cassette and a small tape cassette which is smaller than the standard tape cassette in and from a cassette holder having a ceiling and a bottom, through a cassette insertion inlet and for selectively transferring one of the standard tape cassette and the small tape cassette to one of a first cassette holding position and a second cassette set position, by transferring the cassette holder respectively from a first mounting taking-out position for the standard tape cassette and a second mounting and taking-out position for the small tape cassette, whereby loading means slidably provided on a chassis base is selectively positioned at one of a first loading start position and a second loading start position correspondingly with the first cassette holding position and the second cassette holding position, said tape cassette loading system comprising:

cassette selection means for selecting and indicating one of the standard tape cassette and the small tape cassette to be mounted in the cassette holder;

a cassette holder position switch plate slidably provided nearby the cassette insertion inlet, the cassette holder position switch plate being selectively transformed to one of a first position and a second position correspondingly with the indication of the cassette selection means;

first cassette holder positioning means for positioning the cassette holder at said first mounting and taking-out position in cooperation with the cassette holder position switch plate which is positioned at the first position;

second cassette holder positioning means for positioning the cassette holder at said second mounting and taking-out position in cooperation with the cassette holder position switch plate which is positioned at the second position;

cassette holder driving means for transferring the cassette holder between said first and second mounting and taking-out positions correspondingly with said first and second set positions of the cassette holder position switch plate and

shaft means provided near the cassette insertion inlet; a first door rotatably provided on the shaft means for covering said cassette insertion inlet and permitting an insertion of the standard tape cassette into the cassette holder, the first door having an opening for permitting an insertion of the small tape cassette;

a second door rotatably provided on said shaft means behind said opening for covering thereof and permitting the insertion of the small tape cassette;

a first and second engaging levers rotatably provided nearby and both sides of the cassette insertion inlet, respectively, each of the first and second engaging levers having a first engaging portion at one end thereof to engage with a back surface of the first door to prevent the first door from opening, the first engaging lever further having a tapered surface at one end thereof; and

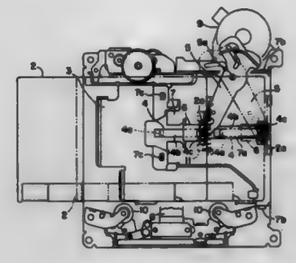
a third engaging lever rotatably provided on nearby the first engaging lever, said third engaging lever having a second engaging portion at one end thereof to engage with a back surface of the second door to prevent the second door from opening and said third engaging lever having a top surface to engage with the first tapered surface, whereby when the standard tape cassette is inserted in the cassette holder which is positioned at the first mounting and taking-out position, the first and second engaging levers are rotated by causing the standard tape cassette to engage with the first engaging portions to permit the insertion of the standard tape cassette, and the third engaging lever is also rotated and retracted in cooperation with the first engaging lever to permit the insertion of the standard tape cassette, and when the small tape cassette is inserted in the cassette holder which is positioned at the second mounting and taking-out position, the third engaging lever is rotated and retracted to permit insertion of the small tape cassette by causing said top surface of the third engaging lever to engage with the bottom of the cassette holder.

5,386,330

TAPE RECORDER CASSETTE LOADING MECHANISM IN WHICH A PROJECTION MATES WITH A HOLE IN A CASSETTE UPPER SURFACE

Shingo Kage, Kobe; Yoshikazu Yamano, and Yasunari Toyama, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 8, 1992, Ser. No. 986,779
Claims priority, application Japan, Dec. 10, 1991, 3-325604
Int. Cl.[6] G11B *5/008*
U.S. Cl. 360—96.5 **2 Claims**



1. A tape recorder in which a tape cassette having a hole in an upper surface of said tape cassette is used, wherein said tape cassette is placed in a playback position by being moved in a direction parallel to a direction of insertion and then a direction perpendicular to the upper surface of the tape cassette, said tape recorder comprising:

(a) a holder for holding the tape cassette;

(b) first supporting means for supporting the holder so that the holder is movable in the direction perpendicular to the upper surface of the tape cassette;

(c) a projection disposed on the first supporting means, the projection mating with the hole of the upper surface of the tape cassette when the tape cassette is in a mating position;

(d) means for transferring the tape cassette from the mating position to the direction parallel to the direction of insertion of the tape cassette;

(e) second supporting means, separate from the holder and first supporting means and disposed adjacent to a lower surface of the tape cassette, for supporting the lower surface of the tape cassette, the second supporting means rotatably mounted on the transfer means so that when the

tape cassette moves in the direction perpendicular to the upper surface of the tape cassette, the second supporting means does not obstruct movement of the tape cassette; and

(f) urging means for applying force to the second supporting means so that the second supporting means maintains contact with the lower surface of the tape cassette.

5,386,331

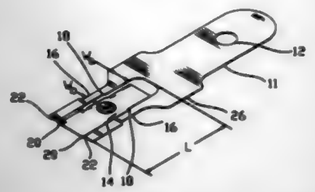
LOAD BEAM AND FLEXURE ASSEMBLY HAVING FLEXIBLE ARMS WITH SPECIFIC WIDTH RATIOS

Raymond R. Wolter, Hutchinson, Minn., assignor to Hutchinson Technology Incorporated, Hutchinson, Minn.

Continuation-in-part of Ser. No. 693,858, Apr. 29, 1991, Pat. No. 5,291,359. This application Oct. 29, 1992, Ser. No. 968,170

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **2 Claims**



1. In a magnetic head suspension for a rotary actuator drive including a load beam joined to a proximal end of a rigid arm for supporting a magnetic head at a fixed distance from the rigid arm:

a flexure mounted on a distal apex of the load beam, the flexure being divided into

a central head mounting support means for receiving the magnetic head to be bonded thereto;

a pair of slot-like segments in the flexure to define at least two extended flexible arms, such that the slot-like segments and the flexible arms, respectively, are generally longitudinally aligned parallel to a longitudinal axis of symmetry of the flexure, said arms suspending the support means from a distal end of the flexure for gimballed movement of the magnetic head relative to the load beam, a proximal end of each flexible arm having a widest width W_a, each flexible arm narrowing to a narrowest width W_b, said narrowest width W_b at a point between the widest width W_a and the distal end of the flexure aligned with a dimple on the support means, and a distal end of each flexible arm at the distal end of the flexure having a width intermediate between the widest width W_a and the narrowest width W_b, the ratio of W_b/W_a falling within the range of about 0.2 to 0.8, thereby decreasing pitch and roll stiffnesses while increasing lateral stiffness and natural frequency of the flexure; wherein a proximal portion of the flexure is of reduced width as compared to the width of the flexure at the widest width W_a of the flexible arms, such that the reduced width proximal portion of the flexure has generally longitudinally aligned parallel sides.

5,386,332

MAGNETIC HEAD FOR HIGH-FREQUENCY, HIGH DENSITY RECORDING

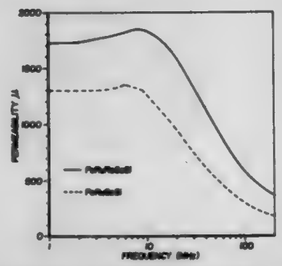
Tomasz M. Jagielinski, Carlsbad, Calif., and Charles F. Bracker, Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 673,995, Mar. 25, 1991, abandoned. This application Feb. 17, 1994, Ser. No. 197,655

Int. Cl.[6] G11B *5/147*

U.S. Cl. 360—126 **5 Claims**

1. A magnetic head for reading and writing signals to at least a frequency of 150 Mhz having a media-contact surface defined by a gapped magnetic core sandwiched between a pair of ceramic substrates, said magnetic core being a multilayered structure comprising: a multiplicity of thin layers of FeRuGaSiX magnetic material alternating with even thinner layers of a dielectric material, each of said magnetic layers having uniaxial



anisotropy, said layers being of substantially equal thickness and having said uniaxial anisotropy aligned in the same direction in each of said layers, and said layers further of a thickness less than 3 μm and having X selected from the group consisting of Zr, Re, Ni and Co of an atomic weight percentage of less than 10%.

5,386,333

HEAD DRUM CLEANING DEVICE FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

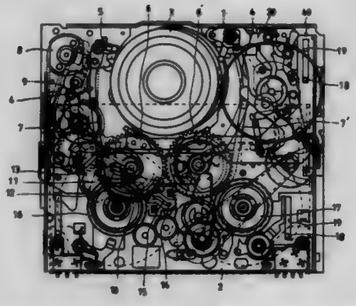
Myung G. Kang, Seoul; Seong S. Kang; Sung H. Choi, both of Kyungki; Mun C. Joung, Seoul; Byoung G. Jang, Kyungki; Key Y. Ryu; Hyo C. Yu, both of Seoul, and Sang J. Lee, Kyungki, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 9, 1993, Ser. No. 73,479

Claims priority, application Rep. of Korea, Jun. 17, 1992, 1992 10712; Jun. 23, 1992, 1992 10924

Int. Cl.[6] G11B *5/41*

U.S. Cl. 360—128 **4 Claims**



1. A head drum cleaning device for a magnetic recording and reproducing apparatus comprising:

head cleaning means for cleaning a rotating head drum;

driving means for driving the head cleaning means, the driving means being constituted by a part of a slide base of the apparatus;

head cleaning lever pivoting means, operatively connected to the driving means, for pivoting the head cleaning means;

wherein the head cleaning means comprises a head cleaning lever pivotally mounted to a fixed base plate of the apparatus and positioned adjacent to one side portion of the head drum, and a cleaning roller rotatably mounted to one end of the head cleaning lever;

wherein the head cleaning lever pivoting means comprises:

an actuating arm disposed adjacent to the head cleaning lever and pivotally mounted to the fixed base plate, said actuating arm including a first bar actuated by coming into contact with the drive means, for pivoting the head cleaning lever in a direction that the cleaning roller moves toward the head drum, a second bar actuated b coming into contact with the head cleaning lever, for pivoting the head cleaning lever in a direction that the cleaning roller moves away from the head drum and a spring connecting bar; and,

a spring connected at one end thereof to the head cleaning lever and at the other end thereof to the spring connecting bar of the actuating arm for urging the head cleaning lever toward the actuating arm.

5,386,334

TAPE CASSETTE REEL LOCKING MECHANISM

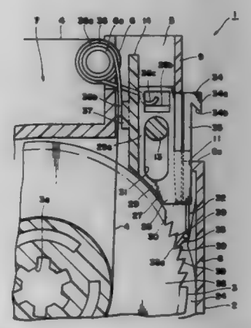
Akihiro Uetake, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Feb. 11, 1993, Ser. No. 16,573

Claims priority, application Japan, Feb. 20, 1992, 4-069394

Int. Cl.[6] G11B *23/087*

U.S. Cl. 360—132 **11 Claims**



1. A tape cassette having a cassette casing containing rotatably therein a pair of tape reels having respective ends of a tape fixed thereto, and a front lid rotatably supported at a fore end of cassette casing to cover a front surface of said tape partly led out from said cassette casing through tape outlets provided at the fore end of the cassette casing, comprising:

reel lock members provided to both side walls of said cassette casing, said reel lock members being slidable in a forward and backward direction of said cassette casing to shift in linkage with opening and closing of front lid, said reel lock members each having a primary section and a rear end section;

engagement claws provided at the rear end sections of said reel lock members to engage in and disengage from engagement teeth provided around the peripheries of said tape reels;

elastic deformable members mounting said engagement claws to said primary sections of said reel lock members;

guide sections provided to said cassette casing to guide the sliding movement of reel lock members;

whereby the engagement claws of said reel lock members engage in said engagement teeth of said tape reels when said front lid is closed and disengage from said engagement teeth of said tape reels when said front lid is open; and

spring means provided to energize said reel lock members in a direction to engage its engagement claws in said engagement teeth and to press said reel lock members against the inner surface of the cassette casing, said spring means comprising torsion coil springs having their coiled sections supportedly fitted onto supporting pins provided at upper end sections of tape guides formed inside said tape cassette.

5,386,335

SURGE ABSORBER

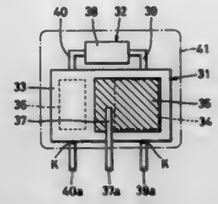
Toshinori Amano; Seiji Sakai; Yasuo Fujiki; Masanori Ueyama; Yukio Sakamoto, and Daisuke Takagi, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 17, 1992, Ser. No. 913,956

Claims priority, application Japan, Jul. 18, 1991, 3-64091[U]; Jul. 18, 1991, 3-203327; Jul. 23, 1991, 3-207390; Jul. 24, 1991, 3-182776; Aug. 30, 1991, 3-77686[U]; Apr. 22, 1992, 4-103126

Int. Cl.[6] H02H *9/06*

U.S. Cl. 361—56 **7 Claims**



1. A surge absorber comprising:

a resistance element having an input side and an output side;

a first electrode connected to the input side of said resistance element;

a second electrode connected to the output side of said resistance element;

a third electrode;

a varistor element interposed between said first electrode on the input side of said resistance element and said third electrode; and

wherein no capacitance element is interposed between the output side of said resistance element and said third electrode;

wherein said varistor element comprises a varistor substrate;

wherein said first and second electrodes are provided on said varistor substrate;

wherein said resistance element comprises a passive element which includes a body part and lead terminals extending from said body part;

wherein said body part of said passive element is positioned so as to face an end surface of said varistor substrate; and

wherein one of said lead terminals of said passive element is electrically connected to one of said first and second electrodes.

5,386,336

ON CHIP CURRENT LIMITER

Jason S.-M. Kim, Los Angeles, and James M. Anderson, Huntington Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 19, 1992, Ser. No. 901,469

Int. Cl.[6] H03K *17/12*

U.S. Cl. 361—93 **16 Claims**

1. A current limiter comprising:

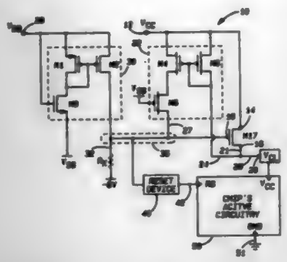
input means for receiving an input signal;

output means for providing a current limited output current;

a drive transistor having a source terminal coupled to said input means for receiving said input signal, and a drain terminal coupled to said output means, said drive transistor further having a gate terminal for receiving a bias control signal, said drive transistor allowing the input signal to be applied as the output current during normal current loads and for further disconnecting said input signal from said output means when said output current

exceeds a preset amount of current which is indicative of a current overload condition; and

a current mirror circuit including a first transistor connected between said input means and output means and in parallel with said drive transistor for transmitting overflow cur-



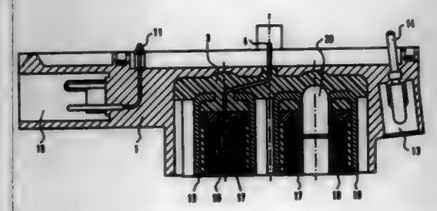
rent to the output means when excessive current flow is detected, said circuit further having a current mirror path connected to the gate terminal of said drive transistor for providing a mirror current when a current overload condition exists so as to increase the bias control signal applied to the gate of the drive transistor.

5,386,337

VALVE CONTROL UNIT AND METHOD FOR ITS PRODUCTION

Johannes Schoettl, Obertraubling, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 27, 1993, Ser. No. 127,233
Claims priority, application Germany, Sep. 25, 1992, 4232205
Int. Cl.[6] H02B *1/26*
U.S. Cl. 361—622 **8 Claims**



1. A unit for controlling valves being actuated by electromagnets for a pressure fluid, comprising:

a housing having a housing frame and a lid defining an interior;

at least one valve coil and components of said at least one valve coil being disposed in said housing, said at least one valve coil being spaced from said housing frame defining interstices therebetween, and said components being mutually spaced apart defining interstices therebetween;

a circuit carrier being disposed in the interior of said housing and being electrically connected to said at least one valve coil; and

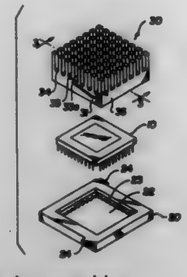
a resilient potting composition filling up the interstices between said components and between said at least one valve coil and said housing frame, without any boundary layers.

5,386,338

HEAT SINK ATTACHMENT ASSEMBLY

William D. Jordan, Dallas, and Matthew C. Smithers, Lewisville, both of Tex., assignors to Thermalloy, Inc., Dallas, Tex.

Filed Dec. 20, 1993, Ser. No. 169,354
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **13 Claims**



11. The combination comprising:

(a) a heat sink comprising a body of thermally conductive material having at least one substantially flat first major face and a second major face disposed substantially parallel with said first major face with at least two fins extending from said second major face and extending substantially perpendicular to said first major face;

(b) a mounting device comprising an elongated body of spring material with a central body portion and ends extending in substantially opposite directions from said central body portion; and

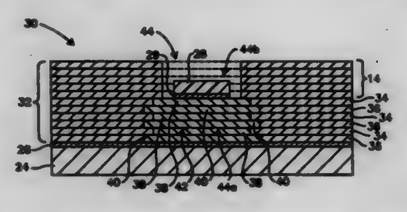
(c) an attachment clip having a generally semi-circular shaped seat receiving the central portion of the elongated body of said mounting device and ears extending from both sides of said seat defining a mouth therebetween which decreases in size as said ears are pinched together to trap said central portion of said mounting device, with said clip positioned and secured between said fins.

5,386,339

MONOLITHIC MICROELECTRONIC CIRCUIT PACKAGE INCLUDING LOW-TEMPERATURE-COFIRED-CERAMIC (LTCC) TAPE DIELECTRIC STRUCTURE AND IN-SITU HEAT SINK

Paul W. Polinski, Sr., Dana Point, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 29, 1993, Ser. No. 98,996
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—719 **19 Claims**



1. A monolithic microelectronic circuit package, comprising:

a dielectric structure including a plurality of stacked low thermal conductivity sheets of low-temperature-cofired-ceramic (LTCC) tape with a hole formed therethrough; and

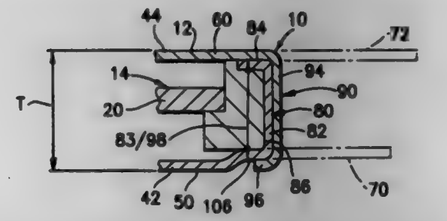
a heat sink including a plurality of stacked high thermal conductivity sheets of LTCC tape disposed in said hole, wherein said dielectric structure and said heat sink are cofired together to form an in-situ monolithic package, said heat sink having laterally continuous high thermal conductivity.

5,386,340

ENCLOSURE FOR PERSONAL COMPUTER CARD GPT

Arthur A. Kurz, Wildlife Run, New Vernon, N.J. 07976

Filed Aug. 13, 1993, Ser. No. 106,210
Int. Cl.[6] H05K *5/03, 9/00*
U.S. Cl. 361—737 **14 Claims**



1. An enclosure for a personal computer card in which an electronic device is housed within the enclosure for convenient interconnection with a host apparatus, the personal computer card having a generally rectangular plan configuration including longitudinal sides and lateral ends, and a predetermined thickness along the longitudinal sides and lateral ends of the personal computer card, and the enclosure having longitudinal sides and lateral ends corresponding to the longitudinal sides and lateral ends of the personal computer card, and a thickness along the longitudinal sides and lateral ends of the enclosure equal to the corresponding predetermined thickness of the personal computer card, the enclosure comprising:

first and second shell-like members, each shell-like member having a generally rectangular plan configuration and including a panel, longitudinal side edges corresponding to the longitudinal sides of the enclosure, and lateral end edges corresponding to the lateral ends of the enclosure;

channels integral with the panel of at least the second shell-like member and extending longitudinally along the longitudinal side edges of the second shell-like member, the channels each having an external channel width extending altitudinally a first distance equal to the thickness of the enclosure along the longitudinal sides of the enclosure, and the channels each having an internal channel width; and

side walls integral with the panel of at least the first shell-like member and extending longitudinally along the longitudinal side edges of the first shell-like member, the side walls each having a side wall width extending altitudinally a second distance;

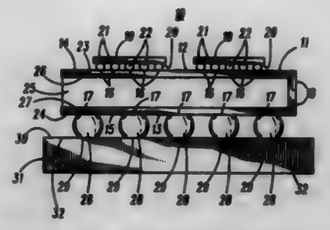
the first distance and the second distance, and the relative locations of the internal channel width and the side wall width being such that upon juxtaposition of the first and second shell-like members in opposed arrangement, the panels confront one another and the side walls of the first shell-like member are nested within the corresponding channels of the second shell-like member to secure the first and second shell-like members together with the respective panels opposed to one another and spaced apart altitudinally to accommodate the electronic device between the opposed panels and to maintain the thickness along the longitudinal sides of the enclosure.

5,386,341

FLEXIBLE SUBSTRATE FOLDED IN A U-SHAPE WITH A RIGIDIZER PLATE LOCATED IN THE NOTCH OF THE U-SHAPE

William L. Olson, Lindenhurst; David W. Currier, Algonquin; Tomasz L. Klosowiak, Glenview, and Mark Fulcher, Hanover Park, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 1, 1993, Ser. No. 143,594
Int. Cl.[6] H05K *7/20, 1/00*
U.S. Cl. 361—749 **24 Claims**



1. Semiconductor carrier assembly, comprising:

a flexible substrate having first and second portions, each of said first and second portions having a top surface with a plurality of electrically isolated metalized areas thereon and a bottom surface, said flexible substrate having electrical interconnection paths connecting at least some of said plurality of metalized areas on said top surface of said first portion to at least some of said plurality of metalized areas on said top surface of said second portion;

at least one semiconductor device mounted to said first portion top surface and electrically connected to said at least some of said metalized areas on said first portion top surface;

at least one rigidizer plate, said bottom surface of said first portion of said flexible substrate mounted to said first rigidizer plate and said second portion of said flexible substrate mounted such that said bottom surface of said second portion of said flexible substrate faces and is spaced apart from said bottom surface of said first portion of said flexible substrate such that said flexible substrate has a generally U-shaped configuration disposed about said rigidizer plate with said rigidizer plate positioned in the notch of said U; and

a circuit board having metalized areas on a top surface thereof which is mounted to said second portion top surface, wherein electrically conductive connections bond and electrically connect said metalized areas on the top surface of said circuit board to some of said metalized areas on the second portion top surface of said flexible substrate.

5,386,342

RIGID BACKPLANE FORMED FROM A MOISTURE RESISTANT INSULATIVE MATERIAL USED TO PROTECT A SEMICONDUCTOR DEVICE

Michael Rostoker, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 829,977, Jan. 30, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 173,494
Int. Cl.[6] H05K *1/00, 7/02*
U.S. Cl. 361—749 **12 Claims**

1. A package for a semiconductor device comprising:

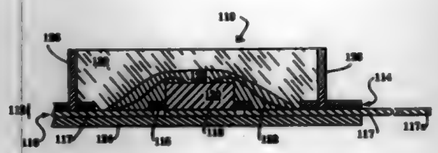
(a) a flexible substrate having an upper patterned insulative layer and a lower patterned conductive layer laminated together, said conductive layer including a plurality of package leads;

(b) a semiconductor device attached to the flexible substrate;

(c) a plurality of electrical leads providing electrical connections between the semiconductor device and the package leads;

(d) a rigid upper protective insulating and moisture resistant layer disposed around said electrical leads and the semiconductor device, and attached to said flexible substrate; and

(e) a rigid lower protective insulating and moisture resistant layer attached to said flexible substrate and opposite the



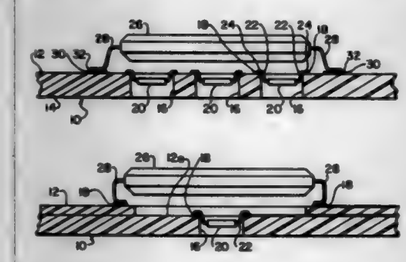
upper protective layer, said lower protective layer proximate to and substantially covering said flexible substrate conductive layer except the package leads, wherein the rigid upper protective layer and the rigid lower protective layer act to substantially encloae the semiconductor device and prevent moisture penetration therein.

5,386,343

DOUBLE SURFACE MOUNT TECHNOLOGY FOR ELECTRONIC PACKAGING

Yi-Hsin Pao, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 12, 1993, Ser. No. 150,319
Int. Cl.[6] H05K *1/18*
U.S. Cl. 361—761 **16 Claims**



1. A printed circuit board comprising, in combination,

a printed wiring board having a plurality of recesses;

a plurality of circuit components comprising upper and lower circuit components electrically connected to the printed wiring board with at least one lower circuit component occupying a corresponding recess and at least one upper circuit component positioned above a plurality of lower circuit components;

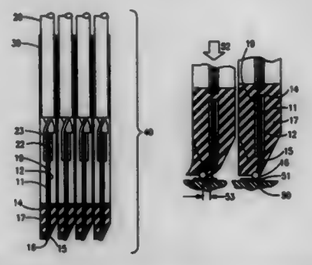
the upper and lower circuit components being independent of each other and each being fixedly electrically connected to an upper surface of the printed wiring board.

5,386,344

FLEX CIRCUIT CARD ELASTOMERIC CABLE CONNECTOR ASSEMBLY

Brian S. Beaman, Hyde Park; Fuad E. Doany, Katonah; Thomas J. Dudek, Poughkeepsie; Alphonso P. Lanzetta, Marlboro; Da-Yuan Shih, Poughkeepsie; William J. Tkazyik, Hyde Park, and George F. Walker, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 26, 1993, Ser. No. 9,498
Int. Cl.[6] H01R *23/68, 4/58*
U.S. Cl. 361—785 **18 Claims**



1. A high performance cable assembly comprising in combination:

a plurality of subassemblies stacked together to form a cable assembly;

each of said plurality of subassemblies comprising a housing and a paddle card attached to said housing;

each paddle card having discrete circuit traces connecting a plurality of discrete wires for transmitting high speed signals along a top edge of a first side of the paddle card to a plurality of contacts along a bottom edge of the first side of the paddle card adapted for contact to a mating printed circuit board;

each of said plurality of contacts along the bottom edge of the paddle card being formed of two cantilevered circuit traces with a ball shaped contact on an end of each cantilevered circuit trace embedded in an elastomer material to provide a compliant elastomeric interconnection and contact configuration for said subassemblies that will allow said cable assembly of stacked subassemblies of housings and paddle cards to be mounted perpendicular to the surface of said mating printed circuit board.

5,386,345

ELECTROMAGNETIC SHIELDING MESH

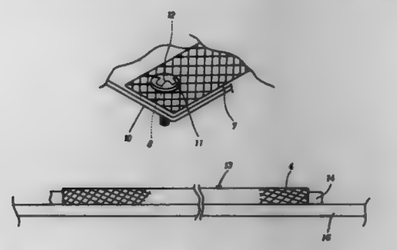
Toru Matsuzaki, Nagoya, and Akio Yamaguchi, Kasugai, both of Japan, assignors to Kitagawa Industries Co., Ltd., Japan

Continuation of Ser. No. 861,120, Mar. 31, 1992. This application Nov. 18, 1993, Ser. No. 154,635
Claims priority, application Japan, May 24, 1991, 3-037323[U]
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—816 **17 Claims**

1. An electromagnetic shielding mesh material, in combination with a housing, comprising:

a plurality of at least partially plated conductive elongate members having a solder layer plated thereon along substantially the entire length of each said elongate member, said plurality of plated elongate members being interwoven with one another to form said electromagnetic shielding mesh material with portions of said plated elongate members contacting portions of adjacent plated elongate members, and said contacting portions of said adjacent plated elongate members being soldered together by heating said mesh material; and

said mesh material being position in contact with said housing for absorbing electromagnetic waves and being solder to said housing by fusing the solder layer of said plated



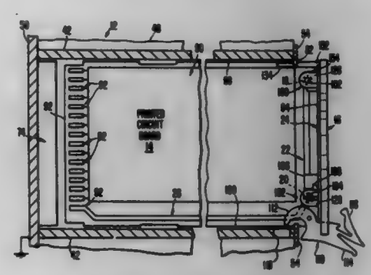
elongate members, which contact said housing, to said housing.

5,386,346

CIRCUIT CARD ASSEMBLY WITH SHIELDING ASSEMBLY FOR REDUCING EMI EMISSIONS

Wilfred L. Gleadall, Leesburg, Va., assignor to Hubbell Incorporated, Orange, Conn.

Continuation of Ser. No. 68,801, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 751,192, Aug. 29, 1991, abandoned. This application Jan. 20, 1994, Ser. No. 262,375
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—799 **27 Claims**



1. A circuit card assembly adapted to be coupled to a housing for reducing electromagnetic interference, the housing having a front opening and electroconductive means providing a grounded closed-loop electromagnetic wave energy path peripherally surrounding said front opening, said circuit card assembly comprising:

an insulative board having a front edge, a rear edge, a pair of spaced side edges extending longitudinally between said front and rear edges, and electronic circuitry distributed over said insulative board;

an elongated, insulative faceplate coupled to said insulative board along said front edge; and

shielding means, coupled to said insulative board and said faceplate, for reducing electromagnetic interference, said shielding means including:

an electrically conductive strip extending along said insulative faceplate and having a first longitudinal end with single contact means for electrically engaging the electroconductive means of the housing upon insertion of said insulative board into the housing and a second longitudinal end without contact means for avoiding electrical engagement with the electroconductive means of the housing upon insertion of said insulative board into the housing, and

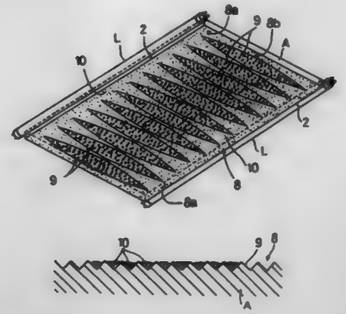
grounding means, coupled to said insulative board and electrically coupled to said conductive strip, for positively grounding said conductive strip other than to the electroconductive means of the housing upon insertion of said insulative board into the housing.

5,386,347

ILLUMINATING APPARATUS AND A METHOD OF MANUFACTURING AN EDGE LIGHT CONDUCTOR FOR USE THEREIN

Iwao Matsumoto, Toyonaka, Japan, assignor to Photo Craft Co., Ltd., Osaka, Japan

Continuation of Ser. No. 973,424, Nov. 9, 1992, abandoned. This application Jul. 7, 1994, Ser. No. 271,582
Claims priority, application Japan, Oct. 2, 1992, 4-265038; Oct. 2, 1992, 4-265039
Int. Cl.[6] F21V *5/02*
U.S. Cl. 362—31 **19 Claims**



1. An illuminating apparatus comprising:

an edge light conductor including plate means of transparent or semitransparent optical medium having end surfaces and at least one of front and back surfaces defining a diffusing plane, said diffusing plane including irregular reflector regions distributed over a portion of said diffusing plane, said diffusing plane further including modified irregular reflector regions formed in a remainder of said diffusing plane, with said modified irregular reflector regions providing a lesser quantity of irregular reflection than said irregular reflector regions, with said irregular reflector regions formed on said diffusing plane such that a greater quantity of light is irregularly reflected from positions remote from said end surfaces than from positions close thereto and with said irregular reflector regions and said modified irregular reflector regions including rugged surfaces formed on said plate means; and

light sources opposed to said end surfaces of said plate means for introducing light inwardly of said plate means through said end surfaces.

5,386,348

VEHICLE HEADLAMP WITH SNAP FIT BULB SHIELD

Michael E. O'Shaughnessey, Fort Wayne, and Keith Chesser, Fishers, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 9, 1994, Ser. No. 239,805
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—61 **10 Claims**

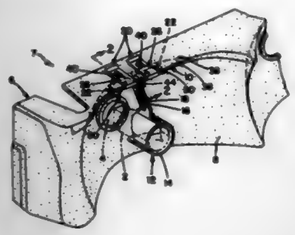
1. A vehicle headlamp assembly comprising:

a bulb providing a source of illumination;

a reflector housing for mounting the bulb, the reflector housing also providing a reflector surface and a forward ledge extending from the reflector surface;

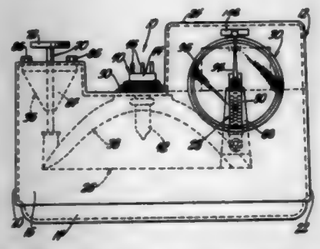
a bulb shield for restricting the illumination given by the bulb, the bulb shield including a generally tubular portion for surrounding the bulb and a leg extending therefrom,

the bulb shield also having a foot to support the leg on the housing ledge; and



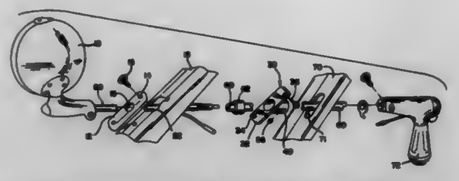
means for snap fit connection of the housing ledge with the bulb shield foot.

5,386,349
VEHICLE HEADLAMP ASSEMBLY
Ronald A. Wheat, Seymour; David R. McMahan, Noblesville, and Paul D. Van Duyn, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 27, 1993, Ser. No. 172,890
Int. Cl.[6] B60Q *1/068*
U.S. Cl. 362—66 10 Claims



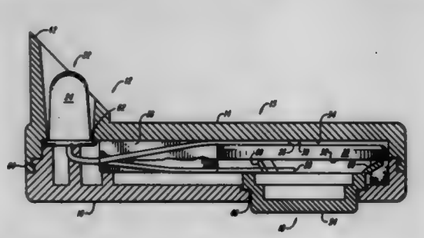
3. In combination with a headlamp assembly including a housing provided with a reflector supporting a light source adapted to be adjusted in a vertical plane about a horizontal aim axis and in a horizontal plane about a vertical aim axis for aiming the light beam provided by said reflector when said light source is energized, a first adjustment device for adjusting the position of said reflector in said vertical plane, a second adjustment device for adjusting the position of said reflector in said horizontal plane, a spirit level connected to said reflector for indicating when the reflector is properly aimed in said vertical plane, a recalibration device operatively connected to said reflector for allowing said reflector to be repositioned to the aimed position in the horizontal plane if the reflector moves out of the aimed position, said recalibration device including a transparent member supported by said housing for indicating the aimed position of the reflector in said horizontal plane, said member being located adjacent said spirit level so as to allow the latter to be visible through said member and thereby provide a visual indication when said reflector is in the aimed position in said vertical plane, and a position indicator operatively associated with said member and said reflector so as to indicate the aimed position of the latter in the horizontal plane and allowing said reflector to be re-aimed by said second adjustment device if said reflector moves out of said aimed position in said horizontal plane.

5,386,350
MOUNTING FOR A SPOTLIGHT
William E. Gross, Chicago, Ill., assignor to Unity Manufacturing Company, Chicago, Ill.
Filed Aug. 19, 1993, Ser. No. 109,085
Int. Cl.[6] B60Q *1/24*
U.S. Cl. 362—83.3 4 Claims



1. A spotlight mounting for a vehicle comprising:
a. a substantially triangular shaped mounting bracket having a horizontal face, a vertical face and an angle face, the bracket having a tube guide hole extending from the angle face to the vertical face, the guide hole having a first diameter and a second diameter with the first diameter being greater than the second diameter and extending a portion of the distance from the angle face to the vertical face creating a stop;
b. a pair of ears extending from the angle face with each ear having an aperture to receive an attaching member;
c. a support tube with two ends and having a diameter slightly smaller that the second diameter with a first end adapted to have a spotlight mounted thereon and a second end adapted to have a handle attached; and,
d. a bushing fixed to the support tube near the second end, the outer circumference of the bushing having a shape substantially similar to the first diameter such that when the support tube is extended through the guide hole in the direction from the angle face toward the vertical face, the bushing contacts the stop and positively mates with the first diameter to secure the support tube.

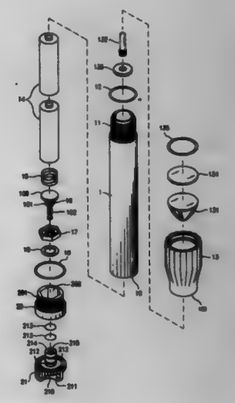
5,386,351
CONVENIENCE FLASHLIGHT
Marilyn Tabor, Cambridge, Mass., assignor to Blue Tiger Corporation, Cambridge, Mass.
Filed Feb. 15, 1994, Ser. No. 196,418
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—201 6 Claims



1. A flashlight comprising, in combination,
a battery having a pair of flat, mutually parallel terminals of opposite polarity,
a light bulb having a pair of spaced elongate leads extending generally parallel to the terminals, end portions of the leads being located adjacent and respectively opposing the terminals, said leads being resilient in a direction normal to the terminals and being spaced further apart than the terminals when in an unstressed condition,
a case body having a socket for the bulb and a seat for one terminal of the battery,

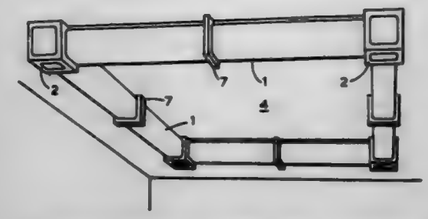
a case cover slip fitted to the case body and having an aperture spaced from and opposing the other terminal of the battery, and
a push button having first, second and third portions mutually connected for simultaneous movement in said direction, said first portion extending outwardly of the case cover through the aperture, said second portion formed to abut the case cover to limit movement of the button away from the case body, and said third portion resiliently engaging said other terminal, said third portion being adapted to force said one terminal in said direction against said seat and into electrical contact with one lead when said second portion abuts the case cover, said button being formed to engage said other lead and to force it into electrical contact with said other terminal when said first portion is depressed toward the case body.

5,386,352
FLASHLIGHT
An G. Chu, P.O. Box 82-144, Taipei, Taiwan, Prov. of China
Filed Jul. 8, 1993, Ser. No. 87,529
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—206 1 Claim



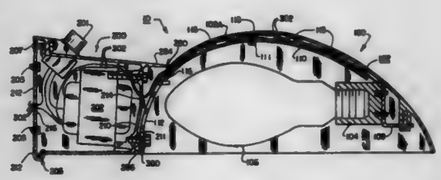
1. A flashlight comprising:
a tubular barrel with internal threads at one end and external threads at another end;
a packing ring fitted with said another end of said tubular barrel with external threads; a head having internal threads threadedly engaged with said external threads of said another end of said tubular barrel;
a socket fitted in said head;
a light bulb fitted in said socket;
a reflector mounted on said socket;
a piece of glass disposed on said reflector; and
a switch assembly including a switch having a projection with an internal center threaded hole and two external grooves, two packing rings each received in one of said two grooves, a tall seat having external threads threadedly engaged with said internal threads of said one end of said tubular barrel and having a hexagonal recess, a hexagonal nut fitted in said hexagonal recess, and a screw having a first threaded portion engaged with the hexagonal nut and a second threaded portion engaged with a center threaded hole of said switch.

5,386,353
ELECTRIC LIGHTING SYSTEM
Domenic Battaglia, 70 Delta Park Blvd., Brampton, Ontario, Canada L6T
Filed Feb. 18, 1993, Ser. No. 19,282
Claims priority, application Canada, Feb. 20, 1992, 2061573
Int. Cl.[6] F21S *3/02*
U.S. Cl. 362—224 6 Claims



1. An electric lighting system comprising an arrangement of individual lighting modules adapted to be mounted on a supporting surface, each lighting module comprising a housing having an elongated rectangular shape and being adapted to be directly mounted on said supporting surface, each said housing including a tubular fluorescent lamp ballast and lamp base connection supports for a fluorescent lamp, the long sides of said housing being provided with outward facing guide means mounted longitudinally along the long sides and parallel to the supporting surface, an elongated tubular translucent cover for the fluorescent lamp, the cover defining a longitudinally extending slot having edges being slidable along the guide means to support the cover relative to the fluorescent lamp, first split collar means mounted on the cover and being freely slidable therealong to provide overlapping coupling between opposed ends of the covers of two adjacently mounted modules arranged in an end-to-end relationship, and second split collar means integral with said first split collar means and arranged angularly with respect thereto, said second split collar means providing overlapping connection between the covers of two or more adjacently mounted lighting modules arranged in end-to-end angular relationship with respect to each other to form an integrated lighting system.

5,386,354
ADJUSTABLE BEAM SECURITY LIGHT
Mitchell M. Osteen, Zirconia, N.C., assignor to Regent Lighting Corporation, Burlington, N.C.
Filed Dec. 17, 1993, Ser. No. 169,496
Int. Cl.[6] F21V *7/16*
U.S. Cl. 362—258 30 Claims



1. An adjustable light fixture with glare light shielding for use with a lamp, comprising:
a. a reflector including a socket means arranged and configured to hold the lamp, said reflector having an interior surface and an exterior surface;
b. a housing adjacent said exterior surface of said reflector, said housing including a front section;
c. adjustable connecting means operable to selectively move

said reflector to adjust the angle of said reflector relative to said housing through a prescribed distance of rotation; and

d. a wire shield disposed between the lamp and said interior surface of said reflector, wherein said wire shield is connected to and spaced apart from said interior surface.

5,386,355

METHOD AND APPARATUS FOR ILLUMINATING A HAZARDOUS UNDERWATER ENVIRONMENT

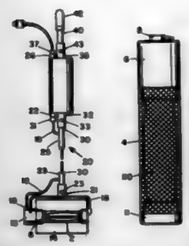
Robert S. Acks, San Diego, Calif., assignor to Remote Ocean Systems, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 825,564, Jan. 24, 1992, Pat. No. 5,213,410, which is a continuation-in-part of Ser. No. 579,655, Sep. 10, 1990, Pat. No. 5,105,346. This application Apr. 1, 1993, Ser. No. 42,450

The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.

Int. Cl.[6] F21V *29/00, 31/02*

U.S. Cl. 362—267 **14 Claims**



1. A modular drop light for an apparatus for illuminating a work site in an underwater location within a nuclear environment, wherein said modular drop light is replaceable without leaving the work site, the modular drop light comprising:

an arc lamp for emitting light;

a base for mating with and for conducting electricity to said arc lamp;

a seal for creating a watertight connection between said arc lamp and said base;

a light-transmissive impact-resistant cover for enclosing said arc lamp and attaching to a first end of said base; and

a releasable wet-mateable connector attached to a second end of said base;

wherein said drop light is replaced by disconnecting said releasable wet-mateable connector of an old said modular drop light from a corresponding connector on power cable and connecting the corresponding connector to a new said modular drop light.

5,386,356

WEATHERPROOF ELECTRIC LIGHTING FIXTURE

Zell Davis, Jr., 3001 Lake Dr., Singer Island, Fla. 33404, and David J. McSorley, 22 Dorchester Cir., Palm Beach Gardens, Fla. 33418

Filed Apr. 12, 1993, Ser. No. 44,698

Int. Cl.[6] F21V *31/02*

U.S. Cl. 362—267 **3 Claims**

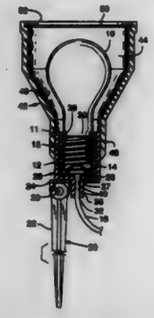
1. A weatherproof electric lighting fixture comprising:

a) electric lamp holder means (12) including an open end (16) adapted to receive an electric lamp (10) and an opposite end including an electric cord (18),

b) a tubular lamp holder sheath (28) made of water resistant material, contoured and dimensioned to fit snugly around the lamp holder means in sealed relation thereto and having an open outer end (30) registering with the open end of the lamp holder means and an open inner end (32),

c) the sheath having a stepped configuration providing an outer segment forming a chamber (34) of relatively large diameter for reception of the lamp holder means and a communicating tube segment (36) of relatively small diameter associated with said open inner end for reception of the electric cord,

d) stake means (20) including a bracket (24) having a central



opening (26) dimensioned for reception of the tube segment in snugly fitting frictional engagement, and

e) a retaining flange (37) on the exterior of the tube segment positioned for engagement with the bracket and retention of the fixture mounted thereon.

5,386,357

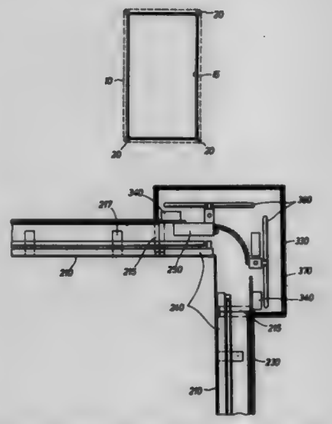
LIGHT BOX

John F. Tryon, Houston, Tex., and Jennings M. Ledbetter, Long Beach, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 4, 1992, Ser. No. 985,778

Int. Cl.[6] F21S *1/02*

U.S. Cl. 362—362 **6 Claims**



1. A quadrilateral-shaped light strip for peripheral illumination of a ceiling of a four-sided raised canopy of a gasoline service station comprising:

(a) four light strip side sections each comprising light boxes comprising:

(1) a plurality of elongated L-shaped top sections abutted length-wise end-to-end, each of said top sections having outer edges and a top flange substantially horizontally oriented and an integral back flange substantially vertically oriented; and

(2) a plurality of bottom sections, each having an integral flange substantially vertically oriented, each having

outer edges, wherein the integral flanges of said bottom sections are attached to said integral back flanges of said top sections; and

(3) a single side section elongated translucent lens having end portions and having a top edge and a bottom edge, wherein said top edge of said lens is slidably secured between the outer edges of said top sections and wherein said bottom edge of said lens is slidably secured between the outer edges of said bottom sections;

wherein said light strip side sections are attached to the perimeter of said canopy in a sufficient number to substantially extend the length of each side of said canopy, wherein said elongated translucent lens of said side section extends substantially the length of each of said light strip side sections and is fixedly secured at one point substantially at the center of each of the light strip side sections wherein said elongated translucent lens of said side section is free to lengthen and shorten due to thermal expansion and contraction; and

(b) four light box corner sections each comprising:

(1) a top assembly in an L-shaped configuration attached to the ceiling of the raised canopy, said top assembly having at least two vertical standoff brackets attached thereto;

(2) a bottom panel having an L-shaped configuration attached to the top assembly by said vertical brackets; and

(3) a corner section elongated translucent lens having a top edge and a bottom edge, wherein said top edge of said corner section elongated translucent lens is secured between at least a portion of the outer edges of said top assembly and wherein said bottom edge of said corner section elongated translucent lens is secured between the outer edges of said bottom panel;

wherein the ends of each of said light strip side sections terminate at and abutting to said light box corner sections, wherein the end portions of each of the side section elongated translucent lenses expand and contract into said light box corner sections;

wherein the top flanges and back flanges of said L-shaped top sections and said bottom sections of said side sections are substantially aligned with said top assemblies and said bottom panels of said light box corner sections, respectively.

5,386,358

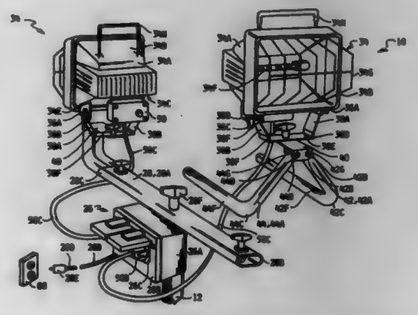
PORTABLE, TWIN-MOUNTED LIGHT ASSEMBLY

George Hillinger, Beverly Hills, Calif., assignor to Alltrade, Inc., Long Beach, Calif.

Filed Jun. 6, 1994, Ser. No. 254,124

Int. Cl.[6] F21V *21/00*

U.S. Cl. 362—431 **20 Claims**



1. A portable, twin-mounted light assembly comprising:

a) a stand assembly comprised of a vertical rod having an upper section that includes a top edge and a lower section to which is attached, by an attachment means, a stable platform,

b) a light-fixture attachment T-section comprised of an elongated hollow tube having a first end, a second end, and means for being attached to the top edge of said stand assembly,

c) a pair of light fixture assemblies with each assembly comprising:

(1) a lamp housing having a bottom side and means for receiving a source of electrical power that powers a lamp attached and enclosed within said lamp housing,

(2) a horizontal mounting structure attached by an attachment means to the bottom side of said lamp housing, with said horizontal mounting structure having a front segment consisting of a downward extending channel having a front channel section and a back channel section, with each section section, with said front channel section having side-by-side first and second front swivel bores and said back channel section having side-by-side first and second back swivel bores,

d) a first light-fixture leg having a vertical section with an upper end and a lower end from where the lower end contiguously extends a horizontal section, with the vertical section further having near its upper end a swivel bore, where when said first light fixture leg is inserted into the channel of said horizontal mounting structure and the first front swivel bore interfaces with the respective first and second swivel bores on said horizontal structure, and a first swivel pin is inserted through the three bores, the first light fixture leg is free to pivot about the first swivel pin,

e) a second light-fixture leg having a vertical section with an upper end and a lower end, from where the lower end contiguously extends a horizontal section, with the vertical section further having near its upper end a swivel bore, where when said back light fixture leg is inserted into the channel of said horizontal mounting structure and the second swivel bore interfaces with the respective second front and back swivel bores on said horizontal structure, and a second swivel pin is inserted through the three bores, the second light fixture leg is free to pivot about the second swivel pin, where when said first and second light fixture legs are pressed together they are sized to be frictionally inserted into either the first or second end of said light-fixture attachment T-section and securely attached within the T-section by an attachment means, and

f) means for maintaining said first and second light fixture legs in an open, extended position to allow said light fixture assembly, when removed from said T-section, to be placed upon a surface remote from said portable twin-mounted light assembly.

5,386,359

MULTI-OUTPUT DC-DC CONVERTER USING A RESONANCE CIRCUIT

Hideo Nochi, Fukushima, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 3, 1993, Ser. No. 72,315

Claims priority, application Japan, Jun. 3, 1992, 4-142529

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **7 Claims**

1. A multi-output converter comprising:

a switching circuit connected electrically in series to a DC voltage source for switching conduction of current from the DC voltage source with a duration modulated by frequency modulation and pulse width modulation;

a fixed resonance circuit connected to a series connection of said DC voltage source and said switching circuit for transforming a first input current flowing for the duration of conduction of said switching circuit into a first current having a sinusoidal waveform;

a first output circuit for outputting a first output voltage by receiving said first current;

a frequency modulating circuit responsive to said first output

voltage for modulating the duration of conduction of said switching circuit on a frequency basis to thereby stabilize said first output voltage;

a second output circuit connected to said series connection of said DC voltage source and said switching circuit;

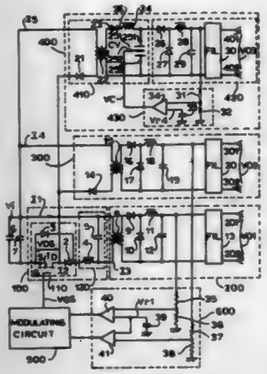
a pulse width modulating circuit responsive to a second output voltage for modulating the duration of conduction of said switching circuit on a pulse width basis to thereby stabilize said second output voltage;

a variable resonance circuit connected to said series connection for transforming said first input current flowing for the duration of conduction of said switching circuit into a second current having a sinusoidal waveform, a current duration of said second current being controlled by a control voltage;

a third output circuit producing a third output voltage by receiving said second current of said variable resonance circuit; and

a resonance frequency modulating circuit for changing a resonance frequency of said variable resonance circuit to change the current duration of said second current in response to said third output voltage, thereby stabilizing said third output voltage.

3. A multi-output converter as claimed in claim 1, wherein said switching circuit comprises a switching element serially connected to said DC voltage source, a first one-way element



serially connected to said switching element in the same conduction direction as said switching element, and a second one-way element connected in parallel to and in opposite direction to a serial connection of said switching element and said first one-way element;

said fixed resonance circuit comprising a serial connection of an inductor and a capacitor connected to opposite ends of said serial connection of said DC voltage source and said switching circuit, said fixed resonance circuit having an output terminal implemented by opposite ends of said capacitor;

said first output circuit comprising a first transformer having a primary winding connected to said output terminal of said fixed resonance circuit, and a first rectifying and smoothing circuit connected to a secondary winding of said first transformer;

said frequency modulating circuit controlling a switching period of said switching circuit by feeding to said switching circuit a modulation frequency signal which reduces a difference of said first output voltage from a predetermined first reference voltage;

said second output circuit comprising a second transformer having a primary winding which is directly connected to one end to one end of said series connection of said DC voltage source and said switching circuit and connected at the other end to the other end of said series connection of said dc voltage source and said switching circuit via a third one-way element, and a second rectifying and smoothing circuit is connected to a secondary winding of said second transformer;

said pulse width modulating circuit controlling the conduction duration of said switching circuit by feeding to said switching circuit a pulse signal which reduces a difference of said second output voltage from a predetermined second reference voltage;

said variable resonance circuit comprising a third transformer directly connected at one end to one end of said series connection of said DC voltage source and said switching circuit and connected at the other end to the other end of said series connection of said dc voltage source and said switching circuit via a fourth one-way element, and a series connection of a fifth one-way element, an inductor and a variable capacitor connected to a secondary winding of said third transformer, said variable capacitor changing a capacitance in response to a control voltage and having opposite ends implemented as an output terminal of said variable resonance circuit;

said third output circuit constituting a third rectifying and smoothing circuit connected to said output terminal of said variable resonance circuit; and

said resonance frequency modulating circuit controlling a resonance frequency of said variable resonance circuit by feeding to said variable capacitor said control voltage which reduces a difference of said third output voltage from a predetermined third reference voltage.

5,386,360

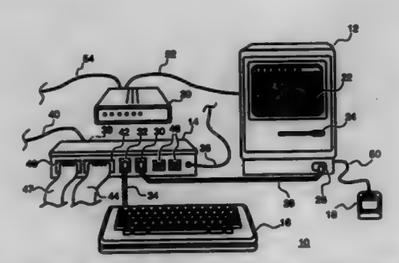
PERIPHERAL DATA ACQUISITION, MONITOR, AND ADAPTIVE CONTROL SYSTEM VIA PERSONAL COMPUTER

Dennis A. Wilson, McHenry, and Mark S. Williamsen, Crystal Lake, both of Ill., assignors to Ansan Industries Ltd., Rockford, Ill.

Continuation-in-part of Ser. No. 832,716, Feb. 7, 1992, Pat. No. 5,220,522, which is a continuation of Ser. No. 350,115, May 9, 1989, Pat. No. 5,099,444. This application Apr. 1, 1992, Ser. No. 862,624

Int. Cl.[6] G05B *11/01*; G06F *3/00*

U.S. Cl. 364—146 **34 Claims**



1. A system for monitoring and controlling a plurality of remotely-located, electrically-controlled devices via a personal computer, each of said plurality of devices having at least two operational states, and having means for changing operational state in response to a device control signal, and further having means for providing a device monitor signal indicative of the operational state of each of said plurality of devices, each of said plurality of devices being physically located at a particular location within at least two geographically-separate sections of a predefined area, said system comprising:

personal computer means for executing a plurality of different software programs under user control, said personal computer means including a central processor, a display monitor, and means for inputting commands from the user;

interface means for interfacing said personal computer means to said plurality of electrically-controlled devices by translating said device monitor signals into code signals which are adapted to be interpreted by said personal computer means, and by providing said device control signals in response to command signals provided by said personal computer means; and

program means for instructing said personal computer means to monitor and control said plurality of devices in accordance with the following steps:

(a) displaying an image to the user which substantially represents an overall geographic layout of the predefined area showing the separate sections of the predefined area within which said plurality of devices are located;

(b) inputting a command from the user which identifies a particular section of the predefined area selected by the user;

(c) displaying an image to the user which substantially represents the approximate physical locations of said plurality of devices located within the particular section selected by the user;

(d) inputting a command from the user which identifies at least one of the plurality of devices selected by the user;

(e) displaying an image to the user which substantially represents a control mechanism for at least the one particular device selected by the user;

(f) inputting a command from the user which corresponds to a desired control action for at least the one particular device selected by the user;

(g) outputting a command signal to the interface means to control at least the one particular device selected by the user in accordance with the desired control action; and

(h) in response to said code signals from said interface means, displaying an image to the user which substantially represents the operational state of at least the one particular device selected by the user.

5,386,361

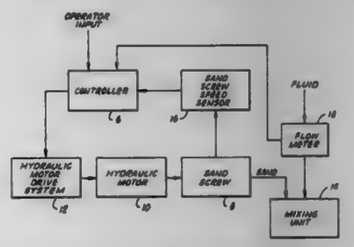
METHOD OF UNSTICKING MATERIAL DELIVERY APPARATUS

Stanley V. Stephenson; Mark Farabee; Max L. Phillippi; Ronald E. Dant, and Russell D. Taylor, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 29, 1993, Ser. No. 84,822

Int. Cl.[6] G05B *9/02*; B65G *33/14*

U.S. Cl. 364—184 **5 Claims**



1. A method of changing a rotatable member of a material delivery apparatus from a static friction state to a dynamic friction state, comprising:

receiving in a computer a signal indicating rotational speed of the rotatable member;

providing in the computer a register for receiving a primary control drive signal generated by the computer under a primary control program to operate the rotatable member at a desired material delivery speed;

communicating the contents of the register to control the operation of the rotatable member; and

performing in the computer concurrently with the primary control program a program for unsticking a stuck rotatable member, including:

determining in the computer whether a primary control drive signal has been generated by the primary control program;

incrementing a time counter in the computer in response to the lapse of predetermined time increments;

determining in the computer whether the time counter has counted an elapsed time less than a predetermined time period;

determining in the computer, from the signal received therein indicating rotational speed of the rotatable member, whether the rotatable member is rotating;

in response to determining in the computer that a primary control signal has been generated and that the elapsed time is less than the predetermined time period and that the rotatable member is not rotating, generating in the computer an unstick drive signal; and

overwriting the primary control drive signal in the register with the unstick drive signal to control the rotatable member therewith instead of controlling the rotatable member with the primary control drive signal concurrently generated by the primary control program during operation of the program for unsticking a stuck rotatable member.

5,386,362

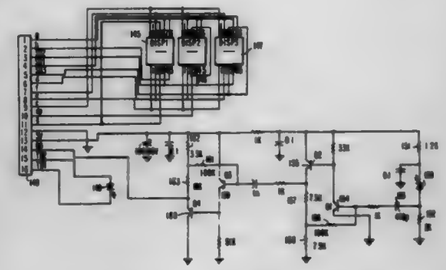
MANAGEMENT SYSTEM FOR COIN OPERATED LAUNDRY MACHINES

Jacob Keret, Tel-Aviv, Israel, assignor to Set-O-Matic, Inc., Farmingdale, N.Y.

Filed Feb. 16, 1993, Ser. No. 18,189

Int. Cl.[6] G05B *11/01*; G06F *15/00*

U.S. Cl. 364—406 **2 Claims**



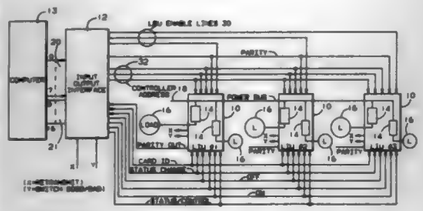
1. In a management system for coin operated laundry machines at individual locations in which individual laundry machines operate through a cycling of operational circuits in response to an insertion of coins into a coin collecting means, the system including a data transfer means associated with each machine, a hand-held terminal for receiving and transmitting data from and to individual machines, and a central computer for receiving and transmitting data from and to said hand-held terminal for processing, said machines operating through distinct operating cycles in accordance with a timing mechanism, the improvement comprising: a circuit board installed within each machine and interconnected between said coin collecting means and said operational circuits, said circuit board having storage facilities for both operational parameters and coin auditing data, said hand-held terminal having means for transmitting information to vary any of said operational parameters and for receiving data relative to said coin auditing; said operational parameters including the number of coins required to initiate a cycle of operation, the operating time of said cycle of operation, and the length of time required between the completion of an operating cycle and the commencement of a following cycle.

5,386,363

AIRCRAFT LOAD MANAGEMENT CENTER

David A. Haak, Rockford, Ill.; William R. Owens, Waukesha, Wis., and Thomas D. Roettger, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 570,118, Aug. 16, 1990, abandoned. This application Mar. 25, 1993, Ser. No. 37,186
Int. Cl.[6] H02J *13/00*; G06F *15/56*
U.S. Cl. 364—424.01 5 Claims



1. A load management center for on-board control of aircraft electrical power, comprising in combination:

a plurality of line replaceable units, each of said line replaceable units including a printed wiring board to which a programmable logic unit and a plurality of power control units are electrically and mechanically coupled, each of said power control units having a control input and a status output means;

an input/output interface for temporarily storing inputs from a computer to the load management center and outputs from the load management center to the computer, said inputs including a line replaceable unit address, a power control unit address, and an operation code, and said outputs including a status code;

decoding means to decode said line replacement unit address;

a dedicated line coupling said decoding means respectively to one of each of said programmable logic units, said decoding means enabling said programmable logic unit to which it is attached in response to a line replaceable unit address;

a bus coupled in parallel to said programmable logic unit electrically and mechanically coupled to each of said plurality of line replaceable units for coupling between said programmable logic unit and said interface, power control unit address, operational code and status code;

a parity detector coupled to said bus, said parity detector generating a retransmit signal on said outputs in response to a parity error on said bus; and wherein

the computer retransmits said inputs in response to said retransmit signal on said outputs.

5,386,364

COMMUNICATION OF CONTROL SIGNALS TO A VEHICLE USING ITS BUMPER SWITCH

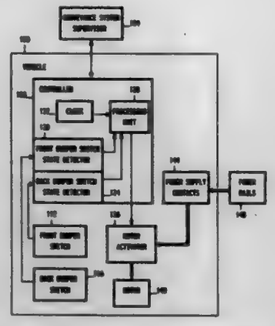
Tommy N. Tyler, Broomfield, Colo., assignor to TransLogic Corporation, Denver, Colo.

Filed Jun. 2, 1993, Ser. No. 71,185
Int. Cl.[6] G06F *15/50*
U.S. Cl. 364—424.02 30 Claims

1. A method for controlling a vehicle of a conveying system comprising:

identifying a first code when said first code is input to an obstruction detection means attached to said vehicle, said first code being required to be input within a predetermined time interval;

relating said first code to a predetermined vehicle behavior;



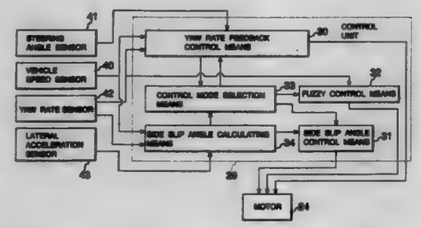
performing said predetermined vehicle behavior related to said first code.

5,386,365

REAR WHEEL STEERING SYSTEM FOR VEHICLE

Mitsuru Nagaoka, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 19, 1992, Ser. No. 855,060
Claims priority, application Japan, Mar. 22, 1991, 3-058587; Mar. 22, 1991, 3-058588; Mar. 22, 1991, 3-058589; Mar. 22, 1991, 3-058591; May 20, 1991, 3-114939; May 20, 1991, 3-114940; May 20, 1991, 3-114941; Jun. 6, 1991, 3-134811; Jun. 6, 1991, 3-134812; Jun. 6, 1991, 3-134813
Int. Cl.[6] B62D *7/14*
U.S. Cl. 364—424.05 13 Claims



1. A rear wheel steering system for a vehicle comprising:

turning state detecting means for physically detecting a turning state of the vehicle;

yaw rate feedback control means for controlling a steering angle of rear wheels so that a yaw rate detected by the turning state detecting means is made equal to a target yaw rate;

a second rear wheel steering angle control means adapted for controlling the steering angle of the rear wheels based on a control mode different from that of the yaw rate feedback control means; and

a control mode selection means for causing the second rear wheel steering angle control means to control the steering angle of the rear wheels when the vehicle is turning with a turning radius smaller than a first predetermined turning radius and causing the yaw rate feedback control means to control the steering angle of the rear wheels when the vehicle is turning with a turning radius equal to or greater than the first predetermined turning radius;

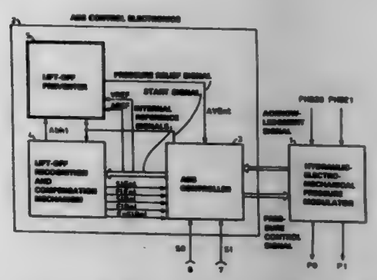
wherein the control mode selection means causes the yaw rate feedback control means to control the steering angle of the rear wheels when, during control of the steering angle of the rear wheels by the second rear wheel steering angle control means, an absolute value of a deviation between the detected yaw rate and the target yaw rate begins to decrease.

5,386,366

METHOD OF REGULATING THE BRAKING FORCE OF MOTORCYCLES

Georg Roll, Heusenstamm; Heinz F. Ohm, Weiterstadt, and Berthold Hauser, Jakobsneuharting, all of Germany, assignors to S:FAG Kugelfischer Georg Schafer KGaA and Bayerische Motoren Werke AG, both of Germany

Continuation-in-part of Ser. No. 962,890, Oct. 19, 1992, Pat. No. 5,324,102. This application Jan. 11, 1993, Ser. No. 2,894
Claims priority, application Germany, Jan. 10, 1992, 4200440
Int. Cl.[6] B60T *8/32*; B60K *31/00*
U.S. Cl. 364—426.01 5 Claims



1. A method employing a microprocessor for regulating the braking force of a motorcycle having front and rear wheels with respective circumferential speeds and with respective front and rear brakes, which comprises the steps of:

(a) sensing the circumferential speeds of the front and rear wheels;

(b) initiating a braking cycle by applying a braking force to the front brake or the rear brake or both the front and rear brakes to decelerate the motorcycle;

(c) determining from the circumferential speeds of the front and rear wheels the speed of the front wheel, the speed of the rear wheel and the deceleration of the motorcycle;

(d) determining from the speeds of the front and rear wheels whether the rear wheel has lost adherence with the ground;

(e) generating a control signal if, after a predetermined time from initiation of step (b), the rear wheel has lost adherence to the ground;

(f) if the control signal is generated, storing the motorcycle deceleration at the time the control signal is generated as an optimal deceleration limit value;

(g) repeating at least steps (b), (c), (d) and (e);

(h) determining any increase in motorcycle deceleration from a value thereof previously determined step (c); and

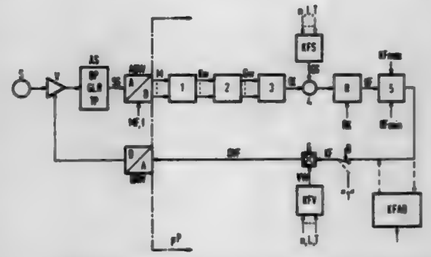
(i) reducing the braking force applied to the front if during a subsequent braking cycle the control signal is generated or the motorcycle deceleration approaches or exceeds the stored optimal deceleration limit and the increase in motorcycle deceleration exceeds a predetermined maximum valve thereof.

5,386,367

METHOD FOR CYLINDER-SELECTIVE KNOCK CONTROL IN INTERNAL COMBUSTION ENGINES

Herbert Ziegler, Straubing, and Peter Schindler, Landshut, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 28, 1991, Ser. No. 706,248
Claims priority, application European Pat. Off., May 28, 1990, 90110083
Int. Cl.[6] F02P *5/14*
U.S. Cl. 364—431.08 14 Claims



1. A method for cylinder-selective knock control in internal combustion engines, which comprises:

sampling a sensor signal of at least one knocking sensor after amplification and preparation at a predetermined frequency within a measurement window being predetermined for each firing cycle, to form sampled values,

determining a knocking value from a mean value of a predetermined number of greatest sampled values,

ascertaining a noise value by forming a sliding mean value from a predetermined number of previous knocking values,

forming an actual noise value from the cylinder-selective noise values,

reading a command noise value being dependent on at least one noise-determining engine parameter out of a performance graph,

comparing the actual noise value and the command noise value,

processing the comparison in a controller to produce a correction factor, and

linking the correction factor with a pilot value being read out of a pilot performance graph and being dependent on at least one noise-determining engine parameter, to produce a total amplification factor for the sensor signal.

5,386,368

APPARATUS FOR MAINTAINING A BOAT IN A FIXED POSITION

Steven J. Knight, Mapleton, Minn., assignor to Johnson Fishing, Inc., Mankato, Minn.

Filed Dec. 13, 1993, Ser. No. 165,985
Int. Cl.[6] G06F *15/50*; B63H *21/22*
U.S. Cl. 364—432 17 Claims

1. An apparatus for maintaining the position of a floating boat over a desired position, comprising:

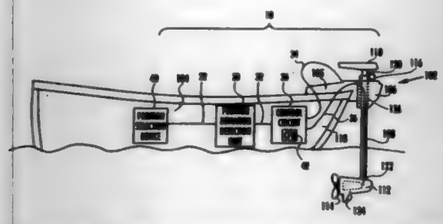
an electric trolling motor connected to the boat, the electric trolling motor producing a variable magnitude of thrust to propel the boat, the magnitude of the thrust being responsive to a first input signal;

a steering motor coupled to the electric trolling motor, the steering motor being disposed to affect the orientation of the electric trolling motor in response to a second input signal;

a position deviation detection unit for detecting a deviation in the position of the boat from the desired position and for generating position deviation signals indicative of a deviation distance and a return heading, the deviation

distance being the distance from the boat to the desired position, the return heading being the direction of the desired position from the boat; and

a control circuit electrically coupled to the position deviation detection unit, the electric trolling motor and the steering motor, the control circuit being configured to



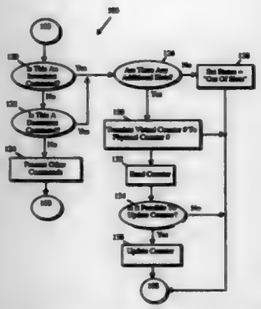
receive the position deviation signals from the position deviation detection unit, to generate the second input signal to the steering motor to steer the electric trolling motor in the return heading, and to generate the first input signal to cause the electric trolling motor to propel the boat in the return heading, whereby the boat returns to the desired position.

5,386,369

LICENSE METERING SYSTEM FOR SOFTWARE APPLICATIONS

Matthew Christiano, Saratoga, Calif., assignor to Globetrotter Software Inc., Cupertino, Calif.

Filed Jul. 12, 1993, Ser. No. 89,834
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—464.01 **27 Claims**



1. A software usage metering system suitable for use in conjunction with a computer system having a port, the metering system comprising:

a meter casing;

a first connector carried by the meter casing and adapted to plug into the computer system port;

a processor housed within the meter casing the processor being capable of metering a plurality of software programs;

a non-volatile read/write memory including a plurality of counters and a plurality of count slots that may be accessed by the processor, wherein each counter may be associated with a particular one of said software programs and includes a slot number storage location for a value indicative of an associated one of the count slots, and wherein the count slots are arranged to store count values indicative of the amount of use that an associated software program is permitted; and

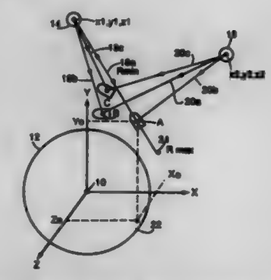
whereby when a metering signal is received from one of said metered software programs, the processor locates an associated count slot by reference to values stored in the slot number storage location and modifies the value in the associated count slot as required by the metering signal.

5,386,370

METHOD AND PARALLEL PROCESSOR COMPUTING APPARATUS FOR DETERMINING THE THREE-DIMENSIONAL COORDINATES OF OBJECTS USING DATA FROM TWO-DIMENSIONAL SENSORS

Steven C. Woo, Monterey Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 736,377, Jul. 19, 1991, abandoned. This application Sep. 21, 1993, Ser. No. 124,416
Int. Cl.[6] G01S *13/42*
U.S. Cl. 364—516 **17 Claims**



1. A method for analyzing electromagnetic radiation from each of a plurality of objects to determine the positions of the objects relative to a predetermined reference point, comprising the steps of:

(a) sensing each object using a first sensor whose position relative to the predetermined reference point is known, the first sensor sensing electromagnetic radiation from each object and providing first angular data defining first lines-of-sight from the first sensor to the respective objects;

(b) sensing each object using a second sensor whose position relative to the predetermined reference point is known, the second sensor sensing electromagnetic radiation from each object and providing second angular data defining second lines-of-sight from the second sensor to the respective objects, said first and second sensors sensing objects over respective angular ranges that include locations at which the angle with respect to the first sensor is greater than the angle with respect to the second sensor, and locations at which the angle with respect to the first sensor is less than the angle with respect to the second sensor;

(c) determining, for each object, a distance range line along its respective first line-of-sight from a predetermined minimum range to a predetermined maximum range independent of the relative intensities of electromagnetic radiation sensed by each sensor from said object;

(d) converting the range line for each object relative to the first sensor to range line coordinates relative to the second sensor independent of the relative intensities of electromagnetic radiation sensed by each sensor from each object;

(e) matching the respective second angular data for each object to said range line coordinates for the respective object independent of the relative intensities of electromagnetic radiation sensed by each sensor from each other;

(f) determining, for each object relative to the second sensor and independent of the relative intensities of electromagnetic radiation sensed by each sensor from each object, a position point which corresponds to the closest approach of its respective second line-of-sight to its respective range line; and

(g) determining, for each object relative to the predetermined reference point and independent of the relative intensities of electromagnetic radiation sensed by each sensor from each object, coordinates of its respective position point;

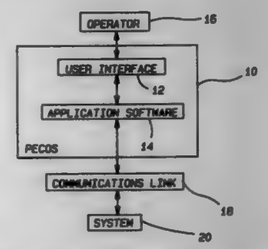
said coordinates of the respective position points relative to the predetermined reference point specifying said positions of the respective objects relative to the reference point.

5,386,371

PORTABLE EXPLOITATION AND CONTROL SYSTEM

Mike Mather, Vadnais Heights; Steve Haumersen, Crystal, and Roger Eastey, Minneapolis, all of Minn., assignors to Hughes Training, Inc., Arlington, Tex.

Continuation of Ser. No. 856,791, Mar. 24, 1992, abandoned. This application Jul. 21, 1994, Ser. No. 278,684
Int. Cl.[6] G06F *13/00*
U.S. Cl. 364—571.08 **21 Claims**



1. A portable multi-purpose system for handling system operations which include control, exploitation, training and test of a remote system, said portable system comprising:

user interface means for receiving operator inputs and providing output operator control signals to allow an operator to interface with said portable system;

memory means for storing designated control commands which provide for desired system operations for a predetermined remote system in response to said output operator control signals;

processing means connected to said user interface means for receiving said output operator control signals and processing said output operator control signals and said control commands to control said predetermined remote system operation, wherein said processing means performs control and exploitation of the remote system; and

portable housing means for enclosing and providing carriage of said user interface, memory and processing means.

5,386,372

VIBRATION/NOISE CONTROL SYSTEM FOR VEHICLES

Toshiaki Kobayashi; Masaki Ueyama; Toshio Yokoyama; Yasuji Nozawa, and Hidetaka Ozawa, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,909
Claims priority, application Japan, Mar. 12, 1992, 4-088075; Jun. 3, 1992, 4-168628
Int. Cl.[6] G01K *11/16*
U.S. Cl. 364—574 **39 Claims**

5. In a vibration/noise control system for a vehicle having a chassis, a compartment, and a power plant for driving said vehicle, periodic or semi-periodic vibrations and noises being generated from at least one vibration/noise source including said power plant, arranged at at least one predetermined location on said chassis or in said compartment, the system including:

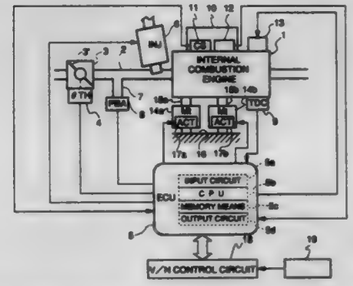
first filter means for generating a control signal for changing a transfer characteristic of at least one vibration/noise-transmitting path formed between said at least one source and said at least one predetermined location by filtering a predetermined input signal supplied thereto, said first filter means having a filter coefficient on which it operates;

driving signal-forming means for converting said control signal into a driving signal;

electromechanical transducer means responsive to said driving signal for controlling said vibrations and noises;

error signal-forming means for forming an error signal indicative of residual vibrations and noises remaining after said vibrations and noises have been reduced by an output from said at least one electromechanical transducer means through addition of vectors;

second filter means for representing a transfer characteristic of a vibration/noise-transmitting path formed between said driving signal-forming means and said error signal-forming means, and generating a reference signal; and



control signal-renewing means for renewing said filter coefficient of said first filter means such that said error signal assumes the minimum value, based on said error signal, said reference signal from said second filter means, and said filter coefficient of said first filter means;

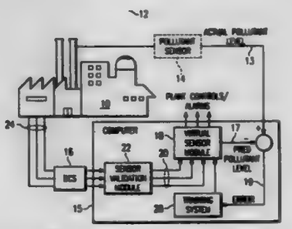
the improvement wherein said error signal-forming means comprises a plurality of error signal-forming means arranged at a plurality of predetermined locations as said at least one predetermined location for generating respective error signals corresponding, respectively, to said predetermined locations, said vibration/noise control system including operating condition-detecting means for detecting operating conditions of said power plant, and weighing means for weighing said error signals in dependence on said operating conditions of said power plant detected by said operating condition-detecting means.

5,386,373

VIRTUAL CONTINUOUS EMISSION MONITORING SYSTEM WITH SENSOR VALIDATION

James D. Keeler; John P. Havener; Devendra Godbole, and Ralph B. Ferguson, all of Austin, Tex., assignors to Pavilion Technologies, Inc., Austin, Tex.

Filed Aug. 5, 1993, Ser. No. 102,405
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—577 **86 Claims**



1. A method for monitoring emissions in a manufacturing

plant that are generated as a by-product of the operation of the plant, the manufacturing plant having controls operating in response to received control values to alter the operation of the plant and sensors to measure the operating parameters of the plant and output associated sensor values, comprising the steps of:

measuring on a periodic basis the level of pollutants emitted by the plant;

measuring the control values to the plant and the sensor values;

storing a representation of the plant in a virtual sensor predictive network having as an output a predicted pollutant level that corresponds to the actual pollutant level output by the manufacturing plant, the control values of the plant and the sensor values of the plant comprising inputs to the virtual sensor predictive network, the stored representation learned from the measured pollutant level, the control values and the sensor values, the virtual sensor predictive network operable to be trained upon the measured level of pollutants, the measured control values and the sensor values to generate the stored representation;

generating an error when the difference between the measured level of pollutants and the predicted pollutant level exceeds a predetermined threshold;

retraining the virtual sensor predictive network upon the generation of an error; and

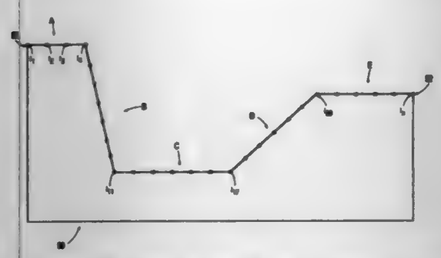
controlling the plant utilizing the predicted pollutant level in accordance with a predetermined control scheme to vary the control values.

5,386,374

METHOD FOR SIMULATING THE SURFACE CONTOURS OF A LAYER MATERIAL TO BE FORMED OVER A BASE STRUCTURE

Peter P. Meng, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 18, 1991, Ser. No. 717,148
Int. Cl.[6] G06F *15/60*
U.S. Cl. 364—578 **6 Claims**



1. A selective mapping method for calculating a doping profile of a simulated layer of material formed over a semiconductor substrate; the steps comprising:

triangulating the simulated layer of material formed over the semiconductor substrate into a plurality of triangles;

identifying non-inverted triangles in said plurality of triangles; and

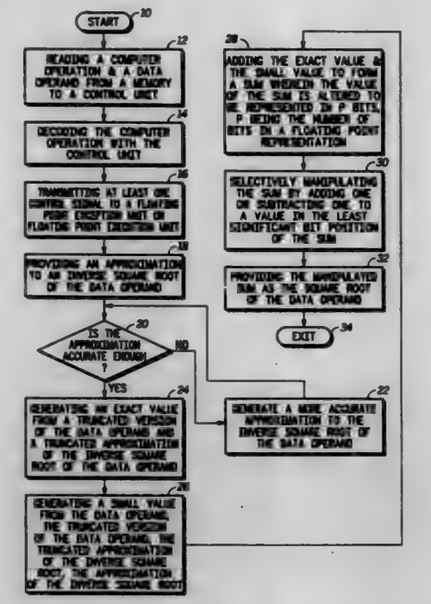
calculating the doping profile of the semiconductor material using the non-inverted triangles in said plurality of triangles using a series of finite difference equations.

5,386,375

FLOATING POINT DATA PROCESSOR AND A METHOD FOR PERFORMING A FLOATING POINT SQUARE ROOT OPERATION WITHIN THE DATA PROCESSOR

Roger A. Smith, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 1, 1993, Ser. No. 143,965
Int. Cl.[6] G06F *7/38*
U.S. Cl. 364—748 **51 Claims**



1. A method for executing a square root instruction in a data processor, the data processor having access to a memory device, means for providing an inverse square root approximation, and an exception handler, and having an execution device, the method comprising the steps of:

reading an opcode from the memory device into the execution device;

determining, via the execution device, that the opcode indicates that a square root operation is to be performed on a number; and

invoking the exception handler to calculate the square root of the number wherein the square root is calculated by:

receiving an inverse square root approximation from the means for providing an inverse square root approximation;

determining a more accurate inverse square root approximation from the inverse square root approximation by executing instructions within the data processor;

using the more accurate inverse square root approximation and the number to create an exact floating point value and a small floating point value wherein the sum of the exact floating point value and the small floating point value is a substantially close approximation to the actual square root of the number; and

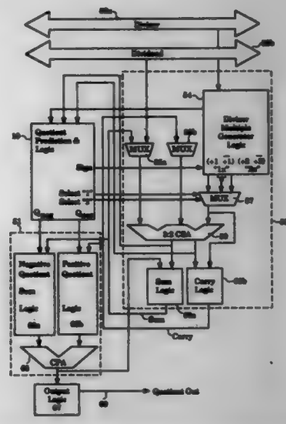
selectively adding a constant value to a least significant bit position of the substantially close approximation in order to numerically adjust the actual square root of the number.

5,386,376

METHOD AND APPARATUS FOR OVERRIDING QUOTIENT PREDICTION IN FLOATING POINT DIVIDER INFORMATION PROCESSING SYSTEMS

Luke Girard, San Jose, and Ron Zinger, Sunnyvale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 938,003, Aug. 31, 1992, abandoned. This application Feb. 9, 1994, Ser. No. 193,797
Int. Cl.[6] G06F *7/52*
U.S. Cl, 364—767 **24 Claims**



1. A quotient prediction circuit in a floating point divider, comprising:

partial quotient generation circuit for generating a first partial quotient for a first iteration of a series of iterations of a division algorithm performed in said floating point divider, said partial quotient generation circuit generating said first partial quotient by examining a first partial remainder of said first iteration and a divisor; and

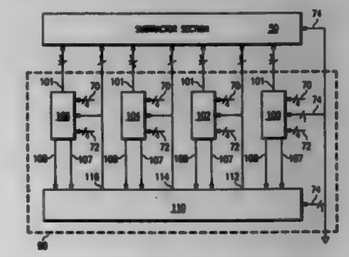
override circuit for forcing a second partial quotient for an another iteration of said division algorithm equal to a predetermined value independent of a second partial remainder of said another iteration and said divisor.

5,386,377

PARALLELIZED BORROW LOOK AHEAD SUBTRACTOR

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 860,981, Mar. 31, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 122,804
Int. Cl.[6] G06F *7/50*
U.S. Cl. 364—787 **11 Claims**



1. Borrow look ahead circuitry for use with circuitry which determines the relative difference between a first value and a second value and compares that difference to a third value, comprising:

a subtractor section of the borrow look ahead circuitry, having a plurality of full subtractors arranged in subtractor groups, wherein each full subtractor computes a difference between one bit of a first value input and a corresponding one bit of a second value input when given a one bit borrow signal and wherein each subtractor group has an initial full subtractor and the subtractor second has an initial subtractor group, wherein a difference is computed between the first value and the second value;

a borrow look ahead logic section of the borrow look ahead circuitry having a plurality of borrow look ahead blocks wherein the borrow look ahead blocks include a plurality of first level blocks, having an initial first level block, and a second level block, wherein the first level blocks generate borrow signals which are input signals to the full subtractors of a corresponding subtractor group, and wherein the second level block generates borrow signals which are input signals to the first level blocks and the full subtractors of the corresponding subtractor group; and

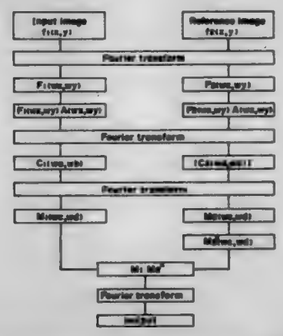
a comparator which compares the difference between the first value and the second value to a third value.

5,386,378

OPTICAL INFORMATION PROCESSING APPARATUS AND METHOD USING COMPUTER GENERATED HOLOGRAM

Masami Itoh, Takarazuka; Kanji Nishii, Osaka; Hiroyuki Kawamura, Kadoma, and Atsushi Fukui, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 710,461, Jun. 5, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 967,739
Claims priority, application Japan, Jun. 5, 1990, 2-148242
Int. Cl.[6] G06E *3/00*
U.S. Cl. 364—822 **4 Claims**



1. A recognition method for recognizing an object by pattern-matching an image of an object with reference images, said method comprising the steps of:

(a) preparing in advance computer generated holograms associated with reference images, said preparing step including, for each of the reference images, the steps of (a1) Fourier-transforming a reference image into first reference complex amplitude information thereof, (a2) coordinate-transforming said first reference complex amplitude information using phase information A(wx, wy) for performing a coordinate transformation from a first coordinate system represented by coordinates (x, y) to a second coordinate system represented by coordinates (u, v) which satisfies $\partial u/\partial y = \partial v/\partial x$, thereby obtaining second reference complex amplitude information, (a3) Fourier-transforming said second reference complex amplitude

information into third reference complex amplitude information, (a4) Fourier-transforming information obtained from an absolute value of said third reference complex amplitude information into fourth reference complex amplitude information, and (a5) forming a complex conjugate of said fourth reference complex amplitude, thereby obtaining a computer generated hologram;

(b) displaying an image of an object picked up by an image pick-up device on a first spatial light modulator;

(c) optically Fourier-transforming said displayed image into first object complex amplitude information;

(d) optically coordinate transforming said first object complex amplitude information by superposing said first object complex amplitude information with said phase information A(wx, wy) on a second spatial light modulator, thereby obtaining second object complex amplitude information;

(e) optically Fourier-transforming said second object complex amplitude information into third object complex amplitude information;

(f) optically Fourier-transforming information obtained from said third object complex amplitude information into fourth object complex amplitude information,

(g) superposing said fourth object complex amplitude information and one of said computer generated holograms associated with the reference images on a third spatial light modulator; and

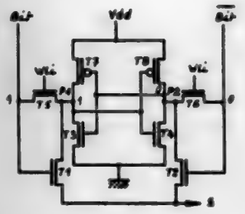
(h) detecting the superposed image to determine whether or not the image of an object coincides with the reference image associated with the one of said computer generated holograms.

5,386,379

MEMORY CELL FOR ASSOCIATIVE MEMORY

Tahar Ali-Yahia, Viroflay, and Michel Dana, Paris, both of France, assignors to France Telecom, Etablissement Autonome De Droit Pub., France

Filed Dec. 29, 1992, Ser. No. 997,931
Claims priority, application France, Jan. 3, 1992, 92-00024
Int. Cl.[6] G11C *15/00*
U.S. Cl. 365—49 **5 Claims**



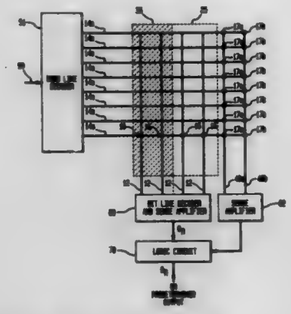
1. Memory cell for a static associative memory comprising two arrays of transistors, a first array having a data storage function and a second array having a comparison function between a stored data item and a data item applied to the cell by bit lines, the comparison result being obtained on a selection line S, characterized in that the second array (T1,T2,T3,T4) of transistors comprises some of the transistors of the first array (T3,T4,T7,T8,T5,T6) connected to be operated by the stored data item to compare the date item applied with the stored data item.

5,386,380

BYPASS SCHEME FOR ROM IC

Hsin-Li Chen, Hsin-Chu; Han-Shen Lo, Chu-Pei, and Wood Wu, Hsin-Chu, all of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan, Prov. of China

Filed Jul. 21, 1993, Ser. No. 95,261
Int. Cl.[6] G11C *17/00*
U.S. Cl. 365—94 **7 Claims**



7. A read only memory comprising:

an array of storage location divided into use and no-use areas,

means for performing read operations in said use and no-use areas of said array of storage locations,

means for overriding an output of one of said read operations and for outputting a predetermined value if said one read operation takes place in said no-use area of said array,

wherein each storage location is at the intersection of a word line and a bit line,

wherein said means for performing a read operation comprises a word line decoder for selecting a particular word line along which a plurality of storage locations are located and a bit line decoder for detecting the output states of a set of bit lines in response to the selection of said particular word line, and

wherein said overriding means comprises at least one extra bit line coupled to each word line by an additional storage location, the output state of the extra bit line indicating whether or not at least a portion of said particular word line is in said no-use area.

5,386,381

MASK READ ONLY MEMORY (ROM) FOR STORING MULTI-VALUE DATA

Makoto Takizawa, and Kazunori Kanebako, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 5, 1993, Ser. No. 42,676
Claims priority, application Japan, Apr. 3, 1992, 4-081236
Int. Cl.[6] G11C *17/00*
U.S. Cl. 365—104 **4 Claims**

1. A mask read only memory (ROM) including a memory cell comprising:

a primary conductive region formed by a first conductive type semiconductor;

a source region formed in the primary conductive region by a second conductive type semiconductor;

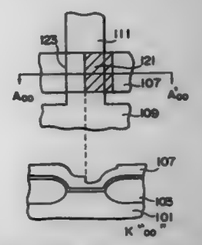
a drain region formed in said primary conductive region by the second conductive type semiconductor;

a first channel region being adjacently formed with said source region and said drain region and having a predetermined gate-voltage/drain-current (VG-ID) characteristic;

a second channel region being adjacently formed with said source region, said drain region and said first channel region so as to form a parallel channel region, and having another VG-ID characteristic different from said predetermined VG-ID characteristic;

a gate insulation layer formed on said first channel region and said second channel region; and

a single gate electrode formed in a manner such that said predetermined VG-ID characteristic and said another VG-ID characteristic are different from each other, and



said single gate electrode entirely covers said first and second channel regions, wherein

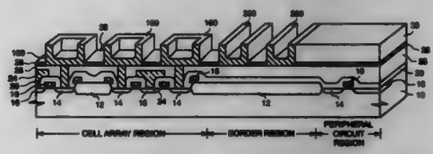
said first channel region can adopt at least two VG-ID characteristic values, and said second channel region can adopt at least two additional VG-ID characteristic values thereby supplying a total current amount of said parallel channel regions with least four combinations of current amounts of the basis of said two and said two additional VG-ID characteristics.

5,386,382

SEMICONDUCTOR MEMORY DEVICE AND A MANUFACTURING METHOD THEREOF

Ji-hong Ahn, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do

Division of Ser. No. 906,376, Jun. 30, 1992, Pat. No. 5,279,983.
This application Sep. 30, 1993, Ser. No. 129,369
Int. Cl.[6] H01L *27/02, 27/10*
U.S. Cl. 365—174 **6 Claims**



1. A semiconductor memory device comprising: a cell array region; a peripheral circuit region; and a border region between said cell array region and said peripheral circuit region, wherein a channel surrounding said cell array region is formed on said border region.

5,386,383

METHOD AND APPARATUS FOR CONTROLLING DYNAMIC RANDOM ACCESS MEMORY DEVICES

Partha Raghavachari, Chicago, Ill., assignor to AT&T Corp., Murray Hill, N.J.

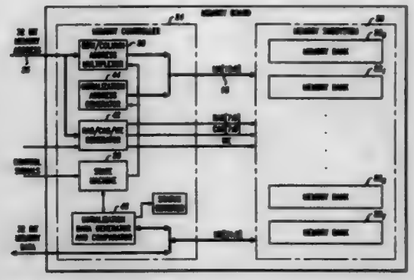
Filed Feb. 28, 1994, Ser. No. 203,209
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—189.05 **18 Claims**

1. A method for controlling a plurality of banks of DRAM devices, each DRAM device comprised of a plurality of memory cells arrayed in rows and columns, each cell being uniquely identified by a row address and a column address, the method comprising the steps of:

decoding an incoming address, specifying a cell of interest in each DRAM device in a bank, to designate the bank of DRAM devices each containing the cell of interest;

multiplexing the incoming address to generate a complete row address that specifies the row in each DRAM device in the designated bank containing the cell of interest when each said DRAM device has an equal number of rows and columns, and simultaneously specifies the row containing the cell of interest row when the DRAM device has an unequal number of rows and columns;

multiplexing the incoming address to generate a complete column address that specifies the column in each DRAM device in the designated bank containing the cell of interest when each said DRAM device has an equal number of



rows and columns, and that simultaneously specifies the row containing the cell of interest row when the DRAM device has an unequal number of rows and columns;

sequentially applying the complete row address and the complete column address to each DRAM device in the designated bank;

decoding only as much of the complete row address at each DRAM device as is necessary, in accordance with the number and columns in the DRAM device, to select the row containing the cell of interest; and

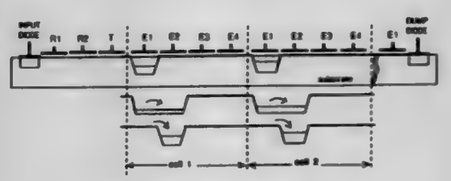
decoding only as much of the complete column address at each DRAM device as is necessary, in accordance with the number and columns in the DRAM device, to select the row containing the cell of interest.

5,386,384

PARALLEL CCD MEMORY CHIP AND METHOD OF MATCHING THEREWITH

Voinel A. Pedroni, Pasadena; Amnon Yariv, San Marino, and Aharon J. Agranat, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 9, 1993, Ser. No. 28,124
Int. Cl.[6] G11C *19/28;* H03K *23/46*
U.S. Cl. 365—183 **7 Claims**



1. A parallel CCD memory comprising:

a plurality of memory cell rows each such row having at least one pair of cells, each such cell pair having at least two sets of sequentially arrayed electrodes for transferring charge in accordance with the magnitudes of voltages applied to said electrodes; each such cell pair having a binary one or zero stored therein in the form of a charge in a region corresponding to a selected first one of said

electrodes; each said row having a voltage comparator having one input terminal connected to a reference voltage source and having another input terminal connected to at least a second one of said electrodes; and an address decoder for indicating which of said memory cell row comparators produces an output indicative of a substantially zero voltage difference between its corresponding input terminals;

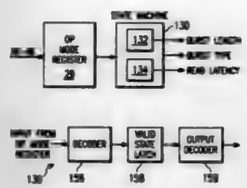
means for applying input voltages to said selected first one of said electrodes in each said cell pair of each said row, said input voltages representing an input binary one or zero to be compared with the binary one or zero stored in said cell pair, the voltage at said second one of said electrodes being dependent upon whether said input binary one or zero is the same as or different from said stored binary one or zero.

5,386,385

METHOD AND APPARATUS FOR PREVENTING INVALID OPERATING MODES AND AN APPLICATION TO SYNCHRONOUS MEMORY DEVICES

Michael C. Stephens, Jr., Stafford, Tex., assignor to Texas Instruments Inc., Dallas, Tex.

Filed Jan. 31, 1994, Ser. No. 189,538
Int. Cl.[6] G11C *7/00*; G06F *13/32*
U.S. Cl. 365—189.05 **23 Claims**



10. A circuit for preventing indeterminate operation of a device, comprising:

a mode register operable to store mode data for controlling the device;

an input decoder coupled to said mode register;

a valid state latch coupled to said input decoder, said input decoder operable to cause decoded data to be latched by said valid state latch when mode data corresponding to valid operating modes is stored in said mode register; and

an output decoder circuit operable to decode data latched in said valid state latch.

5,386,386

REDUNDANCY CIRCUIT HAVING A SPARE MEMORY BLOCK REPLACING DEFECTIVE MEMORY CELLS IN DIFFERENT BLOCKS

Masaki Ogihara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 22, 1991, Ser. No. 673,406
Claims priority, application Japan, Mar. 22, 1990, 2-72818
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **3 Claims**

1. A semiconductor memory device having a redundancy circuit for remedying defective columns having defective column addresses, said semiconductor memory device comprising:

a plurality of blocks of memory cells, each of said blocks comprising a plurality of memory cells arranged in a matrix pattern having rows and columns, for storing binary data, each of said memory cells having an output;

a plurality of bit lines respectively connected to the outputs of the memory cells, said bit lines being grouped into bit line pairs, each of said bit line pairs corresponding to one column, being used for transferring one binary data, and having a first address;

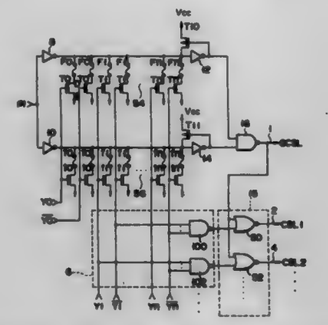
a plurality of gate means, each for gating signals which are transmitted on bit lines of bit line pairs corresponding to at least two columns, each of said gate means having inputs to which the bit lines of said at least two columns are connected, a control input, and column outputs which are equal in number to the bit lines connected to the inputs;

gate selection means for selecting one of the gate means by decoding a second address supplied thereto, said gate selection means having inputs for receiving said second address, and a plurality of control outputs respectively connected to each of the control inputs of the gate means;

a plurality of blocks of spare memory cells, each block comprising a plurality of spare memory cells for storing binary data, each of said spare memory cells having an output;

a plurality of spare bit lines respectively connected to each of the outputs of the spare memory cells, said spare bit lines being equal in number to bit lines which are gated by one of the gate means, said spare bit lines being grouped into spare bit line pairs, each of said bit line pairs corresponding to one column and being used for transferring one binary data;

spare gate means for gating the outputs of the spare memory cells, said spare gate means having a control input, and column outputs which are equal in number to columns



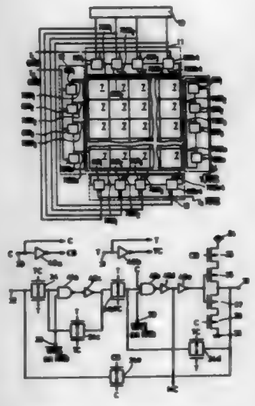
each sense amplifier can be changed depending upon the respective operation mode of the memory.

5,386,390

SEMICONDUCTOR MEMORY WITH LOOPED SHIFT REGISTERS AS ROW AND COLUMN DRIVERS

Takanori Okitaka, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 43,725
Claims priority, application Japan, Apr. 28, 1992, 4-110058; Nov. 6, 1992, 4-297038
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—230.06 **32 Claims**



1. A semiconductor memory comprising:

(a) a plurality of memory cells arranged in the form of a matrix having a plurality of rows and a plurality of columns;

(b) memory cell selecting means including a plurality of memory cell selecting portions provided in corresponding relation to said plurality of rows or said plurality of columns and each having an input node, an output node, a control node, a selection signal output node, a selecting portion for temporarily storing data inputted to the corresponding input node to transmit the temporarily stored data to the corresponding output node and to output a signal for selecting the memory cells provided in the corresponding column or row by means of the temporarily stored data to the corresponding selection signal output node, and a data through portion corresponding to said selecting portion for transmitting the data inputted to the corresponding input node directly to the corresponding output node, said control node receiving a control signal which makes one of the corresponding selecting portion and data through portion operable and makes the other portion inoperable, said input and output nodes of said memory cell selecting portions being connected in series so that said memory cell selecting portions form a loop; and

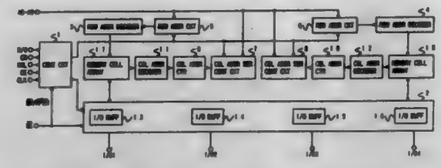
(c) programmable control means for outputting the control signals to said plurality of control nodes of said memory cell selecting means as a function of signals smaller in number than said control signals in order to make the selecting portion inoperable and make the data through portion operable in at least one of said plurality of memory cell selecting portions of said memory cell selecting means.

5,386,391

SEMICONDUCTOR MEMORY DEVICE, OPERATING SYNCHRONOUSLY WITH A CLOCK SIGNAL

Yuji Watanabe, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 28, 1993, Ser. No. 68,705
Claims priority, application Japan, May 29, 1992, 4-163953
Int. Cl.[6] G11C *11/408*
U.S. Cl. 365—233 **33 Claims**



1. A semiconductor memory device, comprising:

memory cell arrays divided into at least two banks with respect to a column system;

row address designating means for designating a row address to each of said banks;

column address designating means for designating a column address to each of said banks in serial order;

a plurality of input and output buffers for holding input and output data to and from each of said banks;

address control means for applying a group of inputted address signals to said row address designating means and said column address designating means and for interleaving said memory cell arrays in operation, on the basis of an inputted standard signal and a group of control signals; and

input and output control means for operating said input and output buffers in a pipelined process in accordance with the operation of said address control means,

said standard signal being used for operations of said address control means and said input and output control means, said input and output control means, and said memory cells arrays being operated on the basis of the standard signal,

wherein in a write mode, data are acquired from the outside in a cycle and then the acquired data are written in said input and output buffers in the succeeding cycle, and

wherein when an output enable signal of the control signal group is used as a mask signal in the write mode, a H/L level of the output enable signal is acquired by said input and output control means as data.

5,386,392

PROGRAMMABLE HIGH SPEED ARRAY CLOCK GENERATOR CIRCUIT FOR ARRAY BUILT-IN SELF TEST MEMORY CHIPS

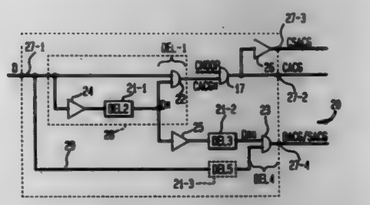
Thierry Cantiant, Dannaire-Les-Lys; Bertrand Gabillard, Paris; Jean-Paul Mifsud, Lieusaint, all of, and Stuart Rapoport, Washington, D.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 8, 1994, Ser. No. 255,697
Claims priority, application European Pat. Off., Jun. 30, 1993, 93480085
Int. Cl.[6] G11C *11/30*
U.S. Cl. 365—233 **9 Claims**

1. A SRAM that includes memory means, data-out shift register means, ABIST means, data compression circuit means, fail address register means and an array clock generator (ACG), said ACG comprising:

a clock chopper that comprises a first AND gate having an inherent delay DEL1, a first input for receiving a D clock signal, a second input for receiving the D signal inverted by an invertor having an inherent delay DEL2, and an output that generates an ungated LSSSD C clock signal; and

a second AND gate having an inherent delay DEL4, a first input connected to the output of an inverter having an



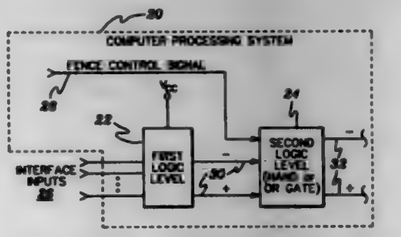
inherent delay DEL3, said inverter is coupled to the invertor having the delay DEL2, a second input is controlled by the D clock signal and an output for generating LSSD clock signals B and S.

5,386,393

FENCING CIRCUIT AND METHOD FOR ISOLATING SPURIOUS NOISE AT SYSTEM INTERFACE

Edward C. Hallee; Soo-Lan Huang, both of Wappingers Falls; Kirk H. Hwang, and Benedicto U. Messina, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1993, Ser. No. 14,978
Int. Cl.[6] H04B *15/00*; H02H *1/04*
U.S. Cl. 364—574 **8 Claims**



1. A noise fencing circuit for an interface of a processor system, said processor system being driven by at least one power supply which provides a substantially defined voltage, said noise fencing circuit being responsive to a fence control signal, said noise fencing circuit comprising:

logic circuit means for attenuating a received noise signal at said processor system interface by constraining said received noise signal to a magnitude less than or equal to said at least one power supply's defined voltage, said logic circuit attenuating means outputting an attenuated noise signal in response to a received noise signal at said processor system interface; and

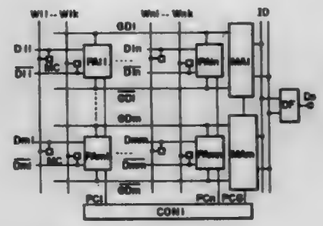
signal fencing means, responsive to said fence control signal and connected to said logic circuit attenuating means for receiving said attenuated noise signal therefrom, said signal fencing means being enabled or disabled by said fence control signal, wherein when enabled, said signal fencing means includes means for outputting a substantially constant isolation signal in response to a received, attenuated noise signal.

5,386,394

SEMICONDUCTOR MEMORY DEVICE FOR PERFORMING PARALLEL OPERATIONS ON HIERARCHICAL DATA LINES

Takayuki Kawahara, Hachioji; Masakazu Aoki, Tokorozawa; Yoshinobu Nakagome, Hamura; Makoto Hanawa, Niiza; Kunio Uchiyama, Kodaira; Masayuki Nakamura, Akishima; Goro Kitsukawa, Tokyo, and Kanji Oishi, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 114,633
Claims priority, application Japan, Sep. 3, 1992, 4-235634; Oct. 29, 1992, 4-291165
Int. Cl.[6] G11C *7/00, 11/40*
U.S. Cl. 365—208 **16 Claims**



1. A semiconductor device comprising:

a plurality of memory cells;

data lines which are supplied with a data signal from a memory cell selected from said plurality of memory cells;

global data lines hierarchically formed together with said data lines;

switches for controlling said data lines and said global data lines to be connected to each other; and

set-up means for making set-up operations for said global data lines in order that said data lines and said global data lines are electrically connected by said switches in parallel with the operation for selecting one of said memory cells;

wherein said semiconductor device and a system to which said semiconductor device is connected share a clock signal.

5,386,395

ULTRASONIC DEVICE COMPRISING AN ACTIVE IMPEDANCE MATCHING DEVICE BETWEEN AN ULTRASONIC TRANSDUCER AND THE GENERATOR FOR GENERATING PULSE SIGNALS FOR THE TRANSDUCER

Yves Le Guerinel, Mellin, and Raoul Mallart, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 27, 1993, Ser. No. 143,796
Claims priority, application France, Oct. 28, 1992, 92 12879
Int. Cl.[6] H04B *1/00*
U.S. Cl. 367—137 **12 Claims**

1. An ultrasonic device, comprising an ultrasonic transducer and a generator for generating electric pulses for the transducer, said generator being connected to the transducer via an active impedance matching device which comprises an interface stage and a matching stage, which stages are connected by way of a cable having a predetermined standard impedance;

said interface stage comprising:

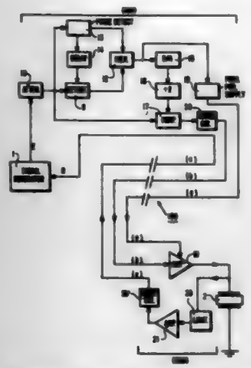
a sub-assembly for generating a d.c. signal whose amplitude is proportional to but smaller than a peak value of said pulses;

a sub-assembly for generating, on the basis of said d.c. signal and the output pulses of said generator, an output signal in the form of voltage pulses feeding said cable connecting the transducer to the generator, which output signal is matched with the impedance of said cable; and

a programmable power supply for generating, on the basis of said d.c. signal, an output signal in the form of a d.c. voltage feeding said cable; and

said matching stage comprising:

a transmission sub-assembly which receives, via said cable, the output signals of the programmable power



supply and of the sub-assembly for generating voltage pulses, and whose output signal constitutes an excitation pulse applied to the transducer; and

a receiving sub-assembly which receives from the transducer an echographic response signal to the excitation pulse and which returns this echographic signal to said generator via said cable.

5,386,396

PROCESS FOR PRODUCING THE OUTPUT SURFACE OF A FOCUSED ULTRASONIC BEAM TRANSDUCER AND TRANSDUCER WITH AN OUTPUT SURFACE PRODUCED BY SAID PROCESS

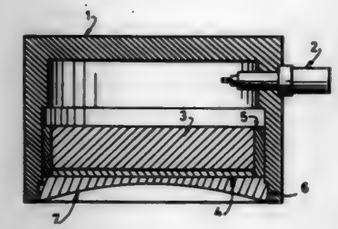
Damien Deltour, Esserteuse, and Pascal Dumont, Chatenoy Le Royal, both of France, assignors to Framatome and Compagnie Europeene Du Zirconium dite Cezus, Courbevoie, France

Filed Sep. 14, 1993, Ser. No. 120,382

Claims priority, application France, Sep. 14, 1992, 92 10915

Int. Cl.[6] H04R *1/20*

U.S. Cl. 367—150 **5 Claims**



1. Process for producing an output surface of a focused ultrasonic beam transducer, said process comprising in combination the following steps:

(a) calculating, by varying an opening angle of said beam, a first group of reference points of x, z coordinates in an incidence plane of said beam, so that the times taken by supersounds to pass through said reference points and through a focal point are identical;

(b) calculating a second group of reference points of y, z coordinates in a plane perpendicular to said incidence plane;

(c) defining two polynomials of degree 4 by polynomial interpolation by the method of least squares of said two previously-calculated groups of reference points, in the following form:

$$f(x)=ax^4+bx^3+cx^2+dx$$

$$g(y)=a'y^4+b'y^3+c'y^2+d'y$$

(d) determining the x, y and z coordinates of the points of an output surface by the relation:

$$z=f(x)+g(y);\ \text{and}$$

(e) producing said output surface by means of said coordinates.

5,386,397

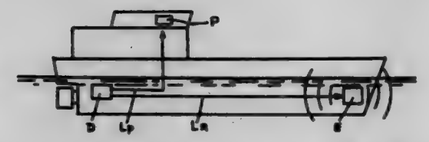
METHOD AND APPARATUS FOR KEEPING A BODY SURFACE, WHICH IS IN CONTACT WITH WATER, FREE OF FOULING

Augusto C. R. Urroz, 6990 Montegrande St. 7600 Mar del Plata, Province of Buenos Aires, Argentina

Filed Nov. 29, 1993, Ser. No. 158,498

Int. Cl.[6] H04B *1/02*

U.S. Cl. 367—139 **19 Claims**



1. A method for keeping a surface free of scale, fouling and any other kind of dirty generated by the adherence of in water-living organisms such as marine life, the surface being at least part of a body that is in contact with water, the body having a first end and a second end opposite to the first end, a length being defined between the ends, the method comprising the step of generating and emitting, from a submerged location at the first end of the body; at least one high-frequency sound wave train, the train propagating longitudinally along the length of the body, from the first end of the second end of the body, forming, adjacent the body surface, a vibrating field encircling the body surface, without nodal points, wherein the molecular kinetic energy of the water within the field is so increased as to generate a drastic drop in the density of the surface surrounding water as well as in the density of the cells of the organisms entering the vibrating field, thus alterating the habitat of the organisms and discouraging the organisms from adhering to the body surface.

5,386,398

DISPLAY OF PARTLY RANDOMIZED TIME

Levan Hlemke, Boston, Mass., and Emanuel Kwak, New York, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 28, 1990, Ser. No. 635,955

Int. Cl.[6] G04B *47/00*

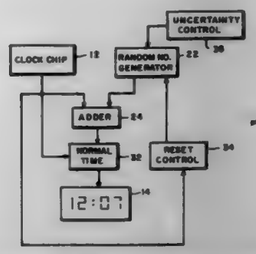
U.S. Cl. 368—10 **8 Claims**

1. A timepiece comprising:

a. a time data source for supplying original time data values, each original time data value comprising a quantity representing the time at which said value is generated.

b. means for generating a pseudo-random value, for each original time data value, from within a predetermined range of possible pseudo-random values;

c. means for generating for each original time data value another time data value, called the modified time data value, the modified time data value being functionally related to the original time data value and the pseudo-random value according to a predetermined mathematical algorithm; and



d. means for receiving and displaying the modified time data values.

5,386,399

ANALOGUE ELECTRONIC TIMEPIECE WITH CHRONOGRAPHIC FUNCTION

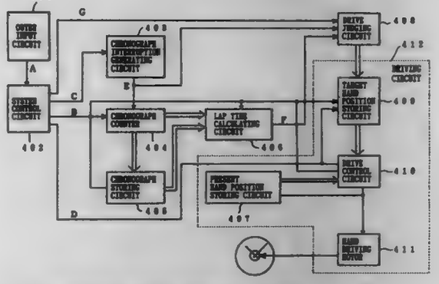
Hiroyuki Masaki, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Dec. 8, 1993, Ser. No. 163,570

Claims priority, application Japan, Mar. 16, 1993, 5-56204

Int. Cl.[6] G04F *8/00*

U.S. Cl. 368—110 **11 Claims**



1. An electronic timepiece, comprising:

control means for generating a control signal in response to a manual input operation;

interrupt generating means for outputting interrupt signals on a periodic basis in response to the control signal;

counting means for counting the interrupt signals and for producing a count value;

storing means for storing a time value in response to said control signal;

lap time calculating means for calculating a lap time by calculating the difference between a time corresponding to an end of a lap measurement and a stored time value corresponding to a start of a lap measurement and for outputting a correcting drive signal;

driving means to which the output signal of the lap time calculating means and the interrupt signals are input for controlling display means; and

display means for displaying an elapsed lap time.

5,386,400

MAGNETO-OPTICAL HEAD DEVICE HAVING A LUBRICATED MEMBER

Junichiro Nakayama, Shiki; Tomoyuki Miyake; Hiroyuki Katayama, both of Nara, and Kenji Ohta, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

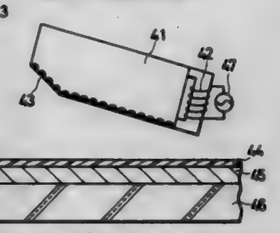
Continuation of Ser. No. 29,433, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 640,109, Jan. 11, 1991, Pat. No. 5,231,613. This application Jan. 19, 1994, Ser. No. 183,259

Claims priority, application Japan, Jan. 19, 1990, 2-11572; Jul. 18, 1990, 2-191063; Aug. 2, 1990, 2-206319

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[6] G11B *13/04*

U.S. Cl. 369—13 **5 Claims**



1. A magneto-optical recording device comprising a flying head for magneto-optical recording which floats over a magneto-optical recording medium according to the rotation of the magneto-optical recording medium, the flying head having:

a head slider means for making the head float over the magneto-optical recording medium, the head slider means having a first bottom surface which comes into contact with a surface of the magneto-optical recording medium: and

a head coil means for generating an external magnetic field for recording information on the magneto-optical recording medium, the head coil means having a second bottom surface which comes into contact with said surface of the magneto-optical recording medium,

wherein a lubricating member is mounted at least on the first bottom surface and the member is a fluorocarbon resin film having a thickness of 10 μm to 20 μm.

5,386,401

Patent Not Issued For This Number

5,386,402

ACCESS CONTROL APPARATUS AND ADDRESS TRANSLATION METHOD FOR DISK STORAGE DEVICE

Akitoshi Iwata, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1993, Ser. No. 158,565

Int. Cl.[6] G11B *17/22, 5/09*

U.S. Cl. 369—32 **9 Claims**

1. An access control apparatus for a disk storage device, comprising:

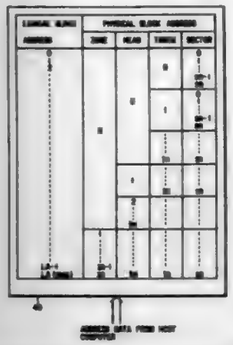
a disk having a plurality of data surfaces for storing data items, each data surface being divided into a plurality of zones as concentric blocks, each zone consisting of a plurality of tracks, and each track consisting of a plurality of sectors;

head means having a plurality of heads, which are provided for each data surface, for reading and writing data items from and into the disk when a host computer requests access to the disk;

address translation means for preparing a translation table used to translate a logical block address supplied from the host computer to a physical block address when the host computer accesses the disk, the translation table showing zone numbers, head numbers and track numbers, the head numbers constituting the physical block address, being

assigned to each of zone numbers, and being sequentially arranged, the track numbers being assigned to each of the head numbers and sequentially arranged, and the sector numbers being assigned to each of the track numbers and sequentially arranged; and

access control means for positioning a head with a designated head number to a track with a designated track



number which is included in a zone with a designated zone number, on the basis of the physical block address obtained by the address translation means, so as to read and write data corresponding to the logical block address supplied from the host computer, from and into a sector with a designated sector number which is included in the track.

5,386,403

SINGLE MOTOR DISK LOADING DEVICE WITH LOCK GEAR

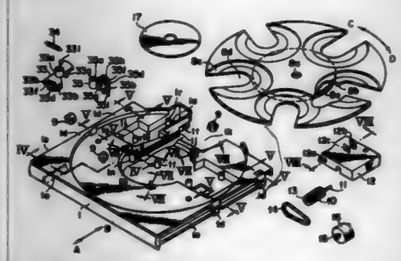
Yukio Morioka, Katano; Toshihiro Kaneo, Shijonawate, and Soichi Kimura, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 9, 1993, Ser. No. 44,615

Claims priority, application Japan, Apr. 22, 1992, 4-102610; Jan. 29, 1993, 5-014009

Int. Cl.[6] G11B *17/26, 17/04*

U.S. Cl. 369—37 **12 Claims**



1. A disk loading device comprising:

a casing;

a rotary tray on which a plurality of disks can be placed, said rotary tray being rotatable together with the disks;

rotary tray drive means for rotating said rotary tray;

a tray base supporting said rotary tray and said rotary tray drive means, said tray base being movable in a forward-backward direction between a disk attachment/detachment position in which at least one of the disks is disposed outside said casing and a disk reception position where the disks are received within said casing, said tray base having a rack formed thereon;

a disk playing portion for carrying one of the disks which is to be played, said disk playing portion being movable between a reproducing position where the one of the disks to be played is played and a nonreproducing position; and

tray base moving means for moving said disk playing portion between said reproducing position and said non-reproducing position, moving said tray base in said forward-backward direction when said disk playing portion is in said non-reproducing position of said disk playing portion, and moving said tray base in said forward-backward direction when said disk playing portion is in said reproducing position, said tray base moving means comprising:

a tooth omission gear and a mating gear which are mated to transfer power selectively from a single motor to said disk playing portion and said rack on said tray base, said tooth omission gear having teeth removed over a certain range to define an end tooth; and

a lock gear for preventing forward-backward movement of said tray base when said tray base is in said disk reception position, said lock gear having (i) a rack portion continuous to said rack on said tray base and (ii) a gear portion, said rack portion and said gear portion meeting at an angle of about 90 degrees to define a corner tooth, said lock gear further comprising means for limiting a position of entry of said end tooth of said tooth omission gear into teeth of said mating gear; and

wherein said lock gear is rotatable into a predetermined position responsive to a pull of a spring after said tray base has moved to said disk reception position.

5,386,404

OPTICAL INFORMATION PROCESSING APPARATUS

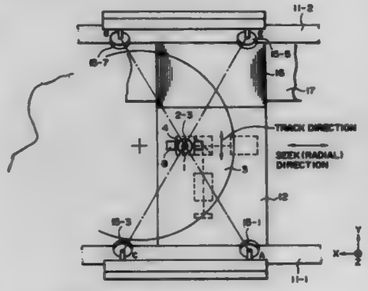
Osamu Koyama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 581,581, Sep. 12, 1990, abandoned. This application Apr. 14, 1993, Ser. No. 47,011

Claims priority, application Japan, Sep. 14, 1989, 1-237185

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.23 **10 Claims**



1. An optical head, comprising:

a light source;

a condenser lens for condensing a light beam from said light source as a small light spot on a predetermined track on a recording medium, said light source and said condenser lens being integrally mounted on a base; and

tracking servo means for positioning the light spot in accordance with information on displacement between a track and the light spot,

wherein a focus length f of said condenser lens, and a distance R_{zx} from an inclination center of vibration or resonance of the base to said condenser lens in a z axis direction in a z-x plane are fixed in a coordinate system in which the tracking direction is in the x axis direction, and the track direction is in a y axis direction, and an optical axis of said condenser lens is in the z axis direction, such that the displacement between the track and the light spot

δ_{zx} due to the vibration or resonance of the base in the z-x plane produced upon tracking satisfies:

$$\delta_{zx}=(f+R_{zx})\cdot\tan\theta_{zx} \text{ and}$$

$$|f+R_{zx}|\leq 5\times 10^{-5}/\tan\theta_{zx}\ (mm)$$

where θ_{zx} is the inclination of the base produced by the vibration or resonance in the z-x plane.

5,386,405

DISK APPARATUS HAVING A READ ERROR RETRY FUNCTION

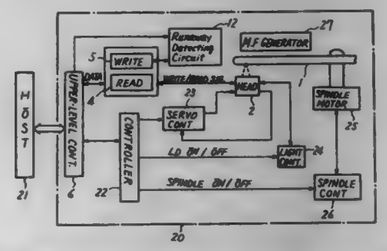
Toru Fujiwara; Shigeyuki Yanagi, and Toru Ikeda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Feb. 22, 1993, Ser. No. 21,281

Claims priority, application Japan, Feb. 27, 1992, 4-041221; Mar. 19, 1992, 4-063018

Int. Cl.[6] G11B *5/02, 5/09, 5/76*

U.S. Cl. 369—59 **15 Claims**



1. A disk apparatus for reading out data signals recorded on a disk, comprising:

a head for picking up a data signal from the disk,

a read circuit for receiving and digitizing the data signal picked up by the head into binary,

a reference clock generator for generating a reference clock signal,

a variable frequency oscillator for receiving a first read-gate signal, the digitized binary data signal and-the reference clock signal and generating a readout data signal and a readout clock signal, each synchronized with the reference clock signal, and

a detecting circuit for supplying the first read-gate signal to said variable frequency oscillator and receiving the reference clock signal from said reference clock generator and the readout clock signals from said readout circuit and for detecting an abnormal state of a synchronizing operation of said variable frequency oscillator and resetting the read-gate signal when a frequency difference between the reference clock signal and the readout clock signal exceeds a predetermined value.

5,386,406

CARTRIDGE SHUTTER OPENING DEVICE

Susumu Ikuma, Tokyo, and Makoto Shiboh, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,890

Claims priority, application Japan, Apr. 15, 1991, 3-082400

Int. Cl.[6] G11B *17/04*

U.S. Cl. 369—77.2 **4 Claims**

1. A shutter opening device for opening an opening/closing shutter of a disk cartridge having a cartridge case accommodating a disk-like recording medium therein, the opening/closing shutter being movable on the cartridge case and having a side end portion near a side surface of the cartridge case, said device comprising:

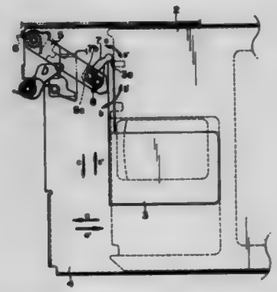
a rigid first arm for abutting against a shutter leading portion of the cartridge when inserted in said device, and for pivoting in a first direction in association with an insertion operation of the cartridge;

a rigid second arm, provided on said first arm, for abutting against the side end portion of the shutter of the cartridge when inserted in said device, the entire rigid second arm pivoting in a second direction about a pivoting point provided on said first arm as the pivoting center

a stopper, formed as a recessed portion within said first restricting the pivoting of said second arm; and

biasing means, provided on said first arm, for biasing said second arm in the first direction,

wherein (i) when the cartridge is initially inserted in said device, the side end portion of the shutter first comes into contact with said second arm to pivot said second arm only in the second direction against the biasing force of



said biasing means in association with the insertion operation of the cartridge, without pivoting said first arm, (ii) further insertion of the cartridge into said device causes said first arm to abut against said shutter and to pivot, the pivoting of said first arm causing said second arm to move entirely in the first direction, and the movement of said second arm causing said second arm to pivot on said first arm so as to open the shutter, (iii) further insertion of said cartridge into said device causes said second arm to abut against said stopper so as to no longer pivot on said first arm and the contact of said first arm with the shutter to be released, and (iv) thereafter, a force acting on said second arm in an insertion direction causes said first arm to pivot, which causes said second arm to move entirely in the first direction so as to open the shutter.

5,386,407

APPARATUS FOR EJECTING A CADDY FROM A DISK PLAYER

Jeong-se Park, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 13, 1992, Ser. No. 867,448

Claims priority, application Rep. of Korea, May 14, 1991, 91-7754

Int. Cl.[6] G11B *17/04, 17/035*

U.S. Cl. 369—77.2 **18 Claims**

16. An apparatus for ejecting a caddy inserted onto a caddy holder from a disk player comprising a base and a turntable, said apparatus comprising:

a lower case having a bottom and a front panel containing a receiving hole;

a support plate fixed to said lower case, said support plate having a side wall perpendicular to said bottom of said lower case;

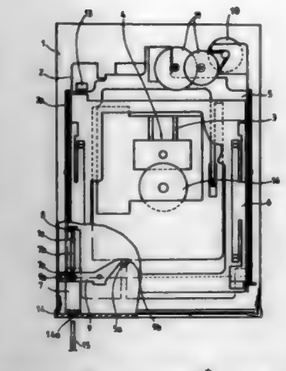
loading means attached to said side wall, disposed to move in a first direction of insertion of the caddy into the disk player and a second direction opposite said first direction, for moving the caddy holder in said first and second directions and along a path of travel parallel to an axis of rotation of said turntable;

slide means disposed to move in said first and second directions, for receiving an external force applied through said receiving hole;

lever means rotatably installed onto said lower case at a lever axis, having a first end connected to said slide means, for rotating about said lever axis in response to movement by said slide means in said first direction;

an eject pin attached to said loading means for contacting a second end of said lever means, and for moving said loading means in said second direction in response to said rotation of said lever means about said lever axis;

a connecting pin attached to said slide means and disposed in a direction parallel to said axis of rotation of said turntable;



a slotted hole having an inner width greater than a diameter of said connecting pin, said slotted hole located in said first end of said lever means, for accommodating said connecting pin, whereby said connecting pin moves in said first direction in response to movement by said slide means in said first direction, said connecting pin simultaneously traversing said inner width of said slotted hole and causing said rotation of said lever means;

a guide pin formed on said lower case;

a guide hole having an inner width in said first and second directions greater than a diameter of said guide pin, said guide hole located in said slide means, for accommodating said guide pin to ensure movement of said slide means in only said first and second directions: and

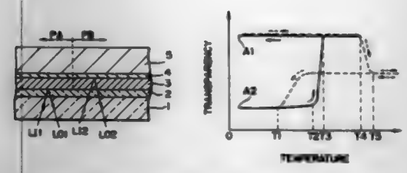
resilient means for biasing said slide means in said second direction.

5,386,408

OPTICAL RECORDING CARRIER AND OPTICAL RECORDING PROCESS

Takashi Akahori, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 89,673
Claims priority, application Japan, Jul. 7, 1992, 4-201832
Int. Cl.[6] B41M *5/30*
U.S. Cl. 369—100 **17 Claims**



1. An optical recording medium comprising:

a substrate made of a transparent material;

an optical recording layer having a transparency reversibly changed in accordance with temperature thereof;

a reflecting layer for reflecting a light which passes through said substrate and said optical recording layer, said substrate, said optical recording layer and said reflecting layer being laminated with each other;

a plurality of guide grooves for guiding a laser beam for recording, reproducing and erasing data; and

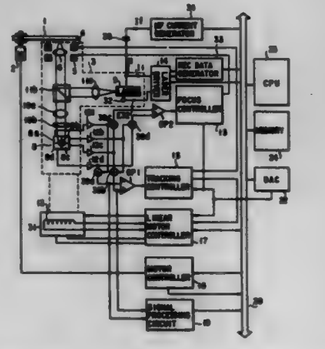
a plurality of recording tracks, formed in each of said guide grooves, for recording data.

5,386,409

OPTICAL INFORMATION REPRODUCING APPARATUS HAVING IMPROVED LASER OSCILLATION

Tsuneshi Yokota, Kawasaki, and Katsumi Suzaki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 5, 1993, Ser. No. 102,252
Claims priority, application Japan, Aug. 5, 1992, 4-208852
Int. Cl.[6] G11B *7/125*
U.S. Cl. 369—116 **12 Claims**



1. An information reproducing apparatus for reproducing information which is recorded at a recording frequency on a recording medium, the apparatus comprising:

a laser diode for irradiating a light beam onto the recording medium;

means for generating a high frequency signal of a pulse waveform, the pulse waveform having a first period T1 to energize said laser diode and a second period T2 to deenergize said laser diode, the high frequency signal having a frequency higher than the recording frequency, the first period T1 satisfying the following equation:

$$T1 < 2d/c,\ T1 < T2$$

where,

d: a distance between said laser diode and the recording medium;

c: a velocity of the light beam;

means for driving said laser diode in accordance with the high frequency signal; and

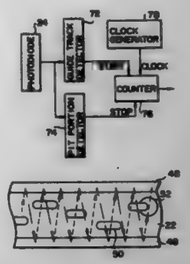
means for reproducing the information recorded on the recording medium by detecting the light beam from the recording medium in synchronism with said recording frequency.

5,386,410

OPTICAL RECORDING MEDIUM AND RECORDING AND REPRODUCING APPARATUS OF THE SAME

Tatsuo Nagasaki, and Yutaka Adachi, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 710,675, Jun. 5, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 100,064
Claims priority, application Japan, Jun. 12, 1990, 2-153575
Int. Cl.[6] G11B *3/70*
U.S. Cl. 369—275.4 **3 Claims**



1. An optical recording medium comprising:

a plurality of writing tracks;

a plurality of guide tracks respectively formed between two of said plurality of writing tracks; and

a plurality of pits formed in each of said plurality of writing tracks;

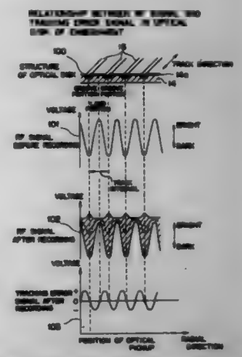
said plurality of writing tracks having data written therein, said data being represented by distance between each of said plurality of pits and one of said plurality of guide tracks adjacent to the writing track in which said plurality of pits are formed.

5,386,411

RECORDABLE OPTICAL DISK AND METHOD OF MANUFACTURING THE SAME

Shuichi Yanagisawa; Satoru Tanaka, and Fumio Matsui, all of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 18, 1993, Ser. No. 154,275
Claims priority, application Japan, Nov. 24, 1992, 4-313460
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—275.4 **10 Claims**



1. A recordable optical disk, to which information is optically recorded by a light beam and from which a return light is received to produce a tracking error signal, said recordable optical disk comprising:

a substrate having a disk shape;

a groove formed on a surface of said substrate along a predetermined track which the light beam is made to follow; and

a recording layer formed on the surface of said substrate, to which the information is recorded by the light beam,

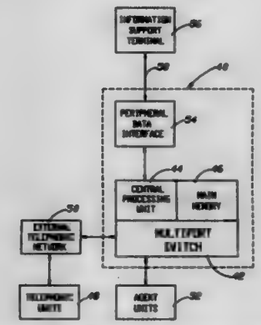
wherein a depth of said groove is prescribed such that an amount of the return light from said groove becomes smaller than an amount of the return light from the portion of said recording layer other than said groove in a condition after recording.

5,386,412

TELECOMMUNICATION SYSTEM PROTOCOL FOR ASYNCHRONOUS DATA COMMUNICATION BETWEEN MULTIPORT SWITCH CONTROL PROCESSOR AND INFORMATION SUPPORT PERSONAL COMPUTER TERMINAL

Jung S. Park, 5148 W. Byron St., Chicago, Ill. 60641, and Raymond G. Johns, Jr., 1682 E. Monticello Ct., Wheaton, Ill. 60187

Filed May 11, 1993, Ser. No. 60,381
Int. Cl.[6] H04L *29/02*; H04M *3/00*
U.S. Cl. 370—53 **33 Claims**



20. In a telecommunication system with a multiport switch controlled by a central processing unit to interconnect telephonic calls received from telephone units of an external network with an internal network of agent telephonic units connected with the multiport switch and in which the central processing unit communicates data with an information support computer terminal on a single, asynchronous, data communication link, a communication protocol method for communication on said communications link, comprising the steps of:

transmitting an informational frame of data with a message number corresponding to a single message being conveyed by a plurality of informational frames; and

transmitting the informational frame of data with a frame sequence number representing the position of the informational frame in the plurality of informational frames which comprise the message.

5,386,413

FAST MULTILEVEL HIERARCHICAL ROUTING TABLE LOOKUP USING CONTENT ADDRESSABLE MEMORY

Anthony J. McAuley, Bloomfield; Paul F. Tsuchiya, Lake Hopatcong, and Daniel V. Wilson, Rockaway Township, Morris County, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 19, 1993, Ser. No. 34,444
Int. Cl.[6] H04Q *11/00*; H04L *12/56*
U.S. Cl. 370—54 **13 Claims**

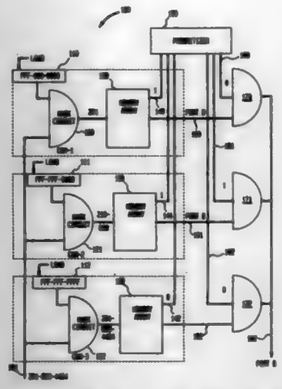
1. A memory for use in a switch in a communications network for implementing a multilevel hierarchical routing table comprising:

an input for receiving a destination address of a call or packet,

an output for outputting an output port entry indicating a particular output port of said switch for said call or packet,

a plurality of content addressable memories, each content addressable memory associated with one level of said multilevel hierarchical routing table and comprising:

a mask circuit for producing a masked destination address by masking out portions of said destination address of said call or packet received at said input which do not correspond to said one level of said routing table, and



a memory array for storing routing table entries comprising destination addresses and corresponding output port entries for said one level of said multiple hierarchical routing table and for outputting, when each non-masked portion of said masked destination address matches corresponding portions of a destination address of a routing table entry stored in said memory array, an output port entry contained in the matched routing table entry, and

a prioritizer for prioritizing said content addressable memories by selecting, for output from said output, the output port entry outputted from the content addressable memory associated with the lowest level in said hierarchy, in which a match occurred.

5,386,414

METHOD AND APPARATUS FOR DISTRIBUTING DATA TRAFFIC AMONG THE TRUNKS CONNECTING COMMUNICATION SWITCHES

Ching-Roung Chou, Naperville; Paul A. Rupsis, Winfield, both of Ill., and David H. Shur, Middletown, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Sep. 17, 1993, Ser. No. 123,317
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 **7 Claims**

1. A method for distributing a plurality of calls among a group of trunks connecting two packet switches, where said group of trunks is either less than or more than eight in number, the method comprising the steps of:

determining a number N of in-service trunks in the group of trunks;

creating a trunk group table of size N in each of the packet switches connected by the group of trunks, said trunk group table having integer indices from the number 0 to N-1 and corresponding to each of said integer indices is a respective trunk ID from the number 0 to N-1;

assigning an integer identification number to each call;

dividing each integer identification number by N to obtain a quotient and a remainder;



using said remainder as an index into said trunk group table to select a trunk of said group of trunks to carry each call; and

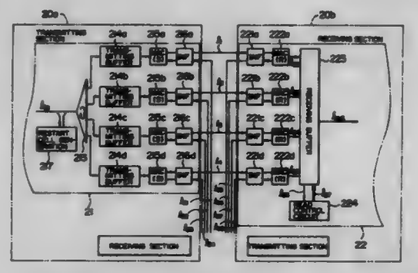
setting up each call on the selected trunk.

5,386,415

PACKET COMMUNICTION METHOD AND PACKET COMMUNICATION APPARATUS

Yutaka Ito, Yokohama; Makoto Mori, Hiratsuka, and Shinobu Gohara, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 7, 1991, Ser. No. 789,001
Claims priority, application Japan, Nov. 9, 1990, 2-302371
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 370—60 **10 Claims**



5. A packet communication system including a plurality of communication nodes linked by a transmission path, subscriber terminals being coupled to said communication nodes, information supplied from said subscriber terminals being formed into packets each having a header portion and an information portion, said packets being communicated between said plurality of communication nodes, said communication nodes including at least one transmitting and receiving packet communication apparatus for transmitting and receiving a plurality of transmission packets arranged in a serial form, said transmission path including at least one of physical and logical lines, said at least one packet communication apparatus comprising:

transmitting buffers for storing transmission packets, said transmitting buffers corresponding to respective lines of said transmission path;

write control circuit for managing the order of a plurality of transmission packets supplied from said subscriber terminal of transmitting side for every packet communication apparatus of transmission destination of communication node of transmission destination or for every call of subscriber terminal of transmission source and for exercising control so as to write said plurality of transmission packets into said transmitting buffers in appropriate order;

transmitting control circuits corresponding to said transmitting buffers and transmitting and receiving lines and incoming lines of said transmission path, whereby when an unoccupied packet arrives at one of the incoming lines of said transmission path and transmission packets are already stored in said transmitting buffers, the packets in said transmitting buffers are sent out onto respective transmitting and receiving lines of said transmission path;

receiving control circuits corresponding to respective transmitting and receiving lines of said transmission path, said receiving control circuits monitoring transmission packets sent out onto transmitting and receiving lines and determining the destination of transmission of the transmission packets;

a receiving buffer for temporarily storing packets found by said receiving control circuit to be directed to its own node; and

a read control circuit for reading out the received packets stored in said receiving buffer in the same order as the order of writing said received packets into said transmitting buffers based on information included in said header portions of said received packets and outputting said received packets thus read out onto outputting lines of said transmission path;

wherein said at least one packet communication apparatus further comprises a restart cell generation circuit for periodically generating restart cells regulating the order of reading the received packets for every packet communication apparatus of transmission destination of communication node of transmission destination or every call and for sending out said restart cells respectively to said lines; and

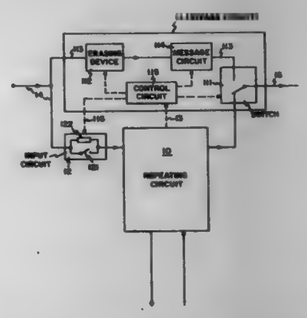
said read control circuit is so configured as to receive said restart cells transmitted from said transmitting packet communication apparatus, confirm the order of received packets read out from said receiving buffer, and readjust said order of readout.

5,386,416

REPEATER HAVING A BYPASS CIRCUIT FOR PASSING TIME DIVISION MULTIPLEX SIGNALS ALONG EVEN THOUGH SOME TIME SLOTS ARE NOT REINJECTED

Alois Neth, Ludwigsburg, Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Jun. 14, 1990, Ser. No. 538,108
Claims priority, application Germany, Jun. 16, 1989, 3919680
Int. Cl.[6] H04B *3/42, 3/46*
U.S. Cl. 370—13.1 **5 Claims**



1. A repeater in a transmission link for transmitting digital signals using time-division multiplexing, comprising:

a repeating circuit having an input and an output and being connected in the transmission link for branching out time slots to said output from an incoming time-division multiplex digital signal received at said input;

a bypass circuit connecting said input to said output so that the incoming time-division multiplex digital signal is passed from said input to said output onward along the transmission link if an alarm is triggered in the repeating circuit;

wherein said repeating circuit includes a re-injection circuit, in which the time slots to be branched are re-injected into the transmission link; and

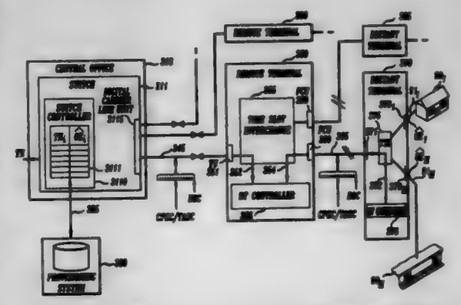
wherein the bypass circuit includes a control circuit and a circuit for transmitting a message, so that if an alarm is triggered in the repeating circuit, the control circuit causes the circuit to transmit in a time slot that is not re-injected a message in the transmission direction to one or a plurality of adjacent repeaters, on the basis of which the time slots not re-injected in the repeater can be re-injected in the adjacent repeater or adjacent repeaters.

5,386,417

METHOD AND APPARATUS FOR ESTABLISHING CONNECTIONS IN A COMMUNICATIONS ACCESS NETWORK

Thomas H. Daugherty, Succasunna, N.J.; Dennis L. DeBruler, Downers Grove, Ill.; Daniel S. Greenberg; David J. Hodgdon, both of Parsippany-Troy Hills Township, Morris County, N.J., and Douglas J. Murphy, Middletown, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation-in-part of Ser. No. 33,478, Mar. 18, 1993, abandoned. This application Aug. 27, 1993, Ser. No. 113,496
Int. Cl.[6] H04Q *11/04*; H04M *3/42*
U.S. Cl. 370—54 **25 Claims**



14. Apparatus, for use in an access network, for interconnecting a communications switch with endpoints served by said switch, said apparatus comprising

a plurality of access network nodes, individual ones of which include said endpoints,

a plurality of links interconnecting said switch with said access network nodes, and

connection-establishing means in each of said access network nodes which is operative in conjunction with the connection-establishing means in others of said access network nodes, for determining for each one of said endpoints an associated access network route from said switch to said one of said endpoints and for establishing connections from said switch to a particular one of said endpoints via the associated route in response to the placing of a call involving that endpoint,

said access network route associated with said each one of said endpoints being determined in response to said self-report information, said self-report information being information which a) originates from the particular access network node which includes said one of said endpoints, and b) reports the presence of said one of said endpoints in said particular access network node.

5,386,418

METHOD FOR SYNCHRONIZING SYNCHRONOUS DATA COMMUNICATION NETWORK AND COMMUNICATION DEVICE USED IN THE SYNCHRONOUS DATA COMMUNICATION NETWORK

Yasuko Komuro; Nobuo Yajima, and Hiroshi Yoshida, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

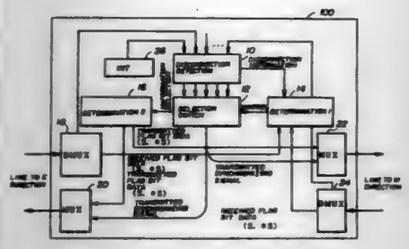
PCT No. PCT/JP92/01042, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO93/04545, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 18, 1992, Ser. No. 39,374

Claims priority, application Japan, Aug. 19, 1991, 3-206689

Int. Cl.[6] H04L *7/04*

U.S. Cl. 370—103 17 Claims



10. A communication apparatus used in a synchronous data communication network having a plurality of synchronizing signal sources, including at least one parent synchronizing signal source and at least one child synchronizing signal source, the apparatus comprising:

first means for receiving flag bit data indicating whether or not a timing of said one of the plurality of synchronizing signal sources related to information in a synchronizing signal transmitted via a line and including information related to one of said plurality of synchronizing signal sources can be used as a synchronizing signal source on each station which receives said information, said synchronizing information being included in the signal transmitted via the line;

second means for specifying an order of priority for selection of a synchronizing signal source;

third means for referring, upon occurrence of a predetermined event in any of said plurality of synchronizing signal sources, to the order of priority for selection of synchronizing signal source, the order being specified by said second means, and for selecting, on the basis of the flag bit data, a synchronizing signal source; and

fourth means for sending, in correspondence to the synchronizing signal source selected by the third means, flag bit data, indicating whether or not a timing of said one of the plurality of synchronizing signal sources related to synchronizing information from the communication apparatus originating the flag bit data can be used as a synchronizing signal source on each stations which receives said signal transmitted via said lines, to neighboring communication apparatuses.

5,386,419

MULTIPLEXER FOR AT LEAST TWO INDEPENDENTLY OPERATING SIGNAL SOURCES

Michael Behrens, and Michael Siebke, both of Nürnberg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1993, Ser. No. 107,545

Claims priority, application Germany, Aug. 20, 1992, 4227496

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—105.1 8 Claims

1. A multiplexer comprising

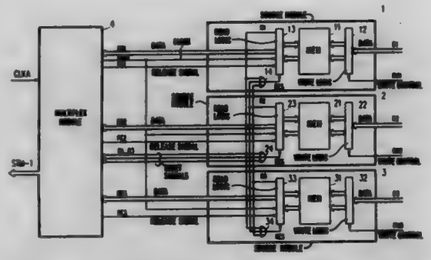
at least two independently operating source modules, each producing a respective source signal, which source signals are frame-structured, each source module comprising

a respective memory;

a respective write counter;

a respective read counter, the counters being arranged to operate independently of each other and to generate addresses for the memory when data are being written into and read from the memory; and respective supplying means for supplying a reset signal;

means for storing the respective source signals at the start of respective frames starting from predetermined respective initial addresses of the respective memories and for marking respective memory addresses of respective ends of the respective frames by means of respective marking bits;



means for reading the source signals from the respective memories of the source modules under control of a clock signal, the respective supplying means supplying the reset signals when the addresses marked by the respective marking bits are reached during reading of the respective frame; and

a multiplex module, for

combining the source signals from the means for reading into a multiplex signal in a predetermined manner and for supplying the clock signal.

5,386,420

CODING METHOD FOR CORRECTION AND DETECTION OF SKEWED TRANSITIONS IN PARALLEL ASYNCHRONOUS COMMUNICATION SYSTEMS

Miguel M. Blaum, San Jose, and Jehoshua Bruck, Palo Alto, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1992, Ser. No. 891,504

Int. Cl.[6] H03M *13/00*; H04L *7/04*

U.S. Cl. 371—1 13 Claims

13. In a system for transmitting codewords in the form of sequences of digital electrical signals asynchronously over n parallel communication channels without requiring acknowledgement of completion of transmission of each sequence, decoding apparatus capable of detecting and correcting skewed transitions which mix signals from codewords transmitted in sequence, comprising:

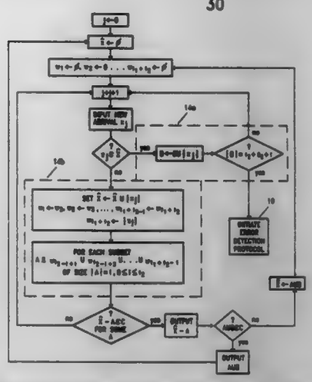
means for generating a first set of vectors from subsets of a vector having information bits and redundancy bits resulting from a transition received on any of said n parallel channels;

means for removing from each vector in said first set all redundancy bits to provide an estimate of information bits;

means for reencoding the bits remaining after the redundancy bits have been removed from each vector of said first set to create a second set of vectors corresponding to those of said first set;

means for unordering said reencoded remaining bits;

means for comparing each vector of said first set with a corresponding vector of said second set; and



means for outputting information bits corresponding to one of the vectors in said first set if and when it is the same as its corresponding vector in the second set.

5,386,421

IMAGE MEMORY DIAGNOSTIC SYSTEM

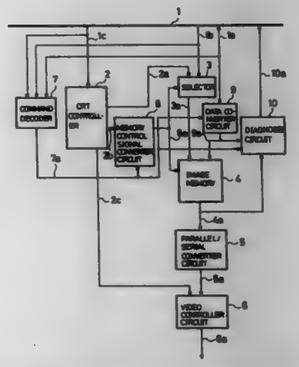
Yasuo Ishikawa, Kanagawa, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Continuation of Ser. No. 801,596, Dec. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 206,826, Jun. 15, 1988, abandoned. This application Mar. 16, 1994, Ser. No. 213,834

Claims priority, application Japan, Jun. 22, 1987, 62-154852

Int. Cl.[6] G11C *29/00*; G06F *11/22*

U.S. Cl. 371—21.2 1 Claim



1. A method of diagnosing an image memory for a display unit of a system which includes an image memory and a display controller responsive to a command from said system to generate a display address and write a set of data corresponding to a predetermined number of bits constituting an address area of said image memory set by said system to each address area of said image memory based on said display address and output said written data as a video signal, said method comprising the steps of:

writing said set of data to an area at a specified address of said image memory based on said display address while holding said data as diagnostic data in a data converter;

reading said written data as memory read data;

comparing said memory read data with said diagnostic data from said data converter in a diagnosis circuit; and

performing a predetermined error correction process if said memory read data and said diagnostic data are not in agreement.

5,386,422

ELECTRICALLY ERASABLE AND PROGRAMMABLE NON-VOLATILE MEMORY SYSTEM WITH WRITE-VERIFY CONTROLLER USING TWO REFERENCE LEVELS

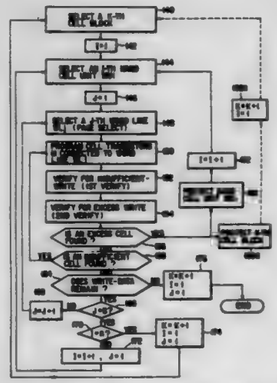
Tetsuo Endoh, Yokohama; Riichiro Shirota, Kawasaki; Kazunori Ohuchi; Ryouhei Kirisawa, both of Yokohama; Seiichi Aritome, Kawasaki; Tomoharu Tanaka, Yokohama, and Yoshiyuki Tanaka, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 851,286, Mar. 12, 1992, Pat. No. 532,699. This application Apr. 19, 1994, Ser. No. 229,761

Claims priority, application Japan, Mar. 12, 1991, 3-72424

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—21.5 2 Claims



1. A method for verifying an electrically erasable and programmable read only memory, said memory being divided into a plurality of memory cell blocks each including a plurality of cell units, each unit having a predetermined number of series-connected memory cell transistors, said method comprising the steps of:

(a) applying a first reference voltage to one of the memory cell transistors and a second reference voltage to each of the remaining memory cell transistors so as to check whether a first threshold voltage of said one of the memory cell transistors is greater than the first reference voltage and the first reference voltage is lower than the second reference voltage;

(b) selecting a second memory cell transistor after step (a); and

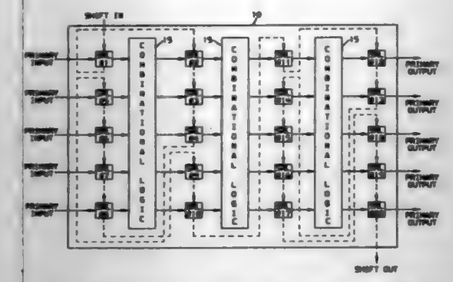
(c) applying the first reference voltage to said second memory cell transistor next to said one of the memory cell transistors and the second reference voltage to each of the remaining memory cell transistors so as to check whether a second threshold voltage of said second memory cell transistor is greater than the first reference voltage and said first threshold voltage of said one of the memory cell transistors is lower than the second reference voltage.

5,386,423

ORDERING SHIFT REGISTER LATCHES IN A SCAN RING TO FACILITATE DIAGNOSIS, TESTING AND ISOLATION

Catherine C. Koo; Benedicto U. Messina, both of Poughkeepsie, N.Y., and Jerry Saia, Knoxville, Tenn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 685,108, Apr. 15, 1991, abandoned.
This application Jun. 11, 1993, Ser. No. 75,906
Int. Cl.[6] H04B *17/00*
U.S. Cl. 371—22.3 7 Claims



1. A logic circuit having a testable scan string, said circuit comprising:

at least two combinatorial logic circuit blocks, one having a set of primary input signal lines and another block having a set of primary output signal lines;

a set of shift register latches, some of whose inputs are connected to said primary input signal lines and some of whose outputs are connected as said primary output signal lines, said latches being electrically configurable to operate either as a single shift register, or as individual latches for (a) receiving said primary input signals lines or (b) for supplying said primary output signal lines or (c) as intermediate latches for output and input between said logic circuit blocks, wherein the primary input signal line connections and the primary output signal line connections are distributed along said single shift register wherein at least some of said latches are connected to non-adjacent ones of said latches in said single shift register, and wherein at least one of said primary input signal lines and at least one of said primary output signal lines are logically connected only through said single shift register, and wherein said at least one primary input signal line is connected to said single shift register at a location from which said at least one primary input signal line can affect said at least one primary output signal line.

5,386,424

APPARATUS AND METHOD FOR TRANSMITTING INFORMATION BETWEEN DUAL REDUNDANT COMPONENTS UTILIZING FOUR SIGNAL PATHS

Kevin R. Driscoll, and Kenneth P. Hoyme, both of Grove, Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Mar. 31, 1993, Ser. No. 41,439
Int. Cl.[6] G06F *11/08*
U.S. Cl. 371—36 14 Claims

1. An apparatus for transmitting information from two identical information sources to first and second information receivers over four signal paths comprising:

a first information source for generating a first information signal;

a second information source for generating a second information signal identical to said first information signal;

first and second transmitters, coupled to said first information source and to respective first and second signal paths for receiving said first information signal and generating therefrom respective first and second transmitted signals for transmission over said first and second signal paths, respectively;

third and fourth transmitters, coupled to said second information source, and to respective third and fourth signal paths, for receiving said second information signal and generating therefrom respective third and fourth transmitted signals for transmission over said third and fourth signal paths, respectively;

first voter means, coupled to said first, second, third and fourth signal paths and to said first information receiver, for comparing predetermined pairs of said first, second, third and fourth transmitted signals to obtain a first comparison result, for determining a first preferred one of said transmitted signals based on said first comparison result, and for sending said first preferred one of said transmitted signals to said first information receiver; and

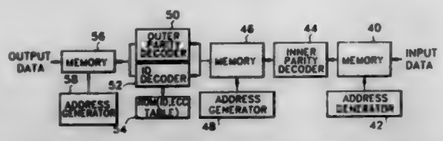
second voter means, coupled to said first, second, third and fourth signal paths and to said second information receiver, for comparing said predetermined pairs of said first, second, third and fourth transmitted signals to obtain a second comparison result, for determining a second preferred one of said transmitted signals based on said second comparison result, and for sending said second preferred one of said transmitted signals to said second information receiver.

5,386,425

TWO-DIMENSIONAL ERROR CORRECTING METHOD AND DECODER

Tae-eung Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Mar. 29, 1993, Ser. No. 38,638
Claims priority, application Rep. of Korea, Aug. 13, 1992, 92-14568
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.4 5 Claims



1. A two-dimensional error correction method comprising a coding step of adding an outer parity OP1 with respect to data of subblock in the vertical direction and adding an inner parity IP with respect to block identification data ID and subblock data and then said block identification data ID and outer parity OP1 in the horizontal direction, and a decoding step for said subblock data by means of both said outer parity OP1 and inner parity IP and for said block identification data ID by means of said inner parity IP, said two-dimensional error correction method further comprising the steps of:

storing a predictive-coded error correcting outer parity OP2 according to a recurrent pattern of said block identification data ID; and

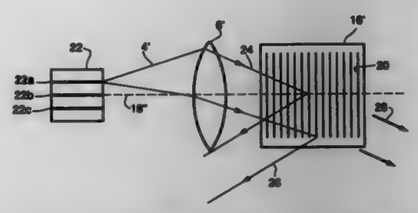
performing error correction during decoding of said block identification data ID, using said stored error correcting outer parity OP2.

5,386,426

NARROW BANDWIDTH LASER ARRAY SYSTEM

Ronald R. Stephens, Westlake Village, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 10, 1992, Ser. No. 943,161
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—20 35 Claims



1. A narrow bandwidth laser array system, comprising:

an array of optically isolated, independent lasers having predetermined emission spectra,

a reflection element that is at least partially reflective of radiation within said emission spectra,

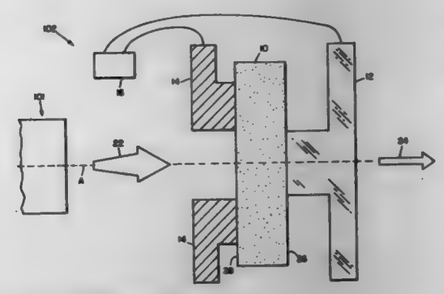
optical transmission means for directing at least a portion of the optical outputs from said lasers onto said reflection element, and for directing a vertically dispersed portion of the laser radiation reflected from said reflection element back onto said laser array wherein the bandwidth of said portion is limited by the height of said lasers so as to substantially reduce the bandwidth of the output radiation from said laser array.

5,386,427

THERMALLY CONTROLLED LENSES FOR LASERS

John J. Zayhowski, Pepperell, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 10, 1994, Ser. No. 195,361
Int. Cl.[6] H01S *3/04*
U.S. Cl. 372—34 21 Claims



1. An optical device comprising:

a) a lens material with two opposed faces for controlling the propagation of a beam of light in a predetermined path which is primarily dependent upon the shape and refractive index of the body, and having a shape or refractive index which is thermally sensitive;

b) a heat source for heating said lens material;

c) a heat sink for cooling said lens material; and

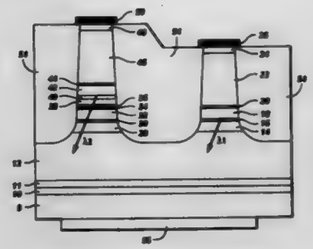
d) a controller for controlling said heat source and said heat sink so that the resultant propagation path of said light beam is controlled by the difference in temperature between said heat source and heat sink.

5,386,428

STACKED ACTIVE REGION LASER ARRAY FOR MULTICOLOR EMISSIONS

Robert L. Thornton, East Palo Alto, and Kevin J. Beernink, Mountain View, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1993, Ser. No. 146,651
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—50 12 Claims



1. A semiconductor structure, comprising:

a substrate,

a lower cladding layer over said substrate;

a lower active region over said lower cladding layer;

a lower etch stop layer over said lower active region;

an upper active region adjacent said lower etch stop layer;

an upper etch stop layer over said upper active region;

an upper cladding layer over said upper active region; and

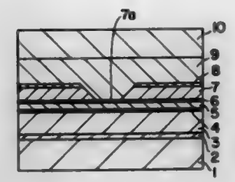
wherein said upper and lower cladding layers serve as cladding layers for both said upper and lower active regions.

5,386,429

LOW OPERATING CURRENT AND LOW NOISE SEMICONDUCTOR LASER DEVICE FOR OPTICAL DISK MEMORIES

Hiroki Naito, Suita; Masahiro Kume, Ohtsu; Hideyuki Sugiura, Takatsuki; Toru Takayama, Nara; Kunio Itoh, Uji; Isoi Ohta, Fujiidera, and Hirokazu Shimizu, Saita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1993, Ser. No. 40,655
Claims priority, application Japan, Mar. 31, 1992, 4-076710; Jun. 16, 1992, 4-156559; Sep. 24, 1992, 4-254537; Sep. 29, 1992, 4-259303; Oct. 19, 1992, 4-279907; Oct. 27, 1992, 4-288553; Dec. 11, 1992, 4-331498
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 6 Claims



1. A semiconductor laser device comprising a certain conduction type $Ga_{1-\gamma 1}Al_{\gamma 1}As$ first light guide layer and $In_{0.5}$

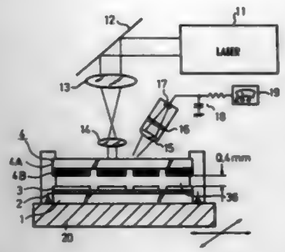
$(GaAl)_{0.5}P$ second light guide layer, an opposite conduction type $Ga_{1-Z}Al_ZAs$ current blocking layer formed on said second light guide layer and provided with a stripe-like window and a $Ga_{1-Y3}Al_{Y3}As$ cladding layer of said certain conduction type formed over the areas including said stripe-like window where said current blocking layer is not being formed, all successively formed one upon another on at least one principal plane of an active layer comprised of a $Ga_{1-X}Al_XAs$ layer, wherein relations of $Z>Y3>X\geqq 0$ and $Z>Y1$ are established among X, Y1, Y3 and Z that define the AlAs mole-fractions.

5,386,430

EXCIMER LASER PROCESSING METHOD AND APPARATUS

Yasuo Yamagishi; Kanae Shimizu; Daisuke Mizutani; Tamotsu Owada; Yoshikatsu Ishizuki, and Hideya Hashii, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 16, 1993, Ser. No. 92,498
Claims priority, application Japan, Jul. 20, 1992, 4-192446; Mar. 18, 1993, 5-058989
Int. Cl.[6] H01S *3/22*; B05D *3/06*; B29C *37/00*; B23K *26.00*
U.S. Cl. 372—57 24 Claims



1. An excimer laser ablation processing method for processing a resin film by irradiation of an excimer laser thereby, to form via holes therein by decomposition thereof comprising the steps of:

detecting an emission of light of a visible range caused during the decomposition of the resin during the processing to measure the intensity thereof; and

judging the endpoint of the processing from the changes in the intensity of light emission during the processing.

8. An excimer laser ablation processing apparatus for processing a resin film by irradiation of an excimer laser thereby to form via holes therein by decomposition thereof, comprising:

means for taking an image of an emission of light of a visible range caused during the decomposition of the resin during the processing;

means for identifying positions of light emission from the resin film;

means for comparing the identified positions of the light emission and respective design positions of the via holes to be formed in the resin film; and

means for using the comparison of the respective positions of light emission and of the design positions to inspect for the presence of defects.

5,386,431

REGENERATIVE AMPLIFIER LASER ARRAY

John Tulip, 11625 Edinboro Rd., Edmonton, Alberta, Canada T6G 1S2

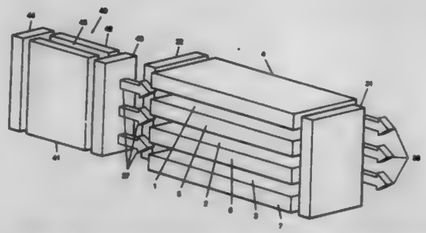
Continuation-in-part of Ser. No. 822,035, Jan. 14, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 72,111
Int. Cl.[6] H01S *3/08, 3/10, 3/098*
U.S. Cl. 372—68 17 Claims

1. A regenerative amplifier laser array comprising:

an array of slab lasers, each slab laser including a pair of spaced apart parallel electrodes forming a channel between them, each channel having first and second sides and first and second ends;

each channel having resonator mirrors positioned at the first and second ends, the resonator mirrors in combination with the electrodes forming phase related resonators in each of which propagating light in the laser walks from the first side to the second side of each of the channels, light from each of the slab lasers being taken from the second side of the respective channels;

a laser source of phase related laser beams one laser beam for each slab laser, the source of phase related laser beams being aligned with the array of slab lasers to provide phase



related light beams simultaneously to each first side of the slab lasers;

the source of phase related laser beams including plural waveguiding laser resonators having phase related output;

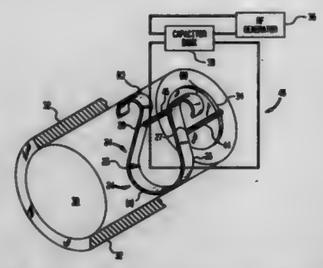
the plural waveguiding laser resonators each including first and second concentric waveguiding electrodes spaced to form a gap between them and first and second mirrors positioned at opposite ends of the gap, the electrodes and mirrors defining an array of open stable resonators forming part of a cylinder, the source of phase related laser beams providing phase related laser beams, one laser beam for each laser resonator.

5,386,432

RING LASER ANGULAR RATE SENSOR GETTER MOUNTING CLIP

Joseph P. Ficalora, Oak Ridge, and John H. Moody, Riverdale, both of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Mar. 28, 1994, Ser. No. 218,195
Int. Cl.[6] H01S *3/083*
U.S. Cl. 372—94 11 Claims



1. In a ring laser angular rate sensor, a getter mounting clip, comprising:

a pair of substantially S-shaped sides disposed in opposing spaced relation, said sides having corresponding inwardly curved ends and opposite corresponding outwardly curved ends;

the corresponding inwardly curved ends formed as a continuous section of the mounting clip for providing a first contact surface;

the corresponding outwardly curved ends providing second and third contact surfaces;

the mounting clip disposed within a ring laser angular rate sensor well, with the first, second and third contact surfaces exerting a retaining force against the well;

a getter affixed to the mounting clip; and

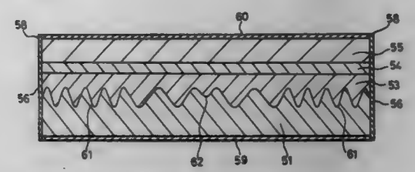
the configuration of the mounting clip being effective for inducing opposing RF currents when the getter is activated by an RF source, whereby heating of said mounting clip beyond retaining force relieving temperatures is inhibited.

5,386,433

SEMICONDUCTOR LASER INCLUDING PERIODIC STRUCTURES WITH DIFFERENT PERIODS FOR PRODUCING A SINGLE WAVELENGTH OF LIGHT

Yuji Ohkura, and Masatoshi Fujiwara, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 568,889, Aug. 17, 1990, Pat. No. 5,238,785. This application May 10, 1993, Ser. No. 58,371
Claims priority, application Japan, Aug. 18, 1989, 1-213553; Jun. 4, 1990, 2-146976; Jul. 17, 1990, 2-189840
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—96 2 Claims



1. A semiconductor laser including:

a semiconductor substrate of a first conductivity type, a light guide layer of a first conductivity type disposed on and contacting the substrate, an active layer disposed on the on and contacting the substrate, an active layer disposed on the light guide layer, and a cladding layer of a second conductivity type, opposite the first conductivity type, disposed on the active layer; and

first and second electrodes disposed on and in electrical contact with the substrate and the cladding layer, respectively, the semiconductor laser including first and second facets transverse to the light guide, active, and cladding layers, wherein thicknesses of one of the light guide, active, and cladding layers and one of an adjacent layer and the substrate vary so that first and second periodic structures are formed by an interface of the layer of varying thickness, the first periodic structure having a first period and being disposed remote from the first and second facets in a central part of the laser and the second periodic structure having a second period smaller than the first period, parts of the second periodic structure being disposed adjacent each of the first and second facets, sandwiching the first periodic structure.

5,386,434

INTERNAL MIRROR SHIELD, AND METHOD FOR PROTECTING THE MIRRORS OF AN INTERNAL GAS LASER

Gilbert E. Mandell, Mountain View, and Dale E. Crane, Pleasanton, both of Calif., assignors to Uniphase Corporation, San Jose, Calif.

Filed Feb. 12, 1993, Ser. No. 17,123
Int. Cl.[6] H01S *3/034*
U.S. Cl. 372—103 15 Claims

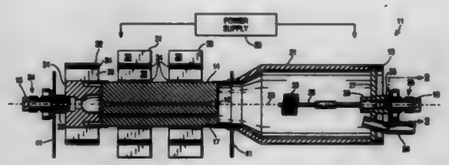
9. In a gas laser having an optical cavity,

(a) a component which includes a surface exposed to the optical cavity of said laser and from which particulate matter is expected to emanate;

(b) an optical element within said cavity having a face against which optical radiation of said laser impinges; and

(c) a barrier generally opaque to said particulate matter positioned between said component surface and the remainder of the optical cavity;

said optical element being a mirror of said laser positioned at the end of a generally closed tube containing a lasing active



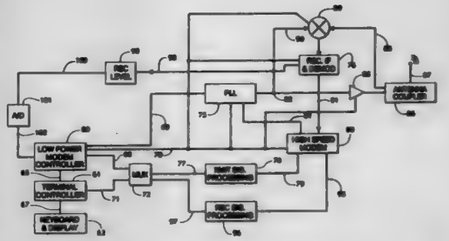
gas and located within said optical cavity for the generation of a beam of optical radiation on an optical axis of said laser, said mirror face being positioned internally of said tube, and wherein said component is a metallic mirror holder having an interior surface within said tube from which said particulate matter is expected to emanate; and said barrier is a sleeve through which said beam passes, said sleeve being positioned between said beam and said mirror holder interior surface adjacent said surface.

5,386,435

FREQUENCY HOPPING SPREAD SPECTRUM DATA COMMUNICATIONS SYSTEM

W. Burchall Cooper, Duluth; Kenneth P. Nelson, Norcross; Donald A. Jones, Alpharetta, and John W. Avery, Lawrenceville, all of Ga., assignors to Lxe, Inc., Norcross, Ga.

Continuation of Ser. No. 961,787, Oct. 15, 1992, Pat. No. 5,287,384. This application Oct. 29, 1993, Ser. No. 145,406
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[6] H04L *9/00*
U.S. Cl. 375—1 2 Claims



1. In a radio frequency data communication system of the type comprising at least one base station and a plurality of terminals, said system employing a media access protocol of the type that defines a plurality of discrete time slots generated locally at each of said plurality of terminals and at said base station, the improvement comprising in combination therewith:

a frequency hopping spread spectrum transmitter at said base station for transmitting an information signal for a predetermined hop period on each of a predetermined plurality of career frequencies in a predetermined sequence;

a first interval within each hop period and subsequent to transmission of said information signal, wherein during said first interval said base station transmits outgoing

messages addressed to specific terminals, said messages being of variable duration; and

a second interval within at least one of said hop periods, subsequent to said first interval, wherein during said second interval any of said terminals may transmit messages intended for said base station using a contention-free, discrete time slotted protocol.

5,386,436

SYNCHRONIZATION SYSTEM FOR USE IN DIGITAL TRANSMISSION SYSTEM

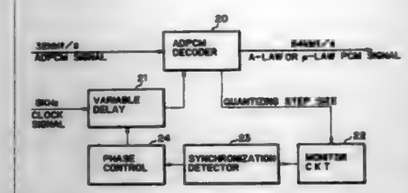
Shinichi Kawada; Keiichiro Hijino, both of Tokyo; Hiroshi Wada, Saitama, and Masahisa Iida, Kanagawa, all of Japan, assignors to Oki Electric Industry Co., Ltd. and Kokusai Denshin Denwa Co., Ltd., both of Tokyo, Japan

Filed May 7, 1992, Ser. No. 879,819

Claims priority, application Japan, May 10, 1991, 3-105553

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—106 **10 Claims**



1. A synchronization system for use in a digital transmission system in which an encoded digital transmission signal is transferred, wherein at least a portion of the bits of the encoded digital transmission signal have unique statistic characteristics, and wherein the encoded digital transmission signal received by a decoder within a digital receiving apparatus is subjected to a decoding process in units of samples on the basis of a synchronous input signal, comprising:

a digital transmitting apparatus for transmitting only the encoded digital transmission signal quantized with the use of an adaptive quantizer; and

wherein said digital receiving apparatus includes:

monitor means for monitoring a quantizing step size of an adaptive dequantizer for dequantizing said encoded digital transmission signal, said adaptive dequantizer being included in said decoder that receives the encoded digital transmission signal,

synchronization detection means for determining whether the digital transmission system is in the synchronous state based on an output of said monitor means; and

phase shift means for shifting a relative phase between the encoded digital transmission signal and said synchronous input signal, said shifting occurring in one or more bits of the encoded digital transmission signal in units of samples, when said synchronization detection means determines that the digital transmission system is not in the synchronous state.

5,386,437

PHASE-LOCKED LOOP CIRCUIT

Nobuyuki Yasuda, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 973,109

Claims priority, application Japan, Nov. 8, 1991, 3-321331

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—120 **20 Claims**

1. A circuit, comprising:

connecting means including circuit elements receiving a signal from a first and a second signal path, said first signal path being selectively operative;

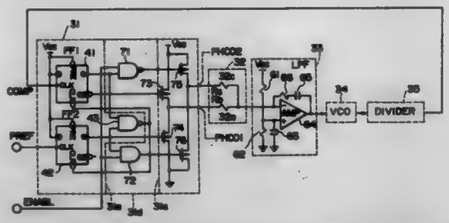
output means for supplying a signal to said connecting means;

control means for controlling said output means by making said first signal path selectively operative, said control means including means for receiving an enabling signal;

phase comparing means for comparing a phase of an input signal with a reference input, and for providing an input to said control means and said output means;

said output means comprising a first transistor pair and a second transistor pair, said first and second transistor pairs generating a phase error signal, said first and second transistor pairs arranged in a push-pull configuration;

said first transistor pair being connected to said control means, said second transistor pair being connected to said phase comparing means;



said first signal path comprising said control means and said first transistor pair;

said second signal path comprising said second transistor pair;

said first transistor pair includes a PMOS FET, and said control means includes a NAND gate for controlling said PMOS FET; and,

said first transistor pair includes an NMOS FET, and said control means includes an AND gate for controlling said NMOS FET.

5,386,438

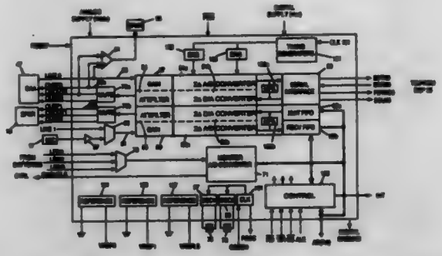
ANALOG FRONT END INTEGRATED CIRCUIT FOR COMMUNICATION APPLICATIONS

David G. England, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 14, 1993, Ser. No. 121,235

Int. Cl.[6] H04L *23/00*

U.S. Cl. 375—121 **11 Claims**



1. A communications analog front end for coupling to a personal computer through a digital signal processor and to a telephone network and microphone/speaker combination, said front end comprising:

a) a first set of analog/digital and digital/analog converter means for providing analog to digital and digital to analog conversions for voice communications;

b) a second set of analog/digital and digital/analog converter means for providing analog to digital and digital to analog conversions for data communications;

c) first and second oscillator means for selectively generating first and second signals, each having a predetermined frequency;

d) timing generator means for generating clocking signals based upon the frequencies of said first and second signals;

e) first rate generator means for selectively generating predetermined independently controlled first sample rates based upon said clocking signals, said independently controlled first sample rates for use by said first set of analog/-digital and digital/analog converter means;

f) second sample rate generator means for selectively generating predetermined independently controlled second sample rates based upon said clocking signals, said independently controlled second sample rates for use by said second set of analog/digital and digital/analog converter means;

g) control means for controlling a selection of one of said first and second pairs of analog/digital and digital/analog converter means, a selection of one of said first and second oscillator means, and a selection of one of said first and second sample rate generator means.

5,386,439

SPECTRAL SHIFT NUCLEAR REACTOR WITH IMPROVED EFFICIENCY

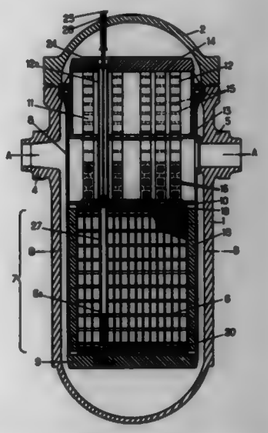
Claude Leroy, Lardy; Jean Paul Millot, Elancourt, and Eric Gonse, Bourg la Reine, all of France, assignors to Framatome, Courbevoie, France

Continuation-in-part of Ser. No. 865,312, May 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 531,786, Sep. 13, 1983, abandoned, and a continuation-in-part of Ser. No. 531,797, Sep. 13, 1983, abandoned. This application Dec. 30, 1986, Ser. No. 947,739

Claims priority, application France, Dec. 30, 1985, 85 19404

Int. Cl.[6] C21C *7/24, 3/22*

U.S. Cl. 376—209 **7 Claims**



1. A light water cooled and moderated reactor having a core comprising:

a plurality of vertical fuel assemblies immersed in light water and arranged for periodical replacement at intervals corresponding to operating cycles of the reactor;

control bars movable into and out of the core for controlling operation of the reactor; and

spectrum variation bars movable between a lower position where they are inserted in the core and displace water from the core and another position above the core,

wherein the spectrum variation bars each comprises a bundle of rods movable in guide tubes of a single fuel assembly, each rod containing a mixture of U235-depleted uranium and thorium, the depleted uranium content being less than 20% by weight.

5,386,440

BOILING WATER REACTOR

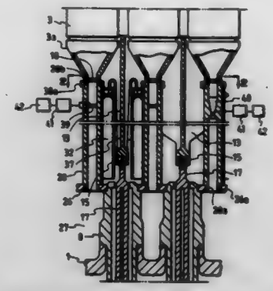
Shin-ichi Kashiwai, Hitachi; Osamu Yokomizo, Toukai; Akihito Orii, Hitachi; Koji Nishida, Hitachi; Toru Kanazawa, Hitachi, and Kumiaki Moriya, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1993, Ser. No. 675

Claims priority, application Japan, Jan. 10, 1992, 4-003013; Jun. 18, 1992, 4-159134

Int. Cl.[6] G21C *3/32*

U.S. Cl. 376—210 **25 Claims**



1. A boiling water reactor wherein a coolant is supplied to fuel assemblies in a reactor pressure vessel from a lower plenum beneath the fuel assemblies;

characterized in that a guide tube for the coolant to the fuel assembly is extended into said lower plenum in the vicinity of an upper end of a control rod driving mechanism housing of the reactor pressure vessel.

5,386,441

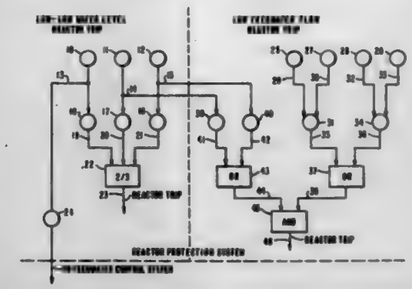
FAULT TOLERANT SIGNAL VALIDATION FOR FEEDWATER CONTROL SYSTEM

Lawrence E. Erin, Monroeville; William J. Catullo, Jr., Plum Boro; Richard E. Paris, Monroeville, and John M. Gallagher, Mt. Lebanon, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 400,837, Aug. 30, 1989, Pat. No. 5,192,493. This application Jun. 24, 1991, Ser. No. 720,039

Int. Cl.[6] G21C *7/36*

U.S. Cl. 376—216 **3 Claims**



1. A method for selecting an input signal for a control system of a controlled apparatus, comprising the steps of:

(a) receiving a plurality of redundant input signals and previously determined indications of quality for the plurality of redundant input signals from the controlled apparatus;

(b) comparing each of the redundant input signals with a

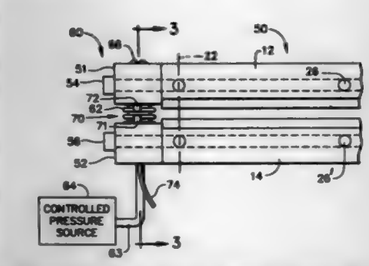
possible signal range to make a signal out-of-range determination when appropriate including consideration of the indications of quality;
(c) calculating differentials for all possible pairs of the redundant input signals;
(d) comparing each of the differentials calculated in step (c) with an acceptable differential range to make a differential out-of-range determination when appropriate;
(e) outputting an alarm when either of the signal out-of-range determination and the differential out-of-range determination is made for any of the redundant input signals and differentials; and
(f) selecting water level a median signal from among the plurality of redundant input signals.

5,386,442

METHOD AND APPARATUS FOR CONTROLLING THE LOAD ON DOUBLE CANTILEVER BEAM SENSORS

Thomas P. Diaz, San Martin, Calif.; Peter L. Andresen; William R. Catlin, both of Schenectady, N.Y.; Gary W. Contreras, San Jose, Calif.; Ronald E. De Lair, Schenectady, N.Y.; William D. Miller, San Jose, Calif.; Harvey D. Solomon, Schenectady, N.Y., and Daniel Weinstein, San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jun. 25, 1993, Ser. No. 83,140
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—245 **20 Claims**



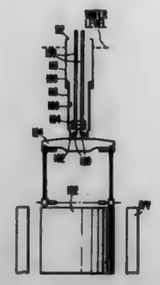
20. An apparatus for monitoring crack growth in a reactor pressure vessel or piping of a nuclear reactor, comprising:
a double-cantilever beam crack growth sensor comprising first and second cantilever beams and a crack formation zone, each of said first and second cantilever beams having one end joined to said crack formation zone;
hollow expandable means having a spring constant and having respective ends which are mechanically coupled to the other ends of said first and second cantilever beams, said hollow expandable means being expandable in a predetermined direction only in response to fluid pressure therein, said hollow expandable means exerting a load that urges the other ends of said first and second cantilever beams mutually apart, the magnitude of said load being dependent on the pressure inside said hollow expandable means and the spring constant of said hollow expandable means; and
displacement sensor means operatively coupled to said first and second spaced beam components for deriving signals corresponding to a mutual displacement of said beam components at a selected location.

5,386,443

SELF-EXPANDING WATERPROOF COVER FOR CRANE HOOK

Bengt I. Baversten, Wevatogue, and Adrian P. Wivagg, Tolland, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 27, 1993, Ser. No. 172,821
Int. Cl.[6] G21C *19/00*
U.S. Cl. 376—260 **6 Claims**



3. A nuclear reactor system comprising:
a reactor pressure vessel disposed in a reactor cavity, said reactor cavity including a separator pool which is separated from said reactor pressure vessel by a separator pool threshold;
an overhead crane disposed above said reactor cavity and arranged to lift and transport a device which is normally disposed in said reactor pressure vessel, from said reactor pressure vessel to said separator pool while said reactor cavity is filled to a predetermined depth with water, said overhead crane including:
a hook block which is suspended from said crane by cables;
a hook operatively connected with said hook block and engageable with said device;
a hook box, said hook box having a tubular portion which extends upwardly and which encloses said hook, said hook block and a portion of said cables;
an essentially tubular extension piece reciprocally disposed about said tubular portion, said extension piece having a diameter which is larger than the diameter of said tubular portion; and
a tube seal disposed between said extension piece and said tubular portion and effective to interconnect said extension piece and said tubular portion in a manner which produces a watertight seal therebetween, said tube seal being folded in a manner which defines a space in which air can collect, the collected air in combination with a difference in diameter between said cylindrical wall portion and said extension piece, producing a buoyancy which biases said extension piece upwardly with respect to said cylindrical wall portion when said hook box is immersed in the water and which extends said enclosure and prevents water from entering said hook box and contacting said hook or hook block.

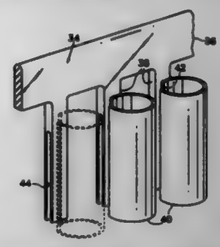
5,386,444

FUEL ROD LOADING APPARATUS

Harold B. King, Jr.; Eric B. Johansson, both of Wrightsville Beach, and John L. Harmon, Wilmington, all of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Jan. 15, 1993, Ser. No. 4,012
Int. Cl.[6] G21C *21/00, 19/00*
U.S. Cl. 376—261 **10 Claims**

1. An apparatus for loading nuclear fuel rods through a plurality of cells in a spacer grid of a fuel bundle comprising:
a handle having at least one elongate clip fixedly joined thereto and extending perpendicularly therewith;
a flexible tubular sleeve having a proximal end and an opposite distal end spaced along a longitudinal axis thereof, and a longitudinal split extending between said proximal and distal ends for allowing said sleeve to unfurl, said sleeve being colinearly fixedly joined to said clip, and said clip being configured to rigidly support said sleeve along said sleeve axis while allowing said sleeve to unfurl perpendicularly to said sleeve axis; and



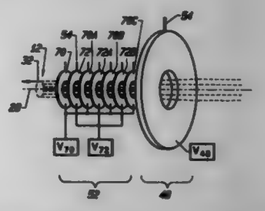
said sleeve being sized to position said sleeve distal end within one of said cells for allowing one of said fuel rods to be translated through said sleeve within said one cell, with said sleeve preventing scratching of said fuel rod by said one cell.

5,386,445

METHOD AND APPARATUS FOR ELECTRON BEAM FOCUSING ADJUSTMENT BY ELECTROSTATIC CONTROL OF THE DISTRIBUTION OF BEAM-GENERATED POSITIVE IONS IN A SCANNING ELECTRON BEAM COMPUTED TOMOGRAPHY SCANNER

Roy E. Rand, Palo Alto, Calif., assignor to Imatron, Inc., San Francisco, Calif.

Filed Dec. 14, 1993, Ser. No. 166,545
Int. Cl.[6] H01J *35/06*
U.S. Cl. 378—10 **15 Claims**



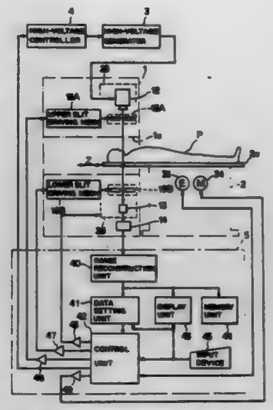
1. A mechanism for focusing an electron beam generated in a vacuum housing chamber having an upstream defocusing region wherein a first force due to electron space-charge expands and de-focuses the electron beam, and having a downstream focusing region wherein a second force due to neutralization of said space-charge and due to said electron beam's self-magnetic field converges the electron beam, the electron beam travelling in a downstream direction defining a beam axis, the mechanism comprising:
a positive ion electrode, disposed downstream from a generator of said electron beam substantially coaxially with said electron beam, said electrode being coupled to a positive potential that creates an axial field controlling any upstream migration through said electrode of positive ions formed downstream;
said positive potential determining an axial boundary location separating said upstream and downstream regions, for which location effects of said first force and said second force are substantially equal;
wherein essentially zero external focus force is required to focus said electron beam.

5,386,446

POSITIONAL ADJUSTMENT OF RESOLUTON IN RADIATION CT SCANNER

Hideki Fujimoto, Otawara, and Yoshinori Manabe, Otawara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 6, 1993, Ser. No. 86,206
Claims priority, application Japan, Jul. 6, 1992, 4-178605; Aug. 5, 1992, 4-208638
Int. Cl.[6] A61B *6/00*
U.S. Cl. 378—20 **15 Claims**



1. A radiation computed tomography scanner by which a computed tomography image of an object to be examined is obtained by a helical scan, resolution of the computed tomography image being affected by a resolution adjustment parameter, the scanner comprising:
a couch for supporting the object having a body axis, said object being examined along a direction of the body axis;
a radiation source for emitting radiation toward the object laid on the couch so that the radiation is transmitted through the object;
means for detecting the radiation transmitted through the object;
means for driving the radiation source and the couch which are relatively rotatable with respect to each other and relatively linearly movable with respect to each other along the direction of the body axis in order to perform the helical scan; and
means for controlling the resolution adjustment parameter simultaneously with performing the helical scan.

5,386,447

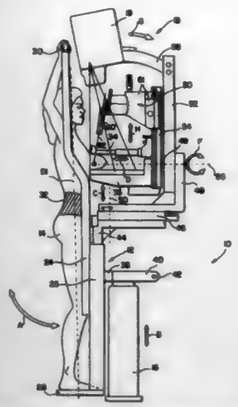
MAMMOGRAPHIC SCREENING AND BIOPSY APPARATUS

Bernard W. Sleezek, Boulder, Colo., assignor to Fischer Imaging Corporation, Denver, Colo.

Filed Sep. 23, 1992, Ser. No. 949,731
Int. Cl.[6] A61B *6/04*
U.S. Cl. 378—37 **13 Claims**

1. An apparatus for use in performing medical procedures on breasts of a patient comprising;
frame means for supporting said patient including at Least one opening through which said patient's breasts are permitted to protrude;
imaging means for providing a radiographic image of said patient's breasts, the imaging means including transmitting means for transmitting a beam through said patient's breasts and receiving means for receiving at least a portion of said transmitted beam passing through said patient's breasts; and

first movement means for providing relative movement between said frame means and said imaging means so as to



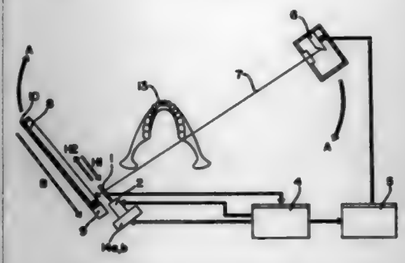
move between a first relative position for imaging a first breast of said patient and a second relative position for imaging a second breast of said patient.

5,386,448

METHOD FOR IMAGING AN OBJECT BY MEANS OF A PANORAMIC APPARATUS EQUIPPED WITH EXPOSURE AUTOMATICS

Erkki Tanninsalo, Turku, and Tuomas Kyllönen, Espoo, both of Finland, assignors to Orion-Yhtyma Oy, Helsinki, Finland

Filed Jun. 7, 1993, Ser. No. 72,917
Claims priority, application Finland, Jun. 12, 1992, 922733
Int. Cl.[6] H05G *1/44*
U.S. Cl. 378—38 **16 Claims**



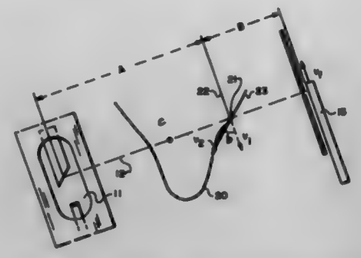
1. A method for imaging a desired object by using a panoramic x-ray radiography apparatus equipped with exposure automatics, the apparatus including an x-ray generator, an x-ray tube emitting a cone of rays, and an image receptor with its holder as well as at least one radiation dose measuring detector for detecting the cone of rays on that side of said receptor which is directed towards the x-ray tube, characterized in that the detecting of the cone of rays which has passed through the object, for the determination of the exposure value, is carried out during imaging at least at one predetermined point of several points positioned at different heights in the cone of rays and that said detection is performed at a moment when the cone of rays strikes the object to be examined or a corresponding object, which is determined on the basis of the distance of travel of the image receptor.

5,386,449

METHOD AND A DEVICE FOR CARRYING OUT CONSTANT ENLARGEMENT IN PANORAMIC TOMOGRAPHIC X-RAY PHOTOGRAPHY

Matti Wahlstrom, Helsinki, Finland, assignor to Orion-Yhtyma Oy, Finland

Filed Jan. 7, 1994, Ser. No. 178,969
Claims priority, application Finland, Jan. 8, 1993, 930075
Int. Cl.[6] A61B *6/14*
U.S. Cl. 378—38 **4 Claims**



4. A device for carrying out constant enlargement in the panoramic X-ray photography of a patient, the device comprising a suport arm (10) rotatably mounted on bearings, an X-ray source (11) and an image recorder being attached to the opposite ends of the support arm, motors (51–54) with movement transmitting member for rotating the support arm and for conveying the image recorder, and a processor (70) provided with a memory (71) for controlling control devices (61–64) of the motors (51–54), characterized in that the approximal form of a layer to be photographed is recorded in the memory (71) of the processor before the photographinig, and that the processor (70) is adapted to control the driving motors (54) of the image recorder so that the speed of the recorder follows the formula:

$$V_f=((A+B)/A)\times V_1\times 1/\cos(b);$$

where

V_f is the speed of the recorder,

A is the distance of the spot to be photographed from the focus of the X-ray source,

B is the distance of the spot to be photographed from the image recorder,

V_1 is a component of the propagation speed of the intersection of an X-ray beam and the spot to be photographed which is perpendicular to the X-ray beam, and

b is the angle between the tangent of the spot to be photographed and the normal of the x-ray beam.

5,386,450

X-RAY PHOTOGRAPHING SYSTEM

Masahiro Ozawa, Tochigiken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

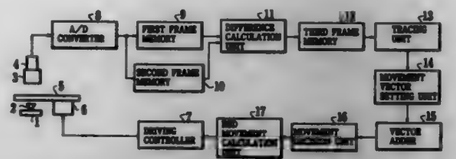
Filed Aug. 19, 1993, Ser. No. 108,301
Claims priority, application Japan, Aug. 21, 1992, 4-222834
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.2 **24 Claims**

1. An X-ray photographing system for emitting X rays from X-ray emitting means toward a patient injected with a contrast medium, moving the patient and X-ray emitting means relative to each other along the flow of the contrast medium, and providing images of a wide area of blood vessels of the patient, comprising:

tracing means for tracing trace points each corresponding to an end of an objective blood vessel according to image concentration data of images picked up at a predetermined relative position of the patient and X-ray emitting means;

movement vector setting means for setting a movement vector for each of the trace points;

movement decision means for selecting the largest one of the movement vectors and determining whether or not the selected vector extends beyond a zone defined around the start of the corresponding trace point;



movement calculation means for calculating relative movements of the patient and X-ray emitting means according to the selected vector when said movement decision means determines that the selected vector extends beyond the zone; and

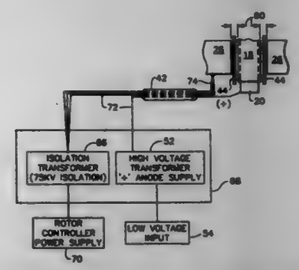
driving control means for relatively driving the patient and X-ray emitting means according to the calculated relative movements.

5,386,451

ANODE POTENTIAL STATOR DESIGN

Steven D. Hansen, Port Washington, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Aug. 30, 1993, Ser. No. 113,009
Int. Cl.[6] H01J *35/10*
U.S. Cl. 378—131 **3 Claims**



1. A rotating X-ray tube having an anode assembly and a cathode assembly, the x-ray tube comprising:

a stator and rotor assembly having an air gap between the stator and rotor;

means for operating the stator at anode potential to improve efficiency of the stator and rotor assembly by reducing the air gap to a length of approximately 0.050 inches.

5,386,452

METHOD AND APPARATUS FOR HELICAL SCAN IMAGING IN X-RAY COMPUTED TOMOGRAPHY

Yusuke Toki, Utsunomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 784,223, Oct. 30, 1991, Pat. No. 5,224,135. This application May 24, 1993, Ser. No. 64,936
Claims priority, application Japan, Nov. 1, 1990, 2-293595
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[6] A61B *6/03*
U.S. Cl. 378—146 **20 Claims**

1. An X-ray computed tomography (CT) apparatus for carrying out a helical scan imaging, comprising:

input means for entering a desired imaging region, the desired imaging region having slice planes located at ends of the desired imaging region;

a bed plate for supporting a body, including a body axis, to be examined along a direction of said body axis;

an X-ray source for irradiating X-rays on the body to be examined on the bed plate, the X-ray source and the bed plate being relatively rotatable with respect to each other at a predetermined angular speed and relatively linearly movable with respect to each other along the direction of the body axis of the body to be examined;

a detector for detecting the X-rays irradiated by the X-ray source and penetrated through the body to be examined;

data collection means for collecting data from the X-rays detected by the detector according to the desired imaging region entered by the input means;

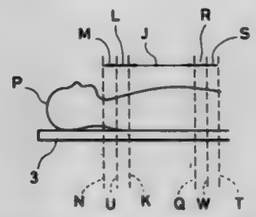


image reconstruction means for reconstructing tomographic images according to the data collected by the data collection means; and

control means for controlling a relative linear motion of the X-ray source and the bed plate according to the desired imaging region entered by the input means such that the X-ray source and the bed plate are relatively linearly moved through a distance covered by a scanning region appropriate for the data collection means to collect the data required by the image reconstruction means to reconstruct the tomographic images for the desired imaging region, the scanning region including the desired imaging region and supplementary interpolation data regions, each of the supplementary interpolation data regions being located at the ends of the desired imaging region and utilized in carrying out interpolations for deriving data in the desired imaging region.

5,386,453

IMAGING AND TREATMENT APPARATUS HAVING A FLOOR-MOUNTED GUIDING TRACK

Larry E. Harrawood, Sandy, and James R. Harvey, Salt Lake City, both of Utah, assignors to Diasonics, Inc., Milpitas, Calif.

Filed May 12, 1992, Ser. No. 881,771
Int. Cl.[6] H05G *1/02*
U.S. Cl. 378—196 **53 Claims**

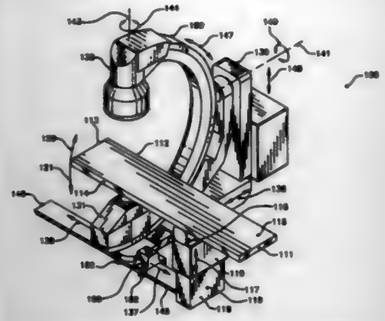
1. An apparatus comprising:

a. support means for supporting a subject on a surface thereof, said support means having at least one axis of rotation;

b. imaging means for imaging said subject; and

c. guide means coupled with said imaging means for allow-

ing relative movement of said imaging means about said support means, said guide means aligned with a centerline



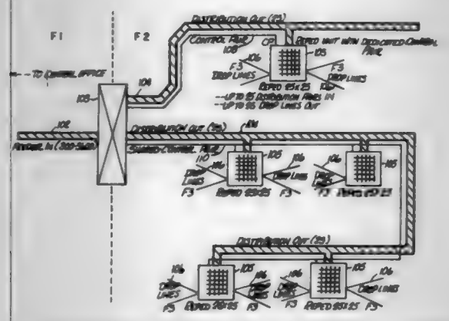
of said surface and in a plane which is substantially parallel to and beneath said surface of said support means.

5,386,454

REMOTELY CONTROLLED MULTIPLE PAIR TELEPHONE PEDESTAL/BUILDING TERMINAL

Whitney E. Childs-Goodrich, Louisville, and William S. Stevens, Berthoud, both of Colo., assignors to Remote Switch Systems, Inc., Loveland, Colo.

Filed Aug. 18, 1993, Ser. No. 108,972
Int. Cl.[6] H04M *1/24, 3/22*
U.S. Cl. 379—27 **6 Claims**



4. A remotely controlled telephone distribution network comprising:

a plurality of terminal boxes, each of the terminal boxes providing non-blocking connectivity between any selected unassigned pair of a plurality X of distribution pairs of lines and any selected pair of a plurality Y of drop pairs of lines, each of the terminal boxes comprising a switching matrix comprising a plurality X of distribution switch blocks, each one of said plurality X of distribution switch blocks including a rotary contact arm having a pair of shorting contacts thereon, each one of said plurality X of distribution switch blocks further including a stationary printed circuit board having a pair of contact rings connected to an associated one of said plurality X of distribution pairs of lines and having a plurality Y of pairs of drop contact pads connected to associated ones of said plurality Y of drop pairs of lines, each one of said plurality X of distribution switch blocks comprising a rotating stepper motor coupled to said rotary contact arm for incrementally moving said rotary contact arm with respect to said plurality Y of pairs of drop contact pads such that electrical contact is made between the associated one of said plurality X of distribution pairs of lines and a selected one of said plurality Y of drop pairs of lines; and

a single control pair of lines coupling each one of the plurality of terminal boxes of the distribution network to a remotely located central office controller, the single control pair of lines being operative for conveying operating power and control commands from the central office controller to the plurality of terminal boxes;

each one of the plurality of terminal boxes including a control pair contention circuit, coupled to said single control pair of lines, each control pair contention circuit being responsive to energization of the single control pair of lines for causing a selected one of the plurality of terminal boxes of the distribution network to become active and for causing the other terminal boxes of the distribution network to become inactive;

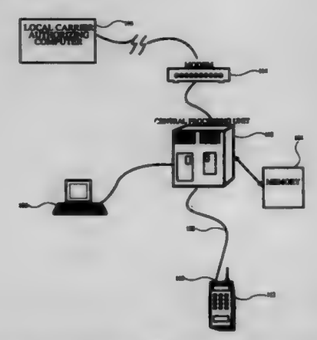
each one of the plurality of terminal boxes including control circuit means, the control circuit means of the active one of the plurality of terminal boxes being responsive to commands from said central office controller for selectively actuating the plurality X of distribution switch blocks of that active terminal box.

5,386,455

SYSTEM AND METHOD FOR AUTOMATIC ACTIVATION OF CELLULAR TELEPHONES

Gershon N. Cooper, Encino, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.

Filed Jan. 4, 1994, Ser. No. 177,275
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—58 **3 Claims**



1. A system, interacting with an activating computer of a local cellular telephone carrier and a cellular telephone unit, for the automatic remote activation of the cellular telephone with the carrier, comprising:

a central processing unit containing and operating in accord with a control program, said central processing unit further having in a memory means, a plurality of hardware and firmware drivers having, respectively, the operating circuitry and commands necessary for controlling a selected cellular telephone, said control program operating to select a desired one pair of said hardware and firmware drivers for activation programming of the cellular telephone;

input means connected to said central processing unit, for manually entering data thereinto;

cable means connecting said central processing unit to the Input/Output data interface bus port of the cellular telephone unit for transferring data therebetween;

modem means connecting said central processing unit with the activating computer of the selected carrier for transferring data therebetween,

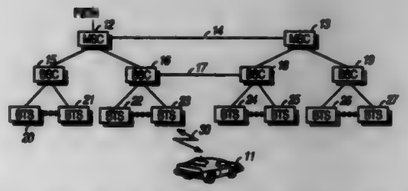
said control program in said central processing unit transfers data received manually from said input means and from the cellular telephone to the activating computer of the selected carrier, and for receiving data from the activating computer of the selected carrier and transferring the received data to the cellular telephone in accord with said selected pair of said hardware and firmware drivers for activation programming of the cellular telephone.

5,386,456

METHOD OF REDUCING AUDIO GAP IN DOWNLINK DURING HANDOFF OF CELLULAR RADIOTELEPHONE

Steven V. Schatz, McHenry; Thomas W. Ritchie, Arlington Heights; Barry J. Merich, Schaumburg; Jeffrey D. Bonta, Arlington Heights, and Akingbade Akinniy, Mundelein, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 25, 1993, Ser. No. 81,895
Int. Cl.[6] H04M *11/00*; H04Q *7/00*
U.S. Cl. 379—60 **6 Claims**



1. A method of reducing an audio gap in a signal connection with a communication unit during handoff in a cellular communication system, such method comprising the steps of: providing a temporary signal connection with the communication unit from a mobile switching center (MSC) of a source base site, through the source base site to a handoff target base site; establishing a trunk connection from the MSC of the source base site to a MSC of the target base site; interconnecting, at the target base site, the temporary signal connection, a signal path extending the trunk connection from the MSC of the target base site to the target base site, and the communication unit; and re-routing the signal connection with the communication unit through the trunk connection.

5,386,457

METHOD AND APPARATUS FOR RESOLVING CONTENTION BETWEEN MULTIPLE BASE UNITS DURING A CALL SETUP IN A PUBLIC CORDLESS TELEPHONE SYSTEM

George P. Cotsoneas, Freehold; Kenneth Kaziuke, Jackson; Dale E. Lynn, Freehold, and Edwin A. Muth, Red Bank, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

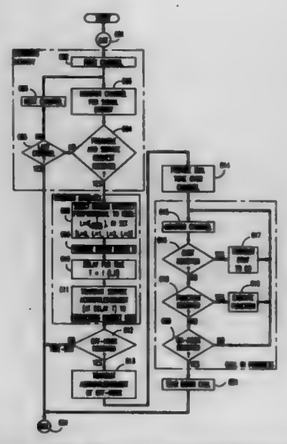
Continuation of Ser. No. 704,516, May 23, 1991, abandoned.
This application May 28, 1993, Ser. No. 70,003
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—61 **24 Claims**

1. A cordless telephone base unit for operation over a plurality of frequency channels in a public cordless telephone system, the base unit being connectable to a telephone line for communicating with a central office and the telephone system including at least one cordless handset unit for generating a service request signal over any one of the plurality of frequency channels for establishing communications with the base unit, the base unit comprising:

means for receiving the service request signal from the handset unit over a selected one of the plurality of frequency channels selected by the handset unit, the service request signal including an identification code that is unique to the handset unit;

means for generating a service request acknowledge signal over the selected one of the plurality of frequency channels;

means for generating a plurality of time delays on the selected one of the plurality of frequency channels for use by the base unit in responding to the handset unit, in response to reception of the service request signal from the handset unit, the base unit generating the service request acknowledge signal and including therein a base unit identification code and the identification code received in the service request signal from the handset unit for responding directly to the handset unit after any one of the plurality of time delays;



assigning means for designating a specific one of the plurality of time delays after which the base unit responds to the handset unit; and

means for establishing a dedicated communications link with the handset unit over the selected one of the frequency channels, the base unit being unresponsive to all communication attempts unaccompanied by the identification code unique to said handset unit.

5,386,458

SYSTEMS AND METHODS FOR OPERATING DATA CARD TERMINALS FOR TRANSACTION AUTHORIZATION

Parameswaran B. Nair, Acworth; Kumar S. Choudhuri, Kennesaw; James H. Hamilton, Lawrenceville; Gregory A. Philmon, Loganville, and James T. Stills, Atlanta, all of Ga., assignors to National Bancard Corporation, Suarise, Fla.

Division of Ser. No. 819,327, Jan. 10, 1992, Pat. No. 5,334,823.
This application Nov. 5, 1993, Ser. No. 148,831
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—91 **48 Claims**

1. A method for providing electronic authorizations in connection with a proposed transaction associated with a data card presented by a cardholder to a merchant utilizing a data card terminal, comprising the steps of:

(1) automatically attempting to connect the terminal for communications via a first telecommunications link to a transaction host processing computer system;

(2) at the transaction processing host computer system, attempting to establish a host/authorization source telecommunication link to an authorization source computer system corresponding to the card presented;

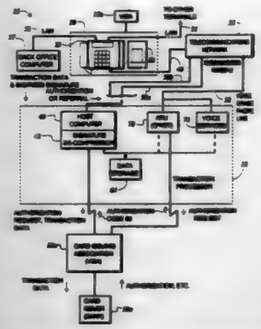
(3) at the transaction processing host computer system, in response to establishment of the host/authorization source telecommunication link with the authorization source computer system, providing information associated with the data card and the proposed transaction amount to the authorization source computer system;

(4) at the transaction processing host computer system,

receiving authorization indicia from the authorization source computer system as remotely obtained authorization indicia;

(5) at the transaction processing host computer system, in response to failure of establishment of the host/authorization source telecommunication link with the authorization source computer system, determining whether to authorize the transaction by providing a transaction processor authorization indicia;

(6) in response to receipt of the remotely obtained authorization indicia from the authorization source computer system or the transaction processor authorization indicia, providing the authorization indicia to the terminal via the first telecommunication link;



(7) in response to failure to connect the terminal to the transaction processing host computer system or receipt of a call me signal provided by the transaction processing host computer system, automatically attempting to connect the terminal with an audio response unit (ARU) via a second telecommunications link;

(8) in response to connection of the terminal to the ARU, providing information associated with the data card and with the proposed transaction in the form of data signals to the ARU; and

(9) providing an audible authorization approval code received from the ARU to the merchant.

5,386,459

METHOD OF DEFINING OPERATION OF SWITCHING SYSTEM PERIPHERALS

Ron C. Veeneman, Carleton Place; Sonya G. Fullarton, Ottawa; Dana C. Peters, Nepean; Michael C. Rehder, Kanata; K. Timothy Rose, Nepean; Jeff J. Tranter, Kanata, and Andrew J. Weatherson, Carp, all of Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Apr. 2, 1993, Ser. No. 41,955

Claims priority, application Canada, Apr. 3, 1992, 2065131

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—93 **10 Claims**

1. A method of defining the operation of switching system peripherals comprising:

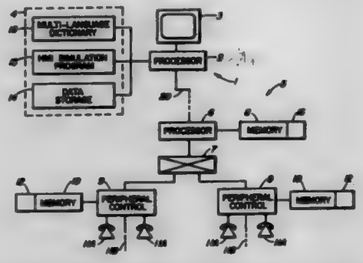
(a) storing a generic software program for operating all peripherals of a particular class in a peripheral controller of a switching system;

(b) storing at least one table of data for access by said program for defining operating parameters of a particular peripheral in the peripheral controller;

(c) modelling a prototype of said peripheral in a remote host system by creating a human-machine-interface simulating said peripheral;

(d) storing a control table of data corresponding to said modelled prototype in a memory of said host system; and

(e) downloading said control table into said at least one table, whereby operation of said peripheral is controlled by said



generic software program and the data in said at least one table.

5,386,460

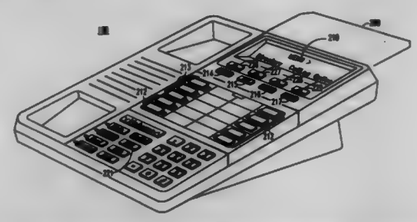
FEATURE CONFIGURABLE TELEPHONE TERMINAL

Edward W. Boakes, Middletown; Kathleen J. Chylinski, Bridgewater, and Susan L. Tuttle, East Windsor, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jan. 4, 1993, Ser. No. 426

Int. Cl.[6] H04M *1/56, 1/27;* **G09G** *3/20*

U.S. Cl. 379—96 **10 Claims**



3. An arrangement for configuring a telephone terminal for accessing selectable features at the telephone terminal, the arrangement comprising:

means for grouping features available at the telephone terminal into separate modules stored in a memory in the telephone terminal and selectable by a user at the telephone terminal;

means for retrieving from the memory a set of information codes for presenting on the telephone terminal, the information codes being representative of each module selectable at the telephone terminal;

means for configuring selected information codes to be accessible in response to actuating an associated local switch;

means for providing access at the telephone terminal only to features corresponding to the selected information codes; and

means for initially, configuring the telephone terminal with a first module, this first module comprising a call log module which includes a set of predetermined basic features available at the telephone terminal, said basic features being directly accessed in response to a single actuation of said associated local switch.

5,386,461

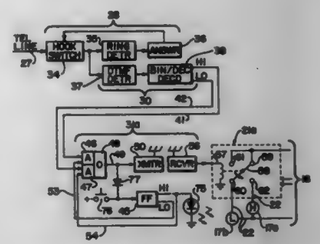
TELEPHONE OPERATED HEATING, VENTILATING AND/OR AIR CONDITIONING

Richard R. Gedney, 159 Bradley Corners Rd., Madison, Conn. 06443

Filed Nov. 8, 1993, Ser. No. 148,730

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—102 **20 Claims**



1. Apparatus for selecting the temperature of a space in a building having an HVAC, from a standard telephone located outside of the building remotely from the building by means of dual tone multiple frequency (DTMF) signals transmitted over common carrier telephone lines, consisting essentially of:

telephone connection means, including a ring detector, an answering circuit and a hook switch, for connection directly to common carrier telephone lines and operative in response to a telephone call directed thereto for answering said call;

a tone decoder connected to said telephone connection means, responsive to DTMF signals received thereat for providing a first selected one of a plurality of command signals indicative of a command for a first temperature in response to a first combination of said DTMF signals and for providing a second selected one of said plurality of command signals indicative of a command for a second temperature in response to a second combination of said DTMF signals;

a toggle system including a bistable device operable in either one of two stable states in response to an input signal provided thereto to assume the opposite one of said stable states, said toggle system providing a switching signal in response to said first selected signal concurrently with said bistable device being in a first one of said stable states and in response to said second selected signal concurrently with said bistable device being in a second one of said stable states, said switching signal being provided as an input signal to said bistable device;

a bistable switch having a first conductive path enabled and a second conductive path disabled when said bistable switch is in a first one of two stable switch states and having said first conductive path disabled and said second conductive path enabled when said bistable switch is in a second one of said two stable switch states, said bistable switch switching from either of said two stable switch states to the other of said two stable switch states in response to an input signal provided thereto;

a first thermostatic switch for connection through said first conductive path to the HVAC to cause said HVAC to operate at a first temperature set point, and a second thermostatic switch for connection through said second conductive path to the HVAC to cause said HVAC to operate at a second temperature set point; and

means for communicating said switching signal to said bistable switch as an input signal thereto, whereby in response to DTMF signals indicative of a command for said first temperature said bistable switch will remain in or assume said first bistable switch state and in response to DTMF signals indicative of a command for said second temperature said bistable switch will remain in or assume said second bistable switch state, thereby to select the temperature set point for the HVAC.

5,386,462

VENDING SYSTEM WITH A GIVEN NUMBER OF COMPARTMENTS

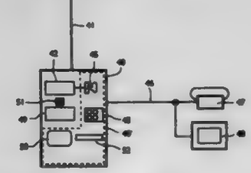
Hans Schlamp, Munich, Germany, assignor to Accumulata Verwaltungsgesellschaft mbH, Germany

Continuation of Ser. No. 956,855, Oct. 2, 1992, abandoned. This application May 10, 1994, Ser. No. 240,389

Claims priority, application Germany, Oct. 2, 1991, 4132856; Oct. 17, 1991, 4134410

Int. Cl.[6] H04M *11/00;* **G06F** *15/20;* **H04N** *7/14*

U.S. Cl. 379—106 **17 Claims**



1. A vending system located in a room, comprising:

a compartment unit including

compartments, each of the compartments having a locking device and a door that can be locked by the locking device and storing goods to be purchased, and each of the compartments assigned an offer number and a price for the goods contained therein; and

a computing unit connected to the locking device of each of the compartments, and assigning the offer number and the price to each of the compartments containing the goods using at least one of text and visual information; and

a presentation unit connected to the computing unit, the presentation unit including

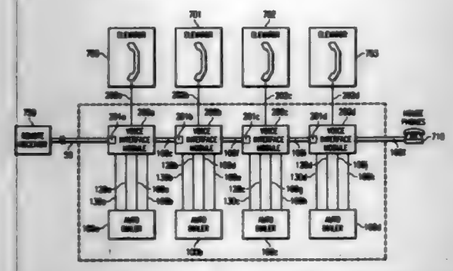
at least one memory device connected to the computing unit and storing the at least one of text and visual information about the goods stored in the compartments;

communication means for communicating the offer number and the price to a customer assigned by the computing unit; and

an input device connected to the at least one memory device, and receiving from the customer reservation information to reserve one of the compartments, the reservation information including the offer number and identification information to identify the customer,

wherein the computing unit receives the reservation information from the presentation unit and updates the at least one of text and visual information stored in the at least one memory device preventing previously purchased goods from being offered for sale to the customer.

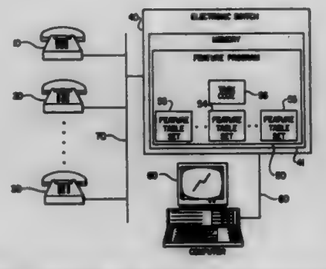
5,386,463
LOW NOISE MULTI-ELEVATOR COMMUNICATION SYSTEM AND METHOD
James H. Thompson, Dallas, Tex., assignor to Kings III of America, Inc., North America, Carrollton, Tex.
Filed Nov. 17, 1992, Ser. No. 977,877
Int. Cl.[6] H04M *1/00, 13/00*
U.S. Cl. 379—182 **39 Claims**



1. A process for connecting a speaker and microphone pair to a remote terminal over a telecommunications channel through a multi-user telecommunication system, the telecommunications channel having a telephone normally connected thereto, the process comprising the steps of:
activating an initiation signal at the speaker and microphone pair;
disconnecting the telephone from the telecommunications channel responsive to the initiation signal;
sending a remote terminal signal to the multi-user telecommunication system with communication circuitry responsive to the initiation signal;
providing an audio signal with voice interface circuitry through the speaker during said sending step;
receiving an answer signal from the multi-user telecommunication system with the communication circuitry signifying that the remote terminal is contacted by the multi-user telecommunication system;
sending an identification code associated with the speaker and microphone pair with the communication circuitry across the multi-user telecommunication system to the remote terminal;
receiving an acknowledgment signal from the remote terminal with the communication circuitry indicating the remote terminal has received the identification code; and
connecting the speaker and microphone pair to the remote terminal by the telecommunications channel and through the multi-user telecommunications system.

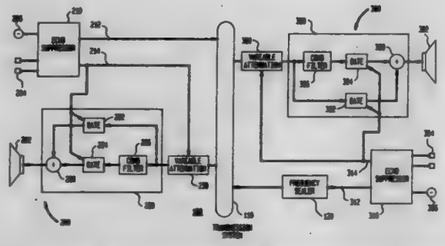
5,386,464
FEATURE CONTROL SYSTEM UTILIZING DESIGN ORIENTED STATE TABLE LANGUAGE
Leonard E. Pruitt, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Dec. 19, 1991, Ser. No. 810,327
Int. Cl.[6] H04M *3/42, 11/00*
U.S. Cl. 379—201 **14 Claims**

9. A system for providing a plurality of telecommunication features in a voice and data telecommunications switch for a plurality of subscribers with control of said plurality of telecommunication features being preformed by a feature program executing within said telecommunications switch, said feature program having executable task code which implements said plurality of telecommunication features, said system comprising:
means for receiving a precipitating event signal in said telecommunications switch from one of said plurality of subscribers;
means for identifying, in response to receiving said precipitating event signal, an associated feature;
means for identifying, from a plurality of predefined tasks, those tasks which implement said identified feature;
means for retrieving said identified tasks from a previously formatted array;



means for processing said retrieved tasks to implement said identified feature; and
means for reformatting said previously formatted array to provide a different one of said plurality of features in response to a precipitating event, without said feature program being re-compiled.

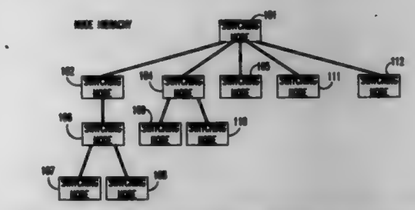
5,386,465
AUDIO PROCESSING SYSTEM FOR TELECONFERENCING WITH HIGH AND LOW TRANSMISSION DELAYS
Eric J. Addeo, Long Valley; Joseph J. Desmarais, and Gennady Shtirmer, both of Morris Plains, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.
Continuation-in-part of Ser. No. 774,085, Oct. 19, 1991, Pat. No. 5,271,057. This application Jan. 26, 1993, Ser. No. 8,965
Int. Cl.[6] H04M *9/08*
U.S. Cl. 379—202 **9 Claims**



1. An audio processing system for teleconferencing systems, said audio .processing system having high and low transmission delays, comprising:
at a first station, first microphone means for detecting and transmitting a first signal having an intensity, and first speaker means for receiving a second signal having an intensity,
at a second station, which is remotely located from the first station, second microphone means for detecting and transmitting said second signal for transmission to said first speaker means and second speaker means for receiving said first signal from said first microphone means;
a first audio channel connecting said first microphone means with said second speaker means through a transmission system;
a second audio channel connecting said second microphone means with said first speaker means through said transmission system;

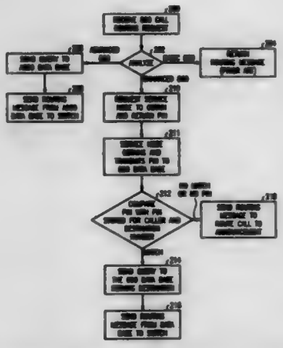
first echo suppressor means connected to said first microphone means and said first speaker means for generating and inserting a first variable attenuation in said first channel at the output of said first microphone means, said first variable attenuation being generated based upon the intensity of said first signal transmitted from said first microphone means and the intensity of said second signal being received by said first speaker means;
second echo suppressor means connected to said second microphone means and said second speaker means for inserting a second variable attenuation in said second channel at the output of said second microphone means, said second variable attenuation being generated based upon the intensity of said second signal transmitted from said second microphone means and the intensity of said first signal being received by said second speaker means; and
first and second comb filters having complementary pass and stop bands located in said first and second channels, respectively, said first comb filter being located between said first microphone means and said first echo suppressor means and said second comb filter being located between said second microphone means and said echo suppressor means, said first and second comb filters attenuating echo, which includes signals coupled between said first speaker means and said first microphone means at said first station and between said second speaker means and said second microphone means at said second station, such that said first and said second echo suppressor means generate said first and said second variable attenuation, respectively, based on said first and second signals substantially excluding echo to improve the performance of said first and second echo suppressor means.

5,386,466
AUTOMATIC INITIALIZATION OF A DISTRIBUTED TELECOMMUNICATION SYSTEM
Bruce M. Bales, Louisville; Robert L. Crumpley, Westminster; Sandra S. North, Golden, and Stephen M. Thieler, Boulder, all of Colo., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 30, 1991, Ser. No. 816,360
Int. Cl.[6] H04M *7/00, 3/22*; H04J *3/24*
U.S. Cl. 379—220 **15 Claims**



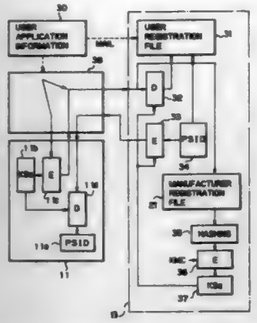
1. A telecommunication switching system having a plurality of switching nodes each having a plurality of internal link interfaces individually connected to one of a plurality of links, comprising:
means within each of said switching nodes for performing self-initialization of each of the switching nodes without knowledge of internal link interfaces and without knowledge of the identity of the switching nodes connected to the other end of links individually connected to each internal link interface;
means within each of the switching nodes for controlling each of the internal link interfaces with each interconnected via one of the links to another internal link interface in another switching node to perform low level protocol initialization functions whereby each internal link interface is identified and reported as having completed the low level protocol initialization functions to the means for performing self-initialization of the switching node of which each internal link interface is a part;
means within each of a pair of the switching nodes interconnected via a pair of the internal link interfaces and one of the interconnecting links for exchanging switching node numbers in response to the completion report to identify switching nodes relative to each other within a switching node hierarchy; and
means within each of the switching nodes further for using knowledge of the switching node hierarchy for routing calls through the telecommunication switching system.

5,386,467
INTELLIGENT NETWORK COMMUNICATION SYSTEM
Nisar Ahmad, North Middletown, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Jul. 31, 1992, Ser. No. 923,289
Int. Cl.[6] H04M *7/00, 3/42*
U.S. Cl. 379—220 **2 Claims**



1. In an intelligent network comprising a plurality of telecommunications switching systems and data base systems, said switching systems and data base systems being interconnected by a signaling network, a method of establishing a call comprising the steps of:
sending a query, for data for establishing said call, from one of said switching systems to a first one of said data base systems;
in said first data base system, determining whether said first data base system has enough data for responding to said query;
responsive to said first data base system determining that it does not have enough data to respond to said query, said first data base system sending a second query to a second one of said data base systems said second query comprising information to permit .the second data base system to transmit a response message directly to said switching system;
said second data base system finding data for responding to said second query and transmitting a first response message comprising said data directly to said switching system; and
said switching system using said data in said response message for establishing said call.

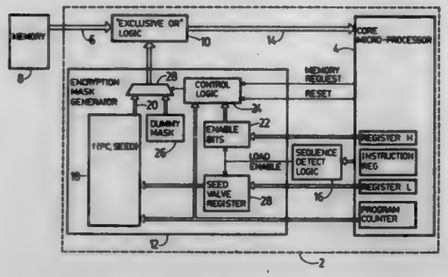
5,386,468
METHOD OF REGISTERING IDENTIFICATION NUMBER IN PERSONAL COMMUNICATION TERMINAL
Ryota Akiyama; Toshihiro Yabe, and Kazutoshi Motohashi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 9, 1993, Ser. No. 89,678
Claims priority, application Japan, Sep. 14, 1992, 4-244361
Int. Cl.[6] H04L *9/30, 9/32*
U.S. Cl. 380—25 **24 Claims**



1. A method of registering an identification number in a personal communication terminal to enable it to access communications services provided by a carrier, comprising the steps of:
a) storing a first key in a secret manner into the personal communication terminal before the communication terminal is sold to a user;
b) receiving an identification number encrypted with a second key associated with the first key from the carrier, after the personal communication terminal is sold to the user;
c) decrypting the encrypted identification number in a secret manner within the personal communication terminal by using the first key from the carrier; and
d) storing the decrypted identification number in a secret manner into the personal communication terminal, wherein the step a) includes the substeps of:
i) inputting manufacturer application information to manufacturer equipment;
ii) transmitting the input manufacturer application information from the manufacturer equipment to carrier equipment;
iii) automatically generating the first key corresponding to the manufacturer information in the carrier equipment;
iv) automatically transmitting the generated first key from the carrier equipment to the manufacturer equipment; and
v) automatically storing the first key received from the carrier equipment into the personal communication terminal, in the manufacturer equipment.

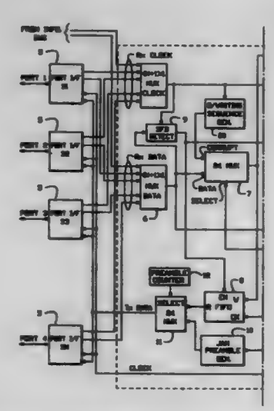
5,386,469
FIRMWARE ENCRYPTION FOR MICROPROCESSOR/MICROCOMPUTER
Gyle Yearsley, Boise, and Grant Richards, Meridian, both of Id., assignors to Zilog, Inc., Campbell, Calif.
Filed Aug. 5, 1993, Ser. No. 102,416
Int. Cl.[6] G11B *23/28;* **H04L** *9/00*
U.S. Cl. 380—3 **16 Claims**

1. A microprocessor comprising:
a microprocessor core comprising a program counter containing a program counter value;
an encryption mask generator attached to said program counter; and
a logic circuit having inputs attached to the mask value generator and attached to the external data bus and having



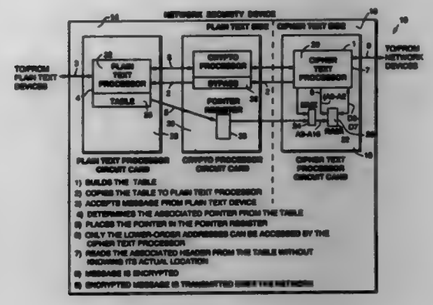
an output attached to the internal data bus connected to the microprocessor core.

5,386,470
REPEATERS FOR SECURE LOCAL AREA NETWORKS
Steven H. Carter, Great Missenden; Terence D. Lockyer, Luton, and Christopher J. Gahan, Kings Langley, all of Great Britain, assignors to 3Com Ireland, Dublin, Ireland
Continuation of Ser. No. 913,475, Jul. 15, 1992, abandoned, which is a continuation of Ser. No. 609,791, Nov. 7, 1990, Pat. No. 5,161,192. This application Aug. 24, 1993, Ser. No. 111,012
Claims priority, application United Kingdom, Dec. 6, 1989, 8927623
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[6] H04B *3/36, 3/58;* **H04L** *25/20, 25/52*
U.S. Cl. 380—48 **53 Claims**



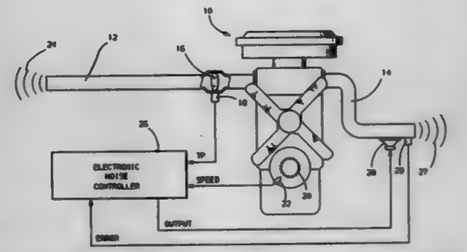
1. In a network communicating data frames having an identifiable destination on communication media having a particular media access protocol, a repeater comprising:
at least first and second ports for connection to the communication media of the network;
a frame regenerator connected between the first and second ports that repeats an incoming frame from the first port to supply a regenerated frame for retransmission on the second port within a time interval which begins before the complete incoming frame has been received by the first port;
access rule logic coupled with the first port to detect incoming frames having destinations not authorized for the second port; and
an override circuit, coupled to the frame regenerator and to the access rule logic, to modify the regenerated frame in response to indication by the access rule logic that the incoming frame has a destination not authorized for the second port.

5,386,471
METHOD AND APPARATUS FOR SECURELY CONVEYING NETWORK CONTROL DATA ACROSS A CRYPTOGRAPHIC BOUNDARY
Mark E. Bianco, Pomona, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jan. 25, 1994, Ser. No. 186,713
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—49 **23 Claims**



16. A network security device for securely conveying network control data across a cryptographic boundary which separates a plain text side from a cipher text side, said network security device comprising:
a plain text processor circuit card, said plain text processor circuit card including a plain text processor and a plain text processor memory, said plain text processor transfers a plurality of unencrypted data packets to and from a plurality of plain text devices on the plain text side of the cryptographic boundary, said plain text processor memory stores a copy of a mapping table identifying a plurality of active network devices on the cipher text side of the cryptographic boundary, wherein said plain text processor locates a destination address for each unencrypted data packet in the mapping table and transfers a corresponding pointer for each unencrypted data packet which identifies the location of the destination address in the mapping table;
a cryptoprocessor circuit card, said cryptoprocessor circuit card including a cryptoprocessor, a unidirectional bypass and a pointer register, said cryptoprocessor encrypts the plurality of unencrypted data packets from the plain text processor, said unidirectional bypass bypasses the copy of the mapping table from the cipher text side to the plain text side of the cryptographic boundary, said pointer register latches the pointer from the plain text processor; and
a cipher text processor circuit card, said cipher text processor circuit card including a cipher text processor, a cipher text processor memory, an isolated memory, and a multiplexer, said cipher text processor transfers a plurality of encrypted data packets from the Cryptoprocessor to the plurality of network devices on the cipher text side of the cryptographic boundary, said cipher text processor memory temporarily stores the mapping table as the cipher text processor automatically constructs the mapping table identifying the active network devices, said isolated memory stores the mapping table after the cipher text processor transfers the mapping table from the cipher text processor memory to the isolated memory and the copy of the mapping table to the plain text processor memory through the unidirectional bypass, said multiplexer provides the cipher text processor with access to upper order addresses of the isolated memory during transfer of the mapping table from the cipher text processor memory to the isolated memory, wherein said cipher text processor transfers each encrypted data packet to its corresponding destination address by reading the destination address for each encrypted data packet from the mapping table where the pointer from the pointer register is pointing.

5,386,472
ACTIVE NOISE CONTROL SYSTEM
Donald P. Pfaff, Mount Clemens, and Nick S. Kapsokavathis, Shelby Township, Macomb County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 565,395, Aug. 10, 1990, abandoned, and a continuation-in-part of Ser. No. 620,801, Dec. 3, 1990, abandoned. This application Feb. 26, 1992, Ser. No. 842,880
Int. Cl.[6] A61F *11/06;* **H04R** *3/02;* **H04B** *15/00*
U.S. Cl. 381—71 **4 Claims**



1. An active noise control system for attenuating an undesirable noise propagating from a noise source, the active noise control system including
means for deriving an input signal representative of the undesirable noise;
a digital signal processor programmed to operate as an adaptive filter for filtering the input signal in accordance with stored filter weighting coefficients to produce a filter output signal, the adaptive digital filter having a specified maximum filter output signal value above which filter output saturation occurs;
actuator means for generating a noise canceling wave in response to the filter output signal and for superimposing the generated noise canceling wave with undesirable noise;
means for sensing a residual noise level resulting from the superposition of the noise canceling wave and the undesirable noise and for developing an error signal representative thereof;
means for adaptively adjusting the stored filter weighting coefficients based upon the error signal to reduce the sensed residual noise level;
means for monitoring the filter output signal and for detecting the occurrence of filter output saturation based upon monitored values of the filter output signal; and
means for modifying the adaptive adjustment of the stored filter weighing coefficients to decrease the value of the filter output signal in response to detecting the occurrence of filter output saturation.

5,386,473
PASSIVE SURROUND SOUND CIRCUIT
Robert W. Harrison, 18 Westfield Park, Cortland, N.Y. 13045
Filed Jan. 21, 1994, Ser. No. 184,648
Int. Cl.[6] H04R *5/00*
U.S. Cl. 381—24 **15 Claims**

1. A surround sound circuit for decoding surround sound

information from a stereo signal comprising left and right channels having out-of-phase rear channel information encoded therein, comprising:

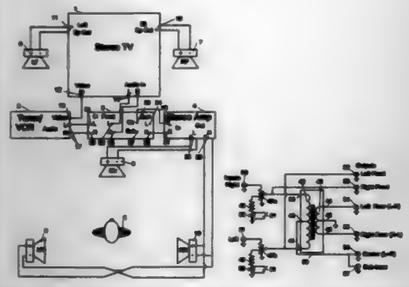
left and right audio input means for accepting signals from the left and right channels of the stereo signal,

a center channel audio output means for supplying a signal representing the sum of the left and right input signals,

a first rear channel audio output means for supplying a signal representing the difference between the left and right input signals,

a transformer having primary and secondary windings,

the primary winding of the transformer having first and second connections at each end of the winding and a center tap connection midway therebetween,



the left and right audio input means being connected to the first and second connections of the primary winding of the transformer,

the secondary winding of the transformer having end connections at each end of the winding and a center tap connection midway therebetween,

the center tap connection of the secondary winding of the transformer being grounded,

the center channel output means being connected to the center tap connection of the primary winding of the transformer,

the first rear channel output means being connected to an end connection of the secondary winding of the transformer.

5,386,474

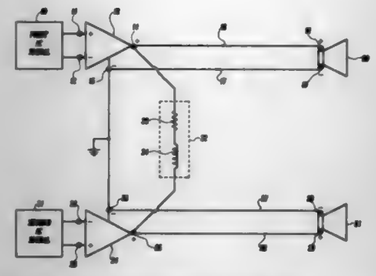
AMPLIFIER-SPEAKER INTERFACE CORRECTION CIRCUIT

Robert M. Grodinsky, 4448 W. Howard, Skokie, Ill. 60076, and David G. Cornwell, 3735 N. Ridgeway, Chicago, Ill. 60618

Filed Aug. 17, 1993, Ser. No. 108,092

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—28 9 Claims



1. A sound reproducing system comprising:

two audio power amplifiers and two loudspeakers, each of said two audio power amplifiers and each of said two loudspeakers having a positive terminal and a negative terminal;

interconnecting leads connecting the positive terminals and the negative terminals of said two audio power amplifiers to the positive terminals and the negative terminals of said two loudspeakers, respectively;

said two loudspeakers, in response to acoustic energy, producing back EMF electrical signals that undesirably interact with said two audio power amplifiers to produce distortion and reverberation; and

low pass filter coupling means connected between the positive terminals of said two audio power amplifiers for reducing said distortion and reverberation.

5,386,475

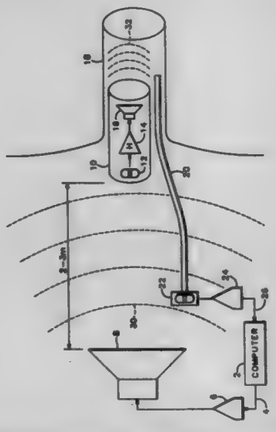
REAL-TIME HEARING AID SIMULATION

Jonathan D. Birck, and Grayson C. Silaski, both of Portland, Oreg., assignors to Virtual Corporation, Portland, Oreg.

Filed Nov. 24, 1992, Ser. No. 981,749

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68 14 Claims



1. A method for fitting a hearing aid to a patient comprising the steps of:

creating a filter having a frequency response dependent on the product of the frequency response of a signal path containing a target hearing aid and the inverse frequency response of said signal path containing a master hearing prosthesis that includes a microphone and an electro-acoustic transducer;

equipping the patient with the master hearing prosthesis;

exposing the microphone of the master hearing prosthesis to an input acoustic signal, whereby the microphone generates an electrical signal; and

filtering said electrical signal with said filter and applying the filtered electrical signal to the electro-acoustic transducer, whereby the patient receives an acoustic signal representative of the input acoustic signal modified by the frequency response of the filter.

5,386,476

LOCKING DEVICE FOR A HEARING AID BATTERY CHAMBER

Nikolai Bisgaard, Lyngby, and Jorgen Hartmann, Glostrup, both of Denmark, assignors to GN Danavox A/S, Taastrup, Denmark

Filed Aug. 10, 1993, Ser. No. 105,013

Claims priority, application Denmark, Aug. 28, 1992, 9200109

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—69 3 Claims



1. In a battery operated hearing aid, said hearing aid including a battery housing, said hearing aid comprising:

a) a chamber attached to said battery housing for receiving and holding a battery, said chamber being movable between a first position closing said battery housing, and a second position, where said battery housing is open;

b) means for locking said chamber in said first position, said means for locking including a displaceable pin, said displaceable pin including a body, a means for receiving a tool and a projection, said projection having a smaller diameter than said body, said displaceable pin slidably attached to said chamber and a means in said battery housing for engaging said displaceable pin; and

c) means for captively holding said displaceable pin in a slidable engagement in said chamber, said means for captively holding said displaceable pin additionally including, a thoroughgoing bore for allowing said projection of said displaceable pin to pass through said means for captively holding said displaceable pin and into engagement with said means for engaging said displaceable pin in said battery housing, and an opening, said opening providing access to said means for receiving a tool in said displaceable pin.

5,386,477

ACTIVE ACOUSTIC CONTROL SYSTEM MATCHING MODEL REFERENCE

Steven R. Popovich, Stoughton; Trevor A. Lask, Madison, and Mark C. Allie, Oregon, all of Wis., assignors to Digisonix, Inc., Middleton, Wis.

Filed Feb. 11, 1993, Ser. No. 16,694

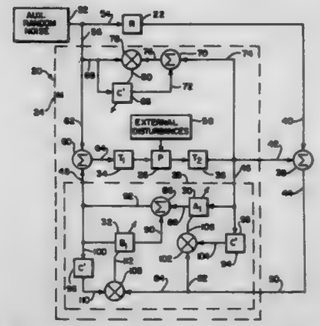
Int. Cl.[6] G10K *11/16*

U.S. Cl. 381—71 42 Claims

1. An active acoustic system comprising:

a model reference having a selectably programmable response;

an active model comprising in combination an acoustic path and an adaptive filter coupled in antiparallel feedback relation wherein the input of said adaptive filter receives the output of said acoustic path, and the output of said adaptive filter is supplied to the input of said acoustic path, such that the output of said acoustic path is fed back through said adaptive filter to the input of said acoustic path, and such that the combination of said acoustic path and said adaptive filter adaptively models said model reference such that the combined response of said acoustic



path and said adaptive filter provides an active model response matching the response of said model reference.

5,386,478

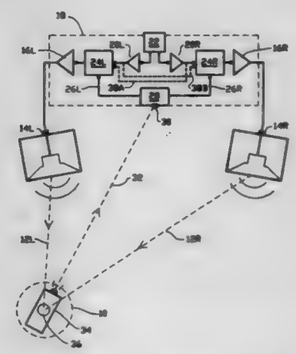
SOUND SYSTEM REMOTE CONTROL WITH ACOUSTIC SENSOR

Bradley J. Plunkett, Granada Hills, Calif., assignor to Harman International Industries, Inc., Northridge, Calif.

Filed Sep. 7, 1993, Ser. No. 116,572

Int. Cl.[6] H03G *5/00*

U.S. Cl. 381—103 11 Claims



1. A remote control system with automatic and manual capabilities in a multi-channel sound reproduction system having a plurality of associated loudspeaker units, a multi-channel amplifying means operationally coupled to drive the loudspeaker units, a command module operationally coupled to control circuitry in the amplifying means, and receiving commands via a wireless link, whereby any selected one of a plurality of adjustable operating parameters may be adjusted in the amplifying means, said remote control system comprising:

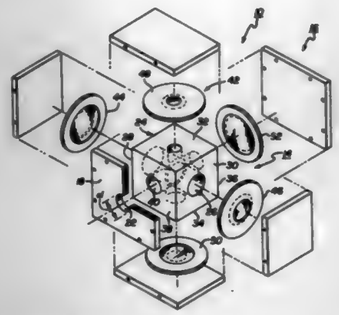
a remote control unit, in a hand-held housing held by a listener located at a particular listening location, transmitting commands to the command module via the wireless link in response to manual key entries by the listener, whereby the listener can manually control said sound reproduction system with regard to manually-selectable parameters;

a microphone, disposed in the hand-held housing of said wireless remote control unit, providing an output signal representing sound emanating from the loudspeaker units;

electronic audio processing circuit means, having a signal path that includes the wireless link, receiving as input the

output signal of said microphone and processing the output signal in a manner to determine need for compensatory adjustment of a predetermined parameter and, when such need is determined, to cause a compensatory adjustment to be made, via the command module, in the predetermined parameter in at least one channel, whereby said sound reproduction system is automatically adjusted with regard to the predetermined parameter as perceived by the microphone at the particular listening location.

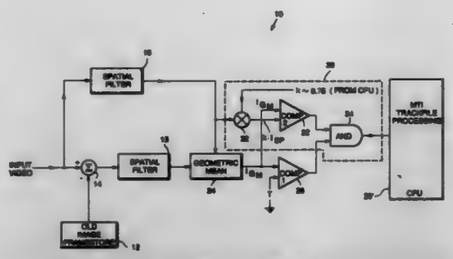
5,386,479
PIEZOELECTRIC SOUND SOURCES
Alan S. Hersh, 22305 Cairnloch St., Calabasas, Calif. 91302
Filed Nov. 23, 1992, Ser. No. 980,268
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—190 **6 Claims**



1. An acoustic generator, comprising:
a housing having a chamber and an opening, said chamber and opening defining a Helmholtz resonator having a first resonant frequency f1, said housing further having first, second, third, fourth and fifth cavities in fluid communication with said opening, each cavity having a different volume;
a first acoustic transducer operatively connected to said housing adjacent to said first cavity and adapted to generate acoustic energy within said chamber;
a second acoustic transducer operatively connected to said housing adjacent to said second cavity and adapted to generate acoustic energy within said chamber;
a third acoustic transducer operatively connected to said housing adjacent to said third cavity and adapted to generate acoustic energy within said chamber;
a fourth acoustic transducer operatively connected to said housing adjacent to said fourth cavity and adapted to generate acoustic energy within said chamber; and,
a fifth acoustic transducer operatively connected to said housing adjacent to said fifth cavity and adapted to generate acoustic energy within said chamber.

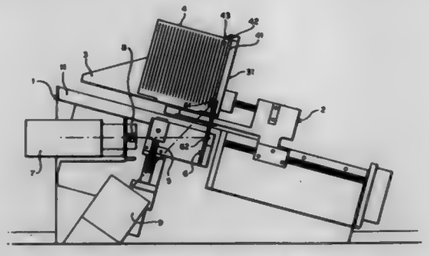
5,386,480
AMPLITUDE RATIO DISCRIMINATION FOR MTI PROCESSORS
Thomas K. Lo, Temple City, and Deborah C. Roty, West Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Mar. 9, 1992, Ser. No. 848,604
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—1 **11 Claims**

1. A system for detecting an object in a scene comprising:
means for storing a first frame of image data represented by a plurality of input signals I_o;
first spatial filter means for spatially filtering a second frame of image data represented by a plurality of input signals I_o to provide a first spatial filter output signal of the form $\eta_s I_o$;
means for subtracting said first frame of image data from said second frame of image data to provide difference signals of the form $\eta_D I_o$, where η_D represents a measure of object registration in said first and second frames of image data;
second spatial filter means for spatially filtering said difference signals to provide spatially filtered difference signals of the form $\eta_s \eta_D I_o$; and



means for processing said first spatial filter output signal and said spatially filtered difference signals of the form $\eta_s \eta_D I_o$ to extract said measure of object registration η_D, said means for processing said first spatial filter output signal and said spatially filtered difference signals of the form $\eta_s \eta_D I_o$ to extract said measure of object registration η_D including means for multiplying said first spatial filter output signal of the form $\eta_s I_o$ by said difference signals of the form $\eta_D I_o$ and taking the geometric mean of the product to provide a geometric mean output signal I_{GM}.

5,386,481
DEVICES AND METHODS FOR READING IDENTIFICATION MARKS ON SEMICONDUCTOR WAFERS
Derek L. Hine, Portola Valley, and Michael Krolak, Los Gatos, both of Calif., assignors to Hine Design, Inc., Redwood City, Calif.
Division of Ser. No. 597,082, Oct. 15, 1990, Pat. No. 5,265,170, which is a continuation-in-part of Ser. No. 463,539, Jan. 11, 1990, abandoned. This application Nov. 19, 1993, Ser. No. 155,428
Int. Cl.[6] G06K *9/00*; B65G *1/06*
U.S. Cl. 382—8 **12 Claims**

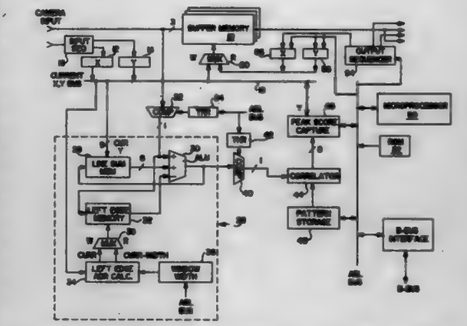


1. Apparatus for successively reading identification marks incised on a plurality of semi-conductor wafers, the wafers being in a cassette containing a plurality of parallel slots; each of the slots having an upper access end, side members, and a partially open bottom end; and each of the wafers being in one of the slots and having an identification mark incised on a principal plane of the wafer, the mark being on a target area of the wafer which is at the bottom end of the slot, which apparatus comprises

(1) a cassette support for supporting the cassette thereon; and
(2) a wafer support which
(a) has a first bearing surface and a second bearing surface, the second surface being offset from the first bearing surface both in a plane parallel with the principal planes of the wafers and in a plane at right angles to the principal planes of the wafers,
(b) is mounted adjacent to the cassette support so that when a cassette is supported on top of the cassette support, the wafer support is adjacent to the partially open bottom ends of the slots in the cassette;
(c) can be moved relative to the cassette support, along an axis substantially at right angles to a plane which is coplanar with the principal planes of wafers in a cassette supported by the cassette support, through a plurality of potential viewing positions, each of the potential viewing positions corresponding to one of the wafers; and
(d) in each of the potential viewing positions, can be moved relative to the cassette support in a plane which is substantially coplanar with the principal planes of wafers in a cassette supported by the cassette support, between (a) a lower rest position in which the support does not contact any of the wafers in a cassette supported by the cassette support, and (b) an upper operating position in which the first bearing surface of the wafer support supports a first wafer in a viewing position in which the target area of the wafer having the identification mark incised thereon can be viewed underneath the cassette, and the second bearing surface of the wafer support supports an adjacent second wafer in a remote position, the first and second bearing surfaces of the wafer support being spaced apart so that, as the wafer support is moved along an upward path from the rest position to the operating position, when a cassette of wafers is supported on the cassette support with the first wafer in the path of the first bearing surface and the adjacent second wafer in the path of the second bearing surface, initially the second bearing surface contacts the second wafer and subsequently the first bearing surface contacts the first wafer, whereby the second wafer is displaced by a relatively large amount into the remote position and the first wafer is displaced by a relatively small amount into the viewing position, the difference between the amounts by which the first and second wafers are displaced being large enough to permit the identification mark on the first wafer to be viewed underneath the cassette.

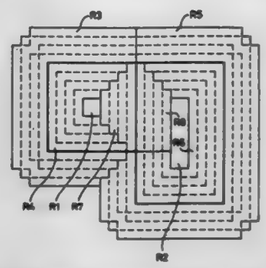
5,386,482
ADDRESS BLOCK LOCATION METHOD AND APPARATUS
Alfred L. Basso, Colebrook, and David A. Newton, Coventry, both of Conn., assignors to Scan-Optics, Inc., East Hartford, Conn.
Filed Jul. 16, 1992, Ser. No. 915,008
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—9 **11 Claims**

1. A method for locating a block of printed indicia on a page comprising:
scanning an area comprising at least a portion of the page and generating a data stream commensurate with results of the scanning, the page being scanned in a pair of mutually orthogonal directions, the data comprising the stream corresponding to the presence or absence of indicia on the page;
storing in a first memory data comprising the data stream and address information corresponding to the location within the scanned area of the page where the data being stored originated;
further storing in a second memory the data comprising the data stream which originates from within a subsection of the scanned area of the page which is smaller than the area being scanned, the subsection being caused to move relative to the page to thereby define a moving window, data stored in the second memory being commensurate with printed indicia located within the moving window;
generating a real time binary profile of the data stored in the second memory;
comparing the generated binary profile with each of a plurality of prerecorded binary profiles commensurate with the type of indicia to be located and generating a running score of numeric values commensurate with the results of the comparisons;



recording the generated numeric values and address information indicative of the location in at least one of the directions of scanning where the data corresponding to each numeric value originated; and
transferring a block of stored data corresponding to a preselected size field within the scanned area from the first memory, the location of the block of data to be transferred being determined by the recorded addresses corresponding to recorded numeric values which satisfy preselected criteria, the transferred data being further processed.

5,386,483
METHOD OF AND APPARATUS FOR PROCESSING IMAGE DATA TO PRODUCE ADDITIONAL REGIONS ON THE BOUNDARY OF IMAGE REGIONS
Hiroshi Shihazaki, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Kyoto, Japan
Filed Oct. 30, 1992, Ser. No. 969,407
Claims priority, application Japan, Oct. 30, 1991, 3-311972
Int. Cl.[6] G06K *9/48*
U.S. Cl. 382—22 **10 Claims**



1. A method of processing image data representing an original image including a plurality of image regions to create additional regions on the boundary between each pair of said plurality of image regions with the aid of a computer, said method comprising the steps of:

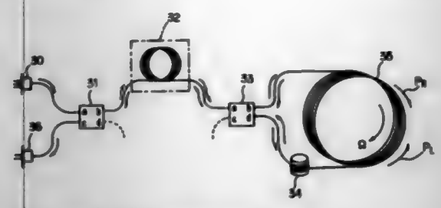
(a) allocating a region number to each of said plurality of image regions;
(b) preparing a neighbour window consisting of a plurality of pixels, said plurality of pixels including a center pixel and a plurality of adjoining pixels, each adjoining pixel allocated a predetermined priority; and
(c) while successively shifting said neighbour window on said original image, allocating a new region number different from the aforementioned region numbers of said plurality of image regions to said center pixel located at the center of said neighbour window, to thereby produce a pair of additional regions each having the new region numbers on a respective side of said boundary between each pair of said plurality of image regions, said new region number being allocated to said center pixel on the conditions that:
(i) said center pixel is located in one of said plurality of image regions;
(ii) the region number of at least one of said adjoining pixels in said neighbour window is different from the region number previously allocated to said center pixel; and
(iii) the region number of a first adjoining pixel which has the highest priority among the adjoining pixels having a different region number from the region number previously allocated to said center pixel is equal to one of the region numbers originally allocated to said plurality of image regions; while
(iv) maintaining the region number previously allocated to said center pixel on the condition that the region number of said first adjoining pixel is different from the region numbers originally allocated to said plurality of image regions.

5,386,484

OPTICAL FIBER TYPE POLARIZER

Akihiro Ooka; Kenji Kawamura; Yozo Nishiura; Katsuaki Itoh; Takaki Iwashita; Yasuhiko Nishi, all of Osaka; Noritaka Kuroda, and Hayato Hasegawa, both of Hisai, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 9, 1993, Ser. No. 118,809
Claims priority, application Japan, Feb. 10, 1992, 5-003890[U]; Sep. 10, 1992, 4-242157; Nov. 30, 1992, 4-320951; Jan. 27, 1993, 5-011896
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—11 **13 Claims**



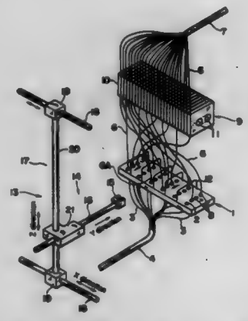
1. An optical fiber type polarizer comprising:
a first optical fiber constituted by a birefringement optical fiber wound at a predetermined winding radius and having winding start and end fixed to each other by an adhesive, said first optical fiber having short extra portions respectively extending from said winding start and end-,and the length of each of said short extra portions being at least as small as said predetermined winding radius;
a second optical fiber spliced to one of said short extra portions of said first optical fiber; and
a third optical fiber spliced to the other of said short extra portions of said first optical fiber.

5,386,485

OPTICAL FIBER SWITCHING DEVICE HAVING AN OPTICAL FIBER LENGTH ADJUSTMENT UNIT AND METHOD FOR USING THE SAME

Kazuhito Saito; Masayuki Nishimura; Tohru Yamanishi, all of Yokohama; Hideo Kobayashi; Toshiaki Katagiri, both of Mito, and Masao Tachikura, Hitachi, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

Filed Feb. 25, 1993, Ser. No. 22,641
Claims priority, application Japan, Feb. 26, 1992, 4-039602; Feb. 26, 1992, 4-039607; Apr. 23, 1992, 4-104612; May 11, 1992, 4-117361; May 11, 1992, 4-117363; May 21, 1992, 4-128777; Feb. 4, 1993, 5-017484
Int. Cl.[6] G02B *6/24*; B25J *11/00*
U.S. Cl. 385—17 **40 Claims**



1. An optical fiber switching device comprising:
a coupling board for optically coupling a selected one of a plurality of second optical fibers to a selected one of a plurality of first optical fibers, the coupling board having a first surface connected to the plurality of first optical fibers, and a second surface which opposes the first surface and is connected to the plurality of second optical fibers;
means including an optical fiber length adjusting unit for handling surplus portions of the selected one of the plurality of second optical fibers;
partition means for dividing the second surface of the coupling board into a plurality of rows; and
switching means for changing a connecting position of the selected one of the plurality of second optical fibers to a desired position so that the selected one of the plurality of second optical fibers are optically connected with the selected one of the plurality of first optical fibers by the coupling board.

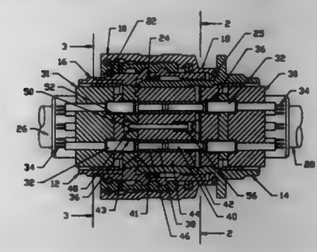
5,386,486

CONNECTING SYSTEM FOR FIELD INSTALLATION AND CLEANING

Robert J. Fan, Canoga Park, and Douglas A. Parker, Camarillo, both of Calif., assignors to LiteCom, Inc., North Hollywood, Calif.

Filed Nov. 7, 1991, Ser. No. 791,661
Int. Cl.[6] G02B *6/36, 6/38*
U.S. Cl. 385—59 **17 Claims**

1. A connector system comprising;
a connector pin terminus having at least one first optical fiber conductor passing there through;
a connector socket terminus having at least one second optical fiber conductor passing there through;
connecting means for connecting said connector pin terminus and said connector socket terminus thereby forming at least one corresponding optical fiber conductor pair upon mating; and
a releasable insert means positioned surrounding said connector pin terminus and connector socket terminus when said connecting means is mated;
whereby the tip end of said at least one corresponding optical fiber conductor pair in said mating pin and socket



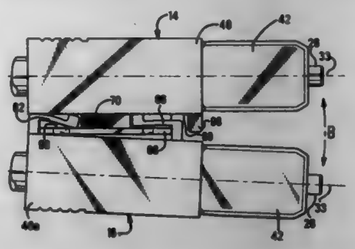
termini may be exposed for maintenance when said connector pin terminus and said connector socket terminus are separated during separation of said connecting means after which said releasable insert is removed to expose the socket terminus end for cleaning and examination.

5,386,487

APPARATUS FOR MAINTAINING PLUG ASSEMBLIES OF OPTICAL FIBER CONNECTORS IN A SIDE BY SIDE RELATION WITH FLOAT THEREBETWEEN

Robert C. Briggs, Newport; Thomas R. Fawcett, Jr., Harrisburg, and Randy M. Manning, New Cumberland, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 127,220, Sep. 27, 1993, abandoned. This application Apr. 15, 1994, Ser. No. 227,933
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—59 **16 Claims**



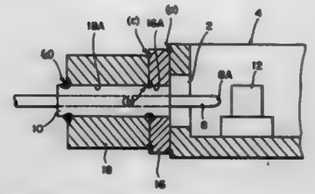
16. An apparatus for maintaining plug assemblies of optical fiber connectors in a side-by-side relation with float therebetween, comprising:
a first housing having a chamber for retainably receiving one of the plug assemblies and a retention member wherein the retention member is a retention plate affixed to the first housing and offset therefrom, said retention plate including a window, and
a second housing having a chamber for retainably receiving one of the plug assemblies and a clasp member wherein the clasp member is a pair of resilient arms having a detent, said resilient arms extending from the second housing, said window receiving said detent to hold the housings in a side-by-side relationship with float therebetween wherein, said float is clearance bounded by said clasp member interfering with said retention member.

5,386,488

OPTICAL MODULE AND MANUFACTURING METHOD THEREFOR

Yoichi Oikawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

PCT No. PCT/JP92/01213, § 371 Date Nov. 16, 1993, § 102(e) Date Nov. 16, 1993, PCT Pub. No. WO93/20467, PCT Pub. Date Oct. 14, 1993
PCT Filed Sep. 24, 1992, Ser. No. 146,102
Claims priority, application Japan, Apr. 2, 1992, 4-081121
Int. Cl.[6] G02B *6/42*
U.S. Cl. 385—92 **20 Claims**



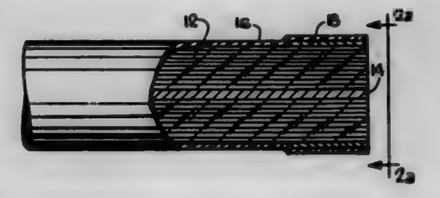
1. An optical module comprising:
a housing (4) having an opening (2) extending from an outer side to an inner side of said housing (4) and having an outer surface around said opening (2);
a main ring (16) having a substantially central hole (16A) and fixed to said housing (4) so that an end surface of said main ring (16) is in close contact with said outer surface of said housing (4);
a ferrule fixed to said main ring (16) under a condition where said ferrule is inserted in said substantially central hole (16A) of said main ring (16);
an optical fiber (8) fixed to said ferrule under a condition where said optical fiber (8) is inserted in a center hole of said ferrule;
a reinforcement ring (18) fixed to said main ring (16) and said ferrule so as to cover said ferrule in Juxtaposed relationship to said main ring (16), a fixing point between said reinforcement ring (18) and said main ring (16) being positioned outside of a fixing point between said reinforcement ring (18) and said ferrule; and
an optical device provided in said housing (4) and adapted to be optically coupled with said optical fiber (8).

5,386,489

DEFORMABLE SHAPE-RETAINING FIBEROPTIC DEVICE

Albert J. Stokes, San Jose, Calif., assignor to Christine E. Munson, San Jose, Calif., a part interest

Continuation-in-part of Ser. No. 663, Jan. 5, 1993, abandoned. This application Nov. 24, 1993, Ser. No. 157,729
Int. Cl.[6] G02B *6/04, 6/44*
U.S. Cl. 385—100 **20 Claims**



1. A formable cut-to-fit optical fiber light guide with serpentine shape retentivity comprising:
a plurality of separate flexible optical fibers having opposed ends, said optical fibers being disposed adjacent to one

another in coextensive arrangement and slidable with respect to each other;

a deformable, elongated, shape-retention member having opposed ends, said shape-retention member being disposed between said optical fibers in coextensive arrangement and slidable with respect to said fibers, said shape-retention member having a fixed state in the absence of manual force, and a pliable state in response to manual force; and

a flexible jacket surrounding said optical fibers and said shape-retention member for mechanically bundling said optical fibers and said shape-retention member into a cable form, said jacket being slidable with respect to said fibers and said shape-retention member,

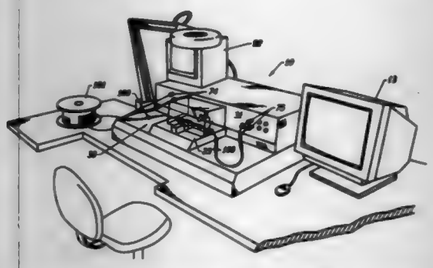
whereby said light guide can be manually formed to extend from a light source to a remote object along a serpentine path and retain said serpentine shape.

5,386,490

AUTOMATED WORKSTATION FOR THE MANUFACTURE OF OPTICAL FIBER COUPLERS

Jing-Jong Pan, Milpitas; Frank Y. F. Liang, San Jose; Ming M. Shih, Milpitas; Zhong M. Mao, Santa Clara, and Kung Shih, San Jose, all of Calif., assignors to E-Tek Dynamics, Inc., San Jose, Calif.

Filed Jul. 1, 1993, Ser. No. 86,629
Int. Cl.[6] G02B *6/00, 6/36*
U.S. Cl. 385—134 **20 Claims**



1. A workstation for automatically forming a coupling region between at least two optical fibers, said workstation comprising

control means for directing operations of said workstation;

a pair of clamps for holding said optical fibers for the formation of said coupling region between said clamps;

means responsive to said control means for heating a predetermined length of said fibers between said clamps to fuse said length;

means responsive to said control means for driving said clamps;

means responsive to said control means for generating a selectable input signal into said optical fibers; and

means for monitoring an output signal responsive to said input signal to determine characteristics of said coupling region between said optical fibers;

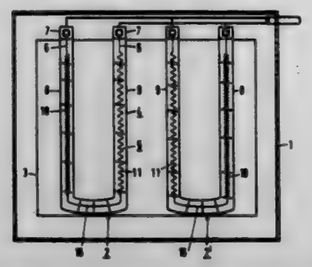
whereby fiber optic couplers are automatically manufactured.

5,386,491

ELECTRICAL APPLIANCE WITH U-SHAPED LAMPS HAVING FILAMENTS OF DIFFERENT POWER CONSUMPTION

Jan A. C. Mewissen, Eindhoven, Netherlands, and Eriel M. Boeckx, Turnhout, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 909,241, Jul. 6, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 166,653
Claims priority, application European Pat. Off., Jul. 8, 1991, 91201767
Int. Cl.[6] A47J *37/06*; H05B *3/00*
U.S. Cl. 392—418 **12 Claims**



1. An electrical appliance for preparing food, comprising:

a housing (1) in which several electric incandescent lamps (2) are accommodated side by side,

a carrier (3) for food positioned opposite and underneath the electric incandescent lamps in facing relationship therewith,

the incandescent lamps (2,2') each having a tubular lamp vessel (4) which is closed in a vacuumtight manner and in which a coiled incandescent body (5) is axially arranged and connected to current conductors (6) which issue to the exterior through respective end portions (7) of the lamp vessel to the exterior,

wherein the lamp vessel (4) is bent into a U-shape so as to form a first (8) and a second (9) leg positioned at a distance from one another and accommodating a first (10) and a second (11) portion, respectively, of the incandescent body (5),

the first portion (8) of the incandescent body (5) consuming a higher power than does the second portion (9), and

a first (2) and a second (2') incandescent lamp being arranged with their second legs next to one another.

5,386,492

SPEECH RECOGNITION SYSTEM UTILIZING VOCABULARY MODEL PRESELECTION

Brian H. Wilson, Somerville; Girija Yegnanarayanan, N. Chelmsford; Vladimir Sejnoha, Cambridge, and William F. Ganong, Brookline, all of Mass., assignors to Kurzweil Applied Intelligence, Inc., Waltham, Mass.

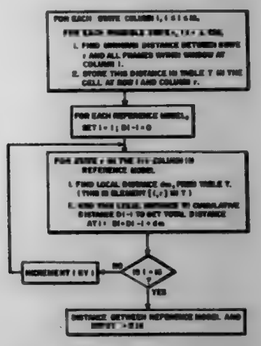
Filed Jun. 29, 1992, Ser. No. 905,345
Int. Cl.[6] G10L *5/00*
U.S. Cl. 395—2.61 **9 Claims**

1. In a speech recognition system which compares an unknown speech segment represented by a fine sequence of frames with a vocabulary of models represented by respective fine sequences of states, said states being selected from a limited collection of predetermined states, thereby to determine the best matches; a computer implemented method of preselecting candidate models for accurate comparison, said method comprising:

for each model to be considered, subsampling the corresponding fine sequence of states to obtain a respective coarse sequence comprising a predetermined number of states;

subsampling said fine sequence of frames to obtain a coarse sequence comprising a predetermined number of frames, said predetermined numbers together defining a matrix having frame positions along one axis and state positions along another axis, there being a preselected region within said matrix which is examined by said method;

for each state in said limited collection, determining for each state position in said matrix the input frame which provides the best match with that state, irrespective of the frame determined in connection with any adjacent state



position and considering and examining only frames which lie within said preselected region, a measure of the match being stored in a table;

calculating, using said table, for each model to be considered a value representing the overall match of said coarse sequence of frames with the respective coarse sequence of states;

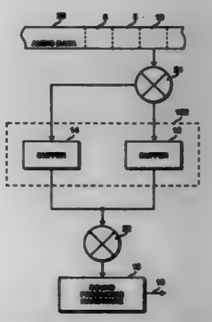
preselecting for accurate comparison those models with the better overall match values as so calculated.

5,386,493

APPARATUS AND METHOD FOR PLAYING BACK AUDIO AT FASTER OR SLOWER RATES WITHOUT PITCH DISTORTION

Leo M. W. F. Degen, Menlo Park, Calif., and Martijn Zwartjes, Utrecht, Netherlands, assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 25, 1992, Ser. No. 951,239
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—2.76 **46 Claims**



1. A computer implemented apparatus for modifying a playback rate of previously stored audio data without varying playback pitch of said audio data, said audio data composed of a plurality of discrete data points stored in said computer, said computer implemented apparatus comprising:

buffer processing means for supplying audio data, said buffer processing means switching between a first buffer and a second buffer;

time stretching means for modifying said playback rate of said audio data said time stretching means coupled to said buffer processing means, said time stretching means comprising:

(a) means for reading a first segment of said audio data and for reading a second segment of said audio data, said first and second segments in sequence but not necessarily consecutive;

(b) means for increasing said playback rate of said audio data by extending said first and second segments by replicating and reincorporating portions of said first segment and said second segment; and

(c) means for decreasing said playback rate of said audio data by excluding predetermined segments of said audio data located between said first segment and said second segment;

means for reducing roll associated with a junction between said first segment and said second segment, said means for reducing roll comprising filtering means for fading out predetermined end data points of said first segment and for fading in predetermined start data points of said second portion, said filtering means coupled to said time stretching means, said filtering means comprising:

first filter means for applying a first filter to only said predetermined end data points of said first segment to fade out said predetermined end data points;

second filter means for applying a second filter to only said predetermined start data points of said second segment to fade in said predetermined start data points, wherein said first filter and said second filter comprise an equal power cross fade filter arrangement and wherein said first filter and said second filter are equal at said junction; and

means for adding results generated from said first filter means and said second filter means to generate an output signal; and

limiting means for constraining said output signal of said filtering means to operate within a predetermined range of fade in and fade out values, said limiting means coupled to receive said output signal from said filtering means.

5,386,494

METHOD AND APPARATUS FOR CONTROLLING A SPEECH RECOGNITION FUNCTION USING A CURSOR CONTROL DEVICE

George M. White, Portola Valley, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 804,077, Dec. 6, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 80,451
Int. Cl.[6] G10L *5/06*
U.S. Cl. 395—2.84 **35 Claims**

1. A method for controlling a speech recognition function for a data processing system, the data processing system having a display, a speech recognition input device, and a cursor control device, the cursor control device having a first selector and a second selector separate from the first selector, the method comprising the steps of:

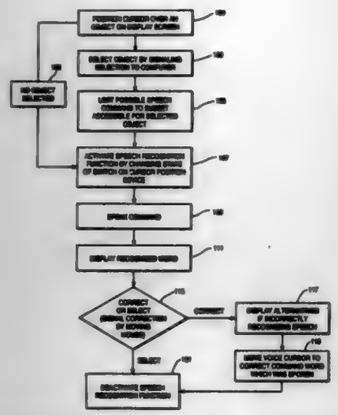
(a) displaying at least one object and a moveable cursor on the display;

(b) controlling the moveable cursor on the display in x and y directions simultaneously in response to user-manipulation of the cursor control device;

(c) selecting one of the at least one object displayed on the display in response to user-manipulation of the cursor control device and user-manipulation of the first selector of the cursor control device;

(d) activating the speech recognition function in response to engagement of the second selector of the cursor control device;

(e) inputting a spoken command for the data processing system by the speech recognition input device; and



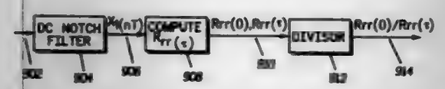
(f) deactivating the speech recognition function in response to disengagement of the second selector of the cursor control device.

5,386,495

METHOD AND APPARATUS FOR DETERMINING THE SIGNAL QUALITY OF A DIGITAL SIGNAL

Chin P. Wong, Ft. Lauderdale, and Gordon W. Chin, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 1, 1993, Ser. No. 11,597
Int. Cl.[6] H04B *3/46*, *17/00*; H04Q *1/20*
U.S. Cl. 375—10 **14 Claims**



1. A method for determining the signal quality of a received carrier signal modulated with a digital signal, comprising the steps of:

(a) a demodulating the carrier signal to recover the digital signal;

(b) calculating the autocorrelation function of the digital signal;

(c) determining the signal quality of the digital signal using the autocorrelation function by performing the sub-steps of:

(c1) determining the value of the autocorrelation function at first and second reference points; and

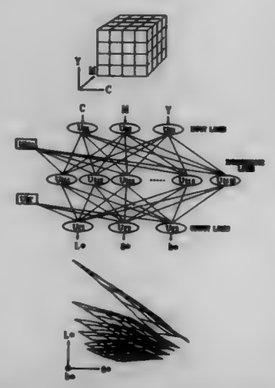
(c2) producing a signal quality indication by taking the ratio of the value of the autocorrelation function at the first reference point against the value of the autocorrelation function at the second reference point.

5,386,496

METHOD AND DEVICE FOR NONLINEAR TRANSFORMATION OF COLOUR INFORMATION BY NEURAL NETWORK

Yoshifumi Arai, and Yoshiki Nakano, both of Tokyo, Japan, assignors to Toyo Ink Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,874
Claims priority, application Japan, Feb. 15, 1991, 3-043028; Feb. 15, 1991, 3-043029; Feb. 15, 1991, 3-043030; Dec. 26, 1991, 3-357689; Dec. 26, 1991, 3-357690
Int. Cl.[6] G01J *3/46*; G06F *15/18*
U.S. Cl. 395—22 **4 Claims**



4. A device for controlling color reproduction performance of a color reproduction device, comprising a multi-layered feedforward neural network having an input layer including at least three units of neural circuits, at least one intermediate layer including at least three units of neural circuits, at least one intermediate layer including at least one unit of neural circuit, and an output layer including at least three units of neural circuits, said neural network having been trained by supplying said input layer with sample color data either (i) in a first set of parameters selected from CMY or CMYK in the substractive color mixing and RGB in the additive color mixing or (ii) in a second set of parameters according to a uniform color space and by supplying said output layer with sample color data either in said second set of parameters or in said first set of parameters, respectively, said sample color data supplied to said output layer being already known to correspond to said sample color data supplied to said input layer, while adjusting a connection coefficient of each neural circuit and biasing factors applied thereto, so that said neural network learns a color reproduction performance of color reproduction device with respect to the correspondence between said sample color data in said first and second set of parameters.

5,386,497

ELECTRONIC NEURON SIMULATION WITH MORE ACCURATE FUNCTIONS

Stephen A. Torrey, 80 Royalwood Ct., Cheshire, Conn. 06410

Filed Aug. 18, 1992, Ser. No. 931,778
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—27 **7 Claims**

5. An artificial neuron apparatus for simulating the functions of various individual biological nerve cells comprising:

a plurality of excitatory inputs;

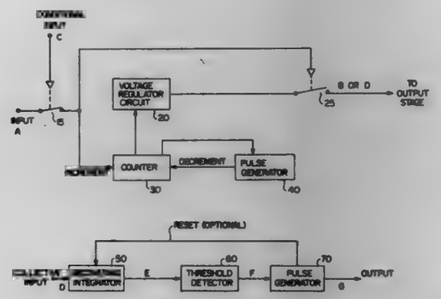
a plurality of inhibitory inputs;

a plurality of voltage regulator circuits for providing a regulated output therefrom each having one of said plurality of excitatory and inhibitory inputs applied thereto,

where a neuron is identified by the number of inhibitory and excitatory inputs being applied to said voltage regulator circuits;

an output circuit having an input for receiving said regulated outputs from said plurality of said voltage regulator circuits;

threshold means in said output circuit for generating an output signal when the stimuli in said neuron exceeds a predetermined level;



means in said output circuit coupled to said threshold means for stimulating towards threshold detection when excitatory inputs are applied to said voltage regulator circuits; and

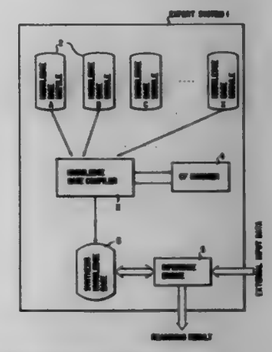
means in said output circuit coupled to said threshold means for impairing stimulation towards threshold detection when inhibitory inputs are applied to said voltage regulator circuits.

5,386,498

EXPERT SYSTEM HAVING A KNOWLEDGE BASE COMPILER AND A CERTAINTY FACTOR MANAGER

Hideaki Kakefuda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1991, Ser. No. 799,959
Claims priority, application Japan, Nov. 30, 1990, 2-340391
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—75 **3 Claims**



1. An expert system comprising:

a plurality of knowledge base modules (2) for expressing a knowledge of a human expert and having a function for managing said knowledge, each of said knowledge base modules (2) including a plurality of knowledge, a corresponding plurality of certainty factors, a plurality of facts, and a plurality of production rules;

a knowledge base compiler (3) for managing said knowledge base modules (2), extracting a plurality of necessary knowledge base modules from a plurality of said knowledge base modules (2) during execution of an inference process, and synthesizing a new unit of synthesis knowledge base by synthesizing said extracted knowledge base modules;

a CF manager (4) for matching certainty factors of said extracted knowledge base modules, and for determining a uniform certainty factor of said synthesis knowledge base;

an inference engine (5) for inputting data from external sources, and for executing an inference process based on said inputted data and said synthesis knowledge base, to obtain an inference result;

wherein said CF manager (4) includes:

means for inputting certainty factors of a plurality of said extracted knowledge base modules;

overall tuning means for performing a tuning of said certainty factors corresponding to said knowledge base modules;

means for calculating provisional certainty factors for said knowledge base modules tuned by the overall tuning means;

individual tuning means for matching said provisional certainty factors among said knowledge base modules; and

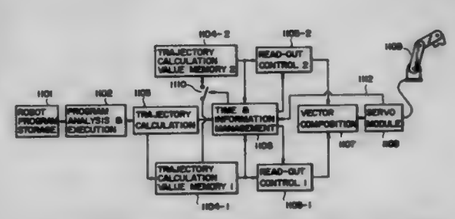
means for determining a uniform certainty factor in said synthesis knowledge base matched by said individual tuning means.

5,386,499

CONTROLLER AND PROCESS FOR EFFECTING A SHORTER PATH TRAJECTORY IN ROBOT MOVEMENT

Takeshi Tokita, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Apr. 19, 1993, Ser. No. 47,479
Claims priority, application Japan, Apr. 27, 1992, 4-107807
Int. Cl.[6] G06F *15/46*
U.S. Cl. 395—85 **13 Claims**



1. A numerical control apparatus for a robot, comprising:

a robot program storage means for storing a program comprised of a procedure of operations for said robot including at least first and second movement operations having aiming position information corresponding to predetermined positions towards which the robot is intended to be moved within respective operation time periods;

a program analysis and execution means for reading said program from said robot program storage means, analyzing contents of said program and executing said program, wherein, said program analysis and execution means outputs said aiming position information for each of said movement operations of said robot having said aiming position information;

a trajectory calculation means for determining and outputting a position information string for each of said movement operations having aiming position information output from said program analysis and execution means,

each position information string comprising a series of positions needed to move said robot within an operation time period of said movement operation along a trajectory to the predetermined position provided in said aiming posi-

tion information of said movement operation, each position of said series of positions being calculated by said trajectory calculating means for each unit time within said operation time period as needed to move said robot along a trajectory to said predetermined position corresponding to said aiming position information of said movement operation;

a first memory for storing a position information string obtained from said trajectory calculation means;

a second memory to which said position information string stored in said first memory is transferred in response to a transfer switch means;

a first read-out control means for reading out said position information string in said first memory, said positions in said position information string being read at unit time intervals;

a second read-out control means for reading out said position information string in said second memory, said positions in said position information string being read at said unit time intervals;

a time and information management means for providing a read-out starting instruction to each of said first and second read-out control means and for providing a transfer instruction to said transfer switch means for initiating transfer of the contents of said first memory to said second memory;

said time and information management means performs an overlapping operation, wherein, both of said first and second read-out control means are activated to read-out position information strings stored in said respective first and second memory, whereby, said first and second movement operations are effected;

said overlapping operation being initiated in response to at least one of an overlapping operation starting point instruction or an overlapping operation ending point instruction when either instruction is read in said program by said program analysis and execution means;

wherein, said overlapping operation starting point instruction includes information on a predetermined proportion of said first movement operation, and in response to said overlapping operation starting point instruction said time and information management means sends said transfer instruction to said transfer switch and begins said overlapping operation when said predetermined proportion of said first movement operation has been completed;

said overlapping operation ending point instruction includes information on a predetermined proportion of said second movement operation succeeding said first movement operation, and in response to said overlapping operation ending point instruction, said time and information management means sends said transfer instruction to said transfer switch means and begins said overlapping operation during said first movement operation such that said first movement operation will expire when said predetermined proportion of said second movement operation has been completed during said overlapping operation.

5,386,500

THREE DIMENSIONAL MODELING APPARATUS

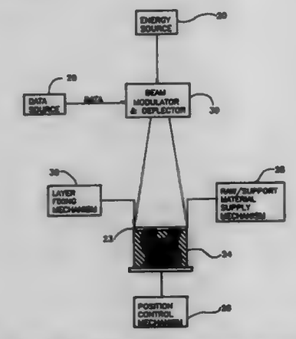
Itzchak Pomerantz, Kfar Saba; Shaley Gilad, Hod Hasharon; Yehoshua Dollberg, Tel Aviv; Barry Ben-Ezra, Ramat Hasharon; Yehoshua Sheinman, Tel Aviv; Gill Barequet, Herzlia, and Matthew Katz, Haifa, all of Israel, assignors to Cubital Ltd., Ra'anana, Israel

Continuation of Ser. No. 661,528, Feb. 25, 1991, Pat. No. 5,263,130, which is a continuation of Ser. No. 290,318, Dec. 22, 1988, Pat. No. 5,031,120, which is a continuation-in-part of Ser. No. 57,366, Jun. 2, 1987, Pat. No. 4,961,154. This application Apr. 13, 1992, Ser. No. 867,899

Claims priority, application Israel, Dec. 23, 1987, 84936

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—119 **21 Claims**



1. A three dimensional modeling system comprising:

coordinate input apparatus for providing coordinate information with respect to a three-dimensional element to be modeled;

coordinate responsive output apparatus responsive to said coordinate information by providing a three-dimensional physical model of said three-dimensional element by sequentially solidifying a plurality of layers of a first material and including:

second material adding apparatus for adding to each layer of said first material, prior to solidification of a subsequent layer of the first material thereover, a second material; and

second material removing apparatus for removing at least part of said second material subsequent to solidification of at least one subsequent layer of the first material thereover.

5,386,501

DEVICE FOR FORMING A CIRCULAR IMAGE ON A DISPLAY SCREEN

Ahn D. Nguyen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1992, Ser. No. 973,445

Claims priority, application European Pat. Off., Nov. 12, 1991, 91202932

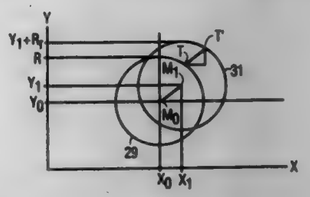
Int. Cl.[6] G06F *15/60*

U.S. Cl. 395—140 **6 Claims**

1. A device for forming an image bounded by a desired circle of radius R on a display screen (3), comprising means (5, 7) for scanning the display screen in a pattern of parallel image lines, each image line extending in conformity with the equation $y=Y_L$ in a rectangular system of coordinates associated with the display screen and having an X-axis and an Y-axis, Y_L having a different value for each image line, and also comprising means for forming an output signal at any instant at which an image line intersects the circumference of the desired circle (31) of radius R bounding the image to be formed, characterized in that the device also comprises:

a) first storage means (13) for storing pairs of coordinates X_r, Y_r of at least one quadrant of a reference circle (27) having a predetermined center $M_0(X_0, Y_0)$ and a predetermined radius R_r in manner that for each stored pair of coordinates X_r, Y_r one coordinate of the pair acts as an address and the other coordinate of the pair is stored at the address;

b) arithmetic means (15) for calculating the coordinates X' and Y' of the desired circle (31) from the coordinates X_r, Y_r of the reference circle (17) obtained from the first storage means and given values of the radius R and the coordinates X_1, Y_1 of the centre M_1 of the desired circle;



c) second storage means (19) for storing the calculated values of X' and Y', the values of Y' acting as addresses, the associated values of X' being stored at each address Y' and;

d) comparison means (23) for comparing, during the scanning of the display screen (3), x-coordinates followed during the formation of each image line $y=Y_L$ with the value X' associated with $Y'=Y_L$ and stored in the second storage means, and for generating an output signal at the instant at which $x=X'$.

5,386,502

PAINTING PATTERN GENERATION SYSTEM USING OUTLINE DATA AND FLAG DATA

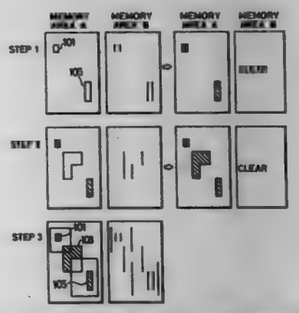
Tsutomu Minagawa, Fujisawa; Naoyuki Kai, Tokyo, and Masahide Ohhashi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 724,939, Jul. 2, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 123,849

Claims priority, application Japan, Jul. 3, 1990, 2-174374

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—141 **7 Claims**



7. A pattern painting method for making patterns painted in interior areas enclosed by a plurality of closed curves using a plurality of outline data representing the plurality of closed curves and a plurality of flag data representing information for a painting operation of the interior areas enclosed by the plurality of closed curves, the method comprising the steps of:

writing outline data into a first memory means and writing flag data, used for painting an interior area of a closed curve represented by the outline data, into a second memory means;

reading out the outline data stored in the first memory means and the flag data stored in the second memory means;

performing a logical exclusive OR operation on adjacent elements of the flag data stored in the second memory means along a predetermined scan line direction to obtain a result of the logical exclusive OR operation;

performing a logical OR operation on the result of the logical exclusive OR operation and the outline data stored in the first memory means along the predetermined scan line direction used in the step of the logical exclusive OR operation to obtain painted pattern data;

clearing the flag data stored in the second memory means in parallel with performing the logical OR operation; and

writing the painted pattern data obtained by the logical OR operation into the first memory means,

wherein the steps for performing the logical exclusive OR operation and the logical OR operation are executed for all scan lines which cross the first closed curve.

5,386,503

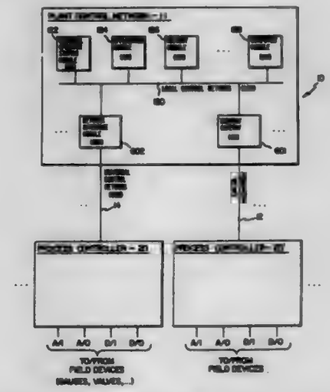
METHOD FOR CONTROLLING WINDOW DISPLAYS IN AN OPEN SYSTEMS WINDOWS ENVIRONMENT

Kevin P. Stagga, Peoria, and Laurence A. Clawson, Cave Creek, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 16, 1992, Ser. No. 899,441

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—157 **6 Claims**



1. A method for guaranteeing that a display of a process control system in an open system windows environment has an integrity of at least a minimum predetermined level, wherein the process control system includes an interface apparatus to at least one open system, the interface apparatus receiving first display information from the open system such that the first display information from the open systems and a second display information from a network of the process control system are displayed on a display unit of the process control system via a display generator unit thereby forming a display in a windows format in response to control information from the interface apparatus, the method comprising the steps of:

by the interface apparatus:

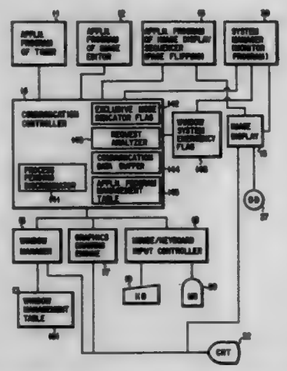
a) transmitting the first display information of the open systems to the display generator unit via a first input channel of the display generator unit;

b) transmitting the control information to the display generator unit via the first input channel to command a display format to the display generator unit of the display unit, said display format including a plurality of windows, one of said windows being a control view, which displays the second display information of the process control system;

c) transmitting an alert command to the display generator unit;
d.1) waiting for a response to the alert command from the display generator unit;
d.2) during the wait:
i) if the alert response is received within a first predetermined time period and if there is new display/control information to be transmitted, proceeding to step (a);
ii) if the response is received within the first predetermined time period and there is no new display/control information to be transmitted, proceeding to step (c);
iii) if the response is not received within the first predetermined time period:
1) transmitting an error message to the display generator unit;
2) causing the control information to be modified such that the display format indicates a removal of the plurality of windows for displaying the first display information of the open systems;
3) zooming the control view such that the control view takes up the entire display of the display unit in a single window; and
4) disabling the first input channel; and
d.3) placing the interface apparatus in an idle mode such that no display information is accepted by the interface apparatus; and
e) proceeding to step (a); and by the display generator unit;
f) receiving the second display information of the process control system transmitted to the display generator unit via a second input channel of the display generator unit;
g) receiving the first display and control information of the open systems transmitted to the display generator unit via the first input channel of the display generator unit;
h) outputting the first and second display information of the open system and the process control system, respectively, to the display unit in the display format in accordance with the command information;
i) upon receipt of the alert command, responding with an acknowledge command to the interface apparatus, thereby guaranteeing that the display unit is operational; and
j) proceeding to step (f).

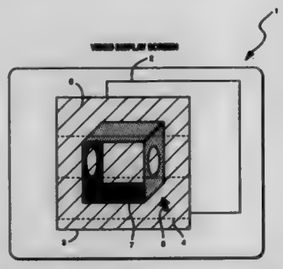
5,386,504
INFORMATION DISPLAY APPARATUS HAVING MULTIWINDOW SYSTEM
Nobuhisa Yoda, Tokyo; Hiroshi Watanabe, Kawasaki; Takeshi Ogaki, Tokyo; Akinori Iwase, Yokosuka, and Shiro Takagi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 28, 1993, Ser. No. 68,225
Claims priority, application Japan, May 29, 1992, 4-138750; May 29, 1992, 4-138751
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—157 **14 Claims**

1. A display apparatus comprising:
display means for displaying data, said display means having a display area for displaying data;
first instructing means for instructing said display means to perform a first process request, wherein said first process request entails displaying data on said display area;
second instructing means for instructing said display means to perform a second process request, wherein said second process request entails modifying a display condition of said display area, said display condition being specified by at least one of the size of said display area and the position of said display area;
first executing means for executing the function of said first process request to said display means;
means for prohibiting a modification of the display condition of said display area when said second instructing means instructs said display means to perform said second process request while said first executing means executes said first process request;
means for storing a content of said second process request when said prohibiting means prohibits the modification of the display condition of said display area; and



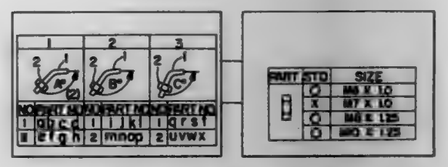
second executing means for executing the function of said second process request stored in said storing means when the function of said first process request completes.

5,386,505
SELECTIVE CONTROL OF WINDOW RELATED OVERLAYS AND UNDERLAYS
Irene Beattie, Leander; Narendra M. Desai, Round Rock; Michael T. Vanover, and John A. Voltin, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 614,350, Nov. 15, 1990, abandoned. This application Nov. 30, 1993, Ser. No. 161,210
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—158 **16 Claims**



7. A method for displaying overlay and underlay patterns in windows in a video display system, comprising the steps of:
defining a plurality of windows for concurrent display in the video display system, each window having an associated image stored in an image frame buffer for display using a frame buffer palette;
defining an overlay pattern for the video display system, said overlay pattern being stored in an independent buffer independent of each said image frame buffer;
defining an underlay pattern for the video display system, said underlay pattern being stored in an independent frame buffer independent of each said image frame buffer; and
selectively associating each overlay and underlay pattern to at least one independent palette stored independent of said frame buffer palette so that display colors of each overlay and underlay pattern are provided by said at least one independent palette, each independent palette being associated with at least one window so that overlay and underlay patterns are selectively displayed in associated windows.

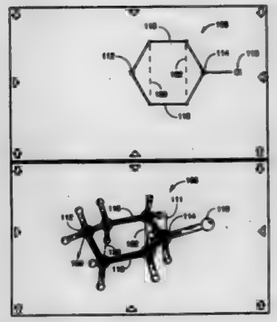
5,386,506
PLOTTING AND EDITING APPARATUS
Kenji Satoh; Miki Tsuchiya; Gichiro Akimori, and Yoshitaka Tezuka, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1992, Ser. No. 983,729
Claims priority, application Japan, Dec. 2, 1991, 3-318216
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—160 **50 Claims**



1. A plotting and editing apparatus comprising:
representative shape storing means for classifying a shape of a target object to be plotted into classes constituting a classification system of a plurality of layers, said layers categorizing each of the classes into progressively lower classes,
said representative shape storing means storing a representative shape of each of the classes making up the classification system;
target object shape storing means for storing the shape of the target object belonging to each of the classes in a lowest layer of the classification system;
display means for displaying shapes retrieved from said representative shape storing means and from said target object shape storing means;
selecting means for selecting one of the shapes displayed on said display means;
shape retrieving means for (a) retrieving from said representative shape storing means the representative shape corresponding to each class in a highest layer of the classification system, (b) retrieving from said representative shape storing means, upon selection via said selecting means of a representative shape displayed on said display means, the representative shape corresponding to each class in a next lower layer relative to the selected shape, and (c) retrieving from said target object shape storing means, when the lowest layer of the classification system is reached, the shape of the target object corresponding to a selected class; and
editing means for editing the shapes displayed on said display means.

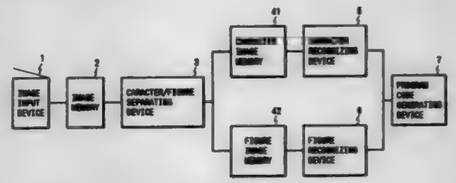
5,386,507
COMPUTER GRAPHICS SYSTEM FOR SELECTIVELY MODELLING MOLECULES AND INVESTIGATING THE CHEMICAL AND PHYSICAL PROPERTIES THEREOF
Steven L. Teig, 904 Ramona St., Palo Alto, Calif. 94301, and Scott D. Kahn, 722 Raymundo Ave., Los Altos, Calif. 94024
Filed Jul. 18, 1991, Ser. No. 732,496
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—161 **34 Claims**

1. A computer graphics system for selectively modeling molecules and investigating chemical and physical properties of said molecules comprising:
a processor;
a controller, running a single software program coupled to said processor to direct operations of said graphics system;
a memory coupled to said processor to store data relative to known atoms, to said molecules, and to intra-molecular forces between atoms in said molecules;
a pointer manipulation device coupled to said processor to provide a user the capability to select models of atoms and molecules from said memory and to direct operations of said controller; and
a monitor coupled to said processor to provide a display of information and said models of atoms and molecules selected by the user via said pointer manipulation device wherein said display has a two-dimensional surface area in which to display information:
wherein said controller:



divides said display into a first portion to display said user selected atoms and molecules with a two-dimensional technique used by chemists to illustrate the relationship between atoms and molecules and a second portion independent of said two-dimensional display and displayed simultaneously therewith, to display said user selected atoms and molecules with a three-dimensional technique used by chemists to illustrate the relationship between atoms and molecules; and
displays a user initiated pointer, which said user has direct control of vin said pointer manipulation device, in one of said first and second display portions to manipulate and modify said selected atoms and molecules as desired by said user in that one of said first and second display portions without changing the configuration of said selected atoms and molecules displayed in the other one of said first and second portions of said display.

5,386,508
APPARATUS FOR GENERATING PROGRAMS FROM INPUTTED FLOWCHART IMAGES
Katsuhiko Itonori, and Noboru Shimizu, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Aug. 16, 1991, Ser. No. 745,897
Claims priority, application Japan, Aug. 24, 1990, 2-220976
Int. Cl.[6] G06F *3/00, 15/70*; G06K *9/46*
U.S. Cl. 395—161 **2 Claims**



1. A program generator comprising:

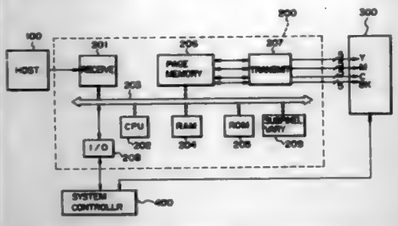
character figure separating means for separating characters and line graphics from an input image of a flowchart into a separated character portion and a separated line graphic portion comprising:
image memory means for storing said input image;
contour extracting means for performing a contouring operation to obtain a contoured image from said input image stored in said image memory means;
chain coding means for performing a chain coding operation to trace black pixels in a region of said input image stored in said image memory means;
directional change counting means for counting a number of changes in direction of strings of chain coded black pixels within said region; and
region identifying means identifying said region as the separated character portion if said number of changes in the direction is larger than a predetermined threshold value, and identifying the region as the separated line graphic portion if said number is smaller than said predetermined threshold value;
character recognizing means for performing character recognition on said separated character portion;
figure recognizing means for extracting symbols from said separated line graphic portion; and
program code generating means for generating instructions corresponding to said symbols and for generating a program code by combining the generated instructions with the results from said character recognizing means corresponding to the positions from which said line graphics were extracted.

5,386,509

GRAPHIC DATA PROCESSING APPARATUS FOR PRODUCING A TONE FOR AN EDGE PIXEL AND REDUCING ALIASING EFFECTS

Hiroaki Suzuki, Yokohama, and Naofumi Ueda, Urayasu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo

Continuation of Ser. No. 659,559, Feb. 22, 1991, Pat. No. 5,299,308. This application Nov. 9, 1993, Ser. No. 149,552
Claims priority, application Japan, Feb. 28, 1990, 2-19566; Jun. 22, 1990, 2-165079; Jun. 22, 1990, 2-165080; Jul. 30, 1990, 2-202190; Jul. 30, 1990, 2-202191; Nov. 13, 1990, 2-306710
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—162 **6 Claims**



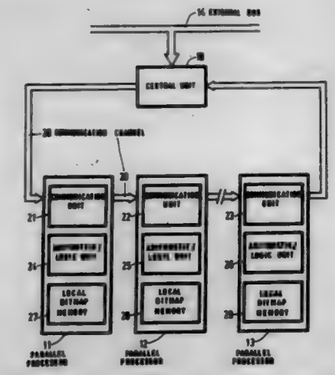
1. A tone determining apparatus for determining tones of respective edge pixels, the tone determining apparatus especially suitable for use within an image forming apparatus which writes an image on a photoconductive drum by scanning a beam from left to right and uses pulse width modulation (PWM) to define areas of a higher tone, the tone determining apparatus comprising:
a dividing means for dividing the edge pixels into subpixels in accordance with a pixel dividing scheme, the pixel dividing scheme dividing each edge pixel into:
(A) one or more left subpixels adjacent a left side of each edge pixel, followed by
(B) one or more right subpixel adjacent a right side of each edge pixel; and
b) tone determining means for determining a tone of each edge pixel by using (A) a first contribution ratio for at least one right subpixel of the edge pixel and (B) a second contribution ratio used for at least one left subpixel of the edge pixel;
wherein:
1) the first and second contribution ratios determine how much the at least one right subpixel's tone contribution value and the at least one left subpixel's tone contribution value respectively contribute to the tone of the edge pixel; and
2) wherein the first contribution ratio is greater than the second contribution ratio, so that:
1) edge pixel, which are at a left edge of the area of the higher tone, are provided with a higher tone by broadened pulse widths; and
2) edge pixel, which are at a right edge of the area of the higher tone, are provided with a lower tone by narrowed pulse widths.

5,386,510

METHOD OF AND APPARATUS FOR CONVERTING OUTLINE DATA TO RASTER DATA

Robertus E. Jacobs, Domburg, Netherlands, assignor to Oce-Nederland BV, Venlo, Netherlands

Continuation of Ser. No. 342,988, Apr. 24, 1989, abandoned. This application Apr. 3, 1992, Ser. No. 863,524
Claims priority, application Netherlands, Apr. 29, 1988, 8801116
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—163 **5 Claims**



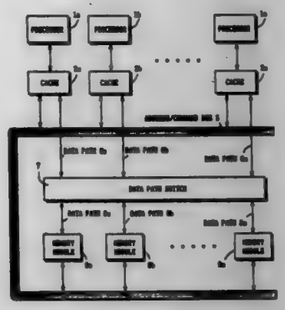
4. Apparatus for converting data concerning the outlines of image parts or objects to raster data, a raster being built up from a number of scan lines, comprising:
a. a central unit adapted to generate and transmit a rasterization order for at least part of the object,
b. at least two parallel processors, each of said processors having a communication unit, a local bitmap memory subdivided into raster memory lines in which corresponding scan lines can be stored and an arithmetic logic unit which generates on the basis of the rasterization order, a corresponding draw order with data concerning a position in said bitmap memory where a result of said draw order is to be stored, and to store this result in the local bitmap memory,
c. said communication unit including means for transmitting said rasterization order to a nonbusy other processor if said arithmetic logic unit is busy, each communication unit of said processor further comprising comparison means for comparing location data in a draw order with data of the position of the raster lines in the local bitmap memory and for feeding the draw order to said arithmetic logic unit upon agreement of the location data in the draw order with data of the position of the raster lines in the local bit memory, and
d. a communication channel interconnecting said central unit and said parallel processors for transmitting data, including said raster order from a busy to a nonbusy processor.

5,386,511

MULTIPROCESSOR SYSTEM AND DATA TRANSMISSION APPARATUS THEREOF

Hiroki Murata, Tokyo-to, and Shigeaori Shimizu, Kawasaki, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1992, Ser. No. 870,539
Claims priority, application Japan, Apr. 22, 1991, 3-116693
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200 **6 Claims**



1. A multiprocessor system comprising:
a plurality of processors;
a main memory comprising a plurality of sections;
a plurality of cache memories provided for said processors;
interconnection network means for selectively connecting said cache memories to said sections for the transfer of data therebetween in accordance with address information for said data;
shared bus means coupled to said cache memories for transferring said address information to said cache memories; and
control means provided for said cache memories for monitoring said address information transferred through said shared bus means to ensure consistency of data stored in said cache memories with data stored in said main memory.

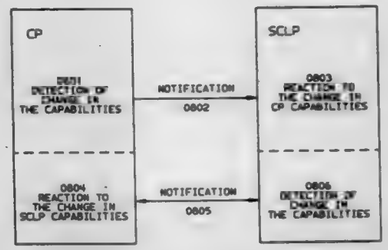
5,386,512

SYSTEM FOR DERIVING AND TESTING MUTUAL CAPABILITY SET AFTER RECEIVING UPDATED CAPABILITY FROM OTHER PROCESSORS AND BEFORE REQUESTING SERVICE INFORMATION

Mary B. Crisman, Hopewell Junction; James C. Daly, Millbrook; Arthur M. Day, Wappingers Falls; Charles W. Gainey, Jr., Poughkeepsie; Paul G. Greenstein, Fishkill; Duane C. Hughes, LaGrange; John T. Rodell, Wappingers Falls, all of N.Y., and Kathleen M. Walsh, Gaithersburg, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 732,985, Jul. 19, 1991, abandoned. This application Dec. 9, 1993, Ser. No. 164,658
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200 **8 Claims**

1. An apparatus for communicating dynamic changes in capabilities of processors for use in a data processing system comprising two or more processors each having storage, said data processing system further comprising a communication path between a pair of the two or more processors, said apparatus comprising:
(a) current capability definitional means, within each of the two or more processors, for identifying a current set of processor functional capabilities associated with the processor containing said current set;
(b) detection means, within each of the two or more processors, for detecting a change to said current set of processor functional capabilities and updating said current capability definitional means, creating an updated current capability definitional means;
(c) communication means, invoked by said detection means, for communicating a copy (termed a communicated copy) of said updated current capability definitional means, associated with a sending processor of the pair of processors, from said sending one to a receiving one of the pair of processors, using the communication path;



(d) mutual capability identification means, within the receiving one of the pair of processors, for identifying, in a mutual capability definitional mask, a derived mutual processing functional capability set by combining said current capability definitional means associated with said receiving processor with said communicated copy of said updated current capability definitional means associated with said sending processor, so that each element of said mutual capability definitional mask, if "on" after said combining, identifies a particular processing functional capability which may be requested by one and performed by another of said pair of processors; and
(e) function request verification means, within the receiving one of the two or more processors, for testing said mutual capability definitional mask means to verify, before requesting a function of the sending processor, that the element of said mutual capability definitional mask associated with the function is "on" and negating the function request if the element is not "on".

5,386,513

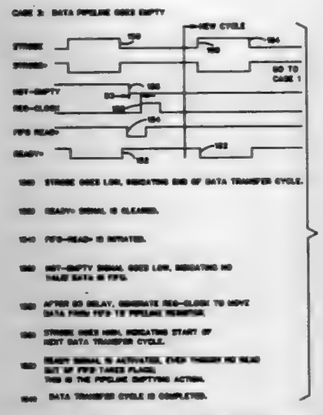
SELF FILLING AND EMPTYING DATA PIPELINE

Curtis S. Tengan, Buena Park, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 9, 1991, Ser. No. 756,686
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—250 **8 Claims**

1. A method for self filling and emptying a data pipeline register between a first-in-first-out register (FIFO) and a receiver, the method comprising the steps of:
(1A) waiting for a data transfer request from the receiver and for a FIFO NOT-EMPTY signal from the FIFO;
(1B) generating a FIFO-READ* signal upon receipt of the data transfer request from the receiver and the FIFO NOT-EMPTY signal from the FIFO;
(1C) delaying for a delay period D3 until data is read out of the FIFO;
(1D) moving data from the FIFO to the above-recited data pipeline register;
(1E) clearing the FIFO-READ* signal;
(1F) testing the FIFO NOT-EMPTY signal

(1G) proceeding to step (2A) if the FIFO is empty, or to step (3A) if the FIFO is not empty;
(2A) generating a READY* signal;
(2B) waiting for a data transfer cycle to complete;
(2C) clearing the READY* signal upon completion of the data transfer cycle;
(2D) returning to step (1A);
(3A) generating a READY* signal;
(3B) waiting for a data transfer cycle to complete;
(3C) clearing the READY* signal upon completion of the data transfer cycle;
(4A) generating a FIFO-READ* signal;
(4B) delaying for a delay period D3 until data is read out of the FIFO;
(4C) moving data from the FIFO to the pipeline register;
(4D) clearing the FIFO-READ* signal;
(4E) testing the FIFO NOT-EMPTY signal;



(4F) proceeding to step (6A) if the FIFO is empty, or to step (5A) if the FIFO is not empty;
(5A) waiting for a data transfer request from the receiver;
(5B) generating a READY* signal upon receipt of the data transfer request from the receiver;
(5C) waiting for a data transfer cycle to complete;
(5D) clearing the READY* signal upon completion of the data transfer cycle;
(5E) returning to step (4A);
(6A) waiting for a data transfer request from the receiver;
(6B) generating a READY* signal upon receipt of the data transfer request from the receiver;
(6C) waiting for a data transfer cycle to complete;
(6D) clearing the READY* signal upon completion of the data transfer cycle; and
(6E) returning to step (1A).

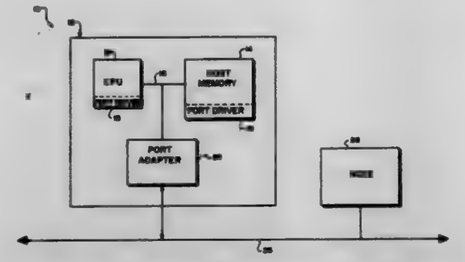
5,386,514

QUEUE APPARATUS AND MECHANICS FOR A COMMUNICATIONS INTERFACE ARCHITECTURE

Richard Lary, Colorado Springs, Colo.; Robert Willard, Andover; Catharine van Ingen, Shrewsbury, both of Mass.; David Thiel, Colorado Springs, Colo.; William Watson, Redmond, Wash.; Barry Rubinson, Danville, Calif.; Edward A. Gardner, Colorado Springs, Colo., and Verell Boaen, Groton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 16, 1992, Ser. No. 869,648
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—250 **16 Claims**

1. Apparatus for exchanging information between a port driver operating system program and a port adapter, said apparatus comprising:
(A) singly-linked queue means located in host memory for inserting and removing said information exchanged between said driver and said port adapter, said queue means having a beginning portion and an end portion and further comprising:
carrier means for storing said information for exchange between said driver and said port adapter;
first stopper means for referencing said end portion of said queue means and including indicator means adapted to be asserted for distinguishing said stopper means from said carrier means; and



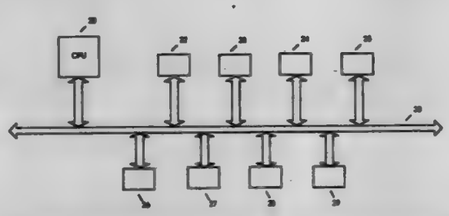
means for referencing said beginning portion of said queue means;
(B) means for inserting said carrier means at said end portion of said queue means; and
(C) means for removing said carrier means from said beginning portion of said queue means so that said information contained in said carrier means is exchanged between said driver and said port adapter without the use of an external synchronization mechanism.

5,386,515

AUTOMATIC INPUT/OUTPUT ADDRESS CONFLICT RESOLUTION

Phil Martin, Banks, and Gary Alvstad, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 27, 1992, Ser. No. 889,458
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—275 **21 Claims**



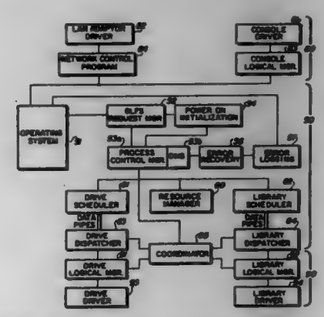
1. A method for resolving address conflicts among adapters in a computer system, comprising the steps of:
determining an address space on a system bus for each of a set of adapters that each implement a set of automatic conflict resolution functions, wherein the automatic conflict resolution functions include a bit switch function for switching on and switching off the corresponding adapter and an address shift function for shifting the address space of the corresponding adapter;
testing for address conflicts on the system bus between the address spaces of the adapters that implement the automatic conflict resolution functions and adapters that do not implement the automatic conflict resolution functions such that the adapters that implement the automatic conflict resolution functions and that do not have the address conflicts are disabled using the bit switch function;
shifting the address space of each adapter that implements the automatic conflict resolution functions to a next sequential address space of a predetermined set of address spaces available on the system bus using the address shift function on the adapters that implement the automatic conflict resolution functions and that are switched on;
repeating the steps of testing for address conflicts and shifting the address space of each adapter that implements the automatic conflict resolution functions a predetermined number of times, such that the adapters that implement the automatic conflict resolution functions are shifted out of address conflict with the adapters that do not implement the automatic conflict resolution functions;
mapping the address space of each adapter that implements the automatic conflict resolution functions, such that the address spaces do not overlap.

5,386,516

VIRTUAL DRIVES IN AN AUTOMATED STORAGE LIBRARY

Christopher J. Monahan; Mary L. Monahan, and Dennis L. Willson, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 787,468, Nov. 4, 1991, abandoned, which is a division of Ser. No. 525,590, May 21, 1990, Pat. No. 5,121,483. This application Jan. 19, 1992, Ser. No. 902,470
The portion of the term of this patent subsequent to Jan. 9, 2009, has been disclaimed.
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—275 **3 Claims**



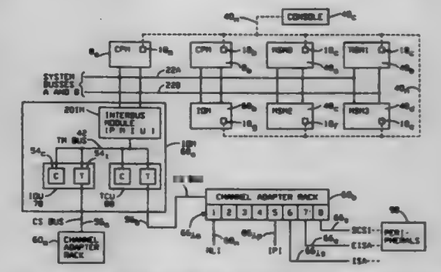
1. A system controller for use in an automated storage library having a plurality of data volumes therein, the automated storage library including a plurality of occupied, internal peripheral storage devices, a plurality of storage cells, and automated means for transferring a volume between any internal peripheral storage device and any storage cell, the system controller comprising:
a memory;
a first driver coupled to the memory for controlling the automated means for transferring a volume;
at least one additional driver coupled to the memory for controlling the plurality of internal peripheral storage devices;
means in the memory for retaining access information for a first data volume mounted in a first one of the peripheral storage devices and for instructing said at least one additional driver to command the first one of the internal peripheral storage devices to interrupt access to the first data volume;
means in the memory for instructing the first driver to command the automated means for transferring a volume to physically demount the first data volume even though access to the first data volume has not been completed;
means in the memory for instructing the first driver to command the automated means for transferring a volume to mount a second data volume in the first one of the peripheral storage devices;
means in the memory for instructing the first driver to command the automated means for transferring a volume to remount the first data volume in any one of the peripheral storage devices that subsequently becomes available after a data volume mounted therein is demounted; and
means in the memory for recalling the access information for the first data volume and using it to instruct said at least one additional driver to command the resumption of access to the first data volume.

5,386,517

DUAL BUS COMMUNICATION SYSTEM CONNECTING MULTIPLE PROCESSORS TO MULTIPLE I/O SUBSYSTEMS HAVING A PLURALITY OF I/O DEVICES WITH VARYING TRANSFER SPEEDS

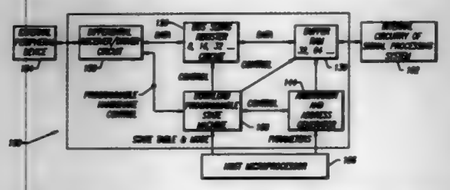
Jayesh V. Sheth, Mission Viejo; Craig W. Harris, Lake Forest; Theodore C. White, Tustin; Kha Nguyen, Anaheim; Chung W. Wong, Dana Point, and Richard A. Cowgill, Lake Forest, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 26, 1993, Ser. No. 8,962
Int. Cl.[6] G06F *5/06*
U.S. Cl. 395—275 **12 Claims**



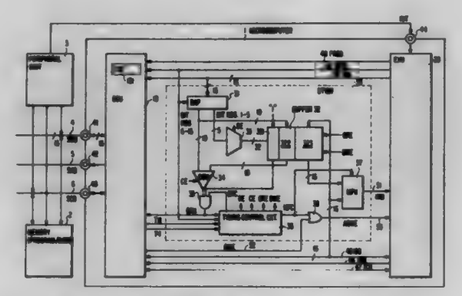
1. A modular input/output subsystem supporting a main host computer having a main memory via dual system busses and providing specialized protocol communication lines to a plurality of different peripheral devices, via a plurality of interface adapter means, said subsystem comprising:
(a) a dual system bus means for connecting a main host computer and main memory to an interbus interface memory unit means (20IM, PMIU) holding a cache memory unit (RAM26) which reduces the need to access said main memory by a group of subrequestor unit means;
(b) said interbus interface memory unit means (PMIU) providing an interface between said dual system bus means and said group of subrequestor unit means and operating at a first clock rate;
(c) transfer message subrequestor bus means (42) operating at said first clock rate and connecting said group of subrequestor unit means;
(d) each said group of subrequestor unit means operating at a range of different clock rates and relieving said main host computer of operating system I/O tasks, including:
(d1) means to communicate via said interbus interface memory unit means to said main host computer via said interbus interface memory unit means for notifying said host of tasks to be run and the completion thereof;
(d2) means to schedule, initiate and terminate I/O job tasks for enabling data transfers to/from each of said plurality of peripheral devices via each of a plurality interface adapter means (60_{ia});
(e) each of said plurality of interface adapter means providing a compatible protocol and clock rate applicable to its connecting peripheral device.

5,386,518
RECONFIGURABLE COMPUTER INTERFACE AND METHOD
Dennis J. Reagle, Riverside, and Gregory D. Bolstad, Orange, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Feb. 12, 1993, Ser. No. 17,222
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—325 12 Claims



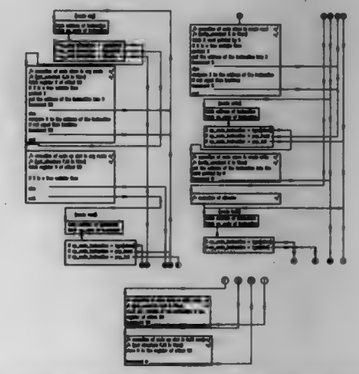
1. A general purpose, reconfigurable parallel-to-parallel interface system for interfacing a first data bus from a first digital subsystem to a second data bus from a second digital subsystem, the interface system comprising:
buffer memory storage means for providing temporary storage of a plurality of data signals transmitted between said first and second subsystems, said buffer memory storage means operating in response to memory storage control signals;
programmable bus sizing means for modifying the word size of a plurality of data signals transmitted between said first and second subsystems in response to bus sizing control signals;
level translating means connected to said first digital subsystem for translating the electrical levels of a plurality of data signals on said first data bus to electrical levels of said reconfigurable system;
reconfigurable state machine means for generating a plurality of interface control signals in accordance with a state table in response to a plurality of external condition signals, said external condition signals including mode control signals, said interface control signals including said memory storage control signals and said bus sizing control signals;
means for establishing a data path through said interface system for connecting said first data bus to said second data bus, said data path comprising said buffer memory storage means, said bus sizing means and said level translating means;
control signal path means for establishing a control signal path between said state machine means and said first digital subsystem, said control signal path being separate from said data path through the interface system and for carrying handshake control signals between said state machine means and said first digital subsystem, said handshake control signals comprising said external condition signals;
host processor means for generating said state table and said mode control signals for said state machine means; and
wherein said state machine means operates autonomously from said host processor means upon receiving said state table and said mode control signals until said host processor generates a fresh state table and mode control signals to reconfigure the interface system.

5,386,519
INFORMATION PROCESSING APPARATUS INCORPORATING BUFFER STORING A PLURALITY OF BRANCH TARGET INSTRUCTIONS FOR BRANCH INSTRUCTIONS AND INTERRUPT REQUESTS
Takasori Nakamura, and Hiroshi Katsuta, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jul. 23, 1992, Ser. No. 917,286
Claims priority, application Japan, Jul. 24, 1991, 3-184245
Int. Cl.[6] G06F *9/26, 9/30, 9/38, 9/42*
U.S. Cl. 395—375 10 Claims



1. A microcomputer comprising:
a bus control unit performing a bus cycle for fetching an instruction;
an execution unit executing an instruction supplied thereto and issuing a branch request including branch address information representative of a branch address to which an instruction stream to be executed by said execution unit is changed; and
a branch target instruction buffer unit coupled to said bus control unit and said execution unit, said bus control unit being responsive to both of said branch request from said execution unit and a control signal from said branch target instruction buffer unit to initiate the bus cycle for fetching an instruction from said branch address to thereby output a branch target instruction,
said branch target instruction buffer unit including:
a plurality of storage buffers for temporarily storing address information and an instruction associated with the stored address information;
a decoder circuit responding to said branch address information to select one of said storage buffers and to read out the address information and the instruction associated therewith from said one of said storage buffers in parallel with each other;
a detection circuit, coupled to receive said branch address information contained in said branch request and the address information read out of said one of said storage buffers, for producing a detection signal of an active level when said branch address information is the same as the address information read out of said one of said storage buffers, and a detection signal of an inactive level when said branch address information is not the same as the address information read out of said one of said storage buffers, said inactive level of said detection signal being supplied to said bus control unit as said control signal;
a selection control circuit, coupled to receive said branch target instruction from said bus control unit and the instruction read out of said one of said storage buffers, for selecting and supplying the instruction read out of said one of said storage buffers to said execution unit in response to said active level of said detection signal, and selecting and supplying said branch target instruction to said execution unit in response to said inactive level of said detection signal; and
an information updating circuit for writing said branch target instruction and said branch address information associated therewith into said one of said storage buffers in response to said inactive level of said detection signal.

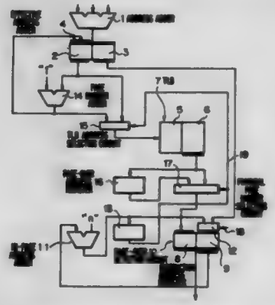
5,386,520
PROLOG ADDRESSING
Marc J. L. Gillet, Redwood City, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 393,629, Aug. 14, 1989, abandoned.
This application Aug. 27, 1992, Ser. No. 938,315
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] G06F *9/26, 9/42*
U.S. Cl. 395—375 3 Claims



2. A method of operating a computer system having a processor, a memory and registers, to execute a set of instructions encoded from a Prolog program, the instructions being stored in the memory and including object words, comprising the steps of:
loading, using the processor of the computer system, an object word into a register having the same number of bits as the object word;
using the processor of the computer system to process the object word of type pointer as an address of an object having no tag field and having a single address field when the most significant bit in the register is equal to zero which includes the step of storing in the object word an object address which points to itself, thereby representing a free variable; and
using the processor of the computer system to process the object word as a type descriptor having a tag field when the most significant bit in the register is equal to one.

5,386,521
INSTRUCTION PREFETCHING CIRCUIT WITH A NEXT PHYSICAL ADDRESS PRECALCULATING CIRCUIT
Takenori Saitoh, Ibaragi, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Dec. 23, 1992, Ser. No. 996,177
Claims priority, application Japan, Dec. 27, 1991, 3-360126
Int. Cl.[6] G06F *9/26, 9/32, 12/10*
U.S. Cl. 395—375 2 Claims

1. An instruction prefetching circuit, comprising:
address adding means for calculating an instruction prefetching address;
an effective address register including a logical page number section into which a logical page number from an output of said address adding means is stored and an in-page address section into which an in-page address in said output of said address adding means is stored;
page number adding means for adding "1" to an output of said logical page number section in said effective address register and storing a sum into said logical page number section in said effective address register;
an address converting buffer including a data section in which a physical address is stored and a key section in which information for converting a logical address into a physical address is stored;
address converting buffer address selecting means for selecting said output of said logical page number section of said effective address register when a page-over detection signal is inactive and selecting an output of said page number adding means when said page-over detection signal is active and for outputting a thus selected output as an address to said address converting buffer;
an instruction address register including a physical page number section into which a physical page number is stored and a physical in-page address section into which a physical in-page address is stored;
in-page address adding means for adding "n", n being a natural number, to an output of said physical in-page address section in said instruction address register;



page-over detecting means for receiving an output of said in-page address adding means and for rendering said page-over detection signal active when a next instruction goes over a boundary of a page;
a page-over address register into which an output of said data section of said address converting buffer is stored;
physical page number selecting means for selecting said output of said data section of said address converting buffer when said page-over detection signal is inactive but selecting an output of said page-over address register when said page-over detection signal is active and for storing a thus selected output into said physical page number section in said instruction address register; and
in-page address selecting means for selecting an output of said in-page address section in said effective address register when a branch instruction decode signal is active and selecting said output of said in-page address adding means when said branch instruction decode signal is inactive and for storing a thus selected output into said physical in-page address section of said instruction address register.

5,386,522
DYNAMIC PHYSICAL ADDRESS ALIASING DURING PROGRAM DEBUGGING
David H. Evans, Lexington, Ky., assignor to International Business Machines, Corp., Armonk, N.Y.
Filed Dec. 30, 1991, Ser. No. 815,734
Int. Cl.[6] G06F *12/08, 11/00, 11/30*
U.S. Cl. 395—400 3 Claims

1. A method of converting a physical address of a portion of a program to be debugged, stored in a memory device of an information storage location to a linear address corresponding to said physical address, said physical address comprising a

physical address frame and an offset value, said method comprising the steps of:

a) providing a debugger program stored in physical memory;

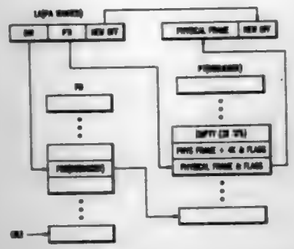
b) providing a program to be debugged stored in said physical memory;

c) determining a permanent linear address of said debugger program;

d) excerpting a portion of said permanent linear address of said debugger program to determine an index to a Page Directory Entry that maps said debugger program;

e) said debugger program reading said Page Directory Entry to acquire a physical address of a Page Table which in turn maps the debugger program;

f) creating a Global Descriptor Table Entry which accesses said Page Table;



g) searching said Page Table for three unused Page Table Entries;

h) modifying two of said three unused Page Table Entries to map any portion of said program to be debugged;

i) converting said physical address of said information storage location of said program to be debugged by assembling a linear address comprising said Page Directory Entry index and an index of the first of said three Page Table Entries; and

j) said debugger program accessing said information storage location using said linear address and using contents of said information storage location for display purposes or for modifying said contents of said information storage location.

5,386,523

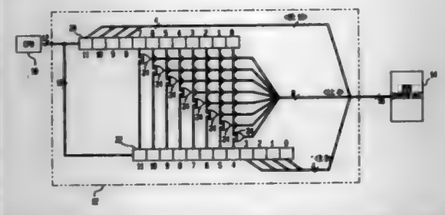
ADDRESSING SCHEME FOR ACCESSING A PORTION OF A LARGE MEMORY SPACE

Neal A. Crook, Reading, England; Michael J. Seaman, San Jose, Calif., and David L. A. Brash, Reading, England, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 10, 1992, Ser. No. 818,607

Int. Cl.[6] G06F *12/00, 12/06*

U.S. Cl. 395—400 **14 Claims**



1. A method of generating an address in a computer system, the address being represented by a first number of address bits, each unique value of the address corresponding to a unique memory location in the computer system, comprising the steps of:

a) loading a first register with binary data, the first register including a first number of register storage locations, the first number of register storage locations being less than the first number of address bits;

b) loading a second register with binary data, the second register including a second number of register storage locations, the second number of register storage locations being less than the first number of address bits;

c) logically combining in a boolean operation a bit in each of a preselected third number of register storage locations of the first register only with a bit in each of a preselected equal number of corresponding register storage locations of the second register to generate an equal number of logical combination result bits;

d) concatenating the logical combination result bits of step c, and binary data in the first and second registers not logically combined in step c to thereby generate the address represented by the first number of address bits.

5,386,524

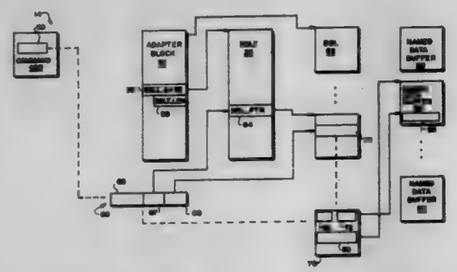
SYSTEM FOR ACCESSING INFORMATION IN A DATA PROCESSING SYSTEM

Richard Lary, Colorado Springs, Colo.; Robert Willard, Andover; Catharine Van Ingen, Shrewsbury, both of Mass.; David Thiel, Colorado Springs, Colo.; William Watson, Redmond, Wash.; Barry Rubinson, Danville, Calif., and Verell Boaen, Groton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 16, 1992, Ser. No. 869,668

Int. Cl.[6] G06F *12/00, 12/06, 13/00*

U.S. Cl. 395—400 **11 Claims**



1. A system for accessing data located in a host memory comprising:

at least one named data buffer containing addressable storage locations in said host memory;

a first addressable storage region for storing a plurality of descriptors, each descriptor containing physical address information identifying the location of one of said at least one named data buffer in said host memory;

a second addressable storage region including a location for storing a starting address of said first addressable storage region; and

a processor located within a port adapter for determining the location of a selected descriptor in response to said starting address and an index contained within a command received by said port adapter, said index identifying said selected descriptor located in said first addressable storage region, said processor also determining the location of said data in a selected one of said at least one named data buffer in response to said physical address information contained in said selected descriptor, such that said port adapter accesses said data from non-contiguous addressable storage locations in said host memory.

5,386,525

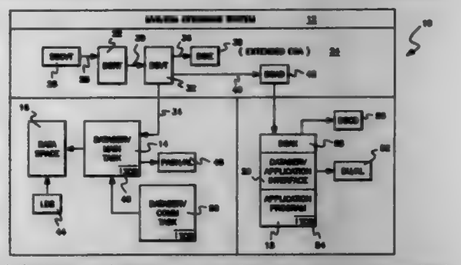
SYSTEM FOR PROVIDING APPLICATION PROGRAMS WITH DIRECT ADDRESSABILITY INTO A SHARED DATASPACE

Otto F. Noack, Walnut Creek, Calif., assignor to Pacific Bell, San Francisco, Calif.

Filed Oct. 29, 1991, Ser. No. 784,265

Int. Cl.[6] G06F *12/06*

U.S. Cl. 395—400 **18 Claims**



1. In an operating system executing on a computer, a method of sharing dataspaces among a plurality of applications executing in the computer, the method comprising steps of:

(a) initializing a Dataspace Services (DataServ) Subsystem in the computer, the initializing step further comprising the steps of obtaining storage for a DataServ Router Table (DSRT) in an Extended Common Storage Area (ECSA) provided by the operating system, anchoring the DSRT by storing a pointer thereto in a SubSystem Communications Vector Table (SSCVT) residing in the ESCA, wherein the SSCVT is accessible through the operating system;

(b) executing a DataServ task in the computer, the executing step further comprising the steps of obtaining storage for a DataServ Vector Table (DSVT) in the ECSA, storing a job name for the DataServ task and a pointer to the DSVT in the DSRT, creating one or more dataspaces by invoking a utility of the operating system which returns STOKENs identifying the created dataspaces, obtaining storage for Dataspace Information Elements (DSIEs) in the ECSA, storing a pointer to the DSIEs in the DSVT, and storing the STOKENs in the DSIEs associated with the created dataspaces;

(c) executing an application in the computer, the executing step further comprising the steps of accessing the SSCVT via the operating system to retrieve the pointer to the DSRT, searching the DSRT for the job name of a particular DataServ task, accessing the DSRT to retrieve the pointer to the DSVT associated with the job name and thus the particular DataServ task, accessing the DSVT to retrieve the pointer to the DSIEs, searching the DSIEs for a name of a particular dataspace, accessing the DSIE to retrieve the STOKEN associated with the particular dataspace, and using the STOKEN to provide direct addressability to the dataspace; and

(d) repeating the executing step (c) for a plurality of applications.

5,386,526

CACHE MEMORY CONTROLLER AND METHOD FOR REDUCING CPU IDLE TIME BY FETCHING DATA DURING A CACHE FILL

Samir Mitra, Milpitas; Renukanthan Raman, Sunnyvale, and Joseph Petolino, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Oct. 18, 1991, Ser. No. 779,388

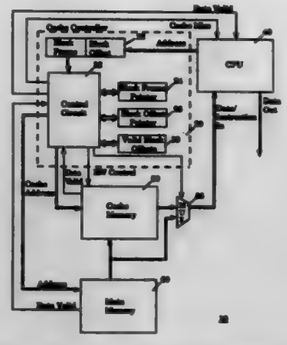
Int. Cl.[6] G06F *12/06, 13/00*

U.S. Cl. 395—400 **34 Claims**

18. A cache memory controller for fetching data for a central processing unit (CPU) of a computer system from a cache and main memory hierarchy of the computer system that reduces CPU idle time, said memory hierarchy including a cache memory and a main memory, said cache memory controller comprising:

an address register coupled to said CPU for receiving a first memory address from said CPU, said first memory address indicating a first memory location of said main memory where a first data word being fetched by said CPU is stored; and

control circuitry coupled to said address register, said CPU, said cache memory and said main memory for determining whether a first cache memory fill is in progress, determining how to fetch said first data word from said cache memory and said main memory and return said first data word to said CPU, wherein said determining how to fetch and return said first data word comprises determining whether said first cache memory fill is in progress, and



determining whether said first cache memory fill includes storing said first data word in said cache memory if said first cache memory fill is in progress, and sending signals to said CPU, said cache memory, and said main memory accordingly, thereby resulting in said first data word being retrieved from said cache and main memory hierarchy and returned to said CPU, said CPU being coupled to said cache memory and said main memory;

said first cache memory fill being initiated due to a first cache read miss which resulted from previously receiving a second memory address from said CPU, said second memory address indicating a second memory location of said main memory where a second data word being fetched by said CPU is stored, said second data word having been subsequently retrieved from said cache and main memory hierarchy and returned to said CPU.

5,386,527

METHOD AND SYSTEM FOR HIGH-SPEED VIRTUAL-TO-PHYSICAL ADDRESS TRANSLATION AND CACHE TAG MATCHING

Patrick W. Bosshart, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1991, Ser. No. 815,292

Int. Cl.[6] G06F *12/10, 12/08, 12/00*

U.S. Cl. 395—400 **19 Claims**

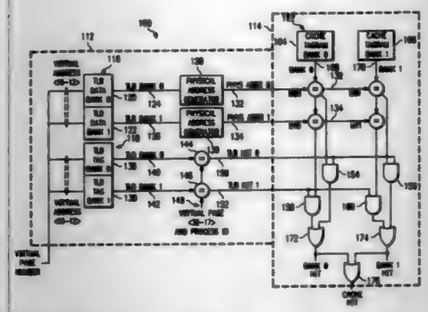
1. A circuit for high-speed virtual-to-physical address translation and cache tag matching, comprising:

circuitry including an N-way set-associative memory for producing a first predetermined plural number, N, of candidate physical addresses and N candidate address hit signals which respectively indicate whether or not said candidate physical addresses are qualified for cache tag matching;

an M-way set-associative cache for producing a second predetermined number, M, of address tags;

comparison circuitry for comparing each of said N candi-

date physical addresses with each of said M address tags; and



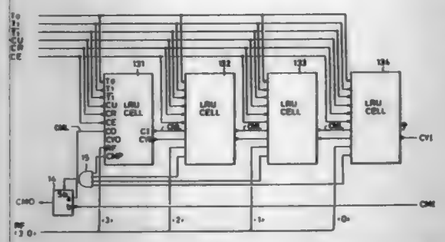
circuitry responsive to said N candidate address hit signals and said comparison circuitry for indicating when a qualified candidate physical address matches one of said address tags.

5,386,528

ADDRESS TRANSLATOR HAVING A HIGH SPEED DATA COMPARATOR

Hideki Ando, and Hirohisa Machida, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 643,987, Jan. 22, 1991, Pat. No. 5,130,692. This application Apr. 29, 1992, Ser. No. 874,921
Claims priority, application Japan, Jan. 24, 1990, 2-15385
Int. Cl.[6] G06F *12/10*; G11C *15/00*
U.S. Cl. 395—400 **2 Claims**



1. An address translator for translating an externally applied first logical address into a physical address, comprising;

a) physical address storage means for storing the physical address;

b) logical address storage means for storing a second logical address corresponding to the physical address stored in said physical address storage means, said logical address storage means generating a logical address detection signal when said first and second logical addresses match one another and causing said physical address storage means to output the physical address corresponding to the externally applied first logical address; and

c) a plurality of LRU circuits each having an input/output port and each storing a count value for each entry of the externally applied first logical address matching said second logical address, and in response to the logical address detection signal, one of said plurality of LRU circuits providing the count value stored therein to said input/output port of the other LRU circuits and each of the other LRU circuits comparing the count value stored therein with the count value provided by said one of said plurality of LRU circuits, wherein each LRU circuit includes:

i) a plurality of partial match detecting means each for comparing a corresponding portion of the count value provided by said one of said LRU circuits to provide a partial match signal, and

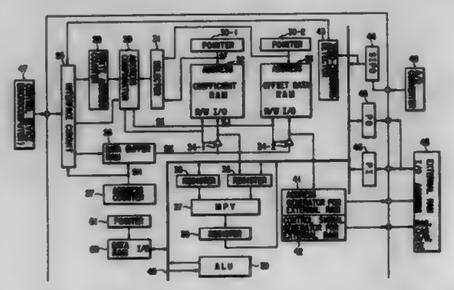
ii) bypass means connected to two adjacent partial match detecting means and responsive to the partial match signal of a higher partial match detecting means for bypassing a lower partial match signal of the corresponding portion of the count value of the lower partial match detecting means to a next higher partial matching detecting means.

5,386,529

DIGITAL SIGNAL PROCESSOR FOR USE IN SOUND QUALITY TREATMENT BY FILTERING

Atsushi Kondo, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 1, 1992, Ser. No. 877,107
Claims priority, application Japan, May 2, 1991, 3-100799
Int. Cl.[6] G06F *12/00, 15/31*; H03G *3/00*; G10H *7/10*
U.S. Cl. 395—400 **9 Claims**



1. A digital signal processor, in which a control device sequentially transmits to and writes into a buffer memory data necessary for multiplication in a multiplier or for address generation for an external memory, and then the data in said buffer memory is written into an internal memory during a single sampling period, and which comprises:

first means for generating control signals to write the data read from said buffer memory into said internal memory by comparing an address set by said control device in said internal memory into which the data in said buffer memory is written, with an address in said internal memory controlled by a program; and

second means for writing the data read from said buffer memory into said internal memory and also using the same data read from said buffer memory for multiplication in the multiplier or for address generation for the external memory.

5,386,530

ADDRESS TRANSLATION DEVICE CAPABLE OF OBTAINING A REAL ADDRESS FROM A VIRTUAL ADDRESS IN A SHORTER TIME

Toshiyuki Hattori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,908
Claims priority, application Japan, May 31, 1991, 3-155361
Int. Cl.[6] G06F *12/08, 12/10*
U.S. Cl. 395—400 **28 Claims**

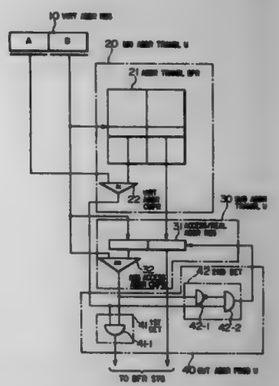
1. An address translation device for translating an input virtual address into an output real address, said device comprising:

a virtual address register for holding said input virtual address as a held virtual address which is divided into first and second fields;

an address translation buffer having a buffer capacity and a buffer access time and is connected to said virtual address register for storing buffer fields of virtual addresses and buffer real addresses corresponding to the respective virtual addresses, each of said buffer fields of the virtual addresses corresponding to said first field of said held virtual address, said address translation buffer being accessed by said second field of said held virtual address as a buffer access address to produce, as an output buffer field of the virtual address and an output buffer real address, one of said buffer fields of the virtual addresses and one of said buffer real addresses, respectively;

a virtual address comparator connected to said virtual address register and said address translation buffer for comparing said first field of the held virtual address with said output buffer field of the virtual address, said virtual address comparator producing a virtual address coincidence signal when said first field of the held virtual address coincides with said output buffer field of the virtual address;

an access/real address register having a register capacity smaller than said buffer capacity and a register access time shorter than said buffer access time, and connected to said virtual address register and said address translation buffer for holding, in response to a buffer presence/register absence signal, said buffer access address and said output buffer real address as a held access address and a held real address, respectively, said access/real address register



producing said held access address and said held real address as an output register access address and said output real address, respectively;

a register access address comparator connected to said virtual address register and said access/real address register for comparing said buffer access address with said output register access address, said register access address comparator producing a register access address coincidence signal when said buffer access address coincides with said output register access address;

first detection means connected to said virtual address comparator and said register access address comparator for detecting, in response to said virtual address coincidence signal and said register access address coincidence signal, whether the held real address corresponding to said input virtual address is present or absent in said access/real address register, said first detection means producing a register presence signal indicative of presence in said access/real address register when both of said virtual address coincidence signal and said register access address coincidence signal are supplied thereto; and

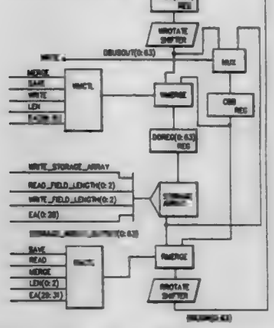
second detection means connected to said virtual address comparator, said register access address comparator, and said access/real address register for detecting, in response to said virtual address coincidence signal and said register access address coincidence signal, that the buffer real address corresponding to said input virtual address is present in said address translation buffer and that the held real address corresponding to said input virtual address is absent in said access/real address register, said second detection means producing said buffer presence/register absence signal indicative of presence in said address translation buffer and of absence in said access/real address register when said virtual address coincidence signal is supplied thereto and when said register access address coincidence signal is not supplied thereto, thereby making said access/real address register hold said buffer access address and said output buffer real address in response to said buffer presence/register absence signal.

5,386,531

COMPUTER SYSTEM ACCELERATOR FOR MULTI-WORD CROSS-BOUNDARY STORAGE ACCESS

Bartholomew Blaner, Newark Valley; Raymond J. Eberhard, Endicott; Thomas L. Jeremiah, Endwell, and Michael J. Mack, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1991, Ser. No. 700,732
Int. Cl.[6] G06F *12/04, 12/06*
U.S. Cl. 395—425 **23 Claims**



1. A data processing system having an instruction processing unit (IPU) and a storage array organized on word boundaries or multi-word boundaries where a word is some number of consecutive bytes representing the basic unit of computation for said instruction processing unit, comprising:

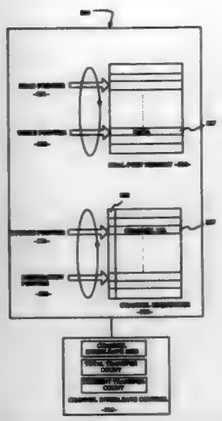
said instruction processing unit and said storage array; and hardware accelerator means for cross-boundary storage access to said storage array including a cross boundary buffer means for providing residual read and write data to said instruction processing unit in support of high speed, block concurrent accessing of multi-word operands of said system and for operating on multiple words, with residues from a second and subsequent accesses enabling continuation of the accessing process by said hardware accelerator means beyond two memory words to span more than a word boundary and to allow high speed block-concurrent accesses to and from said storage array for load multiple and store multiple instructions.

5,386,532

METHOD AND APPARATUS FOR TRANSFERRING DATA BETWEEN A MEMORY AND A PLURALITY OF PERIPHERAL UNITS THROUGH A PLURALITY OF DATA CHANNELS

Martin Sodos, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 30, 1991, Ser. No. 814,765
Int. Cl.[6] G06F *12/08, 13/00*
U.S. Cl. 395—425 9 Claims



1. A circuit architecture for transferring data between a memory and a plurality of peripheral units of a computer through a plurality of data channels, comprising:

a dual-port memory coupled between said memory and said plurality of peripheral units for buffering a plurality of data slices being transferred through said plurality of data channels in a plurality of data locations, said dual-port memory comprising writing means and reading means for writing into and reading out of said dual-port memory, said writing means not writing to a data location before said data location is read out of said dual-port memory by said reading means such that said data location is not overwritten;

channel sequence means coupled to said dual-port memory for storing a plurality of data channel numbers therein, each of said plurality of data channel numbers corresponding to one of said plurality of data slices buffered in said dual-port memory, said channel sequence means for writing a first channel number to a location within said channel sequence means when a data slice from a first channel is written into said dual-port memory such that said first channel number represents a source channel of said data slice, said channel sequence means for reading said first channel number from said location when said data slice is read from said dual-port memory such that said first channel number represents a destination channel of said data slice, wherein said data slice is written into and read out of said dual-port memory through said first channel as stored in said channel sequence means; and

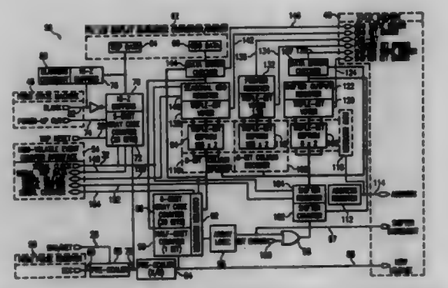
channel interleave control means coupled to said dual-port memory and said channel sequence means for interleaving data transfers for said data channels through said dual-port memory, said channel interleave means for reading a predetermined channel interleave size, said predetermined channel interleave size corresponding to an amount of data which can be transferred by one of said plurality of data channels during a predetermined period of time, a total transfer count and a current transfer count corresponding to each data channel in both read and write directions to determine when a second channel interleaves, said channel interleave means allowing data to be transferred through said second channel after said first channel has transferred data of equal or less than its predetermined channel interleave size, said channel interleave means also allowing said second channel to transfer data after said first channel has completed its total transfer count such that said second channel transfers its data without waiting for said first channel to reach its predetermined channel interleave size.

5,386,533

METHOD AND APPARATUS FOR MAINTAINING VARIABLE DATA IN A NON-VOLATILE ELECTRONIC MEMORY DEVICE

John O. Morris, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 21, 1990, Ser. No. 616,521
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—425 67 Claims



1. Apparatus for maintaining variable data in a non-volatile electronic memory device comprising:

a non-volatile memory array comprising a plurality of non-volatile bit storage locations, a first set of said bit storage locations and a second set of bit storage locations defining a storage unit, wherein the bit locations of said storage unit are a subset of the bit locations of said memory array; and

a shifter array operable to redefine said storage unit to comprise said second set of said bit storage locations and a third set of bit storage locations, said third set including at least one bit not within said first set.

5,386,534

DATA PROCESSING SYSTEM FOR GENERATING SYMMETRICAL RANGE OF ADDRESSES OF INSTRUCTING-ADDRESS-VALUE WITH THE USE OF INVERTING SIGN VALUE

James M. Sibigtroth, Round Rock; J. Greg Viot, Austin; John A. Langan, Austin, and James L. Broseghini, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 27, 1992, Ser. No. 967,295
Int. Cl.[6] G06F *12/06, 9/34*
U.S. Cl. 395—400 11 Claims

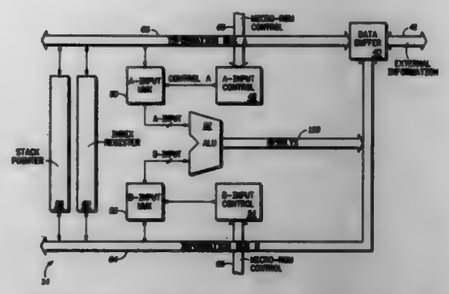
1. A data processing system for calculating an offset sum, comprising wherein said symmetrical range of addresses is within a decimal range off $-2^{(n-1)}$ to -1 and $+1$ to $+2^{(n-1)}$;

interface means for receiving an instruction having an index offset value, the instruction having a first portion for specifying an operation to be executed and a second portion for specifying the index offset value having both a sign portion, and a magnitude portion, the interface means also communicating a first address value corresponding to the instruction;

instruction decode means for decoding the instruction to provide a plurality of control signals, the instruction decode means coupled to the interface means for receiving the instruction;

a register for storing the first address value during execution of the instruction, the register coupled to the interface means for communicating the first address value; and

an arithmetic logic circuit coupled to the register for receiving a portion of the first address value, the arithmetic logic circuit coupled to the interface means for receiving the index offset value, the arithmetic logic circuit coupled to



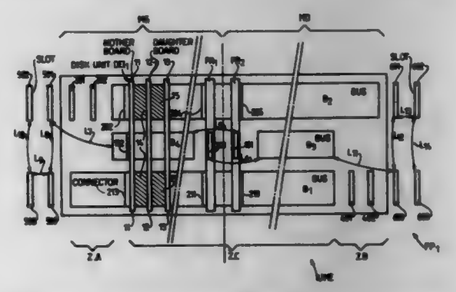
the instruction decode means for receiving a portion of the plurality of control signals, the arithmetic logic circuit inverting the sign portion of the index offset value to provide an inverted offset sign value, the arithmetic logic circuit adding each of the first address value, the sign portion and the magnitude portion of the index offset value, and the inverted offset sign value to generate the offset sum, the offset sum being within a symmetrical range of addresses of the first address value and not being equal to the first address value.

5,386,535

PROTECTED ELECTRONIC MASS MEMORY UNIT INCLUDING FIRST AND SECOND BUSES OF THE PARALLEL TYPE

Daniel Carteau, Montigny le Bretonneux, France, assignor to Bull, S.A., Paris, France

Filed Nov. 30, 1990, Ser. No. 620,471
Claims priority, application France, Dec. 1, 1989, 89 15914
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—425 20 Claims



1. A protected electronic mass memory unit (UME), including at least one electronic disc unit (DEI_1-DEI_2), comprising: a controller and at least one central processor (PR_1-PR_2); a first and second bus (B_1–B_2) of the parallel type, said first and second bus enabling connection of the mass memory unit to at least one host system (H); the central processor (PR_1-PR_2) and the disc unit (DEI_1-DEI_2), each being connected to said first and second bus (B_1–B_2) for making the disc unit accessible to the host system via a controller (CNT_1-CNT_2) and the central processor (PR_1-PR_2), wherein:

at least one back-up disc unit (MDS_1-MDS_2) of a specific type is connected to said controller (CNT_1-CNT_2) and to the central processor (PR_1-PR_2), said at least one back-up unit including information strictly identical to information written in the electronic unit;

said first and second buses (B_1–B_2) being identical and parallel to one another and having an overlap zone (ZC) therebetween, said disc unit and said central processor being connected to said overlap zone;

said electronic mass memory unit further comprising a third and fourth bus (B_3–B_4), said third and fourth buses being identical and parallel to one another, said third and fourth buses being one of specific type and being disposed between and parallel to said first and second buses;

said mass memory unit having a physical structure in the form of a rack including a back plane wherein said first and second parallel buses are connected to logic boards carrying the disc unit and the central processor, said first and second buses being disposed in a lower and an upper part of said back plane, respectively;

said third and fourth buses being connected on a first side to the central processor, and on a second side to the disc unit; and

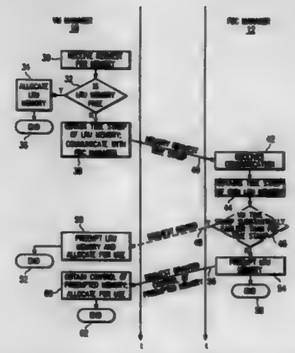
supplemental elements for the disc unit being connectable to each of the first and second buses outside the overlap zone, and insertable rotating back-up memories being mounted on the back plane and connected to the third bus by a link of a specific type.

5,386,536

APPARATUS AND METHOD FOR MANAGING MEMORY ALLOCATION

Howard R. Courts, 8606 Silver Ridge, and Don C. Capps, 7918 Cahill, both of Austin, Tex. 78759

Filed Mar. 28, 1991, Ser. No. 676,616
Int. Cl.[6] G06F *12/12*
U.S. Cl. 395—425 72 Claims



1. A system for managing memory allocation between a first and a second memory manager, comprising:

means for ordering memories allocated to said first memory manager on a least recently used basis;

means for ordering memories allocated to said second memory manager on a least recently used basis;

means for comparing access time indications of least recently used memories of said first and second memory managers in response to a request for memory by said first memory manager;

means for preempting one of said least recently used memories allocated to said first and second memory managers in response to it being less recently used than said other; and

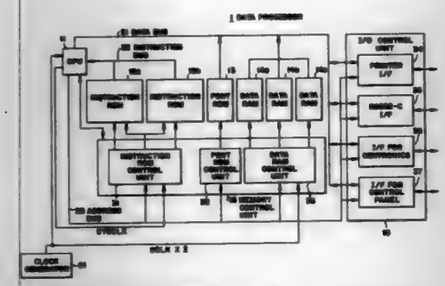
means for allocating said preempted memory to said first memory manager.

5,386,537

SYSTEM WITH REDUCED INSTRUCTION SET PROCESSOR ACCESSING PLURAL MEMORIES AT DIFFERENT SPEEDS USING BANK INTERLEAVING

Eiji Asano, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 27, 1991, Ser. No. 766,524
Claims priority, application Japan, Mar. 28, 1991, 3-091315; Mar. 28, 1991, 3-091316
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—425 **28 Claims**



11. A data processor, comprising:

a clock signal generating means for generating a clock signal with a predetermined frequency;

a central processing means including an instruction bus and a data bus for executing a predetermined program in synchronization with said clock signal and capable of processing one instruction in one cycle of said clock signal;

an instruction memory connected to said instruction bus for storing an instruction to be executed by said central processing means;

a data memory connected to said data bus for storing data to be processed by said central processing means in accordance with said instruction,

said central processing means including means for generating an instruction access request signal and means for generating a data access request signal;

first control means for controlling said central processing means and said instruction memory so as to cause said central processing means to read the instruction stored in said instruction memory before time corresponding to said one cycle has elapsed after generation of said instruction access request signal; and

second control means for controlling said central processing means and said data memory so as to cause said central processing means to write or read data into or from said data memory during a time period between the time that the time corresponding to said one cycle has elapsed and the time that time corresponding to a subsequent one cycle has elapsed, after generation of said data access request signal.

5,386,538

DATA CACHE ACCESS FOR SIGNAL PROCESSING SYSTEMS

Jeffrey L. Nye, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1991, Ser. No. 693,853
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—425 **19 Claims**

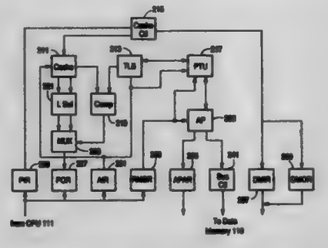
1. A data cache for a signal processing system having a main processor and a main data memory, comprising:

a cache memory for storing data to be used by a main processor;

a replacement mechanism selection register for storing an indication of a selected one cache replacement mechanism of a plurality of cache replacement mechanisms, said indication of said selected cache replacement mechanism stored in said replacement mechanism selection register being supplied by said main processor;

a translation unit connected to said replacement mechanism for translating addresses from said main processor to addresses used by said cache memory, said translating based upon said cache replacement mechanism whose indication is currently stored in said replacement mechanism selection register;

a comparator connected to said main processor and said translation unit for determining from addresses whether



data currently required by said main processor are stored in said cache memory, said comparator supplying said currently required data to said main processor from said cache memory if said currently required data is stored in said cache memory; and

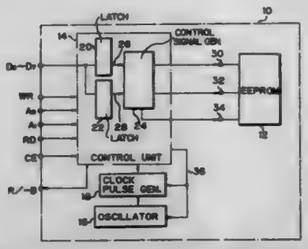
an address processor connected to a main memory and said replacement mechanism selection register for calculating addresses of data to be fetched from said main memory of the signal processing system to fill said cache memory if said currently required data is not stored in said cache memory, said calculating based upon said cache replacement mechanism whose indication is currently stored in said replacement mechanism selection register.

5,386,539

IC MEMORY CARD COMPRISING AN EEPROM WITH DATA AND ADDRESS BUFFERING FOR CONTROLLING THE WRITING/READING OF DATA TO EEPROM

Seiki Nishi, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 29, 1991, Ser. No. 751,982
Claims priority, application Japan, Sep. 28, 1990, 2-257376
Int. Cl.[6] G06F *12/06, 13/00*
U.S. Cl. 395—425 **12 Claims**



6. An IC memory card including an EEPROM configured to operate as an SRAM memory card when removably connected to a host, the IC memory card comprising:

holding means for receiving and temporarily holding input data and an address representative of a particular storage location of the EEPROM in which the input data transferred from the host are to be stored;

clock input means for receiving from the host a first clock which causes said holding means to hold the input data; and

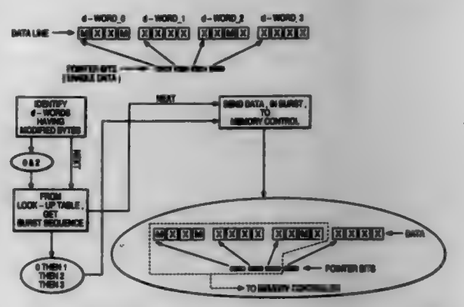
clock generating means for generating a second clock for controlling timing of writing the input data from said holding means into the EEPROM.

5,386,540

METHOD AND APPARATUS FOR TRANSFERRING DATA WITHIN A COMPUTER USING A BURST SEQUENCE WHICH INCLUDES MODIFIED BYTES AND A MINIMUM NUMBER OF UNMODIFIED BYTES

Randolph G. Young, Simpsonville; James L. Bradshaw, Central; Bobby W. Batchler, Easley; Barry C. Sudduth, Clemson, and Craig A. Walrath, Easley, all of S.C., assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 761,538, Sep. 18, 1991. This application Jul. 28, 1993, Ser. No. 98,763
Int. Cl.[6] G06F *13/28*
U.S. Cl. 395—425 **4 Claims**



1. A method of transferring data words which include data bytes in a computer having a main memory and a processor with an associated cache memory, with the processor being able to cause data words to be transferred in a burst mode from the cache memory to the main memory in any one of a plurality of predetermined sequences, comprising the steps of:

a) identifying which data words of a group of data words in the cache contain data bytes which have been modified

b) selecting a predetermined sequence of data words from the plurality of predetermined sequences of data words which includes (i) all of the data words of the group of data words which include data bytes which have been modified, and (ii) the lowest number of data words of the group of data words that include no data bytes which have been modified relative to the other predetermined sequences of data words of the plurality of predetermined sequences of data words; and

transferring said sequence of data words selected in the selecting step in the burst mode from the cache memory to the main memory.

5,386,541

METHOD OF COPYING SYSTEM DATA AND COPYING ADAPTOR THEREFOR

Hideo Moridaira, Tokyo, Japan, assignor to Meisei Electric Co., Ltd., Tokyo, Japan

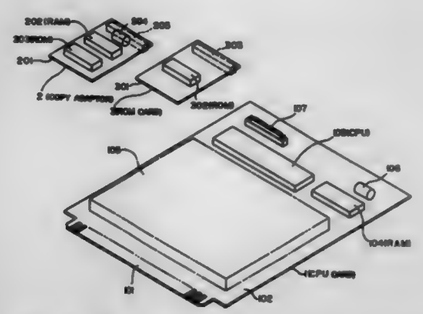
Continuation of Ser. No. 675,131, Mar. 26, 1991, abandoned. This application Oct. 21, 1993, Ser. No. 141,479
Claims priority, application Japan, Jul. 17, 1990, 2-188339
Int. Cl.[6] G06F *13/10*
U.S. Cl. 395—425 **5 Claims**

1. A method of copying system data for a computer system which comprises a main control apparatus including a control CPU, and various CPU-associated circuits inclusive of a control program memory and a system data memory, said control program memory being a separate member from other portions inclusive of said control CPU and connected to said control CPU by a connector, said method comprising the steps of:

replacing the control program memory of a main control apparatus, when it is updated, by an adaptor having a program stored in its program memory for causing transferring and retaining system data from said main control apparatus, said adaptor being connected to said control CPU by said control program memory connector;

transferring and storing the system data stored in said system data memory of said main control apparatus to and in said adaptor;

attaching said adaptor, with said stored system data, to the program memory connector of a new main control apparatus; and



enabling the control CPU in said new main control apparatus to transfer the system data from said adaptor so as to store the system data in said system data memory of said new main control apparatus, said adaptor being connected to said new main control apparatus by the control program memory connector of said new main control apparatus; and

removing said adaptor from said connector after the system data has been transferred and stored in the system data memory of the new main control apparatus and reconnecting the member containing control program memory to the new main control apparatus in said connector.

5,386,542

SYSTEM FOR GENERATING A TIME REFERENCE VALUE IN THE MAC LAYER OF AN ISO/OSI COMMUNICATIONS MODEL AMONG A PLURALITY OF NODES

J. Joseph Brann, Manassas, Va., and Thomas C. Ralya, Monroeville, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,713
Int. Cl.[6] H04L *7/04*
U.S. Cl. 395—550 **5 Claims**

1. A method for generating a Time Reference Value on a plurality of nodes of a ring topology local area network (LAN) implemented in an ISO/OSI communication model comprising the steps of:

at a local node performing the following steps implemented in a media access control (MAC) layer of the ISO/OSI communication model:

acquiring the value of a local clock-counter for use as a local clock time value;

appending the local clock time value to a time, count and correction value received on the LAN in a frame of a time reference protocol data unit (TR-PDU);

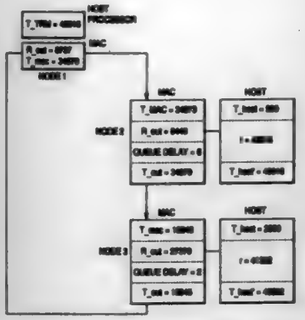
incrementing the count by one in the received time, count and correction value;

calculating a correction factor based on a time value correction algorithm;

retransmitting in response to a time reference request the

incremented and corrected time, count and correction value in the TR-PDU; and

at a time reference node performing the following steps implemented in a media access control (MAC) layer of the ISO/OSI communication model:



replacing a current Time Reference Value with a received time, count and correction value from a local node;

constructing and transmitting a new Time Reference Value in a modified TR-PDU; and

resetting the clock-counter to a specified value in response to a set time reference period service call.

5,386,543

MATRIX DISPLAY DEVICE WITH LIGHT SENSING FUNCTION AND TIME-SHARED AMPLIFIER

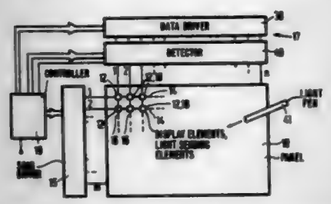
Neil C. Bird, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1993, Ser. No. 96,632

Claims priority, application United Kingdom, Sep. 7, 1992, 9220104

Int. Cl.[6] G06F *3/033*; G09G *3/36*

U.S. Cl. 395—500 **3 Claims**



1. A combined matrix display and light sensing device comprising:

(a) an array of display elements,

(b) an array of light sensing elements which are responsive to illumination so as to provide an electrical charge indicative thereof,

(c) first and second sets of address conductors connected with the arrays of display elements and light sensing elements, the display elements and the light sensing elements each being connected with an address conductor of each set,

(d) a first drive circuit connected to the first set of address conductors for scanning the arrays,

(e) a second drive circuit for providing data signals which are supplied to the display elements via address conductors of the second set,

(f) a detection circuit for sensing the charge provided by the sensing elements, and comprising charge sensitive amplifier circuits, each having

(1) an output,

(2) a first input connected to an address conductor of the second set,

(3) a second input for receiving a read potential, and

(4) a capacitor and switch connected in parallel between the output and the first input, and

(g) control means for opening and closing the switch of each charge sensitive amplifier circuit periodically and providing the read potential to the second input,

characterised in that the control means is operable to apply to the second input of each charge sensitive amplifier circuit data signals from the second drive circuit when the switch is closed and said read potential when the switch is open.

5,386,544

DATA PROCESSING SYSTEM WITH A STANDBY PROCESS MECHANISM FOR SAVING AND RESTORING OPERATIONS

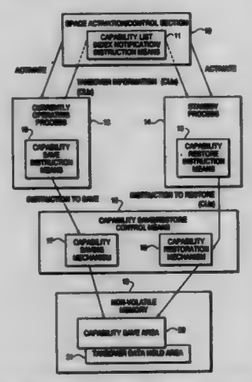
Kei Nakamura, Kawasaki, Japan, assignor to Fujitsu, Ltd., Kawasaki, Japan

Filed May 21, 1992, Ser. No. 886,238

Claims priority, application Japan, Jun. 3, 1991, 3-130170

Int. Cl.[6] G06F *11/14, 11/00*

U.S. Cl. 395—575 **11 Claims**



1. A data processing system having a mechanism for saving and restoring capabilities in a message-based data processing system having a plurality of processes, including a currently operating process and a standby process, each process accessing resources while communicating with individual servers within capabilities given to each process, said data processing system comprising:

a capability save area which is an area in a non-volatile memory for saving the capabilities;

capability save instruction means for giving an instruction to save a replica of the capabilities held by the currently operating process in said capability save area;

capability list index notification/instruction means for giving the standby process an instruction to take over from the currently operating process the capabilities saved in said capability save area;

capability restore instruction means for giving said standby process an instruction to restore the capabilities held by the currently operating process when the standby process takes over the currently operating process; and

capability save/restore control means for performing saving and restoration in said capability save area in response to a save instruction given by said capability save instruction means, and in response to a restore instruction given by said capability restore instruction means.

5,386,545

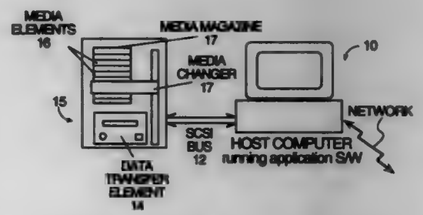
TARGET MANAGEMENT METHOD FOR DATA BACKUP TO A SHARED TRANSFER STATION, MULTIPLE MEDIA ELEMENT DEVICE

Richard G. Gombos, Jr., Sanford, and Thomas Pisello, DeBary, both of Fla., assignors to Archive Corporation, Costa Mesa, Calif.

Filed Sep. 25, 1992, Ser. No. 951,055

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—575 **28 Claims**



1. A method of transferring digital data between a primary data storage system and one or more of a plurality of physically discrete, data storage media elements, where each of the data storage media elements is operatively and interchangeably engageable, one at a time, with a corresponding one of one or more shared media element drives of an automated element handling system, the element handling system being operatively coupled to the primary data storage system for effectuating data transfer therewith and the element handling system having one or more media element changers for automatically loading, and subsequently unloading, desired, physically available ones of the media elements into operative engagement with the corresponding one or more shared media element drives so that data transfer can take place between the loaded one or more shared media element drives and the primary data storage system, the method comprising the steps of:

(a) identifying from among said plurality of data storage media element, a set of available media elements that are each either already loaded in the one or more shared media element drives or are each available for automatic loading into the one or more media element drives by said one or more media element changers;

(b) displaying the identified set of available media elements to a user;

(c) enabling the user to select one or more of the identified media elements from the displayed set;

(d) defining all or a subset of the available media elements as a first selected set in accordance with the selection made by the user from the displayed set of available media elements;

(e) recording the definition of the first selected set;

(f) in response to the recorded definition of the selected set, controlling the one or more media element changers to load, where necessary, one or more of the media elements of the corresponding selected set into operative engagement with the one or more shared media element drives; and

(g) in coordination with the loading by the one or more media element changers, transferring data between the primary data storage system and the one or more media elements of the selected set that are loaded into the one or more shared media element drives.

5,386,546

BLOCK SUBSTITUTION METHOD IN A CACHE MEMORY OF A MULTIPROCESSOR SYSTEM

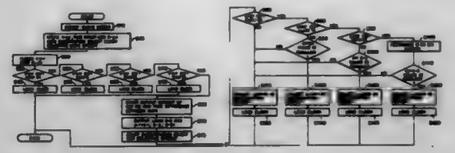
Kazumasa Hamaguchi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,091

Claims priority, application Japan, Nov. 29, 1990, 2-325895

Int. Cl.[6] G06F *12/12*

U.S. Cl. 395—425 **7 Claims**



1. A block substitution method of a cache memory comprising the steps of:

storing data integrity information with a main memory for each block of the cache memory;

calculating a non-reference period of each block;

comparing the non-reference periods of the blocks to determine an order of the blocks based on the non-reference periods;

calculating a difference between the non-reference period of the block having a longest non-reference period and the non-reference period of other blocks;

examining data integrity in the block having the longest non-reference period;

examining the data integrity in other blocks in the order of non-reference period when there is no data integrity in the block having the longest non-reference period;

determining a block having a longest non-reference period among the blocks having the data integrity;

selecting the determined block as a block to be substituted by a new data block when the difference is smaller than a predetermined value; and

loading new data to the selected block.

5,386,547

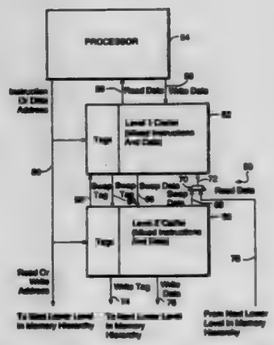
SYSTEM AND METHOD FOR EXCLUSIVE TWO-LEVEL CACHING

Norman P. Jouppi, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 21, 1992, Ser. No. 823,671

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—425 **29 Claims**



1. A cache memory system, which comprises:

a first-level cache configured to store tags and data associated with the tags,

a second-level cache configured to store tags and data associated with the tags, said second level cache having a memory capacity at least half as large as that of said first-level cache,

a next lower-level memory configured to receive tags and store data associated with the tags,

a multiplexer for receiving said data from said second-level cache and said next lower-level memory,

said first-level cache and said second-level cache being connected by first swap tag line and first swap data line, said first swap tag line and said first swap data line for transferring discarded tags and data associated with discarded tags from said first-level cache to said second level cache,

said first-level cache and said second-level cache connected by a second swap data line coupled via said multiplexor, said second swap data line connected to a first input of said multiplexor whose output is coupled to said first-level cache, said second swap data line for transferring data from said second-level cache to said first-level cache,

said first level cache being connected to read data and write data lines for connection to a processor,

said second-level cache being connected to write tag and write data lines for connection to said next lower-level memory,

read data lines connected from the next lower level memory to a second input of said multiplexor for transferring data directly to said first-level cache,

whereby upon a hit in said second-level cache or said next-lower level memory, said multiplexor transfers data directly into said first level cache while simultaneously said first-level cache writes said discarded tags and data associated with the discarded tags to said second-level cache.

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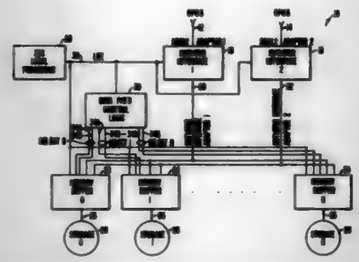
METHOD FOR STORING DATA FROM AN EXTERNAL PROCESSOR IN STORAGE DEVICES THROUGH BUFFER DEVICES

Anh Nguyen, Sunnyvale, and Kumar Gajjar, San Jose, both of Calif., assignors to MTI Technology Corporation, Anaheim, Calif.

Continuation-in-part of Ser. No. 494,039, Mar. 14, 1990. This application Oct. 22, 1992, Ser. No. 964,811

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—425 **8 Claims**



1. A method for storing data from an external central processor in a plurality of memory storage devices through a plurality of memory buffer devices, comprising the steps of:

storing a first sequence of memory buffer identifiers in a first sequencing means;

selecting a first plurality of memory buffer devices responsive to said first sequence of memory buffer identifiers from said first sequencing means to transfer data between said external processor and said first plurality of memory buffer devices;

storing a second sequence of memory buffer identifiers in a second sequencing means; and

selecting a second plurality of memory buffer devices responsive to said second sequence of memory buffer identifiers from said second sequencing means to transfer data between said external processor and said second plurality of memory buffer devices.

5,386,549

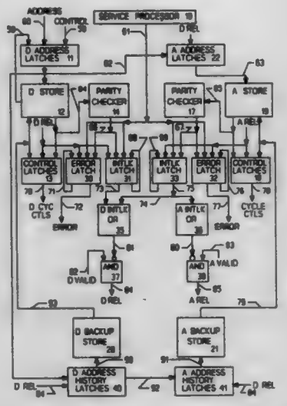
ERROR RECOVERY SYSTEM FOR RECOVERING ERRORS THAT OCCUR IN CONTROL STORE IN A COMPUTER SYSTEM EMPLOYING PIPELINE ARCHITECTURE

Christopher I. W. Norrie, San Jose; Carolee V. Newcomb, Los Altos; Peter K. Yu, and Allan Zmyslowski, both of Sunnyvale, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Nov. 19, 1992, Ser. No. 978,829

Int. Cl.[6] H03M *13/00*

U.S. Cl. 395—575 **3 Claims**



1. An error recovery system used in a pipeline architecture type computer system having an instruction set where each instruction is processed by processing an instruction control word in each cycle of each FLOW associated with the instruction where cycles of different FLOWs are processed at the same time, said error recovery system comprising:

first storage means for storing, for a given cycle of said FLOW, all said control words for all said instructions;

second storage means for storing a control word read from said first storage means;

error recovery means for detecting an error in said control word read from said first storage means and stored in said second storage means and for correcting said error in said control word in said first and second storage means, said error recovery means comprises:

error detector means for generating an error signal when said error detector means detected an error in a control word read from said first storage means;

third storage means for storing all the same said control words that are stored in said first storage means; and

error correcting means in response to said error signal generated by said error detector means for reading from said third storage means said control word that was detected as containing said error when read from said first storage means and for storing said read control word in said second storage means, thereby correcting a control word erroneously stored in said second storage means by said first storage means and for storing all said control words in said third storage means into said first storage means thereby correcting errors in said control word stored in said first storage means including said control word that was detected as being in error by said error detector means; and

interlock means for halting the processing of the cycle in the FLOW which would have processed said erroneous control word stored in said second storage means and halting the processing of any cycle in any subsequent FLOW to said FLOW in which said error was detected that would have been processed at the same time as the cycle in said FLOW that said error was detected which would have processed the erroneous control word stored in said second storage means.

5,386,550

PSEUDO-LSI DEVICE AND DEBUGGING SYSTEM INCORPORATING SAME

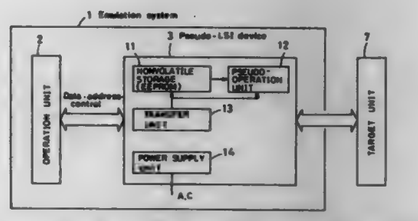
Tatsuya Yumioka; Toshiharu Kaizawa; Kenichi Hamada, and Takeshi Uesaka, all of Hyogo, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 22, 1993, Ser. No. 8,555

Claims priority, application Japan, Jan. 24, 1992, 4-011336; Apr. 23, 1992, 4-104806; Jan. 14, 1993, 5-004543

Int. Cl.[6] G06F *11/34, 11/00*

U.S. Cl. 395—575 **8 Claims**



1. A pseudo-LSI device for emulating a single electronic circuit using a plurality of programmable logic elements mounted on a common circuit board, said pseudo-LSI device comprising:

a pseudo-operation unit including a plurality of programmable gate arrays constituting a pseudo-LSI when circuit data is transferred thereto;

a nonvolatile memory unit, connected to said pseudo-operation unit, for storing the circuit data downloaded from outside and used by said pseudo-operation unit;

a transfer unit, connected to said pseudo-operation unit and said nonvolatile memory unit, for transferring the circuit data stored in the nonvolatile memory unit to the pseudo-operation unit; and

a power supply unit,

wherein said pseudo-operation unit, said nonvolatile memory unit, said transfer unit and said power supply unit being provided in a single case in a form of an assembly.

5,386,551

DEFERRED RESOURCE RECOVERY

JoEtta S. Chikira, Louisville; Fletcher L. Hill, and Nancy R. Jurestovsky, both of Golden, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Apr. 16, 1993, Ser. No. 49,029

Int. Cl.[6] G06F *11/00*

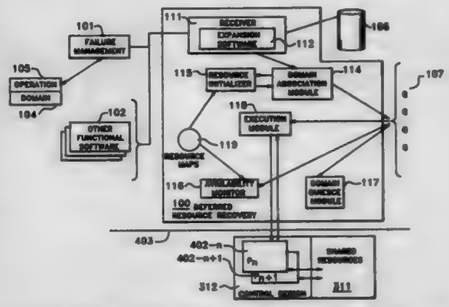
U.S. Cl. 395—575 **28 Claims**

1. Apparatus in a customer system, which performs customer operations, which customer system includes a plurality of redundant operational elements, each interconnected to at least one other operational element via an interconnection path, for controllably isolating operational elements in said customer system to perform a non-customer. operation concurrently with the execution of customer operations in said customer system, comprising:

means for storing data identifying said operational elements and said interconnection paths in said customer system;

means, responsive to receipt of a request to execute a non-customer operation, for retrieving a portion of said data from said storing means to identify a set of said operational elements and said interconnection paths connected to said set of operational elements that are required to execute said non-customer operation comprising:

means responsive to receipt of said request to execute said non-customer operation for mapping said requested non-customer operation into a series of operational sequences of customer system operation that correspond to said requested non-customer operation;



means for selectively disabling the use of said set of operational elements, as identified by said retrieving means, by said customer system for customer operations;

means for executing said non-customer operation concurrently with customer operations, using said set of operational elements;

means, responsive to completion of said non-customer operation, for restoring said set of operational elements to an idle state; and

means for enabling the use of said set of operational elements by said customer system for customer operations.

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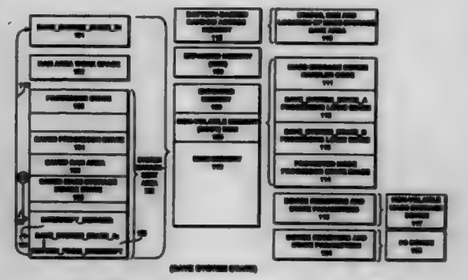
PRESERVATION OF A COMPUTER SYSTEM PROCESSING STATE IN A MASS STORAGE DEVICE

John I. Garney, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 779,642, Oct. 21, 1991, abandoned. This application Jul. 18, 1994, Ser. No. 276,778

Int. Cl.[6] G06F *12/00, 11/00, 9/46*

U.S. Cl. 395—575 **22 Claims**



1. In a computer system for operating in a protected and a nonprotected mode having a processor, a memory, and a nonvolatile mass storage device, said nonprotected mode including a system management interrupt mode, said memory being partitioned into an isolated memory and a non-isolated memory, said isolated memory being only accessible from said system management interrupt mode, said non-isolated memory being partitioned into a first portion of non-isolated memory

that can only be accessed when said processor is operating in said protected mode and a second portion of non-isolated memory that can be accessed when said processor is operating in either said protected or nonprotected mode, a process for saving the processing state of said computer system, said process comprising the steps of:

interrupting the execution of said processor upon the occurrence of a triggering event, said triggering event forcing said processor to operate in said system management interrupt mode;

activating a first save system state module, said first save system state module operating in said system management interrupt mode, said first save system state module having access to said isolated memory and said second portion of non-isolated memory, said first save system state module writing information from said isolated memory into said second portion Of non-isolated memory; and

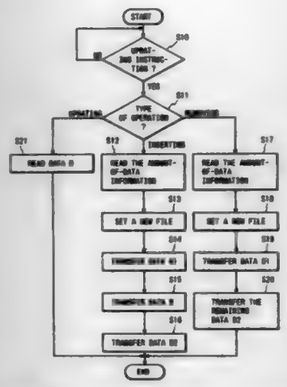
activating a second save system state module, said second save system state module operating in said protected mode, said second save system state module having access to said first and second portion of non-isolated memory, said second save system state module writing information from said non-isolated memory to a predetermined location on said nonvolatile mass storage device.

5,386,553

DISK FILE UPDATING CONTROL DEVICE AND METHOD USING UPDATING DATA STORED IN A FIRST-IN-FIRST-OUT QUEUE

Yuzo Fujita, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 595,217
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—600 2 Claims



2. A method for performing a data operation on data stored in an original disk file in accordance with updating data output by a data processing section, said data operation being a data inserting, removing or changing operation, said data processing section storing updating data in a first-in first-out (FIFO) queue having a nonvolatile memory, said updating data having a data structure which includes an operation code, amount-of-data information and a file page, said operation code representing the type of data operation to be performed, said amount-of-data information representing an amount-of-data to be subjected to the data operation, and said file page containing data for writing into a second disk file for updating, said method comprising the steps of:

determining in accordance with said operation code the type of data operation to be performed;

defining said second disk file to have a size approximately equal to a size of said original disk file changed in size according to the determined type of data operation, and by an amount indicated by said amount-of-data information; and

transferring data of said original file and the file page of said FIFO queue into said second file including the substeps of:

transferring to said second file only that portion of the original data in the original disk file that is not being updated; and

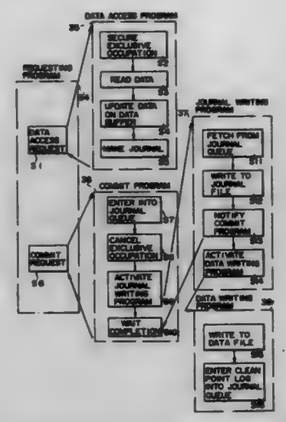
transferring to said second file from the file page of said FIFO queue the data to be written into said second file for a data inserting operation.

5,386,554

METHOD AND APPARATUS FOR REDUCING DATA LOCKING TIME BY REMOVING A LOCK WHEN JOURNAL DATA IS WRITTEN INTO A MAIN MEMORY JOURNAL QUEUE

Masaharu Nozaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 16, 1991, Ser. No. 700,862
Claims priority, application Japan, May 18, 1990, 2-126793
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—600 20 Claims



1. An on line transaction processing method comprising the steps of:

requesting to update data on a data base having a plurality of data files which must not be inconsistent;

executing, in response to said requesting step, operations of reserving an exclusive occupation for a piece of data, updating the data and collecting a journal on updating of the data on a plurality of pieces of data, constituting one transaction, on said plurality of data files in sequence;

storing the journal collected in said executing step in a unit of transactions into a volatile memory;

releasing the exclusive occupation of the data related to the transaction in which the journal is stored into the volatile memory during said storing step;

writing the journals stored in said storage step to a non-volatile journal file in the unit of transactions after releasing of the exclusive occupation of the data; and

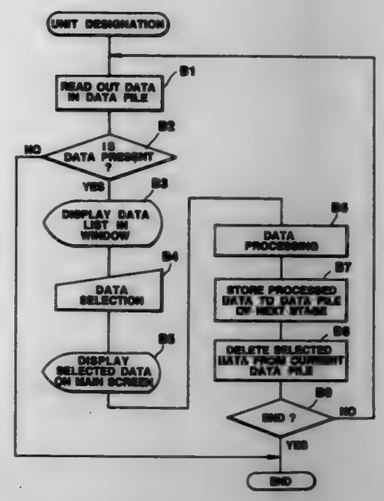
writing updated data to said data files for transactions whose journals have been written to said non-volatile journal file, and outputting a message on updated data.

5,386,555

DATA PROCESSING SYSTEM HAVING A PLURALITY OF UNITS IN WHICH DESIGN OF THE SYSTEM CAN BE CHANGED BY SIMPLE DEFINITION

Tetsuji Kuroda, Tama, and Kazuyoshi Haraguchi, Chofu, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,758
Claims priority, application Japan, Jan. 29, 1991, 3-028102; Jan. 29, 1991, 3-028103
Int. Cl.[6] G06F *7/00, 13/14*
U.S. Cl. 395—600 2 Claims



1. A data processing system for processing data by a plurality of data processing units, comprising:

a plurality of data files;

a plurality of unit means arranged in one-to-one correspondence with said plurality of data files, each for processing, in response to a predetermined processing command, individually a plurality of types of data stored in a corresponding one of said plurality of data files;

a plurality of table means, arranged in one-to-one correspondence with each of said plurality of unit means, for storing identification names corresponding to whichever of said plurality of unit means the one of said unit means corresponding to a particular one of said table means is to be connected; and

one of said unit means including means for:

storing data transferred from another one of said plurality of unit means into the data file corresponding to said one unit means,

processing individually each type of data selected by an operator from among the plurality of types of data stored in one of said plurality of data files corresponding to said one unit means,

determining whether or not any of said identification names is stored in the table means corresponding to said one unit means,

transferring the individually processed types of data to each of the plurality of unit means corresponding to the plurality of identification names that are determined to be stored in the table means corresponding to said one unit means, and

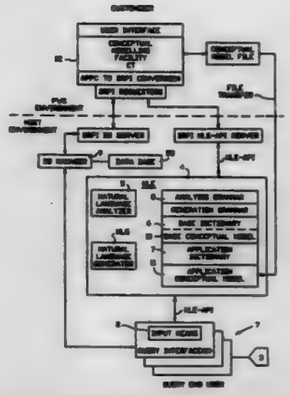
deleting the selected data from the data file corresponding to said one unit means after the transfer is completed.

5,386,556

NATURAL LANGUAGE ANALYZING APPARATUS AND METHOD

Erik B. Hedin; Gregor L. Jonsson, both of Lidingo; Lars E. Olsson, Kista; Mohammad A. Samsamrad, Lidingo, and Sven O. G. Westling, Stockholm, all of Sweden, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 485,917, Feb. 27, 1990, abandoned.
This application Dec. 23, 1992, Ser. No. 996,353
Claims priority, application Sweden, Mar. 6, 1989, 8900774
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—600 11 Claims



1. A natural language analyzing apparatus comprising:

a data base store comprising a data base containing tables;

a grammar store comprising a grammar for a natural language comprising a set of language dependent syntax rules for the natural language, at least one syntax rule having one or more associated semantic routines;

a vocabulary store comprising a vocabulary containing terms of the natural language, definitions of the terms, and morphological information about the terms;

a conceptual model store comprising a conceptual model having (i) a set of language independent records of information defining entities, each entity having a connection to at least one term in the vocabulary, at least one entity having a connection to the data base tables, and each term in the vocabulary being defined by at least one entity, and (ii) a set of records identifying relationships between different entities;

means for inputting a series of words based in the natural language;

parsing means for generating one or more syntactically valid parse trees for the input series of words based on the vocabulary and the syntax rules, and for building, for each parse tree, an executable set of semantic routines based on one or more semantic routines associated with one or more of the syntax rules used to generate the parse tree;

generator means for executing the set of semantic routines generated by the parser to create a language independent representation of the input series of words, wherein executing the semantic routine comprises checking groups of one or more words in the parse trees against the conceptual model for conceptual validity;

output means for producing, from said language independent representation of the input series of words, a natural language output series of words in the same language as the input series of words, said output series of words representing a paraphrase of the input series of words;

confirmation means for requesting confirmation of the conceptual accuracy of the output series of words with reject to the input series of words and for receiving a confirma-

tion from the user if the user determines that the output series of words conceptually matches the input series of words; and

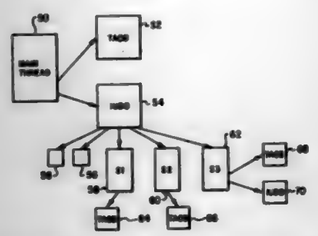
query generator means responsive to the confirmation for producing a data base query from the language independent representation.

5,386,557

ENFORCEMENT OF REFERENTIAL CONSTRAINTS IN A DATABASE SYSTEM

James R. Boykin, Pflugerville; Lisa A. Geer, Elgin; Gary R. Horn, Austin, and Timothy R. Malkemus, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 421,478, Oct. 13, 1989, abandoned. This application Nov. 12, 1992, Ser. No. 975,149
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—600 10 Claims



1. A method for generating an access plan for a relational database, having a plurality of database objects, from a plurality of database access commands used to access the database objects, said method comprising the steps performed by a computer system of:

compiling the plurality of database access commands into a first executable code set for inclusion in the access plan;

during said compiling step, determining constraint relationships among selected database objects utilized during execution of the plurality of database access commands;

also during said compiling step, generating a plurality of second executable code sets to enforce the determined constraint relationships; and

also during said compiling step, merging the first executable code set and the plurality of second executable code sets to form an access plan having both code for executing the database access commands and code for enforcing the determined constraint relationships within the access plan.

5,386,558

METHOD AND APPARATUS FOR EXECUTING CONTROL SYSTEM FUNCTIONS IN A COMPUTER SYSTEM

Craig L. Mandlin, Solana Beach, and Susan L. Adler-Sherman, Encinitas, both of Calif., assignors to Adapsys, Inc., Cardiff, Calif.

Filed Feb. 24, 1992, Ser. No. 840,741
Int. Cl.[6] G06F *15/46*
U.S. Cl. 395—600 13 Claims

1. In a computer system which executes a computer program, the computer system including a storage unit, a central processing unit, input means for providing input data to the storage unit and central processing unit, and output means for providing discernible indications of actions performed by the central processing unit, a machine-executable method for implementing a control system, using:

a plurality of parts, each part including a data object and having a first portion identifying the part, a second portion including a series of associated data items, and a third portion for referencing another part; and

pluralities of interrelated parts, each part in any plurality of interrelated parts including a reference to, or being referenced by, another part in the plurality of interrelated parts; and

a plurality of clusters, each cluster including a data structure with one part or a plurality of interrelated parts;

the method including the steps of:

storing at least one cluster;

storing a plurality of meanings, each meaning including:

a template having one part or a plurality of interrelated parts; and

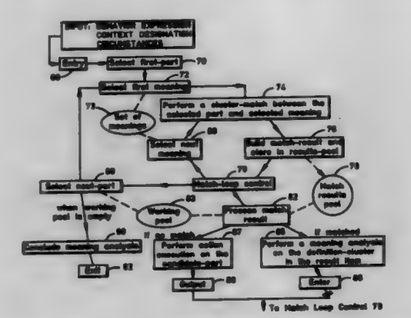
a definition cluster;

storing a plurality of logic components, each logic component including an invocable procedure which is executable by the central processing unit;

providing a plurality of contexts, each context including an associated set of meanings and an associated set of logic components, and means for identifying a context as a definition context;

designating a first context as a current context;

designating a first cluster as a current behavior expression;



(a) comparing parts of the current behavior expression with templates of the set of meanings associated with the current context;

(b) for a meaning of the set of meanings whose template matches a part or a plurality of interrelated parts of the current behavior expression:

designating the definition cluster of the meaning as the current behavior expression; and

designating as a new current context, a second context identified as a definition context by the current context;

(c) performing steps (a) and (b) until a part in the current behavior expression is found which does not match a part in a template in the current context;

invoking a logic component associated with the current context and which is identified by a data item in the second portion of the part found in step (c);

performing a control system action by executing the logic component; and

providing a discernible indication of the control system action.

5,386,559

VARIANT DOMAINS AND VARIANT MAPS IN A VERSIONED DATABASE MANAGEMENT SYSTEM

Neal R. Eisenberg, San Jose; Robert L. Huddleston, Sunnyvale, both of Calif.; Gary R. Karasiuk, Keswick, Canada; Mary C. Lehner, San Jose, and Charles S. Tribolet, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 16, 1992, Ser. No. 914,955
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—600 10 Claims

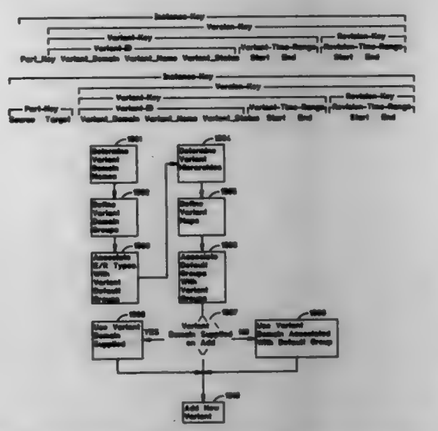
1. A computer implemented method for providing simulta-

neous visibility to a plurality of variant hierarchies in a versioned data management system, comprising the steps of:

associating parts with variant domains, each part associated with a respective variant domain;

representing variant domains by variant hierarchies;

upon creation of a new variant of a part, associating with the new variant a variant ID included in the variant hierarchy that represents the variant domain associated with the part;



upon drawing down a new variant of a part from an existing variant of the part, associating with the new variant a variant ID signifying having a lower level in the variant hierarchy than the variant ID of the existing variant on the same branch of the variant hierarchy that represents the variant domain associated with the part; and

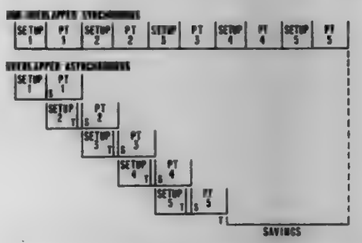
representing views of the parts by variant maps, each variant map including a set of variant IDs, each variant ID belonging to a different variant domain.

5,386,560

EXECUTION OF PAGE DATA TRANSFER BY PT PROCESSORS AND ISSUING OF SPLIT START AND TEST INSTRUCTIONS BY CPUS COORDINATED BY QUEUED TOKENS

Donald W. McCauley, Pleasant Valley; Richard J. Schmalz; Ronald M. Smith, Sr., both of Wappingers Falls, and Susan B. Stillman, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1991, Ser. No. 704,559
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—650 15 Claims



1. A method for enabling a computer system containing a plurality of central processors (CPUs) to free the CPUs from doing detailed control operations required in transferring one or more pages of data in and between plural electronic memory media used by the computer system, the method comprising the steps of:

issuing a start instruction by a first CPU executing a program in which the start instruction provides a transfer request containing a specification for transferring one or more pages of data from a source location to a destination location in the memory media;

storing the transfer request in a queue element from which a page transfer (PT) processor obtains the transfer request, and setting a transfer-status indication in the queue element to an incomplete state to indicate work for the transfer request has not been completed, but indicating completion of the start instruction at the first CPU;

generating a unique identifier as a token for each transfer request provided for each start instruction issued by any CPU, and storing a copy of the token by the CPU in association with each issued start instruction, and storing the token in the queue element receiving the transfer request provided by the issued start instruction;

initiating work for the transfer request by the PT processor obtaining the transfer request from the queue element and controlling copying of page(s) of data from the source location to the destination location as represented in the specification contained in the transfer request;

executing by the first CPU of other instructions in the program following the start instruction asynchronously with operations of the PT processor for the transfer request;

setting the transfer-status indication in the queue element to a completed state by the PT processor when work is completed for the transfer request;

later-executing in the program on any CPU a test asynchronous paging status (TAPS) instruction associated with the start instruction which was previously-executed, the associated TAPS instruction accessing the queue element and testing the state of the transfer-status indication;

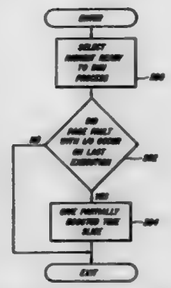
setting a condition code in the CPU executing the associated TAPS instruction to indicate the state of the transfer-status indication to indicate a current state of work for the transfer request by the PT processor, and indicating completion of execution of the TAPS instruction.

5,386,561

METHOD OF INTEGRATED SYSTEM LOAD CONTROL THROUGH DYNAMIC TIME-SLICING IN A VIRTUAL STORAGE ENVIRONMENT

Khoa D. Huynh, Miami; Charles M. Norcutt, Jr., Boca Raton, and Theodore C. Waldron, III, Sunrise, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1992, Ser. No. 861,221
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—650 9 Claims



1. A method of reducing the frequency of occurrence of page faults in a data processing system having a central processing unit, a computer memory having a plurality of pages therein, and a time distribution operating system for managing

the central processing unit and the computer memory by granting various processes central processing unit time within predefined quanta of time known as time slices on a rotating basis, the method comprising the steps of:

executing a current process on the central processing unit for a predetermined time slice;

responsive to occurrence of a storage access operation during execution of the first current process, allocating a supplemental time slice to the current process for execution; and

continuing execution of the current process for the supplemental time slice.

5,386,562

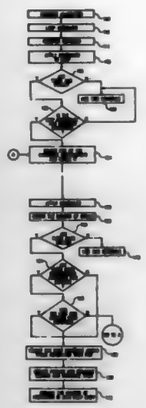
CIRCULAR SCHEDULING METHOD AND APPARATUS FOR EXECUTING COMPUTER PROGRAMS BY MOVING INDEPENDENT INSTRUCTIONS OUT OF A LOOP

Sumeet Jain, San Jose; Frederick Chow, Cupertino; Sun Chan, Fremont, and Sin S. Lew, San Jose, all of Calif., assignors to MIPS Computer Systems, Inc., Sunnyvale, Calif.

Filed May 13, 1992, Ser. No. 882,427

Int. Cl.[6] G06F *9/30, 9/00*

U.S. Cl. 395—650 **15 Claims**



1. A computer implemented method for improving loop execution performance in executing a computer program, said loop comprising a first plurality of computer instructions and salad computer program including instructions for sequentially executing a number of iterations of said loop wherein said loop has a first iteration, the method comprising:

(a) identifying, among said loop instructions, at least one independent instruction which does not require previous execution of another loop instruction in the same iteration;

(b) moving a first iteration of said at least one independent instruction to a location prior to said loop;

(c) moving second and subsequent iterations of said at least one independent instruction to a preceding iteration;

(d) moving all unmoved instructions in the last iteration of said loop to a location after said loop;

(e) reducing the number of iterations in the loop by one;

wherein performing steps (a) through (e) results in providing at least one of said first plurality of instructions as an independent instruction; and

(f) moving said at least one of said first plurality of instructions into a delay slot produced by another loop instruction.

5,386,563

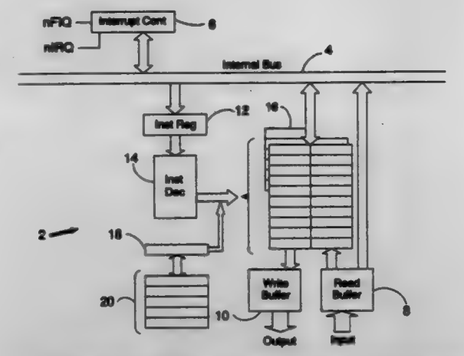
REGISTER SUBSTITUTION DURING EXCEPTION PROCESSING

Alasdair R. P. Thomas, deceased, late of Cambridge, Great Britain by Gerard W. A. Chadwick, administrator , assignor to Advanced Risc Machines Limited, Swaffam Bulbeck, United Kingdom

Filed Oct. 13, 1992, Ser. No. 959,711

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—650 **22 Claims**



1. A data processing apparatus operable to manipulate data in either a main processing mode or an exception processing mode, said data processing apparatus comprising:

(i) a plurality of main data registers for holding data to be manipulated;

(ii) a processing status register for holding data indicative of processing status;

(iii) at least one exception data register;

(iv) a saved processing status register;

(v) address control means interfaced to said plurality of main data registers and said at least one exception data register for substituting the use of said at least one exception data register for a respective corresponding one of said main data registers upon entering said exception processing mode such that substantially all register accesses to said respective corresponding one of said main data registers are redirected to said at least one exception data register;

(vi) processing control means interfaced to said processing status register for storing in said saved processing status register said data indicative of processing status in said main processing mode upon entering said exception processing mode;

(vii) said address control means additionally returning for use said respective corresponding one of said main data registers in place of said at least one exception data register upon leaving said exception processing mode such that substantially all register accesses redirected to said at least one exception data register are directed back to said respective corresponding one of said main data registers; and

(viii) said processing control means additionally restoring said data stored in said saved processing status register to said processing status register upon leaving said exception processing mode.

5,386,564

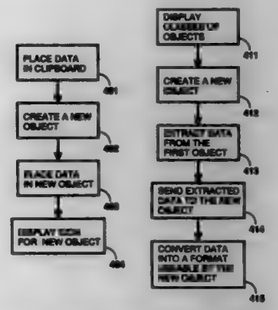
CONVERSION OF DATA AND OBJECTS ACROSS CLASSES IN AN OBJECT MANAGEMENT SYSTEM

Wanda N. Shearer, Dublin, and Barbara Holden, Menlo Park, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 24, 1993, Ser. No. 21,913

Int. Cl.[6] G06F *3/153*

U.S. Cl. 395—650 **11 Claims**



1. A computer implemented method within an operating system process comprising the step of:

(a) in response to a user pasting data within a clipboard to a window controlled by the operating system process, performing the following substeps:

(a.1) creating, by the operating system process, a new data file for the data;

(a.2) placing the data within the new data file; and,

(a.3) displaying, by the operating system process, an icon for the new data file.

5,386,565

METHOD AND SYSTEM FOR CONTROLLING/MONITORING COMPUTER SYSTEM HAVING PLURAL OPERATING SYSTEMS TO RUN THEREON

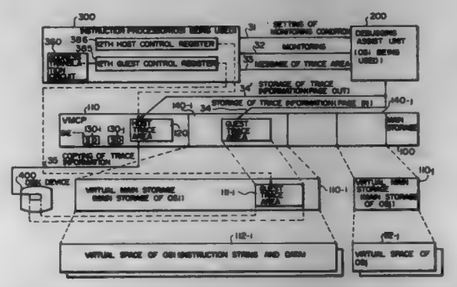
Shunji Tanaka, Sagamihara; Takayoshi Asai, Yokohama; Taro Inone, Sagamihara; Hidenori Umeno, Kanagawa, and Tsuyoshi Watanabe, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1991, Ser. No. 640,089

Claims priority, application Japan, Jan. 23, 1990, 2-13206

Int. Cl.[6] G06F *11/00, 11/30, 11/34*

U.S. Cl. 395—700 **3 Claims**



1. A computer system dedicated to accumulation of trace data which can execute a plurality of operating systems traced during, comprising:

an instruction processor for executing processings of said operating systems under control of a control program;

a real main storage including a first area assigned to said control program and having a first trace area for storing trace information and a second area assigned to at least a part of a virtual main storage which is used as a main storage by said operating systems, said virtual main storage including a second trace area for storing trace information;

external storage means for storing data held by said virtual main storage;

indicating means for indicating at least one event selected from the group consisting of:

(a) an event indicating that successful branching has resulted from execution of a branch instruction resident at an area of the virtual main storage designated by a running operating system,

(b) an event indicating that an instruction resident at an area of the virtual main storage designated by a running operating system has been executed,

(c) an event indicating that data have been stored at an area of the virtual main storage designated by a running operating system, and

(d) an event indicating that a general register designated by a running operating system is updated or altered by an instruction resident at an area of the virtual main storage designated by the running operating system; and

debugging means for detecting execution of a particular program event designated previously by said operating system and for storing trace information in said real main storage based on an address provided from said instruction processor in response to a result of detection;

wherein said instruction processor comprises:

a first register for holding an address indicating a location of trace information in said first trace area on said real main storage,

a second register for holding an address indicating a location of trace information in said second trace area on said virtual main storage used by a running operating system,

address translation means for translating an address held in said second register to a corresponding address on said real main storage,

determining means for determining whether said second trace area indicated by an address held in said second register resides in said second area assigned to a running operating system or not, and

means responsive to a result of determination by said determining means for selecting an address held in said first register in case of negative result and an address provided from said address translation means in case of affirmative result and outputting said selected address to said debugging means as a trace area address.

5,386,566

INTER-PROCESSOR COMMUNICATION METHOD FOR TRANSMITTING DATA AND PROCESSOR DEPENDENT INFORMATION PREDETERMINED FOR A RECEIVING PROCESS OF ANOTHER PROCESSOR

Naoki Hamanaka; Junji Nakagoshi, both of Tokyo; Tatsuo Higuchi, Fuchu; Hiroyuki Chiba, Hachioji; Shin'ichi Shutoh, Kokubunji; Shigeo Takeuchi, Hano; Yasuhiro Ogata, Akishima, and Taturu Toba, Kunitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corporation, both of Tokyo, Japan

Filed Mar. 18, 1992, Ser. No. 853,427

Claims priority, application Japan, Mar. 20, 1991, 3-056469; Sep. 20, 1991, 3-241094

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—700 **16 Claims**

1. A multiple processor system, comprising:

a first cluster including at least one first processor and a first storage for holding data and a program executed by said first processor, said first cluster executing at least one first process under control of a first operating system of said

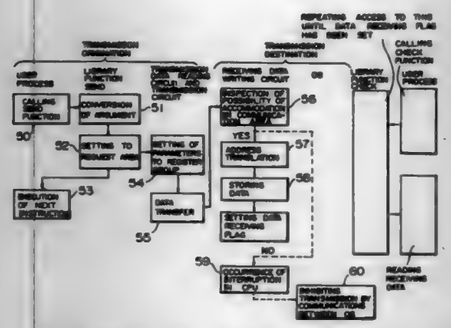
first cluster, said first process being assigned with a first virtual address space;

a second cluster including at least one second processor and a second storage for holding data and a program executed by said second processor, said second cluster executing at least one second process under control of a second operating system of said second cluster, said second process being assigned with a second virtual address space which includes a virtual communication area for data transferred from other clusters including said first cluster, said second memory holding a real communication area assigned to said virtual communication area at a position of said second memory determined by said second operating system, and a base address of said real communication area written by said second operating system into said second memory, said base address indicating a top position of said real communication area within said second memory;

a network for connecting said first cluster and said second cluster;

wherein said first cluster comprises:

a send circuit connected to said first processor and said network for transmitting a packet to said second cluster by way of said network, said packet including: (1) transmission data designated by said first process, (2) process-



dependent information predetermined by said second operating system for said second process, and (3) a data offset address indicative of a difference between a base address of said virtual communication area and a virtual write address at which said transmission data is to be written within said second virtual address space; and

wherein said second cluster comprises;

a receive circuit connected to said network for receiving by way of said network, said transmission dam, said process-dependent information and said dam offset address;

a base address read circuit connected to said second memory and said receive circuit and responsive to a received said process-dependent information for generating a read address of a location within said second memory where the base address of the real communication area provided for said second process is held and for reading said base address from the location;

an address adder connected to said receive circuit and said read circuit for adding a received said data offset address to a read out said base address to generate a real address of a location within said real communication area at which said transmission data is to be written; and

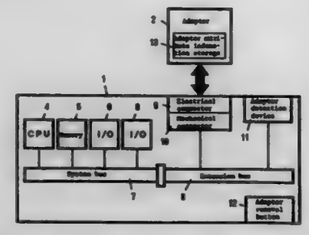
a write circuit connected to said second memory and said address adder for writing, received said transmission dam at a generated said real address of said second memory.

5,386,567

HOT REMOVABLE AND INSERTION OF ATTACHMENTS ON FULLY INITIALIZED COMPUTER SYSTEMS

Yeong-Chang Lien, Armonk, N.Y.; Hironao Sone, Yokohama, Japan; Kazuo Sekiya, Tokyo, Japan, and Yoshihisa Kanada, Tokyo, Japan, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 14, 1992, Ser. No. 960,753
Claims priority, application Japan, Jan. 20, 1992, 4-007527
Int. Cl.[6] G06F *11/30, 9/44*
U.S. Cl. 395—700 19 Claims



1. A computer system, having a main housing with one or more slots for connection of peripheral device adapters, and comprising one or more adapters insertable into said slots, said system also containing means for storing configuration information enabling said system to cooperate with said adapters when they are attached to said one or more slots, an arrangement for dynamically reconfiguring said computer system when an adapter is inserted into an empty one of said one or more slots, or when an adapter is removed from one of said slots, while the system is fully powered and initialized for running application programs, said arrangement comprising:

means interactive with users of said computer system and coupled to said slots for controllably permitting removal of a said adapter from any one of said slots containing an adapter, while said system is actively powered and fully initialized and without requiring rebooting or reinitialization of said system; said interactive means including means operative during removal of a said adapter from said any one slot for adjusting said stored configuration information to reflect removal of said adapter from the respective slot;

means coupled to said slots for detecting insertion of a said adapter into a formerly empty one of said slots; and

means cooperative with said insertion detecting means for altering said stored configuration information to conform to the presence of said inserted adapter in said formerly empty one of said slots.

5,386,568

APPARATUS AND METHOD FOR LINKING SOFTWARE MODULES

Erling Wold, El Cerrito, and Thomas L. Blum, San Francisco, both of Calif., assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 1, 1992, Ser. No. 984,862
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—700 20 Claims

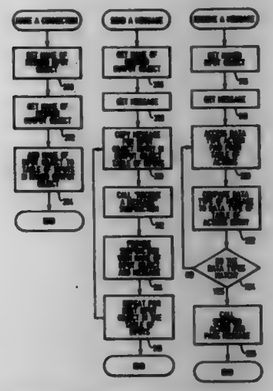
12. A machine-implemented method for communicating data between a plurality of software modules, each software module having at least one of at least one Input object and at least one Output object, wherein:

(a) each Input object having a table of actions containing one or more action entries, each action entry comprising a designated data type and correspanding action identifier, and a message register for receiving data values from an Output object, and

(b) each Output object having a table of inputs containing

one or more input entries, each input entry comprising a designated Input object identifier, wherein at least one Output object is linked to at least one Input object, comprising the steps of:

(1) transferring data between a designated Output object to at least one linked Input object by specifying (a) a message comprising a data type and a corresponding data value, and (b) sending a copy of the message to each Input object specified in the entries of the table of inputs of the designated Output object;



(2) storing the data value in the message register of each such Input object;

(3) comparing the data type of the message to the data type of each action entry in the table of actions of each such Input object; and

(4) executing the action indicated by the action identifier corresponding to the matching action entry data type if the compared data types match.

5,386,569

PROGRAMMABLE CONTROLLER HAVING DIRECTLY EXECUTABLE CPU INSTRUCTIONS

Toshio Harada, and Kazuhiro Kudo, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,629
Claims priority, application Japan, Jan. 23, 1992, 4-010176
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—700 17 Claims

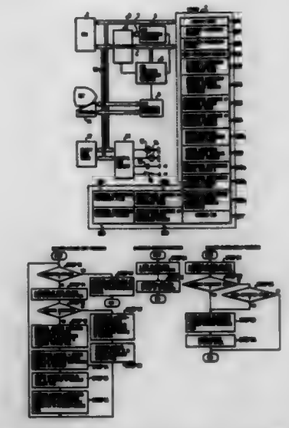
1. A programmable controller (PC) having a CPU and being operative to execute a sequence program, comprising a plurality of PC instructions comprising basic instructions for carrying out bit operations and function instructions for performing operation-transfer processing, and to display said PC instructions in ladder language form on a display means, comprising:

means for storing macro programs, said macro programs having been written in a high level language, compiled, and stored in said means for storing;

conversion means for converting each of said plurality of PC instructions into a unit of CPU instructions in a first language, said unit of CPU instructions comprising at least one instruction of said CPU which can execute said PC instructions without requiring use of one of said macro programs, wherein a PC instruction which requires use of one of said macro programs for its execution is converted to a unit of CPU instructions including information incorporated in the macro program so that the CPU instructions can be executed without reference to the macro program, and for converting each of said plurality of PC instructions into restoration information, which can be restored to said ladder language, in said first language, said conversion means comprising memory means for storing an execution file comprising said PC instructions and said restoration information in said first language; and

restoration information control means for

(a) reading and executing said CPU instructions from said execution file of said memory means but skipping said



restoration information without execution when the sequence program is executed, and

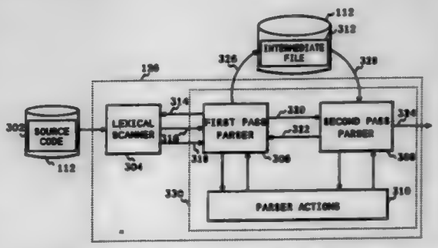
(b) analyzing said restoration information read from said execution file of said memory means, restoring said information to ladder language, and controlling the display of the sequence program as a ladder diagram.

5,386,570

METHOD FOR A TWO PASS COMPILER WITH THE SAVING PARSE STATES FROM FIRST TO SECOND PASS

Gregory S. Lindhorst, Woodinville, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 24, 1993, Ser. No. 66,687
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—700 29 Claims



1. A computer implemented method for compiling a first computer language into a second computer language, wherein said compiling requires at least two compilation passes, said computer implemented method comprising the steps of:

reading a compiler definition file containing a plurality of definitions of parser states for compiling said first computer language into said second computer language, and wherein said compiler definition file further contains at least one production function for execution during at least one of said parser states; and

processing said compiler definition file to compile said first computer language and create said second computer lan-

guage, comprising the steps of performing a first compilation pass comprising the steps

of

reading a source file containing statements of said first computer language and creating a plurality of tokens, one for each symbol contained in each of said statements of said source file,

parsing said tokens to determine which of said plurality of parser states to perform for said tokens, wherein said parsing defines an order of performing each of said parser states,

executing all said production functions identified for execution during performance of each of said plurality of parser states, and

writing said parser states to a data storage area in said order of performing,

performing a second pass comprising the steps of

retrieving said parser states from said data storage area in said order of performing, and

executing all said production functions identified for execution during performance of each of said parser states, wherein said production functions create said second computer language.

5,386,571

COMPUTER SYSTEM AND METHOD FOR STORING AND DISPLAYING OF A SEMANTICALLY STRUCTURED ENTITY RELATIONSHIP DIAGRAM

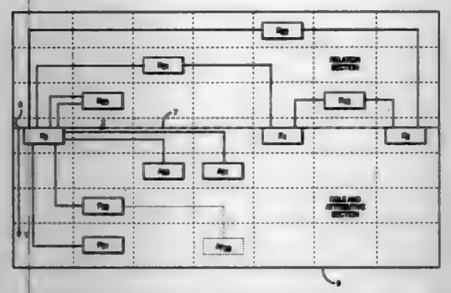
Wolfgang Kurz, Stuttgart, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 17, 1993, Ser. No. 123,391

Claims priority, application European Pat. Off., Sep. 19, 1992, 92116044

Int. Cl.[6] G06F *3/153*

U.S. Cl. 395—700 **19 Claims**



1. A method for storing and displaying of an entity relationship diagram in a computer system comprising storage means, said method comprising the steps of

a) storing of first data representative of a sequence of kernel entity sets K_i, where a kernel entity set K_i is a class of kernel entities e_i;

b) storing of second data representative of relation entity sets R_j, where a relation entity set R_j is a class of relations among a number n of kernel entities e_k each taken from a kernel entity set K_i according to the definition D

$$D: \{[e_1, e_2, \ldots e_n] | e_1 \in K_1, e_2 \in K_2, \ldots e_n \in K_n\},$$

and where the kernel entity sets K_i in the definition D may not be distinct, whereby said second data comprise information as to the assignment of each of said relation entity sets R_j to at least one of said kernel entity sets;

c) logically partitioning a display into at least a first and a second section;

d) displaying of the kernel entity sets K_i represented by a first class of symbols in said first section of said display; and

displaying of the relation entity sets R_j represented by a second class of symbols in said second section.

5,386,572

INFORMATION PROCESSING APPARATUS WITH DISCRIMINATING COMMUNICATION AND DISTINGUISHING DISPLAY FUNCTIONS

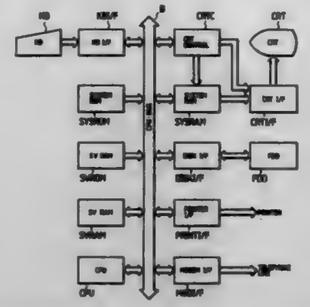
Susumu Takase, Yokohama; Koji Fukunaga, Tokyo, and Kazuhiro Nakamura, Tanashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 225,721, Jul. 28, 1988, abandoned. This application May 16, 1991, Ser. No. 702,113

Claims priority, application Japan, Aug. 2, 1987, 62-194222

Int. Cl.[6] G06F *13/00, 3/14*

U.S. Cl. 395—725 **12 Claims**



1. An information processing apparatus with communicating function, comprising:

input means to be manipulated for entering characters;

memory means for storing said characters entered from said input means;

display means for displaying said characters stored in said memory means;

communication interface means connected with a communication line for receiving characters transmitted through said communication line;

discrimination means for discriminating whether or not the characters transmitted through said communication interface means should be received;

memory control means for causing said memory means to insert the characters transmitted through said communicating interface means in the characters in said memory means, and responsive to said discrimination means for causing said memory means to store discrimination information; and

display control means for displaying the characters, transmitted through said communication line and stored in said memory means by said memory control means, based on said discrimination information, in distinguishable manner from the characters entered from said input means.

5,386,573

SINGLE CHIP MICROCOMPUTER WITH INTERRUPT PROCESSING CAPABILITY DURING HOLD STATES

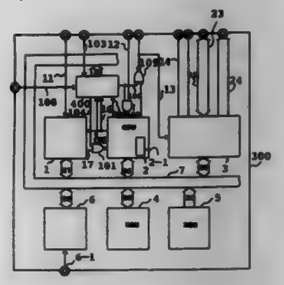
Wataru Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 20, 1993, Ser. No. 64,573

Claims priority, application Japan, May 20, 1992, 4-152779

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—725 **6 Claims**



1. A single chip microcomputer comprising:

an internal communication bus for transmitting data or informations;

a random access memory connected to said internal communication bus;

a read only memory connected to said internal communication bus;

a peripheral interface connected to said internal communication bus;

a central processing unit connected to said internal communication bus, said central processing unit taking a hold state according to a hold request signal transmitted from an external device outside said microcomputer;

an interrupt controller connected to said internal communication bus, said interrupt controller receiving an interrupt request signal from an external device outside said microcomputer and then delivering an interrupt process request signal to said central processing unit; and

a control means connected to said internal communication bus wherein said control means also receives said interrupt request signal and then delivers both an interrupt process request signal and a hold release signal to said central processing unit for having said central processing unit released from said hold state and subsequently said control means synchronizes with an interrupt acknowledge signal from said central processing unit and delivers a vectored interrupt through said internal communication bus to said central processing unit so that said central processing unit executes an interrupt servicing program until said control means receives an interrupt process complete signal from said central processing unit.

5,386,574

TEMPERATURE COMPENSATED EXTENDED RANGE COMPUTER COMMUNICATIONS LINK

Robert R. Asprey, Harvest, Ala., assignor to Cybex Corporation, Huntsville, Ala.

Continuation-in-part of Ser. No. 736,508, Jul. 26, 1991, Pat. No. 5,257,390. This application Oct. 26, 1993, Ser. No. 144,703

Int. Cl.[6] G06F *1/26*

U.S. Cl. 395—725 **14 Claims**

1. A D.C.-video range signal amplifier system comprising:

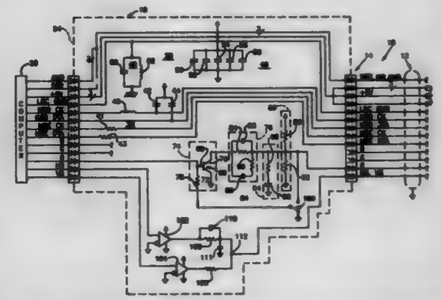
an analog D.C.-video range signal source;

a signal line from said source extending over a discrete distance and providing an output-direct current-video signal at its end; and

a common emitter-type first transistor stage of a first polarity type and having resistors in its collector and emitter leads, with one terminal of the emitter connected resistor being connected to a common reference and with one terminal of the resistor connected to the collector of this transistor and having an opposite end terminal, the base of said first transistor stage being connected to said end of said signal line;

a common emitter-type second transistor stage of an opposite polarity type to that of said first transistor stage, having its base connected to the collector of the first stage transistor, its collector, output, being connected through a third resistor to said common reference and its emitter connected to a source of operating potential;

a third transistor stage including a transistor of an opposite polarity to said second transistor stage, the base of said third transistor stage being connected to the collector of said second transistor stage, the collector of said third transistor stage being connected to a source of operating bias through a collector-resistor, and the output of said



third transistor stage appearing across a resistor connected between the emitter and said common reference, with said output being furnished as a direct current-video signal output for a monitor; and

a temperature compensation circuit for said first and second transistor stages and comprising a pair of serially arranged, forwardly biased, base-emitter transistor circuits, the collector-base of each transistor being connected in series, said temperature compensation circuit being coupled between a source of bias and through a resistor to a collector of said first transistor stage and to the base of said second transistor stage;

wherein said first and second transistor stages together exhibit gain, and whereby the base-emitter D.C. errors occurring by virtue of the parallel arranged and powered base-emitter junctions of said first and second transistor stages are compensated with respect to temperature, and the output of said second transistor stage is temperature stabilized.

5,386,575

ELECTRONIC APPARATUS AND METHOD FOR DETECTING THE VALUE OF VOLTAGE SUPPLIED BY A POWER SOURCE DURING THE OPERATION OF AN INPUT AND/OR OUTPUT DEVICE ON THE BASIS OF TEST DATA SENT TO THE INPUT AND/OR OUTPUT DEVICE

Michinori Shinkai, Tokyo, and Katsuhiko Sakaguchi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 871,998

Claims priority, application Japan, Jun. 10, 1991, 3-137321

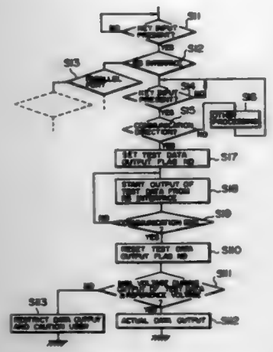
Int. Cl.[6] G06F *1/28*

U.S. Cl. 395—750 **15 Claims**

1. An electronic apparatus comprising:

storage means for storing data to be sent to an input and/or output device;

sending means for sending out the data stored in said storage means to the input and/or output device;
source means for supplying power to the input and/or output device;
output means for outputting predetermined test data to the input and/or output device;
detecting means for detecting a voltage value of voltage supplied by said source means during the receiving of the predetermined test data by the input and/or output device;



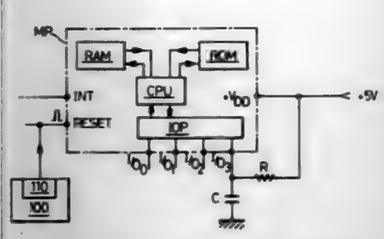
determining means for determining whether a voltage detected by said detecting means is higher than a predetermined voltage,
wherein the data stored in said storage means is sent to the input and/or output device when the voltage detected by said detecting means is determined to be higher than the predetermined voltage; and
restricting means for restricting transmission of the data stored in said storage means to the input and/or output device when the voltage detected by said detecting means is determined to be lower than the predetermined voltage.

5,386,576

METHOD AND APPARATUS FOR ASSOCIATING THE RECEPTION OF RESET PULSES BY A MICROPROCESSOR WITH ACCESS TO DIFFERENT SUBPROGRAMS

Gilles Chelard, Issou, and Alain Sague, Ruell Malmaison, both of France, assignors to Valeo Neiman, France

Continuation of Ser. No. 639,010, Jan. 9, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,051
Int. Cl.[6] G06F *1/24*
U.S. Cl. 395—750 **4 Claims**



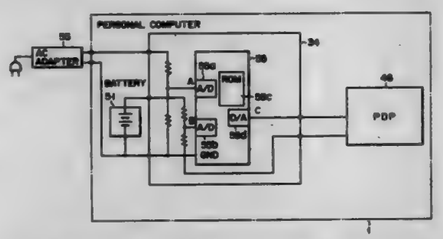
1. In a system including a microprocessor and other units, the system applying to the microprocessor a reset pulse of a first type to for waking-up said microprocessor on switching-on, and one of said other units being capable, after switching-on, to apply to the microprocessor a reset pulse of a second type constituting a request for performing a given function, a method for accessing a first subprogram or a second subprogram as a function of the type of reset pulse received by the microprocessor comprising the following steps:
providing at said microprocessor a single reset input for receiving both types of reset pulses,
after each switching-on of the system, causing a logical data item, different from said reset pulses and readable by said microprocessor, to change from a first state to a second state only after a certain time interval has elapsed since applying a most recent reset pulse,
said step of causing the logical data item to change being performed by a circuit connected to a power supply voltage source for the microprocessor and to an input/output terminal of said microprocessor different from said single reset input and adapted to apply to said terminal a signal which passes from a low logic level to a high logic level only after said certain time interval has elapsed,
each time a reset pulse is received on said single reset input, reading said logical data item before said certain time interval has elapsed since a most recently applied reset pulse, whereby, if said reset pulse is a reset pulse on switching on, the read logical data item has not yet been changed from said first to said second state, and if said reset pulse is a reset pulse for said request, the read logical data item is already in said second state subsequent to a previous switching-on of the system, and
depending on whether said logical data item is in its first state or in its second state, branching said microprocessor either to an initialization subprogram constituting said first subprogram, or else to a subprogram for processing said request and constituting said second subprogram.

5,386,577

DISPLAY CONTROL APPARATUS CAPABLE OF CHANGING LUMINANCE DEPENDING ON CONDITIONS OF POWER SUPPLY CIRCUIT

Hiroki Zenda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 578,247, Sep. 6, 1990, abandoned. This application Aug. 20, 1993, Ser. No. 109,476
Claims priority, application Japan, Feb. 23, 1990, 2-40926
Int. Cl.[6] G06F *1/00*
U.S. Cl. 395—750 **29 Claims**



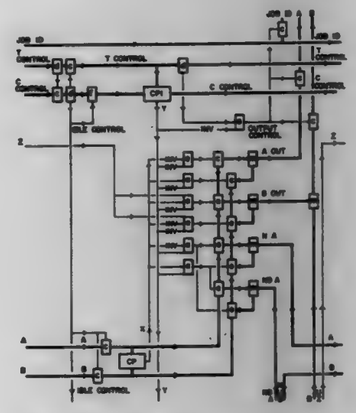
1. A flat panel display luminance control apparatus for a portable computer provided with a flat panel display unit for displaying data in response to luminance control, and first and second power supply means selectively used for supplying power to said flat panel display unit, said apparatus comprising:
first determining means for determining if an output voltage of said first power supply means is greater than "0" but less than a predetermined value when said first power supply means is being used;
second determining means for determining if said second power supply means is being used; and
luminance control means, coupled to said first and second determining means, for supplying a first luminance control signal to said flat panel display unit when the output voltage is less than the predetermined value, and for supplying a second luminance control signal to said flat panel display unit when said second determining means determines that said second power supply means is being used, wherein said second luminance control signal has a value greater than a value of the first luminance control signal.

5,386,578

METHOD FOR SORTING AND MERGING IN A DATA PROCESSING SYSTEM USING A MATRIX OF CELLS

Min H. Lin, 145 Ward St., Apt. #67, Revere, Mass. 02151

Filed Jan. 2, 1992, Ser. No. 816,176
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—800 **2 Claims**



1. In a data processing system including storage means, a central processor unit and a sorting machine having two control buffers holding data representing parameters selected for a data processing operation, a job identification control buffer, and a plurality of cells in a matrix comprised of a plurality of rows and columns of cells, said matrix having a first row defined as the top row and a last row defined as the bottom row, with direction in the matrix being defined as up being toward the top row, down being toward the bottom row, and from left to right within a row where a next cell is defined as one cell to the right and where a top cell is a cell corresponding to the first row and column, each said cell containing two key buffers holding data used for a sort/merge basis, two pointer buffers holding data defining an original sequence order for key data, a control register for indicating the last valid key to be sorted, and a processor for logically comparing pairs of data entities being sorted and for determining future cell directions, a process of sorting/merging data by said data processing system comprising the steps of:
defining each key buffer within a pair of key buffers as an A key and a B key;
defining each pointer buffer within a pair of pointer buffers as an A pointer and a B pointer;
defining A key and A pointer of a cell as A-buffer;
defining B key and B pointer of a cell as B-buffer;
defining a portion of said storage means to hold sorted/-merged data wherein the portion is divided into A-output buffer and B-output buffer;
loading key and pointer data into a buffer in the sorting machine in sequence order, where key data is defined as data used for the sorting/merging basis, and where pointer data is defined as a sequence order key extracted from a file;
loading key and pointer data from said file that loads a pair of keys into key buffers of a cell and from the top cell down associated with a first pointer incremented by 1 to the last valid key;
loading a null value as a key and the null value as a pointer to pair the last valid cell, if the last valid cell has only one set of key and pointer;
using an additional control line to indicate the last valid cell of a column used and control a shifting process;
defining a number of keys to be sorted as C-control;
defining a number of cells as T-control, where the number of cells is equal to one-half the number of keys;
defining a signal of the additional control line that indicates a last valid cell in a column as Z-control;
comparing the two keys of each buffer wherein said comparing is comprised of:
performing the following step 1 beginning with the top cell:
decrement C-control by 1 when C-control and T-control are both greater than zero; and
if C-control is not less than T-control, then do the following:
for the first row of cells
compare the keys A and B and move the smaller key and its pointer to B-buffer of the next cell;
move the larger key and its pointer to the B-buffer of the next down cell;
for the second row of cells and down 1
compare the keys A and B, move the smaller key and its pointer to the A-buffer at the next up cell, and
move the larger key and its pointer to the B-buffer at the next down cell if Z-control is not on;
unless otherwise, if Z-control is on, move the larger key and its pointer to the A-buffer at the next cell;
repeating the above step 1 process, after moving down a cell, until C-control is less than T-control;
performing the following step 2 beginning with the first cell of the second column;
decrement C-control by 1 when C-control and T-control are both greater than zero; and for the first row of cells
compare the keys A and B and output the smaller key and its pointer to A, output buffer, and move the larger key and its pointer to the B-buffer of the next cell if Z-control is not on;
unless otherwise, if Z-control is on, output the larger key and its pointer to B-output buffer;
for the second row of cells and down
compare the keys A and B, move the smaller key and its pointer to the A-buffer at the next up cell, and
move the larger key and its pointer to the B-buffer at the next cell if Z-control is not on;
unless otherwise, if Z-control is on, output the larger key and its pointer to the B-output buffer;
repeating the above step 2 process, after moving down a cell, until C-control is equal to zero, where C-control resets T-control to zero; and Z-control is set to zero; and
stopping the process when either C-control or T-control is zero, wherein the sorted/merged data is stored in the output buffers such that A-output buffer contains the smaller value in ascending order and the B-output buffer contains the larger values in descending order.

5,386,579

MINIMUM PIN-COURT MULTIPLEXED ADDRESS/DATA BUS WITH BYTE ENABLE AND BURST ADDRESS COUNTER SUPPORT MICROPROCESSOR TRANSMITTING BYTE ENABLE SIGNALS ON MULTIPLEXED ADDRESS/DATA BUS HAVING BURST ADDRESS COUNTER FOR SUPPORTING SIGNAL DATUM AND BURST TRANSFER

Philip A. Bourekas, San Jose; Avigdor Willenz, Campbell; Yeshayahu Mor, Cupertino; Dunh LeNgoc, Saratoga, and Scott Revak, Castro Valley, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

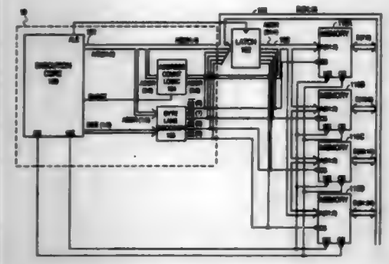
Filed Sep. 16, 1991, Ser. No. 760,794
Int. Cl.[6] G06F *12/00, 15/76*
U.S. Cl. 395—800 **14 Claims**

1. A microprocessor having a multiple-bit multiplexed address and data bus for transferring data to an external memory

for a write operation and from the external memory for a read operation in a selected transfer mode, the transfer mode being selected from one of a burst mode and a single datum mode, the microprocessor comprising:

an execution core for processing data and for controlling the transfer of the data So the external memory for a write operation and from the external memory for a read operation, the execution core being coupled to the multiplexed address and data bus for sending data transfer control signals and for sending and receiving the data, the execution core generating a transfer mode signal indicative of the transfer mode;

address count logic coupled to receive a first subset of the bits of the multiplexed address and data bus and the transfer mode signal from the execution core and transmit a number of bits equal to the first subset of bits directly to



the external memory, the address count logic providing a counting function in place of the first subset of bits to the external memory for a write operation and from the external memory for a read operation when the transfer mode signal indicates the burst transfer mode, and the address count logic providing the first subset of bits unmodified to the external memory when the transfer mode signal indicates the single datum mode; and

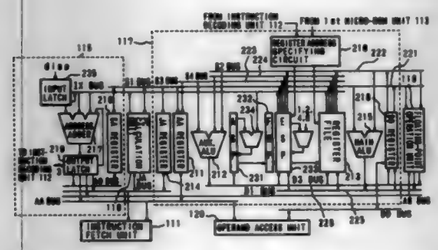
a byte lane decoder coupled to receive a second subset of the bits of the multiplexed address and data bus, the second subset of bits including the data transfer control signals, wherein the byte lane decoder decodes byte transfer information from the data transfer control signals and provides the decoded byte transfer information to the multiplexed address and data bus, replacing the first and second subsets of bits.

5,386,580

DATA PROCESSOR

Toyohiko Yoshida, and Masahito Matsuo, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1992, Ser. No. 819,545
Claims priority, application Japan, Jan. 21, 1991, 3-005229
Int. Cl.[6] G06F *9/35*
U.S. Cl. 395—800 3 Claims



1. A data processor that executes a multi-functional instruction, including an operation code specifying an operation to be performed, for dividing a plurality of operands into groups, each group having one or more operands, and for separately processing each group of operands, comprising:

an instruction decoding unit, which decodes a multi-functional instruction for separately processing at least a first memory operand and a second memory operand, and outputs a first address calculation control code, a first operation control code, second address calculation control code and a second operation control code, with said second address calculation control code decoded only from the operation code of said instruction;

operand address calculating means, coupled to said instruction decoding unit to receive said first and second address calculation control codes, which includes an arithmetic unit and an output operand address holding means having an output coupled to an input of said arithmetic unit and an input coupled to an output of said arithmetic unit, said operand address calculating means responsive to said first and second address calculation control codes for calculating a first operand address, in response to said first address calculation control code, during a first cycle and for holding said first address in said operand address holding means during said first cycle, and for utilizing said arithmetic unit to calculate a second operand address, in response to said second address calculation control code and based on said first operand address, during a second cycle and holding said second address in said operand address holding means during said second cycle; and

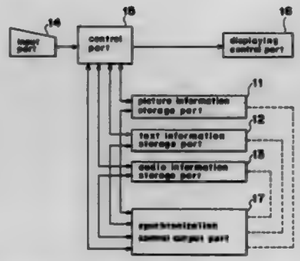
means, coupled to said address calculating means to receive said operand addresses and to said instruction decoding unit to receive said operation control codes, for utilizing said first operand address and said first operation control code to execute the function specified by the operation code on said first operand and for utilizing said second operand address and said second operation control code to execute the function specified by the operation code on said second operand.

5,386,581

MULTIMEDIA DATA EDITING APPARATUS INCLUDING VISUAL GRAPHIC DISPLAY OF TIME INFORMATION

Kisoko Suzuki, Neyagawa; Hidemasa Kitagawa, Toyonaka; Koichiro Endo, Osaka, and Yoshihiro Mori, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 500,543, Mar. 28, 1990, abandoned. This application Sep. 3, 1993, Ser. No. 115,831
Claims priority, application Japan, Mar. 28, 1989, 1-077562; Oct. 13, 1989, 1-266483
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—800 3 Claims



3. A data editing apparatus comprising:

a plurality of information storage parts each for storing a plurality of material information data and corresponding destination information data associated with the plurality of material information data, each corresponding destination information data indicative of a plurality of selected material information data arranged on a time basis;

an input part for outputting, in response to user operating instructions, (a) first input information data for specifying material information data from among the plurality of material information data, (b) second input information data denoting a timewise arrangement condition of the material information data specified by the first input information data and (c) third input information data denoting a time related address location of the plurality of material information data and the corresponding destination information data;

a control part, operatively coupled to said plurality of information storage parts and to said input part, for (a) selecting material information data from among the plurality of material information data stored in the plurality of information storage parts in accordance with the first information data outputted from the input part, (b) arranging the thus selected material information data on the time basis in accordance with the second input information data outputted from the input part so as to produce the destination information, and (c) storing the destination information in the corresponding information storage part;

a display control part, operatively coupled to said control part, for effecting (a) a material information graphic display operation of displaying parallel material information graphics each having a respective displayed area proportional to a reproduction time of the plurality of material information data and each having a displayed color denoting a type of the material information data, (b) a destination information graphic display operation of displaying parallel destination information graphics each having a respective displayed area proportional to a reproduction time of the corresponding destination information data and each having a displayed color denoting a type of the destination information data, (c) a first digital display operation of digitally displaying a time address value associated with the material information graphics in accordance with the time related address location of the third input information data from the input part, (d) a second digital display operation of digitally displaying the time address value associated with the destination information graphics in accordance with the time related address location of the third input information data from the input part, (e) an operation of repeatedly graphically displaying the time address value associated with the material information graphics at a corresponding location on the material information graphics, and (f) an operation of repeatedly graphically displaying the time address value associated with the destination information graphics at a corresponding location on the material information graphics; and

a synchronization control output part, operatively coupled to said control part and to said plurality of information storage parts, for synchronizing in time the plurality of destination information data stored in the plurality of information storage parts during reproduction of the plurality of destination information data.

5,386,582

HIGH SPEED TIME BASE COUNTER IN A FIELD PROGRAMMABLE GATE ARRAY (FPGA)

Clint Ebert, Forest Grove, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 12, 1993, Ser. No. 30,802
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—800 3 Claims

1. A counter comprising:

a number of counter stages connected together in a chain of counter stages;

each of said counter stages comprising a four bit counter and a carry logic:

a first four-bit counter stage of said chain providing a first stage standard carry output and a first stage early carry output;

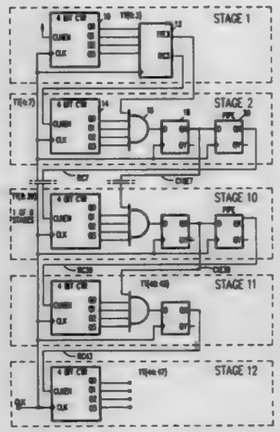
said first stage early carry output being asserted when a count of said first four-bit counter stage is equal to four;

said first stage standard carry output being asserted when a count of said first four-bit counter stage is equal to 0FH;

a second four-bit counter stage having a clock enable input and four counter outputs;

said second four-bit counter stage of said chain providing a second stage standard carry output and a second stage early carry output;

said first stage standard carry output of said first four-bit counter stage being connected to said clock enable of said second four-bit counter stage;



an AND circuit having inputs connected to said first stage early carry output of said first stage and to said four counter outputs of said second stage;

an output of said AND circuit being connected to said second stage early carry output of said second four-bit counter stage;

a third four-bit counter stage of said chain having a clock enable input and four counter outputs; and,

a pipe connected to said second stage early carry output of said second stage and to said enable input of said third stage;

said second stage standard carry output being generated by said pipe, a length of said pipe of said second stage being measured from said second stage early carry to a maximum count of said first stage.

5,386,583

HIGH PERFORMANCE SORT HARDWARE ACCELERATOR IN A DATA PROCESSING SYSTEM INCLUDING A PLURALITY OF COMPARATOR MODULES

Jerry E. Hendricks, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

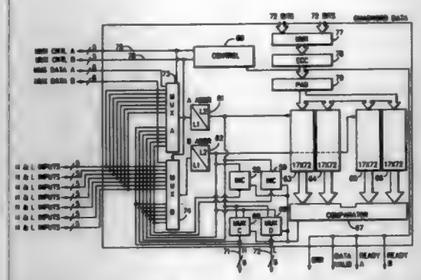
Continuation of Ser. No. 721,023, Jun. 26, 1991, Pat. No. 5,265,260. This application Jul. 6, 1993, Ser. No. 87,438
Int. Cl.[6] G06F *7/08*
U.S. Cl. 395—800 13 Claims

1. High performance sort hardware for a database accelerator comprising:

working store means for storing data records to be sorted;

a plurality of comparator modules, said plurality of comparator modules each including cache storing means for storing records from said working store means and providing high speed access to stored records, data in said cache storing means of each of said plurality of compara-

tor modules being identical data, said plurality of comparator modules each further including comparator means for selecting records stored in said cache storing means in a predetermined ascending or descending order and generating comparator outputs according to said predetermined order; and



control means for loading said comparator outputs of said plurality of comparator modules in said working store means in a sequence of cycles which implements a sort algorithm as a state machine,

wherein each of said comparator modules have access to all digits of said data values to be sorted.

5,386,584

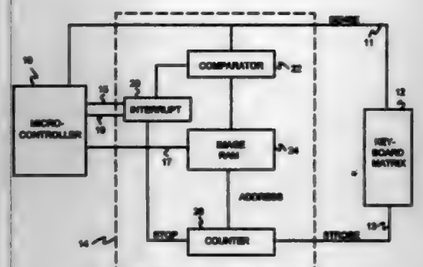
INTERRUPT-GENERATING KEYBOARD SCANNER USING AN IMAGE RAM

Brian Verstegen, Sunnyvale; Lance King, Newark, and George A. Vlantis, Sunnyvale, all of Calif., assignors to Chips and Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 537,583, Jun. 14, 1990, abandoned. This application Oct. 5, 1993, Ser. No. 132,125

Int. Cl.[6] G06F *3/02*

U.S. Cl. 391—800 **5 Claims**



1. In combination with a personal computer, the personal computer including a microcontroller and a keyboard including a plurality of key switches, the keyboard further including a plurality of intersecting strobe lines and sense lines, a key switch connected between appropriate strobe and sense lines, a key closure indicating a strobe line is electrically connected to a sense line, a hardware assisted keyboard scanner comprising:

random access memory (RAM) means, the RAM means being organized as a plurality of bytes of data and a plurality of corresponding addresses, each of the plurality of bytes of data corresponds to one of the plurality of sense lines and each of the plurality of addresses corresponds to one of the plurality of strobe lines, the RAM means storing a data pattern of key closures;

counter means coupled to the RAM means for providing an address to the RAM means, the counter means also for sequentially incrementing and asserting each of the strobe lines, each time the counter means increments a strobe line, a new strobe line is asserted and a next sequential data byte is referenced;

comparator means responsive to the counter means for comparing each data byte stored in the RAM means to a corresponding sense line state to determine if there has been at least one key closure change, a miscompare indicating that at least one key closure has changed as a result of key switch activity; and

flip-flop means responsive to the comparator means for providing an interrupt signal to and receiving an acknowledge signal from the microcontroller if there has been any key switch activity; the microcontroller updating the RAM means responsive to the interrupt signal means for complementing all strobe lines except the strobe line that is asserted and for providing a signal to the microcontroller to indicate if a common key switch closure exists.

5,386,585

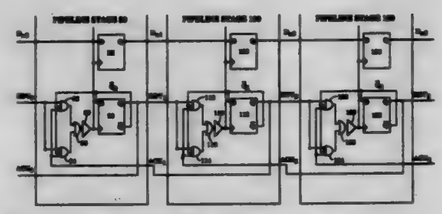
SELF-TIMED DATA PIPELINE APPARATUS USING ASYNCHRONOUS STAGES HAVING TOGGLE FLIP-FLOPS

Roger L. Traylor, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 13,070, Feb. 3, 1993, abandoned. This application Nov. 18, 1993, Ser. No. 154,639

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **1 Claim**



1. A parallel processing system comprising:

a plurality of central processing units, each central processing unit capable of executing an instruction independently from all other central processing units;

a plurality of processor nodes, each processing node being coupled to a different one of said plurality of central processing units, said plurality of processor nodes including a first processor node;

means for routing data between said plurality of processor nodes;

a network interface controller disposed within said first processor node said network interface controller means including a first pipeline stage comprising:

a first data flip-flop, including a first data flip-flop data input, a first data flip-flop data output, and a first data flip-flop clock input,

a first logical AND gate having a first input, a second input, and a third inverted input;

a second logical AND gate having a first inverted input, a second inverted input, and a third input, said first inverted input coupled to said first input of said first logical AND gate, said second inverted input coupled to said second input of said first logical AND gate, and said third input coupled to said third inverted input of said first logical AND gate;

a first logical OR gate coupled to said first logical AND gate and said second logical AND gate;

a first driver coupled to said first logical OR gate and said first data flip-flop clock input;

a first toggle flip-flop having a first toggle flip-flop input, a first toggle flip-flop output, a first toggle flip-flop inverted output, and a first toggle flip-flop clock input,

wherein said first toggle flip-flop input is coupled to said first toggle flip-flop inverted output and said second input of said first logical AND gate, and said first toggle flip-flop clock input is coupled to said first driver;

wherein a first READY signal is coupled to said first input of said first logical AND gate, a first ACKNOWLEDGE signal is coupled to said third inverted input of said first logical AND gate, and said toggle flip-flop output outputs a second READY signal and a second ACKNOWLEDGE signal;

said network interface controller further comprising a second pipeline stage coupled to said first pipeline stage, said second pipeline stage comprising:

a second data flip-flop, including a second data flip-flop data input, a second data flip-flop data output, and a second data flip-flop clock input,

a third logical AND gate having a first input, a second input, and a third inverted input;

a fourth logical AND gate having a first inverted input, a second inverted input, and a third input, said first inverted input coupled to said first input of said third logical AND gate, said second inverted input coupled to said second input of said third logical AND gate, and said third input coupled to said third inverted input of said third logical AND gate;

a second logical OR gate coupled to said third logical AND gate and said fourth logical AND gate;

a second driver coupled to said second logical OR gate and said second data flip-flop clock input;

a second toggle flip-flop having a second toggle flip-flop input, a second toggle flip-flop output, a second toggle flip-flop inverted output, and a second toggle flip-flop clock input, wherein said second toggle flip-flop input is coupled to said second toggle flip-flop inverted output and said second input of said third logical AND gate, and said second toggle flip-flop clock input is coupled to said second driver;

wherein said second READY signal is coupled to said first input of said third logical AND gate, said second toggle flip-flop output provides said first ACKNOWLEDGE signal to said third inverted input of said first logical AND gate, and outputs a third READY signal, and a third ACKNOWLEDGE signal is coupled to said third inverted input of said third logical AND gate.

5,386,586

SYSTEM AND METHOD FOR CONSTRUCTION OF LISTS OF DEFERRED SERVICE REQUESTS

Gregory M. Papadopoulos, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 396,926, Aug. 21, 1989, abandoned. This application Dec. 28, 1993, Ser. No. 176,497

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—800 **23 Claims**

1. A data processing system comprising:

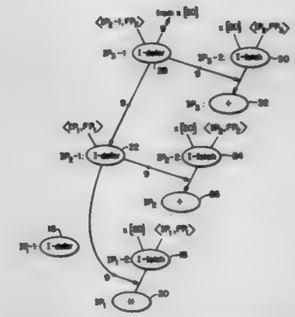
at least one processor for executing code blocks;

a first memory space comprising a plurality of activation frames upon which the at least one processor operates independently, each activation frame being exclusively associated with a single code block and comprising at least one memory location of the first memory space for storing an operand of an instruction within the associated code block, the at least one processor operating in parallel on plural code blocks by processing data relative to respective activation frames exclusively associated with the code blocks;

a second memory space for use by the at least one processor; and

a service controller that manages service requests from the at least one processor executing separate code blocks for a service at a memory location of the second memory space to be returned to an activation frame associated with a requesting code block, the service controller deferring service requests when said service is not yet available at said location of the second memory space by storing a first service request at said location of the second memory space, and for each subsequent request:

replacing the service request stored in said location of the second memory space with a subsequent service request which is provided with an indication that the subsequent service request is part of a list of deferred service requests, and



storing the replaced service request as a next element of the list of deferred service requests at a memory location within an activation frame associated with a code block which made the subsequent service request, the activation frame in which the replaced service request is stored being independent of the code block which made the replaced service request, such that the list of deferred service requests distributed over a plurality of memory locations including at least one memory location of an activation frame.

5,386,587

SATELLITE BROADCASTING RECEIVING SYSTEM WITH RECEPTION LEVEL INDICATOR USING CONTROL SIGNAL FROM RECEIVER

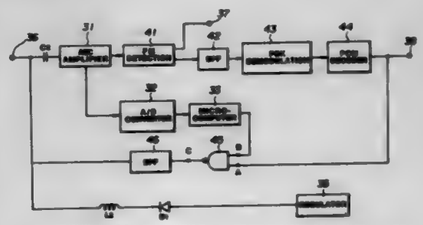
Keji Yazawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,484

Claims priority, application Japan, Dec. 20, 1991, 3-354501

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—3.2 **7 Claims**



1. A satellite broadcasting reception system comprising:

a satellite antenna for receiving electromagnetic waves,

a signal cable for transmitting signals produced upon reception of the electromagnetic waves by said satellite antenna,

a receiver for receiving the signals transmitted over said signal cable, and

a reception level indicator connected to said signal cable for indicating a reception level of the electromagnetic waves on the basis of a control signal transmitted from said receiver over said signal cable, wherein said control signal

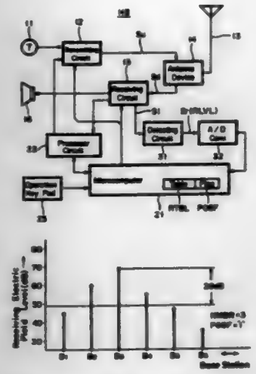
comprises a signal modulating voice sampling clocks as a carrier.

5,386,588

TRANSMISSION POWER CONTROL OF MOBILE RADIOTELEPHONE STATION IN RESPONSE TO BASE STATION CONTROL SIGNAL WHERE BASE STATION DATA IS COLLECTED BY THE MOBILE RADIOTELEPHONE STATION

Hiroshi Yasuda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 17, 1991, Ser. No. 716,002
Claims priority, application Japan, Jun. 19, 1990, 2-160227
Int. Cl.[6] H04Q 7/00
U.S. Cl. 455—33.1 **3 Claims**



2. A mobile radiotelephone station for communicating with a radiotelephone communication system, the mobile radiotelephone station comprising:

means for receiving a plurality of incoming signals transmitted from a corresponding plurality of base stations within the radiotelephone communication system, each of the plurality of incoming signals having a received signal strength level;

means for measuring the received signal strength level of each of the plurality of incoming signals to produce signal strength data;

means for evaluating the signal strength data to determine which incoming signal has the largest received signal strength level;

means for evaluating the signal strength data to determine how many of the incoming signals have a signal strength level within a predetermined range of the largest received signal strength level;

means for identifying the base station that transmitted the incoming signal with the largest received signal strength level; and

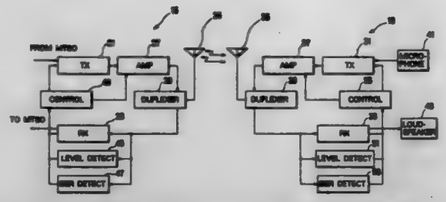
means for transmitting an outgoing signal which identifies the base station having the largest signal strength level, the outgoing signal indicating how many incoming signals have a received signal strength level within the predetermined range of the largest signal strength level.

5,386,589

TRANSMISSION POWER CONTROL SYSTEM CAPABLE OF KEEPING SIGNAL QUALITY CONSTANT IN MOBILE COMMUNICATION NETWORK

Toshihito Kasai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 23, 1993, Ser. No. 996,157
Claims priority, application Japan, Dec. 26, 1991, 3-345625
Int. Cl.[6] H04Q 7/00; H04B 7/00
U.S. Cl. 455—33.1 **2 Claims**



1. A transmission power control system for a mobile communication network which is of a cellular type having a service area divided into a plurality of cells and comprises in each of said cells a base station comprising a transmitter and a receiver to establish in said each of said cells a radio communication channel for carrying out communication between said base station and a mobile station comprising a transmitter and a receiver, one and the other of said base and said mobile stations being used as a transmitting station and as a counterpart station, said transmission power control system comprising in the receiver of said counterpart station:

first means for determining a bit error rate of a signal received from the transmitter of said transmitting station; and

second means for producing a decreasing command to said transmitting station for decreasing transmission power of the transmitter of said transmitting station by a predetermined amount if said bit error rate if not greater than a first rate threshold value, said second means producing an increasing command to said transmitting station for increasing the transmission power of the transmitter of said transmitting station by said predetermined amount if said bit error rate is not less than a second rate threshold value which is greater than said first rate threshold value by a preselected difference, said second means producing neither of said decreasing and increasing commands if said bit error rate is greater than said first rate threshold value and less than said second rate threshold value, said second means causing the transmitter of said counterpart station to transmit said decreasing command and said increasing command towards said transmitting station;

said first means measuring the number of times by which the bit error rate of the radio communication channel in use exceeds a maximum allowable bit error rate in each predetermined time interval, said first means decreasing at least one of said first and said second rate threshold values by a prescribed value if said number of times is not less than a predetermined value, said prescribed value being less than said preselected difference, said first means increasing said at least one of said first and said second rate threshold values by said prescribed value if said number of times is less than said predetermined value.

5,386,590

APPARATUS AND METHOD FOR INCREASING DATA TRANSMISSION RATE OVER WIRELESS COMMUNICATION SYSTEMS USING SPECTRAL SHAPING

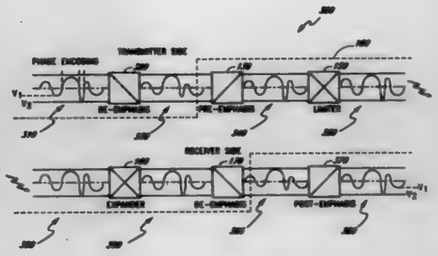
Michael G. Dolan, Orange, Calif., assignor to Celeritas Technologies, Ltd., Mission Viejo, Calif.

Filed Jul. 28, 1993, Ser. No. 99,080
Int. Cl.[6] H04Q 7/00
U.S. Cl. 455—33.1 **2 Claims**

2. An apparatus for increasing the data output rate from a transmit modem in a duplex analog radio communication system having a single-carrier data signal, comprising:

a radio transmitter which receives said single-carrier data signal, said radio transmitter including a pre-emphasizer that increases the amplitudes of components of said single-carrier data signal in the range of 1,000 Hz to 3,000 Hz, said radio transmitter further including a limiter that limits the amplitudes of said single-carrier data signal;

a transmit modem which provides said single-carrier data signal as an input signal to said radio transmitter, said transmit modem encoding digital data onto said input signal as a plurality of modulation signal components, said transmit modem including a spectral shaper which selectively reduces amplitudes of said modulation signal components at higher frequencies to cause said input signal



from said modem to said radio transmitter to have lower amplitudes at higher frequencies than at lower frequencies to reduce the effect of said limiter on said input signal.

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DESIGN PATENTS

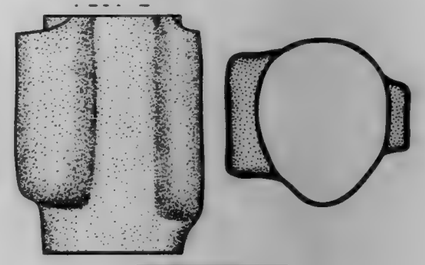
GRANTED JAN. 31, 1994

ERRATA

For CLASS	See PATENT NO.
D6–334	D 354,866
D6–335	D 354,867
D6–356	D 354,868
D6–457	D 354,869
D6–474	D 354,870
D10–106	D 354,922
D10–030	D 354,926
D16–203	D 354,973
D16–301	D 354,974
D19–036	D 354,979
D26–139	D 355,039
D29–119	D 355,051

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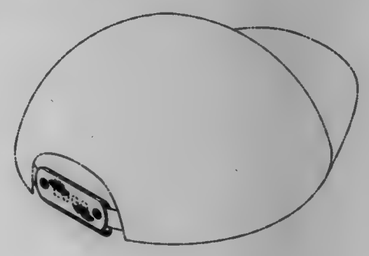
354,840
ELASTIC CUFF SAFE FOR ARM OR LEG USE
Rudolph M. Geisler, 91 Hamilton Ave., Lodi, N.J. 07644
Filed Oct. 29, 1993, Ser. No. 14,636
Term of patent 14 years
U.S. Cl. D2—612



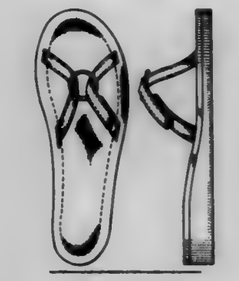
354,841
LONGHORN SKULL BOOTJACK
Charles W. Bussell, P.O. Box 483, Georgetown, Calif. 95634
Filed Oct. 18, 1993, Ser. No. 14,240
Term of patent 14 years
U.S. Cl. D2—642



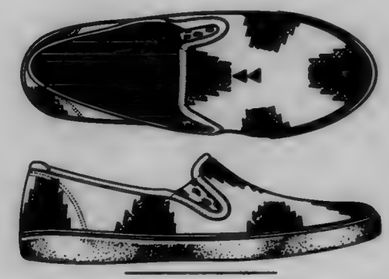
354,842
COMFORT BAND FOR HEADWEAR
Edward J. Imre, 39 Glendale Drive, Welland, Ontario, Canada L3C 4Z1
Filed Jan. 7, 1993, Ser. No. 9,178
Term of patent 14 years
U.S. Cl. D2—891



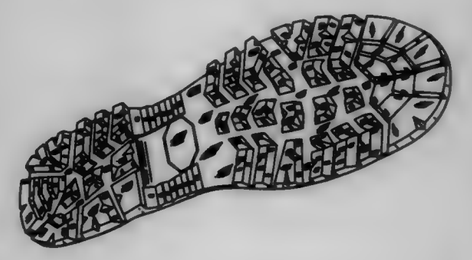
354,843
PEDICURE SLIPPER
Helen I. Atkins, 1700 Kaanahina Ave., Las Vegas, Nev. 89104, and Lucia B. Cotto, 3120 Clamdigger Ln., Las Vegas, Nev. 89117
Filed Feb. 16, 1993, Ser. No. 4,787
Term of patent 14 years
U.S. Cl. D2—916



354,844
SHOE
Dixie Rinehart, 37055 Hwy. 550 S., Montrose, Colo. 81401
Filed Sep. 30, 1993, Ser. No. 13,710
Term of patent 14 years
U.S. Cl. D2—923



354,845
SOLE FOR SHOES
Marco Bramani, Milan, Italy, assignor to Vibram S.p.A., Italy
Filed Nov. 2, 1992, Ser. No. 1,501
Claims priority, application Italy, May 4, 1992, MI92 U 000288
Term of patent 14 years
U.S. Cl. D2—957



354,846
SHOE UPPER
Amy S. Minkin, Canton, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 16,044, Dec. 6, 1993, Pat. No. Des. 348,149.
This application Jun. 14, 1994, Ser. No. 24,422
Term of patent 14 years
U.S. Cl. D2—969



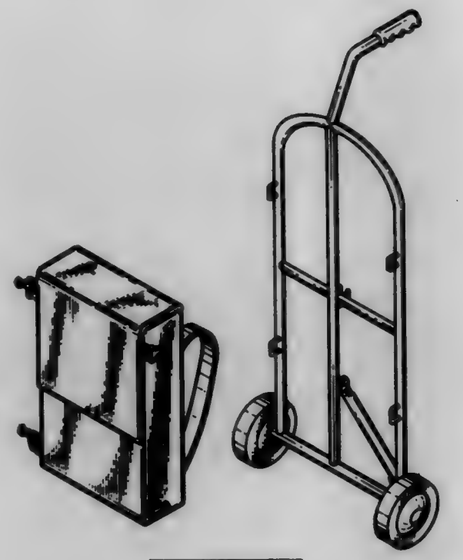
354,847
SHOE UPPER
Juan A. Diaz; Paul D. Brown, both of Higham, Mass., and E. Scott Morris, East Providence, R.I., assignors to Reebok International Ltd., Stoughton, Mass.
Filed Jun. 15, 1993, Ser. No. 9,494
Term of patent 14 years
U.S. Cl. D2—970



354,848
COSMETIC BOX
Brian J. Lovell, San Diego, Calif., assignor to Sassaby, Inc., San Diego, Calif.
Filed Mar. 5, 1993, Ser. No. 5,571
Term of patent 14 years
U.S. Cl. D3—205



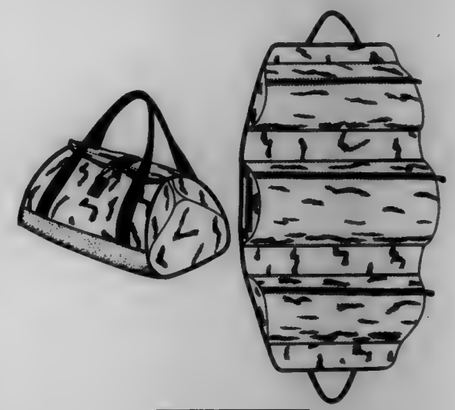
354,849
COMBINED BOOK BAG AND CARRIER
William H. Herman, and Kim-Loan T. Herman, both of 5635 Wembley Downs Dr., Arlington, Tex. 76017
Filed Apr. 26, 1993, Ser. No. 7,544
Term of patent 14 years
U.S. Cl. D3—216



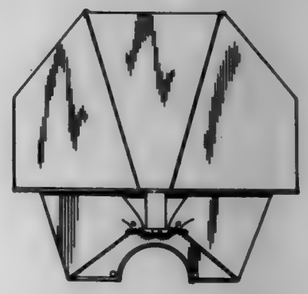
354,850
POUCH FOR HEALTH CARE PROFESSIONALS
Cheryl L. Denson, 10755 El Paso Ave., Fountain Valley, Calif. 92708
Filed Jun. 4, 1993, Ser. No. 9,059
Term of patent 14 years
U.S. Cl. D3—226



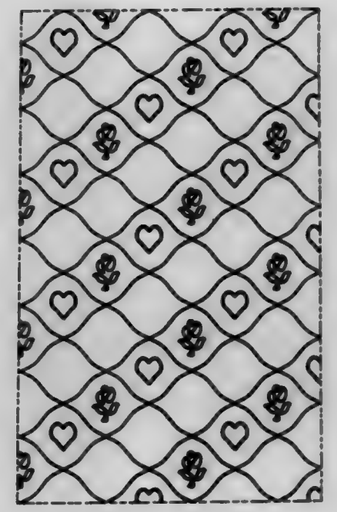
354,851
BAG FOR SPORT OR TRAVEL
Trevor J. S. Smith, London; Victor Herbert; Judith Herbert, both of Nr. Clitheroe; Hillary Fuller, London, and Wendy Longbon, Hackbridge, all of United Kingdom, assignors to Equator Group PLC, United Kingdom
Filed Oct. 20, 1992, Ser. No. 665
Claims priority, application United Kingdom, Apr. 30, 1992, 2022629
Term of patent 14 years
U.S. Cl. D3—254



354,852
GOLF BAG COVER
Frank H. Goddard, Seaforth, Canada, and Diana Caldwell, 120 West William Street, P.O. Box 163, Seaforth, Ontario, Canada N0K 1W0 , assignors to Diana Caldwell, Seaforth, Canada
Filed Jan. 22, 1992, Ser. No. 824,458
Term of patent 14 years
U.S. Cl. D3—255



354,853
EMBOSSED TISSUE
Galyn A. Schulz, Appleton, Wis., assignor to James River Corporation of Virginia, Norwalk, Conn.
Filed Dec. 14, 1992, Ser. No. 2,628
Term of patent 14 years
U.S. Cl. D5—53



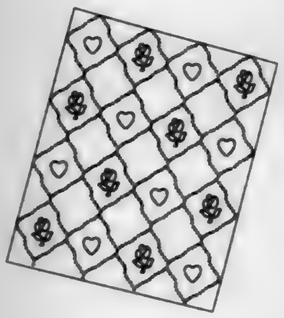
354,854
EMBOSSED TISSUE
Galyn A. Schulz, Appleton, Wis., assignor to James River Corporation of Virginia, Norwalk, Conn.
Filed Dec. 14, 1992, Ser. No. 2,630
Term of patent 14 years
U.S. Cl. D5—53



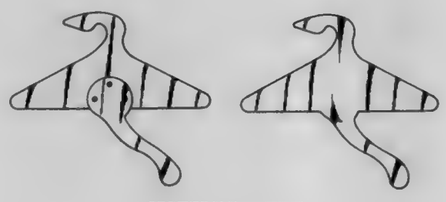
354,855
EMBOSSED TISSUE
Galyn A. Schulz, Appleton, Wis., assignor to James River Corporation of Virginia, Norwalk, Conn.
Filed Dec. 14, 1992, Ser. No. 2,619
Term of patent 14 years
U.S. Cl. D5—53



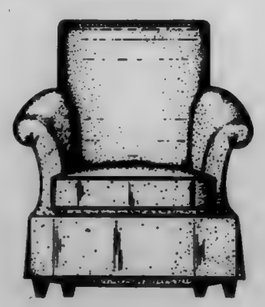
354,856
EMBOSSED TISSUE
Galyn A. Schulz, Appleton, Wis., assignor to James River Corporation of Virginia, Norwalk, Conn.
Filed Dec. 14, 1992, Ser. No. 2,629
Term of patent 14 years
U.S. Cl. D5—53



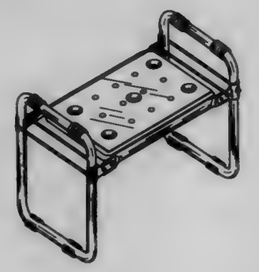
354,857
EXTENDED REACH HANGER
Nicholas A. Hammer, DuBois, Pa., assignor to Help Yourself Designs, Incorporated, DuBois, Pa.
Filed May 28, 1993, Ser. No. 8,839
Term of patent 14 years
U.S. Cl. D6—318



354,858
CHAIR
John Hutton, New York, N.Y., assignor to Donghia Furniture, New York, N.Y.
Filed Sep. 16, 1993, Ser. No. 13,036
Term of patent 14 years
U.S. Cl. D6—334



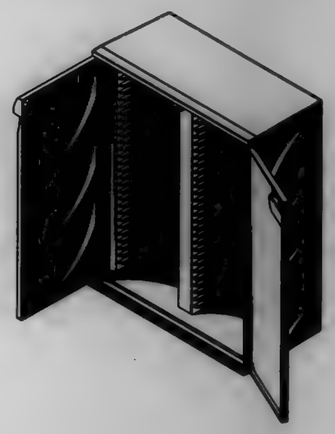
354,859
COLLAPSABLE WORKCHAIR
Chun-Li Hsu, No. 426, Tou-Yuan E. Rd., Ho-Feng Village, Pi-Tou Hsiang, Chang-Hua Hsien, Taiwan, Prov. of China
Filed Oct. 19, 1993, Ser. No. 14,280
Term of patent 14 years
U.S. Cl. D6—368



354,860
ARMCHAIR
Raymond Groufflex, Oyonnax, France, assignor to Groufflex Sari, Oyonnax, France
Filed Oct. 21, 1993, Ser. No. 14,413
Claims priority, application Hague Agreement, Apr. 26, 1993, DMA/002129
Term of patent 14 years
U.S. Cl. D6—379



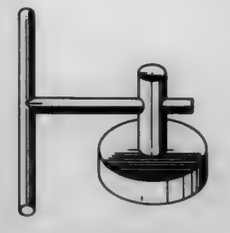
354,861
COMPACT DISC STORAGE UNIT
Gregg M. Davis, Columbus, and Jeffrey T. DeBord, Worthington, both of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio
Filed Feb. 22, 1993, Ser. No. 5,055
Term of patent 14 years
U.S. Cl. D6—407



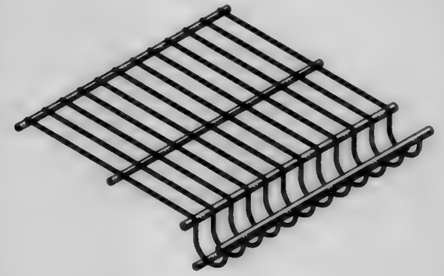
354,862
DISPLAY RACK
Lewis B. Goldberg, 20768 Skoeras Dr., Canoga Park, Calif. 91306
Filed Nov. 4, 1993, Ser. No. 14,909
Term of patent 14 years
U.S. Cl. D6—461



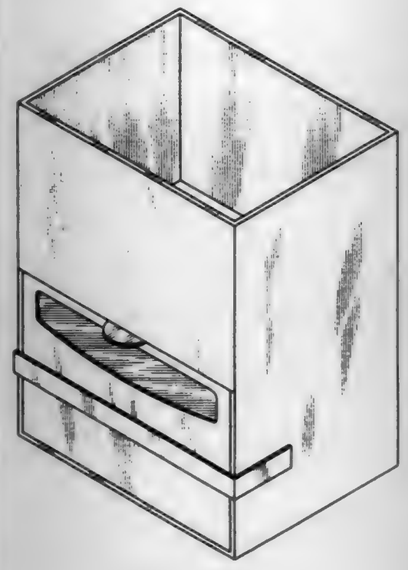
354,863
EYE GLASS STAND
Stephen L. Pope, 1066 Manor Dr., Palm Springs, Fla. 33015
Filed Feb. 2, 1993, Ser. No. 4,334
Term of patent 14 years
U.S. Cl. D6—465



354,864
WIRE SHELF
Elmer J. Kokenge, Loveland, Ohio, and John D. Kokenge, Bloomington, Ind., assignors to Schulte Corporation, Bloomington, Ind.
Filed Aug. 13, 1993, Ser. No. 11,725
Term of patent 14 years
U.S. Cl. D6—511



354,865
TISSUE BOX
Zhimin Situ, 2325 Fairbourne Way, Henderson, Nev. 89014
Filed Dec. 16, 1993, Ser. No. 16,433
Term of patent 14 years
U.S. Cl. D6—518



354,867
FOLDABLE TABLE
Hae-Sup Lee, 1467-16 Seocho-Dong, Seocho-Ku, Seoul, Rep. of Korea
Filed Mar. 9, 1993, Ser. No. 5,675
Claims priority, application Rep. of Korea, Oct. 17, 1992, 92-17339
Term of patent 14 years
U.S. Cl. D6—335



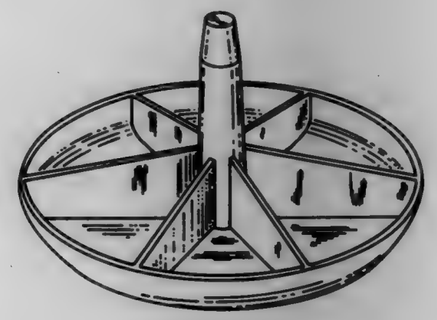
354,866
SEAT
Thomas A. Jordan, Asheboro, N.C., assignor to Michel Thomas Furniture, Inc., Liberty
Filed Oct. 12, 1993, Ser. No. 13,979
Term of patent 14 years
U.S. Cl. D6—334



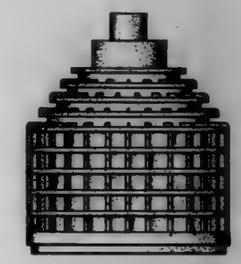
354,868
VEHICLE SEAT
Bruce Bowlby, 1220 NW. 39th Ave., Gainesville, Fla. 32609
Filed Feb. 3, 1994, Ser. No. 18,300
Term of patent 14 years
U.S. Cl. D6—356



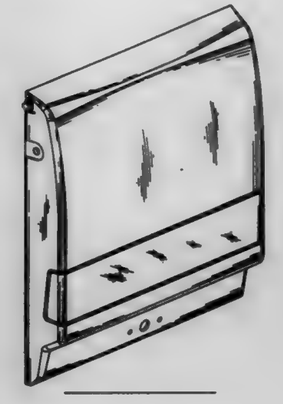
354,869
STACKABLE TRAY
David G. Salyer, 665 Mitchell Rd., Kingsport, Tenn. 37663
Filed Nov. 27, 1992, Ser. No. 1,880
Term of patent 14 years
U.S. Cl. D6—457



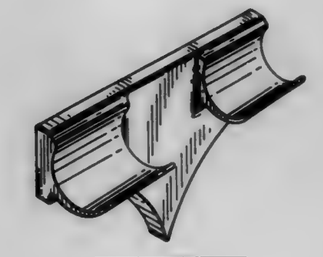
354,870
DISPLAY STAND
Norwood D. Oliver, Mantoloking, N.J., and Karen Wenzel-Murphy, Yardley, Pa., assignors to Kinney Shoe Corporation, New York, N.Y.
Filed Nov. 17, 1992, Ser. No. 1,682
Term of patent 14 years
U.S. Cl. D6—474



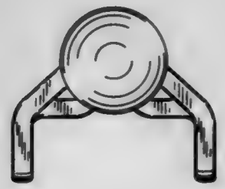
354,871
FRONT COVER FOR A PAPER TOWEL DISPENSER
Alan D. Frazier, West Chester, and Paul F. Tramontina, Perkasie, both of Pa., assignors to Scott Paper Company, Philadelphin, Pa.
Filed Sep. 27, 1993, Ser. No. 13,486
Term of patent 14 years
U.S. Cl. D6—522



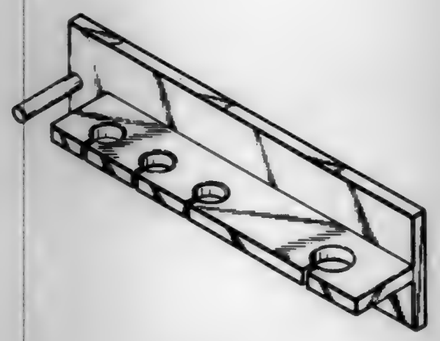
354,872
SUPPORT RACK FOR A SKATEBOARD
Kevin M. Dix, 78-17 87th Ave., Woodhaven, N.Y. 11421
Filed May 7, 1993, Ser. No. 8,112
Term of patent 14 years
U.S. Cl. D6—552



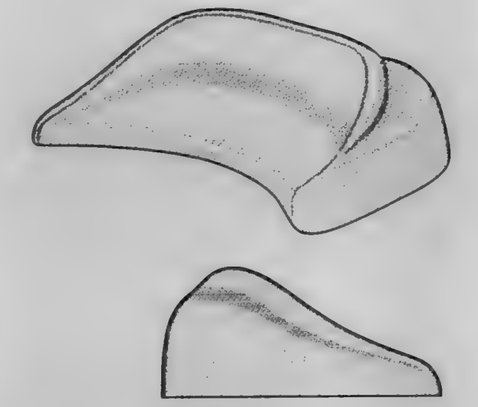
354,873
SPONGE HOLDER
Dave Odbert, 2736 SE. Chandler Ave., Troutdale, Oreg. 97060
Filed Sep. 20, 1993, Ser. No. 13,442
Term of patent 14 years
U.S. Cl. D6—566



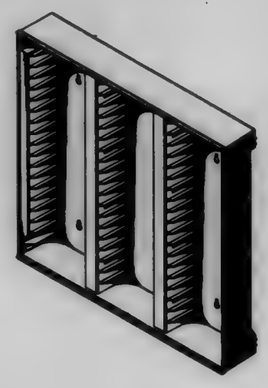
354,874
HAIR ACCESSORY SUPPORT RACK
Geraldine B. Burch, 1104 NW. 52nd Cir., Lawton, Okla. 73505
Filed Sep. 20, 1993, Ser. No. 13,149
Term of patent 14 years
U.S. Cl. D6—567



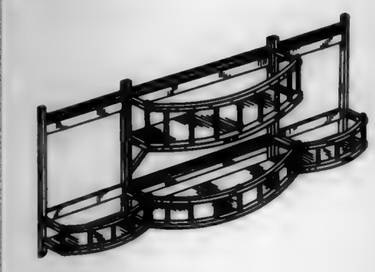
354,876
SEAT CUSHION FOR BACK SUPPORT
Laurence J. Pace, 2855 Pinecreek Dr. #C202, Costa Mesa, Calif. 92626
Filed Feb. 2, 1994, Ser. No. 18,259
Term of patent 14 years
U.S. Cl. D6—601



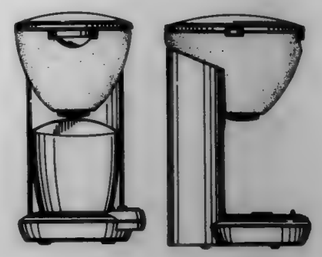
354,877
AUDIOCASSETTE STORAGE UNIT
Gregg M. Davis, Columbus, and Jeffery T. DeBord, Worthington, both of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio
Filed Jul. 10, 1992, Ser. No. 911,314
Term of patent 14 years
U.S. Cl. D6—629



354,878
SPICE RACK
Raymond Scott, Sr., 3866 North 38 St., Milwaukee, Wis. 53216
Filed Jul. 12, 1993, Ser. No. 10,568
Term of patent 14 years
U.S. Cl. D6—569



354,878
COFFEE MAKER
Yu-Yuan Lin, Tainan, Taiwan, Prov. of China, assignor to Ever Splendor Enterprises Co., Ltd., Tainan, Taiwan, Prov. of China
Filed Sep. 9, 1993, Ser. No. 12,768
Term of patent 14 years
U.S. Cl. D7—309



354,879
COFFEE-POT
Roland Ullmann, Offenbach-Rumpenheim, Germany, assignor to Braun Aktiengesellschaft, Germany
Filed Mar. 2, 1993, Ser. No. 5,367
Claims priority, application Germany, Sep. 3, 1992, 001892
Term of patent 14 years
U.S. Cl. D7—317



354,880
THERMOS JUG
Frank T. S. Huang, Suite 804, 8 Fl., No. 128, Sec. 3, Ming-Sheng E. Rd., Taipei, Taiwan, Prov. of China
Filed Nov. 9, 1993, Ser. No. 15,131
Term of patent 14 years
U.S. Cl. D7—319



354,881
KNIFE HANDLE
Bernard G. Huff, 3500 W. 69th St., Mission Hills, Kans. 66208
Filed Nov. 23, 1993, Ser. No. 15,653
Term of patent 14 years
U.S. Cl. D7—401.2



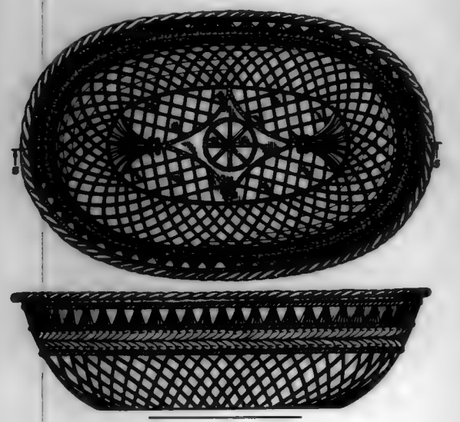
354,882
DRINK CONTAINER IN THE SHAPE OF A SPORTS BALL
Dwayne S. Hurst, Tampa, and Charles B. Williams, Odessa, both of Fla., assignors to Palomino Sports, Inc., Odessa, Fla.
Filed Jul. 15, 1993, Ser. No. 10,727
Term of patent 14 years
U.S. Cl. D7—515



354,883
CUP
Barbara S. Marsten, New York, and Valentin Mandrajji-Lebadaru, Long Island City, both of N.Y., assignors to Christian Dior, S.A., Paris, France
Filed Nov. 7, 1988, Ser. No. 268,355
Term of patent 14 years
U.S. Cl. D7—536



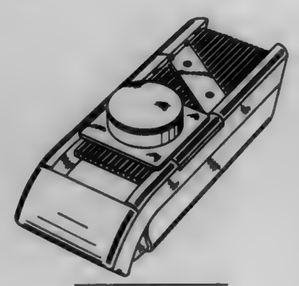
354,884
BOWL
Victor Carranza, Mexico, Mexico, assignor to Godinger Silver Art Co., Ltd., Brooklyn, N.Y.
Filed Jan. 14, 1992, Ser. No. 820,952
Term of patent 14 years
U.S. Cl. D7—564



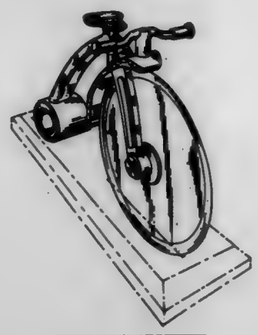
354,885
MERCHANDISING COOLER
Charles Lanius, Prairie Du Sac, Wis., assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 13, 1992, Ser. No. 851,150
Term of patent 14 years
U.S. Cl. D7—605



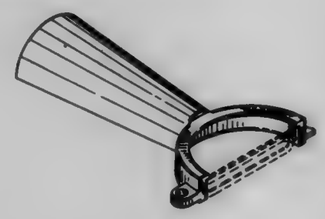
354,886
GRATER
Berndt Diefenbach, Munich, Germany, assignor to Moha Moderne Haushaltwaren AG, Zollikofen, Switzerland
Filed Oct. 7, 1993, Ser. No. 13,961
Claims priority, application Hague Agreement, Apr. 7, 1993, DM/025791
Term of patent 14 years
U.S. Cl. D7—678



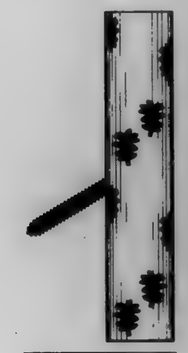
354,887
PIZZA CUTTER
Howard C. Hawkins, Mahtomedi, Minn., assignor to Bicycle Tools Incorporated, St. Paul, Minn.
Filed Dec. 17, 1993, Ser. No. 16,565
Term of patent 14 years
U.S. Cl. D7—694



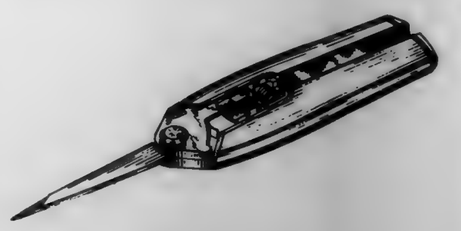
354,888
VEGETABLE PEELER
Morison S. Cousins, Winter Park, Fla., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Nov. 23, 1993, Ser. No. 15,634
Term of patent 14 years
U.S. Cl. D7—695



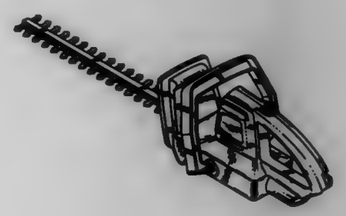
354,889
TREE LIMB HOLDER
Dale A. Diedrick, 1434 N. Rd., Green Bay, Wis. 54313
Filed Mar. 31, 1994, Ser. No. 20,743
Term of patent 14 years
U.S. Cl. D8—1



354,890
5" SCISSORS
Gabriel E. Concari, Madison; Douglas J. Birkholz, Deforest, and Charles S. Ramsey, Wausau, all of Wis., assignors to Fiskars Oy Ab, Finland
Continuation of Ser. No. 1,498, Jan. 7, 1993, Pat. No. 5,297,343.
This application Aug. 5, 1993, Ser. No. 11,478
Term of patent 14 years
U.S. Cl. D8—5



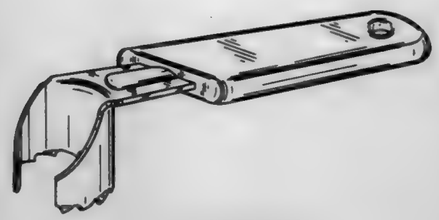
354,891
HEDGE TRIMMER
Mark A. McJunkin, Westminster; Daniel A. Chann, Greenville, both of S.C., and James B. Watson, Conyers, Ga., assignors to Ryobi Motor Products, Easley, S.C.
Filed Apr. 20, 1993, Ser. No. 7,335
Term of patent 14 years
U.S. Cl. D8—8



354,892
ELECTRIC GRASS TRIMMER
John Griffin, Phoenix, Ariz., assignor to McCulloch Corporation, Tucson, Ariz.
Filed Apr. 24, 1992, Ser. No. 874,566
The portion of the term of this patent subsequent to Oct. 25, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—8



354,893
VALVE PACKING REMOVAL TOOL
Aaron L. Bishop, 7553 Alward Rd., Laingsburg, Mich. 48848
Filed May 17, 1993, Ser. No. 8,442
Term of patent 14 years
U.S. Cl. D8—14



354,894
DUAL IN-LINE PACKAGE RESET SWITCH TOOL
Solomon J. Vance, III, Mentor, Ohio, assignor to Elsag International B.V., Amsterdam Zuidoost, Netherlands
Filed Feb. 8, 1993, Ser. No. 4,578
Term of patent 14 years
U.S. Cl. D8—14



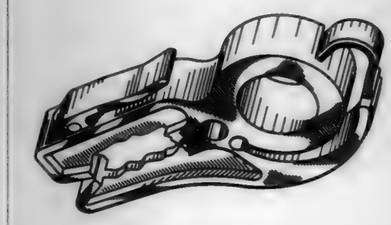
354,895
COMPOUND TOOL
Stephen P. Flynn, P.O. Box 3122, Christchurch, New Zealand
Filed May 28, 1993, Ser. No. 8,901
Term of patent 14 years
U.S. Cl. D8—16



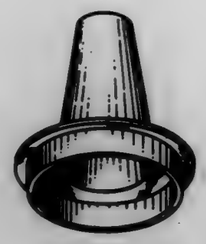
354,896
SAFETY GARBAGE PUSHER
Edgar T. Lordier, 230 Littleflower La., Columbus, Ohio 43213
Filed Dec. 16, 1993, Ser. No. 16,400
Term of patent 14 years
U.S. Cl. D8—19



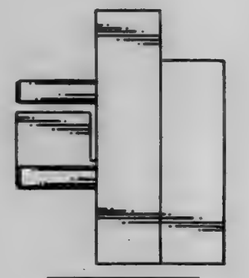
354,897
WIRE AND CABLE STRIPPER
Richard A. Steiner, East Haddam, Conn., assignor to Rostra Tool Company, Branford, Conn.
Filed Oct. 16, 1992, Ser. No. 538
Term of patent 14 years
U.S. Cl. D8—52



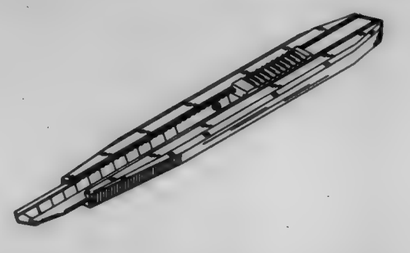
354,898
EGG HOLDER FOR USE WITH A STAND FOR DECORATING EGGS
Verna M. Nagy, Shell Beach, Calif., assignor to Verdel Innovations, Shell Beach, Calif.
Filed Oct. 13, 1992, Ser. No. 299
Term of patent 14 years
U.S. Cl. D8—71



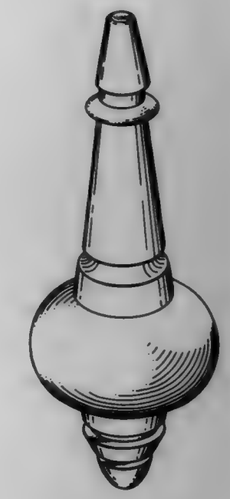
354,899
BALLOON TIEING PLATFORM
William L. Messler, R.D. #1, Box 272-C, East Montpelier, Vt. 05651
Filed Nov. 29, 1993, Ser. No. 15,749
Term of patent 14 years
U.S. Cl. D8—71



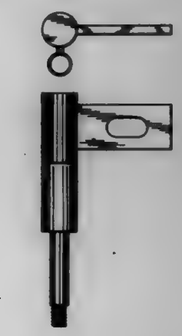
354,900
RETRACTABLE BLADE KNIFE
Kikuji Hirai, Osaka, Japan, assignor to NT Incorporated, Osaka, Japan
Filed Apr. 1, 1993, Ser. No. 6,568
Claims priority, application Japan, Jan. 8, 1993, 5-283
Term of patent 14 years
U.S. Cl. D8—99



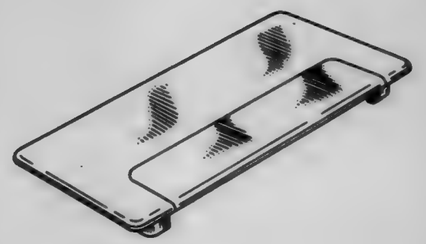
354,901
FULL CHAIN HANDLE
Dennis Merino, El Dorado Hills, Calif., assignor to Trade Source International, El Dorado Hills, Calif.
Filed Apr. 28, 1994, Ser. No. 22,021
Term of patent 14 years
U.S. Cl. D8—310



354,902
DOOR HINGE FOR UTILITY VEHICLES
Ryan R. Harris, 1812 Navy St., Santa Monica, Calif. 90405
Filed Dec. 4, 1992, Ser. No. 2,232
Term of patent 14 years
U.S. Cl. D8—323



354,903
GROMMET WITH PIVOTING TAB
Douglas A. J. Mockett, Ranchos Palos Verdes, Calif., assignor to Doug Mockett & Company, Inc., Manhattan Beach, Calif.
Filed Dec. 20, 1993, Ser. No. 16,525
Term of patent 14 years
U.S. Cl. D8—356



354,904
WIRE MANAGEMENT DEVICE
Mark S. Halsten, 16206 Holdridge Rd. West, Wayzata, Minn. 55391
Filed Feb. 16, 1993, Ser. No. 4,878
Term of patent 14 years
U.S. Cl. D8—356



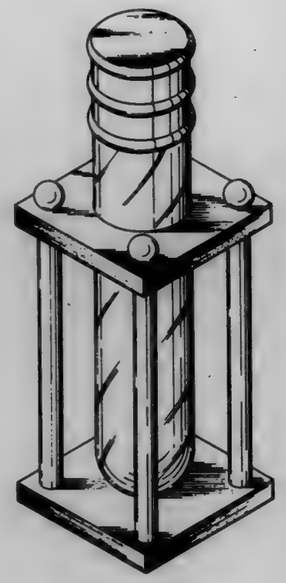
354,905
ANCHOR BOLT
Thomas J. Fitzmyers, Pleasanton, and Karen W. Colonias, Pleasant Hill, both of Calif., assignors to Simpson Strong-Tie Company, Inc., San Leandro, Calif.
Filed Oct. 7, 1992, Ser. No. 217
Term of patent 14 years
U.S. Cl. D8—367



354,906
COLLAPSIBLE DISPENSER POUCH
William A. Lane, Jr., Lake Arrowhead, and Steven D. Davis, Yucaipa, both of Calif., assignors to W. A. Lane, Inc., San Bernardino, Calif.
Continuation-in-part of Ser. No. 4,232, Jan. 29, 1993, Pat. No. Des. 347,993. This application Nov. 12, 1993, Ser. No. 15,247
Term of patent 14 years
U.S. Cl. D9—305



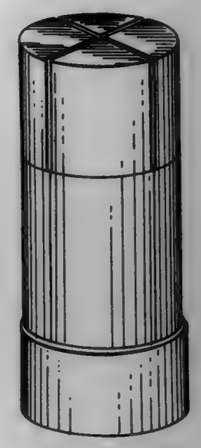
354,907
COMBINED PERFUME BOTTLE AND HOLDER
Marc A. Rosen, New York, N.Y., assignor to Halston Borghese International Limited, Craigmar Chambers, V.I.
Filed Dec. 16, 1993, Ser. No. 16,377
Term of patent 14 years
U.S. Cl. D9—307



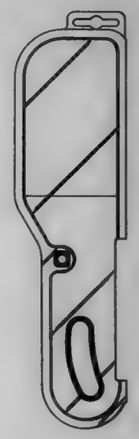
354,908
CONTAINER
René Barre, Saint-Hilaire, France, assignor to Verreries Brosse & Cie, Paris, France
Filed Jul. 26, 1993, Ser. No. 10,089
Claims priority, application France, Jan. 26, 1993, 930405
Term of patent 14 years
U.S. Cl. D9—315



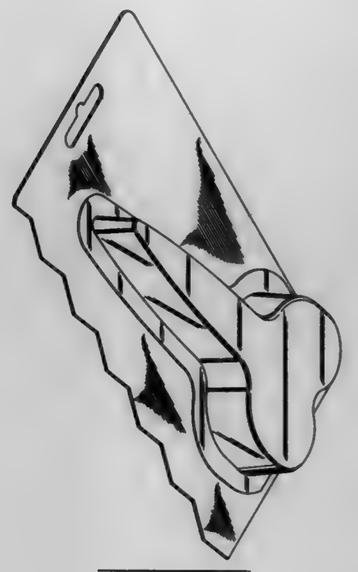
354,909
BOTTLE SET WITH REMOVABLE BOTTLES
Eric Blanche, Paris, France, assignor to Best Design for Beauty, Sarl, Paris, France
Filed Aug. 3, 1993, Ser. No. 11,383
Claims priority, application France, Feb. 5, 1993, 930654
Term of patent 14 years
U.S. Cl. D9—341



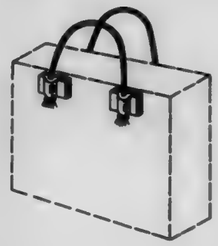
354,910
CLAMSHELL PACKAGING FOR SCISSORS
Javier V. Weatherford, Canton, and William H. Valls, Harwinton, both of Conn., assignors to Acme United Corporation, Fairfield, Conn.
Filed Oct. 27, 1993, Ser. No. 14,603
Term of patent 14 years
U.S. Cl. D9—415



354,911
BLISTER CARD PACKAGING FOR SCISSORS
Javier V. Weatherford, Canton, and William H. Valls, Harwinton, both of Conn., assignors to Acme United Corporation, Fairfield, Conn.
Filed Oct. 18, 1993, Ser. No. 14,242
Term of patent 14 years
U.S. Cl. D9—415



354,912
CARRYING HANDLES WITH ATTACHMENT THEREFOR
Ron Roy, 102 E. Prospect Ave., Burbank, Calif. 91502
Continuation-in-part of Ser. No. 1,158, Nov. 4, 1992. This application Jul. 14, 1993, Ser. No. 10,697
Term of patent 14 years
U.S. Cl. D9—434



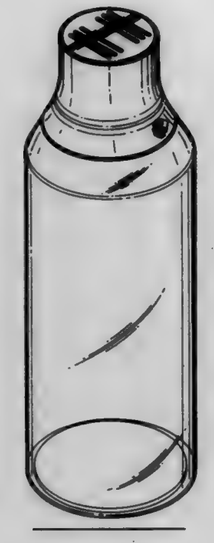
354,913
BOTTLE
Paul A. Penzoli, Topeka, Kans.; Thomas D. Loughria, Columbus, Ohio, and James C. Lierman, Lake Bluff, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Continuation-in-part of Ser. No. 626,875, Dec. 13, 1990, Pat. No. Des. 335,450. This application Jan. 19, 1993, Ser. No. 3,818
The portion of the term of this patent subsequent to May 11, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—500



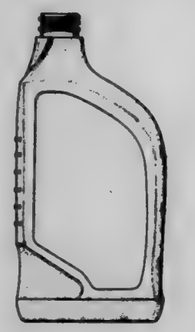
354,914
COMBINED CONTAINER AND CAP
Terry Newman, Oshawa, Canada, assignor to McNeil-PPC, Inc., Milltown, N.J.
Filed Aug. 30, 1993, Ser. No. 12,393
Term of patent 14 years
U.S. Cl. D9—503



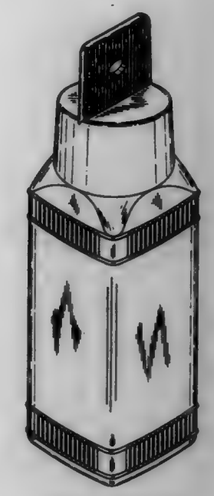
354,915
COMBINED BOTTLE AND CAP
Peter Schneider, Konigstein, and Juergen Greubel, Heidenrod, both of Germany, assignors to The Gillette Company, Boston, Mass.
Filed Jun. 11, 1993, Ser. No. 9,444
Term of patent 14 years
U.S. Cl. D9—504



354,916
CONTAINER
Yeong C. Park, Palisades Park, N.J., assignor to Quaker State Corporation, Oil City, Pa.
Filed Feb. 9, 1994, Ser. No. 18,564
Term of patent 14 years
U.S. Cl. D9—523



354,917
ANALGESIC CONTAINER AND CAP
Maximillian Kusz, Waterville; Donald P. Deubel, Toledo; Timothy J. Fuchs; William H. Connery, III, both of Perrysburg, all of Ohio; Kenneth E. Fuller, Ambler, and Kenneth T. Yearwood, Phoenixville, both of Pa., assignors to McNeil-PPC, Inc., Milltown, N.J.
Filed Mar. 19, 1993, Ser. No. 6,039
Term of patent 14 years
U.S. Cl. D9—560



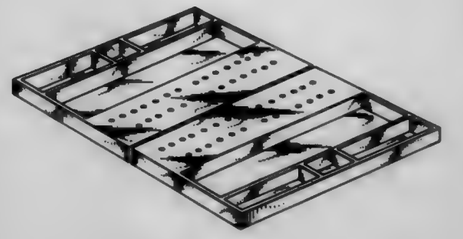
354,918
COMBINED WATCH AND BRACELET
Severin Wunderman, Irvine, Calif., assignor to Severin Montres AG, Lengnau, Switzerland
Filed Dec. 22, 1992, Ser. No. 2,884
Claims priority, application Hague Agreement, Jun. 29, 1992, DM/023 176
Term of patent 14 years
U.S. Cl. D10—32



354,919
COMBINED WATCH AND BRACELET
Severin Wunderman, Irvine, Calif., assignor to Severin Montres AG, Lengnau, Switzerland
Filed Dec. 22, 1992, Ser. No. 2,904
Claims priority, application Hague Agreement, Jun. 29, 1992, DM/023-176
Term of patent 14 years
U.S. Cl. D10—32



354,920
COMBINED GAME BOARD AND CONTAINER
Iraj Moradinia, 3998 Brairidge Cir., Atlanta, Ga. 30340
Filed Dec. 18, 1992, Ser. No. 2,668
Term of patent 14 years
U.S. Cl. D10—46.1



354,921
LIQUID TEST METER
Bhaskar Narayanan, Singapore, Singapore, assignor to Estech Cybernetics PTE. Ltd., Singapore, Singapore
Filed Nov. 2, 1993, Ser. No. 14,882
Term of patent 14 years
U.S. Cl. D10—78



354,922
ELECTRONIC KEYPAD FOR HOME ALARM SYSTEMS
Klaus W. Gartner, Palos Verdes Estates, Calif., assignor to La Gard, Inc., Torrance, Calif.
Filed Mar. 18, 1994, Ser. No. 20,088
Term of patent 14 years
U.S. Cl. D10—106

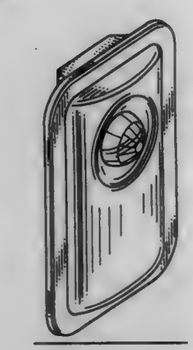


354,923
PROBING HEAD FOR AN ELECTRICAL TEST PROBE
Mark W. Nightingale, Washougal, Wash., assignor to Tektronix, Inc., Wilsonville, Oreg.
Filed Jan. 31, 1994, Ser. No. 18,212
Term of patent 14 years
U.S. Cl. D10—80

354,924
DIMPLED REUSABLE SECURITY PIN
Glen W. Garner, 2500 Paula Ct.; William G. L. Knecht, 2392 Thorn Lodge Drive, and Keith Burns, 2442 Thorn Lodge Drive, all of Mississauga, Ontario, Canada L5K 1K5
Filed Dec. 2, 1993, Ser. No. 15,919
Term of patent 14 years
U.S. Cl. D10—104



354,925
INFRA-RED INTRUDER DETECTOR
Frederick W. Eggers, Dixon, and David Houston, Sacramento, both of Calif., assignors to C & K Systems, Inc., Folsom, Calif.
Filed Jan. 31, 1994, Ser. No. 18,115
Term of patent 14 years
U.S. Cl. D10—106



354,926
WATCHCASE
Eddy Schopfer, La Chaux-du-Milieu, Switzerland, assignor to Tag-Heuer, S.A., Marin, Switzerland
Filed Jun. 8, 1993, Ser. No. 9,210
Claims priority, application WIPO, Dec. 9, 1992, DMA/002001
Term of patent 14 years
U.S. Cl. D10—30



354,927
DIAMOND EARRING
Bernard J. Andrau, St. Clement De Riviere, France, assignor to Diamant Applications S.A., Montpellier Cedex, France
Filed Jul. 7, 1992, Ser. No. 909,439
Claims priority, application France, Jan. 7, 1992, 92 0046
Term of patent 14 years
U.S. Cl. D11—40



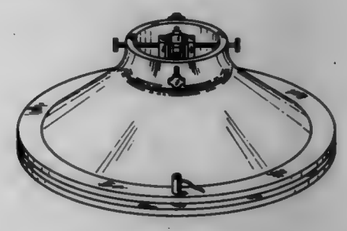
354,928
CHRISTMAS TREE
Martha D. Hoffman, 4107 Adams, Kansas City, Kans. 66103, and C. Daniel Compo, 6025 Metcalf La., Overland Park, Kans. 66202
Filed Oct. 29, 1993, Ser. No. 14,816
Term of patent 14 years
U.S. Cl. D11—118



354,929
CHRISTMAS STOCKING
Joan D. Sheridan, 425 W. 8th Ave., Cheyenne, Wyo. 82001
Filed Sep. 14, 1993, Ser. No. 12,959
Term of patent 14 years
U.S. Cl. D11—126



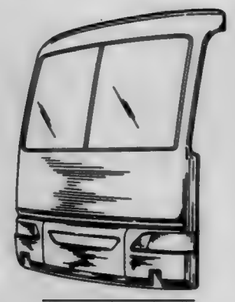
354,930
COMBINED CHRISTMAS TREE HOLDER AND TURNTABLE
Raymond Rush, 20 Booth Ave., Englewood Cliffs, N.J. 07632, and Warren Rush, 309 Willow Ave., Lyndhurst, N.J. 07071
Filed Nov. 1, 1993, Ser. No. 14,750
Term of patent 14 years
U.S. Cl. D11—130.1



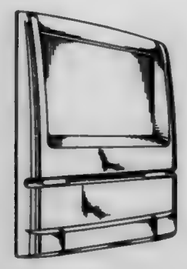
354,931
BUTTON
Nicole Miller, New York, N.Y., assignor to Kobra International, Ltd., New York, N.Y.
Filed Oct. 22, 1993, Ser. No. 14,458
Term of patent 14 years
U.S. Cl. D11—223



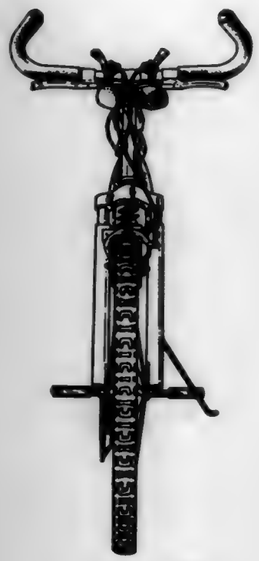
354,932
MOTORHOME FRONT PANEL UNIT EXTERIOR SURFACE
James F. Shea, Sr., South Bend, Ind., assignor to Gulf Stream Coach, Inc., Nappanee, Ind.
Filed Mar. 18, 1993, Ser. No. 6,210
Term of patent 14 years
U.S. Cl. D12—100



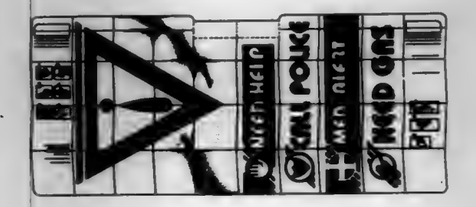
354,933
FIFTH WHEEL TRAVEL TRAILER REAR PANEL UNIT EXTERIOR SURFACE
James F. Shea, Sr., South Bend, Ind., assignor to Gulf Stream Coach, Inc., Nappanee, Ind.
Filed Mar. 18, 1993, Ser. No. 6,201
Term of patent 14 years
U.S. Cl. D12—106



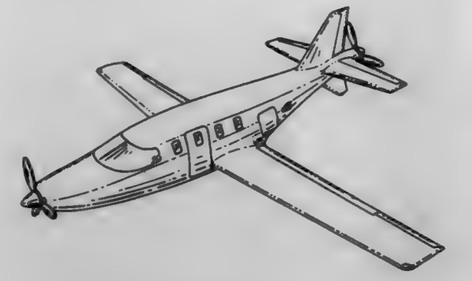
354,934
BICYCLE
Elizabeth L. Johnson, Middletown; Stephen J. Bishop, Celina; Andrew J. Boss, Cincinnati; Timothy J. Dietz, Springboro; Michael D. Melton, Farmersville, and Ronald J. Schneider, Cleves, all of Ohio, assignors to Huffy Corporation, Miamisburg, Ohio
Filed Oct. 15, 1992, Ser. No. 464
Term of patent 14 years
U.S. Cl. D12—111



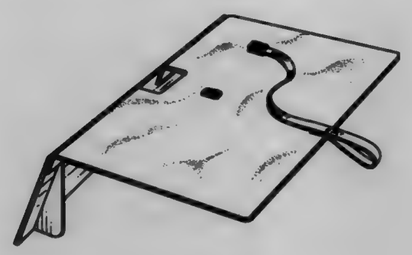
354,935
AUTOMOBILE SUNSHADE
Ezra D. Eskandry, 1925 Brickell Ave., D901, Miami, Fla. 33129
Continuation-in-part of Ser. No. 606,574, Apr. 17, 1991, Pat. No. Des. 335,481. This application Mar. 23, 1993, Ser. No. 6,077
Term of patent 14 years
U.S. Cl. D12—191



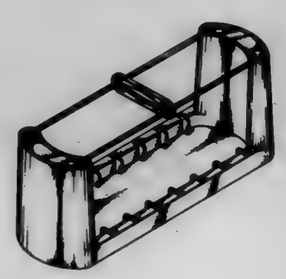
354,936
PASSENGER AIRCRAFT
Roger E. Kraft, Ft. Scott; Jeffrey D. Ackland, Shawnee; Harold E. Kraft, Ft. Scott, all of Kans., and Martin Hollmann, Monterrey, Calif., assignors to Starkraft, Inc., Ft. Scott, Kans.
Filed Oct. 12, 1993, Ser. No. 12,346
Term of patent 14 years
U.S. Cl. D12—344



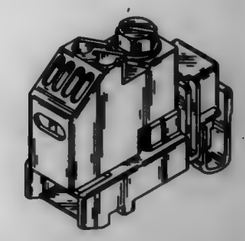
354,937
COMBINED PROTECTIVE APRON FOR THE REAR END OF AN AUTOMOBILE AND ARTICLE COVER FOR THE TRUNK THEREOF
Caroline A. Nentwich, Rte. 1, Box 232A, Devine, Tex. 78016
Filed Feb. 16, 1993, Ser. No. 4,879
Term of patent 14 years
U.S. Cl. D12—400



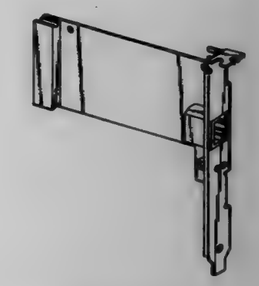
354,938
AUTOMOBILE CONVENIENCE TRAY
Steven Remeyer, 23052 Alicia Pkwy., Mission Viejo, Calif. 92692
Filed Dec. 2, 1993, Ser. No. 15,920
Term of patent 14 years
U.S. Cl. D12—425



354,939
TELECOMMUNICATIONS CONNECTOR
Michael L. Jensen, Cary; George D. Summers, Jr., Raleigh, and Thomas M. Baum, Apex, all of N.C., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Apr. 12, 1993, Ser. No. 6,960
Term of patent 14 years
U.S. Cl. D13—133



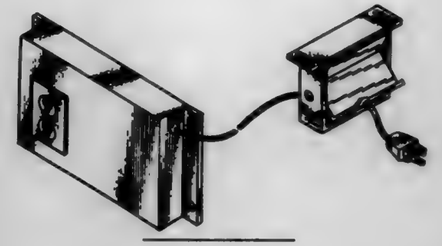
354,940
RJ-45 INTERCHANGEABLE TRANSCEIVER MODULE
Benjamin T. Speiser, San Francisco, and Lloyd N. Oliver, Milpitas, both of Calif., assignors to 3 Com Corporation, Santa Clara, Calif.
Filed May 17, 1993, Ser. No. 8,524
The portion of the term of this patent subsequent to Dec. 27, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—133



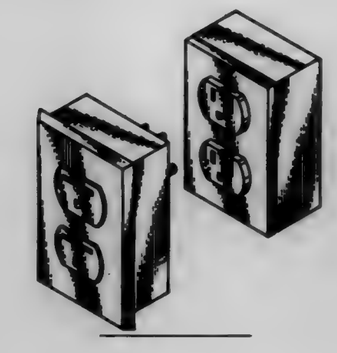
354,941
LOW PROFILE HOUSING FOR AN ELECTRICAL PLUG
Mark Lentz, Indianapolis, and Craig Stewart, Noblesville, both of Ind., assignors to Woods Industries, Inc., Carmel, Ind.
Filed Dec. 14, 1993, Ser. No. 16,414
Term of patent 14 years
U.S. Cl. D13—138



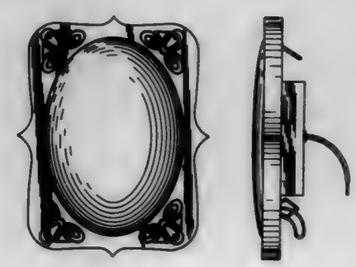
354,942
ELECTRICAL CORD STORAGE SYSTEM
William C. Schwaa, 619 S. 10th St., Aberdeen, S. Dak. 57401
Filed Jun. 10, 1993, Ser. No. 9,302
Term of patent 14 years
U.S. Cl. D13—140



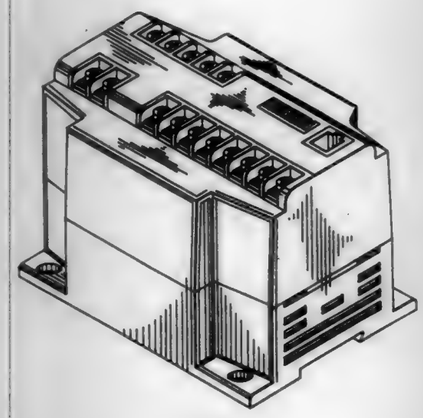
354,943
110/220 VOLT RECEPTACLE
Jesse D. Williams, and Phai L. Lovan, both of 1309 Laurel, Des Moines, Iowa 50314
Filed Nov. 4, 1993, Ser. No. 14,907
Term of patent 14 years
U.S. Cl. D13—143



354,944
TOUCH CONTROL SWITCH
Daniel A. Diak, and Bruce M. Carey, both of 43 Nervada Drive, Toronto, Ontario, Canada MGM2Y1
Filed Jan. 8, 1993, Ser. No. 3,400
Term of patent 14 years
U.S. Cl. D13—158

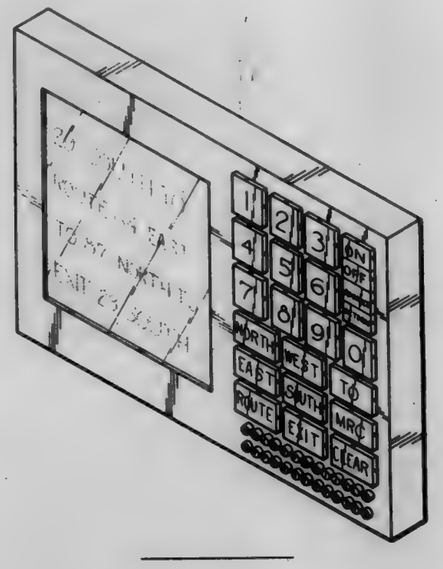


354,945
ELECTRONIC RELAY UNIT
Daniel J. Dellavecchia, Cheshire; David C. Etherton, Monroe, and Brian J. Rolnick, Plainville, all of Conn., assignors to General Electric, New York, N.Y.
Filed Aug. 25, 1993, Ser. No. 12,155
Term of patent 14 years
U.S. Cl. D13—159

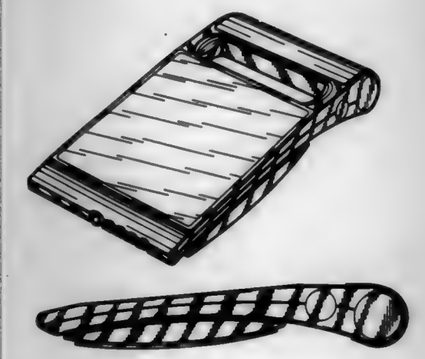


D 354,946
Patent Not Issued For This Number

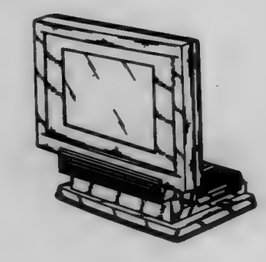
354,948
ELECTRONIC AUTOMOBILE ROUTING SYSTEM FOR STORING AND RETRIEVING TRAVEL INSTRUCTIONS AND INFORMATION
James J. Moodie, 107 Wade La., Lynchburg, Va. 24502
Filed Mar. 12, 1993, Ser. No. 5,913
Term of patent 14 years
U.S. Cl. D14—100



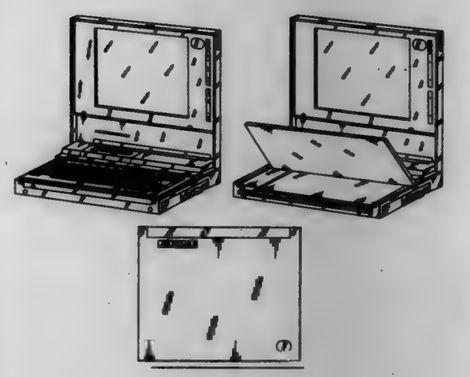
354,947
HAND HELD COMPUTER HOUSING
Steve Peart, Los Gatos, Calif., assignor to FirstPerson, Inc., Mountain View, Calif.
Filed Oct. 27, 1992, Ser. No. 860
Term of patent 14 years
U.S. Cl. D14—100



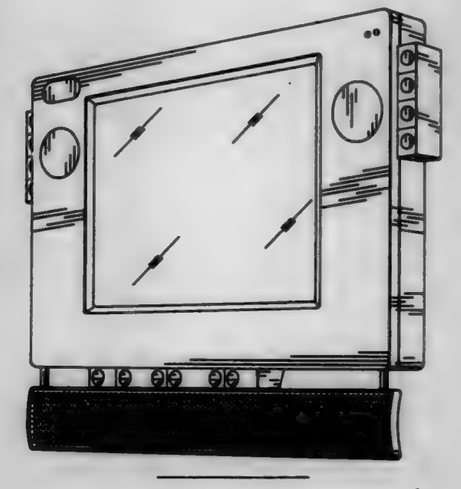
354,949
PERSONAL COMPUTER ASSEMBLY
Li-Ho Yao, No. 14, Lane 113, Hsin Men St., Taipei,
Filed May 21, 1993, Ser. No. 8,627
Term of patent 14 years
U.S. Cl. D14—100



354,950
PERSONAL COMPUTER WITH PRINTER
Toshitaka Imai, Sagamihara, Japan, assignor to International Business Machines Corp., Armonk, N.Y.
Filed Jun. 25, 1993, Ser. No. 10,032
Claims priority, application Japan, Jan. 14, 1993, 5-535
Term of patent 14 years
U.S. Cl. D14—106



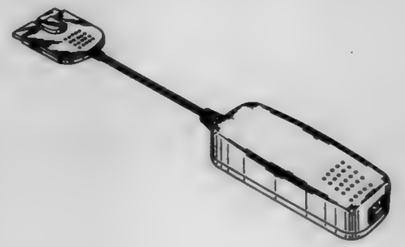
354,952
FLAT PANEL DISPLAY WITH A PALM REST
Timothy J. Rodd, Lyndhurst, United Kingdom, assignor to International Business Machines Corp., Armonk, N.Y.
Filed May 14, 1993, Ser. No. 8,415
Claims priority, application United Kingdom, Nov. 20, 1992, 2027220
Term of patent 14 years
U.S. Cl. D14—113



354,951
PORTABLE RADIO FREQUENCY MODEM ADAPTER
William E. Fenton, Surrey, and Roman P. Rak, Delta, both of Canada, assignors to Motorola, Schaumburg, Ill.
Filed Nov. 29, 1993, Ser. No. 15,774
Term of patent 14 years
U.S. Cl. D14—107



354,953
TELEPHONE LINE CONNECTOR FOR A PC CARD MODEM
Takada Kazufini, and Takai Kazuhito, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Aug. 20, 1992, Ser. No. 932,875
Claims priority, application Japan, Jun. 5, 1992, 4-16483
Term of patent 14 years
U.S. Cl. D14—114



354,954
VIDEO TELEPHONE

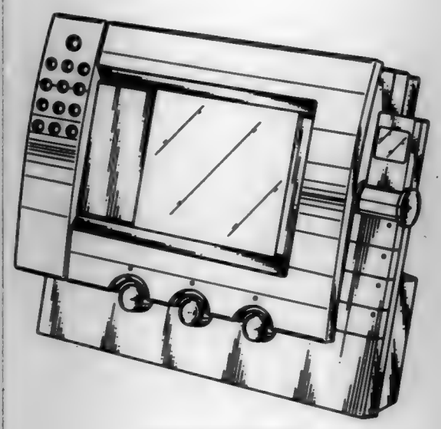
Eiichiro Naito, Hyogo; Hiroyuki Maeno; Hirofumi Takemasu, both of Osaka; Tadakazu Narikawa, Kanagawa, and Junichi Yamada, Saitama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 10, 1993, Ser. No. 16,211

Claims priority, application Japan, Jun. 14, 1993, 5-17701

Term of patent 14 years

U.S. Cl. D14—130



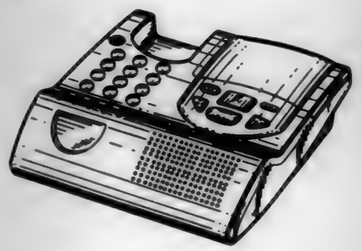
354,955
INTEGRATED TELEPHONE AND ANSWERING MACHINE

James E. Wicks, Hoboken, N.J., assignor to Sony Electronics, Inc., Park Ridge, N.J.

Filed Dec. 7, 1993, Ser. No. 16,097

Term of patent 14 years

U.S. Cl. D14—141



354,956
TELEPHONE SET

Tadamine Toh, and Kazuhiro Oda, both of Kawasaki, Japan, assignors to Nitsuko Corporation, Kanagawa, Japan

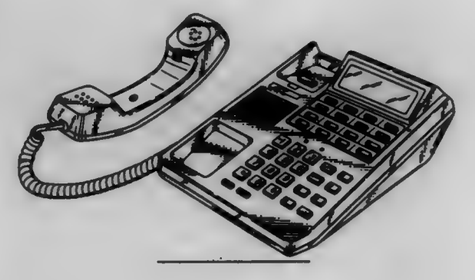
Filed Nov. 6, 1992, Ser. No. 1,218

Claims priority, application Japan, Jun. 24, 1992, 4-18491

The portion of the term of this patent subsequent to Aug. 22, 2008, has been disclaimed.

Term of patent 14 years

U.S. Cl. D14—151



354,957
DIGITAL AUDIO DISC PLAYER

Isao Wada, and Souichi Tanaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 2,635

Claims priority, application Japan, Jul. 22, 1992, 4-22017

Term of patent 14 years

U.S. Cl. D14—156



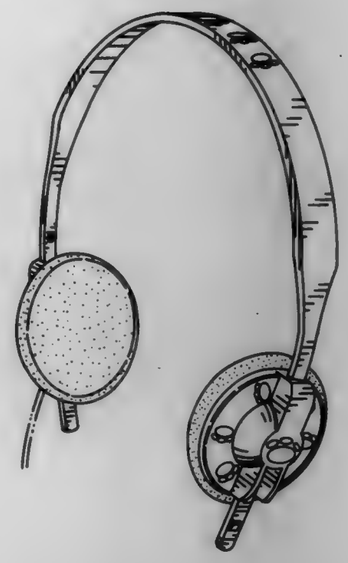
354,958
HEAD PHONE

Mark Grasso, Malibu; John Hamagami, Los Angeles, and Justin Carroll, Venice, all of Calif., assignors to Mark Grasso, Malibu, Calif.

Filed Dec. 30, 1993, Ser. No. 16,934

Term of patent 14 years

U.S. Cl. D14—205



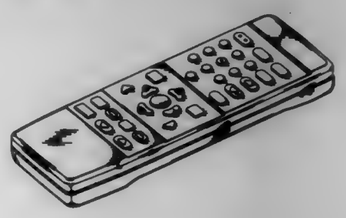
354,959
REMOTE CONTROL UNIT

Jeffrey A. Madill, Acworth; Jeffrey R. Hupperts, Alpharetta; Vibha Rastagi, Duluth; William J. Saunders, Lithonia, and James B. Watson, Conyers, all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 984,038, Dec. 1, 1992, Pat. No. 5,357,276. This application May 3, 1993, Ser. No. 7,880

Term of patent 14 years

U.S. Cl. D14—218



354,960
TELEPHONE RECEIVER

Tucker L. Viemeister, New York; Stuart H. Lee, Brooklyn; Edmund Fu, New York, all of N.Y.; Robert Rienick, Weston, Conn.; Fran Pillersdorf, New York, and Jennifer Burke, Brooklyn, both of N.Y., assignors to Cicesa, Inc., New York, N.Y.

Filed Feb. 15, 1994, Ser. No. 18,759

Term of patent 14 years

U.S. Cl. D14—248



354,961
VEHICLE ADAPTER FOR A PORTABLE RADIO/TELEPHONE

Scott Richards, Plantation; Troy Frandsen, and Don Burnette, both of Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

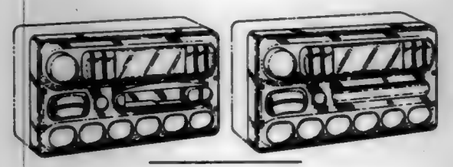
Filed Mar. 25, 1994, Ser. No. 20,461

Term of patent 14 years

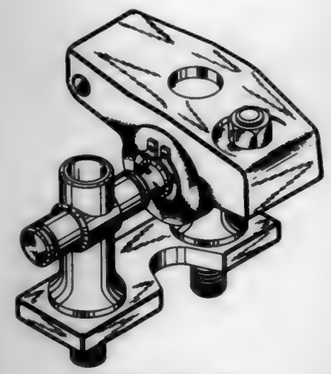
U.S. Cl. D14—253



354,962
CONTROL PANEL FOR AN AUTOMOTIVE AUDIO SYSTEM
Thomas S. Jazmoski, Wixom, and Nevenka Schumaker, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 5, 1993, Ser. No. 5,588
Term of patent 14 years
U.S. Cl. D14—258



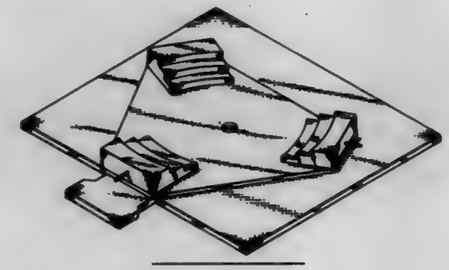
354,963
ROCKER ARM ASSEMBLY
Richard Harrick, 15181 N.W. 33rd Pl., Miami, Fla. 33054, and Richard Carper, 760 N.E. 117 St., Miami, Fla. 33161
Filed Jun. 7, 1993, Ser. No. 9,162
Term of patent 14 years
U.S. Cl. D15—5



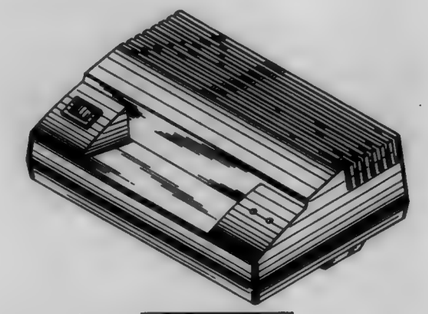
354,964
LAWN MOWER SHIELD
Andrew L. Reichle, 50 Verdin Ct., Apt. D, Gahanna, Ohio 43230
Filed Dec. 6, 1993, Ser. No. 15,986
Term of patent 14 years
U.S. Cl. D15—17



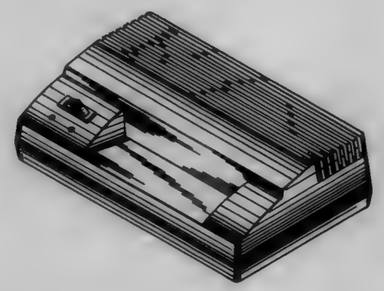
354,965
SUPPORT PLATFORM FOR A PRINTED CIRCUIT BOARD REPAIR STATION
Gary L. Hanson, Arvada, Colo., assignor to JAGC Investment Company, Englewood, Colo.
Filed Sep. 27, 1993, Ser. No. 13,571
Term of patent 14 years
U.S. Cl. D15—141



354,966
LAMINATING MACHINE
Ta K. Lim, Franklin Lakes, N.J., assignor to Royal Sovereign Corp., Englewood, N.J.
Filed Jun. 29, 1993, Ser. No. 10,204
Term of patent 14 years
U.S. Cl. D15—145



354,967
LAMINATING MACHINE
Ta K. Lim, Franklin Lakes, N.J., assignor to Royal Sovereign Corp., Engelwood, N.J.
Filed Jun. 29, 1993, Ser. No. 10,205
Term of patent 14 years
U.S. Cl. D15—145



354,968
EYEGLASS LENS
James H. Jannard, San Juan Capistrano, Calif., assignor to Oakley, Inc., Irvine, Calif.
Division of Ser. No. 929,266, Aug. 12, 1992, Pat. No. Des. 344,742. This application Feb. 14, 1994, Ser. No. 18,729
Term of patent 14 years
U.S. Cl. D16—101



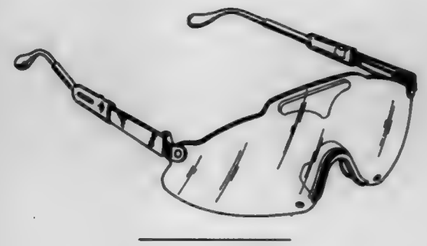
354,969
TIME DISPLAY EYEGLASSES
Rafael Garcia, P.O. Box 763, Safford, Ariz. 85548
Filed Feb. 18, 1993, Ser. No. 4,979
Term of patent 14 years
U.S. Cl. D16—309



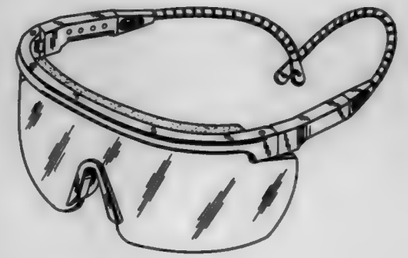
354,970
EYEGLASSES WITH HEADBAND
Maurice Bollé, Oyonnax, France, assignor to Etablissements Bolle S.N.C., Oyonnax, France
Filed Jul. 2, 1993, Ser. No. 10,331
Term of patent 14 years
U.S. Cl. D16—312



354,971
EYEGLASSES
Marc Mugnier, La Trinite, France, assignor to Mugnier Design, Wayne, N.J.
Continuation-in-part of Ser. No. 12,291, Feb. 1, 1993. This application Jul. 26, 1993, Ser. No. 11,061
Term of patent 14 years
U.S. Cl. D16—314



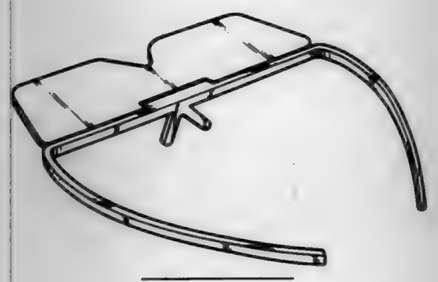
354,972
SAFETY SPECTACLES
Richard Hirschman, Albertson, N.Y., assignor to Hudson Optical Corporation, Bohemia, N.Y.
Filed Dec. 23, 1993, Ser. No. 16,802
Term of patent 14 years
U.S. Cl. D16—314



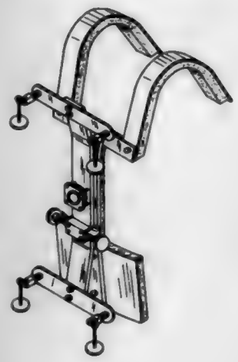
354,973
SURVEILLANCE VIDEO CAMERA
Toshiyuki Hisatune, Yokohama; Shigemitsu Kizawa, and Kouji Shindou, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Apr. 5, 1993, Ser. No. 6,716
Claims priority, application Japan, Oct. 7, 1992, 4-29286
Term of patent 14 years
U.S. Cl. D16—203



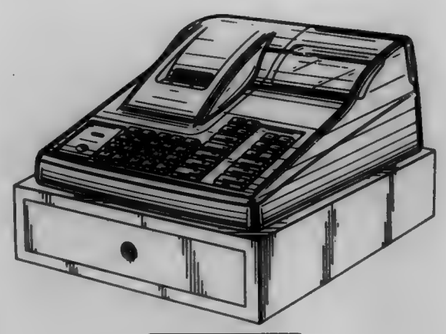
354,974
EYE SHADE
Linda F. Wielheower, 100 Teggerdine, White Lake, Mich. 48386
Filed Feb. 4, 1993, Ser. No. 4,437
Term of patent 14 years
U.S. Cl. D16—301



354,975
SPINNING DRUM CARRIER
Henry A. Pena, Rte. 2, Box 429–D, Brandenburg, Ky. 40108
Filed Oct. 4, 1993, Ser. No. 13,805
Term of patent 14 years
U.S. Cl. D17—22



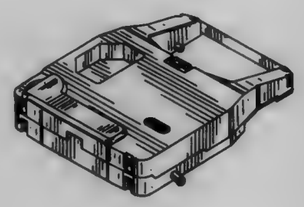
354,976
CASH REGISTER
Takao Miyake, and Kensho Tsuji, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 19, 1993, Ser. No. 8,456
Claims priority, application Japan, Nov. 19, 1992, 4-34361
Term of patent 14 years
U.S. Cl. D18—4



354,977
CASH REGISTER
Takao Miyake, and Kensho Tsuji, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 19, 1993, Ser. No. 8,457
Claims priority, application Japan, Nov. 19, 1992, 4-34362
Term of patent 14 years
U.S. Cl. D18—4



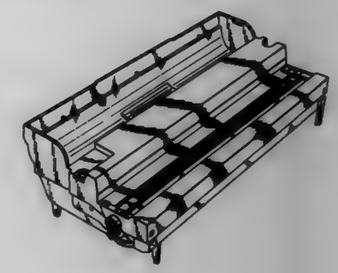
354,978
REFILLABLE INK RIBBON CARTRIDGE
Keita Yoshida, Tokyo, and Noboru Shimoyama, Yokohama, both of Japan, assignors to Canon Business Machines, Inc., Costa Mesa, Calif.
Filed Jul. 1, 1992, Ser. No. 907,218
Term of patent 14 years
U.S. Cl. D18—12



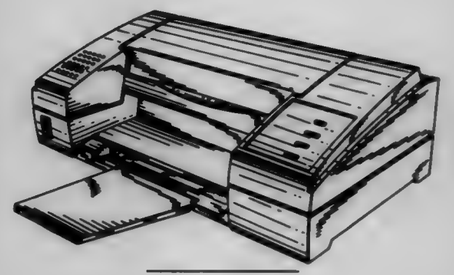
354,979
COMBINED BALL-POINT PEN AND FAN
Shintaro Tsuji, Tokyo, Japan, assignor to Sanrio Company, Ltd., Tokyo, Japan
Filed Oct. 18, 1993, Ser. No. 14,284
Claims priority, application Japan, Apr. 16, 1993, 5-11026
Term of patent 14 years
U.S. Cl. D19—36



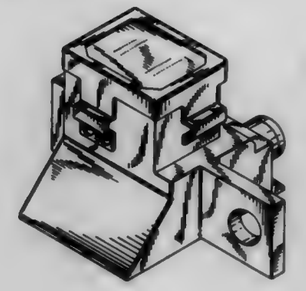
354,980
IMAGE DRUM CARTRIDGE
Shigeki Nakajima; Yukio Ota, and Yoshiharu Moniyama, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed May 21, 1993, Ser. No. 8,626
Claims priority, application Japan, Mar. 22, 1993, 5-7779
Term of patent 14 years
U.S. Cl. D18—43



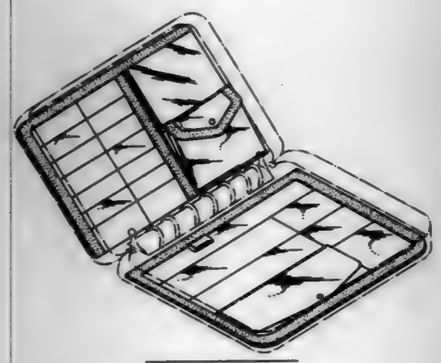
354,981
PRINTER FOR AN ELECTRONIC COMPUTER
Makoto Kobayashi, and Masayuki Ono, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Nov. 29, 1993, Ser. No. 15,755
Claims priority, application Japan, May 27, 1993, 5-15417
Term of patent 14 years
U.S. Cl. D18—54



354,982
INKJET HEAD
Fujio Akahane; Osamu Nakamura, and Hisashi Miyazawa, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Aug. 24, 1993, Ser. No. 12,151
Claims priority, application Japan, Feb. 25, 1993, 5-5338
Term of patent 14 years
U.S. Cl. D18—56



354,983
SET OF POCKET ORGANIZERS FOR A PORTFOLIO
Lisa Tumulty, 2756 Macby Walk, Marietta, Ga. 30066
Filed Nov. 5, 1993, Ser. No. 15,017
Term of patent 14 years
U.S. Cl. D19—32



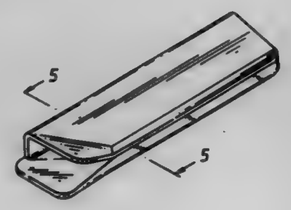
354,984
COMBINED BALL-POINT PEN AND FAN
Shintaro Tsuji, Tokyo, Japan, assignor to Sanrio Company, Ltd., Tokyo, Japan
Filed Oct. 18, 1993, Ser. No. 14,288
Claims priority, application Japan, Apr. 16, 1993, 5-11025
Term of patent 14 years
U.S. Cl. D19—36



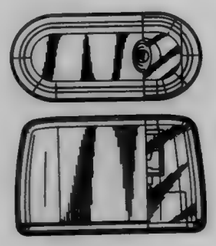
354,985
ROLLER BALL PEN
Seung D. Hong, Seoul, Rep. of Korea, assignor to Logos Co., Ltd., Kyunggi, Rep. of Korea
Filed Mar. 10, 1993, Ser. No. 5,722
Claims priority, application Rep. of Korea, Sep. 15, 1992, 1992-15432
Term of patent 14 years
U.S. Cl. D19—50



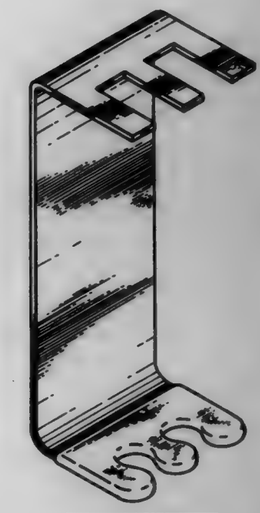
354,986
PAPER FASTENER
Cornel Clu, London, England, assignor to Hi-Tech Industries Limited, London, England
Filed Apr. 7, 1993, Ser. No. 6,791
Claims priority, application United Kingdom, Oct. 8, 1992, 2026308
Term of patent 14 years
U.S. Cl. D19—65



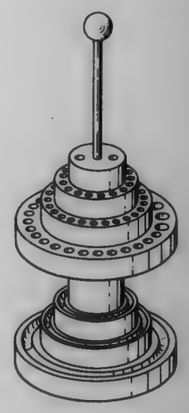
354,987
PENCIL SHARPENER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Ltd., Kowloon, Hong Kong
Filed Jul. 12, 1993, Ser. No. 10,547
Claims priority, application United Kingdom, Jan. 12, 1993, 2025305
Term of patent 14 years
U.S. Cl. D19—73



354,988
DASHBOARD-MOUNTABLE PEN HOLDER
Lupe Garza, Rte. 3 Box 156, Snyder, Tex. 79549
Filed May 22, 1993, Ser. No. 8,226
Term of patent 14 years
U.S. Cl. D19—85



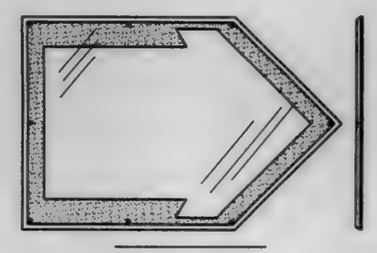
354,989
ARTIST'S PAINT BRUSH CADDY
Mildred L. West, 5017 Cockrell, Fort Worth, Tex. 76133
Filed May 28, 1993, Ser. No. 9,011
Term of patent 14 years
U.S. Cl. D19—85



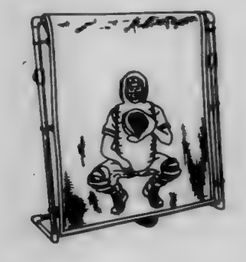
354,990
VENDING MACHINE
Makoto Shibazaki, and Takao Tsuchida, both of Tokyo, Japan, assignors to Kabushiki Kaishi Bandai, Tokyo, Japan
Filed Jul. 13, 1993, Ser. No. 10,639
Claims priority, application Japan, Jan. 25, 1993, 5-1619
Term of patent 14 years
U.S. Cl. D20—2



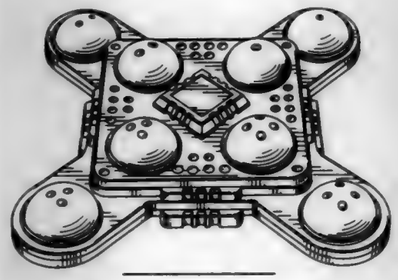
354,991
COMBINED SIGN HOLDER AND SIGN FOR INDICATING DIRECTIONS
Margaret J. DeSutter, 374 S. Elm Ave., St. Louis, Mo. 63119-3840
Filed May 24, 1994, Ser. No. 23,361
Term of patent 14 years
U.S. Cl. D20—42



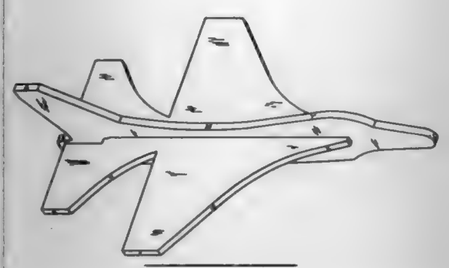
354,992
PITCHING AID
Peter Hinsperger, Mississauga, Canada, assignor to Hinspergers Poly Industries Ltd., Mississauga, Canada
Filed May 4, 1993, Ser. No. 7,904
Claims priority, application Canada, Jan. 8, 1993, 08-01-93-4
Term of patent 14 years
U.S. Cl. D21—5



354,993
HAND HELD ELECTRONIC GAME HOUSING
Howard J. Morrison, Riverwoods, and Zarko Stambolic, Chicago, both of Ill., assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Feb. 14, 1994, Ser. No. 18,737
Term of patent 14 years
U.S. Cl. D21—13



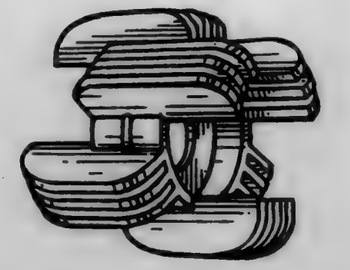
354,994
KITE
Thomas E. Bender, 2283 Wisteria St., Sarasota, Fla. 34239, and Richard W. Moody, 2808 60th Ave. West #622, Bradenton, Fla. 34207
Filed Jun. 15, 1993, Ser. No. 9,495
Term of patent 14 years
U.S. Cl. D21—88



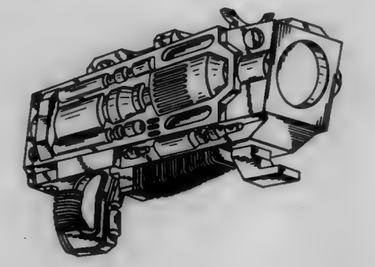
354,995
PLASTIC LINK TOY
Uri Barzani, 15 Mendes St., Tel Hashomer, Ramat Gan, Israel
Continuation-in-part of Ser. No. 935,195, Aug. 26, 1992, which is a continuation-in-part of Ser. No. 803,610, Dec. 9, 1991, abandoned. This application Mar. 2, 1993, Ser. No. 5,332
Claims priority, application Israel, Dec. 28, 1990, 096823; Sep. 2, 1992, 19962; Sep. 2, 1992, 19963; Sep. 2, 1992, 19964
Term of patent 14 years
U.S. Cl. D21—108



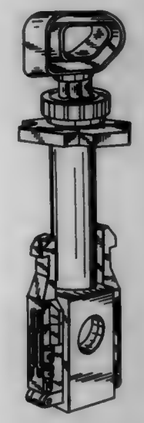
354,996
PLASTIC LINK TOY
Uri Barzani, 15 Mendes St., Tel Hashomer, Ramat Gan, Israel
Division of Ser. No. 5,332, Mar. 2, 1993, which is a continuation-in-part of Ser. No. 935,195, Aug. 26, 1992, which is a continuation-in-part of Ser. No. 803,610, Dec. 9, 1991, abandoned. This application Mar. 8, 1994, Ser. No. 19,615
Claims priority, application Israel, Dec. 28, 1990, 096823; Sep. 2, 1992, 19962; Sep. 2, 1992, 19963; Sep. 2, 1992, 19964
Term of patent 14 years
U.S. Cl. D21—108



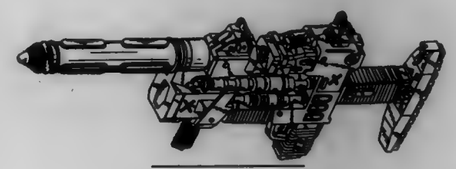
354,997
TOY WEAPON HOUSING
Avi Arad, Westport, Conn., and Finn Tornquist, Warren, N.J., assignors to Toy Biz Inc., New York, N.Y.
Filed Dec. 31, 1992, Ser. No. 3,224
Term of patent 14 years
U.S. Cl. D21—146



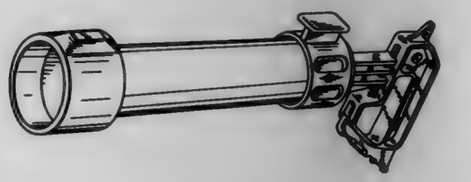
354,998
TOY WEAPON PRIMARY WEAPON
Avi Arad, Westport, Conn., and Finn Tornquist, Warren, N.J., assignors to Toy Biz, Inc., New York, N.Y.
Filed Dec. 31, 1992, Ser. No. 3,231
Term of patent 14 years
U.S. Cl. D21—146



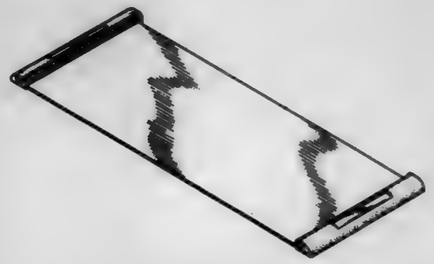
354,999
TOY WEAPON
Avi Arad, Westport, Conn., assignor to Toy Biz, Inc., New York, N.Y.
Filed Oct. 1, 1992, Ser. No. 79
Term of patent 14 years
U.S. Cl. D21—147



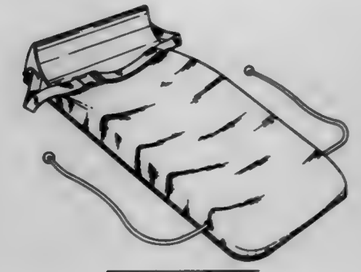
355,000
TOY WEAPON PISTOL
Avi Arad, Westport, Conn., and Finn Tornquist, Warren, N.J., assignors to Toy Biz, Inc., New York, N.Y.
Filed Dec. 31, 1992, Ser. No. 3,225
Term of patent 09 years
U.S. Cl. D21—147



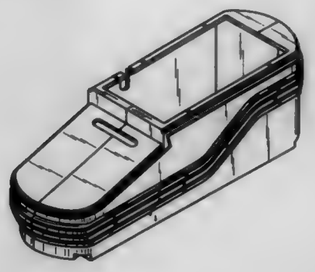
355,001
PHYSICAL EXERCISE PLATFORM
Jeffrey M. Koblick, 351 Townes Rd., Wayzata, Minn. 55391
Filed May 5, 1993, Ser. No. 7,939
The portion of the term of this patent subsequent to Oct. 25, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—191



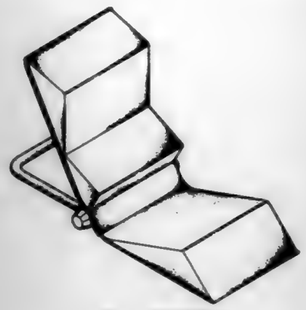
355,002
ABDOMINAL MUSCLE TRAINER
Ingvar Bengtson, Kallavik, Sweden, assignor to Ingvar Bengtson Racing Service Aktiebolag, Sweden
Filed Oct. 7, 1993, Ser. No. 13,936
Claims priority, application Sweden, Apr. 7, 1993, 93 0851
Term of patent 14 years
U.S. Cl. D21—191



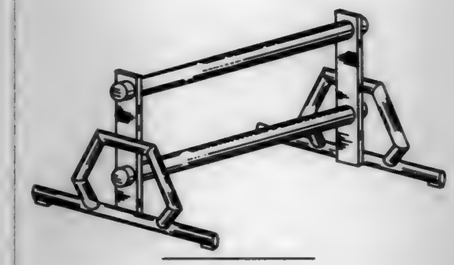
355,003
EXERCISER BASE HOUSING
Lindell N. Edwards, St. Louis, Mo., assignor to Slender World International, Inc., St. Louis, Mo.
Filed Oct. 12, 1993, Ser. No. 14,025
Term of patent 14 years
U.S. Cl. D21—191



355,004
BEACH CHAIR EXERCISER
John C. Hanning, Jr., 4850-B Cass St., San Diego, Calif. 92109
Filed Oct. 21, 1993, Ser. No. 14,432
Term of patent 14 years
U.S. Cl. D21—191



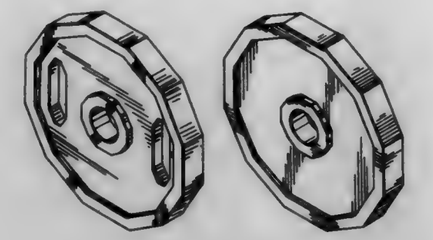
355,005
LEG EXERCISE APPARATUS
Joseph J. Voohanel, Jr., 10937 S. Groveland Ave., Whittier, Calif. 90603
Filed Nov. 9, 1993, Ser. No. 15,132
Term of patent 14 years
U.S. Cl. D21—191



355,006
STEPPER EXERCISER
Peter K.-C. Lo, No. 3, Ching-Cheng Sou St., Taichung, Taiwan, Prov. of China
Filed Oct. 8, 1993, Ser. No. 13,975
Term of patent 14 years
U.S. Cl. D21—195



355,007
WEIGHT-LIFTING PLATE
Michael D. Rojas, 13341 San Remo, Tustin, Calif. 92680, and Scott J. Franco, 9042 Colbreggan, Huntington Beach, Calif. 92646
Filed Mar. 17, 1993, Ser. No. 6,016
Term of patent 14 years
U.S. Cl. D21—197



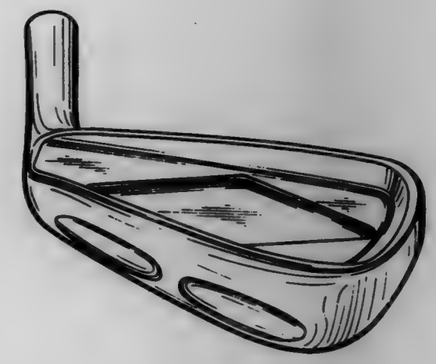
355,008
RECREATIONAL BALL
Sandro Vitiello, Commack, and Richard F. Genovese, Deer Park, both of N.Y., assignors to Regent Sports Corporation, Hauppauge, N.Y.
Filed Sep. 22, 1992, Ser. No. 950,034
Term of patent 14 years
U.S. Cl. D21—204



355,009
TOY CLUB
David Pagani, Montpelier, Vt., assignor to New Ventures Product Development And Marketing Ltd., Montpelier, Vt.
Filed Jan. 14, 1993, Ser. No. 3,775
Term of patent 14 years
U.S. Cl. D21—215



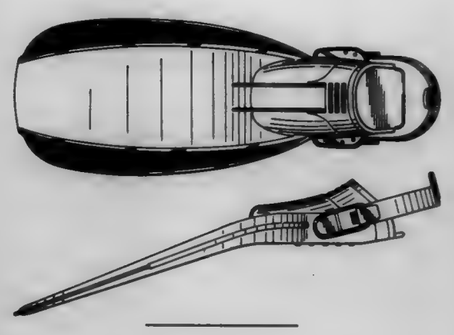
355,010
GOLF CLUB HEAD
Kunihiko Takahashi, Musashino, and Shigeki Take, Tokyo, both of Japan, assignors to Daiwa Golf Co., Ltd., Higashikurume, Japan
Filed Apr. 20, 1993, Ser. No. 7,362
Claims priority, application Japan, Oct. 20, 1992, 4-30759
Term of patent 14 years
U.S. Cl. D21—220



355,011
GOLF PUTTER GRIP
Howard D. Subnick, 7171 Little Harbor Dr., Huntington Beach, Calif. 92648
Filed Sep. 17, 1993, Ser. No. 13,103
Term of patent 14 years
U.S. Cl. D21—222



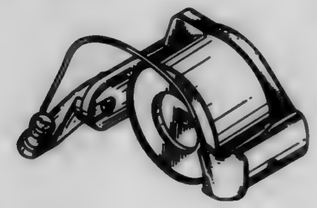
355,012
SWIMMING FIN
Russell Robertson, Chicago, Ill., assignor to Dacor Corporation, Northfield, Ill.
Filed Jun. 25, 1993, Ser. No. 10,030
Term of patent 14 years
U.S. Cl. D21—239



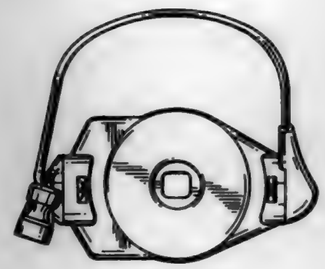
355,013
SWING
Stanley Schechner, 4310 N. Reflection Blvd., Apt. 101, Sunrise, Fla. 33351
Filed Apr. 19, 1993, Ser. No. 7,341
Term of patent 14 years
U.S. Cl. D21—246



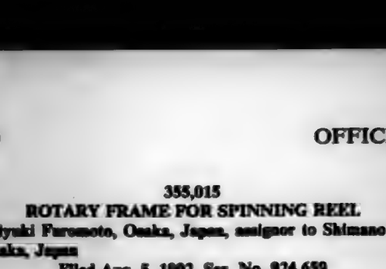
355,014
ROTARY FRAME FOR SPINNING REEL
Yoshiyuki Furomoto, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Aug. 5, 1992, Ser. No. 924,656
Term of patent 14 years
U.S. Cl. D22—141



355,015
ROTARY FRAME FOR SPINNING REEL
Yoshiyuki Furomoto, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Aug. 5, 1992, Ser. No. 924,659
Term of patent 14 years
U.S. Cl. D22—141



355,016
ROTARY FRAME FOR SPINNING REEL
Yoshiyuki Furomoto, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Jul. 31, 1992, Ser. No. 922,944
Term of patent 14 years
U.S. Cl. D22—141



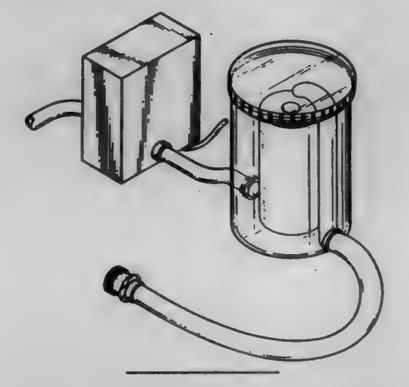
355,017
ROTARY FRAME FOR SPINNING REEL
Yoshiyuki Furomoto, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Aug. 10, 1992, Ser. No. 926,953
Term of patent 14 years
U.S. Cl. D22—141



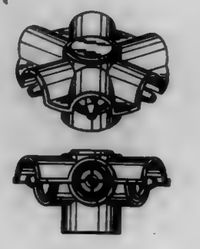
355,018
ROTARY FRAME FOR SPINNING REEL
Yoshiyuki Furomoto, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Aug. 10, 1992, Ser. No. 927,366
Term of patent 14 years
U.S. Cl. D22—141



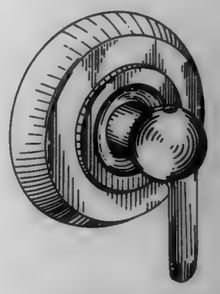
355,019
FERTILIZER DISPENSER
Terrence Spanke, 23624 Zerita, Warren, Mich. 48091
Filed Aug. 5, 1993, Ser. No. 11,430
Term of patent 14 years
U.S. Cl. D23—207



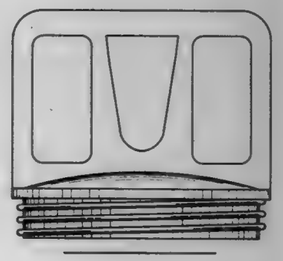
355,020
MULTI-OUTLET DRIP IRRIGATION UNIT
Raphael Mehoudar, Tel-Aviv, Israel, assignor to Hydroplan Engineering Ltd., Tel Aviv, Israel
Filed Apr. 20, 1992, Ser. No. 871,627
Term of patent 14 years
U.S. Cl. D23—213



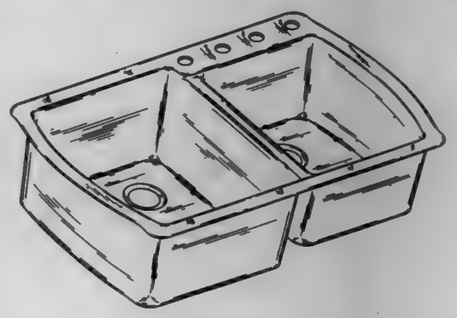
355,021
COMBINED HANDLE AND ESCUTCHEON
John H. Schott, and Todd D. Dannenberg, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 19, 1994, Ser. No. 17,708
Term of patent 14 years
U.S. Cl. D23—254



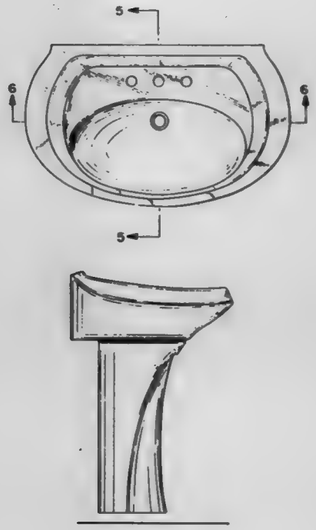
355,022
COMBINED COVER AND LID FOR A CANNISTER
David M. Canther, 2051 E. Imperial Cir., Naples, Fla. 33942
Filed Jun. 2, 1994, Ser. No. 23,901
Term of patent 14 years
U.S. Cl. D23—260



355,023
SINK
Paul P. Kolada, Columbus, Ohio, assignor to American Standard Inc., Piscataway, N.J.
Filed Dec. 20, 1993, Ser. No. 16,607
Term of patent 14 years
U.S. Cl. D23—290



355,024
BASIN
Seijiro Kawamura, and Noriko Yoshii, both of Fukuoka, Japan, assignors to Toto Ltd., Kitakyushu, Japan
Continuation-in-part of Ser. No. 862,239, Mar. 31, 1992. This application Apr. 29, 1993, Ser. No. 7,668
Claims priority, application Japan, Nov. 21, 1991, 3-35169
Term of patent 14 years
U.S. Cl. D23—292



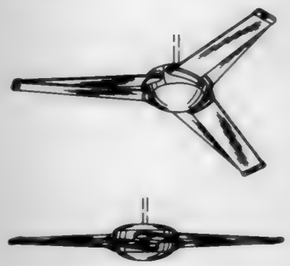
355,025
BIDET
Herbert V. Kohler, Jr., Kohler; Pierre H. Paulis; Francois Kergoet, both of Paris; Michel Chalard, Villemomble, all of France, and Thomas A. Boanell, Sheboygan, Wis., assignors to Jacob Delafon, Paris, France
Division of Ser. No. 880,475, May 6, 1992, Pat. No. Des. 349,156, which is a continuation-in-part of Ser. No. 792,045, Nov. 8, 1991. This application Mar. 8, 1994, Ser. No. 18,243
Term of patent 14 years
U.S. Cl. D23—295



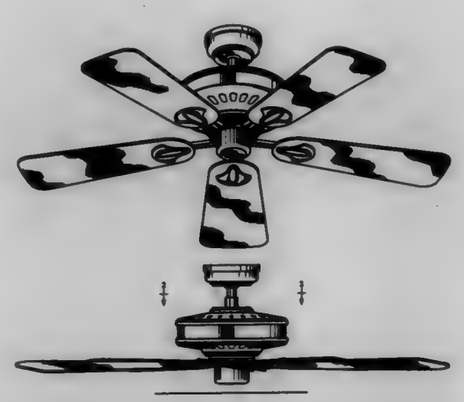
355,026
BATHTUB RIM
Robin H. Levien, London, England, assignor to American Standard Inc., Piscataway, N.J.
Filed Feb. 8, 1990, Ser. No. 477,109
Claims priority, application United Kingdom, Aug. 10, 1989, 2008262
Term of patent 14 years
U.S. Cl. D23—304



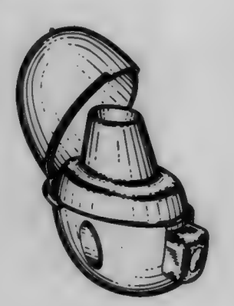
355,027
COMBINED DOUBLE BLADED CEILING FAN AND ILLUMINABLE LENS
Stanfield K. Young, Cypress, Calif., assignor to Seattle Lighting Fixture Co., Seattle, Wash.
Filed Jan. 7, 1993, Ser. No. 3,455
Term of patent 14 years
U.S. Cl. D23—377



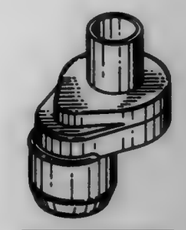
355,028
CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Mar. 24, 1994, Ser. No. 20,355
Term of patent 14 years
U.S. Cl. D23—377



355,029
INHALER
Ross Kinneir, and Sean Devane, both of Bristol, Great Britain, assignors to Boehringer Ingelheim International GmbH, Germany
Filed Jul. 16, 1993, Ser. No. 10,755
Claims priority, application United Kingdom, Jan. 21, 1993, 2028512
Term of patent 14 years
U.S. Cl. D24—110



355,030
RESUSCITATOR VALVE
Gene R. Baldwin, 324 N. Gardiner Ave., Rockford, Ill. 61107
Filed Apr. 14, 1993, Ser. No. 7,007
Term of patent 14 years
U.S. Cl. D24—1106



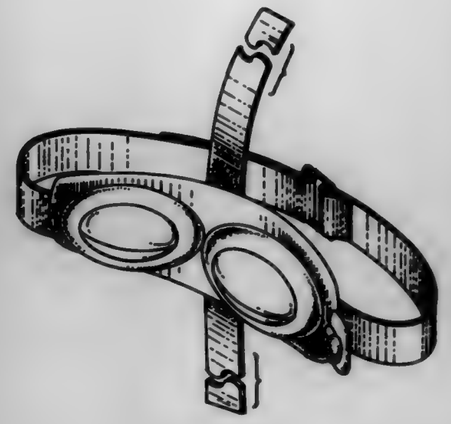
355,031
CATHETER
Masashi Yoshikawa, Tokyo, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 457
Claims priority, application Japan, Apr. 20, 1992, 4-11485
Term of patent 14 years
U.S. Cl. D24—112



355,032
MEDICAL MONITORING EQUIPMENT PROBE CONNECTOR
Daniel S. Goldberger, Boulder; Mark Hibl, Louisville; James H. Taylor, Boulder; Timothy A. Turley, Highlands Ranch; Gregory D. Volan, Boulder, and Kirk L. Weimer, Louisville, all of Colo., assignors to Ohmeda Inc., Liberty Corner, N.J.
Filed Jul. 13, 1993, Ser. No. 10,637
Term of patent 14 years
U.S. Cl. D24—169



355,033
INFLATABLE TRAVEL BACK SUPPORT
Henry W. Lee, 7 Warwick Ave., Scarsdale, N.Y. 10583
Filed Jun. 18, 1993, Ser. No. 9,558
Term of patent 14 years
U.S. Cl. D24—190



355,034
CERVICAL VISUALIZATION HARNESS
Anna Marie Weed, 15095 Lebanon Pinegrove Rd., Terry, Miss. 39170
Filed Nov. 1, 1993, Ser. No. 14,741
Term of patent 14 years
U.S. Cl. D24—190



355,035
HEATING VEST
Rosalie E. Payne, 1523 Marbella #3, St. Louis, Mo. 63138
Filed Aug. 6, 1993, Ser. No. 11,490
Term of patent 14 years
U.S. Cl. D24—206



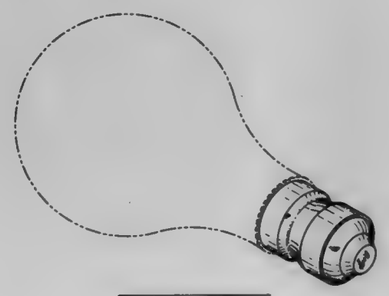
355,036
ASPIRATION SAFETY SHIELD
Sharon Shufelt, 4828 51st St., San Diego, Calif. 92115
Filed Feb. 22, 1993, Ser. No. 5,058
Term of patent 14 years
U.S. Cl. D24—232



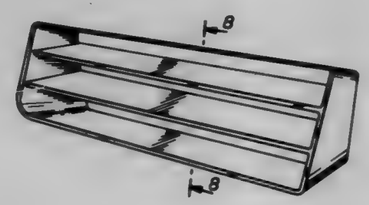
355,037
GLASS DOOR
William Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed Nov. 9, 1990, Ser. No. 611,860
Term of patent 14 years
U.S. Cl. D25—48



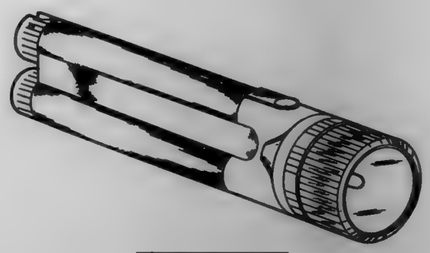
355,038
GROOVED BASE FOR AN ELECTRIC LIGHT BULB
Jose A. Ortiz, Paterson, N.J., assignor to John Tirado, Paterson, N.J.
Filed Feb. 7, 1994, Ser. No. 18,473
Term of patent 14 years
U.S. Cl. D26—2



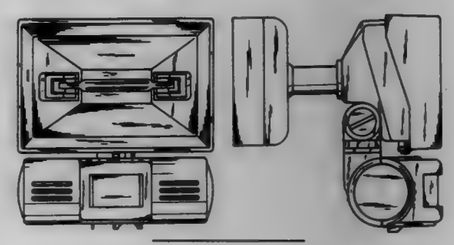
355,039
LIGHT GRILL
Jerome Winick, 10206 Cielo Dr., Beverly Hills, Calif. 90210
Filed Feb. 22, 1994, Ser. No. 19,071
Term of patent 14 years
U.S. Cl. D26—139



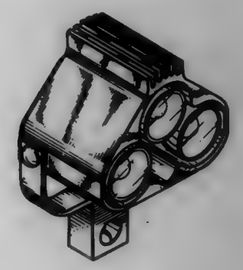
355,040
FLASHLIGHT
David Dalton, Turramurra, and John Brown, Northbridge, both of Australia, assignors to Eveready Australia Pty. Limited, Rosebery, Australia
Filed Dec. 7, 1992, Ser. No. 2,116
Term of patent 14 years
U.S. Cl. D26—37



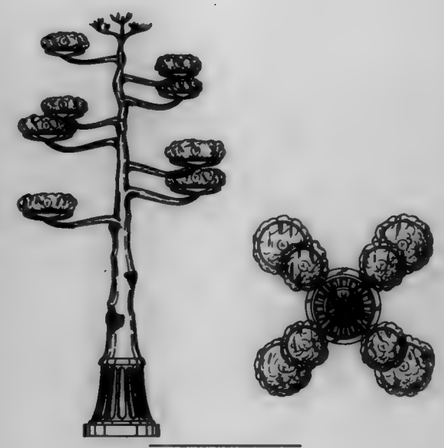
355,041
COMBINED ADJUSTABLE FLOODLIGHT AND SENSOR UNIT
Tako C. T. Cham, Hong Kong, Hong Kong, assignor to Original Marketing Services, Limited, New Territories, Hong Kong
Filed Jun. 18, 1992, Ser. No. 900,713
Claims priority, application United Kingdom, Dec. 20, 1991, 2109727
Term of patent 14 years
U.S. Cl. D26—63



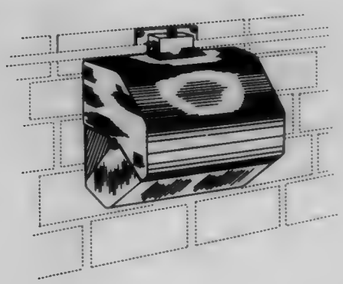
355,042
THREE LIGHT ADJUSTABLE LAMP
George N. Panagiotou, 409 Calle San Pablo, Camarillo, Calif. 93010
Filed Jul. 26, 1993, Ser. No. 10,949
Term of patent 14 years
U.S. Cl. D26—63



355,043
STREET LAMP
Mahala Sibley, 310 N. Sixth, Alpine, Tex. 79830
Filed Nov. 15, 1993, Ser. No. 15,397
Term of patent 14 years
U.S. Cl. D26—69



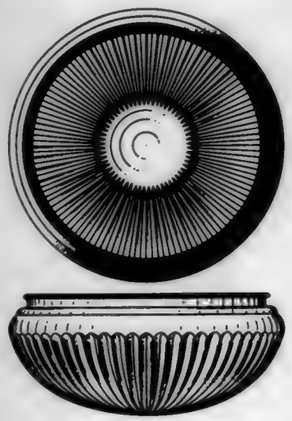
355,044
WALL MOUNTED LIGHTING FIXTURE
Thomas Russello, Howell, and Richard Sangiamo, Linden, both of N.J., assignors to The Genlyte Group Incorporated, Secaucus, N.J.
Filed Oct. 28, 1992, Ser. No. 908
Term of patent 14 years
U.S. Cl. D26—85



355,045
TABLE LAMP BASE
John R. Drucker, Atlanta, Ga., assignor to The Speer Corp. of New York, Smyrna, Ga.
Filed Jul. 19, 1993, Ser. No. 10,847
Term of patent 14 years
U.S. Cl. D26—110



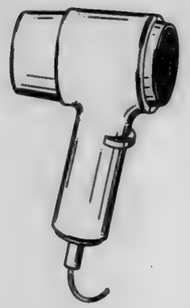
355,046
PRISMATIC MUSHROOM GLOBE FOR LIGHTING FIXTURE
Daniel R. Corsi, Beaver, Pa., assignor to Anchor Hocking Corporation, Freeport, Ill.
Filed Aug. 12, 1992, Ser. No. 930,028
Term of patent 14 years
U.S. Cl. D26—134



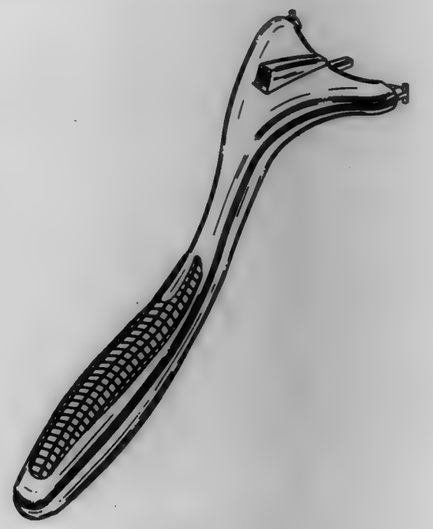
355,047
MOISTURE RETAINING HEAD BAND FOR USE IN PERMANENT WAVING
Michael S. Grimes, 6601 Grapevine Hwy., North Richland Hills, Tex. 76180
Filed Apr. 17, 1992, Ser. No. 869,719
Term of patent 14 years
U.S. Cl. D28—9



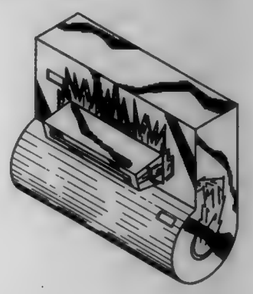
355,048
HAIR DRIER
Gustavo Soresina, Mendrisio, Switzerland, assignor to Ligo Electric S.A., Ligornetto, Switzerland
Filed Jul. 31, 1992, Ser. No. 922,946
Claims priority, application Hague Agreement, Jan. 31, 1992, DM/021.857
Term of patent 14 years
U.S. Cl. D28—13



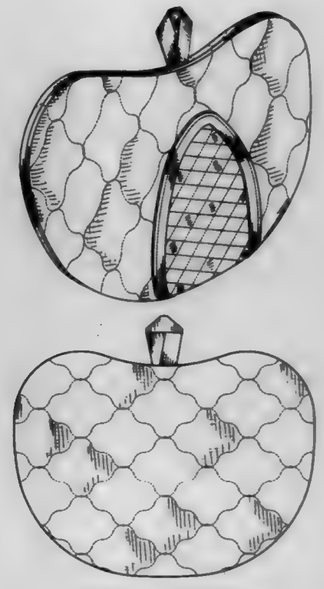
355,049
RAZOR HANDLE
Hiromasa Yasui, Tokyo, Japan, assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Feb. 4, 1991, Ser. No. 649,946
Term of patent 14 years
U.S. Cl. D28—48



355,050
PHOTOELECTRIC HAND DRIER
Geraldyne F. Ellsworth, and Robert C. Ellsworth, both of 1605 W. Division St., Faribault, Minn. 55021-5617
Filed Apr. 17, 1992, Ser. No. 869,715
Term of patent 14 years
U.S. Cl. D28—54.1



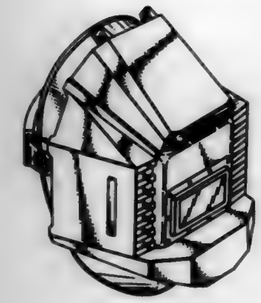
355,051
POTHOLDER
Joann M. Ives, 11 Delta Pl., Kingston, N.Y. 12401
Filed Oct. 6, 1993, Ser. No. 15,781
Term of patent 14 years
U.S. Cl. D29—119



355,052
PROTECTIVE KNEE PAD
George P. Paikos, 10655 Baton Rouge, and David J. Long, 12216 Beaufait Ave., both of Northridge, Calif. 91326
Filed May 27, 1993, Ser. No. 8,809
Term of patent 14 years
U.S. Cl. D29—100



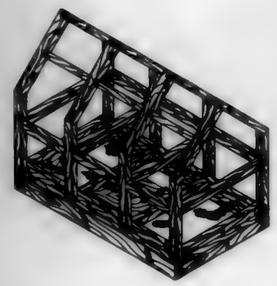
355,053
WELDERS HELMET
Gregory S. Hosrud, 500 South State St., Suite F, Bellingham, Wash. 98225
Filed Jan. 3, 1994, Ser. No. 16,979
Term of patent 14 years
U.S. Cl. D29—110



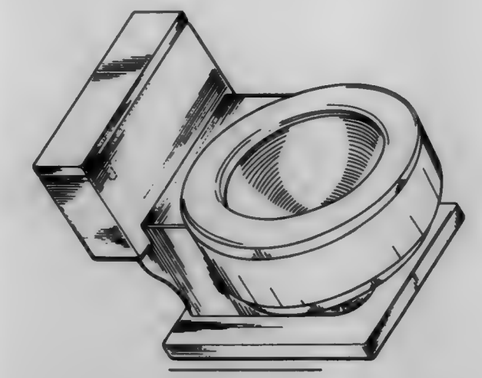
355,054
BREAKABLE SEAL FOR FIRE EXTINGUISHER
Fred Self, 933 Parkside Dr., Richmond, Calif. 94803
Filed Jul. 12, 1993, Ser. No. 10,617
Term of patent 14 years
U.S. Cl. D29—129



355,055
BIRD FEEDER
Stewart Hardison, P.O. Box 333, Bainbridge, N.Y. 13733
Filed Sep. 15, 1993, Ser. No. 13,561
Term of patent 14 years
U.S. Cl. D30—124



355,056
PET WATER DISH
Richard A. Burnet, 2305 Walnut St., Reno, Nev. 89502
Filed Dec. 8, 1993, Ser. No. 16,116
Term of patent 14 years
U.S. Cl. D30—132



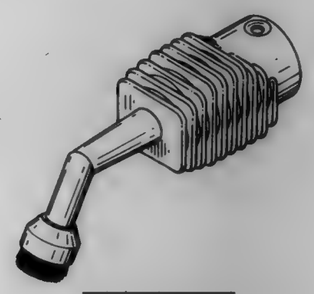
355,057
FELINE SCRATCHING POST
Melaney L. Northrop, Cleburne, and Thomas B. Murphy, Arlington, both of Tex., assignors to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Jul. 15, 1993, Ser. No. 10,722
Term of patent 14 years
U.S. Cl. D30—160



355,058
HAND-HELD VACUUM CLEANER
Kieren M. Phelan, New Mill, United Kingdom, assignor to Black & Decker Inc., Newark, Del.
Filed Jun. 25, 1993, Ser. No. 9,938
Term of patent 14 years
U.S. Cl. D32—18



355,059
BRUSH ATTACHMENT FOR HIGH TEMPERATURE CLEANING MACHINE
Jerry D. Ennis, Plantation, Fla., assignor to Marketing "10", Inc., Fort Lauderdale, Fla.
Filed Jun. 14, 1993, Ser. No. 9,470
Term of patent 14 years
U.S. Cl. D32—33



355,060
DIAPER PAIL
Michael S. Bernstein, Natick; Brian C. Sandberg, Stoughton, both of Mass., and David W. Crossley, Woonsocket, R.I., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed May 11, 1994, Ser. No. 22,762
Term of patent 14 years
U.S. Cl. D32—37



355,061
SQUEEGEE
Billy J. Stokes, 104 Cedar Valley Dr., Canton, Ga. 30114
Filed Jun. 26, 1990, Ser. No. 543,570
Term of patent 14 years
U.S. Cl. D32—41



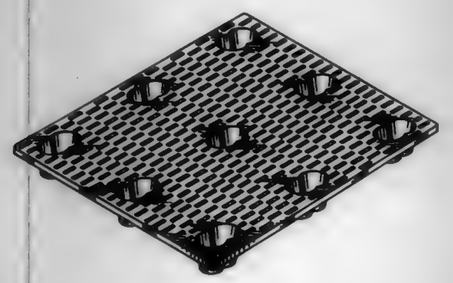
355,062
TOOL CARRIER
Paul R. Maire, Edina, and Robert W. Fierek, Duluth, both of Minn., assignors to Portable Products, Inc., St. Paul, Minn.
Filed Jan. 11, 1993, Ser. No. 3,413
Term of patent 14 years
U.S. Cl. D32—53



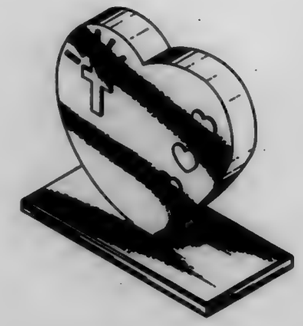
355,063
DISPLAY HOLDER FOR GROCERY CARTS
Mike R. Pirnat, 4523 Ventura Way, Union City, Calif. 94587
Filed Oct. 20, 1993, Ser. No. 14,366
Term of patent 14 years
U.S. Cl. D34—27



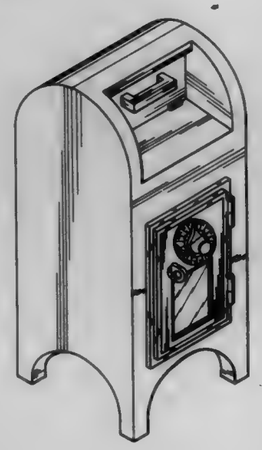
355,064
PALLET
William Kinzie, Cleveland; Bill V. Smith, Bartlesville, and Donald G. Needham, Ramona, all of Okla., assignors to Plastic Pallets, Inc., Bartlesville, Okla.
Filed Dec. 10, 1993, Ser. No. 16,293
Term of patent 14 years
U.S. Cl. D34—38



355,065
CONTAINER FOR CREMATION ASHES
Jacquelin L. Hicks, 4802 Cattle Rd., St. Clair, Mich. 48079
Filed Dec. 28, 1993, Ser. No. 16,852
Term of patent 14 years
U.S. Cl. D99—5



355,066
MAILBOX BANK
Walter R. Roberts, 709 N. Florida St., Arlington, Va. 22205
Filed Feb. 2, 1994, Ser. No. 18,267
Term of patent 14 years
U.S. Cl. D99—37



LIST OF PATENTEES

TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Soule, Christopher A.; and Kuzmin, Gary F., 5,384,940, Cl. 24-453.000.
AB UVA: *See*—
Siggelin, Lars E., 5,384,983, Cl. 451-65.000.
AB Volvo: *See*—
Sundstedt, Per; and Ode, Bengt, 5,384,946, Cl. 297-238.000.
Abbey, Kirk J.; Howe, Stephen E.; and Munoz, Beth C., to Lord Corporation. Structural adhesive composition having high temperature resistance. 5,385,990, Cl. 525-534.000.
Abbott Laboratories: *See*—
Wiedeman, Paul E.; Kawai, Megumi; Luly, Jay R.; Or, Yat S.; and Wagner, Rolf, 5,386,011, Cl. 530-329.000.
Abbott, Martyn S.; Thompson, Thomas C.; Jones, Kenneth A.; Davis, Albert M.; and Mattson, Andrew P., to Quest Medical, Inc. Cardioplegia delivery system. 5,385,540, Cl. 604-4.000.
Abdow, David A.: *See*—
Hrycin, Frank M.; Abdow, David A.; and Babb, John D., 5,385,109, Cl. 114-238.000.
Abe, Hiroomi: *See*—
Furuta, Motonobu; Abe, Hiroomi; Fujii, Takeshi; and Yamamoto, Masashi, 5,385,976, Cl. 525-68.000.
Abe, Masayuki: *See*—
Sato, Toshio; Abe, Masayuki; and Phiu-On, Jureerut, 5,385,681, Cl. 252-8.700.
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, to Eisai Co., Ltd. Quinone derivatives and pharmacological use. 5,385,942, Cl. 514-568.000.
Abele, John E.; Heath, Kevin R.; Landman, Mark S.; and McLaughlin, Paul D., to Boston Scientific Corporation. Guidewire for crossing occlusions in blood vessels. 5,385,152, Cl. 128-772.000.
Abita, Joseph L., to United States of America, Navy. Non-magnetic alloy. 5,385,618, Cl. 148-509.000.
Abramsohn, Dennis A.: *See*—
Spiewak, John W.; Yuh, Huoy-Jen; Thornton, Constance J.; Abramsohn, Dennis A.; Nichol-Landry, Deborah; Mammino, Joseph; Ziolo, Ronald F.; Yu, Robert C. U.; Carmichael, Kathleen; and Patterson, Neil S., 5,385,796, Cl. 430-64.000.
Abukawa, Sakio, to Toko Tekko Kabushiki Kaisha. Joint for corrugated structural members. 5,385,423, Cl. 403-245.000.
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Schlamp, Hans, 5,385,265, Cl. 221-7.000.
Accumulata Verwaltungssgesellschaft mbH: *See*—
Schlamp, Hans, 5,386,462, Cl. 379-106.000.
Acetocell GmbH & Co. KG: *See*—
Berg, Alex; Janssen, Wim; Balle, Stefan; Kunz, Rudolf G., deceased; and Klein, Wolfdieter, 5,385,641, Cl. 162-76.000.
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MacNeill, Gerald F., 5,385,873, Cl. 501-95.000.
ACT Distribution, Inc.: *See*—
Lund, William J., 5,385,168, Cl. 137-337.000.
Active Management, Inc.: *See*—
Lyday, Joe H., 5,385,452, Cl. 417-403.000.
Adachi, Yutaka: *See*—
Nagasaki, Tatsuo; and Adachi, Yutaka, 5,386,410, Cl. 369-275.400.
Adam, Gerard: *See*—
Guillaumet, Gerald; Coudert, Gerard; Podona, Tchao; Guardiola-Lemaitre, Beatrice; Renard, Pierre; Adam, Gerard; and Henri-Caignard, Daniel, 5,385,930, Cl. 514-432.000.
Lesieur, Daniel; Yous, Said; Depreux, Patrick; Adam, Gerard; Renard, Pierre; Pfeiffer, Bruno; and Guardiola-Lemaitre, Beatrice, 5,385,944, Cl. 514-585.000.
Yous, Said; Lesieur, Isabelle; Depreux, Patrick; Caignard, Daniel H.; Guardiola, Beatrice; Adam, Gerard; and Renard, Pierre, 5,386,034, Cl. 548-169.000.
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Adams, Theodore P., to Angeion Corporation. Implantable cardioverter defibrillator having variable output capacitance. 5,385,575, Cl. 607-5.000.
Adamson, Mark, to UNR Industries, Inc. Shopping cart having basket with improved front gate. 5,385,358, Cl. 280-33.995.
Adapsys, Inc.: *See*—
Maudlin, Craig L.; and Adler-Sherman, Susan L., 5,386,558, Cl. 395-600.000.
Adco Products, Inc.: *See*—
Slovinsky, Manuel; Tarizzo, Jeffrey R.; Fisher, Dennis K.; and Briddell, Brian J., 5,385,772, Cl. 428-220.000.
Adcock Ingram Self Medication (Proprietary) Limited: *See*—
Talbot, Marie M. B.; Talbot, Marie M. J.; and Urbaniak-Hedley, Francis D., 5,385,671, Cl. 210-636.000.
Addeo, Eric J.; Desmarais, Joseph J.; and Shtirmer, Gennady, to Bell Communications Research, Inc. Audio processing system for teleconferencing with high and low transmission delays. 5,386,465, Cl. 379-202.000.
Adir et Compagnie: *See*—
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Adler-Sherman, Susan L.: *See*—
Maudlin, Craig L.; and Adler-Sherman, Susan L., 5,386,558, Cl. 395-600.000.
Advanced Haemotechnologies: *See*—
Maynard, David L., 5,385,539, Cl. 604-4.000.
Advanced Micro Devices, Inc.: *See*—
Folmsbee, Alan C., 5,386,151, Cl. 327-536.000.
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Thomas, Alasdair R. P., deceased, 5,386,563, Cl. 395-650.000.
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Kirk, Kenneth G.; Schoenman, Leonard; Baxter, Kris E.; and Mouritsen, John B., 5,385,263, Cl. 220-589.000.
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Rathbun, Richard T., 5,385,014, Cl. 60-39.020.
Aeroquip Corporation: *See*—
Allread, Alan R.; and Jensen, Jon A., 5,385,331, Cl. 251-149.100.
Aeschbacher, Cynthia L.: *See*—
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Aflague, Allen; and Talbot, Mark. Binary inner tube for tire. 5,385,191, Cl. 152-340.100.
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Krohm, Harald; Holscher, Ludger; and Nithammer, Andreas, 5,385,134, Cl. 123-676.000.
Aftanas, Jeffrey M.: *See*—
Cucheran, John S.; and Aftanas, Jeffrey M., 5,385,285, Cl. 224-321.000.
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Cundall, David J., 5,385,002, Cl. 53-441.000.
Agfa-Gevaert AG: *See*—
Klotzer, Sieghart; and Lapp, Otto, 5,385,813, Cl. 430-503.000.
AGFA-Gevaert, N.V.: *See*—
Leenders, Luc; and Daems, Eddie, 5,385,805, Cl. 430-257.000.
AGIE, A.G. fur industrielle Elektronik: *See*—
Borsari, Claudio, 5,386,093, Cl. 219-69.120.
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Pedroni, Volnei A.; Yariv, Amnon; and Agranat, Aharon J., 5,386,384, Cl. 365-183.000.
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Ahmed, Bashir M., to Henkel Corporation. Method for applying autodeposition coating. 5,385,758, Cl. 427-421.000.
Ahn, Ji-hong, to Samsung Electronics Co., Ltd. Semiconductor memory device and a manufacturing method thereof. 5,386,382, Cl. 365-174.000.
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Menke, W. Kenneth, 5,385,062, Cl. 74-54.000.
Aichinger, Gerd: *See*—
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Ainslie, Neil T., to Huntington Laboratories, Inc. Germicide resistant floor finish. 5,385,604, Cl. 106-15.050.
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Fujita, Satoshi; Momiyama, Masayoshi; Kagiyama, Naoto; Kondo, Yasumitsu; and Hori, Hiroshi, 5,385,823, Cl. 435-6.000.

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Tomioka, Junsuke; Akagi, Tetsuro; and Yoshino, Shiro, 5,385,115, Cl. 117-2.000.

Akahori, Takashi, to Ricoh Company, Ltd. Optical recording carrier and optical recording process. 5,386,408, Cl. 369-100.000.

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Amano, Yoshifumi; Nakamura, Kazuo; Kurosawa, Hiroshi; Sato, Takeshi; Akano, Hirofumi; and Kawamura, Yoshiya, 5,385,830, Cl. 435-29.000.

Akiike, Tadashi: *See—*
Kyomasu, Ryuichi; Sakakura, Mitsuaki; Kawagishi, Minoru; and Akiike, Tadashi, 5,385,288, Cl. 228-1.100.

Akimori, Giichiro: *See—*
Satoh, Kenji; Tsuchiya, Miki; Akimori, Giichiro; and Tezuka, Yoshitaka, 5,386,506, Cl. 395-160.000.

Akinniy, Akingbade: *See—*
Schatz, Steven V.; Ritchie, Thomas W.; Merich, Barry J.; Bonta, Jeffrey D.; and Akinniy, Akingbade, 5,386,456, Cl. 379-60.000.

Akita, Yasunori: *See—*
Abe, Shinya; Otamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.

Akiyama, Ryota; Yabe, Toshihiro; and Motohashi, Kazutoshi, to Fujitsu Limited. Method of registering identification number in personal communication terminal. 5,386,468, Cl. 380-25.000.

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Andersson, Carl-Magnus A.; Bergstrand, Hakan S. A. M.; Jakupovic, Edib; Josefsson, Bo-Goran; Lindvall, Magnus L.; Sarnstrand, Bengt O.; and Teneberg, Eric N. G., 5,385,904, Cl. 514-255.000.
Boar, Bernard R.; Cross, Alan J.; Green, Alfred R.; and Hagberg, Curt-Eric, 5,385,921, Cl. 514-365.000.
Brandstrom, Arne E., 5,386,032, Cl. 546-271.000.

Akzo N.V.: *See—*
Hoet, Rene M. A.; and Van Venrooy, Waltherus J., 5,385,824, Cl. 435-6.000.

Al-Bargi, Hamed H. Expandable litter apparatus. 5,384,926, Cl. 5-627.000.

Alagaratnam, Maniam: *See—*
Variot, Patrick; Low, Qwai H.; Alagaratnam, Maniam; and Dalao, Teresa, 5,386,144, Cl. 257-718.000.

Albemarle Corporation: *See—*
Hu, Patrick C.; and Leavitt, Richard I., 5,385,753, Cl. 427-215.000.

Albright, Scot P.; Chamberlin, Rhodes R.; and Thompson, Roger A., to Photon Energy Inc. Series interconnected photovoltaic cells and method for making same. 5,385,614, Cl. 136-244.000.

Albright & Wilson Limited: *See—*
Bryan, Edward; Veale, Malcolm A.; Talbot, Robert E.; Cooper, Kenneth G.; and Matthews, Nigel S., 5,385,896, Cl. 514-129.000.
Davis, Keith P.; Hoye, Peter A. T.; Williams, Michael J.; Woodward, Gary; and Greenhall, Martin P., 5,386,038, Cl. 549-262.000.

Alcatel N.V.: *See—*
Neth, Alois, 5,386,416, Cl. 370-13.100.
Poingt, Francis; Gaumont-Goarin, Elisabeth; and Le Gouezigou, Lionel, 5,385,636, Cl. 156-649.000.

Aleksejczyk, Robert A.; and Urfer, Allen D., to Henkel Corporation. Alkyl glycoside compositions with improved wetting properties. 5,385,750, Cl. 427-4.000.

Alexandrovich, Peter S.: *See—*
Wilson, John C.; and Alexandrovich, Peter S., 5,385,800, Cl. 430-110.000.

Alford, Steve: *See—*
Slater, Glenn L.; Woods, Jerry; Alford, Steve; Updyke, Dave; and Methe, Rick, 5,385,564, Cl. 604-416.000.

Alfred Teves GmbH: *See—*
Volz, Peter, 5,385,395, Cl. 303-116.100.

Alfred Univeristy: *See—*
Bayya, Shyam S.; Synder, Robert L.; Gopalakrishman, Sudhakar; and Schulze, Walter A., 5,385,882, Cl. 505-501.000.

Ali-Yahia, Tahar; and Dana, Michel, to France Telecom, Etablissement Autonome De Droit Pub. Memory cell for associative memory. 5,386,379, Cl. 365-49.000.

Aliano, Benedict J.: *See—*
Greenwood, Peter J.; Aliano, Benedict J.; Lee, Taeeon; and Barolli, Martin M., 5,385,334, Cl. 251-335.300.

Allen, Mike: *See—*
Steele, Randy C.; and Allen, Mike, 5,386,155, Cl. 326-37.000.

Allen, Paul C.; Jolley, Matthew J.; Teitzel, Robin L.; Rieger, Michael; Bohan, Michael; and Thomas, Timothy, to Etec Systems, Inc. Laser pattern generation apparatus. 5,386,221, Cl. 346-108.000.

Allentown Caging Equipment Co., Inc.: *See—*
Coiro, Michael A., Sr.; and Murray, Dale R., 5,385,118, Cl. 119-18.000.

Allergan, Inc.: *See—*
Garst, Michael E.; and Burk, Robert M., 5,385,945, Cl. 514-613.000.

Alliance Research Corporation: *See—*
Cooper, Gershon N., 5,386,455, Cl. 379-58.000.

Allie, Mark C.: *See—*
Popovich, Steven R.; Leak, Trevor A.; and Allie, Mark C., 5,386,477, Cl. 381-71.000.

AlliedSignal Inc.: *See—*
Ficalora, Joseph P.; and Moody, John H., 5,386,432, Cl. 372-94.000.
Maxfield, MacRae; Christiani, Brian R.; Murthy, Sanjeeva N.; and Tuller, Harold, 5,385,776, Cl. 428-297.000.
Springer, Linda L.; and Carelli, Charles E., 5,385,765, Cl. 428-36.100.
Stewart, Donald B., Jr., 5,385,011, Cl. 60-39.020.

Allread, Alan R.; and Jensen, Jon A., to Aeroquip Corporation. Valve assembly. 5,385,331, Cl. 251-149.100.

Alltrade, Inc.: *See—*
Hillinger, George, 5,386,358, Cl. 362-431.000.

Almers, Wolfhard: *See—*
Mulvihill, Eileen R.; Hagen, Frederick S.; Houamed, Khaled M.; and Almers, Wolfhard, 5,385,831, Cl. 435-69.100.

Alvstad, Gary: *See—*
Martin, Phil; and Alvstad, Gary, 5,386,515, Cl. 395-275.000.

Aiza Corporation: *See—*
Haak, Ronald P.; Gyory, J. Richard; Theeuwes, Felix; and Myers, Robert M., 5,385,543, Cl. 604-20.000.

Amano, Toshinori; Sakai, Seiji; Fujiki, Yasuo; Ueyama, Masanori; Sakamoto, Yukio; and Takagi, Daisuke, to Murata Manufacturing Co., Ltd. Surge absorber. 5,386,335, Cl. 361-56.000.

Amano, Yoshifumi; Nakamura, Kazuo; Kurosawa, Hiroshi; Sato, Takeshi; Akano, Hirofumi; and Kawamura, Yoshiya, to Nakano Vinegar Co., Ltd. Apparatus for measuring free and total sulfurous acid and method of measurement. 5,385,830, Cl. 435-29.000.

Amdahl Corporation: *See—*
Norrie, Christopher I. W.; Newcomb, Carolee V.; Yu, Peter K.; and Zmyslowski, Allan, 5,386,549, Cl. 395-575.000.

Amemiya, Yutaka; and Toda, Akihito, to Tokyo Electron Limited. Apparatus and method for treating substrates. 5,385,624, Cl. 156-345.000.

American Cyanamid Company: *See—*
Sum, Phaik-Eng; Lee, Ving J.; Hlavka, Joseph J.; and Testa, Raymond T., 5,386,041, Cl. 552-205.000.

American Home Products Corporation: *See—*
Nelson, Frances C.; and Schiehser, Guy A., 5,385,908, Cl. 514-291.000.
Nelson, Frances C.; and Schiehser, Guy A., 5,385,909, Cl. 514-291.000.
Ocain, Timothy D.; and Schiehser, Guy A., 5,385,910, Cl. 514-291.000.

American National Red Cross, The: *See—*
Fahy, Gregory M.; and Khirabadi, Bjan S., 5,385,843, Cl. 435-283.000.

American Pipe & Plastics, Inc.: *See—*
Gargiulo, Joseph L., 5,385,173, Cl. 138-98.000.

American Polywater Corporation: *See—*
Miller, Win R.; Dahlke, Sheri H.; and Fee, John M., 5,385,688, Cl. 252-73.000.

American Standard Inc.: *See—*
Rein, Alan D.; and Foye, David M., 5,385,297, Cl. 236-49.300.

Amin, Dilip: *See—*
Neuenschwander, Kent; Amin, Dilip; Scotese, Anthony C.; and Morris, Robert L., 5,385,912, Cl. 514-305.000.

Amon, Max; and Tejada, John, to Martin Marietta Corporation. IR fast low light level lens system. 5,386,315, Cl. 359-350.000.

AMP-AKZO Corporation: *See—*
Minten, Karl L., 5,385,787, Cl. 428-447.000.

Ampulski, Robert S., to Procter & Gamble Company, The. Process for applying a thin film containing low levels of a functional-polysiloxane and a nonfunctional-polysiloxane to tissue paper. 5,385,643, Cl. 162-135.000.

Andersen, Per J.; and Hodson, Simon K., to E. Khashoggi Industries. Hydraulically settable containers and other articles for storing, dispensing, and packaging food and beverages and methods for their manufacture. 5,385,764, Cl. 428-34.400.

Anderson, Albert G.: *See—*
Weimer, Paul J.; Odom, James M.; Cooling, Frederick B., III; and Anderson, Albert G., 5,385,842, Cl. 435-262.000.

Anderson, Craig M.: *See—*
Faiks, Frederick S.; Forslund, Carl V., III; Scheper, Robert M.; Anderson, Craig M.; Knoblock, Glenn A.; and Groendal, Dale M., 5,385,388, Cl. 297-301.000.

Anderson, David B. Apparatus for automatically dispensing food product such as hard ice cream. 5,385,464, Cl. 425-145.000.

Anderson, James M.: *See—*
Kim, Jason S.-M.; and Anderson, James M., 5,386,336, Cl. 361-93.000.

Anderson, Leslie D.; Bartlett, Janeth M.; Szaflarski, Diane M.; and Widder, Kenneth J., to Molecular Biosystems, Inc. Method of ultrasonic imaging of the gastrointestinal tract and upper abdominal organs using an orally administered negative contrast medium. 5,385,147, Cl. 128-662.020.

Anderson, Lowell R.: *See—*
Chaudhuri, Ratan K.; Narayanan, Kolazi S.; and Anderson, Lowell R., 5,385,948, Cl. 514-788.000.

Anderson, Patricia P.: *See—*
Blohm, Margaret L.; Brown, Sterling B.; Seeger, George T.; and Anderson, Patricia P., 5,385,984, Cl. 525-393.000.

Anderson, Stephen; Brady, Kevin M.; Keyt, Bruce A.; and Presta, Leonard G., to Genentech, Inc. Variants of tissue plasminogen activator, compositions and methods of use for same. 5,385,732, Cl. 424-94.640.

Andersson, Carl-Magnus A.; Bergstrand, Hakan S. A. M.; Jakupovic, Edib; Josefsson, Bo-Goran; Lindvall, Magnus L.; Sarnstrand, Bengt O.; and Teneberg, Eric N. G., to Aktiebolaget Astra. Organic salts of N, N'-diacetyl cystine. 5,385,904, Cl. 514-255.000.

Andersson, Par; and Ruetschi, Werner, to Tetra Pak Holdings S.A. Liquid package with aseptic properties and a method of producing such a package. 5,385,294, Cl. 229-125.170.

Ando, Hideki; and Machida, Hirohisa, to Mitsubishi Denki Kabushiki Kaisha. Address translator having a high speed data comparator. 5,386,528, Cl. 395-400.000.

Ando, Osamu: *See—*
Ono, Hitoshi; Ando, Osamu; and Takeuchi, Masako, 5,385,799, Cl. 430-110.000.

Andresen, Peter L.: *See—*
Diaz, Thomas P.; Andresen, Peter L.; Catlin, William R.; Contreras, Gary W.; De Lair, Ronald E.; Miller, William D.; Solomon, Harvey D.; and Weinstein, Daniel, 5,386,442, Cl. 376-245.000.

Andrews, Mark J., to Gemcor Engineering Corporation. Piston rod stabilizing device for a riveting apparatus ram assembly. 5,385,041, Cl. 72-453.140.

Andricacos, Panayotis C.; Chang, I-Chia; Deligianni, Hariklia; and Horkans, Wilma J., to International Business Machines Corporation. Acid electrolyte solution and process for the electrodeposition of copper-rich alloys exploiting the phenomenon of underpotential deposition. 5,385,661, Cl. 205-239.000.

Andujar, Valerie: *See—*
Stalport, Gerard; Giraud, Benoit; and Andujar, Valerie, 5,385,122, Cl. 122-511.000.

Angeion Corporation: *See—*
Adams, Theodore P., 5,385,575, Cl. 607-5.000.

Anglerot, Didier: *See—*
Dougnier, Francois; Guth, Jean-Louis; Patarin, Joel; and Anglerot, Didier, 5,385,717, Cl. 423-702.000.

Ansan Industries Ltd.: *See—*
Wilson, Dennis A.; and Williamsen, Mark S., 5,386,360, Cl. 364-146.000.

Antonio, Gelabert: *See—*
Didier, Wilheim; and Antonio, Gelabert, 5,385,680, Cl. 252-8.600.

Aoki, Masakazu: *See—*
Kawahara, Takayuki; Aoki, Masakazu; Nakagome, Yoshinobu; Hanawa, Makoto; Uchiyama, Kunio; Nakamura, Masayuki; Kitsukawa, Goro; and Oishi, Kanji, 5,386,394, Cl. 365-208.000.

Aoki, Namito; Ichiki, Yasufumi; and Tanabe, Chishiro, to Bridgestone Corporation. Pneumatic tire with paired sides in the tread. 5,385,189, Cl. 152-209.00R.

Aoki, Norihiro: *See—*
Yatabe, Takayuki; Goto, Fusasuke; Aoki, Norihiro; and Imamura, Yoichi, 5,385,412, Cl. 384-492.000.

Aoun, Michel M. Bottom dispensing dispenser. 5,385,272, Cl. 222-185.000.

Aoyagi, Takuo, to Nihon Kohden Corporation. Apparatus for measuring predetermined data of living tissue. 5,385,143, Cl. 128-633.000.

Aoyama, Toshinobu; and Hirahara, Keizo, to Hoechst Japan Limited. Antithrombin III preparation. 5,385,890, Cl. 514-21.000.

APD Cryogenics, Inc.: *See—*
Longsworth, Ralph C.; and Khatri, Ajay N., 5,385,027, Cl. 62-51.100.

APLS Co., Ltd.: *See—*
Morita, Susumu, 5,385,571, Cl. 606-181.000.

Apple Computer, Inc.: *See—*
Degen, Leo M. W. F.; and Zwartjes, Martijn, 5,386,493, Cl. 395-2.760.
White, George M., 5,386,494, Cl. 395-2.840.

Applied Medical Resources Corporation: *See—*
Hart, Charles C.; Ritchart, Mark A.; and Gadberry, Donald L., 5,385,553, Cl. 604-167.000.

Arai, Hideko: *See—*
Mohri, Fumihito; Arai, Hideko; and Sakata, Yoshio, 5,384,957, Cl. 20-895.320.

Arai, Yoshifumi; and Nakano, Yoshiki, to Toyo Ink Mfg. Co., Ltd. Method and device for nonlinear transformation of colour information by neural network. 5,386,496, Cl. 395-22.000.

Arakawa, Mitsuaki: *See—*
McCarten, Barry; Carlson, Joseph W.; Arakawa, Mitsuaki; and Kaufman, Leon, 5,386,191, Cl. 324-318.000.

Arch Development Corporation: *See—*
Praeg, Walter F., 5,385,201, Cl. 164-467.000.

Archer, Donald M.; and Hoei, Jung S., to National Semiconductor Corporation. Trim correction circuit with temperature coefficient compensation. 5,386,160, Cl. 327-513.000.

Archery Dynamics, Inc.: *See—*
Thomas, Bruce A., 5,385,136, Cl. 124-89.000.

Archive Corporation: *See—*
Gombos, Richard G., Jr.; and Pisello, Thomas, 5,386,545, Cl. 395-575.000.

Arde Incorporated: *See—*
Sneddon, Kirk, 5,385,081, Cl. 92-192.000.

Argus International: *See—*
Costello, Bernard J., 5,385,598, Cl. 75-10.110.

Arikawa, Shiro; Ueno, Isamu; and Nakayama, Toshiki, to Canon Kabushiki Kaisha. Photoelectric conversion device for amplifying and outputting photoelectrically converted signal, and a method thereof. 5,386,108, Cl. 250-208.100.

Arima, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Data synapse expressing unit capable of refreshing stored synapse load. 5,386,149, Cl. 395-24.000.

Aritome, Seiichi: *See—*
Endoh, Tetsuo; Shirota, Riichiro; Ohuchi, Kazunori; Kirisawa, Ryouhei; Aritome, Seiichi; Tanaka, Tomoharu; and Tanaka, Yoshiyuki, 5,386,422, Cl. 371-21.500.

Armament Systems and Procedures: *See—*
Parsons, Kevin L., 5,386,322, Cl. 359-872.000.

Arndt, Craig M.: *See—*
DeBen, Abdou F.; Xu, Tianning; Tumey, David M.; and Arndt, Craig M., 5,386,103, Cl. 235-379.000.

Arnold, Michael J., to Viva America Marketing, Inc. Method for the preparation of pure carboxyethyl germanium sesquioxide. 5,386,046, Cl. 556-89.000.

Arnt, Stanley L., to Michigan Outdoor Products, Inc. Pin lock. 5,384,972, Cl. 40-1.600.

Aronson, Michael P.: *See—*
Tsaur, Liang S.; and Aronson, Michael P., 5,385,959, Cl. 523-201.000.

Aryani, Shahryar: *See—*
Voss, Peter H.; and Aryani, Shahryar, 5,386,153, Cl. 326-34.000.

Asada, Kaoru: *See—*
Sasaki, Yoshiyuki; Kobayashi, Shigesobu; Kassoka, Katsuyuki; Matsubara, Tomio; and Asada, Kaoru, 5,385,784, Cl. 428-369.000.

Asahi Glass Company Ltd.: *See—*
Gunjima, Tomoki; Yuki, Masanori; Kunigita, Massya; Hirai, Yoshinori; Yoshikawa, Yukio; and Shidoji, Eiji, 5,386,306, Cl. 359-52.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Takahashi, Mamoru; and Ueda, Shigeru, 5,385,829, Cl. 435-19.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ichikawa, Yuichi; and Kosako, Koeei, 5,386,259, Cl. 354-94.000.
Kirigaya, Tadayuki, 5,386,260, Cl. 354-289.120.
Nishikawa, Tomoyuki, 5,386,280, Cl. 355-282.000.

Asai, Takayoshi: *See—*
Tanaka, Shunji; Asai, Takayoshi; Inoue, Taro; Umeno, Hidenori; and Watanabe, Tsuyoshi, 5,386,565, Cl. 395-700.000.

Asakura, Sotoo; Murakami, Yoshio; Kanagawa, Nobuto; and Nakate, Toshiomi, to Fujisawa Pharmaceutical Co., Ltd. Ointments containing FK-506 or derivatives thereof. 5,385,907, Cl. 514-291.000.

Asano, Eiji, to Minolta Camera Kabushiki Kaisha. System with reduced instruction set processor accessing plural memories at different speeds using bank interleaving. 5,386,537, Cl. 395-425.000.

Asaoka, Takemitsu: *See—*
Koano, Fujiko; Shibata, Akihiro; Matsuda, Hideaki; Asaoka, Takemitsu; Kawahara, Ryuichi; Taido, Naokata; Kuraishi, Tadayuki; and Takeda, Sunao, 5,385,900, Cl. 514-218.000.

Asayama, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Obstacle detecting device for a vehicle. 5,386,285, Cl. 356-1.000.

Ash, Stephen C. Lawn trimmer/edge attachment. 5,385,005, Cl. 56-12.700.

Asom, Moses T.: *See—*
Henderson, Gregory H.; West, Lawrence C.; Gaylord, Thomas K.; Roberts, Charles W.; Glytsis, Elias N.; and Asom, Moses T., 5,386,126, Cl. 257-15.000.

Asprey, Robert R., to Cybex Corporation. Temperature compensated extended range computer communications link. 5,386,574, Cl. 395-725.000.

Assaad, Mahmoud C.; and Wagner, David C., to Goodyear Tire & Rubber Company, The. Biased pneumatic tire having a belt structure with six annular layers. 5,385,190, Cl. 152-209.00R.

Aszodi, Jozsef: *See—*
Teutsch, Jean-Georges; Bonnet, Alain; Aszodi, Jozsef; and Gouin d'Ambrieres, Solange, 5,385,897, Cl. 514-210.000.

AT&T Corp.: *See—*
Ahmad, Nisar, 5,386,467, Cl. 379-220.000.
Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., 5,386,466, Cl. 379-220.000.
Beitman, Bruce A., 5,385,487, Cl. 439-540.000.
Boakes, Edward W.; Chylinski, Kathleen J.; and Tuttle, Susan L., 5,386,460, Cl. 379-96.000.
Bohrer, Michael P.; and Mixon, David A., 5,385,809, Cl. 430-311.000.
Britton, Barry K.; and Leung, Wai-Bor, 5,386,156, Cl. 326-37.000.
Chou, Ching-Roung; Rupais, Paul A.; and Shur, David H., 5,386,414, Cl. 370-60.000.
Cotsonas, George P.; Kasieke, Kenneth; Lynn, Dale E.; and Muth, Edwin A., 5,386,457, Cl. 379-61.000.
Daugherty, Thomas H.; DeBruler, Dennis L.; Greenberg, Daniel S.; Hodgdon, David J.; and Murphy, Douglas J., 5,386,417, Cl. 370-54.000.
Degani, Yinon, 5,385,290, Cl. 228-180.220.
Hruska, Christopher D.; McGinn, Todd M.; and Smith, Wayne A., 5,385,097, Cl. 102-202.500.
Jopson, Robert M., 5,386,314, Cl. 359-326.000.
Raghavachari, Partha, 5,386,383, Cl. 365-189.050.

AT&T Laboratories: *See—*
Goossen, Keith W., 5,385,632, Cl. 156-630.000.

Atkinson, Alan W.; Bridge, David R.; and James, Alan, to T&N Technology Limited. Heat shields. 5,385,790, Cl. 428-593.000.

Atlas Copco Airpower: *See—*
Sienack, Desideratus, 5,385,603, Cl. 96-125.000.

Atlas Copco Tools AB: *See—*
Jacobsson, Rolf A., 5,384,985, Cl. 451-344.000.

Atwell, Michael: *See*—
Minneman, Michael; Reindel, Kenneth A.; Banaska, John G.; Bish, Gary K.; Creque, Andy J.; and Atwell, Michael, 5,386,188, Cl. 324-126.000.

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Mascia, Leso; Tonelli, Claudio; and Simeone, Giovanni, 5,386,005, Cl. 528-110.000.

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Dell, John M.; and Yoffe, Gideon W., 5,386,137, Cl. 257-458.000.

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Bernard, Margaret M.; and Schnieders, Lawrence J., 5,385,965, Cl. 524-272.000.

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Cooper, W. Burchall; Nelson, Kenneth P.; Jones, Donald A.; and Avery, John W., 5,386,435, Cl. 375-1.000.

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Paul, Frank W.; Avigdor, Shlomo; and Subba-Rao, Kishore, 5,385,278, Cl. 223-2.000.

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Bagchi, Pranab; Beck, James T.; and Flow, Vincent J., III, to Eastman Kodak Company. Continuous manufacture of gelled micro-precipitated dispersion melts. 5,385,812, Cl. 430-449.000.

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Butler, Douglas; Stevens, E. Henry; Bailey, Richard A.; and Taylor, Thomas C., 5,385,634, Cl. 156-644.000.

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Baker, R. Arnold; and Baker, John L., 5,385,208, Cl. 169-46.000.

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Kaiser, Franz-Josef, 5,385,460, Cl. 425-115.000.

Baldew, Glenn S.; and Vermeulen, N. P. E., to Rhone-Poulenc Rorer GmbH. Use of 2-phenyl-1,2-benziioselenazol-3-(2H)-one. 5,385,726, Cl. 424-10.000.

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Waizmann, Franz, 5,385,095, Cl. 101-424.000.

Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., to AT&T Corp. Automatic initialization of a distributed telecommunication system. 5,386,466, Cl. 379-220.000.

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Hammond, Milton L.; Schwartz, Robert E.; and Balkovec, James M., 5,385,884, Cl. 514-11.000.
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Schwarz, James A.; Putyera, Karol; Jagiello, Jacek; and Bandosz, Teresa J., 5,385,876, Cl. 502-80.000.

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Kurze, Peter; Banerjee, Dora; and Kletke, Hans-Jurgen, 5,385,662, Cl. 205-316.000.

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Cerny, David E., 5,385,561, Cl. 604-264.000.

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Bartle, Alden S.; Wise, Michael A.; Sasaki, Masao; Ishizuka, Hironori; and Kajizuka, Hideharu, to OKI Electric Cable Co., Ltd.; and OKI Telecom. Modular plug and cover therefor. 5,385,484, Cl. 439-460.000.

Bartlett, Janeth M.: *See*—
Anderson, Leslie D.; Bartlett, Janeth M.; Szaflaraki, Diane M.; and Widder, Kenneth J., 5,385,147, Cl. 128-662.020.

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Bauer, Gerhard; Schumacher, Karl-Heinz; Fricke, Hans-Joachim; Wistuba, Eckehardt; and Neumann, Hans J., 5,385,967, Cl. 524-458.000.
Dust, Matthias; Bergmann, Udo; and Schwantje, Gerd, 5,386,042, Cl. 552-239.000.
Muenster, Peter; Freund, Wolfgang; Steiner, Gerd; Walter, Helmut; Westphalen, Karl-Otto; and Gerber, Matthias, 5,386,036, Cl. 548-453.000.
Otterbach, Andreas; Schwarz, Hans V.; Merger, Franz; Schwarz, Wolfgang; Brandt, Eckhardt; Magnussen, Peter; and Mattner, Otto, 5,386,053, Cl. 560-344.000.
Teles, Joaquim H.; Melder, Johann-Peter; Gehrer, Eugen; Harder, Wolfgang; Ebel, Klaus; Groening, Carsten; and Meyer, Regina, 5,386,062, Cl. 568-463.000.

BASF Corporation: *See*—
Fishback, Thomas L.; and Reichel, Curtis J., 5,385,952, Cl. 521-131.000.

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Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,385,977, Cl. 525-113.000.

Bashir, Rashid; Hebert, Francois; and Chen, Datong, to National Semiconductor Corporation. Planarized trench and field oxide and poly isolation scheme. 5,385,861, Cl. 437-67.000.

Basil, John D.; Lin, Chia-Cheng; and Hunia, Robert M., to PPG Industries, Inc. Silica-free UV-absorbing abrasion resistant coatings. 5,385,964, Cl. 524-266.000.

Basso, Alfred L.; and Newton, David A., to Scan-Optics, Inc. Address block location method and apparatus. 5,386,482, Cl. 382-9.000.

Batchler, Bobby W.: *See*—
Young, Randolph G.; Bradshaw, James L.; Batchler, Bobby W.; Sudduth, Barry C.; and Walrath, Craig A., 5,386,540, Cl. 395-425.000.

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Greenhalgh, Lennox P. H.; and Riley, Robert P., 5,385,668, Cl. 210-257.100.

Bates, Dale; Smith, Daniel N.; and Little, Richard F., to Pilot Industries, Inc. Nozzle restrictor assembly. 5,385,179, Cl. 141-312.000.

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Battenberg, Rexford A.: *See*—
Piety, Kenneth R.; Heise, Brian D.; Battenberg, Rexford A.; and King, Willie T., 5,386,117, Cl. 250-330.000.

Battlogg, Stefan. Windshield wiper system with blade assembly drive for maintaining a constant attack angle of the wiper blade on a curved windshield. 5,384,932, Cl. 15-250.230.

Bauer, Gerhard; Schumacher, Karl-Heinz; Fricke, Hans-Joachim; Wistuba, Eckehardt; and Neumann, Hans J., to BASF Aktiengesellschaft. Use of aqueous dispersions as heat-seal adhesives. 5,385,967, Cl. 524-458.000.

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Kuhnert, Jurgen; Zimmermann, Peter; Baumann, Armin; and Kramer, Wolfgang, 5,386,318, Cl. 359-394.000.

Baversten, Bengt I.; and Wivagg, Adrian P., to Combustion Engineering, Inc. Self-expanding waterproof cover for crane hook. 5,386,443, Cl. 376-260.000.

Baxter International Inc.: *See*—
Kim, Kwan; and Packham, Victor S., 5,385,322, Cl. 248-118.000.
Scharf, Michael W.; Veillon, Joseph N., Jr.; and Yatsko, Thomas, 5,385,253, Cl. 215-296.000.
Wong, Joseph; Wood, Ray W.; and McShane, James, 5,385,547, Cl. 604-87.000.

Baxter, Kris E.: *See*—
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Bay Corrugated Container, Inc.: *See*—
LaFreniere, Brian R., 5,385,625, Cl. 156-379.800.

Bayer Aktiengesellschaft: *See*—
Beck, Gunther; and Kaletta, Bernd, 5,386,051, Cl. 558-343.000.
Heinemann, Ulrich; Himmler, Thomas; Dutzmann, Stefan; Hanssler, Gerd; and Dehne, Heinz-Wilhelm, 5,385,905, Cl. 514-256.000.
Immel, Otto; Darsow, Gerhard; Waldmann, Helmut; and Petruck, Gerd-Michael, 5,386,060, Cl. 564-450.000.
Kruger, Ralf; Harrison, David B.; and Morbitzer, Leo, 5,385,981, Cl. 525-276.000.
Ludwig, Georg-Wilhelm; Exner, Otto; Paulus, Wilfried; Buchel, Karl-Heinz; and Holmwood, Graham, 5,385,926, Cl. 514-383.000.
Pentling, Ursula; Buysch, Hans-Josef; Puppe, Lothar; Rohlk, Kai; Grosser, Rolf; and Paul, Hans-Ingolf, 5,386,067, Cl. 570-211.000.
Scholl, Hans J.; Muller, Hanns-Peter; and Welte, Rainer, 5,386,054, Cl. 560-352.000.
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Bayer, Dean M.: *See*—
Morgan, Terry B.; and Bayer, Dean M., 5,385,375, Cl. 293-109.000.

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Roll, Georg; Ohm, Heinz F.; and Hauser, Berthold, 5,386,366, Cl. 364-426.010.

Bayya, Shyam S.; Synder, Robert L.; Gopalakrishman, Sudhakar; and Schulze, Walter A., to Alfred Univeristy. Process for preparing a thallium-containing superconductor. 5,385,882, Cl. 505-501.000.

Beac Sarl: *See*—
Huys, Erwin, 5,385,398, Cl. 312-9.480.

Beale, William T., to Sunpower, Inc. Free piston stirling machine having variable spring between displacer and piston for power control and stroke limiting. 5,385,021, Cl. 62-6.000.

Beaman, Brian S.; Doany, Fuad E.; Dudek, Thomas J.; Lanzetta, Alphonso P.; Shih, Da-Yuan; Tkazyik, William J.; and Walker, George F., to International Business Machines Corporation. Flex circuit card elastomeric cable connector assembly. 5,386,344, Cl. 361-785.000.

Beamish, Claudia H.; and Derrington, Michael A. L. Transportable seat. 5,385,386, Cl. 297-256.160.

Beard, Terry D.; Dellaria, Joseph; and Ketcham, James S., to Digital Theater Systems, L.P. Motion picture digital sound system and method with primary sound storage edit capability. 5,386,255, Cl. 352-5.000.

Beattie, Irene; Desai, Narendra M.; Vanover, Michael T.; and Voltin, John A., to International Business Machines Corporation. Selective control of window related overlays and underlays. 5,386,505, Cl. 395-158.000.

Beaurain, Andre : *See*—
Lehe, Jean-Robert; Beaurain, Andre ; Bosson, Rene ; and Tiret, Etienne, 5,385,442, Cl. 415-104.000.

Beck, Erhard; and Otto, Albrecht. Valve block and method of assembling an element thereto. 5,385,396, Cl. 303-119.200.

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Beck, James T.: *See*—
Bagchi, Pranab; Beck, James T.; and Flow, Vincent J., III, 5,385,812, Cl. 430-449.000.

Beck, Lawrence R.; Franko, Joseph J.; and King, Daniel L., to General Motors Corporation. High speed AC motor controller. 5,386,185, Cl. 318-762.000.

Beck, Susan A.: *See*—
Tisdale, Michael J.; and Beck, Susan A., 5,385,740, Cl. 424-573.000.

Becton, Dickinson and Company: *See*—
Brimhall, Greg L., 5,385,554, Cl. 604-168.000.
Hausser, Roderick J., 5,385,555, Cl. 604-192.000.

Bedi, Ram D., to K.J. Manufacturing Co. Self-contained fuel filler system. 5,385,178, Cl. 141-59.000.

Beecher, Gary R.: *See*—
Khachik, Frederick; Beecher, Gary R.; and Li, Betty W., 5,386,063, Cl. 568-494.000.

Beermann, Ewald H., to Martor-Argentax E. H. Beermann KG. Razor knife with autoretracting blade. 5,384,963, Cl. 30-162.000.

Beernink, Kevin J.: *See*—
Thornton, Robert L.; and Beernink, Kevin J., 5,386,428, Cl. 372-50.000.

Behrens, Michael; and Siebke, Michael, to U.S. Philips Corporation. Multiplexer for at least two independently operating signal sources. 5,386,419, Cl. 370-105.100.

Beitman, Bruce A., to AT&T Corp. Apparatus for electrically operating devices in a controlled environment. 5,385,487, Cl. 439-540.000.

Bell Communications Research, Inc.: *See*—
Addeo, Eric J.; Desmarais, Joseph J.; and Shtirmer, Gennady, 5,386,465, Cl. 379-202.000.
McAuley, Anthony J.; Tsuchiya, Paul F.; and Wilson, Daniel V., 5,386,413, Cl. 370-54.000.

Bell, Eric L., to Eastman Kodak Company. Photographic emulsions containing internally and externally modified silver halide grains. 5,385,817, Cl. 430-567.000.

Bell, James A. E.; and Stephenson, Thomas F., to Inco Limited. Nickel coated carbon preforms. 5,385,195, Cl. 164-66.100.

Belli, Remo D., to Remo, Inc. Reinforced drumhead. 5,385,076, Cl. 84-414.000.

Beloit Technologies, Inc.: *See*—
Bielagus, Joseph B., 5,385,309, Cl. 241-235.000.

Belvedere, Paul C.: *See*—
Kittelsen, Jon D.; Belvedere, Paul C.; and Kittelsen, Anne M., 5,385,155, Cl. 128-861.000.

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Kruse, Charles J.; Preston, Kyle L.; and Benac, Brian L., 5,386,065, Cl. 568-691.000.

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Halliburton, Ronald D., 5,385,347, Cl. 273-142.00R.

Benge, William D.: *See*—
Gosselin, Peter G.; and Benge, William D., 5,385,303, Cl. 219-394.000.

Benner, Pamela K.: *See*—
Vroman, Albert L.; Benner, Pamela K.; and Stedman, Shelly A., 5,385,675, Cl. 210-728.000.

Bennett, Blake J.; and Hagstrom, David A., to Bennett Marine, Incorporated of Deerfield Beach. Boat trim control and monitor system. 5,385,110, Cl. 114-285.000.

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Bennett, Blake J.; and Hagstrom, David A., 5,385,110, Cl. 114-285.000.

Bennett, Paul T.; Gray, Randall C.; and Pigott, John, to Motorola, Inc. Temperature stable square wave oscillator. 5,386,201, Cl. 331-176.000.

Bennion, William: *See*—
Moore, Donald J.; and Bennion, William, 5,385,381, Cl. 296-117.000.

Benson, Bradley J.; White, Robert T.; Schilling, James W., Jr.; Buckley, Douglas I.; and Scarborough, Robert M., to Scios Nova Inc. DNA encoding analogs of human alveolar surfactant protein SP-5. 5,385,840, Cl. 435-240.200.

Beowulf Holdings: *See*—
Nobles, Anthony A.; Lancaster, Arthur; Flower, Robert J.; and Broach, Ben G., Jr., 5,385,572, Cl. 606-185.000.

Berg, Alex; Janssen, Wim; Balle, Stefan; Kunz, Rudolf G., deceased (by Kunz, Eberhard C., executor); and Klein, Wolfdieter, to Acetocell GmbH & Co. KG. Delignification of cellulosic raw materials using acetic acid, nitric acid and ozone. 5,385,641, Cl. 162-76.000.

Berg, Howard M.: *See*—
Liu, Jay J.; Berg, Howard M.; and Hawkins, George W., 5,385,869, Cl. 437-209.000.

Berg, Lloyd, to Berg, Lloyd. Separation of 1-hexene from hexane by azeotropic distillation. 5,385,649, Cl. 203-62.000.

Berg Technology, Inc.: *See*—
Schell, Mark S., 5,385,489, Cl. 439-571.000.

Bergmann, Udo: *See*—
Dust, Matthias; Bergmann, Udo; and Schwantje, Gerd, 5,386,042, Cl. 552-239.000.

Bergstrand, Hakan S. A. M.: *See*—
Andersson, Carl-Magnus A.; Bergstrand, Hakan S. A. M.; Jakupovic, Edib; Josefsson, Bo-Goran; Lindvall, Magnus L.; Sarnstrand, Bengt O.; and Teneberg, Eric N. G., 5,385,904, Cl. 514-255.000.

Bernard, Gilbert: *See*—
Lonardi, Emile; Bernard, Gilbert; Cimenti, Giovanni; and Venturini, Jean-Jacques, 5,385,437, Cl. 414-204.000.

Bernard, Margaret M.; and Schnieders, Lawrence J., to Avery Dennison Corporation. Removable pressure-sensitive adhesives for recyclable substrates. 5,385,965, Cl. 524-272.000.

Bernstein, Michael S.; Sundberg, Brian C.; and Crossley, David W., to Safety 1st, Inc. Diaper pail. 5,385,259, Cl. 220-404.000.

Berty, Yale. Stereo endoscope for inserting into body cavities. 5,385,138, Cl. 128-6.000.

Bersen, Johannes; Hanschke, Clemens; Kaczor, Michael; Klein, Hermann-Josef; Maczkowiak, Michael; and Schmitt, Wolfgang, to Dr. Bruno Lange GmbH. Device for automatically evaluating a plurality of probe ingredients by means of chemical sensors. 5,386,287, Cl. 356-326.000.

Bertocchio, Rene: *See*—
Lantz, Andre; Bertocchio, Rene; and Lambert, Patrick, 5,386,068, Cl. 570-122.000.

Bettis Corporation: *See*—
Owen, Charles D.; Rembert, Michael E.; and Davis, Albert S., 5,385,167, Cl. 137-315.000.

Betz Laboratories, Inc.: *See*—
Liao, Wen P.; and Purnell, Deborah L., 5,385,676, Cl. 210-734.000.

Bhagwat, Anil; and Howard, Alan, to Xerox Corporation. Dispensing cartridge. 5,385,181, Cl. 141-364.000.

Bianchini, Phil: *See*—
Patel, Bharat; Bianchini, Phil; and Tanrikulu, Nilufer, 5,385,783, Cl. 428-353.000.

Bianco, Mark E., to Hughes Aircraft Company. Method and apparatus for securely conveying network control data across a cryptographic boundary. 5,386,471, Cl. 380-49.000.

Bichler, Helmut; and Herfurth, Michael, to Siemens Aktiengesellschaft. Method for anticipatory control of a switched-mode power supply for compensating for fluctuations in feed voltage and circuit configuration for performing the method. 5,386,187, Cl. 323-222.000.

Bidwell, Christopher C., to Circle R Central, Inc. Object configuration for uniquely stacking same. 5,385,326, Cl. 248-346.100.

Bielagus, Joseph B., to Beloit Technologies, Inc. Segmented wood chip cracking roll. 5,385,309, Cl. 241-235.000.

Bierend, Steven J.; Tichenor, Clyde L.; and Ginsburgh, Irwin. Utility-power operated aerosol spray can. 5,385,271, Cl. 222-153.000.

Bigg, Dennis; Duflos, Alain; and Rieu, Jean-Pierre, to Pierre Fabre Medicament. Sulfonamides derived from benzocyclic or benzoheterocyclic acids, their preparation and application in therapeutics. 5,385,931, Cl. 514-443.000.

Billet, Robert L., to Robert Billet Promotions, Inc. Portable beverage dispenser with anti-foaming tank. 5,385,275, Cl. 222-399.000.

Binaghi, Marco: *See*—
Marciandi, Franco; Giudici, Dario; and Binaghi, Marco, 5,385,973, Cl. 524-730.000.

Binner, Siegfried, to Volund Ecology Systems A/S. Method and apparatus for incinerating different kinds of solid and possibly liquid waste material. 5,385,104, Cl. 110-246.000.

Birck, Jonathan D.; and Silaski, Grayson C., to Virtual Corporation. Real-time hearing aid simulation. 5,386,475, Cl. 381-68.000.

Bird, Neil C., to U.S. Philips Corporation. Matrix display device with light sensing function and time-shared amplifier. 5,386,543, Cl. 395-500.000.

Bisaha, Sharon N.: *See*—
Gammill, Ronald B.; Bisaha, Sharon N.; Timko, Joseph M.; Judge, Thomas M.; Barbachyn, Michael R.; and Kim, Kyoung S., 5,385,906, Cl. 514-258.000.

Bisgaard, Nikolai; and Hartmann, Jorgen, to GN Danavox A/S. Locking device for a hearing aid battery chamber. 5,386,476, Cl. 381-69.000.

Bish, Gary K.: *See*—
Minneman, Michael; Reindel, Kenneth A.; Banaska, John G.; Bish, Gary K.; Creque, Andy J.; and Atwell, Michael, 5,386,188, Cl. 324-126.000.

Bishai, Macram N., to McCord Win Textron. Adjustable vehicle seat. 5,385,389, Cl. 297-339.000.

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Chu, An G. Flashlight. 5,386,352, Cl. 362-206.000.
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Chu, Jack S. Water exerciser. 5,385,497, Cl. 441-129.000.
Chu, Jen Y. Vane-type rotary compressor. 5,385,458, Cl. 418-255.000.
Chues, Ng T. Cerec inlay holder and inserter. 5,385,471, Cl. 433-153.000.
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Chundury, Deenadayalu; Scheibelhoffer, Anthony S.; Leonard, Berdine L.; Thompson, Ronald E.; McAllister, Randall S.; Wimolkiatisak, Surachai; and Dean, Anthony F., Jr., to Ferro Corporation. Multilayer thermoformable structure. 5,385,781, Cl. 428-330.000.
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CK Technologies, Inc.: *See*—
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Clark, John R. Method of geochemical prospecting. 5,385,827, Cl. 435-9.000.
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Cleasby, Kenneth G., to Trinova Limited. Two-stage hydraulic valves. 5,385,171, Cl. 137-625.640.
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Cohen, Leon R., to Woodstream Corporation. Glue board. 5,384,981, Cl. 43-114.000.
Coiro, Michael A., Sr.; and Murray, Dale R., to Allentown Caging Equipment Co., Inc. Assembly for animals with positive disconnect from a watering system. 5,385,118, Cl. 119-18.000.
Coleman, Larry E. Method for flushing an automatic transmission cooling system. 5,385,613, Cl. 134-22.100.
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Clancy, Kevin F., 5,386,091, Cl. 200-517.000.
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Connonrs, Geoff W. Pipeline ballasting device. 5,385,430, Cl. 405-157.000.
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Coon, Richard L., III. Vehicle light monitoring apparatus. 5,386,208, Cl. 340-461.000.
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Odelius, Larry D., 5,385,169, Cl. 137-614.030.
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Graham, Andrew T., 5,385,983, Cl. 525-330.100.
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Kiefer, Garry E., 5,385,893, Cl. 514-80.000.
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Tarshiani, Yassin Y.; and Weber, Steven A., 5,385,955, Cl. 522-31.000.

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Wulf, Thomas, 5,385,560, Cl. 604-264.000.

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Debregeas, Patrice; and Leduc, Gerard, 5,385,739, Cl. 424-494.000.

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Emert, Jacob; Lundberg, Robert D.; and Gutierrez, Antonio, 5,385,687, Cl. 252-56.00R.
Gutierrez, Antonio; and Lundberg, Robert D., 5,385,684, Cl. 252-47.500.
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Higuchi, Hiroyuki; Matsushita, Kiichiro; Ezoe, Minoru; and Shinomura, Toshihiko, 5,385,777, Cl. 428-316.600.

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Mills, Michael E.; Teramoto, Yoshihiko; Faley, Timothy L.; and Nakagawa, Masaru, 5,385,702, Cl. 264-103.000.

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Cronvich, James T.; Farag, Samir F.; De Cicco, Daniel J.; and Culligan, John J., 5,386,183, Cl. 318-434.000.

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Singie, Arthur W., II; Steiner, Thomas J.; Cristiano, James J.; Macek, Matthew J.; Yeager, Debra; and Farah, Riad A., 5,385,382, Cl. 297-180.130.

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Roche, Bonnie; and Farber, Samuel, 5,384,999, Cl. 52-764.000.

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Farquharson, Graeme J.; Kildea, John D.; Gross, Anthony E.; and Grocott, Stephen C., to Nalco Chemical Company. Liquor oxalate stabilizers. 5,385,586, Cl. 23-305.00A.

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Gwilliam, Scott B.; Pell, Richard A.; and Farr, Aaron V., 5,385,020, Cl. 62-3.700.

Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., to BASF Lacke + Farben AG. Polymeric reaction products. 5,385,977, Cl. 525-113.000.

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Fee, John M.: *See*—
Miller, Win R.; Dahlke, Sheri H.; and Fee, John M., 5,385,688, Cl. 252-73.000.

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Caveness, Lorine S.; Glass, Henry G.; and Feldman, Alan B., 5,384,914, Cl. 2-9.000.

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Ferri, Vincent, to Westinghouse Air Brake Company. Recoverable and a direct release and non-recoverable bail-off logic arrangement for use on a railroad vehicle. 5,385,392, Cl. 303-20.000.

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Chundury, Deenadayalu; Scheibelhoffer, Anthony S.; Leonard, Berdine L.; Thompson, Ronald E.; McAllister, Randall S.; Wimolkiatisak, Surachai; and Dean, Anthony F., Jr., 5,385,781, Cl. 428-330.000.

Ferry, James E. Boots for outdoor use by sports persons. 5,384,971, Cl. 36-105.000.

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Wlodarczyk, Marek T.; and Vokovich, Daniel, 5,385,053, Cl. 73-705.000.

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Dunmire, Charles W.; Whitelaw, Dennis G.; and Fields, Richard D., 5,385,166, Cl. 137-15.000.

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Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Garavaglia, Carlo; and Mirenna, Luigi, 5,385,892, Cl. 514-63.000.

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Emmons, William D.; Finch, William C.; and Morgan, Meredith A., 5,385,960, Cl. 523-205.000.

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Fiori, David, Jr. Signal conditioning apparatus. 5,386,148, Cl. 307-49.000.

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Snowden, Roger L.; Mahaim, Cyril; and Simmons, Dana P., 5,386,039, Cl. 568-355.000.

Fischer Imaging Corporation: *See*—
Siczek, Bernard W., 5,386,447, Cl. 378-37.000.

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Weber, Wilfried, 5,384,939, Cl. 24-306.000.

Fish, Michael L. Synthesis of ultra-hard abrasive particles. 5,385,715, Cl. 423-446.000.

Fish, Richard I. Aquatic toy. 5,385,501, Cl. 446-154.000.

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Slovinsky, Manuel; Tarizzo, Jeffrey R.; Fisher, Dennis K.; and Briddell, Brian J., 5,385,772, Cl. 428-220.000.

Fisher, Joyce M.: *See*—
Rabinovitz, Marco; and Fisher, Joyce M., 5,385,933, Cl. 514-499.000.

Fisher, Stephen A.: *See*—
Cady, John B.; Howard, Mark S.; Fisher, Stephen A.; Lloyd, Robert C. W.; and Thomas, Alan V., 5,385,212, Cl. 180-69.210.

Fitch, James C.; and Wu, Zhan, to Diagnetics, Inc. Contamination measurement apparatus. 5,385,043, Cl. 73-61.730.

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Fitt, Larry E.; and McNary, Harry T., to CPC International Inc. Absorbable dusting powder derived from reduced-protein modified starch. 5,385,608, Cl. 106-210.000.

Flack, Mary R.; Knazek, Richard; and Reidenberg, Marcus, to United States of America, Health and Human Services. Gossypol acetic acid for the treatment of cancer. 5,385,936, Cl. 514-548.000.

Flaugh, Michael E., to Eli Lilly and Company. Tetrahydrobenz [CD] indazoles, compositions and use. 5,385,928, Cl. 514-403.000.

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Seely, Warren L.; Kao, Joseph H.; and Fleming, James H., 5,386,204, Cl. 333-208.000.

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Peters, Alan R., 5,384,978, Cl. 40-155.000.

Flow, Vincent J., III: *See*—
Bagchi, Pranab; Beck, James T.; and Flow, Vincent J., III, 5,385,812, Cl. 430-449.000.

Flower, Robert J.: *See*—
Nobles, Anthony A.; Lancaster, Arthur; Flower, Robert J.; and Brosch, Ben G., Jr., 5,385,572, Cl. 606-185.000.

FMC Corporation: *See*—
Mannen, Bryce L.; and Rogers, Steve, 5,385,045, Cl. 73-462.000.

Fogliani, Giuseppe: *See*—
Sebastiani, Enrico; and Fogliani, Giuseppe, 5,385,467, Cl. 431-326.000.

Fogt, James F.; and Caillat, Jean-Luc, to Copeland Corporation. Multiple compressor in a single shell. 5,385,453, Cl. 417-410.500.

Folmsbee, Alan C., to Advanced Micro Devices, Inc. Low voltage charge pumps using p-well driven MOS capacitors. 5,386,151, Cl. 327-536.000.

Foos, Douglas E.; and Schindler, Fred, to Plastofilm Industries Inc. Packaging for fragile articles having controlled collapsibility. 5,385,232, Cl. 206-320.000.

Foote, Jerrold L.: *See*—
Lampropoulos, Fred P.; and Foote, Jerrold L., 5,385,549, Cl. 604-100.000.

Ford Motor Company: *See*—
Hofmann, Harald, 5,385,065, Cl. 74-331.000.
Matthews, Jacob, 5,385,126, Cl. 123-179.210.
Pao, Yi-Hsin, 5,386,343, Cl. 361-761.000.
Riaz, Umar; and Proscia, James W., 5,385,751, Cl. 427-126.200.
Single, Arthur W., II; Steiner, Thomas J.; Cristiano, James J.; Macek, Matthew J.; Yeager, Debra; and Farah, Riad A., 5,385,382, Cl. 297-180.130.
Wickenheiser, Francis J.; Sterling, Timothy J.; and Ngo, Tom T., 5,385,370, Cl. 280-808.000.
Zimlich, Glenn A.; Orzel, Daniel V.; and Truong, Tri T., 5,385,016, Cl. 60-274.000.

Forest Products Machinery, Inc.: *See*—
Head, George W., Jr.; and Landers, Reginald R., 5,385,186, Cl. 144-245.00A.

Forrest, Charles P. Dual motion blocking sled. 5,385,523, Cl. 482-83.000.

Forslund, Carl V., III: *See*—
Faiks, Frederick S.; Forslund, Carl V., III; Scheper, Robert M.; Anderson, Craig M.; Knoblock, Glenn A.; and Groendal, Dale M., 5,385,388, Cl. 297-301.000.

Fossum, Eric R.; Cunningham Thomas J.; Krabach, Timothy N.; and Staller, Craig O., to United States of America, National Aeronautics and Space Administration. Monolithic in-based III-V compound semiconductor focal plane array cell with single stage CCD output. 5,386,128, Cl. 257-183.100.

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Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,385,552, Cl. 604-167.000.

Foster, Donald D.; and Nelson, Philip L., to Contico. Low cost trigger sprayer. 5,385,302, Cl. 239-333.000.

Fowler, John O.: *See*—
Boardman, James E.; and Fowler, John O., 5,385,204, Cl. 165-170.000.

Foye, David M.: *See*—
Rein, Alan D.; and Foye, David M., 5,385,297, Cl. 236-49.300.

Framatome: *See*—
Deltour, Damien; and Dumont, Pascal, 5,386,396, Cl. 367-150.000.
Leroy, Claude; Millot, Jean Paul; and Gonse, Eric, 5,386,439, Cl. 376-209.000.
Stalport, Gerard; Giraud, Benoit; and Andujar, Valerie, 5,385,122, Cl. 122-511.000.

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Ali-Yahia, Tahar; and Dana, Michel, 5,386,379, Cl. 365-49.000.

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Villedieu, Eric; and Francois, Daniel, 5,385,102, Cl. 104-2.000.

Francone, Nicola: *See*—
Malaspina, Giorgio; and Francone, Nicola, 5,385,376, Cl. 294-1.300.

Frank, Frederick W.; and Herr, Benjamin M., IV, to General Motors Corporation. Air bag deflection shield. 5,385,366, Cl. 280-728.00B.

Franko, Joseph J.: *See*—
Beck, Lawrence R.; Franko, Joseph J.; and King, Daniel L., 5,386,185, Cl. 318-762.000.

Franzen, Jochen; Heinen, Gerhard; Weiss, Gerhard; and Gabling, Reemt-Holger, to Bruker-Franzen Analytik GmbH. Method and device for in-phase measuring of ions from ion trap mass spectrometers. 5,386,113, Cl. 250-292.000.

Frappier, John P.: *See*—
Lepine, James J.; and Frappier, John P., 5,385,520, Cl. 482-54.000.

Frederick, Darrel L. Dinnerware securement assembly. 5,384,938, Cl. 24-308.000.

Freeman, Jimmy; Freeman, Richard; and Spector, George. Portable seat carrier. 5,385,390, Cl. 297-380.000.

Freeman, Richard: *See*—
Freeman, Jimmy; Freeman, Richard; and Spector, George, 5,385,390, Cl. 297-380.000.

Freidhoff, Carl B.; Young, Robert M.; and Sriram, Saptharishi, to Westinghouse Electric Corporation. Solid state micro-machined mass spectrograph universal gas detection sensor. 5,386,115, Cl. 250-281.000.

Freisale, Manfred F. A. Screening arrangement. 5,385,242, Cl. 209-399.000.

Freissmuth, Alfred. Agent for desulfurization, dephosphorization, desiliconizing and demitriding of pig iron, cast iron and chromium and manganese containing melts and process for the treatment thereof. 5,385,599, Cl. 75-326.000.

Fremerey, Johan K.: *See*—
Reimer, Peter; Schneider, Helmut; and Fremerey, Johan K., 5,386,166, Cl. 310-90.500.

Fresenius USA, Inc.: *See*—
Slater, Glenn L.; Woods, Jerry; Alford, Steve; Updyke, Dave; and Methe, Rick, 5,385,564, Cl. 604-416.000.

Freund, Wolfgang: *See*—
Muenster, Peter; Freund, Wolfgang; Steiner, Gerd; Walter, Helmut; Westphalen, Karl-Otto; and Gerber, Matthias, 5,386,036, Cl. 548-453.000.

Fricke, Hans-Joachim: *See*—
Bauer, Gerhard; Schumacher, Karl-Heinz; Fricke, Hans-Joachim; Wistuba, Eckehardt; and Neumann, Hans J., 5,385,967, Cl. 524-458.000.

Friedman, William H., to Horseradish Spray, Inc. Horseradish preparation for the treatment of nasal and sinus dysfunction. 5,385,734, Cl. 424-434.000.

Frihart, Charles R.; and Gordon, Ronald L., to Union Camp Corporation. Adhesive of amine-terminated polyamide and epoxy resin. 5,385,986, Cl. 525-420.500.

Frisbie, Milo W.: *See*—
Swapp, Mavin C.; and Frisbie, Milo W., 5,385,441, Cl. 414-627.000.

Fry, Rupert J., to Molex Incorporated. Electrical connector with flexible terminal latch means and terminal position assurance device. 5,385,491, Cl. 439-595.000.

Fry, Scott M.; Nylander-Hill, Pamela R.; and Paranjape, Sushama M., to International Business Machines Corporation. Apparatus and method for anticipated error recovery using debris profiles. 5,386,324, Cl. 360-53.000.

Fu, Lin S. Copper sleeve for lamp sockets. 5,385,485, Cl. 439-419.000.

Fuhrman, Andrew M.; and Fuhrman, Roxanne S. Couple's intimacy reciprocating and pivoting two seat assembly. 5,385,154, Cl. 128-845.000.

Fuhrman, Roxanne S.: *See*—
Fuhrman, Andrew M.; and Fuhrman, Roxanne S., 5,385,154, Cl. 128-845.000.

Fuji Electric Co., Ltd.: *See*—
Maeda, Takao; Nishizawa, Tatsuo; and Watanabe, Kenji, 5,386,193, Cl. 324-547.000.
Sato, Yasushi; and Watanabe, Toshiharu, 5,385,338, Cl. 266-234.000.

Fuji Photo Film Co., Ltd.: *See*—
Hirano, Mitsunori, 5,385,811, Cl. 430-438.000.
Kotani, Takaaki; Takada, Seiji; Goto, Shigenori; and Saito, Tatsuo, 5,386,263, Cl. 354-403.000.
Miura, Toshihiko; and Inaba, Hiroo, 5,385,779, Cl. 428-323.000.
Nishi, Seiki, 5,386,539, Cl. 395-425.000.
Okamoto, Yasuo; Kondo, Syunichi; and Ukai, Toshinao, 5,385,807, Cl. 430-283.000.
Uchida, Minoru; Kawagishi, Toshio; and Yoshioka, Yasuhiro, 5,385,814, Cl. 430-504.000.
Yasuda, Hiroaki; and Kojima, Tetsuya, 5,386,124, Cl. 250-585.000.

Fuji Xerox Co., Ltd.: *See*—
Fujita, Yuzo, 5,386,553, Cl. 395-600.000.
Inaba, Yoshihiro; Kubo, Tsutomu; and Takashima, Koichi, 5,385,802, Cl. 430-137.000.
Itonori, Katsuhiko; and Shimizu, Noboru, 5,386,908, Cl. 395-161.000.
Sato, Yoshihide, 5,386,179, Cl. 315-169.300.

Fujii, Takeshi: *See*—
Furuta, Motonobu; Abe, Hiroomi; Fujii, Takeshi; and Yamamoto, Masashi, 5,385,976, Cl. 525-68.000.

Fujii, Toshiro; Ito, Koichi; and Iwama, Kazuaki, to Kabushiki Kaisha Toyoda Jidoshikki Seisakusho. Swash-plate type compressor with tapered bearings and rotary valves. 5,385,451, Cl. 417-269.000.

Fujikawa, Hisao; Katsui, Hideo; and Ogawa, Hiroshi, to Daicel Chemical Industries, Ltd. Process for the preparation of an alkyl vinyl ether/maleic anhydride copolymer. 5,385,995, Cl. 526-216.000.

Fujiki, Osamu: *See*—
Shimizu, Kentaro; Fujiki, Osamu; and Hitotsuyanagi, Mitsuru, 5,385,626, Cl. 156-406.400.

Fujiki, Yasuo: *See*—
Amano, Toshinori; Sakai, Seiji; Fujiki, Yasuo; Ueyama, Masanori; Sakamoto, Yukio; and Takagi, Daisuke, 5,386,335, Cl. 361-56.000.

Fujimoto, Hideki; and Manabe, Yoshinori, to Kabushiki Kaisha Toshiba. Positional adjustment of resoluton in radiation CT scanner. 5,386,446, Cl. 378-20.000.

Fujimoto, Nobuhiro: *See*—
Ikeuchi, Tadashi; Mori, Kazuyuki; and Fujimoto, Nobuhiro, 5,386,109, Cl. 250-214.00R.

Fujimura, Yoshiichi; and Matsuura, Shizutaka, to Takata Corporation. Seat belt retractor. 5,385,313, Cl. 242-377.000.

Fujino, Akihiko: *See*—
Ishibashi, Kenji; Hara, Yoshihiro; Yukawa, Kazuhiko; Fujino, Akihiko; Maeda, Yasuo; Ohmori, Shigeto; Ishito, Fumiaki; Ootsuka, Hiroshi; and Miyazawa, Masayuki, 5,386,262, Cl. 354-402.000.

Fujino, Masato: *See*—
Iwatani, Hidetoshi; Kazama, Masakazu; and Fujino, Masato, 5,386,206, Cl. 336-200.000.

Fujioka, Keiji: *See*—
Yamahira, Yoshiya; Fujioka, Keiji; Sato, Shigeji; and Takada, Yoshihiro, 5,385,738, Cl. 424-489.000.

Fujioka, Takafumi; Teramoto, Shuji; Tominaga, Michiaki; and Yabuuchi, Yoichi, to Otsuka Pharmaceutical Company, Limited. Cardiotonic carbostyril agents for treating heart ailments. 5,385,914, Cl. 514-312.000.

Fujisawa, Koichi: *See*—
Higashii, Takayuki; Kurimoto, Isao; Toda, Shoji; Minai, Masayoshi; Tani, Takeshi; Kawakami, Chizu; Fujisawa, Koichi; and Imamura, Kiyoshi, 5,385,693, Cl. 252-299.650.

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Asakura, Sotoo; Murakami, Yoshio; Kanagawa, Nobuto; and Nakate, Toshiomi, 5,385,907, Cl. 514-291.000.

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Niekawa, Yukihisa, 5,385,478, Cl. 439-67.000.

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Yokoyama, Keiichi; Hiwara, Akio; Fujita, Shigeru; and Omaru, Atsuo, 5,385,794, Cl. 429-194.000.

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Akiyama, Ryota; Yabe, Toshihiro; and Motohashi, Kazutoshi, 5,386,468, Cl. 380-25.000.
Fujiwara, Toru; Yanagi, Shigeyuki; and Ikeda, Toru, 5,386,405, Cl. 369-59.000.
Ikeuchi, Tadashi; Mori, Kazuyuki; and Fujimoto, Nobuhiro, 5,386,109, Cl. 250-214.00R.
Komuro, Yasuko; Yajima, Noboru; and Yoshida, Hiroshi, 5,386,418, Cl. 370-103.000.
Nakamura, Kei, 5,386,544, Cl. 395-575.000.
Oikawa, Yoichi, 5,386,488, Cl. 385-92.000.
Sugawara, Hideo, 5,386,214, Cl. 343-700.0MS.
Taoka, Hideho, 5,386,389, Cl. 365-230.060.
Yamagishi, Yasuo; Shimizu, Kanae; Mizutani, Daisuke; Owada, Tamotsu; Ishizuki, Yoshikatsu; and Hashii, Hideya, 5,386,430, Cl. 372-57.000.
Yonemoto, Ryuji, 5,386,150, Cl. 327-141.000.
Yumioka, Tatsuya; Kaizawa, Toshiharu; Hamada, Kenichi; and Uesaka, Takeshi, 5,386,550, Cl. 395-575.000.

Fujitsu VLSI Limited: *See*—
Taoka, Hideho, 5,386,389, Cl. 365-230.060.

Fujiwara, Akira: *See*—
Hamazaki, Hirohide; and Fujiwara, Akira, 5,385,987, Cl. 525-445.000.

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Ohkura, Yuji; and Fujiwara, Masatoshi, 5,386,433, Cl. 372-96.000.

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Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 5,385,998, Cl. 526-348.600.

Fukui, Tetsuro; Yoshinaga, Kazuo; Mitsutake, Hideaki; Oikawa, Katsuya; Takeuchi, Shinsuke; Miyazaki, Takeshi; Takasu, Yoshio; Mouri, Akihiro; Katayama, Masato; and Isaka, Kazuo, to Canon Kabushiki Kaisha. Photosensitive material and image forming method. 5,385,810, Cl. 430-351.000.

Fukunaga, Koji: *See*—
Takase, Susumu; Fukunaga, Koji; and Nakamura, Kazuhiro, 5,386,572, Cl. 395-725.000.

Fukushima, Toshimitsu: *See*—
Kizawa, Yoshihiro; Fukushima, Toshimitsu; Katsuyama, Hiroyoshi; Makino, Isamu; and Yamada, Toshiyuki, 5,385,031, Cl. 62-186.000.

Fulcher, Mark: *See*—
Olson, William L.; Currier, David W.; Klosowiak, Tomasz L.; and Fulcher, Mark, 5,386,341, Cl. 361-749.000.

Fulford, Raymond: *See*—
Mardero, Steve; Fulford, Raymond; and Van de Mosselaer, Harry, 5,384,927, Cl. 5-662.000.

Fullarton, Sonya G.: *See*—
Veeneman, Ron C.; Fullarton, Sonya G.; Peters, Dana C.; Rehder, Michael C.; Rose, K. Timothy; Tranter, Jeff J.; and Weatherson, Andrew J., 5,386,459, Cl. 379-93.000.

Fullerton, Kathy L.: *See*—
Lee, Sunggyu; Gencer, Mehmet A.; Fullerton, Kathy L.; and Azzam, Fouad O., 5,386,055, Cl. 562-512.200.

Furuta, Motonobu; Abe, Hiroomi; Fujii, Takeshi; and Yamamoto, Masashi, to Sumitomo Chemical Company, Limited. Thermoplastic resin composition. 5,385,976, Cl. 525-68.000.

Furuyama, Tohru, to Kabushiki Kaisha Toshiba. Semiconductor device having groups of pads which receive the same signal. 5,386,127, Cl. 257-48.000.

Futaba Denshi Kogyo K.K.: *See*—
Ogawa, Yukio; and Yamaura, Tatsuo, 5,385,499, Cl. 445-24.000.

Futaya, Ryuji: *See*—
Ozawa, Hiroyoshi; Kamiya, Noboru; and Futaya, Ryuji, 5,385,979, Cl. 525-145.000.

G.D. Searle & Co.: *See*—
Hanson, Gunnar J., 5,385,898, Cl. 514-210.000.

Gabillard, Bertrand: *See*—
Cantiant, Thierry; Gabillard, Bertrand; Mifsud, Jean-Paul; and Rapoport, Stuart, 5,386,392, Cl. 365-233.000.

Gabler, Oskar: *See*—
Merkt, Thilo; Schafer, Horst; Feldle, Gunter; and Gabler, Oskar, 5,385,448, Cl. 416-229.00R.

Gabling, Reemt-Holger: *See*—
Franzen, Jochen; Heinen, Gerhard; Weiss, Gerhard; and Gabling, Reemt-Holger, 5,386,113, Cl. 250-292.000.

Gadberry, Donald L.: *See*—
Hart, Charles C.; Ritchart, Mark A.; and Gadberry, Donald L., 5,385,553, Cl. 604-167.000.

Gahan, Christopher J.: *See*—
Carter, Steven H.; Lockyer, Terence D.; and Gahan, Christopher J., 5,386,470, Cl. 380-48.000.

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Crisman, Mary B.; Daly, James C.; Day, Arthur M.; Gainey, Charles W., Jr.; Greenstein, Paul G.; Hughes, Duane C.; Rodell, John T.; and Walsh, Kathleen M., 5,386,512, Cl. 395-200.000.

Gajjar, Kumar: *See*—
Nguyen, Anh; and Gajjar, Kumar, 5,386,548, Cl. 395-425.000.

Gallagher, John M.: *See*—
Erin, Lawrence E.; Catullo, William J., Jr.; Paris, Richard E.; and Gallagher, John M., 5,386,441, Cl. 376-216.000.

Gallucci, Robert R.; and Liu, Ping Y., to General Electric Company. Halogen-free flame retardant ternary blends. 5,385,970, Cl. 524-538.000.

Galperin, Anatoly, to Miller Edge, Inc. Sensing device having universal interface for cooperation with plurality of door actuators. 5,384,982, Cl. 49-27.000.

Gamand, Patrice; and Caux, Christian, to U.S. Philips Corporation. Semiconductor device comprising a broadband and high-gain monolithic integrated circuit for a distributed amplifier. 5,386,130, Cl. 257-275.000.

Gambro Dialysatoren GmbH & Co. KG: *See*—
McDonogh, Richard M.; Gohl, Hermann J.; and Buck, Reinhold J., 5,385,670, Cl. 210-500.300.

Gammill, Ronald B.; Bisaha, Sharon N.; Timko, Joseph M.; Judge, Thomas M.; Barbachyn, Michael R.; and Kim, Kyoung S., to Upjon Company, The. Antibacterial quinolone compounds. 5,385,906, Cl. 514-258.000.

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Buxbaum, Joseph D.; Gandy, Samuel E.; and Greengard, Paul, 5,385,915, Cl. 514-313.000.

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Zhang, Burt X.; Ganni, Venkatarao; and Stifle, Kirk E., 5,385,026, Cl. 62-50.700.

Ganong, William F.: *See*—
Wilson, Brian H.; Yegnasarayanan, Girija; Sejnoha, Vladimir; and Ganong, William F., 5,386,492, Cl. 395-2.610.

Gansert, Willi: *See*—
Maue, Hans-Heinrich; Hofmeister, Werner; Gansert, Willi; and Heide, Thomas, 5,385,870, Cl. 439-157.000.

Garavaglia, Carlo: *See*—
Camaggi, Giovanni; Filippini, Lucio; Guasmeroli, Marilena; Garavaglia, Carlo; and Mirenna, Luigi, 5,385,892, Cl. 514-63.000.

Garcia, Tomas V.: *See*—
Ortega, Jose D.; Gil, Jose A.; Garcia, Tomas V.; and Martin, Juan F., 5,385,841, Cl. 435-252.350.

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Lewis, Thomas E.; Williams, Richard A.; Pensavecchia, Frank G.; Kline, John F.; and Gardiner, John P., 5,385,092, Cl. 101-467.000.

Gardner, Donald S., to Intel Corporation. Embedded ground plane and shielding structures using sidewall insulators in high frequency circuits having vias. 5,386,088, Cl. 174-261.000.

Gardner, Edward A.: *See*—
Lary, Richard; Willard, Robert; van Ingen, Catharine; Thiel, David; Watson, William; Rubinson, Barry; Gardner, Edward A.; and Boaen, Verell, 5,386,514, Cl. 395-250.000.

Garelick, Richard J. Telescoped tubular support members. 5,385,323, Cl. 248-161.000.

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Szegedi, Nicholas J.; Garett, Lawrence I.; Maki, Theodore R.; and Smith, Dennis N., 5,386,313, Cl. 359-280.000.

Gargiulo, Joseph L., to American Pipe & Plastics, Inc. Pipe liner composition. 5,385,173, Cl. 138-98.000.

Garney, John I., to Intel Corporation. Preservation of a computer system processing state in a mass storage device. 5,386,552, Cl. 395-575.000.

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Tevaarwerk, Joseph L., 5,385,408, Cl. 384-115.000.

Gas Research Institute: *See*—
Keuper, Edward F.; and Pizak, William J., 5,385,120, Cl. 122-136.000.
Schultz, Thomas J., 5,385,337, Cl. 266-81.000.

Gasic, Gabriel J.: *See*—
Gasic, Gregory P.; Gasic, Gabriel J.; and Gasic, Tatiana B., 5,385,885, Cl. 514-12.000.

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Massen, Robert; Gassler, Joachim; Konz, Christian; and Richter, Harald, 5,386,292, Cl. 356-376.000.

Gatcomb, James, to Sherwood Industries, Inc. Disposable cup assembly system and method. 5,385,260, Cl. 220-415.000.

Gatts, James D.: *See*—
Jamieson, John W.; and Gatts, James D., 5,385,153, Cl. 128-845.000.

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Gavlak, Michael A., to General Motors Corporation. Method of odor elimination on A/C heat pump systems. 5,385,028, Cl. 62-81.000.

Gaylord, Thomas K.: *See*—
Henderson, Gregory H.; West, Lawrence C.; Gaylord, Thomas K.; Roberts, Charles W.; Glytsis, Elias N.; and Asom, Moses T., 5,386,126, Cl. 257-15.000.

Gearing, Thomas W.; Haver, Andrew A.; and Hoinacki, Gerald M., to H. G. Products, Inc. Chipper-shredder. 5,385,308, Cl. 241-101.700.

Gebr. Happich GmbH: *See*—
Cramer, Johannes; Winterberg, Erwin; and Nockemann, Hans, 5,385,774, Cl. 428-247.000.

Geck, Michael: *See*—
Herzig, Christian; Geck, Michael; Rengstl, Alfred; Hockemeyer, Friedrich; and Oswaldbauer, Helmut, 5,386,007, Cl. 528-12.000.

Gedney, Richard R. Telephone operated heating, ventilating and/or air conditioning. 5,386,461, Cl. 379-102.000.

Geer, Lisa A.: *See*—
Boykin, James R.; Geer, Lisa A.; Horn, Gary R.; and Malkemus, Timothy R., 5,386,557, Cl. 395-600.000.

Geerts, Jacobus F.: *See*—
Moolenaar, Antony J.; Houben, Jan P.; and Geerts, Jacobus F., 5,385,512, Cl. 475-153.000.

Gehrer, Eugen: *See*—
Teles, Joaquim H.; Melder, Johann-Peter; Gehrer, Eugen; Harder, Wolfgang; Ebel, Klaus; Groening, Carsten; and Meyer, Regina, 5,386,062, Cl. 568-463.000.

Geister, Donald E., to Marine Pollution Control. Axial flow pump for debris-laden oil. 5,385,447, Cl. 415-220.000.

Gemcor Engineering Corporation: *See*—
Andrews, Mark J., 5,385,041, Cl. 72-453.140.

Gen-Probe Incorporated: *See*—
Kacian, Daniel L.; and Nunomura, Kiyotada, 5,386,024, Cl. 536-25.400.

Gencer, Mehmet A.: *See*—
Lee, Sunggyu; Gencer, Mehmet A.; Fullerton, Kathy L.; and Azzam, Fouad O., 5,386,055, Cl. 562-512.200.

GenCorp Inc.: *See*—
McBain, Douglas S.; Melby, Earl G.; and LaJudice, Kevin P., 5,385,963, Cl. 523-436.000.

Genentech, Inc.: *See*—
Anderson, Stephen; Brady, Kevin M.; Keyt, Bruce A.; and Presta, Leonard G., 5,385,732, Cl. 424-94.640.

General Clutch Corporation: *See*—
Rude, Edward T.; and Mondzer, Robert L., 5,385,315, Cl. 242-586.000.

General Devices Co., Inc.: *See*—
Hobbs, James D.; Lentz, James M.; and Karr, Richard E., 5,385,405, Cl. 384-19.000.

General Electric Company: *See*—
Avakian, Roger W.; and Mahood, James A., 5,385,961, Cl. 523-213.000.
Barron, Michael L.; Brantley, James W.; and Wakeman, Thomas G., 5,385,013, Cl. 60-39.020.
Blohm, Margaret L.; Brown, Sterling B.; Seeger, George T.; and Anderson, Patricia P., 5,385,984, Cl. 525-393.000.
Brown, Dale M.; Michon, Gerald J.; Krishnamurthy, Vikram B.; and Kretchmer, James W., 5,385,855, Cl. 437-41.000.
Butcher, James A.; and Carey, Timothy W., 5,386,164, Cl. 310-71.000.
Diaz, Thomas P.; Andresen, Peter L.; Catlin, William R.; Contreras, Gary W.; De Lair, Ronald E.; Miller, William D.; Solomon, Harvey D.; and Weinstein, Daniel, 5,386,442, Cl. 376-245.000.
Gallucci, Robert R.; and Liu, Ping Y., 5,385,970, Cl. 524-538.000.
Hansen, Steven D., 5,386,451, Cl. 378-131.000.
Jones, William D., 5,386,184, Cl. 318-701.000.
King, Harold B., Jr.; Johansson, Eric B.; and Harmon, John L., 5,386,444, Cl. 376-261.000.
Kosmatka, Walter J., 5,386,173, Cl. 313-318.000.
Martin, Jerry C.; Zentner, Martin M.; and Mills, Robert T., 5,385,032, Cl. 62-187.000.
Takekoshi, Tohru; and Pearce, Eric J., 5,386,037, Cl. 549-206.000.

General Hospital Corporation, The: *See*—
Moskowitz, Michael A., 5,385,940, Cl. 514-565.000.

General Instrument Corporation: *See*—
Shen, Paul; Krause, Edward A.; and Tom, Adam, 5,386,212, Cl. 341-67.000.

General Motors Corporation: *See*—
Beck, Lawrence R.; Franko, Joseph J.; and King, Daniel L., 5,386,185, Cl. 318-762.000.
Dinsmore, Larry E.; and Hegler, Gary G., 5,385,455, Cl. 417-505.000.
Frank, Frederick W.; and Herr, Benjamin M., IV, 5,385,366, Cl. 280-728.000.
Gavlak, Michael A., 5,385,028, Cl. 62-81.000.
Leppek, Kevin G.; and Kade, Alexander, 5,385,394, Cl. 303-115.200.
Micheli, Adolph L.; Mantese, Joseph V.; Schubring, Norman W.; and Catalan, Antonio B., 5,386,120, Cl. 250-338.200.
Miller, Laurie-Jo; Sabo, Brian R.; Gump, Bruce S.; and DeSalvo, Jerry J., 5,385,686, Cl. 252-54.000.
Morgan, Mark R.; and Couch, Harry J., 5,385,421, Cl. 403-272.000.
Morgan, Terry B.; and Bayer, Dean M., 5,385,375, Cl. 293-109.000.
O'Daniel, Gregory F.; and Provenzano, Dennis M., 5,384,958, Cl. 29-859.500.
O'Shaughnessey, Michael E.; and Chesser, Keith, 5,386,348, Cl. 362-61.000.
Pfaff, Donald P.; and Kapeokavathis, Nick S., 5,386,472, Cl. 381-71.000.
Rock, Jeffrey A.; and Volo, Corrine A., 5,385,305, Cl. 239-533.900.
Shirai, Takeshi; and Pawlak, Andrzej M., 5,385,410, Cl. 184-446.000.
Shirai, Takeshi; and Pawlak, Andrzej M., 5,385,411, Cl. 384-446.000.
Van Maanen, Keith D., 5,385,221, Cl. 192-3.210.
Wheat, Ronald A.; McMahan, David R.; and Van Duyn, Paul D., 5,386,349, Cl. 362-66.000.
Wodrich, Helmut A. H.; and Zanet, Mario S., 5,384,949, Cl. 29-557.000.

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General Signal Corporation: *See*—
Krauss, Kenneth J., 5,385,058, Cl. 73-864.320.

Genetics Institute, Inc.: *See*—
Yim, Kalvin W. K.; Huberty, Michael C.; Northey, Richard P., Jr.; and Schrier, Jay A., 5,385,887, Cl. 514-12.000.

Georg Fischer Rohrleitungssysteme AG: *See*—
Steinmetz, Hans W.; and Petry, Dirk A., 5,386,101, Cl. 219-535.000.

Georgia Tech Research Corporation: *See*—
Ikeda, Richard A., 5,385,834, Cl. 435-172.300.

Georgian Art Lighting Designs, Inc.: *See*—
Rottner, Michael L., 5,385,482, Cl. 439-409.000.

Gephard, Robert H.: *See*—
Booth, Richard B.; Gephard, Robert H.; Gremban, Bradley S.; Poetzinger, Janet E.; and Shen, David T. M., 5,384,955, Cl. 29-830.000.

Gerber, Matthias: *See*—
Muenster, Peter; Freund, Wolfgang; Steiner, Gerd; Walter, Helmut; Westphalen, Karl-Otto; and Gerber, Matthias, 5,386,036, Cl. 548-453.000.

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Gierman, Karl E.; and Mandrik, Paul. Child safety seat. 5,385,384, Cl. 297-238.000.

Gieseler, Martin: *See*—
Steppuhn, Karin G.; Bressler, Karin; Gieseler, Martin; Stephens, David N.; and Turski, Lechoslaw, 5,385,903, Cl. 514-249.000.

Gil, Jose A.: *See*—
Ortega, Jose D.; Gil, Jose A.; Garcia, Tomas V.; and Martin, Juan F., 5,385,841, Cl. 435-252.350.

Gilad, Shaley: *See*—
Pomerantz, Itzchak; Gilad, Shaley; Dollberg, Yehoshua; Ben-Ezra, Barry; Sheinman, Yehoshua; Barequet, Gill; and Katz, Matthew, 5,386,500, Cl. 395-119.000.

Gilbert, John A.: *See*—
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,385,977, Cl. 525-113.000.

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Ginsburgh, Irwin: *See*—
Bierend, Steven J.; Tichenor, Clyde L.; and Ginsburgh, Irwin, 5,385,271, Cl. 222-153.000.

Girard, Luke; and Zinger, Ron, to Intel Corporation. Method and apparatus for overriding quotient prediction in floating point divider information processing systems. 5,386,376, Cl. 364-767.000.

Girard, Randall, to Canvasback Convertible Tops Inc. Pickup truck bed covers and attachment system therefore. 5,385,377, Cl. 296-36.000.

Giraud, Benoit: *See*—
Stalport, Gerard; Giraud, Benoit; and Andujar, Valerie, 5,385,122, Cl. 122-511.000.

Gist-Brocades N.V.: *See*—
Van Eijk, Johannes H., 5,385,742, Cl. 426-19.000.

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Murphy, Richard F.; Van Horne, James; and Gist, Walter R., Jr., 5,385,413, Cl. 384-564.000.

Giudici, Dario: *See*—
Marciandi, Franco; Giudici, Dario; and Binaghi, Marco, 5,385,973, Cl. 524-730.000.

Giuffrida, Giuseppe: *See*—
Cozzi, Pierluigi; Giuffrida, Giuseppe; Pellizzon, Tullio; and Radici, Pierino, 5,386,072, Cl. 585-456.000.

Gland, John L.: *See*—
Wise, Kessall D.; Schwank, Johannes W.; and Gland, John L., 5,385,709, Cl. 422-98.000.

Glass, Henry G.: *See*—
Cavenes, Lorine S.; Glass, Henry G.; and Feldman, Alan B., 5,384,914, Cl. 2-9.000.

Glasstech, Inc.: *See*—
Shetterly, Donivan M.; and Schnabel, James P., Jr., 5,385,786, Cl. 428-432.000.

Gleadall, Wilfred L., to Hubbell Incorporated. Circuit card assembly with shielding assembly for reducing EMI emissions. 5,386,346, Cl. 361-799.000.

Glinka, Tomasz W.: *See*—
de Laszlo, Stephen E.; Glinka, Tomasz W.; Greenlee, William J.; Chakravarty, Prasun K.; and Patchett, Arthur A., 5,385,894, Cl. 514-80.000.

Global Sports Technologies Inc.: *See*—
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Globe-Union Inc.: *See*—
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Globetrotter Software Inc.: *See*—
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Glytsis, Elias N.: *See*—
Henderson, Gregory H.; West, Lawrence C.; Gaylord, Thomas K.; Roberts, Charles W.; Glytsis, Elias N.; and Asom, Moses T., 5,386,126, Cl. 257-15.000.

GN Danavox A/S: *See*—
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GNB Battery Technologies Inc.: *See*—
Lund, David L.; Groff, Donald W.; Bonk, James J.; and Rumsey, Kenneth S., 5,385,587, Cl. 29-623.500.

Gobert, Jean: *See*—
Michel, Philippe; Cosement, Eric; Gobert, Jean; and Wulfert, Ernst, 5,385,927, Cl. 514-397.000.

Goble, E. Marlowe. Sight barrel arthroscopic instrument. 5,385,567, Cl. 606-96.000.

Godbole, Devendra: *See*—
Keeler, James D.; Havener, John P.; Godbole, Devendra; and Ferguson, Ralph B., 5,386,373, Cl. 364-577.000.

Godel, Thierry; and Gutknecht, Eva-Maria, to Hoffmann-La Roche Inc. Octahydrophenanthrene derivatives. 5,385,947, Cl. 514-654.000.

Goetting, F. Erich; Parlour, David B.; and Trimberger, Stephen M., to Xilinx, Inc. Compact logic cell for field programmable gate array chip. 5,386,154, Cl. 326-44.000.

Gohara, Shinobu: *See*—
Ito, Yutaka; Mori, Makoto; and Gohara, Shinobu, 5,386,415, Cl. 370-60.000.

Gohl, Hermann J.: *See*—
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Hardy, Robert E.: *See*—
Kunkle, Albert C.; Hardy, Robert E.; and Skipper, Bobby R., 5,385,239, Cl. 209-164.000.

Harichian, Bijan: *See*—
Au, Van; Harichian, Bijan; Hill, Michael I.; Raykh, Mikhail; and Krupa, Jerry J., 5,386,018, Cl. 536-185.000.

Harman International Industries, Inc.: *See*—
Plunkett, Bradley J., 5,386,478, Cl. 381-103.000.

Harman, Jefferson H., to Wangtek, Inc. Oscillating erase current circuit. 5,386,326, Cl. 360-66.000.

Harmon, John L.: *See*—
King, Harold B., Jr.; Johansson, Eric B.; and Harmon, John L., 5,386,444, Cl. 376-261.000.

Harnischfeger Corporation: *See*—
Kallenberger, Harvey J., 5,384,950, Cl. 29-558.000.
Long, Herbert D., Jr., 5,385,249, Cl. 212-218.000.

Harnischfeger Engineers, Inc.: *See*—
Jackson, Billy R.; Hrica, James P.; Hueman, Dennis G.; and Kirby, Rodney O., 5,385,243, Cl. 209-509.000.

Harpold, Michael M.: *See*—
Jay, Scott D.; Ellis, Steven B.; Harpold, Michael M.; and Campbell, Kevin P., 5,386,025, Cl. 536-23.500.

Harrawood, Larry E.; and Harvey, James R., to Diasonics, Inc. Imaging and treatment apparatus having a floor-mounted guiding track. 5,386,453, Cl. 378-196.000.

Harrington, John C., III: *See*—
Stuart, Ross M., 5,385,492, Cl. 439-877.000.

Harris Corporation: *See*—
Dupre, Jean L., 5,386,159, Cl. 327-310.000.
Moehlmann, Richard H., 5,386,194, Cl. 324-650.000.

Harris, Craig W.: *See*—
Sheth, Jayesh V.; Harris, Craig W.; White, Theodore C.; Nguyen, Kha; Wong, Chung W.; and Cowgill, Richard A., 5,386,517, Cl. 395-275.000.

Harris Waste Management Group, Inc.: *See*—
Newsom, Horace R., 5,385,089, Cl. 100-179.000.

Harrison, David B.: *See*—
Kruger, Ralf; Harrison, David B.; and Morbitzer, Leo, 5,385,981, Cl. 525-276.000.

Harrison, Robert W. Passive surround sound circuit. 5,386,473, Cl. 381-24.000.

Hart, Charles C.; Ritchart, Mark A.; and Gadberry, Donald L., to Applied Medical Resources Corporation. Trocar with floating septum seal. 5,385,553, Cl. 604-167.000.

Hart, John R.: *See*—
Kappes, Joan K.; and Hart, John R., 5,385,736, Cl. 424-448.000.

Hartel, Robert; and Brockmanns, Karl-Josef, to W. Schlafhorst AG & Co. Pot-spinning device having magnetic bearing providing radial and axial support. 5,385,007, Cl. 57-76.000.

Hartmann, Jorgen: *See*—
Bisgaard, Nikolai; and Hartmann, Jorgen, 5,386,476, Cl. 381-69.000.

Haruch, James, to Spraying Systems Co. Air assisted atomizing spray nozzle. 5,385,304, Cl. 239-431.000.

Harvey, James R.: *See*—
Harrawood, Larry E.; and Harvey, James R., 5,386,453, Cl. 378-196.000.

Harvey, William B. Tow vehicle system. 5,385,210, Cl. 180-11.000.

Has, Uwe, to Bosch-Siemens Hausgeraete GmbH. Self-cleaning process utilizing fuzzy logic and stove for carrying out the process. 5,386,099, Cl. 219-413.000.

Hase, Sumihiro: *See*—
Kusumoto, Shoichi; Hase, Sumihiro; and Fukase, Koichi, 5,386,033, Cl. 546-309.000.

Hasegawa, Hayato: *See*—
Ooka, Akihiro; Kawamura, Kenji; Nishiura, Yozo; Itoh, Katsuaki; Iwashita, Takaki; Nishi, Yasuhiko; Kuroda, Noritaka; and Hasegawa, Hayato, 5,386,484, Cl. 385-11.000.

Hasegawa, Toshiyuki: *See*—
Ishii, Norihiro; Hasegawa, Toshiyuki; Yoshina, Atsuo; and Iida, Masaru, 5,385,513, Cl. 475-203.000.

Haselden, Geoffrey G., to University of Leeds, The. Vapor compression systems. 5,385,034, Cl. 62-218.000.

Haseley, Phillip J.: *See*—
Morris, Michael P.; and Haseley, Phillip J., 5,385,333, Cl. 251-308.000.

Hashii, Hideya: *See*—
Yamagishi, Yasuo; Shimizu, Kanae; Mizutani, Daisuke; Owada, Tamotsu; Ishizuki, Yoshikatsu; and Hashii, Hideya, 5,386,430, Cl. 372-57.000.

Hashimura, Yoshiaki; Okihara, Masakazu; Miyazaki, Yusaku; Shida, Zenichiro; and Kogure, Tomohiko, to Yokohama Rubber Co., Ltd., The. Pneumatic tire with different side wall thickness in tread-side and bead-side regions. 5,385,192, Cl. 152-454.000.

Hatake, Toshikazu: *See*—
Kubota, Yousuke; Hatake, Toshikazu; and Iijima, Takuya, 5,385,055, Cl. 73-861.120.

Hatakeyama, Hiroki: *See*—
Yamamoto, Naoki; Nakata, Akira; Hatakeyama, Hiroki; and Watanabe, Hiroyuki, 5,385,988, Cl. 525-479.000.

Hatanaka, Fumiko: *See*—
Ueno, Hiroaki; Morioka, Masahiko; and Hatanaka, Fumiko, 5,385,917, Cl. 514-325.000.

Hattori, Toshiyuki, to NEC Corporation. Address translation device capable of obtaining a real address from a virtual address in a shorter time. 5,386,530, Cl. 395-400.000.

Hattori, Yasuhiro; Mizoguchi, Akira; and Kubata, Michiru, to Sumitomo Electric Industries, Ltd. Method for producing organic crystal film. 5,385,116, Cl. 117-5.000.

Hauel, Norbert: *See*—
Narr, Berthold; Hauel, Norbert; Van Meel, Jacques; Wienen, Wolfgang; Entzeroth, Michael; and Ries, Uwe, 5,385,925, Cl. 514-397.000.

Haumersen, Steve: *See*—
Mather, Mike; Haumersen, Steve; and Eastey, Roger, 5,386,371, Cl. 364-571.080.

Haun, Edward C.: *See*—
Zimmerman, Joseph E.; and Haun, Edward C., 5,385,663, Cl. 208-58.000.

Haupt, Deiter; Holtz, Friedhelm; and Keesen, Heinz W., to Deutsche Thomson-Brandt GmbH. Coder and decoder apparatus for a data transmission system. 5,386,213, Cl. 341-67.000.

Hauser, Berthold: *See*—
Roll, Georg; Ohm, Heinz F.; and Hauser, Berthold, 5,386,366, Cl. 364-426.010.

Hauser, Robert G.; Dahl, Roger W.; and KenKnight, Bruce H., to Cardiac Pacemakers, Inc. Implantable intravenous cardiac stimulation system with pulse generator housing serving as optional additional electrode. 5,385,574, Cl. 607-4.000.

Hausser, Roderick J., to Becton, Dickinson and Company. Lockable safety shield for hypodermic syringe. 5,385,555, Cl. 604-192.000.

Havener, John P.: *See*—
Keeler, James D.; Havener, John P.; Godbole, Devendra; and Ferguson, Ralph B., 5,386,373, Cl. 364-577.000.

Havens, Thomas R. Bedside toilet for incapacitated patients. 5,384,920, Cl. 84-480.000.

Haver, Andrew A.: *See*—
Gearing, Thomas W.; Haver, Andrew A.; and Hoinacki, Gerald M., 5,385,308, Cl. 241-101.700.

Hawkins, George W.: *See*—
Liu, Jay J.; Berg, Howard M.; and Hawkins, George W., 5,385,869, Cl. 437-209.000.

Hayes, David V.; and Wagner, Robert S., to Corning Incorporated. Method and apparatus for monitoring an electrical property of a conductive coating. 5,386,195, Cl. 324-662.000.

Hayes, Randy A. Apparatus and method for repair of roadway. 5,385,425, Cl. 404-72.000.

Hays, Dah A.; Mammino, Joseph; Pai, Damodar M.; Sypula, Donald S.; Wayman, William H.; Yanus, John F.; and DeFeo, Paul J., to Xerox Corporation. Developing apparatus including a coated developer roller. 5,386,277, Cl. 355-259.000.

Hays, Lance G. Hybrid two-phase turbine. 5,385,446, Cl. 415-202.000.

Hazen and Sawyer, P.C.: *See*—
Fergen, Robert E., 5,385,673, Cl. 210-710.000.

Hazinski, Daniel P.; and Samole, Sidney. Hunting blind. 5,385,165, Cl. 135-126.000.

Head, George W., Jr.; and Landers, Reginald R., to Forest Products Machinery, Inc. Sharp chain charger. 5,385,186, Cl. 144-245.00A.

Heater, J. Courtenay: *See*—
Miller, Kenneth C.; and Heater, J. Courtenay, 5,385,344, Cl. 273-460.000.

Heath, Kevin R.: *See*—
Abele, John E.; Heath, Kevin R.; Landman, Mark S.; and McLaughlin, Paul D., 5,385,152, Cl. 128-772.000.

Heavner, Edward J., to Plastics Manufacturing, Inc. Split-panel windshield assembly for attachment to a recreation vehicle. 5,385,379, Cl. 296-84.100.

Heavner, Edward J., to Plastics Manufacturing, Inc. Split windshield assembly for recreation vehicle. 5,385,380, Cl. 296-84.100.

Hebert, Francois: *See*—
Bashir, Rashid; Hebert, Francois; and Chen, Datong, 5,385,861, Cl. 437-67.000.

Hecht, Anton: *See*—
Troetscher, Gerhard; and Hecht, Anton, 5,384,969, Cl. 34-82.000.

Hecht, David L.: *See*—
Duff, James M.; Goodbrand, H. Bruce; and Hecht, David L., 5,385,803, Cl. 430-138.000.

Hechtman, Charles D.: *See*—
Lenzing, Erik H.; and Hechtman, Charles D., 5,385,883, Cl. 505-182.000.

Hedin, Erik B.; Jonsson, Gregor I.; Olsson, Lars E.; Sanamrad, Mohammad A.; and Westling, Sven O. G., to International Business Machines Corporation. Natural language analyzing apparatus and method. 5,386,556, Cl. 395-600.000.

Hegarty, David; and Terc, Michael, to Hegarty, David. Universal document support monitor stand. 5,385,327, Cl. 248-442.200.

Hegler, Gary G.: *See*—
Dinsmore, Larry E.; and Hegler, Gary G., 5,385,455, Cl. 417-505.000.

Heide, Thomas: *See*—
Maue, Hans-Heinrich; Hofmeister, Werner; Gansert, Willi; and Heide, Thomas, 5,385,870, Cl. 439-157.000.

Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
Leib, Rudolf, 5,385,342, Cl. 271-274.000.

Heilman, Raymond D., to Emerson Electric Co. Counterweighted rotor. 5,386,163, Cl. 310-51.000.

Heimann, Ulrich: *See*—
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,385,977, Cl. 525-113.000.

Heinemann, Ulrich; Himmler, Thomas; Dutzmann, Stefan; Hansler, Gerd; and Dehne, Heinz-Wilhelm, to Bayer Aktiengesellschaft. Substituted pyridylpyrimidines. 5,385,905, Cl. 514-256.000.

Heinen, Gerhard: *See*—
Franzen, Jochen; Heinen, Gerhard; Weiss, Gerhard; and Gabling, Reemt-Holger, 5,386,113, Cl. 250-292.000.

Heinz, Tony F.: *See*—
Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Silvestri, Victor J., 5,386,121, Cl. 250-341.800.

Heise, Brian D.: *See*—
Piety, Kenneth R.; Heise, Brian D.; Battenberg, Rexford A.; and King, Willie T., 5,386,117, Cl. 250-330.000.

Heitmann, Detlef: *See*—
Nieder, Johannes; Grambow, Peter; Lage, Herbert; Ploog, Klaus; Wieck, Andreas; Heitmann, Detlef; and Von Klitzing, Klaus, 5,385,865, Cl. 437-133.000.

Helentjaris, Timothy; and Nienhuis, James, to Pioneer Hi-Bred International, Inc. Identification and localization and introgression into plants of desired multigenic traits. 5,385,835, Cl. 435-172.300.

Helland, John R., to Siemens Pacesetter, Inc. Myocardial body implantable lead. 5,385,579, Cl. 607-130.000.

Helmuth, William E. Collapsible rafter square. 5,384,967, Cl. 33-456.000.

Henderson, Gregory H.; West, Lawrence C.; Gaylord, Thomas K.; Roberts, Charles W.; Glytsis, Elias N.; and Asom, Moses T. Semiconductor devices based on optical transitions between quasibound energy levels. 5,386,126, Cl. 257-15.000.
Hendricks, Jerry E., to International Business Machines Corporation. High performance sort hardware accelerator in a data processing system including a plurality of comparator modules. 5,386,583, Cl. 395-800.000.
Hendrickson, William A.: *See*—
Palazzotto, Michael C.; and Hendrickson, William A., 5,385,954, Cl. 522-29.000.
Hendrix, Loren E.: *See*—
Herbert, William G.; Hendrix, Loren E.; Maier, Gary J.; and Matyi, Ernest F., 5,385,660, Cl. 205-67.000.
Hendry, James M., to Santillo Limited. Body part impact guard. 5,384,913, Cl. 2-2.000.
Henkel Corporation: *See*—
Ahmed, Bashir M., 5,385,758, Cl. 427-421.000.
Aleksejczyk, Robert A.; and Urfer, Allen D., 5,385,750, Cl. 427-4.000.
Henna, John A. Self adjusting water ski assembly. 5,385,495, Cl. 441-79.000.
Henri-Caignard, Daniel: *See*—
Guillaumet, Gerald; Coudert, Gerard; Podona, Tchao; Guardiola-Lemaitre, Beatrice; Renard, Pierre; Adam, Gerard; and Henri-Caignard, Daniel, 5,385,930, Cl. 514-432.000.
Her, Jern-Shong, to Yu Chou Enterprise Corporation. Universal hand tool for a bicycle. 5,385,071, Cl. 81-177.700.
Heraeus Noblelight GmbH: *See*—
Kogelschatz, Ulrich, 5,386,170, Cl. 313-17.000.
Herbert, William G.; Hendrix, Loren E.; Maier, Gary J.; and Matyi, Ernest F., to Xerox Corporation. Dendritic growth assisted electroform separation. 5,385,660, Cl. 205-67.000.
Herberts GmbH: *See*—
Doebler, Klaus P.; Goldner, Wolfgang; Grutter, Roland; Jungermann, Reiner; and Oppermann, Manfred, 5,385,656, Cl. 204-181.100.
Herfurth, Michael: *See*—
Bichler, Helmut; and Herfurth, Michael, 5,386,187, Cl. 323-222.000.
Hergenrother, William L.: *See*—
Graves, Daniel F.; and Hergenrother, William L., 5,385,459, Cl. 425-32.000.
Hermansen, Ralph D.; and Lau, Steven E., to Hughes Aircraft Company. Frozen premix, fillet-holding urethane adhesives/sealants. 5,385,966, Cl. 524-426.000.
Hernandez, William D., to Practical Systems, Inc. Lens surfacing assembly. 5,384,988, Cl. 451-42.000.
Herr, Benjamin M., IV: *See*—
Frank, Frederick W.; and Herr, Benjamin M., IV, 5,385,366, Cl. 280-728.00B.
Hersh, Alan S. Piezoelectric sound sources. 5,386,479, Cl. 381-190.000.
Herzig, Christian; Geck, Michael; Rengstl, Alfred; Hockemeyer, Friedrich; and Oswaldbauer, Helmut, to Wacker-Chemie GmbH. Siloxane copolymers containing alkenyl groups, their preparation and their use. 5,386,007, Cl. 528-12.000.
Hewlett-Packard Company: *See*—
Guenther, Martin, 5,385,145, Cl. 128-634.000.
Lindhorst, Gregory S., 5,386,570, Cl. 395-700.000.
Shearer, Wanda N.; and Holden, Barbara, 5,386,564, Cl. 395-650.000.
Hexcel Corporation: *See*—
Diaz, Rodolfo E., 5,385,623, Cl. 156-197.000.
Hibi, Shigeki: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.
Hickey, John J. In-line auger driven charging system. 5,386,146, Cl. 290-55.000.
Hidaka, Shigeyuki: *See*—
Kimura, Kazuya; Hidaka, Shigeyuki; Mizutani, Hideki; and Takeichi, Toru, 5,385,450, Cl. 417-269.000.
Hidding, Douglas J.: *See*—
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Hidding, Robert D.: *See*—
Hidding, Walter E.; Hidding, Douglas J.; and Hidding, Robert D., 5,385,252, Cl. 215-230.000.
Hidding, Walter E.; Hidding, Douglas J.; and Hidding, Robert D. Closure. 5,385,252, Cl. 215-230.000.
Hiemke, Levan; and Kwak, Emanuel, to Massachusetts Institute of Technology. Display of partly randomized time. 5,386,398, Cl. 368-10.000.
Hierath, Leonard L., to VR Company. Tennis score keeper and display device. 5,385,113, Cl. 116-222.000.
Higashi, Iwao, to Yamaha Corporation. Method of detecting localization of acoustic image and acoustic image localizing system. 5,386,082, Cl. 84-630.000.
Higashii, Takayuki; Kurimoto, Isao; Toda, Shoji; Minai, Masayoshi; Tasi, Takeshi; Kawakami, Chizu; Fujisawa, Koichi; and Imamura, Kiyoshi, to Sumitomo Chemical Company, Limited. Optically active ester derivatives, preparation process thereof, liquid crystal materials and a light switching element. 5,385,693, Cl. 252-299.650.
Higuchi, Hiroyuki; Matsushita, Kiichiro; Ezoe, Minoru; and Shinomura, Toshihiko, to Nitto Denko Corporation. Porous film, process for producing the same, and use of the same. 5,385,777, Cl. 428-316.600.
Higuchi, Tatsuo: *See*—
Hamanaka, Naoki; Nakagoshi, Junji; Higuchi, Tatsuo; Chiba, Hiroyuki; Shutoh, Shin'ichi; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, 5,386,566, Cl. 395-700.000.
Hijino, Keiichiro: *See*—
Kawada, Shinichi; Hijino, Keiichiro; Wada, Hiroshi; and Iida, Masahisa, 5,386,436, Cl. 375-106.000.
Hikichi, Toichiro: *See*—
Tanaka, Keishin; Hikichi, Toichiro; and Kumagai, Chiaki, 5,385,393, Cl. 303-106.000.
Hikida, Toshiharu: *See*—
Hirota, Narumi; Hikida, Toshiharu; Kurita, Ryuzo; and Inada, Toshihide, 5,385,293, Cl. 229-122.000.
Hill, Fletcher L.: *See*—
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Hill, Michael I.: *See*—
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Hille, Martin: *See*—
Kupfer, Rainer; Hille, Martin; Bohm, Roland; and Staiss, Friedrich, 5,385,674, Cl. 210-708.000.
Hillebrand, George A.; and Blowers, Bryan K., to Eaton Corporation. Roller follower axle. 5,385,124, Cl. 123-90.500.
Hillinger, George, to Alltrade, Inc. Portable, twin-mounted light assembly. 5,386,358, Cl. 362-431.000.
Himmler, Thomas: *See*—
Heinemann, Ulrich; Himmler, Thomas; Dutzmann, Stefan; Hanssler, Gerd; and Dehne, Heinz-Wilhelm, 5,385,905, Cl. 514-256.000.
Hine, Derek L.; and Krolak, Michael, to Hine Design, Inc. Devices and methods for reading identification marks on semiconductor wafers. 5,386,481, Cl. 382-8.000.
Hine Design, Inc.: *See*—
Hine, Derek L.; and Krolak, Michael, 5,386,481, Cl. 382-8.000.
Hiner, Roger N.: *See*—
Kyle, Donald J.; and Hiner, Roger N., 5,385,889, Cl. 514-15.000.
Hinton, Mark A.: *See*—
Buda, Paul R.; and Hinton, Mark A., 5,386,096, Cl. 219-110.000.
Hippe, David C.: *See*—
Van Phan, Dean; Trokhan, Paul D.; and Hippe, David C., 5,385,642, Cl. 162-112.000.
Hirahara, Keizo: *See*—
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Hiraharu, Akio: *See*—
Nakamura, Katsuhiro; Kato, Minoru; Watanabe, Yasuhisa; Matsubara, Yasunori; Ikeda, Yorinobu; Yonekawa, Yoshiaki; Miki, Hiroyuki; Hiraharu, Akio; Ito, Nobuyuki; Kurita, Osamu; Kaneko, Yasunobu; and Nishida, Shouzou, 5,385,975, Cl. 525-101.000.
Hirai, Yoshinori: *See*—
Gunjima, Tomoki; Yuki, Masanori; Kunigita, Masaya; Hirai, Yoshinori; Yoshikawa, Yukio; and Shidoji, Eiji, 5,386,306, Cl. 359-52.000.
Hirano, Mitsunori, to Fuji Photo Film Co., Ltd. Method for processing silver halide photographic materials. 5,385,811, Cl. 430-438.000.
Hirano, Takashi: *See*—
Tokoh, Akira; Sashida, Nobuyuki; Takeuchi, Etsu; and Hirano, Takashi, 5,385,808, Cl. 430-283.000.
Hirao, Shuji: *See*—
Ueda, Tetsuya; Yano, Kousaku; Murakami, Tomoyasu; Yamanaka, Michinari; Hirao, Shuji; and Nomura, Noboru, 5,385,867, Cl. 437-195.000.
Hirao, Takasi: *See*—
Kawasaki, Tetuo; Koretika, Tetuhiro; Kitabatake, ; and Hirao, Takasi, 5,385,864, Cl. 437-132.000.
Hirasa, Yoshiaki: *See*—
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Hirata, Michiya: *See*—
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Hirata, Sumiaki: *See*—
Maekawa, Kazunobu; Hirata, Sumiaki; and Yamaguchi, Ikunori, 5,386,271, Cl. 355-204.000.
Hirata, Tetsuo: *See*—
Yamada, Yasushi; Hirata, Tetsuo; Uematsu, Tadashi; and Hara, Hiroyuki, 5,385,341, Cl. 271-265.000.
Hiroi, Masakazu; Mukasa, Mitsuhiro; Uto, Nobutaka; Sato, Masaaki; and Honjo, Takeshi, to Canon Kabushiki Kaisha. Sheet post-processing apparatus. 5,385,340, Cl. 270-53.000.
Hiroki, Akira; Odanaka, Shinji; and Kurimoto, Kazumi, to Matsushita Electric Industrial Co., Ltd. LDD FET with polysilicon sidewalls. 5,386,133, Cl. 257-344.000.
Hirose, Chisai: *See*—
Kanamori, Hiroo; Urano, Akira; Aikawa, Haruhiko; Ishikawa, Shinji; Hirose, Chisai; and Saito, Masahide, 5,385,594, Cl. 65-60.200.
Hirose, Masayoshi; Ishikawa, Seiji; Kimura, Norio; Kawashima, Kiyotaka; and Ishii, You, to Ebara Corporation. Polishing apparatus. 5,384,986, Cl. 451-444.000.

Hirota, Kazuo: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.
Hirota, Narumi; Hikida, Toshiharu; Kurita, Ryuzo; and Inada, Toshihide, to Matsushita Electric Industrial Co., Ltd. Corrugated fiberboard box for packaging large television receiver. 5,385,293, Cl. 229-122.000.
Hirotoshi, Umemoto: *See*—
Noriyuki, Tsuboniwa; Satoshi, Urano; Hirotoshi, Umemoto; Hiroyuki, Sakamoto; Kenshiro, Tobinaga; and Yasuyuki, Tsuchiya, 5,385,985, Cl. 525-420.000.
Hiroyuki, Sakamoto: *See*—
Noriyuki, Tsuboniwa; Satoshi, Urano; Hirotoshi, Umemoto; Hiroyuki, Sakamoto; Kenshiro, Tobinaga; and Yasuyuki, Tsuchiya, 5,385,985, Cl. 525-420.000.
Hiruta, Koichi: *See*—
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Hishinuma, Ieharu: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.
Hitachi Koki Co., Ltd.: *See*—
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Hitachi, Ltd.: *See*—
Hamanaka, Naoki; Nakagoshi, Junji; Higuchi, Tatsuo; Chiba, Hiroyuki; Shutoh, Shin'ichi; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, 5,386,566, Cl. 395-700.000.
Haneda, Makoto; Ono, Yuuichi; and Chiba, Katuaki, 5,386,310, Cl. 365-107.000.
Ito, Yutaka; Mori, Makoto; and Gohara, Shinobu, 5,386,415, Cl. 370-60.000.
Kashiwai, Shin-ichi; Yokomizo, Osamu; Orii, Akihito; Nishida, Koji; Kanazawa, Toru; and Moriya, Kumiaki, 5,386,440, Cl. 376-210.000.
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Yoshida, Minoru; Nakagawa, Manabu; and Yoshioka, Tomonori, 5,386,122, Cl. 250-368.000.
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Hitachi VLSI Engineering Corporation: *See*—
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Sakaguchi, Haruo, 5,385,199, Cl. 164-428.000.
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Herzig, Christian; Geck, Michael; Rengstl, Alfred; Hockemeyer, Friedrich; and Oswaldbauer, Helmut, 5,386,007, Cl. 528-12.000.
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Lepine, James J.; and Frappier, John P., 5,385,520, Cl. 482-54.000.
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Hodson, Simon K.: *See*—
Andersen, Per J.; and Hodson, Simon K., 5,385,764, Cl. 428-34.400.
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Kupfer, Rainer; Hille, Martin; Bohm, Roland; and Staiss, Friedrich, 5,385,674, Cl. 210-708.000.
Schumacher, Hans; Huff, Hans P.; and Hacker, Erwin, 5,385,881, Cl. 504-136.000.
Hoechst Celanese Corporation: *See*—
Hou, Mean-Jeng; and Seenivasan, Narayanasamy, 5,385,639, Cl. 162-5.000.
Hoechst Japan Limited: *See*—
Aoyama, Toshinobu; and Hirahara, Keizo, 5,385,890, Cl. 514-21.000.
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Hoffman, Ernest G., to Hubell Incorporated. Electrical connector inlet assembly with break-away mechanism for electric vehicle. 5,385,480, Cl. 439-310.000.
Hoffman, James V., to Hoffman, James V. Monowheel travois. 5,385,355, Cl. 280-1.500.
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Hoffmann, Gerhard: *See*—
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,385,977, Cl. 525-113.000.
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Godel, Thierry; and Gutknecht, Eva-Maria, 5,385,947, Cl. 514-654.000.
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Sninsky, John J.; Kwok, Shirley Y.; Mack, David; Erlich, Henry A.; and Mullis, Kary B., 5,386,022, Cl. 536-24.320.
Hofmann, Franz: *See*—
Oppermann, Klaus-Guenter; Roesner, Wolfgang; and Hofmann, Franz, 5,385,852, Cl. 437-40.000.
Hofmann, Fritz, to Deutsche Aerospace AG. Inertial sensor. 5,385,052, Cl. 73-517.00A.
Hofmann, Georg, to SWF Auto-Electric GmbH. Electric switch unit for the control of air conditioning units in automotive vehicles. 5,386,090, Cl. 200-308.000.
Hofmann, Harald, to Ford Motor Company. Multispeed manual transmission for motor vehicles. 5,385,065, Cl. 74-331.000.
Hofmann, Ludwig, to MMM Munchener Medizin Mechanik GmbH. Control valve. 5,385,328, Cl. 251-30.040.
Hofmeister, Werner: *See*—
Maue, Hans-Heinrich; Hofmeister, Werner; Gansert, Willi; and Heide, Thomas, 5,385,870, Cl. 439-157.000.
Hoinacki, Gerald M.: *See*—
Gearing, Thomas W.; Haver, Andrew A.; and Hoinacki, Gerald M., 5,385,308, Cl. 241-101.700.
Hokama, Leslie A.: *See*—
Tuse, Daniel; Marquez, Leticia; and Hokama, Leslie A., 5,385,832, Cl. 435-101.000.
Holden, Barbara: *See*—
Shearer, Wanda N.; and Holden, Barbara, 5,386,564, Cl. 395-650.000.
Holiday, Allan D., to Farmland Industries, Inc. Method of treating chemical process effluent. 5,385,646, Cl. 203-11.000.
Hollis, Calvin L.; and Carr, William K. Poultry collection device. 5,385,117, Cl. 119-846.000.
Holmwood, Graham: *See*—
Ludwig, Georg-Wilhelm; Exner, Otto; Paulus, Wilfried; Buchel, Karl-Heinz; and Holmwood, Graham, 5,385,926, Cl. 514-383.000.
Holscher, Ludger: *See*—
Krohm, Harald; Holscher, Ludger; and Nithammer, Andreas, 5,385,134, Cl. 123-676.000.
Holtz, Friedhelm: *See*—
Haupt, Deiter; Holtz, Friedhelm; and Keesen, Heinz W., 5,386,213, Cl. 341-67.000.
Homes, Samuel J.: *See*—
Rose, James L.; and Homes, Samuel J., 5,385,609, Cl. 118-119.000.
Homma, Noriyuki: *See*—
Nakazato, Shinji; Uchida, Hideaki; Saito, Yoshikazu; Yamamura, Masahiro; Kobayashi, Yutaka; Ikeda, Takahide; Hori, Ryoichi; Kitsukawa, Goro; Itoh, Kiyoo; Tanba, Nobuo; Watanabe, Takao; Shimohigashi, Katsuhiro; and Homma, Noriyuki, 5,386,135, Cl. 257-369.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hakamada, Hitoshi; and Hoshino, Kenji, 5,385,378, Cl. 296-37.120.
Hara, Fumio; and Shinchi, Takashi, 5,385,517, Cl. 477-169.000.
Kobayashi, Toshiaki; Ueyama, Masaki; Yokoyama, Toshio; Nozawa, Yasuji; and Ozawa, Hidetaka, 5,386,372, Cl. 364-574.000.
Satoh, Kenji; Tsuchiya, Miki; Akimori, Giichiro; and Tezuka, Yoshitaka, 5,386,506, Cl. 395-160.000.
Tanaka, Keishin; Hikichi, Toichiro; and Kumagai, Chiaki, 5,385,393, Cl. 303-106.000.
Yamakawa, Hiroshi; Ikegami, Masayuki; and Hano, Tsuyoshi, 5,385,046, Cl. 73-516.0LM.
Honeywell, Inc.: *See*—
Driscoll, Kevin R.; and Hoyme, Kenneth P., 5,386,424, Cl. 371-36.000.

Staggs, Kevin P.; and Clawson, Laurence A., 5,386,503, Cl. 395-137.001.
Thorland, Rodney H., 5,386,289, Cl. 356-350.000.

Hong, Gary Y., to United Microelectronics Corporation. Manufacture of the fieldless split-gate EPROM/Flash EPROM. 5,385,856, Cl. 437-43.000.

Hong, Sang H., to Goldstar Co., Ltd. Television screen aspect ratio converting method and the device thereof. 5,386,236, Cl. 348-445.000.

Honjo, Takeshi: *See*—
Hiroi, Masakazu; Mukasa, Mitsuhiro; Uto, Nobutaka; Sato, Masaaki; and Honjo, Takeshi, 5,385,340, Cl. 270-53.000.

Hoover Universal, Inc.: *See*—
Deerer, Richard P.; and Huber, Kenneth G., 5,385,610, Cl. 118-241.000.

Horan, Paul K.: *See*—
Melnicoff, Meryle J.; Jensen, Bruce D.; Muirhead, Katharine A.; Horan, Paul K.; Summers, Martin D.; and Wong, William, 5,385,822, Cl. 435-5.000.

Hori, Akihiro, to Nippon Television Network Corporation. Encoder/decoder of information upon/from a video signal. 5,386,240, Cl. 348-473.000.

Hori, Hiroshi: *See*—
Fujita, Satoshi; Momiyama, Masayoshi; Kagiyama, Naoto; Kondo, Yasumitsu; and Hori, Hiroshi, 5,385,823, Cl. 435-6.000.

Hori, Ryoichi: *See*—
Nakazato, Shinji; Uchida, Hideaki; Saito, Yoshikazu; Yamamura, Masahiro; Kobayashi, Yutaka; Ikeda, Takahide; Hori, Ryoichi; Kitsukawa, Goro; Itoh, Kiyoo; Tanba, Nobuo; Watanabe, Takao; Shimohigashi, Katsuhiro; and Homma, Noriyuki, 5,386,135, Cl. 257-369.000.

Horie, Tohru: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.

Horkans, Wilma J.: *See*—
Andricacos, Panayotis C.; Chang, I-Chia; Deligianni, Hariklia; and Horkans, Wilma J., 5,385,661, Cl. 205-239.000.

Horn, Gary R.: *See*—
Boykin, James R.; Geer, Lisa A.; Horn, Gary R.; and Malkemus, Timothy R., 5,386,557, Cl. 395-600.000.

Horn, Stuart B., to United States of America, Army. Cryogenic cooler system. 5,385,010, Cl. 62-6.000.

Horne, William E., to United Solar Technologies, Inc: Solar energy system. 5,385,615, Cl. 136-246.000.

Hornewer, Jean-Marc; and Cozler, Daniel, to Societe Anonyme Dite Regie Nationale des Usines Renault. Process for controlling the exhaust gas recirculation system of an internal combustion engine. 5,385,130, Cl. 123-436.000.

Horseradish Spray, Inc.: *See*—
Friedman, William H., 5,385,734, Cl. 424-434.000.

Horst, Gary E., to Emerson Electric Co. Redundant switched reluctance motor. 5,386,162, Cl. 310-51.000.

Hoshino, Kenji: *See*—
Hakamada, Hitoshi; and Hoshino, Kenji, 5,385,378, Cl. 296-37.120.

Hou, Mean-Jeng; and Seenivasan, Narayanasamy, to Hoechst Celanese Corporation. Deinking wastepaper printed with oil-based ink. 5,385,639, Cl. 162-5.000.

Houamed, Khaled M.: *See*—
Mulvihill, Eileen R.; Hagen, Frederick S.; Houamed, Khaled M.; and Almers, Wolfhard, 5,385,831, Cl. 435-69.100.

Houben, Jan P.: *See*—
Moolenaar, Antony J.; Houben, Jan P.; and Geerts, Jacobus F., 5,385,512, Cl. 475-153.000.

Housel, Edward M., to Eastman Kodak Company. Electrostatographic reproduction apparatus with annotation function. 5,386,270, Cl. 355-202.000.

Howard, Alan: *See*—
Bhagwat, Anil; and Howard, Alan, 5,385,181, Cl. 141-364.000.

Howard, Harry R., Jr., to Pfizer Inc. 4-(1,2-benzisoxazolyl)piperidine antipsychotic agents. 5,385,916, Cl. 514-321.000.

Howard, Mark S.: *See*—
Cady, John B.; Howard, Mark S.; Fisher, Stephen A.; Lloyd, Robert C. W.; and Thomas, Alan V., 5,385,212, Cl. 180-69.210.

Howarth, Jonathan N.; Dadgar, Ahmad; and Sergent, Rodney H., to Great Lakes Chemical Corporation. Recovery of bromine and preparation of hypobromous acid from bromide solution. 5,385,650, Cl. 204-103.000.

Howe, Stephen E.: *See*—
Abbey, Kirk J.; Howe, Stephen E.; and Munoz, Beth C., 5,385,990, Cl. 525-534.000.

Hoye, Peter A. T.: *See*—
Davis, Keith P.; Hoye, Peter A. T.; Williams, Michael J.; Woodward, Gary; and Greenhall, Martin P., 5,386,038, Cl. 548-242.000.

Hoyme, Kenneth P.: *See*—
Driscoll, Kevin R.; and Hoyme, Kenneth P., 5,386,424, Cl. 371-36.000.

Hrica, James P.: *See*—
Jackson, Billy R.; Hrica, James P.; Hueman, Dennis G.; and Kirby, Rodney O., 5,385,243, Cl. 209-509.000.

Hruska, Christopher D.; McGinn, Todd M.; and Smith, Wayne A., to AT&T Corp. Electroexplosive device. 5,385,097, Cl. 102-202.500.

Hrycin, Frank M.; Abdow, David A.; and Babb, John D., to United States of America, Navy. Dispenser for deploying elongated flexible articles. 5,385,109, Cl. 114-238.000.

Hsieh, Chang-Ming: *See*—
Chu, Jack O.; Hsieh, Chang-Ming; Nastasi, Victor R.; Revitz, Martin; and Ronsheim, Paul A., 5,385,850, Cl. 437-31.000.

Hsieh, Jung-Jen. Clamping pen. 5,385,418, Cl. 401-92.000.

Hsu, Adam C., to Rohm and Haas Company. Iodopropargylated oxalic derivatives as antimicrobial agents. 5,385,902, Cl. 514-237.500.

Hsu, Chi-Hsueh; Shyu, Chih-Yes; and Shyu, Joag-Yes. Running machine. 5,385,519, Cl. 482-54.000.

Hsu, Yung-sheng: *See*—
Tamai, Hideo; Ueda, Kinzo; and Hsu, Yung-sheng, 5,385,935, Cl. 514-535.000.

Hu, Patrick C.; and Leavitt, Richard I., to Albemarle Corporation. Process for reactively coating particles. 5,385,753, Cl. 427-215.000.

Huang, Jinshi; and Casey, Robert F., to Zoran Corporation. Ghost signal cancellation system for television signals. 5,386,243, Cl. 348-607.000.

Huang, Suo-Lun: *See*—
Hallee, Edward C.; Huang, Suo-Lun; Hwang, Kirk H.; and Messina, Benedicto U., 5,386,393, Cl. 364-574.000.

Huang, Tiao-Yuan, to VLSI Technology, Inc. Asymmetric electrostatic discharge transistors for increased electro-static discharge hardness. 5,386,134, Cl. 257-360.000.

Hubbell Incorporated: *See*—
Gleadall, Wilfred L., 5,386,346, Cl. 361-799.000.

Hubble, Fred F., III; Martin, James P.; Powers, Edward A.; and Osman, Kenneth R., to Xerox Corporation. Beam steering sensor for a raster scanner using a lateral effect detecting device. 5,386,123, Cl. 250-561.000.

Hubell Incorporated: *See*—
Hoffman, Ernest G., 5,385,480, Cl. 439-310.000.

Huber, Kenneth G.: *See*—
Deerer, Richard P.; and Huber, Kenneth G., 5,385,610, Cl. 118-241.000.

Huberty, Michael C.: *See*—
Yim, Kalvin W. K.; Huberty, Michael C.; Northey, Richard P., Jr.; and Schrier, Jay A., 5,385,887, Cl. 514-12.000.

Huddleston, Robert L.: *See*—
Eisenberg, Neal R.; Huddleston, Robert L.; Karasiuk, Gary R.; Lehner, Mary C.; and Tribolet, Charles S., 5,386,559, Cl. 395-600.000.

Huebel, Eugene: *See*—
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Huels Aktiengesellschaft: *See*—
Keil, Thomas; Huwels, Wilhelm; and Doll, Georg, 5,386,075, Cl. 585-800.000.
Sauer, Thomas; and Stutzel, Bernhard, 5,385,971, Cl. 524-558.000.

Hueman, Dennis G.: *See*—
Jackson, Billy R.; Hrica, James P.; Hueman, Dennis G.; and Kirby, Rodney O., 5,385,243, Cl. 209-509.000.

Huemke, Klaus: *See*—
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,385,977, Cl. 525-113.000.

Huff, Hans P.: *See*—
Schumacher, Hans; Huff, Hans P.; and Hacker, Erwin, 5,385,881, Cl. 504-136.000.

Huggler, Peter; and Martin, Charles, to Toastmaster Inc. Toaster with safety shut-off. 5,385,082, Cl. 99-328.000.

Hughes, Adrian D.: *See*—
Cain, Frederick W.; Hughes, Adrian D.; and Talbot, Geoffrey, 5,385,744, Cl. 426-89.000.

Hughes Aircraft Company: *See*—
Bianco, Mark E., 5,386,471, Cl. 380-49.000.
Cook, Lacy G., 5,386,316, Cl. 359-365.000.
Hermansen, Ralph D.; and Lau, Steven E., 5,385,966, Cl. 524-426.000.
Ledger, Anthony, 5,386,119, Cl. 250-341.100.
Lo, Thomas K.; and Roty, Deborah C., 5,386,480, Cl. 382-1.000.
Miehls, David J.; Martin, Felipe J.; and Pond, Ramona G., 5,386,085, Cl. 174-250.000.
Polinski, Paul W., Sr., 5,386,339, Cl. 361-719.000.
Reagle, Dennis J.; and Bolstad, Gregory D., 5,386,518, Cl. 395-325.000.
Spencer, Harvey M., 5,386,312, Cl. 359-215.000.
Stephens, Ronald R., 5,386,426, Cl. 372-20.000.
Woo, Steven C., 5,386,370, Cl. 364-516.000.

Hughes, Daniel L., to Wagner Mining and Construction Equipment Co. Cable reel level wind mechanism. 5,385,314, Cl. 242-397.300.

Hughes, David W.: *See*—
Withers, L. Andrew, Jr.; and Hughes, David W., 5,385,105, Cl. 110-346.000.

Hughes, Duane C.: *See*—
Crisman, Mary B.; Daly, James C.; Day, Arthur M.; Gainey, Charles W., Jr.; Greenstein, Paul G.; Hughes, Duane C.; Rodell, John T.; and Walsh, Kathleen M., 5,386,512, Cl. 395-200.000.

Hughes Missile Systems Company: *See*—
Schotter, Daniel K., 5,385,319, Cl. 244-3.120.

Hughes Training, Inc.: *See*—
Mather, Mike; Haumersen, Steve; and Eastey, Roger, 5,386,371, Cl. 364-571.080.

Huijgen, Hendrik: *See*—
De Haan, Gerard; and Huijgen, Hendrik, 5,386,248, Cl. 348-699.000.

Humphreys, Robert W.; Hung, Anthony; Wu, Shang-Ren; and Khan-Lodhi, Abid N., to Lever Brothers Company, Division of Conopco, Inc. Compositions comprising glyceroglycolipids having an ether linkage as a surfactant or cosurfactant. 5,385,685, Cl. 252-174.170.

Hung, Anthony: *See*—
Humphreys, Robert W.; Hung, Anthony; Wu, Shang-Ren; and Khan-Lodhi, Abid N., 5,385,685, Cl. 252-174.170.

Hung, Chi-Tsan. Pot with improved configuration. 5,385,257, Cl. 220-324.000.

Hunia, Robert M.: *See*—
Basil, John D.; Lin, Chia-Cheng; and Hunia, Robert M., 5,385,964, Cl. 524-266.000.

Hunt, Hugh E. M.; and Kopke, Uwe G. Pipeline pig and method of pipeline inspection. 5,385,049, Cl. 73-592.000.

Huntington Laboratories, Inc.: *See*—
Ainslie, Neil T., 5,385,604, Cl. 106-15.050.

Hurdle, Donald R. Radial extrusion thread-forming screw. 5,385,439, Cl. 411-386.000.

Hussey, David A.; and Stafford, Fred, III, to Earth Support Systems. Permanent ventilation seal. 5,385,504, Cl. 454-169.000.

Hutcheson, Greg A.: *See*—
Lancaster, Gary D.; and Hutcheson, Greg A., 5,385,238, Cl. 206-594.000.

Hutchings, Timothy; and Pilgrem, Kathryn M., to Exxon Research & Engineering Co. Grease composition. 5,385,682, Cl. 252-18.000.

Hutchinson Technology Incorporated: *See*—
Wolter, Raymond R., 5,386,331, Cl. 360-104.000.

Huwels, Wilhelm: *See*—
Keil, Thomas; Huwels, Wilhelm; and Doll, Georg, 5,386,075, Cl. 585-800.000.

Huynh, Khoa D.; Norcutt, Charles M., Jr.; and Waldron, III: Theodore C., to International Business Machines Corporation. Method of integrated system load control through dynamic time-slicing in a virtual storage environment. 5,386,561, Cl. 395-650.000.

Huys, Erwin, to Beac Sarl. Compact disc storage system. 5,385,398, Cl. 312-9.480.

Hwang, Kirk H.: *See*—
Hallee, Edward C.; Huang, Suo-Lun; Hwang, Kirk H.; and Messina, Benedicto U., 5,386,393, Cl. 364-574.000.

Hwang, Lisa: *See*—
Hwang, Phillip; and Hwang, Lisa, 5,384,923, Cl. 5-419.000.

Hwang, Phillip; and Hwang, Lisa, to Goodway Corporation. Sleeping mat and seating arrangement. 5,384,923, Cl. 5-419.000.

Hydro Dynamics, Inc.: *See*—
Griggs, James L., 5,385,298, Cl. 237-1.00R.

Hydronautics Research, Inc.: *See*—
Johnson, Virgil E., Jr., 5,385,069, Cl. 73-571.000.

Hyundai Electronics Industries, Co., Ltd.: *See*—
Yang, Bong won; and Noh, Myung Ho, 5,386,283, Cl. 355-308.000.

I.T.M. Corporation: *See*—
Iwanaga, Masao, 5,385,761, Cl. 427-448.000.

Ibaraki Seiki Machinery Company: *See*—
Tolson, Sidney S., 5,385,004, Cl. 53-548.000.

Ichida, Tomohiro; and Hara, Takehiko, to Nippon Thompson Co., Ltd. Linear motion rolling guide unit. 5,385,406, Cl. 384-45.000.

Ichikawa, Yuichi; and Kosako, Kosei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Coordinating mechanism for picture image area and field frame size adjusting apparatus of camera. 5,386,259, Cl. 354-94.000.

Ichiki, Yasufumi: *See*—
Aoki, Namito; Ichiki, Yasufumi; and Tanabe, Chishiro, 5,385,189, Cl. 152-209.00R.

Ichinohe, Shoji, to Shin-Etsu Chemical Co., Ltd. Lactone-modified silicone compositions and cosmetic agents or lustering agents containing them. 5,385,730, Cl. 424-78.020.

Ide, Russell D. Non-contacting mechanical face seal of the gap-type. 5,385,409, Cl. 384-124.000.

Idei, Yasuo; and Shimizu, Toshio, to Kabushiki Kaisha Toshiba. Semiconductor light emitting element with improved structure of groove therein. 5,386,139, Cl. 257-466.000.

Ihara Chemical Industry Co., Ltd.: *See*—
Miyazaki, Masahiro; Matsuzawa, Masafumi; Toriyabe, Keiji; and Hirata, Michiya, 5,385,880, Cl. 504-243.000.

Il Morrow Inc.: *See*—
Risko, John J., 5,386,084, Cl. 174-52.300.

Iida, Masahisa: *See*—
Kawada, Shinichi; Hijino, Keiichiro; Wada, Hiroshi; and Iida, Masahisa, 5,386,436, Cl. 375-106.000.

Iida, Masaru: *See*—
Ishii, Norihiro; Hasegawa, Toshiyuki; Yoshina, Atsuo; and Iida, Masaru, 5,385,513, Cl. 475-203.000.

Iijima, Takuya: *See*—
Kubota, Yousuke; Hatake, Toshikazu; and Iijima, Takuya, 5,385,055, Cl. 73-861.120.

Iikura, Masahiko: *See*—
Oyaizu, Takeshi; and Iikura, Masahiko, 5,385,125, Cl. 123-90.270.

Iino, Tadashi, to Yazaki Corporation. Indication display unit for vehicles. 5,386,216, Cl. 345-7.000.

Iizuka, Naonori, to Jatco Corporation. Select shock attenuating method and system for automatic transmission. 5,385,511, Cl. 475-132.000.

Ikebe, Masaru; Shiba, Haruo; and Miyazaki, Yukio, to TDK Corporation. Casing for housing a cartridge. 5,385,235, Cl. 206-308.100.

Ikeda, Noriaki: *See*—
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Ikeda, Richard A., to Georgia Tech Research Corporation. Mutant T7 RNA Polymerase GP1(lys222)exhibiting altered promoter recognition. 5,385,834, Cl. 435-172.300.

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Nakamura, Katsuhiro; Kato, Minoru; Watanabe, Yasuhisa; Matsubara, Yasunori; Ikeda, Yorinobu; Yonekawa, Yoshiaki; Miki, Hiroyuki; Hiraharu, Akio; Ito, Nobuyuki; Kurita, Osamu; Kaneko, Yasunobu; and Nishida, Shouzou, 5,385,975, Cl. 525-101.000.

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Watanabe, Katsuhide; Kanemitu, Yoichi; and Ikeda, Yukio, 5,385,217, Cl. 188-267.000.

Ikegami, Masayuki: *See*—
Yamakawa, Hiroshi; Ikegami, Masayuki; and Hano, Tsuyoshi, 5,385,046, Cl. 73-516.0LM.

Ikegawa, Masaki, to Victor Company of Japan, Ltd. Tape cassette loading system. 5,386,329, Cl. 360-94.000.

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Higashii, Takayuki; Kurimoto, Isao; Toda, Shoji; Minai, Masayoshi; Tani, Takeshi; Kawakami, Chizu; Fujisawa, Koichi; and Imamura, Kiyoshi, 5,385,693, Cl. 252-299.650.

Imamura, Yoichi: *See*—
Yatabe, Takayuki; Goto, Fusasuke; Aoki, Norihiro; and Imamura, Yoichi, 5,385,412, Cl. 384-492.000.

Imatran Voima Oy: *See*—
Pietikainen, Lauri, 5,385,508, Cl. 474-148.000.

Imatron, Inc.: *See*—
Rand, Roy E., 5,386,445, Cl. 378-10.000.

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Aufenanger, Johannes, 5,385,828, Cl. 435-11.000.

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Casci, John L.; and Shannon, Mervyn D., 5,385,718, Cl. 423-718.000.
Woodcock, Duncan C.; and Grady, Brian T., 5,386,064, Cl. 568-683.000.

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Hirota, Narumi; Hikida, Toshiharu; Kurita, Ryuzo; and Inada, Toshihide, 5,385,293, Cl. 229-122.000.

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Nishida, Shin; and Inatsu, Hiroshi, 5,385,035, Cl. 62-525.000.

Inbasekaran, Muthiah N.; Murray, Daniel J.; Mang, Michael N.; and Brewbaker, James L., to Dow Chemical Company, The. Fluorene based bisimides and thermoplastic polymers thereof. 5,386,002, Cl. 528-170.000.

Inco Limited: *See*—
Bell, James A. E.; and Stephenson, Thomas F., 5,385,195, Cl. 164-66.100.

Infant Advantage, Inc.: *See*—
Jamieson, John W.; and Gatts, James D., 5,385,153, Cl. 128-845.000.

Infrasonics, Inc.: *See*—
Brady, Michael; and Lawson, Damon, 5,385,142, Cl. 128-204.230.

Ingersoll-Dresser Pump Company: *See*—
McKenna, John M., 5,385,445, Cl. 415-199.200.

Ingersoll-Rand Company: *See*—
Bodell, Steven W.; and Kimberlin, Robert R., 5,385,209, Cl. 173-62.000.

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Drew, Robert E.; Drew, David M.; and Kraus, Steve, 5,385,277, Cl. 222-474.000.
Inoue, Taro: *See*—
Tanaka, Shunji; Asai, Takayoshi; Inoue, Taro; Umeno, Hidenori; and Watanabe, Tsuyoshi, 5,386,565, Cl. 395-700.000.
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Kim, Choung U.; Martin, John C.; Luh, Bing Y.; and Misco, Peter F., 5,386,030, Cl. 544-243.000.
Integrated Device Technology, Inc.: *See*—
Bourekas, Philip A.; Willenz, Avigdor; Mor, Yeshayahu; LeNgoc, Danh; and Revak, Scott, 5,386,379, Cl. 395-800.000.
Intel Corporation: *See*—
Atwood, Gregory E.; Jungroth, Owen W.; Mielke, Neal R.; and Vajdic, Branislav, 5,386,388, Cl. 365-201.000.
Ebert, Clint, 5,386,582, Cl. 395-800.000.
England, David G., 5,386,438, Cl. 375-121.000.
Gardner, Donald S., 5,386,088, Cl. 174-261.000.
Garney, John I., 5,386,552, Cl. 395-575.000.
Girard, Lake; and Zinger, Ron, 5,386,376, Cl. 364-767.000.
Golin, Stuart; Nickerson, Brian; Keith, Michael; and Coelho, Rohan, 5,386,232, Cl. 348-391.000.
Goveas, Melvyn A., 5,386,211, Cl. 341-51.000.
Keith, Michael, 5,386,233, Cl. 348-407.000.
Martin, Phil; and Alvstad, Gary, 5,386,515, Cl. 395-275.000.
Steele, Randy C.; and Allen, Mike, 5,386,155, Cl. 326-37.000.
Traylor, Roger L., 5,386,585, Cl. 395-800.000.
Intelectron Products Company: *See*—
Lee, Wade, 5,386,210, Cl. 340-567.000.
Intelpro Corporation: *See*—
Moretz, Herbert L.; and Brier, Daniel L., 5,385,502, Cl. 450-93.000.
Internas, S.A.: *See*—
Ferre, Jacinto F., 5,385,766, Cl. 428-36.100.
International Business Machines Corporation: *See*—
Andricacos, Panayotis C.; Chang, I-Chia; Deligianni, Hariklia; and Horkans, Wilma J., 5,385,661, Cl. 205-239.000.
Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Silvestri, Victor J., 5,386,121, Cl. 250-341.800.
Bartush, Thomas A., 5,385,866, Cl. 437-186.000.
Beaman, Brian S.; Doany, Fuad E.; Dudek, Thomas J.; Lanzetta, Alphonso P.; Shih, Da-Yuan; Tkazyik, William J.; and Walker, George F., 5,386,344, Cl. 361-785.000.
Beattie, Irene; Desai, Narendra M.; Vanover, Michael T.; and Voltin, John A., 5,386,505, Cl. 395-158.000.
Blaner, Bartholomew; Eberhard, Raymond J.; Jeremiah, Thomas L.; and Mack, Michael J., 5,386,531, Cl. 395-425.000.
Blaum, Miguel M.; and Bruck, Jehoshua, 5,386,420, Cl. 371-1.000.
Booth, Richard B.; Gephard, Robert H.; Gremban, Bradley S.; Poetzinger, Janet E.; and Shen, David T. M., 5,384,955, Cl. 29-430.000.
Boykin, James R.; Geer, Lisa A.; Horn, Gary R.; and Malkemus, Timothy R., 5,386,557, Cl. 395-600.000.
Brann, J. Joseph; and Raiya, Thomas C., 5,386,542, Cl. 395-550.000.
Cantiant, Thierry; Gabillard, Bertrand; Mifsud, Jean-Paul; and Rapoport, Stuart, 5,386,392, Cl. 365-233.000.
Chu, Jack O.; Hsieh, Chang-Ming; Nastasi, Victor R.; Revitz, Martin; and Rosheim, Paul A., 5,385,850, Cl. 437-31.000.
Crisman, Mary B.; Daly, James C.; Day, Arthur M.; Gainey, Charles W., Jr.; Greenstein, Paul G.; Hughes, Duane C.; Rodell, John T.; and Walsh, Kathleen M., 5,386,512, Cl. 395-200.000.
Economikos, Laertis; and Surprenant, Richard P., 5,384,953, Cl. 29-846.000.
Eisenberg, Neal R.; Huddleston, Robert L.; Karasiuk, Gary R.; Lehner, Mary C.; and Tribolet, Charles S., 5,386,599, Cl. 395-600.000.
Evans, David H., 5,386,522, Cl. 395-400.000.
Fry, Scott M.; Nylander-Hill, Pamela R.; and Paranjape, Sushama M., 5,386,324, Cl. 360-53.000.
Gillet, Marc J. L., 5,386,520, Cl. 395-375.000.
Greanias, Evon C.; Verrier, Guy F.; and Donaldson, Robert L., 5,386,219, Cl. 345-174.000.
Hallee, Edward C.; Huang, Suo-Lun; Hwang, Kirk H.; and Messina, Benedicto U., 5,386,393, Cl. 364-574.000.
Hedin, Erik B.; Jonsson, Gregor I.; Olsson, Lars E.; Sanamrad, Mohammad A.; and Westling, Sven O. G., 5,386,556, Cl. 395-600.000.
Hendricks, Jerry E., 5,386,583, Cl. 395-800.000.
Huynh, Khoa D.; Norcutt, Charles M., Jr.; and Waldron, III; Theodore C., 5,386,561, Cl. 395-650.000.
Koo, Catherine C.; Messina, Benedicto U.; and Saia, Jerry, 5,386,423, Cl. 371-22.300.
Kurz, Wolfgang, 5,386,571, Cl. 395-700.000.
Lien, Yeong-Chang; Sone, Hironao; Sekiya, Kazuo; and Kanada, Yoshihisa, 5,386,567, Cl. 395-700.000.
McCauley, Donald W.; Schmalz, Richard J.; Smith, Ronald M., Sr.; and Stillman, Susan B., 5,386,560, Cl. 395-650.000.
Mohammad, S. Noor, 5,385,853, Cl. 437-41.000.
Monahan, Christopher J.; Monahan, Mary L.; and Willson, Dennis L., 5,386,516, Cl. 395-275.000.
Murata, Hiroki; and Shimizu, Shigenori, 5,386,511, Cl. 395-200.000.
Premlatha, Jagannathan; Sachdev, Harbans S.; and Sooriyakumaran, Ratnam, 5,385,804, Cl. 430-195.000.
Intevep, S.A.: *See*—
Rivero, Mayela; Rodriquez, Valmore; Joseph, Dan; Guevara, Emilio; and Carabano, Nelson, 5,385,175, Cl. 138-145.000.
Iowa Thin Film Technologies, Inc: *See*—
Grimmer, Derrick P., 5,385,848, Cl. 437-2.000.
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Tholander, Lars H. G., 5,385,310, Cl. 242-47.010.
Isaka, Kazuo: *See*—
Fukui, Tetsuro; Yoshinaga, Kazuo; Mitsutake, Hideaki; Oikawa, Katsuya; Takeuchi, Shinsuke; Miyazaki, Takeshi; Takasu, Yoshio; Mouri, Akihiro; Katayama, Masato; and Isaka, Kazuo, 5,385,810, Cl. 430-351.000.
Ise, Shinsuke: *See*—
Takikawa, Hiroyoshi; Yoshio, Yoshida; Kakimoto, Nobuko; and Ise, Shinsuke, 5,386,102, Cl. 21-620.000.
Ishibashi, Kenji; Hara, Yoshihiro; Yukawa, Kazuhiko; Fujino, Akihiko; Maeda, Yasuo; Ohmori, Shigeto; Ishito, Fumiaki; Ootsuka, Hiroshi; and Miyazawa, Masayuki, to Minolta Camera Kabushiki Kaisha. Camera. 5,386,262, Cl. 354-402.000.
Ishihara, Jinsei, to Murata Manufacturing Co., Ltd. Antenna coupler. 5,386,203, Cl. 333-129.000.
Ishihara, Shigeichi: *See*—
Fukada, Toru; and Ishihara, Shigeichi, 5,385,527, Cl. 493-135.000.
Ishii, Eiji. Panel for color cathode-ray tube. 5,386,174, Cl. 313-408.000.
Ishii, Hiroshi: *See*—
Kasahara, Seitaro; Itakura, Haruo; Kurihara, Susumu; and Ishii, Hiroshi, 5,386,284, Cl. 355-311.000.
Ishii, Norihiro; Hasegawa, Toshiyuki; Yoshina, Atsuo; and Iida, Masaru, to Kanzaki Kokyukoki Mfg. Co., Ltd. Transmission assembly with separateable halves differential casing with gears and clutch mounted on casing for vehicles. 5,385,513, Cl. 475-203.000.
Ishii, You: *See*—
Hirose, Masayoshi; Ishikawa, Seiji; Kimura, Norio; Kawashima, Kiyotaka; and Ishii, You, 5,384,986, Cl. 451-444.000.
Ishikawa, Keihachi. Acupuncture device. 5,385,150, Cl. 128-735.000.
Ishikawa, Seiji: *See*—
Hirose, Masayoshi; Ishikawa, Seiji; Kimura, Norio; Kawashima, Kiyotaka; and Ishii, You, 5,384,986, Cl. 451-444.000.
Ishikawa, Shinji: *See*—
Kanamori, Hiroo; Urano, Akira; Aikawa, Haruhiko; Ishikawa, Shinji; Hirose, Chisai; and Saito, Masahide, 5,385,594, Cl. 65-60.200.
Ishikawa, Yasuo, to Mitsubishi Denki K.K. Image memory diagnostic system. 5,386,421, Cl. 371-21.200.
Ishito, Fumiaki: *See*—
Ishibashi, Kenji; Hara, Yoshihiro; Yukawa, Kazuhiko; Fujino, Akihiko; Maeda, Yasuo; Ohmori, Shigeto; Ishito, Fumiaki; Ootsuka, Hiroshi; and Miyazawa, Masayuki, 5,386,262, Cl. 354-402.000.
Ishiwata, Tetsuo; and Yamaguchi, Susumu, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for reproducing independently recorded multi-channel digital audio signals simultaneously and in synchronization with video signals. 5,386,323, Cl. 360-19.100.
Ishizuka, Hironori: *See*—
Bartle, Alden S.; Wise, Michael A.; Sasaki, Masao; Ishizuka, Hironori; and Kajizuka, Hideharu, 5,385,484, Cl. 439-468.000.
Ishizuki, Yoshikatsu: *See*—
Yamagishi, Yasuo; Shimizu, Kanae; Mizutani, Daisuke; Owada, Tamotsu; Ishizuki, Yoshikatsu; and Hashii, Hideya, 5,386,430, Cl. 372-57.000.
Isis Pharmaceuticals: *See*—
Sanghvi, Yogesh S.; and Cook, Phillip D., 5,386,023, Cl. 536-25.300.
Ismert, Joseph P.; and Julian, Frank J., to Chieftain Corporation. Hook shaped pipe hanger. 5,385,320, Cl. 248-62.000.
Isobe, Yuji: *See*—
Chiou, Chii-Fa; and Isobe, Yuji, 5,386,328, Cl. 360-68.000.
Isogawa, Toshiaki: *See*—
Shimizu, Shuji; Isogawa, Toshiaki; and Seto, Joichi, 5,386,231, Cl. 345-296.000.
Isomura, Shigenori: *See*—
Ikuta, Kenji; Isomura, Shigenori; and Suzumura, Toshihiro, 5,385,133, Cl. 123-585.000.
Isono, Hitoshi; and Takemori, Hirotoshi, to Sharp Kabushiki Kaisha. Method of manufacturing a stamper. 5,385,638, Cl. 156-663.000.
ISP Investments Inc.: *See*—
Chaudhuri, Ratan K.; Narayanan, Kolazi S.; and Anderson, Lowell R., 5,385,948, Cl. 514-788.000.
Itabashi, Tatsuo: *See*—
Sato, Soichi; Tomiya, Masaki; and Itabashi, Tatsuo, 5,386,291, Cl. 156-136.000.
Itakura, Haruo: *See*—
Kasahara, Seitaro; Itakura, Haruo; Kurihara, Susumu; and Ishii, Hiroshi, 5,386,284, Cl. 355-311.000.
Ito, Koichi: *See*—
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Ito, Nobuyuki: *See*—
Nakamura, Katsuhiro; Kato, Minoru; Watanabe, Yasuhisa; Matsubara, Yasunori; Ikeda, Yorinobu; Yonekawa, Yoshiaki; Miki, Hiroyuki; Hiraharu, Akio; Ito, Nobuyuki; Kurita, Osamu; Kaneko, Yasunobu; and Nishida, Shouzou, 5,385,975, Cl. 525-101.000.
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Kaneko, Yuji; and Ito, Shinji, 5,386,095, Cl. 219-69.100.
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Kitagawa, Koichi; Saito, Kazuo; Otaka, Toshio; Yamamoto, Toshihiro; and Ito, Yoshihiro, 5,385,030, Cl. 62-160.000.

Ito, Yutaka; Mori, Makoto; and Gohara, Shinobu, to Hitachi, Ltd. Packet communiction method and packet communication apparatus. 5,386,415, Cl. 370-60.000.
Itoh, Katsuaki: *See*—
Ooka, Akihiro; Kawamura, Kenji; Nishiura, Yozo; Itoh, Katsuaki; Iwashita, Takaki; Nishi, Yasuhiko; Kuroda, Noritaka; and Hasegawa, Hayato, 5,386,484, Cl. 385-11.000.
Itoh, Kiyoo: *See*—
Nakazato, Shinji; Uchida, Hideaki; Saito, Yoshikazu; Yamamura, Masahiro; Kobayashi, Yutaka; Ikeda, Takahide; Hori, Ryoichi; Kitsukawa, Goro; Itoh, Kiyoo; Tanba, Nobuo; Watanabe, Takao; Shimohigashi, Katsuhiro; and Homma, Noriyuki, 5,386,135, Cl. 257-369.000.
Itoh, Kunio: *See*—
Naito, Hiroki; Kume, Masahiro; Sugiura, Hideyuki; Takayama, Toru; Itoh, Kunio; Ohta, Issei; and Shimizu, Hirokazu, 5,386,429, Cl. 372-46.000.
Itoh, Masami; Nishii, Kanji; Kawamura, Hiroyuki; and Fukui, Atsushi, to Matsushita Electric Industrial Co., Ltd. Optical information processing apparatus and method using computer generated hologram. 5,386,378, Cl. 364-822.000.
Itonori, Katsuhiko; and Shimizu, Noboru, to Fuji Xerox Co., Ltd. Apparatus for generating programs from inputted flowchart images. 5,386,508, Cl. 395-161.000.
ITT Corporation: *See*—
Karsten, Kenneth S., Jr.; and Wertman, Richard C., 5,384,951, Cl. 29-600.000.
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, to Canon Kabushiki Kaisha. Mesomorphic compound, liquid crystal composition, liquid crystal device, display apparatus and display method. 5,385,692, Cl. 252-299.620.
Iwama, Kazuaki: *See*—
Fujii, Toshiro; Ito, Koichi; and Iwama, Kazuaki, 5,385,451, Cl. 417-269.000.
Iwamura, Ryuichi: *See*—
Veltman, Markus H.; and Iwamura, Ryuichi, 5,386,234, Cl. 348-409.000.
Iwanaga, Masao, to I.T.M. Corporation. Discharge element, method of producing the same and apparatus comprising the same. 5,385,761, Cl. 427-448.000.
Iwase, Akinori: *See*—
Yoda, Nobuhisa; Watanabe, Hiroshi; Ogaki, Takeshi; Iwase, Akinori; and Takagi, Shiro, 5,386,504, Cl. 395-157.000.
Iwase, Hiroyuki: *See*—
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Iwase, Norikazu: *See*—
Shigeno, Chitoshi; Katada, Naoki; Shida, Jun; Iwase, Norikazu; Sato, Hirotaka; and Yorozu, Hidenori, 5,385,737, Cl. 424-451.000.
Iwashita, Takaki: *See*—
Ooka, Akihiro; Kawamura, Kenji; Nishiura, Yozo; Itoh, Katsuaki; Iwashita, Takaki; Nishi, Yasuhiko; Kuroda, Noritaka; and Hasegawa, Hayato, 5,386,484, Cl. 385-11.000.
Iwasiuk, Orest: *See*—
Moy, Curtis T.; and Iwasiuk, Orest, 5,385,061, Cl. 74-42.000.
Iwata, Akitoshi, to Kabushiki Kaisha Toshiba. Access control apparatus and address translation method for disk storage device. 5,386,402, Cl. 369-32.000.
Iwata, Kazuya, to Canon Kabushiki Kaisha. Ink jet recording system and recovery device used with same. 5,386,222, Cl. 347-89.000.
Iwatani, Hidetoshi; Kazama, Masakazu; and Fujino, Masato, to Murata Manufacturing Co., Ltd. Layered transformer coil having conductors projecting into through holes. 5,386,206, Cl. 336-200.000.
Izawa, Michio. Map in which information which can be coded is arranged in invisible state and a method for coding the content of the map. 5,385,371, Cl. 283-34.000.
J. M. Huber Corporation: *See*—
Kunkle, Albert C.; Hardy, Robert E.; and Skipper, Bobby R., 5,385,239, Cl. 209-164.000.
J.M. Voith GmbH: *See*—
Grabscheid, Joachim, 5,385,088, Cl. 100-168.000.
J. van Walraven B.V.: *See*—
Van Walraven, Jan, 5,384,936, Cl. 24-279.000.
JAC Products, Inc.: *See*—
Bott, John A., 5,385,284, Cl. 224-321.000.
Cucheran, John S.; and Aftanas, Jeffrey M., 5,385,285, Cl. 224-321.000.
Jackson, Billy R.; Hrica, James P.; Hueman, Dennis G.; and Kirby, Rodney O., to Harnischfeger Engineers, Inc. Modular system for automatically staging letters in connection with a letter sorting machine. 5,385,243, Cl. 209-509.000.
Jackson, Jerome: *See*—
Lesh, Michael D.; Owens, Patrick M.; and Jackson, Jerome, 5,385,148, Cl. 128-662.060.
Jacobs Brake Technology Corporation: *See*—
Kulig, Frank M.; and Spacek, Paul J., 5,385,019, Cl. 60-599.000.
Jacobs, Robertus E., to Oce-Nederland BV. Method of and apparatus for converting outline data to raster data. 5,386,510, Cl. 395-163.000.
Jacobson, Barry J.: *See*—
Labianca, Giuseppe; Rosenberg, Richard L.; and Jacobson, Barry J., 5,385,292, Cl. 229-120.000.
Jacobsson, Rolf A., to Atlas Copco Tools AB. Pneumatic rotation grinder. 5,384,985, Cl. 451-344.000.
Jaeger, David W.: *See*—
Malloy, Gary J.; and Jaeger, David W., 5,385,705, Cl. 264-219.000.
Jagenberg Aktiengesellshaft: *See*—
Weis, Manfred, 5,385,316, Cl. 242-552.000.
Jagielinski, Tomasz M.; and Brucker, Charles F., to Eastman Kodak Company. Magnetic head for high-frequency, high density recording. 5,386,332, Cl. 360-126.000.
Jagiello, Jacek: *See*—
Schwarz, James A.; Putyera, Karol; Jagiello, Jacek; and Bandosz, Teresa J., 5,385,876, Cl. 502-80.000.
Jaguar Cars Limited: *See*—
Cady, John B.; Howard, Mark S.; Fisher, Stephen A.; Lloyd, Robert C. W.; and Thomas, Alan V., 5,385,212, Cl. 180-69.210.
Moore, Donald J.; and Bennion, William, 5,385,381, Cl. 296-117.000.
Jahoda, Frantisek. Exercise device. 5,385,524, Cl. 482-113.000.
Jain, Suneel; Chow, Frederick; Chan, Sun; and Lew, Sin S., to MIPS Computer Systems, Inc. Circular scheduling method and apparatus for executing computer programs by moving independent instructions out of a loop. 5,386,562, Cl. 395-650.000.
Jakupovic, Edib: *See*—
Andersson, Carl-Magnus A.; Bergstrand, Hakan S. A. M.; Jakupovic, Edib; Josefsson, Bo-Goran; Lindvall, Magnus L.; Sarnstrand, Bengt O.; and Teneberg, Eric N. G., 5,385,904, Cl. 514-255.000.
James, Alan: *See*—
Atkinson, Alan W.; Bridge, David R.; and James, Alan, 5,385,790, Cl. 428-593.000.
James, Dustin K.: *See*—
Earhart, Harold W.; Komin, Andrew P.; and James, Dustin K., 5,385,879, Cl. 503-213.000.
James River Paper Company, Inc.: *See*—
Fadale, Saadat, 5,385,438, Cl. 414-786.000.
Rizzuto, Jack A., 5,385,318, Cl. 242-597.800.
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Sato, Toshio; Abe, Masayuki; and Phiu-On, Jureerut, 5,385,681, Cl. 252-8.700.
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Nussbaumer, Wolfgang, 5,385,364, Cl. 280-607.000.

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Nohira, Hiroyuki; Kumano, Yuuta; Katagiri, Kazuharu; Shinjo, Kenji; and Yoshinaga, Kazuo, 5,385,691, Cl. 252-299.010.

Katagiri, Toshiaki: *See*—
Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, 5,386,485, Cl. 385-17.000.

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Nakayama, Junichiro; Miyake, Tomoyuki; Katayama, Hiroyuki; and Ohta, Kenji, 5,386,400, Cl. 369-13.000.
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Nakamura, Takanori; and Katsuta, Hiroshi, 5,386,519, Cl. 395-375.000.
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Katz, Joseph: *See*—
Dvorkis, Paul; and Katz, Joseph, 5,386,107, Cl. 235-472.000.
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Pomerantz, Itzchak; Gilad, Shaley; Dollberg, Yehoshua; Ben-Ezra, Barry; Sheinman, Yehoshua; Barequet, Gill; and Katz, Matthew, 5,386,500, Cl. 395-119.000.
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Connell, Richard D.; Osterman, David G.; Katz, Michael E.; Hanko, Rudolf; and Schneider, Stephan, 5,385,918, Cl. 514-330.000.
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Uchida, Minoru; Kawagishi, Toshio; and Yoshioka, Yasuhiro, 5,385,814, Cl. 430-504.000.
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Kawamura, Kazuteru, to Olympus Optical Co., Ltd. Zoom lens. 5,386,321, Cl. 359-692.000.
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Kawamura, Takanori; and Shinohara, Kibatsu, to Kinugawa Rubber Ind. Co., Ltd. Control system for continuous vulcanization line for manufacturing sponge rubber product. 5,385,463, Cl. 425-143.000.
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Kashihara, Atsushi; Kawana, Takashi; Saito, Tetsuo; Mano, Hiroshi; Kanaiwa, Kiyoshi; and Seto, Kaoru, 5,386,302, Cl. 358-448.000.
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Minneman, Michael; Reindel, Kenneth A.; Banaska, John G.; Bish, Gary K.; Creque, Andy J.; and Atwell, Michael, 5,386,188, Cl. 324-126.000.
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Bunger, John R.; Keller, Brenda L.; and Tarr, Robert E., 5,385,748, Cl. 426-590.000.
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Gross, James R., 5,385,563, Cl. 604-284.000.
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Hauser, Robert G.; Dahl, Roger W.; and KenKnight, Bruce H., 5,385,574, Cl. 607-4.000.
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Kennedy, Randall J., to SBN Systems, Inc. Credit card imprinter. 5,385,094, Cl. 101-269.000.
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Keret, Jacob, to Set-O-Matic, Inc. Management system for coin operated laundry machines. 5,386,362, Cl. 364-406.000.
Ketcham, James S.: *See*—
Beard, Terry D.; Dellaria, Joseph; and Ketcham, James S., 5,386,255, Cl. 352-5.000.
Keuper, Edward F.; and Plzak, William J., to Gas Research Institute. Fluid heater. 5,385,120, Cl. 122-136.00R.
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Feiss, Roy L., 5,385,121, Cl. 122-459.000.
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Anderson, Stephen; Brady, Kevin M.; Keyt, Bruce A.; and Presta, Leonard G., 5,385,732, Cl. 424-94.640.
Khachik, Frederick; Beecher, Gary R.; and Li, Betty W., to Catholic University of America, The; and United States of America, Agriculture. Synthesis of (all-E)-2,7,-dimethylocta-2,4,6-triene-1,8-dial $^{13}C_4$. 5,386,063, Cl. 568-494.000.
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Longsworth, Ralph C.; and Khatri, Ajay N., 5,385,027, Cl. 62-51.100.
Khirabadi, Bjan S.: *See*—
Fahy, Gregory M.; and Khirabadi, Bjan S., 5,385,843, Cl. 435-283.000.
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Kiesewetter, Rene ; Reinhardt, Eugen; Kniewske, Reinhard; and Szablikowski, Klaus, to Wolff Walsrode AG. Use of anionic alkyl cellulose mixed ethers in textile printing. 5,385,585, Cl. 8-562.000.
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Saito, Yuichi; and Kikuchi, Naohiko, 5,385,969, Cl. 524-496.000.
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Kim, Kwan; and Packham, Victor S., to Baxter International Inc. Ergonomic elbow rest. 5,385,322, Cl. 248-118.000.
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Bodell, Steven W.; and Kimberlin, Robert R., 5,385,209, Cl. 173-62.000.
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Wright, Robert D., 5,385,775, Cl. 428-284.000.
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Kimura, Kazuya; Hidaka, Shigeyuki; Mizutani, Hideki; and Takeichi, Toru, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Reciprocating-piston type refrigerant compressor with an improved rotary-type suction-valve mechanism. 5,385,450, Cl. 417-269.000.
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Kinugawa Rubber Ind. Co., Ltd.: *See*—
Kawamura, Takanori; and Shinohara, Kibatsu, 5,385,463, Cl. 425-143.000.
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Jackson, Billy R.; Hrica, James P.; Hueman, Dennis G.; and Kirby, Rodney O., 5,385,243, Cl. 209-509.000.
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Kirk, Kenneth G.; Schoenman, Leonard; Baxter, Kris E.; and Mouritsen, John B., to Aerojet-General Corporation. Compressed gas mobile storage module and lightweight composite cylinders. 5,385,263, Cl. 220-589.000.
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Klein, Hermann-Josef: *See*—
Berssen, Johannes; Hanschke, Clemens; Kaczor, Michael; Klein, Hermann-Josef; Maczkowiak, Michael; and Schmitt, Wolfgang, 5,386,287, Cl. 356-326.000.

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Berg, Alex; Janssen, Wim; Balle, Stefan; Kunz, Rudolf G., deceased; and Klein, Wolfdieter, 5,385,641, Cl. 162-76.000.

Klemm, Peter: *See*—
Michael, Wolfgang; Thudium, Karl; Hofele, Hans; Rieger, Walter; Klemm, Peter; and Schumann, Burkhardt, 5,385,040, Cl. 72-401.000.

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Lewis, Thomas E.; Williams, Richard A.; Pensavecchia, Frank G.; Kline, John F.; and Gardiner, John P., 5,385,092, Cl. 101-467.000.

Klingebiel, Karl-Heinz, to Korber AG. Web splicing method and apparatus. 5,385,622, Cl. 156-157.000.

Klosowiak, Tomasz L.: *See*—
Olson, William L.; Currier, David W.; Klosowiak, Tomasz L.; and Fulcher, Mark, 5,386,341, Cl. 361-749.000.

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Flack, Mary R.; Knazek, Richard; and Reidenberg, Marcus, 5,385,936, Cl. 514-548.000.

Knee, Michael, to Thomson Consumer Electronics S.A. Method and apparatus for adaptive progressive scan conversion. 5,386,237, Cl. 348-459.000.

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White, David H.; Woulfe, Steven R.; Liu, Youlin; and Kneller, Mills T., 5,385,724, Cl. 424-9.000.

Kniewske, Reinhard: *See*—
Kiesewetter, Rene ; Reinhardt, Eugen; Kniewske, Reinhard; and Szablikowski, Klaus, 5,385,585, Cl. 8-562.000.

Knight Manufacturing Corp.: *See*—
Knight, William S.; Knight, Stanley W.; Saunders, William M.; and Joranlien, Ric S., 5,385,403, Cl. 366-297.000.

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Knight, Steven J., to Johnson Fishing, Inc. Apparatus for maintaining a boat in a fixed position. 5,386,368, Cl. 364-432.000.

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Faiks, Frederick S.; Forslund, Carl V., III; Scheper, Robert M.; Anderson, Craig M.; Knoblock, Glenn A.; and Groendal, Dale M., 5,385,388, Cl. 297-301.000.

Knudsen, William, to Chrysler Corporation. Arrangement for electrically heating parking areas for windshield wipers. 5,386,098, Cl. 219-203.000.

Ko, Jung W.: *See*—
Strolle, Christopher H.; and Ko, Jung W., 5,386,249, Cl. 348-701.000.

Ko, Jung-Wan, to SamSung Electronics Co., Ltd. Motion signal detecting circuit. 5,386,235, Cl. 348-427.000.

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Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, 5,386,485, Cl. 385-17.000.

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Sasaki, Yoshiyuki; Kobayashi, Shigenobu; Kasaoka, Katsuyuki; Matsubara, Tomio; and Asada, Kaoru, 5,385,784, Cl. 428/369.000.

Kobayashi, Shozo: *See*—
Shiratori, Akira; Takagi, Hiroshi; and Kobayashi, Shozo, 5,385,792, Cl. 429-32.000.

Kobayashi, Toshiaki; Ueyama, Masaki; Yokoyama, Toshio; Nozawa, Yasuji; and Ozawa, Hidetaka, to Honda Giken Kogyo Kabushiki Kaisha. Vibration/noise control system for vehicles. 5,386,372, Cl. 364-574.000.

Kobayashi, Yutaka: *See*—
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Koch, Gil: *See*—
Davis, Roland; and Koch, Gil, 5,385,628, Cl. 156-499.000.

Koch Industries, Inc.: *See*—
Earhart, Harold W.; Komin, Andrew P.; and James, Dustin K., 5,385,879, Cl. 503-213.000.

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Doswald, Paul; and Koch, Werner, 5,386,015, Cl. 534-637.000.

Kochloefl, Karl: *See*—
Schneider, Michael; Kochloefl, Karl; and Maletz, Gerhard, 5,386,066, Cl. 568-885.000.

Kodama, Takashi; and Takizawa, Kiyoto, to Nissei Plastic Industrial Co., Ltd. Vent-type injection molding machine. 5,385,462, Cl. 425-135.000.

Kogelschatz, Ulrich, to Heraeus Noblelight GmbH. High-power radiator. 5,386,170, Cl. 313-17.000.

Kogure, Tomohiko; and Miyazaki, Yusaku, to Yokohama Rubber Co., Ltd., The. Pneumatic radial tire for passenger cars. 5,385,188, Cl. 152-209.000R.

Kogure, Tomohiko: *See*—
Hashimura, Yoshiaki; Okihara, Masakazu; Miyazaki, Yusaku; Shida, Zenichiro; and Kogure, Tomohiko, 5,385,192, Cl. 152-454.000.

Kohno, Satoshi; Morishita, Tatsuya; and Tsuchiya, Shouichi, to Unisia Jecs Corporation. Device for transmitting automotive engine driving torque for automatic power transmission with feature of absorption of torsional vibration. 5,385,018, Cl. 60-338.000.

Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd. Random 1-butene/ethylene copolymer. 5,385,998, Cl. 526-348.600.

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Yuasa, Kazuhiro; and Koike, Kazumasa, 5,386,301, Cl. 358-445.000.

Koike, Noriyuki: *See*—
Kishita, Hirofumi; Sato, Shinichi; Yamaguchi, Kouichi; Koike, Noriyuki; and Matsuda, Takashi, 5,386,049, Cl. 556-434.000.

Koizumi, Yuuji, to NEC Corporation. Power supply system of semiconductor chip for optimizing impedances of power supply sub-systems associated with outside and inside function blocks. 5,386,129, Cl. 257-207.000.

Kojima, Tetsuya: *See*—
Yasuda, Hiroaki; and Kojima, Tetsuya, 5,386,124, Cl. 250-585.000.

Kokusai Denshin Denwa Co., Ltd.: *See*—
Kawada, Shinichi; Hijino, Keiichiro; Wada, Hiroshi; and Jida, Masahisa, 5,386,436, Cl. 375-106.000.

Kokuyo Co., Ltd.: *See*—
Tanaka, Mamoru; and Kaneda, Shinichi, 5,384,998, Cl. 52-630.000.

Komatsu Electronic Metals Co., Ltd.: *See*—
Tomioka, Junsuke; Akagi, Tetsuro; and Yoshino, Shiro, 5,385,115, Cl. 117-2.000.

Komatsu, Hiroshi, to Seiko Epson Corporation. Multiple electrode field electron emission device and method of manufacture. 5,386,172, Cl. 313-309.000.

Komin, Andrew P.: *See*—
Earhart, Harold W.; Komin, Andrew P.; and James, Dustin K., 5,385,879, Cl. 503-213.000.

Komura, Osamu: *See*—
Awazu, Tomoyuki; Tsuzuki, Yasushi; Komura, Osamu; and Yamakawa, Akira, 5,385,701, Cl. 264-86.000.

Komuro, Yasuko; Yajima, Noboru; and Yoshida, Hiroshi, to Fujitsu Limited. Method for synchronizing synchronous data communication network and communication device used in the synchronous data communication network. 5,386,418, Cl. 370-103.000.

Kondo, Atsushi, to Kabushiki Kaisha Toshiba. Digital signal processor for use in sound quality treatment by filtering. 5,386,529, Cl. 395-400.000.

Kondo, Kazuaki: *See*—
Sato, Kazuo; and Kondo, Kazuaki, 5,385,620, Cl. 156-131.000.

Kondo, Syunichi: *See*—
Okamoto, Yasuo; Kondo, Syunichi; and Ukai, Toshinao, 5,385,807, Cl. 430-283.000.

Kondo, Yasumitsu: *See*—
Fujita, Satoshi; Momiyama, Masayoshi; Kagiyama, Naoto; Kondo, Yasumitsu; and Hori, Hiroshi, 5,385,823, Cl. 435-6.000.

Konefal, Robert S., to Owens-Illinois Plastic Products Inc. Thermoplastic container injection blow molding apparatus. 5,385,466, Cl. 425-522.000.

Konica Corporation: *See*—
Kasahara, Seitaro; Itakura, Haruo; Kurihara, Susumu; and Ishii, Hiroshi, 5,386,284, Cl. 355-311.000.
Yamada, Yasushi; Hirata, Tetsuo; Uematsu, Tadashi; and Hara, Hiroyuki, 5,385,341, Cl. 271-265.000.

Konii, Yoshio: *See*—
Kajiwara, Shinzo; Konii, Yoshio; and Yanase, Minao, 5,385,187, Cl. 152-209.00R.

Konno, Fujiko; Shibata, Akihiro; Matsuda, Hideaki; Asaoka, Takemitsu; Kawahara, Ryuichi; Taido, Naokata; Kuraishi, Tadayuki; and Takeda, Sunao, to SS Pharmaceutical Co., Ltd. Quinoline carboxylic acid derivatives. 5,385,900, Cl. 514-218.000.

Konz, Christian: *See*—
Massen, Robert; Gassler, Joachim; Konz, Christian; and Richter, Harald, 5,386,292, Cl. 356-376.000.

Koo, Catherine C.; Messina, Benedicto U.; and Saia, Jerry, to International Business Machines Corporation. Ordering shift register latches in a scan ring to facilitate diagnosis, testing and isolation. 5,386,423, Cl. 371-22.300.

Kopke, Uwe G.: *See*—
Hunt, Hugh E. M.; and Kopke, Uwe G., 5,385,049, Cl. 73-592.000.

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Klingebiel, Karl-Heinz, 5,385,622, Cl. 156-157.000.

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Jung, Il N.; Yoo, Bok R.; Lee, Bong W.; and Yeon, Seung H., 5,386,050, Cl. 556-435.000.

Koretika, Tetuhiro: *See*—
Kawasaki, Tetuo; Koretika, Tetuhiro; Kitabatake, ; and Hirao, Takasi, 5,385,864, Cl. 437-132.000.

Kornblit, Levy. Apparatus and method for deep thermoelectric refrigeration. 5,385,022, Cl. 62-3.200.

Kosako, Kosei: *See*—
Ichikawa, Yuichi; and Kosako, Kosei, 5,386,259, Cl. 354-94.000.

Kosinski, John A., to United States of America, Army. Polarization-sensitive shear wave transducer. 5,386,168, Cl. 310-365.000.

Koskinen, Jukka; Nyfors, Klaus; and Leskinen, Pauli, to Borealis Holding A/S. Method for the dosage of a fluidized polymerization catalyst into a polymerization reactor. 5,385,992, Cl. 526-79.000.

Kosmatka, Walter J., to General Electric Company. One-piece thermally resistant gimbal device for a replaceable headlamp bulb. 5,386,173, Cl. 313-318.000.

Kostanecki, Andrew T.: *See*—
Kaufman, Richard H.; Kovacic, Theodore J.; Okita, Hideyoshi; Bostwick, Martin M.; Kostanecki, Andrew T.; Brainard, Robert H.; and Nolan, Patrick B., 5,385,264, Cl. 220-710.000.

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Gurinov, Alexander V.; Kostritsa, Vladimir N.; Petrov, Igor' V.; and Sukhostavets, Valeryi F., 5,385,336, Cl. 266-74.000.

Kosugi, Masao, to Canon Kabushiki Kaisha. Alignment and exposure apparatus. 5,386,269, Cl. 355-43.000.

Kotani, Takaaki; Takada, Seiji; Goto, Shigenori; and Saito, Tatsuo, to Fuji Photo Film Co., Ltd. Method and apparatus for rangefinding. 5,386,263, Cl. 354-403.000.

Kottenhahn, Matthias: *See*—
Seebach, Dieter; Drauz, Karlheinz; Kottenhahn, Matthias; Lotter, Hermann; and Schwarm, Michael, 5,386,035, Cl. 548-316.400.

Kotyuk, Kenneth A., to Tandem Computers Incorporated. Alignment mechanism for blind-matable connection for two or more connectors. 5,385,481, Cl. 439-378.000.

Kouichi, Suzuki: *See*—
Perrott, Charles H.; and Kouichi, Suzuki, 5,385,172, Cl. 138-31.000.

Kovacic, Theodore J.: *See*—
Kaufman, Richard H.; Kovacic, Theodore J.; Okita, Hideyoshi; Bostwick, Martin M.; Kostanecki, Andrew T.; Brainard, Robert H.; and Nolan, Patrick B., 5,385,264, Cl. 220-710.000.

Kowalski, Mike S.: *See*—
Spillane, Robert T.; and Kowalski, Mike S., 5,385,036, Cl. 66-87.000.

Kowanko, Nicholas. Adhesive composition and method. 5,385,606, Cl. 106-124.000.

Koyama, Osamu, to Canon Kabushiki Kaisha. Optical information processing apparatus. 5,386,404, Cl. 369-44.230.

Krabach, Timothy N.: *See*—
Fossum, Eric R.; Cunningham Thomas J.; Krabach, Timothy N.; and Staller, Craig O., 5,386,128, Cl. 257-183.100.

Kraft General Foods, Inc.: *See*—
Kaufman, Richard H.; Kovacic, Theodore J.; Okita, Hideyoshi; Bostwick, Martin M.; Kostanecki, Andrew T.; Brainard, Robert H.; and Nolan, Patrick B., 5,385,264, Cl. 220-710.000.

Kramer, Donald: *See*—
Varano, Richard F.; and Kramer, Donald, 5,385,255, Cl. 220-306.000.

Kramer, Hy. Fastener tension monitor. 5,385,054, Cl. 73-761.000.

Kramer, Wolfgang: *See*—
Kuhnert, Jurgen; Zimmermann, Peter; Baumann, Armin; and Kramer, Wolfgang, 5,386,318, Cl. 359-394.000.

Kratky, Bernard A., to University of Hawaii. Non-circulating hydroponic plant growing system. 5,385,589, Cl. 47-58.000.

Kratt, Alfred; and Nusser, Claus-Dieter, to Robert Bosch GmbH. Method and device for limiting vehicle speed. 5,385,128, Cl. 123-335.000.

Kraus, Steve: *See*—
Drew, Robert E.; Drew, David M.; and Kraus, Steve, 5,385,277, Cl. 222-474.000.

Krause, Edward A.: *See*—
Shen, Paul; Krause, Edward A.; and Tom, Adam, 5,386,212, Cl. 141-67.000.

Krause, Kenneth J., to General Signal Corporation. Method and apparatus for sampling particulate material falling from a belt conveyor. 5,385,058, Cl. 73-864.320.

Krautkramer GmbH & Co.: *See*—
Prause, Reinhard, 5,385,051, Cl. 73-640.000.

Kreis, Gundolf; Enning, Norbert; Klages, Ulrich; and Timm, Heinrich, to Audi A.G. Door pillar for passenger car coachwork. 5,385,383, Cl. 296-202.000.

Kreis-Elektrik GmbH & Co. Elektromotorenfabrik: *See*—
Kreis, Willy, 5,385,757, Cl. 427-420.000.

Kreis, Willy, to Kreis-Elektrik GmbH & Co. Elektromotorenfabrik. Trickle resin impregnation by mixing resin in free fall with a curing agent. 5,385,757, Cl. 427-420.000.

Kretchmer, James W.: *See*—
Brown, Dale M.; Michon, Gerald J.; Krishnamurthy, Vikram B.; and Kretchmer, James W., 5,385,855, Cl. 437-41.000.

Kriesel, Marshall S.; and Thompson, Thomas N., to Science Incorporated. Mixing and delivery system. 5,385,545, Cl. 604-82.000.

Kriesel, Marshall S.; and Thompson, Thomas N., to Science Incorporated. Mixing and delivering system. 5,385,546, Cl. 604-85.000.

Krishnamurthy, Vikram B.: *See*—
Brown, Dale M.; Michon, Gerald J.; Krishnamurthy, Vikram B.; and Kretchmer, James W., 5,385,855, Cl. 437-41.000.

Krivan, Howard C.; Victor, Ginsburg; and Roberts, David D., to United States of America, Health & Human Services. Carbohydrate receptor for bacteria and method for use thereof. 5,386,027, Cl. 536-123.100.

Krohm, Harald; Holscher, Ludger; and Nithammer, Andreas, to AFT Atlas Fahrzeugtechnik GmbH. System for monitoring leakage into exhaust lines. 5,385,134, Cl. 123-676.000.

Krolak, Michael: *See*—
Hine, Derek L.; and Krolak, Michael, 5,386,481, Cl. 382-8.000.

Kruger, Cory J.: *See*—
Lippisch, Hangwind F.; and Kruger, Cory J., 5,385,261, Cl. 220-372.000.

Kruger, Ralf; Harrison, David B.; and Morbitzer, Leo, to Bayer Aktiengesellschaft. Thermoplastic fluoroelastomers produced by graft copolymerization. 5,385,981, Cl. 525-276.000.

Kruger, Ronald D., to Chrysler Corporation. Pivot/rotational device. 5,385,422, Cl. 403-371.000.

Krupa, Jerry J.: *See*—
Au, Van; Harichian, Bijan; Hill, Michael I.; Raykh, Mikhail; and Krupa, Jerry J., 5,386,018, Cl. 536-185.000.

Kruse, Charles J.; Preston, Kyle L.; and Benac, Brian L., to Texaco Inc. Methyl tertiary butyl ether process. 5,386,065, Cl. 568-698.000.

KSB Aktiengesellschaft: *See*—
Merkt, Thilo; Schafer, Horst; Feldle, Gunter; and Gabler, Oskar, 5,385,448, Cl. 416-229.00R.

Kubata, Michiru: *See*—
Hattori, Yasuhiro; Mizoguchi, Akira; and Kubata, Michiru, 5,385,116, Cl. 117-5.000.

Kubo, Kunimichi: *See*—
Yamaguchi, Yoshihisa; Suga, Shinjiro; Morikawa, Masatoshi; Kubo, Kunimichi; Watanabe, Motokazu; and Sano, Yasuhiko, 5,385,991, Cl. 526-74.000.

Kubo, Takahiro: *See*—
Maeyama, Ryuichiro; and Kubo, Takahiro, 5,386,278, Cl. 355-271.000.

Kubo, Tsutomu: *See*—
Inaba, Yoshihiro; Kubo, Tsutomu; and Takashima, Koichi, 5,385,802, Cl. 430-137.000.

Kubota, Hiroshi: *See*—
Kitagawara, Yutaka; Kubota, Hiroshi; Tamatsuka, Masaro; Takenaka, Takao; and Takamizawa, Kazuhisa, 5,386,118, Cl. 250-338.100.

Kubota, Maki, to Seikosha Co., Ltd. Digital display value adjusting device. 5,386,220, Cl. 345-184.000.

Kubota, Yousuke; Hatake, Toshikazu; and Iijima, Takuya, to Kabushiki Kaisha Toshiba. Electromagnetic flowmeter. 5,385,055, Cl. 73-861.120.

Kuchar, Paul J.; and Gosling, Christopher D., to UOP. Process for producing aromatics from a C_5/C_6 feedstream. 5,386,071, Cl. 585-313.000.

Kudo, Kazuhiro: *See*—
Harada, Toshio; and Kudo, Kazuhiro, 5,386,569, Cl. 395-700.000.

Kuhn, Lance S.; Ochs, Mary L.; and Morris, Gilbert C., to Boehringer Mannheim Corporation. Biosensor and method for hematocrit determination. 5,385,846, Cl. 436-70.000.

Kuhnert, Jurgen; Zimmermann, Peter; Baumann, Armin; and Kramer, Wolfgang, to Jenoptron Gesellschaft Fur Optoelektronik Und Handling mbH. Apparatus for handling biological specimens. 5,386,318, Cl. 359-394.000.

Kulczycki, Stanley, to Budd Company, The. Composite rear brake disc and drum. 5,385,216, Cl. 188-70.00R.

Kulig, Frank M.; and Spacek, Paul J., to Jacobs Brake Technology Corporation. Compression release engine braking methods and apparatus for use with turbocharged engines having intercoolers. 5,385,019, Cl. 60-599.000.

Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; Shor, Joseph S.; and Ned, Alexander A., 5,386,142, Cl. 257-690.000.

Kumagai, Chiaki: *See*—
Tanaka, Keishin; Hikichi, Toichiro; and Kumagai, Chiaki, 5,385,393, Cl. 303-106.000.

Kumano, Yuuta: *See*—
Nohira, Hiroyuki; Kumano, Yuuta; Katagiri, Kazuharu; Shinjo, Kenji; and Yoshinaga, Kazuo, 5,385,691, Cl. 252-299.010.

Kumar, Rajendra, to Khyber Technologies Corporation. Integrated portable device for point of sale transactions. 5,386,106, Cl. 235-462.000.

Kume, Kiyotaka; and Tanaka, Takuya, to Sumitomo Wiring Systems, Ltd.; and Daiwa Kasei Industry Co., Ltd. Belt clamp. 5,385,321, Cl. 248-74.300.

Kume, Masahiro: *See*—
Naito, Hiroki; Kume, Masahiro; Sugiura, Hideyuki; Takayama, Toru; Itoh, Kunio; Ohta, Isaei; and Shimizu, Hirokazu, 5,386,429, Cl. 372-46.000.

Kumiai Chemical Industry Co., Ltd.: *See*—
Miyazaki, Masahiro; Matsuzawa, Masafumi; Toriyabe, Keiji; and Hirata, Michiya, 5,385,880, Cl. 504-243.000.

Kunert, Heinz; Cornils, Gerd; and Schnitter, Heinrich, to St. Gobain Vitrage International. Spacer for windshield bracket. 5,384,995, Cl. 52-394.000.

Kunig, Helmut; and Wagner, Wolfgang, to Nordischer Maschinenbau Rud. Baader GmbH & Co KG. Separating machine. 5,385,244, Cl. 209-699.000.

Kunigita, Masaya: *See*—
Gunjima, Tomoki; Yuki, Masanori; Kunigita, Masaya; Hirai, Yoshinori; Yoshikawa, Yukio; and Shidoji, Eiji, 5,386,306, Cl. 359-52.000.

Kunkle, Albert C.; Hardy, Robert E.; and Skipper, Bobby R., to J. M. Huber Corporation. Low brightness functional pigment from process by-product. 5,385,239, Cl. 209-164.000.

Kunz, Eberhard C., executor: *See*—
Berg, Alex; Janssen, Wim; Balle, Stefan; Kunz, Rudolf G., deceased; and Klein, Wolfdieter, 5,385,641, Cl. 162-76.000.

Kunz, Rudolf G., deceased: *See*—
Berg, Alex; Janssen, Wim; Balle, Stefan; Kunz, Rudolf G., deceased; and Klein, Wolfdieter, 5,385,641, Cl. 162-76.000.

Kuo, Ching-Chuan: *See*—
Fann, Yaw-Shin; Lin, San-Yi; Wu, Rong-Fan; Kuo, Ching-Chuan; and Don, Lan-Kun, 5,385,374, Cl. 292-336.300.

Kupfer, Jurgen: *See*—
Finkelmann, Heino; and Kupfer, Jurgen, 5,385,690, Cl. 252-299.010.

Kupfer, Raiser; Hille, Martin; Bohm, Roland; and Staiss, Friedrich, to Hoechst Aktiengesellschaft. Process for separation of petroleum emulsions of the water-in-oil type. 5,385,674, Cl. 210-708.000.

Kupperman, Dennis: *See*—
Diamond, Sidney; and Kupperman, Dennis, 5,385,267, Cl. 221-248.000.

Kuraishi, Tadayuki: *See*—
Konno, Fujiko; Shibata, Akihiro; Matsuda, Hideaki; Asaoka, Takemitsu; Kawahara, Ryuichi; Taido, Naokata; Kuraishi, Tadayuki; and Takeda, Sunao, 5,385,900, Cl. 514-218.000.

Kuramoto, Akio: *See*—
Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kakuta, Hirotaka, 5,385,354, Cl. 277-235.00B.

Kuraudo Co. Ltd.: *See*—
Toyokura, Yasuhiro, 5,385,083, Cl. 99-355.000.

Kurihara, Susumu: *See*—
Kasahara, Seitaro; Itakura, Haruo; Kurihara, Susumu; and Ishii, Hiroshi, 5,386,284, Cl. 355-311.000.

Kurimoto, Isao: *See*—
Higashii, Takayuki; Kurimoto, Isao; Toda, Shoji; Minai, Masayoshi; Tani, Takeshi; Kawakami, Chizu; Fujisawa, Koichi; and Imamura, Kiyoshi, 5,385,693, Cl. 252-299.650.

Kurimoto, Kazumi: *See*—
Hiroki, Akira; Odanaka, Shinji; and Kurimoto, Kazumi, 5,386,133, Cl. 257-344.000.

Kurita, Hironori: *See*—
Moriya, Tamon; Kurita, Hironori; Otake, Toru; Mori, Haruyo; and Morimoto, Motoko, 5,385,891, Cl. 514-58.000.

Kurita, Osamu: *See*—
Nakamura, Katsuhiro; Kato, Minoru; Watanabe, Yasuhisa; Matsubara, Yasunori; Ikeda, Yorinobu; Yonekawa, Yoshiaki; Miki, Hiroyuki; Hiraharu, Akio; Ito, Nobuyuki; Kurita, Osamu; Kaneko, Yasunobu; and Nishida, Shouzou, 5,385,975, Cl. 525-101.000.

Kurita, Ryuzo: *See*—
Hirota, Narumi; Hikida, Toshiharu; Kurita, Ryuzo; and Inada, Toshihide, 5,385,293, Cl. 229-122.000.

Kurita Water Industries Ltd.: *See*—
Oinuma, Masayoshi; and Kawachi, Toru, 5,385,664, Cl. 210-151.000.

Kuroda, Noritaka: *See*—
Ooka, Akihiro; Kawamura, Kenji; Nishiura, Yozo; Itoh, Katsuaki; Iwashita, Takaki; Nishi, Yasuhiko; Kuroda, Noritaka; and Hasegawa, Hayato, 5,386,484, Cl. 385-11.000.

Kuroda, Tetsuji; and Haraguchi, Kazuyoshi, to Casio Computer Co., Ltd. Data processing system having a plurality of units in which design of the system can be changed by simple definition. 5,386,555, Cl. 395-600.000.

Kurosawa, Hiroshi: *See*—
Amano, Yoshifumi; Nakamura, Kazuo; Kurosawa, Hiroshi; Sato, Takeshi; Akano, Hirofumi; and Kawamura, Yoshiya, 5,385,830, Cl. 435-29.000.

Kurose, Isao, to Uchiyama Manufacturing Corp. Sealing system for bearings, particularly radial-type bearings. 5,385,352, Cl. 277-37.000.

Kurtz, Anthony D.; Shor, Joseph S.; and Ned, Alexander A., to Kulite Semiconductor Products, Inc. Semiconductor structures having environmentally isolated elements and method for making the same. 5,386,142, Cl. 257-690.000.

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Ortega, Jose D.; Gil, Jose A.; Garcia, Tomas V.; and Martin, Juan F., 5,385,841, Cl. 435-252.350.

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LaFreniere, Brian R., to Bay Corrugated Container, Inc. Apparatus for manufacturing corrugated pallets using a stacked compression station. 5,385,625, Cl. 156-379.800.

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Hu, Patrick C.; and Leavitt, Richard I., 5,385,753, Cl. 427-215.000.

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Grange, Jean-Paul; and Lecomte, Olivier, 5,385,516, Cl. 477-107.000.

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Lee, Ving J.: *See*—
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Bonneau, Victor B.; Kuzkin, Gary M.; Wagoner, Robert G.; and Overman, John A., 5,386,147, Cl. 307-64.000.

Lenain, Valerie: *See*—
Robin, Jean-Pierre; and Lenain, Valerie, 5,386,016, Cl. 536-18.100.

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Au, Van; Harichian, Bijan; Hill, Michael I.; Raykh, Mikhail; and Krupa, Jerry J., 5,386,018, Cl. 536-185.000.
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Tsaur, Liang S.; and Aronson, Michael P., 5,385,959, Cl. 523-201.000.

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Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Silvestri, Victor J., 5,386,121, Cl. 250-341.800.

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Maurer, Donald D.; and Lien, Mary M., 5,385,577, Cl. 607-41.000.

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Bramm, Gunter L.; and Olsen, Don B., 5,385,581, Cl. 623-3.000.

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Limberg, Allen L., to Samsung Electronics Co., Ltd. IGFET current mirror amplifiers with nested-cascode input and output stages. 5,386,200, Cl. 330-288.000.

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Lin, Min H. Method for sorting and merging in a data processing system using a matrix of cells. 5,386,578, Cl. 395-800.000.

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White, David H.; Woulfe, Steven R.; Lin, Youlin; and Kneller, Mills T., 5,385,724, Cl. 424-9.000.

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Troetscher, Gerhard; and Hecht, Anton, 5,384,969, Cl. 34-82.000.

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Smith, Collin M., 5,385,140, Cl. 128-200.230.

Lindstrom, Richard L.: *See*—
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Andersson, Carl-Magnus A.; Bergstrand, Hakan S. A. M.; Jakupovic, Edib; Josefsson, Bo-Goran; Lindvall, Magnus L.; Sarnstrand, Bengt O.; and Teneberg, Eric N. G., 5,385,904, Cl. 514-255.000.

Linear Limited: *See*—
Hall, Alfred B., 5,384,976, Cl. 49-489.100.

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Fan, Robert J.; and Parker, Douglas A., 5,386,486, Cl. 385-59.000.

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Kilius, Linas R.; and Litherland, Albert E., 5,386,116, Cl. 250-288.000.

Little, Richard F.: *See*—
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Martin, Graham J., 5,386,288, Cl. 356-350.000.

Liu, Hsiung-Hao; Shyn, Der-Cing; Cheng, Lios-Shun; and Chiu, Chen-Tsu, to Winbond Electronic Corp. Method for controlling a liquid crystal display module to show interlaced picture data thereon. 5,386,217, Cl. 345-99.000.

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Sunkara, Ssi P.; Liu, Paul S.; Tyms, A. Stanley; and Taylor, Debra L., 5,385,911, Cl. 514-299.000.

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Gallucci, Robert R.; and Liu, Ping Y., 5,385,970, Cl. 524-538.000.

Lloyd, Robert C. W.: *See*—
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Grizzuti, Antonio; and Lloyd, Robert J., 5,385,735, Cl. 424-442.000.

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Chen, Hsin-Li; Lo, Han-Shen; and Wu, Wood, 5,386,380, Cl. 365-94.000.

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Carter, Steven H.; Lockyer, Terence D.; and Gahan, Christopher J., 5,386,470, Cl. 380-48.000.

Loctite Corporation: *See*—
Nakos, Steven T.; and Woods, John G., 5,386,047, Cl. 556-416.000.

Loehr, Karl R.: *See*—
Robinson, Darrell; Lewis, Michael E.; Loehr, Karl R.; and Pruchs, Allen V., 5,385,486, Cl. 439-517.000.

Lofgren, Lars-Gunnar: *See*—
Lindqvist, Vidon; Lofgren, Lars-Gunnar; and Olsson, Tord, 5,385,098, Cl. 102-205.000.

Lofton, Elizabeth P., to Rohm and Haas Company. Formaldehyde-free binder. 5,385,756, Cl. 427-389.900.

Loker, Keith G.; and Bland, James B., III. Umbrella support. 5,385,161, Cl. 135-15.100.

Loma Linda University Medical Center: *See*—
Kirsch, Wolff M.; and Zhu, Yong H., 5,385,541, Cl. 604-8.000.

Lonardi, Emile; Bernard, Gilbert; Cimenti, Giovanni; and Venturini, Jean-Jacques, to Paul Wurth S.A. Device for charging a pressurized enclosure. 5,385,437, Cl. 414-204.000.

Long, Herbert D., Jr., to Harnischfeger Corporation. Material handling machine with force-isolating support link. 5,385,249, Cl. 212-218.000.

Long, John D., to Longford Equipment International Limited. Gear transmission with ratchet o.w.c. and planetary gear set suitable for providing a pulsed drive. 5,385,509, Cl. 475-14.000.

Longford Equipment International Limited: *See*—
Long, John D., 5,385,509, Cl. 475-14.000.

Longobardo, Anthony V., to PPG Industries, Inc. Selenium encapsulation for producing colored glass. 5,385,593, Cl. 65-17.100.

Longsworth, Ralph C.; and Khatri, Ajay N., to APD Cryogenics, Inc. Continuous flow cryogen sublimation cooler. 5,385,027, Cl. 62-51.100.

Lord Corporation: *See*—
Abbey, Kirk J.; Howe, Stephen E.; and Munoz, Beth C., 5,385,990, Cl. 525-534.000.
Ozawa, Hiroyoshi; Kamiya, Noboru; and Futaya, Ryuji, 5,385,979, Cl. 525-145.000.

Los Alamos Technical Associates, Inc.: *See*—
Baker, Forrest A.; and Bradford, Wesley L., 5,385,711, Cl. 422-186.070.

Loscalzo, Joseph: *See*—
Stamler, Jonathan; and Loscalzo, Joseph, 5,385,937, Cl. 514-557.000.

Lotter, Hermann: *See*—
Seebach, Dieter; Drauz, Karlheinz; Kottenhahn, Matthias; Lotter, Hermann; and Schwarm, Michael, 5,386,035, Cl. 548-316.400.

Love, Scott D.: *See*—
Kwok, Tai W.; and Love, Scott D., 5,386,073, Cl. 585-464.000.

Love, Vaughn R., to Cummins Engine Company, Inc. Tamper-evident, self-locking cover for mechanical connections and related objects. 5,385,373, Cl. 292-307.00B.

Lovell, Walter C., to Tapeswitch Corporation of America. Apparatus and method for providing high temperature conductive-resistant coating, medium and articles. 5,385,785, Cl. 428-408.000.

Low, Qwai H.: *See*—
Variot, Patrick; Low, Qwai H.; Alagaratnam, Maniam; and Dalao, Teresa, 5,386,144, Cl. 257-718.000.

Lowne, Alan J.: *See*—
Switalski, Steven C.; Uerz, David S.; Lowne, Alan J.; Sandifer, James R.; and Liu, Hsue-Yang, 5,386,295, Cl. 356-418.000.

LSI Logic Corporation: *See*—
Rostoker, Michael, 5,386,342, Cl. 361-749.000.
Variot, Patrick; Low, Qwai H.; Alagaratnam, Maniam; and Dalao, Teresa, 5,386,144, Cl. 257-718.000.

Lubinskas, Robert B.: *See*—
Feldpausch, Thomas G.; Branc, Joseph R.; and Lubinskas, Robert B., 5,385,039, Cl. 70-78.000.

Lucks Company, The: *See*—
Christensen, George M.; and Weyer, Donald D., 5,385,137, Cl. 126-21.00R.

Ludwig, Georg-Wilhelm; Exner, Otto; Paulus, Wilfried; Buchel, Karl-Heinz; and Holmwood, Graham, to Bayer Aktiengesellschaft. Microbicidal active compound combinations. 5,385,926, Cl. 514-383.000.

Luh, Bing Y.: *See*—
Kim, Choung U.; Martin, John C.; Luh, Bing Y.; and Misco, Peter F., 5,386,030, Cl. 544-243.000.

Luk Getriebe-Systeme GmbH: *See*—
Otto, Dieter; and Pfund, Thomas, 5,385,222, Cl. 192-3.290.

Luly, Jay R.: *See*—
Wiedeman, Paul E.; Kawai, Megumi; Luly, Jay R.; Or, Yat S.; and Wagner, Rolf, 5,386,011, Cl. 530-329.000.

Lund, David L.; Groff, Donald W.; Bonk, James J.; and Rumsey, Kenneth S., to GNB Battery Technologies Inc. Methods and apparatus for pasting battery current collectors. 5,385,587, Cl. 29-623.500.

Lund, William J., to ACT Distribution, Inc. Hot water demand appliance and sytem. 5,385,168, Cl. 137-337.000.

Lundberg, Robert D.: *See*—
Emert, Jacob; Lundberg, Robert D.; and Gutierrez, Antonio, 5,385,687, Cl. 252-56.00R.
Gutierrez, Antonio; and Lundberg, Robert D., 5,385,684, Cl. 252-47.500.

Lundquist, Ingemar H.: *See*—
Edwards, Stuart D.; Sharkey, Hugh R.; Lundquist, Ingemar H.; Lax, Ronald G.; and Strul, Bruno, 5,385,544, Cl. 604-22.000.

Lutz, James E.: *See*—
Jones, Dennis R.; Lutz, James E.; Campbell, Richard H.; and Overholser, Denys D., 5,386,196, Cl. 324-667.000.

Lxe, Inc.: *See*—
Cooper, W. Burchall; Nelson, Kenneth P.; Jones, Donald A.; and Avery, John W., 5,386,435, Cl. 375-1.000.

Lyday, Joe H., to Active Management, Inc. Hydraulic fluid pressurizer with fluid cushioning means. 5,385,452, Cl. 417-403.000.

Lyden, Robert M., to Nike, Inc. Sole with articulated forefoot. 5,384,973, Cl. 36-25.00R.

Lynn, Dale E.: *See*—
Cotsonas, George P.; Kasiske, Kenneth; Lynn, Dale E.; and Muth, Edwin A., 5,386,457, Cl. 379-61.000.

Lyons, James E.: *See*—
Durante, Vincent A.; Lyons, James E.; and Walker, Darrell W., 5,386,074, Cl. 585-658.000.

M. Bohlke Veneer Corp.: *See*—
Mellor, David, 5,385,184, Cl. 144-178.000.

MacDonald, Keith: *See*—
Nixon, Henry M., Jr.; Schell, Frank; and MacDonald, Keith, 5,385,003, Cl. 53-471.000.

Macdonald, Robert D.: *See*—
Munson, Robert E.; and Macdonald, Robert D., 5,386,079, Cl. 588-205.000.

Macek, Matthew J.: *See*—
Single, Arthur W., II; Steiner, Thomas J.; Cristiano, James J.; Macek, Matthew J.; Yeager, Debra; and Farah, Riad A., 5,385,382, Cl. 297-180.130.

Machida, Hirohisa: *See*—
Ando, Hideki; and Machida, Hirohisa, 5,386,528, Cl. 395-400.000.

Machida, Junji: *See*—
Terasaka, Yoshihisa; Ohtani, Junji; Machida, Junji; Shimizu, Tamotsu; Murasaki, Hiroshi; and Mizuno, Hiroshi, 5,385,801, Cl. 430-122.000.

Machida, Tetsuo, to Sony Corporation. Injection molding machine for making a magnetic tape cassette. 5,385,461, Cl. 425-130.000.

Mack, David: *See*—
Sninsky, John J.; Kwok, Shirley Y.; Mack, David; Erlich, Henry A.; and Mullis, Kary B., 5,386,022, Cl. 536-24.320.

Mack, Michael J.: *See*—
Blaner, Bartholomew; Eberhard, Raymond J.; Jeremiah, Thomas L.; and Mack, Michael J., 5,386,531, Cl. 395-425.000.

MacNeill, Gerald F., to ACS Industries, Inc. High temperature resistant material. 5,385,873, Cl. 501-95.000.

Macon, Carolyn B. Emission control assembly. 5,385,131, Cl. 123-538.000.

Maczkowiak, Michael: *See*—
Bersaen, Johannes; Hanschke, Clemens; Kaczor, Michael; Klein, Hermann-Josef; Maczkowiak, Michael; and Schmitt, Wolfgang, 5,386,287, Cl. 356-326.000.

Mader, Roger A., to Minnesota Mining and Manufacturing Company. Method of producing polymethine dyes. 5,386,058, Cl. 564-330.000.

Maeda Limited: *See*—
Maeda, Sadao, 5,385,592, Cl. 55-323.000.

Maeda, Sadao, to Maeda Limited. Filter device for compressed air. 5,385,592, Cl. 55-323.000.

Maeda, Takao; Nishizawa, Tatsuo; and Watanabe, Kenji, to Fuji Electric Co., Ltd. Partial discharge detecting device for resin-molded transformer. 5,386,193, Cl. 324-547.000.

Maeda, Yasuko: *See*—
Ototake, Taro; Maeda, Yasuko; and Ueki, Takakazu, 5,386,294, Cl. 356-401.000.

Maeda, Yasuo: *See*—
Ishibashi, Kenji; Hara, Yoshihiro; Yukawa, Kazuhiko; Fujino, Akihiko; Maeda, Yasuo; Ohmori, Shigeto; Ishito, Fumiaki; Ootsuka, Hiroshi; and Miyazawa, Masayuki, 5,386,262, Cl. 354-402.000.

Maekawa, Kazunobu; Hirata, Sumiaki; and Yamaguchi, Ikunori, to Minolta Camera Kabushiki Kaisha. Centralized control system for an image forming apparatus which employs fuzzy logic to identify abnormal conditions. 5,386,271, Cl. 355-204.000.

Maekawa, Tomohiro; Yui, Yasuji; and Kamoda, Hitoshi, to Sony Corporation. Device for identifying an ink ribbon cartridge used in a printer. 5,385,416, Cl. 400-208.000.

Maekawa, Zenichiro: *See*—
Akiyama, Yasuo; Maekawa, Zenichiro; Yokoyama, Atsushi; and Uratani, Yasushi, 5,385,077, Cl. 87-8.000.

Maeyama, Ryuichiro; and Kubo, Takahiro, to Canon Kabushiki Kaisha. Cleaning fiber, cleaning brush and image forming apparatus using the same. 5,386,278, Cl. 355-271.000.

Magnussen, Peter: *See*—
Otterbach, Andreas; Schwarz, Hans V.; Merger, Franz; Schwarz, Wolfgang; Brandt, Eckhardt; Magnussen, Peter; and Mattner, Otto, 5,386,053, Cl. 560-344.000.

Mahafby & Harder Engineering Co.: *See*—
Nixon, Henry M., Jr.; Schell, Frank; and MacDonald, Keith, 5,385,003, Cl. 53-471.000.

Mahaim, Cyril: *See*—
Snowden, Roger L.; Mahaim, Cyril; and Simmons, Dana P., 5,386,039, Cl. 568-355.000.

Mahjour, Majid: *See*—
Fawzi, Mahdi B.; and Mahjour, Majid, 5,385,941, Cl. 514-567.000.

Mahler, Walter, to Du Pont de Nemours, E. I., and Company. Separation of polymers. 5,385,950, Cl. 521-45.500.

Mahood, James A.: *See*—
Avakian, Roger W.; and Mahood, James A., 5,385,961, Cl. 523-213.000.

Maier, Gary J.: *See*—
Herbert, William G.; Hendrix, Loren E.; Maier, Gary J.; and Matyi, Ernest F., 5,385,660, Cl. 205-67.000.

Maier-Hunke, Horst-Werner; and Rupprecht, Gunter, to "Durable" Hunke & Jochheim GmbH & Co. KG. Clip device. 5,384,935, Cl. 24-67.00H.

Maki, Theodore R.: *See*—
Szegedi, Nicholas J.; Garett, Lawrence I.; Maki, Theodore R.; and Smith, Dennis N., 5,386,313, Cl. 359-280.000.

Makino, Isamu: *See*—
Kizawa, Yoshihiro; Fukushima, Toshimitsu; Katsuyama, Hiroyoshi; Makino, Isamu; and Yamada, Toshiyuki, 5,385,031, Cl. 62-106.000.

Makino, Syozaburo; Takahashi, Isao; and Kishigami, Masanori, to Nippon Selen Co., Ltd. Yarn break detecting device for spinning machine. 5,385,006, Cl. 57-81.000.

Makkink, Andrew E. Treating of agricultural soil. 5,385,596, Cl. 71-43.000.

Malabre, John A.: *See*—
Walker, James A., 5,385,038, Cl. 70-14.000.

Malaspina, Giorgio; and Francone, Nicola, to Socoplast; and Nuova Poliver Di Oddone C. Device for picking up litter such as animal excrement. 5,385,376, Cl. 294-1.300.

Maletz, Gerhard: *See*—
Schneider, Michael; Kochloefl, Karl; and Maletz, Gerhard, 5,386,066, Cl. 568-885.000.

Malkemus, Timothy R.: *See*—
Boykin, James R.; Geer, Lisa A.; Horn, Gary R.; and Malkemus, Timothy R., 5,386,557, Cl. 395-600.000.

Mallart, Raoul: *See*—
Le Guerinel, Yves; and Mallart, Raoul, 5,386,395, Cl. 367-137.000.

Mallinckrodt Medical, Inc.: *See*—
Dickerhoff, Scott D.; Kappel, Thomas F.; and Virag, Robert A., 5,384,924, Cl. 5-421.000.
White, David H.; Woulfe, Steven R.; Lin, Youlin; and Kneller, Mills T., 5,385,724, Cl. 424-9.000.

Malloy, Gary J.; and Jaeger, David W. Reusable core apparatus for a casting mold, and methods of utilizing same. 5,385,705, Cl. 264-219.000.

Malzman, Allyson: *See*—
Dubois, Robert A.; Malzman, Allyson; Treybig, Duane S.; Sheih, Pong S.; and Whetten, Alan R., 5,386,008, Cl. 528-87.000.

Mama Tiah's Italian Specialties, Inc.: *See*—
Katz, Sumner N.; and O'Connor, Thomas L., 5,385,747, Cl. 426-573.000.

Mammino, Joseph: *See*—
Hays, Dah A.; Mammino, Joseph; Pai, Damodar M.; Sypula, Donald S.; Wayman, William H.; Yanus, John F.; and DeFeo, Paul J., 5,386,277, Cl. 355-259.000.
Spiewak, John W.; Yah, Huoy-Jen; Thornton, Constance J.; Abramsohn, Dennis A.; Nichol-Landry, Deborah; Mammino, Joseph; Ziolo, Ronald F.; Yu, Robert C. U.; Carmichael, Kathleen; and Patterson, Neil S., 5,385,796, Cl. 430-64.000.

Man-Gill Chemical Company: *See*—
Brent, Randall J.; and Blaha, David A., 5,385,655, Cl. 204-181.100.

Manabe, Kazutaka, to NEC Corporation. Method for fabricating semiconductor device having memory cell of stacked capacitor type. 5,385,858, Cl. 437-52.000.

Manabe, Yoshinori: *See*—
Fujimoto, Hideki; and Manabe, Yoshinori, 5,386,446, Cl. 376-20.000.

Mancini, Flavio. Pump for hot chamber die casting of corrosive light alloys. 5,385,456, Cl. 417-510.000.

Mandell, Gilbert E.; and Crane, Dale E., to Uniphase Corporation. Internal mirror shield, and method for protecting the mirrors of an internal gas laser. 5,386,434, Cl. 372-103.000.

Mandler, Daniel; and Turyan, Iva, to Yissum Research Development Company of the Hebrew University of Jerusalem. Determination of ultra low levels of mercury. 5,385,708, Cl. 422-82.030.

Mandrik, Paul: *See*—
Gierman, Karl E.; and Mandrik, Paul, 5,385,384, Cl. 297-238.000.

Mang, Michael N.: *See*—
Inbasekaran, Muthiah N.; Murray, Daniel J.; Mang, Michael N.; and Brewbaker, James L., 5,386,002, Cl. 528-170.000.

Manico, Joseph A.: *See*—
Pattos, David L.; Manico, Joseph A.; Rosenburgh, John H.; and Piccinino, Ralph L., Jr., 5,386,261, Cl. 354-324.000.

Manier, Monika: *See*—
Schassberger, Wolfgang; Manier, Monika; and Thoma, Martin, 5,385,760, Cl. 427-443.100.

Mankovitz, Roy J. Topical preparation and method for suppression of skin eruptions caused by herpes simplex virus. 5,385,733, Cl. 424-195.100.

Mann, Donnerl B., to D'Mannco, Inc. Knee brace having an inflatable bladder support. 5,385,538, Cl. 602-26.000.

Mannen, Ilryce L.; and Rogers, Steve, to FMC Corporation. Tire changing and balancing machine. 5,385,045, Cl. 73-462.000.

Mannesmann Aktiengesellschaft: *See*—
Wenzel, Harald, 5,385,449, Cl. 417-243.000.

Manning, Monte: *See*—
Batra, Shubneesh; and Manning, Monte, 5,385,854, Cl. 437-41.000.

Manning, Randy M.: *See*—
Briggs, Robert C.; Fawcett, Thomas R., Jr.; and Manning, Randy M., 5,386,487, Cl. 385-59.000.

Mannix, Gerald, to Newsom, R. Jason. Syringe filling and metering device. 5,385,559, Cl. 604-211.000.

Mann's Bait Company: *See*—
Davis, Jack, 5,384,979, Cl. 43-42.180.

Mano, Hiroshi: *See*—
Kashihara, Atsushi; Kawana, Takashi; Saito, Tetsuo; Mano, Hiroshi; Kanaiwa, Kiyoshi; and Seto, Kaoru, 5,386,302, Cl. 358-448.000.

Mantese, Joseph V.: *See*—
Micheli, Adolph L.; Mantese, Joseph V.; Schubring, Norman W.; and Catalan, Antonio B., 5,386,120, Cl. 250-338.200.

Mao, Zhong M.: *See*—
Pan, Jing-Jong; Liang, Frank Y. F.; Shih, Ming M.; Mao, Zhong M.; and Shih, Kung, 5,386,490, Cl. 385-134.000.

Maranci, Arutun: *See*—
Evans, Robert E.; Maranci, Arutun; and Kaminski, Stanley S., 5,385,978, Cl. 525-113.000.

Marantz, Richard: *See*—
Deur, Ted E.; Crawford, Clark W.; Wood, Brian J.; Marantz, Richard; and Buehler, James D., 5,386,224, Cl. 347-7.000.

Marciandi, Franco; Giudici, Dario; and Binaghi, Marco, to Vedril S.p.A. Process for preparing flowable, stable and hardenable suspensions, and thus-obtained compositions. 5,385,973, Cl. 524-730.000.

Mardero, Steve; Fulford, Raymond; and Van de Mosselaer, Harry, to Canadian Aging & Rehabilitation Product Development Corp. Security rail attachment for a bed. 5,384,927, Cl. 5-662.000.

Marine Pollution Control: *See*—
Geister, Donald E., 5,385,447, Cl. 415-220.000.

Marlow, Geoffrey G.: *See*—
Wilson, Owen H.; and Marlow, Geoffrey G., 5,386,299, Cl. 333-406.000.

Marquez, Leticia: *See*—
Tuse, Daniel; Marquez, Leticia; and Hokama, Leslie A., 5,385,832, Cl. 435-101.000.

Marrone, Giovanni, to ENEL-Ente Nationale per l'Energia Elettrica. Apparatus for checking the contamination condition of electric insulators. 5,386,192, Cl. 324-439.000.

Marsh, Lawrence B.; and Wright, John D., to Marsh-McBirney, Inc. Pump station flowmeter. 5,385,056, Cl. 73-861.000.

Marsh-McBirney, Inc.: *See*—
Marsh, Lawrence B.; and Wright, John D., 5,385,056, Cl. 73-861.000.

Marsh, Robert A. Elevating conveyor for small articles. 5,385,227, Cl. 198-773.000.

Marshall, Perry C. Method for using lie, shaft position, and loft indicator. 5,385,349, Cl. 273-187.400.

Marsi, Marianne: *See*—
Dembek, Alexa A.; and Marsi, Marianne, 5,386,001, Cl. 528-373.000.

Martin, Charles: *See*—
Huggler, Peter; and Martin, Charles, 5,385,082, Cl. 99-328.000.

Martin Engineering Company: *See*—
Swearingen, Terry L.; and Mueller, David W., 5,385,507, Cl. 474-92.000.

Martin, Felipe J.: *See*—
Miehls, David J.; Martin, Felipe J.; and Pond, Ramona G., 5,386,085, Cl. 174-250.000.

Martin, Graham J., to Litton Systems, Inc. Split gain multimode ring laser gyroscope and method. 5,386,288, Cl. 356-350.000.

Martin, James P.: *See*—
Hubble, Fred F., III; Martin, James P.; Powers, Edward A.; and Ossman, Kenneth R., 5,386,123, Cl. 250-561.000.

Martin, Jerry C.; Zentner, Martin M.; and Mills, Robert T., to General Electric Company. Refrigerator air flow control mechanism. 5,385,032, Cl. 62-187.000.

Martin, John C.: *See*—
Kim, Choung U.; Martin, John C.; Luh, Bing Y.; and Misco, Peter F., 5,386,030, Cl. 544-243.000.

Martin, Juan F.: *See*—
Ortega, Jose D.; Gil, Jose A.; Garcia, Tomas V.; and Martin, Juan F., 5,385,841, Cl. 435-252.350.

Martin Marietta Corporation: *See*—
Amon, Max; and Tejada, John, 5,386,315, Cl. 359-350.000.

Martin Marietta Energy Systems, Inc.: *See*—
Scott, Timothy C., 5,385,658, Cl. 204-305.000.

Martin, Phil; and Alvstad, Gary, to Intel Corporation. Automatic input/output address conflict resolution. 5,386,515, Cl. 395-275.000.

Martino, Gary T.; and Tessler, Martin M., to National Starch and Chemical Investment Holding Corporation. Low molecular weight polyacetals and polyaldehydes. 5,386,040, Cl. 568-483.000.

Martor-Argentax E. H. Beermann KG: *See*—
Beermann, Ewald H., 5,384,963, Cl. 30-162.000.

Maruyama, Akio: *See*—
Nagahara, Shin; Maruyama, Akio; and Tsuji, Haruyuki, 5,385,797, Cl. 430-67.000.

Masaki, Hiroyuki, to Seiko Instruments Inc. Analogue electronic timepiece with chronographic function. 5,386,399, Cl. 368-110.000.

Mascia, Leno; Tonelli, Claudio; and Simeone, Giovanni, to Ausimont S.p.A. Prepolymers containing a perfluoropolyethereal chain and carboxylic end groups, suitable as cross-linking agents for epoxy prepolymers. 5,386,005, Cl. 528-110.000.

MascoTech Controls: *See*—
Moy, Curtis T.; and Iwasiuk, Orest, 5,385,061, Cl. 74-42.000.

Maskasky, Joe E., to Eastman Kodak Company. Process for the preparation of silver halide emulsions and photographic elements containing hollow silver halide grains. 5,385,818, Cl. 430-567.000.

Massachusetts Institute of Technology: *See*—
Brown, Elliott R., 5,386,215, Cl. 343-795.000.
Hiemke, Levan; and Kwak, Emanuel, 5,386,398, Cl. 368-10.000.
Papadopoulos, Gregory M., 5,386,586, Cl. 395-800.000.
Zayhowski, John J., 5,386,427, Cl. 372-34.000.

Massen, Robert; Gassler, Joachim; Konz, Christian; and Richter, Harald, to Kaltenbach & Voight GmbH & Co. Optical measurement of teeth. 5,386,292, Cl. 356-376.000.

Massimo, Giontella. Orthopedic shoe insert with a yielding element in the heel. 5,384,974, Cl. 36-27.000.

Materiels Equipments Graphics, S.A.: *See*—
Grandjean, Alain J., 5,384,968, Cl. 34-79.000.

Mather, Mike; Haumersen, Steve; and Eastey, Roger, to Hughes Training, Inc. Portable exploitation and control system. 5,386,371, Cl. 364-371.080.

Mathews, Margaret R. Needlework thread organizer. 5,385,237, Cl. 206-574.000.

Matsubara, Tomio: *See*—
Sasaki, Yoshiyuki; Kobayashi, Shigenobu; Kasaoka, Katsuyuki; Matsubara, Tomio; and Asada, Kaoru, 5,385,784, Cl. 428-369.000.

Matsubara, Yasunori: *See*—
Nakamura, Katsuhiro; Kato, Minoru; Watanabe, Yasuhisa; Matsubara, Yasunori; Ikeda, Yorinobu; Yonekawa, Yoshiaki; Miki, Hiroyuki; Hiraharu, Akio; Ito, Nobuyuki; Kurita, Osamu; Kaneko, Yasunobu; and Nishida, Shouzou, 5,385,975, Cl. 525-101.000.

Matsuda, Hideaki: *See*—
Konno, Fujiko; Shibata, Akihiro; Matsuda, Hideaki; Asaoka, Takemitsu; Kawahara, Ryuichi; Taido, Naokata; Kuraishi, Tadayuki; and Takeda, Sunao, 5,385,900, Cl. 514-218.000.

Matsuda, Takashi: *See*—
Kishita, Hirofumi; Sato, Shinichi; Yamaguchi, Kouichi; Koike, Noriyuki; and Matsuda, Takashi, 5,386,049, Cl. 556-434.000.

Matsuda, Yoshiaki: *See*—
Kimura, Fuminori; Mitsuda, Shinjiro; and Matsuda, Yoshiaki, 5,385,836, Cl. 435-177.000.

Matsui, Fumio: *See*—
Yanagisawa, Shuichi; Tanaka, Satoru; and Matsui, Fumio, 5,386,411, Cl. 369-275.400.

Matsui, Koji, to NEC Corporation. Method of connecting an integrated circuit chip to a substrate. 5,384,952, Cl. 29-840.000.

Matsumoto, Iwao, to Photo Craft Co., Ltd. Illuminating apparatus and a method of manufacturing an edge light conductor for use therein. 5,386,347, Cl. 362-31.000.

Matsumoto, Masakazu, to Nikken Kosakusho Works, Ltd. Clamp device for rotary shaft portion. 5,385,424, Cl. 403-369.000.

Matsumoto, Roger L. K.; and Schwark, Joanne M. Shape sintered articles derived from boro-containing polysilazanes. 5,386,006, Cl. 528-4.000.

Matsumoto, Yoshihiro; Shinomoto, Mitsuhiro; and Yagi, Yasunori, to Osaka Sanso Kogyo Ltd. Apparatus for forming resin coating on surface of article having three-dimensional structure. 5,385,611, Cl. 118-642.000.

Matsuo, Masahito: *See*—
Yoshida, Toyohiko; and Matsuo, Masahito, 5,386,580, Cl. 395-800.000.

Matsuoka, Kazuyuki, to Daicel Chemical Industries, Ltd. Process for producing 2-hydroxy-4-methylthiobutanoic acid. 5,386,056, Cl. 562-526.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hiroki, Akira; Odanaka, Shinji; and Kurimoto, Kazumi, 5,386,133, Cl. 257-344.000.
Hirota, Narumi; Hikida, Toshiharu; Kurita, Ryuzo; and Inada, Toshihide, 5,385,293, Cl. 229-122.000.
Ishiwata, Tetsuo; and Yamaguchi, Susumu, 5,386,323, Cl. 360-19.100.
Itoh, Masami; Nishii, Kanji; Kawamura, Hiroyuki; and Fukui, Atsushi, 5,386,378, Cl. 364-822.000.
Kage, Shingo; Yamano, Yoshikazu; and Toyama, Yasunari, 5,386,330, Cl. 360-96.500.
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Mita Industrial Co., Ltd.: *See*—
Fukami, Toshiyuki; and Tanaka, Masashi, 5,386,279, Cl. 355-271.000.
Mitani, Masao; and Shimizu, Kazuo, to Hitachi Koki Co., Ltd. Thermal fixing device. 5,386,281, Cl. 355-290.000.
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Veeneman, Ron C.; Fullarton, Sonya G.; Peters, Dana C.; Rehder, Michael C.; Rose, K. Timothy; Tranter, Jeff J.; and Weatherson, Andrew J., 5,386,459, Cl. 379-93.000.
Mitra, Samir; Raman, Renukanthan; and Petolino, Joseph, to Sun Microsystems, Inc. Cache memory controller and method for reducing CPU idle time by fetching data during a cache fill. 5,386,526, Cl. 395-400.000.
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Ishikawa, Yasuo, 5,386,421, Cl. 371-21.200.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Ando, Hideki; and Machida, Hirohisa, 5,386,528, Cl. 395-400.000.
Arima, Yutaka, 5,386,149, Cl. 395-24.000.
Asayama, Yoshiaki, 5,386,285, Cl. 356-1.000.
Gai, Toshihiro, 5,386,244, Cl. 348-610.000.
Harada, Toshio; and Kudo, Kazuhiro, 5,386,569, Cl. 395-700.000.
Kawai, Hideki; and Tanaka, Hidehiko, 5,386,094, Cl. 219-69.140.
Nishimura, Kazuhiro; and Ueda, Kiyotoshi, 5,386,189, Cl. 324-158.100.
Ohkura, Yuji; and Fujiwara, Masatoshi, 5,386,433, Cl. 372-96.000.
Okitaka, Takenori, 5,386,390, Cl. 365-230.060.
Takikawa, Hiroyoshi; Yoshio, Yoshida; Kakimoto, Nobuko; and Ise, Shinsuke, 5,386,102, Cl. 21-620.000.
Tanizaki, Tetsushi, 5,386,387, Cl. 365-200.000.
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Goto, Hirofumi; Yoshida, Chisato; and Yokouchi, Kazuhiro, 5,386,218, Cl. 345-129.000.
Yoshida, Toyohiko; and Matsuo, Masahito, 5,386,580, Cl. 395-800.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Ohya, Kazuyuki, 5,385,989, Cl. 525-502.000.
Mitsubishi Kasei Corporation: *See*—
Ono, Hitoshi; Ando, Osamu; and Takeuchi, Masako, 5,385,799, Cl. 430-110.000.
Ueno, Hiroaki; Morioka, Masahiko; and Hatanaka, Fumiko, 5,385,917, Cl. 514-325.000.
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Tanaka, Etuzi; Yamada, Motoshige; and Tanaka, Akira, 5,385,820, Cl. 430-595.000.
Mitsubishi Petrochemical Company Limited: *See*—
Fujita, Takashi; Sugano, Toshihiko; and Uchino, Hideshi, 5,385,877, Cl. 502-103.000.
Fujita, Takashi, 5,385,993, Cl. 526-119.000.
Sakakura, Yasuyuki, 5,386,052, Cl. 560-205.000.
Yamamoto, Koji; Ikeno, Hajime; and Shichijo, Keiko, 5,385,972, Cl. 524-579.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Yamamoto, Naoki; Nakata, Akira; Hatakeyama, Hiroki; and Watanabe, Hiroyuki, 5,385,988, Cl. 525-479.000.
Mitsuda, Shinjiro: *See*—
Kimura, Fuminori; Mitsuda, Shinjiro; and Matsuda, Yoshiaki, 5,385,836, Cl. 435-177.000.
Mitsuhashi, Ken-ichiro; Ueno, Koichi; and Kashihara, Shin-ichiro, to Kabushiki Kaisha Kobe Seiko Sho. Plate fin heat exchanger built-in type multi-stage thermosiphon. 5,385,203, Cl. 165-110.000.
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Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 5,385,998, Cl. 526-348.600.
Yokoyama, Keiichi; Hiwara, Akio; Fujita, Shigeru; and Omaru, Atsuo, 5,385,794, Cl. 429-194.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Obuchi, Shoji; and Ohta, Masahiro, 5,386,004, Cl. 528-354.000.
Mitsumi Electric Co., Ltd.: *See*—
Tooi, Shuichi, 5,386,089, Cl. 178-18.000.
Mitsutake, Hideaki: *See*—
Fukui, Tetsuro; Yoshinaga, Kazuo; Mitsutake, Hideaki; Oikawa, Katsuya; Takeuchi, Shinsuke; Miyazaki, Takeshi; Takasu,

Yoshio; Mouri, Akihiro; Katayama, Masato; and Isaka, Kazuo, 5,385,810, Cl. 430-351.000.

Mitutoyo Corporation: *See*—
Sato, Soichi; Tomiya, Masaki; and Itabashi, Tatsuo, 5,386,291, Cl. 356-356.000.

Miura, Toshihiko; and Inaba, Hiroo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,385,779, Cl. 428-323.000.

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Bohrer, Michael P.; and Mixon, David A., 5,385,809, Cl. 430-311.000.

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Nakayama, Junichiro; Miyake, Tomoyuki; Katayama, Hiroyuki; and Ohta, Kenji, 5,386,400, Cl. 369-13.000.

Miyake, Yoshio: *See*—
Kobayashi, Makoto; Yamamoto, Masakazu; and Miyake, Yoshio, 5,385,444, Cl. 415-182.100.
Kobayashi, Makoto; Yamamoto, Masakazu; Miyake, Yoshio; and Kimura, Yoshikazu, 5,385,454, Cl. 417-423.120.

Miyamoto, Hiromu: *See*—
Nakada, Takuya; Iwase, Hiroyuki; and Miyamoto, Hiromu, 5,386,081, Cl. 84-609.000.

Miyamoto, Kaname: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.

Miyamoto Kogyosho Co., Ltd.: *See*—
Sato, Yasushi; and Watanabe, Toshiharu, 5,385,338, Cl. 266-234.000.

Miyamoto, Seiji: *See*—
Mukai, Yoshiaki; Tokiwa, Yoji; and Miyamoto, Seiji, 5,385,369, Cl. 280-788.000.

Miyazaki, Masahiro; Matsuzawa, Masafumi; Toriyabe, Keiji; and Hirata, Michiya, to Kumiai Chemical Industry Co., Ltd.; and Ihara Chemical Industry Co., Ltd. Pyridine derivative herbicidal composition containing the same, and method for killing weeds. 5,385,880, Cl. 504-243.000.

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Miyazaki, Yukio: *See*—
Ikebe, Masaru; Shiba, Haruo; and Miyazaki, Yukio, 5,385,235, Cl. 206-308.100.

Miyazaki, Yusaku: *See*—
Hashimura, Yoshiaki; Okihara, Masakazu; Miyazaki, Yusaku; Shida, Zenichiro; and Kogure, Tomohiko, 5,385,192, Cl. 152-454.000.
Kogure, Tomohiko; and Miyazaki, Yusaku, 5,385,188, Cl. 152-209.000.

Miyazawa, Masayuki: *See*—
Ishibashi, Kenji; Hara, Yoshihiro; Yukawa, Kazuhiko; Fujino, Akihiko; Maeda, Yasuo; Ohmori, Shigeto; Ishito, Fumiaki; Ootsuka, Hiroshi; and Miyazawa, Masayuki, 5,386,262, Cl. 354-402.000.

Mizoguchi, Akira: *See*—
Hattori, Yasuhiro; Mizoguchi, Akira; and Kubata, Michiru, 5,385,116, Cl. 117-5.000.

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Mizuno, Hiroshi: *See*—
Terasaka, Yoshihisa; Ohtani, Junji; Machida, Junji; Shimizu, Tamotsu; Murasaki, Hiroshi; and Mizuno, Hiroshi, 5,385,801, Cl. 430-122.000.

Mizuno, Shigeki: *See*—
Shirotori, Hiroshi; Nishizawa, Katsuhiko; Mizuno, Shigeki; and Takahashi, Teturo, 5,385,414, Cl. 400-124.020.

Mizutani, Daisuke: *See*—
Yamagishi, Yasuo; Shimizu, Kanae; Mizutani, Daisuke; Owada, Tamotsu; Ishizuki, Yoshikatsu; and Hashii, Hideya, 5,386,430, Cl. 372-57.000.

Mizutani, Hideki: *See*—
Kimura, Kazuya; Hidaka, Shigeyuki; Mizutani, Hideki; and Takeichi, Toru, 5,385,450, Cl. 417-269.000.

MMM Munchener Medizin Mechanik GmbH: *See*—
Hofmann, Ludwig, 5,385,328, Cl. 251-30.040.

Mobil Oil Corporation: *See*—
Child, Jonathan E.; and Melli, Tomas R., 5,386,076, Cl. 585-802.000.

Moehlmann, Richard H., to Harris Corporation. Digital impedance determination using peak detection of current and voltage samplers. 5,386,194, Cl. 324-650.000.

Mohammad, S. Noor, to International Business Machines Corporation. Method of fabricating a metal oxide semiconductor heterojunction field effect transistor (MOSHFET). 5,385,853, Cl. 437-41.000.

Mohri, Fumihito; Arai, Hideko; and Sakata, Yoshio, to Kanegafuchi Kagaka Kogyo Kabushiki Kaisha. Method for producing a magnet roll. 5,384,937, Cl. 29-895.320.

Molecular Biosystems, Inc.: *See*—
Anderson, Leslie D.; Bartlett, Janeth M.; Szaflarski, Diane M.; and Widder, Kenneth J., 5,385,147, Cl. 128-662.020.

Molex Incorporated: *See*—
Fry, Rupert J., 5,385,491, Cl. 439-595.000.

Quian, Robert L.; Parkinson, Edwin W.; and Pelletier, James R., 5,385,434, Cl. 406-73.000.

Momiyama, Masayoshi: *See*—
Fujita, Satoshi; Momiyama, Masayoshi; Kagiyama, Naoto; Kondo, Yasumitsu; and Hori, Hiroshi, 5,385,823, Cl. 435-6.000.

Monahan, Christopher J.; Monahan, Mary L.; and Willson, Dennis L., to International Business Machines Corporation. Virtual drives in an automated storage library. 5,386,516, Cl. 395-275.000.

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Monahan, Christopher J.; Monahan, Mary L.; and Willson, Dennis L., 5,386,516, Cl. 395-275.000.

Monsees, Claude E.: *See*—
Kildal, Maurice A.; Richardson, Frank A.; and Monsees, Claude E., 5,384,947, Cl. 29-407.000.

Montag, Bernhard: *See*—
Gumbrecht, Walter; Schelter, Wolfgang; and Montag, Bernhard, 5,385,659, Cl. 204-435.000.

Montefiore Medical Center: *See*—
Lalezari, Parviz; and Khorshidi, Manouchehr, 5,385,731, Cl. 424-85.100.

Montemayor, Arthur A.; and Werr, Karl H. Dry ice pelletizer. 5,385,023, Cl. 62-10.000.

Moody, John H.: *See*—
Ficalora, Joseph P.; and Moody, John H., 5,386,432, Cl. 372-94.000.

Moolenaar, Antony J.; Houben, Jan P.; and Geerts, Jacobus F., to Emerson Electric Co. Transmission for electrically driven tool. 5,385,512, Cl. 475-153.000.

Moore, Donald J.; and Bennion, William, to Jaguar Cars Limited. Vehicle roofs. 5,385,381, Cl. 296-117.000.

Mor, Yeshayahu: *See*—
Bourekas, Philip A.; Willenz, Avigdor; Mor, Yeshayahu; LeNgoc, Danh; and Revak, Scott, 5,386,579, Cl. 395-800.000.

Morbitzer, Leo: *See*—
Kruger, Ralf; Harrison, David B.; and Morbitzer, Leo, 5,385,981, Cl. 525-276.000.

Moretz, Herbert L.; and Brier, Daniel L., to Intelpro Corporation. Moisture managing brassiere for sports and general wear. 5,385,502, Cl. 450-93.000.

Morey, James A. Trailer hitch. 5,385,363, Cl. 280-511.000.

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Emmons, William D.; Finch, William C.; and Morgan, Meredith A., 5,385,960, Cl. 523-205.000.

Morgan, Terry B.; and Bayer, Dean M., to General Motors Corporation. Reinforced impact beam for a bumper assembly and method of manufacture. 5,385,375, Cl. 293-109.000.

Mori, Haruyo: *See*—
Moriya, Tamon; Kurita, Hironori; Otake, Toru; Mori, Haruyo; and Morimoto, Motoko, 5,385,891, Cl. 514-58.000.

Mori, Kazuyuki: *See*—
Ikeuchi, Tadashi; Mori, Kazuyuki; and Fujimoto, Nobuhiro, 5,386,109, Cl. 250-214.00R.

Mori, Makoto: *See*—
Ito, Yutaka; Mori, Makoto; and Gohara, Shinobu, 5,386,415, Cl. 370-60.000.

Mori, Yoshihiro: *See*—
Suzuki, Kisoko; Kitagawa, Hidemasa; Endo, Koichiro; and Mori, Yoshihiro, 5,386,581, Cl. 395-800.000.

Moridaira, Hideo, to Meisei Electric Co., Ltd. Method of copying system data and copying adaptor therefor. 5,386,541, Cl. 395-425.000.

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Yamaguchi, Yoshihisa; Suga, Shinjiro; Morikawa, Masatoshi; Kubo, Kunimichi; Watanabe, Motokazu; and Sano, Yasuhiko, 5,385,991, Cl. 526-74.000.

Morikawa, Sumio; Ohga, Toshiji; Satone, Hiroyuki; and Zakohji, Nobuyuki, to Ohyodo Komatsu Co., Ltd. Breaking equipment. 5,385,311, Cl. 241-266.000.

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Ueno, Hiroaki; Morioka, Masahiko; and Hatanaka, Fumiko, 5,385,917, Cl. 514-325.000.

Morioka, Yukio; Kaneo, Toshihiro; and Kimura, Soichi, to Matsushita Electric Industrial Co., Ltd. Single motor disk loading device with lock gear. 5,386,403, Cl. 369-37.000.

Morishita, Tatsuya: *See*—
Kohno, Satoshi; Morishita, Tatsuya; and Tsuchiya, Shouichi, 5,385,018, Cl. 60-338.000.

Morison, James: *See*—
Vidoni, Daniel P.; and Morison, James, 5,385,228, Cl. 206-44.120.

Morita, Susumu, to APLS Co., Ltd. Lancet. 5,385,571, Cl. 606-181.000.

Moriya, Kumiaki: *See*—
Kashiwai, Shin-ichi; Yokomizo, Osamu; Orii, Akihito; Nishida, Koji; Kanazawa, Toru; and Moriya, Kumiaki, 5,386,440, Cl. 376-210.000.

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Morris, Gilbert C.: *See*—
Kuhn, Lance S.; Ochs, Mary L.; and Morris, Gilbert C., 5,385,846, Cl. 436-70.000.

Morris, John O., to Texas Instruments Incorporated. Method and apparatus for maintaining variable data in a non-volatile electronic memory device. 5,386,533, Cl. 395-425.000.

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Mosehauer, Gary M.: *See*—
Tsou, Andy H.; Greener, Jehuda; Smith, Gary D.; and Mosehauer, Gary M., 5,385,704, Cl. 264-210.700.

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Moss, Joel; Mishima, Koichi; Nightingale, Maria S.; and Tsuchiya, Mikako, to United States of America, Health & Human Services. Mammalian guanine nucleotide binding protein with an ADP-rybosylation factor domain. 5,386,021, Cl. 536-23.100.

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Motorola, Inc.: *See*—
Bennett, Paul T.; Gray, Randall C.; and Pigott, John, 5,386,201, Cl. 331-176.000.
Liu, Jay J.; Berg, Howard M.; and Hawkins, George W., 5,385,869, Cl. 437-209.000.
Olson, William L.; Currier, David W.; Klosowiak, Tomasz L.; and Fulcher, Mark, 5,386,341, Cl. 361-749.000.
Schatz, Steven V.; Ritchie, Thomas W.; Merich, Barry J.; Boata, Jeffrey D.; and Akinniy, Akingbade, 5,386,456, Cl. 379-60.000.
Seely, Warren L.; Kao, Joseph H.; and Fleming, James H., 5,386,204, Cl. 333-208.000.
Sibigtroth, James M.; Viot, J. Greg; Langan, John A.; and Broseghini, James L., 5,386,534, Cl. 395-400.000.
Smith, Roger A., 5,386,375, Cl. 364-748.000.
Swapp, Mavin C.; and Frisbie, Milo W., 5,385,441, Cl. 414-627.000.
Wong, Chin P.; and Chiu, Gordon W., 5,386,495, Cl. 375-10.000.

Mou, Chung-Yuan: *See*—
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Mouri, Akihiro: *See*—
Fukui, Tetsuro; Yoshinaga, Kazuo; Mitsutake, Hideaki; Oikawa, Katsuya; Takeuchi, Shinsuke; Miyazaki, Takeshi; Takasu, Yoshio; Mouri, Akihiro; Katayama, Masato; and Isaka, Kazuo, 5,385,810, Cl. 430-351.000.

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Kirk, Kenneth G.; Schoenman, Leonard; Baxter, Kris E.; and Mouritsen, John B., 5,385,263, Cl. 220-589.000.

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Moy, Curtis T.; and Iwasiuk, Orest, to MascoTech Controls. Power window actuator. 5,385,061, Cl. 74-42.000.

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Rude, Edward T.; and Mozdzer, Robert L., 5,385,315, Cl. 242-586.000.

MTI Technology Corporation: *See*—
Nguyen, Anh; and Gajjar, Kumar, 5,386,548, Cl. 395-425.000.

MTU Motoren-und Turbinen-Union Munchen GmbH: *See*—
Schassberger, Wolfgang; Manier, Monika; and Thoma, Martin, 5,385,760, Cl. 427-443.100.

Mueller, David W.: *See*—
Swearingen, Terry L.; and Mueller, David W., 5,385,507, Cl. 474-92.000.

Muenster, Peter; Freund, Wolfgang; Steiner, Gerd; Walter, Helmut; Westphalen, Karl-Otto; and Gerber, Matthias, to BASF Aktiengesellschaft. Dicarboximides, their preparation and their use as herbicides. 5,386,036, Cl. 548-453.000.

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Melnicoff, Meryle J.; Jensen, Bruce D.; Muirhead, Katharine A.; Horan, Paul K.; Summers, Martin D.; and Wong, William, 5,385,822, Cl. 435-5.000.

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Hiroi, Masakazu; Mukasa, Mitsuhiro; Uto, Nobutaka; Sato, Masaaki; and Honjo, Takeshi, 5,385,340, Cl. 270-53.000.

Muller-Glauser: *See*—
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Miltenyi, Stefan; Radbruch, Andreas; Weichel, Walter; Muller, Werner; Gottlinger, Christoph; and Meyer, Klaus L., 5,385,707, Cl. 422-69.000.

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Mullis, Kary B.: *See*—
Sainsky, John J.; Kwok, Shirley Y.; Mack, David; Erlich, Henry A.; and Mullis, Kary B., 5,386,022, Cl. 536-24.320.

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Dunn, Steven B., 5,385,251, Cl. 215-11.300.

Munoz, Beth C.: *See*—
Abbey, Kirk J.; Howe, Stephen E.; and Munoz, Beth C., 5,385,990, Cl. 525-534.000.

Munson, Christine E.: *See*—
Stokes, Albert J., 5,386,489, Cl. 385-100.000.

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Murakami, Tomoyasu: *See*—
Ueda, Tetsuya; Yano, Kousaku; Murakami, Tomoyasu; Yamanaka, Michinari; Hirao, Shuji; and Nomura, Noboru, 5,385,867, Cl. 437-195.000.

Murakami, Yoshio: *See*—
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Muranaka, Takeshi: *See*—
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Murasaki, Hiroshi: *See*—
Terasaka, Yoshihisa; Ohtani, Junji; Machida, Junji; Shimizu, Tamotsu; Murasaki, Hiroshi; and Mizuno, Hiroshi, 5,385,801, Cl. 430-122.000.

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Akiyama, Yasuo; Maekawa, Zenichiro; Yokoyama, Atsushi; and Uratani, Yasushi, 5,385,077, Cl. 87-8.000.

Murata Manufacturing Co., Ltd.: *See*—
Amano, Toshinori; Sakai, Seiji; Fujiki, Yasuo; Ueyama, Masanori; Sakamoto, Yukio; and Takagi, Daisuke, 5,386,335, Cl. 361-36.000.
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Iwatani, Hidetoshi; Kazama, Masakazu; and Fujino, Masato, 5,386,206, Cl. 336-200.000.
Okada, Masanobu, 5,385,479, Cl. 439-144.000.
Shiratori, Akira; Takagi, Hiroshi; and Kobayashi, Shozo, 5,385,792, Cl. 429-32.000.

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Coiro, Michael A., Sr.; and Murray, Dale R., 5,385,118, Cl. 119-18.000.

Murray, Daniel J.: *See*—
Inbasekaran, Muthiah N.; Murray, Daniel J.; Mang, Michael N.; and Brewbaker, James L., 5,386,002, Cl. 528-170.000.

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Myers, Robert M.: *See*—
Haak, Ronald P.; Gyory, J. Richard; Theeuwes, Felix; and Myers, Robert M., 5,385,543, Cl. 604-20.000.

Nagahara, Shin; Maruyama, Akio; and Tsuji, Haruyuki, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member, and electrophotographic apparatus, device unit, and facsimile machine employing the same. 5,385,797, Cl. 430-67.000.

Nagakawa, Junichi: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.

Nagano, Akihiko, to Canon Kabushiki Kaisha. Optical apparatus having a visual axis direction detecting device. 5,386,258, Cl. 354-400.000.

Nagaoka, Mitsuru, to Mazda Motor Corporation. Rear wheel steering system for vehicle. 5,386,365, Cl. 364-424.050.

Nagasaki, Tatsuo; and Adachi, Yutaka, to Olympus Optical Co., Ltd. Optical recording medium and recording and reproducing apparatus of the same. 5,386,410, Cl. 369-275.400.

Nagasawa, Masahiko: *See*—
Kato, Rentaro; and Nagasawa, Masahiko, 5,386,275, Cl. 335-219.000.

Nair, Parameswaran B.; Choudhuri, Kumar S.; Hamiltoe, James H.; Philmon, Gregory A.; and Stills, James T., to National Bancard Corporation. Systems and methods for operating data card terminals for transaction authorization. 5,386,458, Cl. 379-91.000.

Naito, Hiroki; Kume, Masahiro; Sugiura, Hideyuki; Takayama, Toru; Itoh, Kunio; Ohta, Isei; and Shimizu, Hirokazu, to Matsushita Electric Industrial Co., Ltd. Low operating current and low noise semiconductor laser device for optical disk memories. 5,386,429, Cl. 372-46.000.

Nakada, Takuya; Iwase, Hiroyuki; and Miyamoto, Hiromu, to Yamaha Corporation. Automatic performance device capable of successive performance of plural music pieces. 5,386,081, Cl. 84-609.000.

Nakagawa, Manabu: *See*—
Yoshida, Minoru; Nakagawa, Manabu; and Yoshioka, Tomonori, 5,386,122, Cl. 250-368.000.

Nakagawa, Masaru: *See*—
Mills, Michael E.; Teramoto, Yoshihiko; Faley, Timothy L.; and Nakagawa, Masaru, 5,385,702, Cl. 264-103.000.

Nakagome, Yoshinobu: *See*—
Kawahara, Takayuki; Aoki, Masakazu; Nakagome, Yoshinobu; Hanawa, Makoto; Uchiyama, Kunio; Nakamura, Masayuki; Kitsukawa, Goro; and Oishi, Kanji, 5,386,394, Cl. 365-208.000.

Nakagoshi, Junji: *See*—
Hamanaka, Naoki; Nakagoshi, Junji; Higuchi, Tatsuo; Chiba, Hiroyuki; Shutoh, Shin'ichi; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, 5,386,566, Cl. 395-700.000.

Nakajima, Toshiyuki: *See*—
Sekine, Masayoshi; Nakajima, Toshiyuki; Kai, Takashi; Yoshimura, Katsuji; and Toyama, Masamichi, 5,386,264, Cl. 354-430.000.

Nakajima, Yoshihiro: *See*—
Tanaka, Natsuro; Tamada, Tokuji; and Nakajima, Yoshihiro, 5,386,297, Cl. 358-402.000.

Nakajima, Yukio; Yoshida, Muneaki; Yamada, Hiroshi; and Kawakami, Satoshi, to Olympus Optical Co., Ltd. Strobo apparatus. 5,386,180, Cl. 315-241.00S.

Nakamura, Katsuhiro; Kato, Minoru; Watanabe, Yasuhisa; Matsubara, Yasunori; Ikeda, Yorinobu; Yonekawa, Yoshiaki; Miki, Hiroyuki; Hiraharu, Akio; Ito, Nobuyuki; Kurita, Osamu; Kaneko, Yasunobu; and Nishida, Shouzou, to Japan Synthetic Rubber Co., Ltd. Polysiloxane-composite polymer particles. 5,385,975, Cl. 525-101.000.

Nakamura, Kazuhiro: *See*—
Takase, Susumu; Fukunaga, Koji; and Nakamura, Kazuhiro, 5,386,572, Cl. 395-725.000.

Nakamura, Kazuo: *See*—
Amano, Yoshifumi; Nakamura, Kazuo; Kurosawa, Hiroshi; Sato, Takeshi; Akano, Hirofumi; and Kawamura, Yoshiya, 5,385,830, Cl. 435-29.000.

Nakamura, Kei, to Fujitsu, Ltd. Data processing system with a standby process mechanism for saving and restoring operations. 5,386,544, Cl. 395-575.000.

Nakamura, Masayuki: *See*—
Kawahara, Takayuki; Aoki, Masakazu; Nakagome, Yoshinobu; Hanawa, Makoto; Uchiyama, Kunio; Nakamura, Masayuki; Kitsukawa, Goro; and Oishi, Kanji, 5,386,394, Cl. 365-208.000.

Nakamura, Satoshi; and Shirahata, Hirokatsu, to Nisshinbo Industries, Inc. Method for producing modified polyisocyanurate foams. 5,385,878, Cl. 502-167.000.

Nakamura, Shinichi: *See*—
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, 5,385,692, Cl. 252-299.620.

Nakamura, Takanori; and Katsuta, Hiroshi, to NEC Corporation. Information processing apparatus incorporating buffer storing a plurality of branch target instructions for branch instructions and interrupt requests. 5,386,519, Cl. 395-375.000.

Nakamura, Toru: *See*—
Yuasa, Hitoshi; Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; and Otsuki, Yutaka, 5,385,795, Cl. 430-7.000.

Nakano Vinegar Co., Ltd.: *See*—
Amano, Yoshifumi; Nakamura, Kazuo; Kurosawa, Hiroshi; Sato, Takeshi; Akano, Hirofumi; and Kawamura, Yoshiya, 5,385,830, Cl. 435-29.000.

Nakano, Yoshiki: *See*—
Arai, Yoshifumi; and Nakano, Yoshiki, 5,386,496, Cl. 395-22.000.

Nakashiba, Yasutaka, to NEC Corporation. Process of fabricating solid-state image pick-up device free from crystal defects in active region. 5,385,849, Cl. 437-3.000.

Nakata, Akira: *See*—
Yamamoto, Naoki; Nakata, Akira; Hatakeyama, Hiroki; and Watanabe, Hiroyuki, 5,385,988, Cl. 525-479.000.

Nakate, Toshiomi: *See*—
Asakura, Sotoo; Murakami, Yoshio; Kanagawa, Nobuto; and Nakate, Toshiomi, 5,385,907, Cl. 514-291.000.

Nakayama, Junichiro; Miyake, Tomoyuki; Katayama, Hiroyuki; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Magneto-optical head device having a lubricated member. 5,386,400, Cl. 369-13.000.

Nakayama, Toshiki: *See*—
Arikawa, Shiro; Ueno, Isamu; and Nakayama, Toshiki, 5,386,108, Cl. 250-208.100.

Nakazato, Shinji; Uchida, Hideaki; Saito, Yoshikazu; Yamamura, Masahiro; Kobayashi, Yutaka; Ikeda, Takahide; Hori, Ryoichi; Kitsukawa, Goro; Itoh, Kiyoo; Tanba, Nobuo; Watanabe, Takao; Shimohigashi, Katsuhiro; and Homma, Noriyuki, to Hitachi, Ltd. Semiconductor CMOS memory device with separately biased wells. 5,386,135, Cl. 257-369.000.

Nakazato, Yasushi, to Ricoh Company, Ltd. Apparatus and method for protecting fixing unit in image forming system against damage. 5,386,272, Cl. 355-207.000.

Nakos, Steven T.; and Woods, John G., to Loctite Corporation. Di-α-cyanopentadienoate distiloxane compounds for use in adhesives. 5,386,047, Cl. 556-416.000.

Nalco Chemical Company: *See*—
Farquharson, Graeme J.; Kildea, John D.; Gross, Anthony E.; and Grocott, Stephen C., 5,385,586, Cl. 23-305.00A.
Syrinek, Allen R., 5,385,605, Cl. 106-18.330.

Nam, Geung W., to Goldstar Co., Ltd. Liquid crystal display module with positioning marks on circuit substrate and heat seal. 5,386,309, Cl. 359-88.000.

Nam, Sang B.: *See*—
Chang, Kyung S.; and Nam, Sang B., 5,385,149, Cl. 128-680.000.

Naraki, Toshinari, to Oki Electric Industry Co., Ltd. Power-on reset circuit responsive to a clock signal. 5,386,152, Cl. 327-143.000.

Narayanan, Kolazi S.: *See*—
Chaudhuri, Ratan K.; Narayanan, Kolazi S.; and Anderson, Lowell R., 5,385,948, Cl. 514-788.000.

Narr, Berthold; Hauel, Norbert; Van Meel, Jacques; Wienen, Wolfgang; Entzeroth, Michael; and Ries, Uwe, to Dr. Karl Thomae GmbH. Benzimidazoles, pharmaceutical compositions containing these compounds and processes for preparing them. 5,385,925, Cl. 514-382.000.

Narwhal Ltd.: *See*—
Gurinov, Alexander V.; Kostritsa, Vladimir N.; Petrov, Igor' V.; and Sukhostavets, Valeryi F., 5,385,336, Cl. 266-74.000.

Nastasi, Victor R.: *See*—
Chu, Jack O.; Hsieh, Chang-Ming; Nastasi, Victor R.; Revitz, Martin; and Ronsheim, Paul A., 5,385,850, Cl. 437-31.000.

Nath, Robert H., to Cyclean, Inc. Process for adding recylced tire particle to asphalt. 5,385,401, Cl. 366-7.000.

National Bancard Corporation: *See*—
Nair, Parameswaran B.; Choudhuri, Kumar S.; Hamilton, James H.; Philmon, Gregory A.; and Stills, James T., 5,386,458, Cl. 379-91.000.

National Science Council: *See*—
Lin, Shoa-Lin; and Mou, Chung-Yuan, 5,385,725, Cl. 424-9.000.

National Semiconductor Corporation: *See*—
Archer, Donald M.; and Hoei, Jung S., 5,386,160, Cl. 327-513.000.
Bashir, Rashid; Hebert, Francois; and Chen, Datong, 5,385,861, Cl. 437-67.000.
Meng, Peter P., 5,386,374, Cl. 364-578.000.

National Starch and Chemical Investment Holding Corporation: *See*—
Martino, Gary T.; and Tessler, Martin M., 5,386,040, Cl. 568-443.000.

Nazzaro-Porro, Marcella, to Schering Aktiengesellschaft. Use of topically applicable preparations for treatment of presbyderma. 5,385,943, Cl. 514-574.000.

NCR Corporation: *See*—
Sime, Iain R. F., 5,386,104, Cl. 235-379.000.
Wilson, Owen H.; and Marlow, Geoffrey G., 5,386,299, Cl. 358-406.000.
Young, Randolph G.; Bradshaw, James L.; Batchler, Bobby W.; Sudduth, Barry C.; and Walrath, Craig A., 5,386,540, Cl. 395-425.000.

NEC Corporation: *See*—
Enomoto, Shuichi, 5,385,859, Cl. 437-52.000.
Hattori, Toshiyuki, 5,386,530, Cl. 395-400.000.
Kanai, Toshihito, 5,386,589, Cl. 455-33.100.
Kitawaki, Sachiko, 5,386,300, Cl. 358-426.000.
Koizumi, Yuuji, 5,386,129, Cl. 257-207.000.
Manabe, Kazutaka, 5,385,858, Cl. 437-52.000.
Matsui, Koji, 5,384,952, Cl. 29-840.000.
Nakamura, Takanori; and Katsuta, Hiroshi, 5,386,519, Cl. 395-375.000.
Nakashiba, Yasutaka, 5,385,849, Cl. 437-3.000.
Nochi, Hideo, 5,386,359, Cl. 363-21.000.
Okamoto, Wataru, 5,386,573, Cl. 395-725.000.
Saito, Koichi, 5,386,197, Cl. 324-757.000.
Saitoh, Takenori, 5,386,521, Cl. 395-375.000.
Sato, Natsuki, 5,386,131, Cl. 257-301.000.
Tatsumi, Toru; and Sakai, Akira, 5,385,863, Cl. 437-109.000.
Yoshino, Isao, 5,386,138, Cl. 257-551.000.

Neclosup-Acuna, Alex: *See*—
Carnes, Ben; and Neclosup-Acuna, Alex, 5,385,075, Cl. 84-411.00R.

Ned, Alexander A.: *See*—
Kurtz, Anthony D.; Shor, Joseph S.; and Ned, Alexander A., 5,386,142, Cl. 257-690.000.

Needham, Kelley S.: *See*—
Eddy, John W.; and Needham, Kelley S., 5,385,273, Cl. 227-185.000.

Neff, Ted. Adjustable gripping and locking tool. 5,385,072, Cl. 81-405.000.

Nelson, Frances C.; and Schiehser, Guy A., to American Home Products Corporation. Hindered esters of rapamycin. 5,385,908, Cl. 514-291.000.

Nelson, Frances C.; and Schiehser, Guy A., to American Home Products Corporation. Heterocyclic esters of rapamycin. 5,385,909, Cl. 514-291.000.

Nelson, Jerry D. System for introducing a lubricant. 5,385,493, Cl. 440-63.000.

Nelson, Kenneth P.: *See*—
Cooper, W. Burchall; Nelson, Kenneth P.; Jones, Donald A.; and Avery, John W., 5,386,435, Cl. 375-1.000.

Nelson, Philip L.: *See*—
Foster, Donald D.; and Nelson, Philip L., 5,385,302, Cl. 239-333.000.

Nelson, Robert J.: *See*—
Kelly, Lenore; Burgi, Dean S.; and Nelson, Robert J., 5,385,654, Cl. 204-180.100.

Nelson, Steven W.: *See*—
Ohlig, Albert H.; Nelson, Steven W.; Verbiar, Robert J.; and Cushner, Stephen, 5,386,268, Cl. 355-70.000.

Neon Dynamics Corporation: *See*—
Orenstein, Edward D., 5,386,181, Cl. 315-287.000.

Neopost Industrie: *See*—
Coret, Francis; and Gravillon, Michel, 5,385,090, Cl. 101-110.000.

Nestec S.A.: *See*—
De Almeida, Joao, 5,385,746, Cl. 426-447.000.

Neth, Alois, to Alcatel N.V. Repeater having a bypass circuit for passing time division multiplex signals along even though some time slots are not reinjected. 5,386,416, Cl. 370-13.100.

Neuenschwander, Kent; Amin, Dilip; Scotese, Anthony C.; and Morris, Robert L., to Rhone-Poulenc Rorer Pharmaceuticals Inc. Multicyclic tertiary amine polyaromatic squalene synthase inhibitors. 5,385,912, Cl. 514-305.000.

Neuhaus, Adolf. Apparatus for the foaming of organic components in water. 5,385,665, Cl. 210-169.000.

Neumann, Hans J.: *See*—
Bauer, Gerhard; Schumacher, Karl-Heinz; Fricke, Hans-Joachim; Wistuba, Eckehardt; and Neumann, Hans J., 5,385,967, Cl. 524-458.000.

Neurnetics Ltd.: *See*—
DeBan, Abdou F.; Xu, Tianning; Tumey, David M.; and Arndt, Craig M., 5,386,103, Cl. 235-379.000.

New York University: *See*—
Lee, Tae H.; Wisniewski, Hans-Georg; and Vilcek, Jan, 5,386,013, Cl. 530-350.000.
Seeman, Nadrian C.; Chen, Junghuei; and Kallenbach, Neville R., 5,386,020, Cl. 536-23.100.

Newcomb, Carolee V.: *See*—
Norrie, Christopher I. W.; Newcomb, Carolee V.; Yu, Peter K.; and Zmyslowski, Allan, 5,386,549, Cl. 395-575.000.

Newman, John: *See*—
Tiedemann, William H.; and Newman, John, 5,385,793, Cl. 429-62.000.

Newman, Robert D., Jr.: *See*—
Newman, Robert D., Sr.; and Newman, Robert D., Jr., 5,385,420, Cl. 403-299.000.

Newman, Robert D., Sr.; and Newman, Robert D., Jr. Coupling assembly. 5,385,420, Cl. 403-299.000.

Newsom, Horace R., to Harris Waste Management Group, Inc. Apparatus for replacing wear components in a ram baler. 5,385,089, Cl. 100-179.000.

Newsom, R. Jason: *See*—
Mannix, Gerald, 5,385,559, Cl. 604-211.000.

Newton, David A.: *See*—
Basso, Alfred L.; and Newton, David A., 5,386,482, Cl. 382-9.000.

Ngo, Tom T.: *See*—
Wickenheiser, Francis J.; Sterling, Timothy J.; and Ngo, Tom T., 5,385,370, Cl. 280-808.000.

Nguyen, Ahn D., to U.S. Philips Corporation. Device for forming a circular image on a display screen. 5,386,501, Cl. 395-140.000.

Nguyen, Anh; and Gajjar, Kumar, to MTI Technology Corporation. Method for storing data from an external processor in storage devices through buffer devices. 5,386,548, Cl. 395-425.000.

Nguyen, Kha: *See*—
Sheth, Jayesh V.; Harris, Craig W.; White, Theodore C.; Nguyen, Kha; Wong, Chung W.; and Cowgill, Richard A., 5,386,517, Cl. 395-275.000.

Nguyen, My N., to Johnson Matthey Inc. Low temperature flexible die attach adhesive and articles using same. 5,386,000, Cl. 528-362.000.

Nho, Kwang; Zalipsky, Shmuel; and Davis, Frank, to Enzon, Inc. Chemically modified hemoglobin as an effective, stable, non-immunogenic red blood cell substitute. 5,386,014, Cl. 530-385.000.

Nichol-Landry, Deborah: *See*—
Spiewak, John W.; Yuh, Huoy-Jen; Thornton, Constance J.; Abramsohn, Dennis A.; Nichol-Landry, Deborah; Mammino, Joseph; Ziolo, Ronald F.; Yu, Robert C. U.; Carmichael, Kathleen; and Patterson, Neil S., 5,385,796, Cl. 430-64.000.

Nicholas, John D., to Pawling Corporation. Architectural joint system with arched cover plate. 5,384,996, Cl. 52-468.000.

Nickerson, Brian: *See*—
Golin, Stuart; Nickerson, Brian; Keith, Michael; and Coelho, Rohan, 5,386,232, Cl. 348-391.000.

Nickisch, Klaus: *See*—
Tilstam, Ulf; Borner, Helmut; Nickisch, Klaus; Gries, Heinz; and Platzek, Johannes, 5,386,028, Cl. 540-474.000.

Nieder, Johannes; Grambow, Peter; Lage, Herbert; Ploog, Klaus; Wieck, Andreas; Heitmann, Detlef; and Von Klitzing, Klaus, to Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften. Method of generating active semiconductor structures by means of starting structures whith have a 2D charge carrier layer parallel to the surface. 5,385,865, Cl. 437-133.000.

Niekawa, Yukihisa, to Fujisoku Corporation. Sheet-like contact device and a connector using this device. 5,385,478, Cl. 439-67.000.

Nienhuis, James: *See*—
Helentjaris, Timothy; and Nienhuis, James, 5,385,835, Cl. 435-172.300.

Nightingale, Maria S.: *See*—
Moss, Joel; Mishima, Koichi; Nightingale, Maria S.; and Tsuchiya, Mikako, 5,386,021, Cl. 536-23.100.

Nigrin, Jaroslava M.; and Rose, Paul L., to Corning Incorporated. Fluorine-containing lead- and cadmium-free glazes. 5,385,871, Cl. 501-25.000.

Nihon Kohden Corporation: *See*—
Aoyagi, Takuo, 5,385,143, Cl. 128-633.000.

Nikami, Akira, to Sony Corporation. Apparatus for driving a stepping motor. 5,386,182, Cl. 318-293.000.

Nike, Inc.: *See*—
Lyden, Robert M., 5,384,973, Cl. 36-25.00R.

Nikken Kosakusho Works, Ltd.: *See*—
Matsumoto, Masakazu, 5,385,424, Cl. 403-369.000.

Nikon Corporation: *See*—
Ototake, Taro; Maeda, Yasuko; and Ueki, Takakazu, 5,386,294, Cl. 156-401.000.
Sakamoto, Hiroshi, 5,386,265, Cl. 354-484.000.

Nippon Oil Co., Ltd.: *See*—
Yuasa, Hitoshi; Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; and Otsuki, Yutaka, 5,385,795, Cl. 430-7.000.

Nippon Paint Co. Ltd.: *See*—
Le Goff, Philippe; Dewilde, Daniele; Tsuboniwa, Noriyuki; and Urano, Satoshi, 5,386,057, Cl. 562-871.000.
Noriyuki, Tsuboniwa; Satoshi, Urano; Hirotoshi, Umemoto; Hiroyuki, Sakamoto; Kenshiro, Tobinaga; and Yasuyuki, Tsuchiya, 5,385,985, Cl. 525-420.000.

Nippon Petrochemicals Company, Limited: *See*—
Yamaguchi, Yoshihisa; Suga, Shinjiro; Morikawa, Masatoshi; Kubo, Kunimichi; Watanabe, Motokazu; and Sano, Yasuhiko, 5,385,991, Cl. 526-74.000.

Nippon Selen Co., Ltd.: *See*—
Makino, Syozaburo; Takahashi, Isao; and Kishigami, Masmori, 5,385,008, Cl. 57-81.000.

Nippon Shokubai Co., Ltd.: *See*—
Sugishima, Noboru; Ikeda, Noriaki; Yamamoto, Koichi; and Kizu, Yasuhiko, 5,385,648, Cl. 204-59.00R.

Nippon Steel Corporation: *See*—
Hamada, Kazushi; and Tokuno, Kazushige, 5,385,617, Cl. 148-337.000.
Kiyomiya, Osamu; Minami, Kenichiro; Takahashi, Kunio; and Sato, Koichi, 5,385,432, Cl. 405-204.000.

Nippon Steel Semiconductor Corporation: *See*—
Butler, Douglas; Stevens, E. Henry; Bailey, Richard A.; and Taylor, Thomas C., 5,385,634, Cl. 156-644.000.

Nippon Telegraph and Telephone Corporation: *See*—
Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, 5,386,485, Cl. 385-17.000.

Nippon Television Network Corporation: *See*—
Hori, Akihiro, 5,386,240, Cl. 348-473.000.

Nippon Thompson Co., Ltd.: *See*—
Ichida, Tomohiro; and Hara, Takehiko, 5,385,406, Cl. 384-45.000.

Nippondenso Co., Ltd.: *See*—
Ikuta, Kenji; Isomura, Shigenori; and Suzumura, Toshihiro, 5,385,133, Cl. 123-585.000.
Nishida, Shin; and Inatsu, Hiroshi, 5,385,035, Cl. 62-525.000.
Yamanaka, asushi; Kakehashi, Nobuharu; Numazawa, Shigeo; Nishi, Yasuyuki; Kishita, Hiroshi; and Suzuki, Hideki, 5,385,029, Cl. 62-133.000.

Nishi, Seiki, to Fuji Photo Film Co., Ltd. IC memory card comprising an EEPROM with data and address buffering for controlling the writing/reading of data to EEPROM. 5,386,539, Cl. 395-425.000.

Nishi, Yasuhiko: *See*—
Ooka, Akihiro; Kawamura, Kenji; Nishiura, Yozo; Itoh, Katsuaki; Iwashita, Takaki; Nishi, Yasuhiko; Kuroda, Noritaka; and Hasegawa, Hayato, 5,386,484, Cl. 385-11.000.

Nishi, Yasuyuki: *See*—
Yamanaka, asushi; Kakehashi, Nobuharu; Numazawa, Shigeo; Nishi, Yasuyuki; Kishita, Hiroshi; and Suzuki, Hideki, 5,385,029, Cl. 62-133.000.

Nishida, Koji: *See*—
Kashiwai, Shin-ichi; Yokomizo, Osamu; Orii, Akihito; Nishida, Koji; Kanazawa, Toru; and Moriya, Kumiaki, 5,386,440, Cl. 376-210.000.

Nishida, Shin; and Inatsu, Hiroshi, to Nippondenso Co., Ltd. Refrigerant cycle control system. 5,385,035, Cl. 62-525.000.

Nishida, Shouzou: *See*—
Nakamura, Katsuhiro; Kato, Minoru; Watanabe, Yasuhisa; Matsubara, Yasunori; Ikeda, Yorinobu; Yonekawa, Yoshiaki; Miki, Hiroyuki; Hiraharu, Akio; Ito, Nobuyuki; Kurita, Osamu; Kaneko, Yasunobu; and Nishida, Shouzou, 5,385,975, Cl. 525-101.000.

Nishii, Kanji: *See*—
Itoh, Masami; Nishii, Kanji; Kawamura, Hiroyuki; and Fukui, Atsushi, 5,386,378, Cl. 364-822.000.

Nishikawa, Tomoyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electrophotographic imaging apparatus with continuous form feeder located after fixing device. 5,386,280, Cl. 355-282.000.

Nishimura, Kazuhiro; and Ueda, Kiyotoshi, to Mitsubishi Denki Kabushiki Kaisha. IC measuring method. 5,386,189, Cl. 324-158.100.

Nishimura, Masayuki: *See*—
Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, 5,386,485, Cl. 385-17.000.

Nishino, Atsushi: *See*—
Numoto, Hironao; Nishino, Atsushi; and Ono, Yukiyoshi, 5,385,699, Cl. 264-57.000.
Nishiura, Yozo: *See*—
Ooka, Akihiro; Kawamura, Kenji; Nishiura, Yozo; Itoh, Katsuaki; Iwashita, Takaki; Nishi, Yasuhiko; Kuroda, Noritaka; and Hasegawa, Hayato, 5,386,484, Cl. 385-11.000.
Nishizawa, Katsuhiko: *See*—
Shirotori, Hiroshi; Nishizawa, Katsuhiko; Mizuno, Shigeki; and Takahashi, Teturo, 5,385,414, Cl. 400-124.020.
Nishizawa, Tatsuo: *See*—
Maeda, Takao; Nishizawa, Tatsuo; and Watanabe, Kenji, 5,386,193, Cl. 324-547.000.
Nissei Plastic Industrial Co., Ltd.: *See*—
Kodama, Takashi; and Takizawa, Kiyoto, 5,385,462, Cl. 425-135.000.
Nisshinbo Industries, Inc.: *See*—
Nakamura, Satoshi; and Shirahata, Hirokatsu, 5,385,878, Cl. 102-167.000.
Nithammer, Andreas: *See*—
Krohm, Harald; Holscher, Ludger; and Nithammer, Andreas, 5,385,134, Cl. 123-676.000.
Nitro Nobel AB: *See*—
Lindqvist, Vidon; Lofgren, Lars-Gunnar; and Olsson, Tord, 5,385,098, Cl. 102-205.000.
Nitto Denko Corporation: *See*—
Higuchi, Hiroyuki; Matsushita, Kiichiro; Ezoe, Minoru; and Shinomura, Toshihiko, 5,385,777, Cl. 428-316.600.
Nixon, Henry M., Jr.; Schell, Frank; and MacDonald, Keith, to Mahaffy & Harder Engineering Co. Method and apparatus for moving and closing packaging trays. 5,385,003, Cl. 53-471.000.
Noack, Otto F., to Pacific Bell. Dataspace services subsystem. 5,386,525, Cl. 395-400.000.
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Nockemann, Hans: *See*—
Cramer, Johannes; Winterberg, Erwin; and Nockemann, Hans, 5,385,774, Cl. 428-247.000.
Noga, Robert: *See*—
Dromgoole, James A.; Hall, Kenneth H.; and Noga, Robert, 5,385,745, Cl. 426-392.000.
Noguchi, Akira, to Daiwa Golf Co., Ltd. Golf club shaft and production method thereof. 5,385,767, Cl. 428-36.910.
Noguchi, Kanji, to Shilogane Kasei Co., Ltd. Fastener. 5,385,419, Cl. 402-75.000.
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Okano, Haruo; Noguchi, Sadahisa; and Sekine, Makoto, 5,385,763, Cl. 427-572.000.
Noh, Myung Ho: *See*—
Yang, Boog won; and Noh, Myung Ho, 5,386,283, Cl. 355-308.000.
Nohira, Hiroyuki; Kumano, Yuuta; Katagiri, Kazuharu; Shinjo, Kenji; and Yoshinaga, Kazuo, to Canon Kabushiki Kaisha; and Nohira, Hiroyuki. Mesomorphic compound, liquid crystal composition and liquid crystal device. 5,385,691, Cl. 252-299.010.
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Kaufman, Richard H.; Kovacic, Theodore J.; Okita, Hideyoshi; Bostwick, Martin M.; Kostanecki, Andrew T.; Brainard, Robert H.; and Nolan, Patrick B., 5,385,264, Cl. 220-710.000.
Nomura, Noboru: *See*—
Ueda, Tetsuya; Yano, Kousaku; Murakami, Tomoyasu; Yamanaka, Michinari; Hirao, Shuji; and Nomura, Noboru, 5,385,867, Cl. 437-195.000.
Norcutt, Charles M., Jr.: *See*—
Huynh, Khoa D.; Norcutt, Charles M., Jr.; and Waldron, III: Theodore C., 5,386,561, Cl. 395-650.000.
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Kunig, Helmut; and Wagner, Wolfgang, 5,385,244, Cl. 209-699.000.
Noren, Kjell; Hagel, Pia; and Hoegnelid, Kurt, to Siemens Atiengesellschaft. Method for detecting ventricular fibrillation and apparatus for detecting and treating ventricular fibrillation. 5,385,576, Cl. 607-6.000.
Noriyuki, Tsubosiwa; Satoshi, Urano; Hirotoshi, Umemoto; Hiroyuki, Sakamoto; Kenshiro, Tobinaga; and Yasuyuki, Tsuchiya, to Nippon Paint Co., Ltd. Cyclic urea derivative. 5,385,985, Cl. 525-420.000.
Norman, Neville M. Net arrangement for a court for games. 5,385,350, Cl. 273-29.00B.
Norrie, Christopher I. W.; Newcomb, Carolee V.; Yu, Peter K.; and Zmyslowski, Allan, to Amdahl Corporation. Error recovery system for recovering errors that occur in control store in a computer system employing pipeline architecture. 5,386,549, Cl. 395-575.000.
North, Sandra S.: *See*—
Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., 5,386,466, Cl. 379-220.000.
Northern Telecom Limited: *See*—
Clark, Gordon P. F., 5,385,488, Cl. 439-557.000.
Shields, James A., 5,386,311, Cl. 359-189.000.
Northey, Richard P., Jr.: *See*—
Yim, Kalvin W. K.; Huberty, Michael C.; Northey, Richard P., Jr.; and Schrier, Jay A., 5,385,887, Cl. 514-12.000.
Northrop Grumman Corporation: *See*—
Roberts, William E., 5,385,050, Cl. 73-597.000.
Norton Company: *See*—
Ramanath, Srinivasan; and Williston, William H., 5,385,591, Cl. 51-309.000.
Novapure Corporation: *See*—
Tom, Glenn M.; and McManus, James V., 5,385,689, Cl. 252-194.000.
Nowotny, Robert C., to Don Evans, Inc. Package for compact disk. 5,385,231, Cl. 206-309.000.
Nozaki, Masaharu, to Kabushiki Kaisha Toshiba. Method and apparatus for reducing data locking time by removing a lock when journal data is written into a main memory journal queue. 5,386,554, Cl. 395-600.000.
Nozawa, Yasuji: *See*—
Kobayashi, Toshiaki; Ueyama, Masaki; Yokoyama, Toshio; Nozawa, Yasuji; and Ozawa, Hidetaka, 5,386,372, Cl. 364-574.000.
NSK Ltd.: *See*—
Yatabe, Takayuki; Goto, Fusasuke; Aoki, Norihiro; and Imamura, Yoichi, 5,385,412, Cl. 384-492.000.
Nuchia Kagaku Kogyo K.K.: *See*—
Sumitomo, Miyuki; and Uchimura, Katsunori, 5,386,176, Cl. 313-468.000.
Numazawa, Shigeo: *See*—
Yamanaka, asushi; Kakehashi, Nobuharu; Numazawa, Shigeo; Nishi, Yasuyuki; Kishita, Hiroshi; and Suzuki, Hideki, 5,385,029, Cl. 62-133.000.
Numoto, Hironao; Nishino, Atsushi; and Ono, Yukiyoshi, to Matsushita Electric Industrial Co., Ltd. Method for producing a honeycomb shaped ceramic. 5,385,699, Cl. 264-57.000.
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Kacian, Daniel L.; and Nunomura, Kiyotada, 5,386,024, Cl. 536-25.400.
Nuova Poliver Di Oddone C.: *See*—
Malaspina, Giorgio; and Francone, Nicola, 5,385,376, Cl. 294-1.300.
Nussbaumer, Wolfgang, to Kastle Aktiengesellschaft. Ski with ski binding. 5,385,364, Cl. 280-607.000.
Nusser, Claus-Dieter: *See*—
Kratt, Alfred; and Nusser, Claus-Dieter, 5,385,128, Cl. 123-335.000.
Nye, Jeffrey L., to Texas Instruments Incorporated. Data cache access for signal processing systems. 5,386,538, Cl. 395-425.000.
Nyfors, Klaus: *See*—
Koskinen, Jukka; Nyfors, Klaus; and Leskinen, Pauli, 5,385,992, Cl. 526-79.000.
Nygard, James C.; Thompson, Dorman N.; Sheeler, William H.; Miles, Alden R.; Windorski, David C.; Carlson, Bruce W.; and Crawford, Dennis L., to Minnesota Mining and Manufacturing Company. Adjustable tray assembly for use in desk drawers. 5,385,230, Cl. 206-214.000.
Nygren, Thorsten: *See*—
Ripstrand, Krister I.; and Nygren, Thorsten, 5,386,198, Cl. 330-52.000.
Nylander-Hill, Pamela R.: *See*—
Fry, Scott M.; Nylander-Hill, Pamela R.; and Paranjape, Sushama M., 5,386,324, Cl. 360-53.000.
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Ocain, Timothy D.; and Schiehser, Guy A., to American Home Products Corporation. Gem-distributed esters of rapamycin. 5,385,910, Cl. 514-291.000.
Oce-Nederland BV: *See*—
Jacobs, Robertus E., 5,386,510, Cl. 395-163.000.
Ochs, Mary L.: *See*—
Kuhn, Lance S.; Ochs, Mary L.; and Morris, Gilbert C., 5,385,846, Cl. 436-70.000.
O'Connor, Thomas L.: *See*—
Katz, Sumner N.; and O'Connor, Thomas L., 5,385,747, Cl. 426-573.000.
Odanaka, Shinji: *See*—
Hiroki, Akira; Odanaka, Shinji; and Kurimoto, Kazumi, 5,386,133, Cl. 257-344.000.
O'Daniel, Gregory F.; and Provenzano, Dennis M., to General Motors Corporation. Method of making a torque converter assembly. 5,384,958, Cl. 29-889.500.
Ode, Bengt: *See*—
Sundstedt, Per; and Ode, Bengt, 5,384,946, Cl. 297-238.000.
Odelim, Larry D., to Cooper Industries, Inc. Subsea fluid coupling employing metal-to-metal sealing. 5,385,169, Cl. 137-614.030.
O'Dell, Bobby J.; and Bunegin, Leonid, to Board of Regents, The University of Texas System. Method for hypothermic preservation of living tissue. 5,385,821, Cl. 435-1.000.
Odom, James M.: *See*—
Weimer, Paul J.; Odom, James M.; Cooling, Frederick B., III; and Anderson, Albert G., 5,385,842, Cl. 435-262.000.
Ogaki, Takeshi: *See*—
Yoda, Nobuhisa; Watanabe, Hiroshi; Ogaki, Takeshi; Iwase, Akinori; and Takagi, Shiro, 5,386,504, Cl. 395-157.000.
Ogata, Yasuhiro: *See*—
Hamanaka, Naoki; Nakagoshi, Junji; Higuchi, Tatsuo; Chiba, Hiroyuki; Shutoh, Shin'ichi; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, 5,386,566, Cl. 395-700.000.
Ogawa, Hiroshi: *See*—
Fujikawa, Hisao; Katsui, Hideo; and Ogawa, Hiroshi, 5,385,995, Cl. 526-216.000.

Ogawa, Yukio; and Yamaura, Tatsuo, to Futaba Denshi Kogyo K.K. Envelope for display device and method for manufacturing same. 5,385,499, Cl. 445-24.000.
Ogihara, Masaki, to Kabushiki Kaisha Toshiba. Redundancy circuit having a spare memory block replacing defective memory cells in different blocks. 5,386,386, Cl. 365-200.000.
Ohga, Toshiji: *See*—
Morikawa, Sumio; Ohga, Toshiji; Satone, Hiroyuki; and Zakohji, Nobuyuki, 5,385,311, Cl. 241-266.000.
Ohhashi, Masahide: *See*—
Minagawa, Tsutomu; Kai, Naoyuki; and Ohhashi, Masahide, 5,386,502, Cl. 395-141.000.
Ohkura, Yuji; and Fujiwara, Masatoshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor laser including periodic structures with different periods for producing a single wavelength of light. 5,386,433, Cl. 372-96.000.
Ohlig, Albert H.; Nelson, Steven W.; Verbiar, Robert J.; and Cushner, Stephen, to Du Pont de Nemours, E. I., and Company. Exposure unit and method for exposing photosensitive materials. 5,386,268, Cl. 355-70.000.
Ohm, Heinz F.: *See*—
Roll, Georg; Ohm, Heinz F.; and Hauser, Berthold, 5,386,366, Cl. 364-476.010.
Ohmae, Tadayuki; Tanaka, Hisao; and Hara, Sumio, to Sumitomo Chemical Company, Limited. Graft copolymer, process for production thereof, and plasticizer comprising said copolymer as active component. 5,385,974, Cl. 525-58.000.
Ohmori, Shigeto: *See*—
Ishibashi, Kenji; Hara, Yoshihiro; Yukawa, Kazuhiko; Fujino, Akihiko; Maeda, Yasuo; Ohmori, Shigeto; Ishito, Fumiaki; Ootsuka, Hiroshi; and Miyazawa, Masayuki, 5,386,262, Cl. 354-402.000.
Ohno, Eiji; Yamada, Noboru; and Takao, Masatoshi, to Matsushita Electric Industrial Co., Ltd. Optical information recording medium. 5,385,806, Cl. 430-270.000.
Ohta, Hiroyuki: *See*—
Sakurai, Hiroshi; Onodera, Hitoshi; and Ohta, Hiroyuki, 5,384,956, Cl. 29-834.000.
Ohta, Isei: *See*—
Naito, Hiroki; Kume, Masahiro; Sugiura, Hideyuki; Takayama, Toru; Itoh, Kunio; Ohta, Isei; and Shimizu, Hirokazu, 5,386,429, Cl. 372-46.000.
Ohta, Kenji: *See*—
Nakayama, Junichiro; Miyake, Tomoyuki; Katayama, Hiroyuki; and Ohta, Kenji, 5,386,400, Cl. 369-13.000.
Ohta, Masahiro: *See*—
Obuchi, Shoji; and Ohta, Masahiro, 5,386,004, Cl. 528-354.000.
Ohtani, Junji: *See*—
Terasaka, Yoshihisa; Ohtani, Junji; Machida, Junji; Shimizu, Tamotsu; Murasaki, Hiroshi; and Mizuno, Hiroshi, 5,385,801, Cl. 430-122.000.
Ohuchi, Kazunori: *See*—
Endoh, Tetsuo; Shirota, Riichiro; Ohuchi, Kazunori; Kiriiawa, Ryouhei; Aritome, Seiichi; Tanaka, Tomoharu; and Tanaka, Yoshiyuki, 5,386,422, Cl. 371-21.500.
Ohya, Kazuyuki, to Mitsubishi Gas Chemical Company, Inc. Thermal resistance resin dust for friction material. 5,385,989, Cl. 525-502.000.
Ohyodo Komatsu Co., Ltd.: *See*—
Morikawa, Sumio; Ohga, Toshiji; Satone, Hiroyuki; and Zakohji, Nobuyuki, 5,385,311, Cl. 241-266.000.
Oikawa, Katsuya: *See*—
Fukui, Tetsuro; Yoshinaga, Kazuo; Mitsutake, Hideaki; Oikawa, Katsuya; Takeuchi, Shinsuke; Miyazaki, Takeshi; Takasu, Yoshio; Mouri, Akihiro; Katayama, Masato; and Isaka, Kazuo, 5,385,810, Cl. 430-351.000.
Oikawa, Yoichi, to Fujitsu Limited. Optical module and manufacturing method therefor. 5,386,488, Cl. 385-92.000.
Oinuma, Masayoshi; and Kawachi, Toru, to Kurita Water Industries Ltd. Apparatus for producing ultrapure water. 5,385,664, Cl. 210-151.000.
Oishi, Kanji: *See*—
Kawahara, Takayuki; Aoki, Masakazu; Nakagome, Yoshinobu; Hanawa, Makoto; Uchiyama, Kunio; Nakamura, Masayuki; Kitsukawa, Goro; and Oishi, Kanji, 5,386,394, Cl. 365-208.000.
Oka, Kunio: *See*—
West, Robert C.; and Oka, Kunio, 5,386,048, Cl. 556-430.000.
Okada, Kenichi, to Japan Aviation Electronics Industry Limited. Optical interferometric angular rate meter with a self-diagnostic capability. 5,386,290, Cl. 356-350.000.
Okada, Masanobu, to Murata Mfg. Co., Ltd. Modular jack. 5,385,479, Cl. 439-144.000.
Okamoto, Wataru, to NEC Corporation. Single chip microcomputer with interrupt processing capability during hold states. 5,386,573, Cl. 395-725.000.
Okamoto, Yasuo; Kondo, Syunichi; and Ukai, Toshinao, to Fuji Photo Film Co., Ltd. Photopolymerizable composition. 5,385,807, Cl. 430-283.000.
Okamoto, Yasushi: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tautomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.
Okamura, Masatoshi: *See*—
Kaneda, Hiroshi; Okamura, Masatoshi; and Katoh, Hisao, 5,385,312, Cl. 242-347.000.
Okano, Haruo; Noguchi, Sadahisa; and Sekine, Makoto, to Kabushiki Kaisha Toshiba. Method for forming a film on a substrate by activating a reactive gas. 5,385,763, Cl. 427-572.000.
OKI Electric Cable Co., Ltd.: *See*—
Bartle, Alden S.; Wise, Michael A.; Sasaki, Masao; Ishizuka, Hironori; and Kajizuka, Hideharu, 5,385,484, Cl. 439-468.000.
Oki Electric Industry Co., Ltd.: *See*—
Kawada, Shinichi; Hijino, Keiichiro; Wada, Hiroshi; and Iida, Masahisa, 5,386,436, Cl. 375-106.000.
Naraki, Toshinari, 5,386,152, Cl. 327-143.000.
OKI Telecom: *See*—
Bartle, Alden S.; Wise, Michael A.; Sasaki, Masao; Ishizuka, Hironori; and Kajizuka, Hideharu, 5,385,484, Cl. 439-468.000.
Okihara, Masakazu: *See*—
Hashimura, Yoshiaki; Okihara, Masakazu; Miyazaki, Yusaku; Shida, Zenichiro; and Kogure, Tomohiko, 5,385,192, Cl. 152-454.000.
Okino, Tadashi, to Canon Kabushiki Kaisha. Image pickup device including means for adjusting sensitivity of image pickup elements. 5,386,228, Cl. 348-218.000.
Okita, Hideyoshi: *See*—
Kaufman, Richard H.; Kovacic, Theodore J.; Okita, Hideyoshi; Bostwick, Martin M.; Kostanecki, Andrew T.; Brainard, Robert H.; and Nolan, Patrick B., 5,385,264, Cl. 220-710.000.
Okitaka, Takenori, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory with looped shift registers as row and column drivers. 5,386,390, Cl. 365-230.060.
Oku, Kentaro, to Hitachi, Ltd. Projection system and display apparatus for compressing and expanding aspect ratio of a picture. 5,386,252, Cl. 348-746.000.
Olin Corporation: *See*—
Corzine, Alan J.; Dippold, Jack D.; and Schluckebier, David K., 5,385,100, Cl. 102-507.000.
Corzine, Alan J.; and Eberhart, Gerald E., 5,385,101, Cl. 102-309.000.
Oliva, Philip B., to Rose Health Care Systems. Diagnostic and treatment method for cardiac rupture and apparatus for performing the same. 5,385,156, Cl. 128-898.000.
Olsen, Don B.: *See*—
Bramm, Gunter L.; and Olsen, Don B., 5,385,581, Cl. 623-3.000.
Olson, William L.; Currier, David W.; Klosowiak, Tomasz L.; and Fulcher, Mark, to Motorola, Inc. Flexible substrate folded in a U-shape with a rigidizer plate located in the notch of the U-shape. 5,386,341, Cl. 361-749.000.
Olsson, Lars E.: *See*—
Hedin, Erik B.; Jonsson, Gregor I.; Olsson, Lars E.; Sanamrad, Mohammad A.; and Westling, Sven O. G., 5,386,556, Cl. 395-600.000.
Olsson, Lennart: *See*—
Goodenow, Robert S.; and Olsson, Lennart, 5,385,888, Cl. 514-12.000.
Olsson, Tord: *See*—
Lindqvist, Vidon; Lofgren, Lars-Gunnar; and Olsson, Tord, 5,385,098, Cl. 102-205.000.
Olympus Optical Co., Ltd.: *See*—
Kawamura, Kazuteru, 5,386,321, Cl. 359-692.000.
Nagasaki, Tatsuo; and Adachi, Yutaka, 5,386,410, Cl. 369-275.400.
Nakajima, Yukio; Yoshida, Muneaki; Yamada, Hiroshi; and Kawakami, Satoshi, 5,386,180, Cl. 315-241.00S.
Takada, Katsuhiro, 5,386,320, Cl. 359-689.000.
Toda, Akitoshi, 5,386,110, Cl. 250-216.000.
Omann, James S. Apparatus, method and use for reduced shingles. 5,385,426, Cl. 404-75.000.
Omaru, Atsuo: *See*—
Yokoyama, Keiichi; Hiwara, Akio; Fujita, Shigeru; and Omaru, Atsuo, 5,385,794, Cl. 429-194.000.
Ommaya, Ayub K. Spinal fluid driven artificial organ. 5,385,582, Cl. 623-12.000.
O'Neil, Paul J. Aerosol can recycling system. 5,385,177, Cl. 141-1.000.
O'Neill, James F., to Xerox Corporation. Process for fabricating silicon channel structures with variable cross-sectional areas. 5,385,635, Cl. 156-647.000.
Onishi, Hirokazu: *See*—
Ota, Atsushi; Uozumi, Minoru; and Onishi, Hirokazu, 5,385,198, Cl. 164-254.000.
Ono, Hitoshi; Ando, Osamu; and Takeuchi, Masako, to Mitsubishi Kasei Corporation. Toner for development of electrostatic image. 5,385,799, Cl. 430-110.000.
Ono, Yukiyoshi: *See*—
Numoto, Hironao; Nishino, Atsushi; and Ono, Yukiyoshi, 5,385,699, Cl. 264-57.000.
Ono, Yuuichi: *See*—
Haneda, Makoto; Ono, Yuuichi; and Chiba, Katsuki, 5,386,310, Cl. 365-107.000.
Onodera, Hitoshi: *See*—
Sakurai, Hiroshi; Onodera, Hitoshi; and Ohta, Hiroyuki, 5,384,956, Cl. 29-834.000.
Ooka, Akihiro; Kawamura, Kenji; Nishiura, Yozo; Itoh, Katsuaki; Iwashita, Takaki; Nishi, Yasuhiko; Kuroda, Noritaka; and Hasegawa, Hayato, to Sumitomo Electric Industries, Ltd. Optical fiber type polarizer. 5,386,484, Cl. 385-11.000.
Ootsuka, Hiroshi: *See*—
Ishibashi, Kenji; Hara, Yoshihiro; Yukawa, Kazuhiko; Fujino, Akihiko; Maeda, Yasuo; Ohmori, Shigeto; Ishito, Fumiaki; Ootsuka, Hiroshi; and Miyazawa, Masayuki, 5,386,262, Cl. 354-402.000.

Oppermann, Klaus-Guenter; Roesner, Wolfgang; and Hofmann, Franz, to Siemens Aktiengesellschaft. Method for manufacturing vertical MOS transistors. 5,385,852, Cl. 437-40.000.
Oppermann, Manfred: *See*—
Doebler, Klaus P.; Goldner, Wolfgang; Grutter, Roland; Jungermann, Reiner; and Oppermann, Manfred, 5,385,656, Cl. 204-181.100.
Or, Yat S.: *See*—
Wiedeman, Paul E.; Kawai, Megumi; Luly, Jay R.; Or, Yat S.; and Wagner, Rolf, 5,386,011, Cl. 530-329.000.
Orazi, Richard J.: *See*—
Russell, Stephen D.; Sexton, Douglas A.; and Orazi, Richard J., 5,385,633, Cl. 156-693.000.
Orenstein, Edward D., to Neon Dynamics Corporation. Swept frequency switching excitation supply for gas discharge tubes. 5,386,181, Cl. 315-287.000.
Orii, Akihito: *See*—
Kashiwai, Shin-ichi; Yokomizo, Osamu; Orii, Akihito; Nishida, Koji; Kanazawa, Toru; and Moriya, Kumiaki, 5,386,440, Cl. 376-210.000.
Orion-Yhtyma Oy: *See*—
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Wahlstrom, Matti, 5,386,449, Cl. 378-38.000.
Orme, Christopher J.: *See*—
Peterson, Eric S.; Orme, Christopher J.; and Stone, Mark L., 5,385,672, Cl. 210-637.000.
Ortega, Jose D.; Gil, Jose A.; Garcia, Tomas V.; and Martin, Juan F., to Laboratorios Serono S.A. PO438, a new calcium-regulated promoter. 5,385,841, Cl. 435-252.350.
Orzel, Daniel V.: *See*—
Zimlich, Glenn A.; Orzel, Daniel V.; and Truong, Tri T., 5,385,016, Cl. 60-274.000.
Osaka Sanso Kogyo Ltd.: *See*—
Matsumoto, Yoshihiro; Shinomoto, Mitsuhiro; and Yagi, Yasunori, 5,385,611, Cl. 118-642.000.
O'Shaughnessey, Michael E.; and Chesser, Keith, to General Motors Corporation. Vehicle headlamp with snap fit bulb shield. 5,386,348, Cl. 362-61.000.
Osid Corporation: *See*—
Tolson, Sidney S., 5,385,004, Cl. 53-548.000.
Osman, Kenneth R.: *See*—
Hubble, Fred F., III; Martin, James P.; Powers, Edward A.; and Osman, Kenneth R., 5,386,123, Cl. 250-561.000.
Otteen, Mitchell M., to Regent Lighting Corporation. Adjustable beam security light. 5,386,354, Cl. 362-258.000.
Otterman, David G.: *See*—
Connell, Richard D.; Otterman, David G.; Katz, Michael E.; Hanko, Rudolf; and Schneider, Stephan, 5,385,918, Cl. 514-330.000.
Oswaldbauer, Helmut: *See*—
Herzig, Christian; Geck, Michael; Rengstl, Alfred; Hockemeyer, Friedrich; and Oswaldbauer, Helmut, 5,386,007, Cl. 528-12.000.
Ota, Atsushi; Uozumi, Minoru; and Onishi, Hirokazu, to Toyota Jidosha Kabushiki Kaisha. Vacuum casting apparatus. 5,385,198, Cl. 164-258.000.
Otaka, Toshio: *See*—
Kitagawa, Koichi; Saito, Kazuo; Otaka, Toshio; Yamamoto, Toshihiro; and Ito, Yoshihiro, 5,385,030, Cl. 62-160.000.
Otake, Toru: *See*—
Moriya, Tamon; Kurita, Hironori; Otake, Toru; Mori, Haruyo; and Morimoto, Motoko, 5,385,891, Cl. 514-58.000.
Otani, Yuzo; and Takeda, Naohiro, to Daifoil Company, Limited. Electrically conductive film. 5,385,768, Cl. 428-141.000.
Ototake, Taro; Maeda, Yasuko; and Ueki, Takakazu, to Nikon Corporation. Pattern position measuring apparatus. 5,386,294, Cl. 156-401.000.
Otsuka Pharmaceutical Company, Limited: *See*—
Fujioka, Takafumi; Teramoto, Shuji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,385,914, Cl. 514-312.000.
Otsuki, Yutaka: *See*—
Yuasa, Hitoshi; Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; and Otsuki, Yutaka, 5,385,795, Cl. 430-7.000.
Otterbach, Andreas; Schwarz, Hans V.; Merger, Franz; Schwarz, Wolfgang; Brandt, Eckhardt; Magnussen, Peter; and Mattner, Otto, to BASF Aktiengesellschaft. Multistep, continuous preparation of organic polyisocyanates. 5,386,053, Cl. 560-344.000.
Otto, Albrecht: *See*—
Beck, Erhard; and Otto, Albrecht, 5,385,396, Cl. 303-119.200.
Otto, Dieter; and Pfund, Thomas, to Luk Getriebe-Systeme GmbH. Coupling for a hydrodynamic flow converter. 5,385,222, Cl. 192-3.290.
Oude, Bernardus A.: *See*—
Dougherty, James A.; Dear, George W.; and Oude, Bernardus A., 5,385,616, Cl. 148-248.000.
Outokumpu Harjavalta Metals Oy: *See*—
Jounela, Seppo S., 5,385,600, Cl. 75-430.000.
Overholser, Denys D.: *See*—
Jones, Dennis R.; Lutz, James E.; Campbell, Richard H.; and Overholser, Denys D., 5,386,196, Cl. 324-667.000.
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Perlsweig, Leon. Means for releasing leaves and debris from hand-held swimming pool leaf skimmer. 5,385,666, Cl. 210-169.000.
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Photo Craft Co., Ltd.: *See*—
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Jeng, Peide, 5,386,230, Cl. 348-241.000.
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Robin, Jean-Pierre; and Lenain, Valerie, 5,386,016, Cl. 536-18.100.
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Basil, John D.; Lin, Chia-Cheng; and Hunia, Robert M., 5,385,964, Cl. 524-266.000.
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Quinn, Anna M.; and Eastman, Jay M., 5,386,105, Cl. 235-462.000.

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Liao, Wen P.; and Purnell, Deborah L., 5,385,676, Cl. 210-734.000.

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Schwarz, James A.; Putyera, Karol; Jagiello, Jacek; and Bandosz, Teresa J., 5,385,876, Cl. 502-80.000.

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Abbott, Martyn S.; Thompson, Thomas C.; Jones, Kenneth A.; Davis, Albert M.; and Mattson, Andrew P., 5,385,540, Cl. 604-4.000.

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Melton, Florence, 5,384,970, Cl. 36-88.000.

R. J. Surgical Instruments, Inc.: *See*—
Chin, Albert K.; and Gresl, Charles, 5,385,570, Cl. 606-170.000.

Raben, Thomas M. Lift truck accessories for stacking and moving stacks of tires. 5,385,440, Cl. 414-608.000.

Rabinovitz, Marco; and Fisher, Joyce M., to United States of America, Health and Human Services. Method for the treatment of cancer by use of the copper complex of S-(methylthio)-DL-homocysteine or the L-enantiomorph thereof. 5,385,933, Cl. 514-499.000.

Radbruch, Andreas: *See*—
Miltenyi, Stefan; Radbruch, Andreas; Weichel, Walter; Muller, Werner; Gottlinger, Christoph; and Meyer, Klaus L., 5,385,707, Cl. 422-69.000.

Radici, Pierino: *See*—
Cozzi, Pierluigi; Giuffrida, Giuseppe; Pellizzon, Tullio; and Radici, Pierino, 5,386,072, Cl. 585-456.000.

Raghavachari, Partha, to AT&T Corp. Method and apparatus for controlling dynamic random access memory devices. 5,386,383, Cl. 365-189.050.

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Brann, J. Joseph; and Ralya, Thomas C., 5,386,542, Cl. 395-550.000.

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Mitra, Samir; Raman, Renukanthan; and Petollno, Joseph, 5,386,526, Cl. 395-400.000.

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Ramer, William E. Roll-off table apparatus and method. 5,385,001, Cl. 53-399.000.

Ramos, Gerardo: *See*—
Schneider, Peter; and Ramos, Gerardo, 5,386,029, Cl. 544-88.000.

Ramtron International Corporation: *See*—
Butler, Douglas; Stevens, E. Henry; Bailey, Richard A.; and Taylor, Thomas C., 5,385,634, Cl. 156-644.000.

Rand, Roy E., to Imatron, Inc. Method and apparatus for electron beam focusing adjustment by electrostatic control of the distribution of beam-generated positive ions in a scanning electron beam tomography scanner. 5,386,445, Cl. 378-10.000.

Ranganathan, Ramaswamy: *See*—
Bloch, Carl J.; McKinley, Philip E.; and Ranganathan, Ramaswamy, 5,385,289, Cl. 228-103.000.

Rangaswamy, Subramaniam; and Miller, Robert A., to Sulzer Plasma Technik, Inc. Composite powders for thermal spray coating. 5,385,789, Cl. 428-570.000.

Rank Brimar Limited: *See*—
Fielding, Raymond G., 5,386,253, Cl. 348-745.000.

Ransom, Louis J. Anti-friction composition. 5,385,683, Cl. 252-35.000.

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Cantiant, Thierry; Gabillard, Bertrand; Mifsud, Jean-Paul; and Rapoport, Stuart, 5,386,392, Cl. 365-233.000.

Ratcliff, Jack W.: *See*—
Pryor, Jeffery W.; and Ratcliff, Jack W., 5,385,324, Cl. 248-231.700.

Rathbun, Richard T., to Aeronautical Accessories, Inc. Valve and method of valve use while washing a compressor in an aircraft engine. 5,385,014, Cl. 60-39.020.

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Sudman, David; Ulowetz, Joseph; Singhi, Dilip; and Pajerski, Maureen, 5,385,475, Cl. 434-307.00R.

Rawlings, David A., to Smith & Nephew plc. Tampon applicators. 5,385,542, Cl. 604-14.000.

Ray, R. Charles, to Danek Medical, Inc. Tool and method for derotating scoliotic spine. 5,385,565, Cl. 606-61.000.

Raykh, Mikhail: *See*—
Au, Van; Harichian, Bijan; Hill, Michael I.; Raykh, Mikhail; and Krupa, Jerry J., 5,386,018, Cl. 536-185.000.

Read-Rite Corporation: *See*—
Thayamballi, Pradeep K., 5,385,637, Cl. 156-656.000.

Reagle, Dennis J.; and Bolstad, Gregory D., to Hughes Aircraft Company. Reconfigurable computer interface and method. 5,386,518, Cl. 395-325.000.

Reckitt & Colman Products Limited: *See*—
Chapleo, Christopher B.; and Fagan, Gay P., 5,385,919, Cl. 514-339.000.

Reece, John W., to Borg-Warner Automotive, Inc. Dual clutch countershaft automatic transmission. 5,385,064, Cl. 74-331.000.

Reese, LeRoy H.: *See*—
Taylor, Jeffrey E.; Stewart, Lane R.; Tate, Thomas; Weisman, Richard; Wood, Dana; and Reese, LeRoy H., 5,386,256, Cl. 352-27.000.

Rega Stichting v.z.w.: *See*—
Kim, Choung U.; Martin, John C.; Luh, Bing Y.; and Misco, Peter F., 5,386,030, Cl. 544-243.000.

Regent Lighting Corporation: *See*—
Osteen, Mitchell M., 5,386,354, Cl. 362-258.000.

Rehder, Michael C.: *See*—
Veeneman, Ron C.; Fullarton, Sonya G.; Peters, Dana C.; Rehder, Michael C.; Rose, K. Timothy; Tranter, Jeff J.; and Weatherson, Andrew J., 5,386,459, Cl. 379-93.000.

Reichel, Curtis J.: *See*—
Fishback, Thomas L.; and Reichel, Curtis J., 5,385,952, Cl. 521-131.000.

Reidenberg, Marcus: *See*—
Flack, Mary R.; Knazek, Richard; and Reidenberg, Marcus, 5,385,936, Cl. 514-548.000.

Reimer, Peter; Schneider, Helmut; and Fremerey, Johan K., to Leybold AG. Magnetic bearing cell. 5,386,166, Cl. 310-90.500.

Rein, Alan D.; and Foye, David M., to American Standard Inc. Personal comfort system. 5,385,297, Cl. 236-49.300.

Reindel, Kenneth A.: *See*—
Minneman, Michael; Reindel, Kenneth A.; Banaska, John G.; Bish, Gary K.; Creque, Andy J.; and Atwell, Michael, 5,386,188, Cl. 324-126.000.

Reinhardt, Eugen: *See*—
Kiesewetter, Rene ; Reinhardt, Eugen; Kniewake, Reinhard; and Szablikowski, Klaus, 5,385,585, Cl. 8-562.000.

Rembert, Michael E.: *See*—
Owen, Charles D.; Rembert, Michael E.; and Davis, Albert S., 5,385,167, Cl. 137-315.000.

Remo, Inc.: *See*—
Belli, Remo D., 5,385,076, Cl. 84-414.000.

Remote Ocean Systems, Inc.: *See*—
Acks, Robert S., 5,386,355, Cl. 362-267.000.

Remote Switch Systems, Inc.: *See*—
Childs-Goodrich, Whitney E.; and Stevens, William S., 5,386,454, Cl. 379-27.000.

Renard, Pierre: *See*—
Guillaumet, Gerald; Coudert, Gerard; Podona, Tchao; Guardiola-Lemaitre, Beatrice; Renard, Pierre; Adam, Gerard; and Henri-Caignard, Daniel, 5,385,930, Cl. 514-432.000.
Lesieur, Daniel; Yous, Said; Depreux, Patrick; Adam, Gerard; Renard, Pierre; Pfeiffer, Bruno; and Guardiola-Lemaitre, Beatrice, 5,385,944, Cl. 514-585.000.
Yous, Said; Lesieur, Isabelle; Depreux, Patrick; Caignard, Daniel H.; Guardiola, Beatrice; Adam, Gerard; and Renard, Pierre, 5,386,034, Cl. 548-169.000.

Rengstl, Alfred: *See*—
Herzig, Christian; Geck, Michael; Rengstl, Alfred; Hockemeyer, Friedrich; and Oswaldbauer, Helmut, 5,386,007, Cl. 528-12.000.

Renlund, Gary M.; and Syammach, Mustafa A., to Triox Technologies, Inc. Ceramic compositions. 5,385,874, Cl. 501-103.000.

Renovisions, Inc.: *See*—
Wurdack, Kirk, 5,385,335, Cl. 254-1.000.

Repinec, Stephen T., Jr.; Gomes, Gilbert S.; and Erilli, Rita, to Colgate Palmolive Co. High foaming nonionic surfactant based liquid detergent. 5,385,696, Cl. 252-546.000.

Revak, Scott: *See*—
Bourekas, Philip A.; Willenz, Avigdor; Mor, Yeshayahu; LeNgoc, Danh; and Revak, Scott, 5,386,579, Cl. 395-800.000.

Revitz, Martin: *See*—
Chu, Jack O.; Hsieh, Chang-Ming; Nastasi, Victor R.; Revitz, Martin; and Ronsheim, Paul A., 5,385,850, Cl. 437-31.000.

Rexham Graphics Inc.: *See*—
Willetts, Carl V.; Klausner, Cynthia F.; Brault, Donald A.; Crosbie, Bryan W. M.; Stewart, Alan F.; and Taylor, Dene H., 5,385,771, Cl. 428-211.000.

Rhee, Choong K.: *See*—
Stickney, John L.; Lei, Qing; and Rhee, Choong K., 5,385,651, Cl. 204-129.250.

Rhone-Poulenc Rorer GmbH: *See*—
Baldew, Glenn S.; and Vermeulen, N. P. E., 5,385,726, Cl. 424-10.000.

Rhone-Poulenc Rorer Pharmaceuticals Inc.: *See*—
Neuenschwander, Kent; Amin, Dilip; Scotese, Anthony C.; and Morris, Robert L., 5,385,912, Cl. 514-305.000.

Riaz, Umar; and Proscia, James W., to Ford Motor Company. Atmospheric pressure CVD process for preparing fluorine-doped tungsten oxide films. 5,385,751, Cl. 427-126.200.

Richard Wolf GmbH: *See*—
Boebel, Manfred; and Messroghli, Hossein, 5,385,568, Cl. 606-144.000.

Richards, Grant: *See*—
Yearsley, Gyle; and Richards, Grant, 5,386,469, Cl. 380-3.000.

Richards, John W.; and Soloff, Jonathan M., to Sony United Kingdom Ltd. Apparatus and method for processing a digital video signal which prevents discontinuities and erosion of the picture area. 5,386,245, Cl. 348-629.000.

Richardson, Frank A.: *See*—
Kildal, Maurice A.; Richardson, Frank A.; and Monsees, Claude E., 5,384,947, Cl. 29-407.000.

Richland Diversified Industries, Inc.: *See*—
Dorris, Jimmie D., 5,385,112, Cl. 114-362.000.

Richter, Harald: *See*—
Massen, Robert; Gassler, Joachim; Konz, Christian; and Richter, Harald, 5,386,292, Cl. 356-376.000.

Richter, Simon J.; and Paisley, Gary V., to Coca-Cola Company, The. Liquid container system. 5,385,269, Cl. 222-105.000.

Ricoh Company, Ltd.: *See*—
Akahori, Takashi, 5,386,408, Cl. 369-100.000.
Nakazato, Yasushi, 5,386,272, Cl. 355-207.000.
Sanpe, Atsushi; and Misago, Naomi, 5,386,274, Cl. 355-215.000.
Suzuki, Hiroaki; and Ueda, Naofumi, 5,386,509, Cl. 395-162.000.
Yuasa, Kazuhiro; and Koike, Kazumasa, 5,386,301, Cl. 358-445.000.

Rieger, Michael: *See*—
Allen, Paul C.; Jolley, Matthew J.; Teitzel, Robin L.; Rieger, Michael; Bohan, Michael; and Thomas, Timothy, 5,386,221, Cl. 346-108.000.

Rieger, Walter: *See*—
Michael, Wolfgang; Thudium, Karl; Hofele, Hans; Rieger, Walter; Klemm, Peter; and Schumann, Burkhardt, 5,385,040, Cl. 72-405.000.

Ries, Uwe: *See*—
Narr, Berthold; Hauel, Norbert; Van Meel, Jacques; Wienen, Wolfgang; Entzeroth, Michael; and Ries, Uwe, 5,385,925, Cl. 514-362.000.

Rieter Ingolstadt Spinnereimaschinenbau AG: *See*—
Dammig, Joachim, 5,384,934, Cl. 19-239.000.
Schuller, Edmund, 5,385,009, Cl. 57-263.000.

Rieu, Jean-Pierre: *See*—
Bigg, Dennis; Duflos, Alain; and Rieu, Jean-Pierre, 5,385,931, Cl. 514-443.000.

Rigaby, Kenneth D. Adjustable container holder. 5,385,325, Cl. 248-313.000.

Riken Denshi Co., Ltd.: *See*—
Yasunaga, Soichiro, 5,386,114, Cl. 250-253.000.

Riley, Robert P.: *See*—
Greenhalgh, Lennox P. H.; and Riley, Robert P., 5,385,668, Cl. 210-257.100.

Rinn, Jean-Charles; and Robillard, Bertrand, to Champagne Moet & Chandon. Calcium alginate gel partially deficient in calcium ions for use in binding metal cations. 5,385,741, Cl. 426-13.000.

Ripstrand, Krister I.; and Nygren, Thorsten, to Telefonaktiebolaget L M Ericsson. Linear amplifier control. 5,386,198, Cl. 330-52.000.

Risko, John J., to II Morrow Inc. Electronic device enclosure. 5,386,084, Cl. 174-52.300.

Ritchart, Mark A.: *See*—
Hart, Charles C.; Ritchart, Mark A.; and Gadberry, Donald L., 5,385,553, Cl. 604-167.000.

Ritchie, Thomas W.: *See*—
Schatz, Steven V.; Ritchie, Thomas W.; Merich, Barry J.; Bonta, Jeffrey D.; and Akinaiy, Akingbade, 5,386,456, Cl. 379-60.000.

Rivero, Mayela; Rodriquez, Valmore; Joseph, Dan; Guevara, Emilio; and Carabano, Nelson, to Intevep, S.A. Conduit having hydrophilic and oleophobic inner surfaces for oil transportation. 5,385,175, Cl. 138-145.000.

Rizzardo, Ezio; Meija, Gordon F.; and Thang, San H., to Commonwealth Scientific and Industrial Research Organisation. Control of molecular weight and end-group functionality of polymers. 5,385,996, Cl. 526-240.000.

Rizzolo, Roberto: *See*—
Sigrist, Albert; and Rizzolo, Roberto, 5,385,526, Cl. 493-14.000.

Rizzuto, Jack A., to James River Paper Company, Inc. Apparatus for dispensing sheet material. 5,385,318, Cl. 242-597.800.

Robert Billet Promotions, Inc.: *See*—
Billet, Robert L., 5,385,275, Cl. 222-399.000.

Robert Bosch GmbH: *See*—
Cochard, Roland; and Jeannin, Pierre, 5,385,047, Cl. 73-517.00A.
Eyberg, Wilhelm, 5,385,129, Cl. 123-436.000.
Kratt, Alfred; and Nusser, Claus-Dieter, 5,385,128, Cl. 123-335.000.
Maue, Hans-Heinrich; Hofmeister, Werner; Gansert, Willi; and Heide, Thomas, 5,385,870, Cl. 439-157.000.

Roberton, Ian. Apparatus for extending an enclosure. 5,384,992, Cl. 52-67.000.

Roberts, Charles W.: *See*—
Henderson, Gregory H.; West, Lawrence C.; Gaylord, Thomas K.; Roberts, Charles W.; Glytsis, Elias N.; and Asom, Moses T., 5,386,126, Cl. 257-15.000.

Roberts, David D.: *See*—
Krivan, Howard C.; Victor, Ginsburg; and Roberts, David D., 5,386,027, Cl. 536-123.100.

Roberts, Mark J.; and Cheung, Harry, to Praxair Technology, Inc. Cryogenic rectification system with improved recovery. 5,385,024, Cl. 62-25.000.

Roberts, William E., to Northrop Grumman Corporation. Gap measurement for shim manufacture. 5,385,050, Cl. 73-597.000.

Robertson, Donald T.: *See*—
Weerasooriya, Upali; Robertson, Donald T.; Lin, John; Leach, Bruce E.; Aeschbacher, Cynthia L.; and Sandoval, Tonyette S., 5,386,045, Cl. 554-149.000.

Robillard, Bertrand: *See*—
Rinn, Jean-Charles; and Robillard, Bertrand, 5,385,741, Cl. 426-13.000.

Robin, Jean-Pierre; and Lenain, Valerie, to Pierre Fabre Medicament. 2^{II},3^{II},4'-tri(acetyl)-4^{II},6^{II}-ethylidine-β-D-glucopyranosides, their preparation and their use for the preparation of 4'-demethylepipodophyliotoxing ethylidene-β-D-glucopyranoside. 5,386,016, Cl. 536-18.100.

Robinson, Darrell; Lewis, Michael E.; Loehr, Karl R.; and Pruchs, Allen V., to Ekstrom Industries, Inc. Watthour meter socket adapter with additional plug-in terminal capability. 5,385,486, Cl. 439-517.000.

Rocco S.r.l.: *See*—
Conte, Gino, 5,385,356, Cl. 280-11.220.

Roche, Bonnie; and Farbes, Samuel, to Roche, Bonnie. Display panel having dual securement means. 5,384,999, Cl. 52-764.000.

Rock, Jeffrey A.; and Volo, Corrine A., to General Motors Corporation. Fuel injection nozzle. 5,385,305, Cl. 239-533.900.

Rockefeller University, The: *See*—
Buxbaum, Joseph D.; Gandy, Samuel E.; and Greengard, Paul, 5,385,915, Cl. 514-313.000.
Kaplan, Gilla; and Sampaio, Elisabeth P., 5,385,901, Cl. 514-231.500.

Rockwell International Corporation: *See*—
Schnittgrund, Gary D., 5,385,710, Cl. 422-184.000.
Tengan, Curtis S., 5,386,513, Cl. 395-250.000.

Rodell, John T.: *See*—
Crisman, Mary B.; Daly, James C.; Day, Arthur M.; Gainey, Charles W., Jr.; Greenstein, Paul G.; Hughes, Duane C.; Rodell, John T.; and Walsh, Kathleen M., 5,386,512, Cl. 395-200.000.

Rodriguez, Kay A. Expandable outerwear garment. 5,384,915, Cl. 2-93.000.

Rodriquez, Valmore: *See*—
Rivero, Mayela; Rodriquez, Valmore; Joseph, Dan; Guevara, Emilio; and Carabano, Nelson, 5,385,175, Cl. 138-145.000.

Roeben, Wolfgang: *See*—
Wild, Hanno; Roeben, Wolfgang; Aichinger, Gerd; Paessens, Arnold; and Petersen-von Gehr, Jorg, 5,385,899, Cl. 514-217.000.

Roesner, Wolfgang: *See*—
Oppermann, Klaus-Guenter; Roesner, Wolfgang; and Hofmann, Franz, 5,385,852, Cl. 437-40.000.

Roettger, Thomas D.: *See*—
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Rogers, Steve: *See*—
Mannen, Bryce L.; and Rogers, Steve, 5,385,045, Cl. 73-462.000.

Rogge, Gunter; and Rogge, Uwe, to Windmoeller & Hoelscher. Inking unit having a cantilevered inking roller, as well as a cantilevered plate cylinder. 5,385,093, Cl. 101-247.000.

Rogge, Uwe: *See*—
Rogge, Gunter; and Rogge, Uwe, 5,385,093, Cl. 101-247.000.

Rohlk, Kai: *See*—
Pentling, Ursula; Buysch, Hans-Josef; Puppe, Lothar; Rohlk, Kai; Grosser, Rolf; and Paul, Hans-Ingolf, 5,386,067, Cl. 570-211.000.

Rohm Co., Ltd.: *See*—
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Rohm and Haas Company: *See*—
Emmons, William D.; Finch, William C.; and Morgan, Meredith A., 5,385,960, Cl. 523-205.000.
Hsu, Adam C., 5,385,902, Cl. 514-237.500.
Lofton, Elizabeth P., 5,385,756, Cl. 427-389.900.

Rohrle, Dieter: *See*—
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Roll, Georg; Ohm, Heinz F.; and Hauser, Berthold, to S:FAG Kugelfischer Georg Schafer KGaA; and Bayerische Motoren Werke AG. Method of regulating the braking force of motorcycles. 5,386,366, Cl. 364-426.010.

Rolls-Royce plc: *See*—
Boardman, James E.; and Fowler, John O., 5,385,204, Cl. 165-170.000.
Rowe, Arthur L., 5,385,012, Cl. 60-39.020.

Ronsheim, Paul A.: *See*—
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Roquette Freres: *See*—
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Rose Health Care Systems: *See*—
Oliva, Philip B., 5,385,156, Cl. 128-898.000.

Rose, James L.; and Homes, Samuel J., to Thomas, E. B. Apparatus and method for treating the outer surface of a pipeline. 5,385,609, Cl. 118-119.000.

Rose, K. Timothy: *See*—
Veeneman, Ron C.; Fullarton, Sonya G.; Peters, Dana C.; Rehder, Michael C.; Rose, K. Timothy; Tranter, Jeff J.; and Weatherson, Andrew J., 5,386,459, Cl. 379-93.000.

Rose, Paul L.: *See*—
Nigrin, Jaroslava M.; and Rose, Paul L., 5,385,871, Cl. 501-25.000.

Rosenberg, Richard L.: *See*—
Labianca, Giuseppe; Rosenberg, Richard L.; and Jacobson, Barry J., 5,385,292, Cl. 229-120.000.

Rosenburgh, John H.: *See*—
Patton, David L.; Manico, Joseph A.; Rosenburgh, John H.; and Piccinino, Ralph L., Jr., 5,386,261, Cl. 354-324.000.

Rostoker, Michael, to LSI Logic Corporation. Rigid backplane formed from a moisture resistant insulative material used to protect a semiconductor device. 5,386,342, Cl. 361-749.000.

Roth, Bruce D.: *See*—
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Rottner, Michael L., to Georgian Art Lighting Designs, Inc. Wiring connector device. 5,385,482, Cl. 439-409.000.

Roty, Deborah C.: *See*—
Lo, Thomas K.; and Roty, Deborah C., 5,386,480, Cl. 382-1.000.

Roussel-UCLAF: *See*—
Teutsch, Jean-Georges; Bonnet, Alain; Aszodi, Jozsef; and Gouin d'Ambrieres, Solange, 5,385,897, Cl. 514-210.000.

Rowe, Arthur L., to Rolls-Royce, plc. Bleed valve control. 5,385,012, Cl. 60-39.020.

Roy, Ronald G.: *See*—
Milstein, Joseph B.; and Roy, Ronald G., 5,385,114, Cl. 117-1.000.

Royal Ordnance PLC: *See*—
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Rubinson, Barry: *See*—
Lary, Richard; Willard, Robert; van Ingen, Catharine; Thiel, David; Watson, William; Rubinson, Barry; Gardner, Edward A.; and Boaen, Verell, 5,386,514, Cl. 395-250.000.
Lary, Richard; Willard, Robert; Van Ingen, Catharine; Thiel, David; Watson, William; Rubinson, Barry; and Boaen, Verell, 5,386,524, Cl. 395-400.000.

Ruckl, Siegfried, to Schablonentechnik, Kufstein, Gesellschaft. Device for machining thin-walled hollow cylinders using a laser beam. 5,386,097, Cl. 219-121.680.

Rude, Edward T.; and Mozdzer, Robert L., to General Clutch Corporation. Tape-spool retention member. 5,385,315, Cl. 242-586.000.

Ruetschi, Werner: *See*—
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Rumph, Robert M., to Sumter Transport, Inc. Hazardous waste transportation and disposal. 5,385,402, Cl. 366-196.000.

Rumsey, Kenneth S.: *See*—
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Rupprecht, Gunter: *See*—
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Rupsis, Paul A.: *See*—
Chou, Ching-Roung; Rupsis, Paul A.; and Shur, David H., 5,386,414, Cl. 370-60.000.

Russell, Stephen D.; Sexton, Douglas A.; and Orazi, Richard J., to United States of America, Navy. Method for laser-assisted silicon etching using halocarbon ambients. 5,385,633, Cl. 156-693.000.

Ryu, Key Y.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Key Y.; Yu, Hyo C.; and Lee, Sang J., 5,386,333, Cl. 360-128.000.

S:FAG Kugelfischer Georg Schafer KGaA: *See*—
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Sabo, Brian R.: *See*—
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Sachdev, Harbans S.: *See*—
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Safelite Glass Corporation: *See*—
Staley, Jack B., 5,385,755, Cl. 427-379.000.

Safety 1st, Inc.: *See*—
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Sague, Alain: *See*—
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Saia, Jerry: *See*—
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St. Gobain Vitrage International: *See*—
Kunert, Heinz; Cornils, Gerd; and Schnitter, Heinrich, 5,384,995, Cl. 52-394.000.

Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, to Sumitomo Electric Industries, Ltd.; and Nippon Telegraph and Telephone Corporation. Optical fiber switching device having an optical fiber length adjustment unit and method for using the same. 5,386,485, Cl. 385-17.000.

Saito, Kazuo: *See*—
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Saito, Koichi, to NEC Corporation. Slidable adapter for simultaneous connection of a plurality of contacts of a backboard test module to conductors of a backboard. 5,386,197, Cl. 324-757.000.

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Kanamori, Hiroo; Urano, Akira; Aikawa, Haruhiko; Ishikawa, Shinji; Hirose, Chisai; and Saito, Masahide, 5,385,594, Cl. 65-60.200.

Saito, Tatsuo: *See*—
Kotani, Takaaki; Takada, Seiji; Goto, Shigenori; and Saito, Tatsuo, 5,386,263, Cl. 354-403.000.

Saito, Tetsuo: *See*—
Kashihara, Atsushi; Kawana, Takashi; Saito, Tetsuo; Mano, Hiroshi; Kanaiwa, Kiyoshi; and Seto, Kaoru, 5,386,302, Cl. 358-448.000.

Saito, Yoshikazu: *See*—
Nakazato, Shinji; Uchida, Hideaki; Saito, Yoshikazu; Yamamura, Masahiro; Kobayashi, Yutaka; Ikeda, Takahide; Hori, Ryoichi; Kitsukawa, Goro; Itoh, Kiyoo; Tanba, Nobuo; Watanabe, Takao; Shimohigashi, Katsuhiro; and Homma, Noriyuki, 5,386,135, Cl. 257-369.000.

Saito, Yuichi; and Kikuchi, Naohiko, to Sumitomo Rubber Industries, Ltd. Radial tire for passenger cars. 5,385,969, Cl. 524-496.000.

Saitoh, Masahiko; and Tadokoro, Hiroyuki, to Hitachi, Ltd. Method of apparatus for recording color image by overlapping toner images of different colors. 5,386,223, Cl. 346-157.000.

Saitoh, Takenori, to NEC Corporation. Instruction prefetching circuit with a next physical address precalculating circuit. 5,386,521, Cl. 395-375.000.

Sakaguchi, Haruo, to Hitachi Zosen Corporation. Molten metal surface protective cover for a continuous casting apparatus having moving mold walls. 5,385,199, Cl. 164-428.000.

Sakaguchi, Katsuhiko: *See*—
Shinkai, Michinori; and Sakaguchi, Katsuhiko, 5,386,575, Cl. 395-750.000.

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Tatsumi, Toru; and Sakai, Akira, 5,385,863, Cl. 437-109.000.

Sakai, Seiji: *See*—
Amano, Toshinori; Sakai, Seiji; Fujiki, Yasuo; Ueyama, Masanori; Sakamoto, Yukio; and Takagi, Daisuke, 5,386,335, Cl. 361-56.000.

Sakakura, Mitsuaki: *See*—
Kyomasu, Ryuichi; Sakakura, Mitsuaki; Kawagishi, Minoru; and Akiike, Tadashi, 5,385,288, Cl. 228-1.100.

Sakakura, Yasuyuki, to Mitsubishi Petrochemical Company Limited. Process for producing acrylic or methacrylic esters. 5,386,052, Cl. 560-205.000.

Sakamoto, Hiroshi, to Nikon Corporation. Display lighting device. 5,386,265, Cl. 354-484.000.

Sakamoto, Masafumi, to Japan Servo Co., Ltd. Permanent magnet stepping motor. 5,386,161, Cl. 310-49.00R.

Sakamoto, Yukio: *See*—
Amano, Toshinori; Sakai, Seiji; Fujiki, Yasuo; Ueyama, Masanori; Sakamoto, Yukio; and Takagi, Daisuke, 5,386,335, Cl. 361-56.000.

Sakata, Yoshio: *See*—
Mohri, Fumihito; Arai, Hideko; and Sakata, Yoshio, 5,384,957, Cl. 29-895.320.

Sakurai, Hiroshi; Onodera, Hitoshi; and Ohta, Hiroyuki, to Yamaha Hatsudoki Kabushiki Kaisha. Method for mounting components. 5,384,956, Cl. 29-834.000.

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Earl, Harold A.; and Salisbury, Richard J., 5,385,754, Cl. 427-221.000.

Salisbury, Winfield W.: *See*—
Burt, William C.; and Salisbury, Winfield W., 5,386,205, Cl. 335-255.000.

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Jay, Scott D.; Ellis, Steven B.; Harpold, Michael M.; and Campbell, Kevin P., 5,386,025, Cl. 536-23.500.

Samole, Sidney: *See*—
Hazinski, Daniel P.; and Samole, Sidney, 5,385,165, Cl. 135-126.000.

Sampaio, Elisabeth P.: *See*—
Kaplan, Gilla; and Sampaio, Elisabeth P., 5,385,901, Cl. 514-231.500.

Samsung Electron Devices Co., Ltd.: *See*—
Son, Wan-Jae; and Kim, Yu-Seon, 5,386,178, Cl. 315-15.000.

Samsung Electronics Co., Ltd.: *See*—
Ahn, Ji-hong, 5,386,382, Cl. 365-174.000.
Bae, Sang-Chul, 5,385,037, Cl. 68-16.000.
Chang, Kyung S.; and Nam, Sang B., 5,385,149, Cl. 128-680.000.
Craft, Jack, 5,386,296, Cl. 358-316.000.
Jang, In-sik, 5,386,307, Cl. 359-53.000.
Kang, Ho-young, 5,386,266, Cl. 355-67.000.
Kim, Dong-Young, 5,386,325, Cl. 360-33.100.
Kim, Tae-eung, 5,386,425, Cl. 371-37.400.
Ko, Jung-Wan, 5,386,235, Cl. 348-427.000.
Limberg, Allen L., 5,386,200, Cl. 330-288.000.
Park, Jeong-ae, 5,386,407, Cl. 369-77.200.
Strolle, Christopher H.; and Ko, Jung W., 5,386,249, Cl. 348-701.000.
Yeom, Hee-cheol, 5,386,199, Cl. 330-279.000.

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Hedin, Erik B.; Jonsson, Gregor I.; Olsson, Lars E.; Sanamrad, Mohammad A.; and Westling, Svea O. G., 5,386,556, Cl. 395-600.000.

Sandersen, Charleston A., to Coates Brothers PLC. Polyesters. 5,385,788, Cl. 428-458.000.

Sandifer, James R.: *See*—
Switalski, Steven C.; Uerz, David S.; Lowne, Alan J.; Sandifer, James R.; and Liu, Hsue-Yang, 5,386,295, Cl. 356-418.000.

Sandofsky, Marc D.; and Ward, David F., to JDM, Ltd. Apparatus for maximizing air conditioning and/or refrigeration system efficiency. 5,385,033, Cl. 62-197.000.

Sandoval, Tonyette S.: *See*—
Weerasooriya, Upali; Robertson, Donald T.; Lin, John; Leach, Bruce E.; Aeschbacher, Cynthia L.; and Sandoval, Tonyette S., 5,386,045, Cl. 554-149.000.

Sandoz Ltd.: *See*—
Doswald, Paul; and Koch, Werner, 5,386,015, Cl. 534-637.000.

Sanghvi, Yogesh S.; and Cook, Phillip D., to Isis Pharmaceuticals. Backbone modified oligonucleotide analogs and preparation thereof through reductive coupling. 5,386,023, Cl. 536-25.300.

Sano, Yasuhiko: *See*—
Yamaguchi, Yoshihisa; Suga, Shinjiro; Morikawa, Masatoshi; Kubo, Kunimichi; Watanabe, Motokazu; and Sano, Yasuhiko, 5,385,991, Cl. 526-74.000.

Sanpe, Atsushi; and Misago, Naomi, to Ricoh Company, Ltd. Image forming apparatus having a toner collecting mechanism for removing foreign particles from the copier environment. 5,386,274, Cl. 355-215.000.

Santillo Limited: *See*—
Hendry, James M., 5,384,913, Cl. 2-2.000.

Sarmadi, Kamran: *See*—
Corle, Timothy R.; Vora, Younus; and Sarmadi, Kamran, 5,386,317, Cl. 359-386.000.

Sarnstrand, Bengt O.: *See*—
Andersson, Carl-Magnus A.; Bergstrand, Hakan S. A. M.; Jakupovic, Edib; Josefsson, Bo-Goran; Lindvall, Magnus L.; Sarnstrand, Bengt O.; and Teneberg, Eric N. G., 5,385,904, Cl. 514-255.000.

Sasaki, Masao: *See*—
Bartle, Alden S.; Wise, Michael A.; Sasaki, Masao; Ishizuka, Hironori; and Kajizuka, Hideharu, 5,385,484, Cl. 439-468.000.

Sasaki, Yoshiyuki; Kobayashi, Shigenobu; Kasaoka, Katsuyuki; Matsubara, Tomio; and Asada, Kaoru, to Teijin Limited. Deeply dyed polyester fabric. 5,385,784, Cl. 428-369.000.

Sashida, Nobuyuki: *See*—
Tokoh, Akira; Sashida, Nobuyuki; Takeuchi, Etsu; and Hirano, Takashi, 5,385,808, Cl. 430-283.000.

Sato, Haruyoshi: *See*—
Yuasa, Hitoshi; Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; and Otsuki, Yutaka, 5,385,795, Cl. 430-7.000.

Sato, Hirotaka: *See*—
Shigeno, Chitoshi; Katada, Naoki; Shida, Jun; Iwase, Norikazu; Sato, Hirotaka; and Yorozu, Hidenori, 5,385,737, Cl. 424-451.000.

Sato, Joichi: *See*—
Shimizu, Shuji; Isogawa, Toshiaki; and Sato, Joichi, 5,386,231, Cl. 348-296.000.

Sato, Kazuo; and Kondo, Kazuaki, to Sumitomo Rubber Industries, Ltd. Process and apparatus for building a green tire. 5,385,620, Cl. 156-131.000.
Sato, Koichi: *See*—
Kiyomiya, Osamu; Minami, Kenichiro; Takahashi, Kunio; and Sato, Koichi, 5,385,432, Cl. 405-204.000.
Sato, Masaaki: *See*—
Hiroi, Masakazu; Mukasa, Mitsuhiro; Uto, Nobutaka; Sato, Masaaki; and Honjo, Takeshi, 5,385,340, Cl. 270-53.000.
Sato, Natsuki, to NEC Corporation. Semiconductor memory device. 5,386,131, Cl. 257-301.000.
Sato, Shigeji: *See*—
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Sato, Shinichi: *See*—
Kishita, Hirofumi; Sato, Shinichi; Yamaguchi, Kouichi; Koike, Noriyuki; and Matsuda, Takashi, 5,386,049, Cl. 556-434.000.
Sato, Soichi; Tomiya, Masaki; and Itabashi, Tatsuo, to Mitutoyo Corporation. Displacement sensor including a heat insulating member partitioning the moving scale and the semiconductor laser. 5,386,291, Cl. 356-356.000.
Sato, Takeshi: *See*—
Amano, Yoshifumi; Nakamura, Kazuo; Kurosawa, Hiroshi; Sato, Takeshi; Akano, Hirofumi; and Kawamura, Yoshiya, 5,385,830, Cl. 435-29.000.
Sato, Toshio; Abe, Masayuki; and Phiu-On, Jureerut, to Kao Corporation. Scouring agent composition for fabric. 5,385,681, Cl. 252-8.700.
Sato, Yasushi; and Watanabe, Toshiharu, to Miyamoto Kogyosho Co., Ltd.; and Fuji Electric Co., Ltd. Apparatus for melting aluminum alloy scraps. 5,385,338, Cl. 266-234.000.
Sato, Yoshihide, to Fuji Xerox Co., Ltd. AC power driven electroluminescent device. 5,386,179, Cl. 315-169.300.
Satoh, Kenji; Tsuchiya, Miki; Akimori, Giichiro; and Tezuka, Yoshitaka, to Honda Giken Kogyo Kabushiki Kaisha. Plotting and editing apparatus. 5,386,506, Cl. 395-160.000.
Satone, Hiroyuki: *See*—
Morikawa, Sumio; Ohga, Toshiji; Satone, Hiroyuki; and Zakohji, Nobuyuki, 5,385,311, Cl. 241-266.000.
Satoshi, Urano: *See*—
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Saturn Corporation: *See*—
Bishop, Gary E.; and Van Ryckeghem, Patrick J., 5,385,698, Cl. 264-53.000.
Certeza, Cesar F., 5,385,223, Cl. 192-4.00C.
Sauer, Thomas; and Stutzel, Bernhard, to Huels Aktiengesellschaft. Method of producing aqueous polymer dispersions. 5,385,971, Cl. 524-551.000.
Saunders Archery Co.: *See*—
Saunders, Charles A., 5,385,135, Cl. 124-44.500.
Saunders, Charles A., to Saunders Archery Co. Arrow rest and pressure button assembly. 5,385,135, Cl. 124-44.500.
Saunders, Gregory J.: *See*—
Keough, William J.; Saunders, Gregory J.; Smith, Neil L.; and Stratychuk, Mark, 5,385,602, Cl. 75-766.000.
Saunders, William M.: *See*—
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Kurz, Manfred; and Saur, Roland, 5,385,296, Cl. 236-34.500.
Sauter, Herman J. Cold weather personal shelter device. 5,385,164, Cl. 135-87.000.
Sayles, David C., to United States of America, Army. Composite thermoplastic filler for ballast cans for use with fluorescent lights. 5,386,086, Cl. 174-52.200.
SBN Systems, Inc.: *See*—
Kennedy, Randall J., 5,385,094, Cl. 101-269.000.
Scan-Optics, Inc.: *See*—
Basso, Alfred L.; and Newton, David A., 5,386,482, Cl. 382-9.000.
Scarborough, Robert M.: *See*—
Benson, Bradley J.; White, Robert T.; Schilling, James W., Jr.; Buckley, Douglas I.; and Scarborough, Robert M., 5,385,840, Cl. 435-240.200.
Scarfone, Frank A.; and Turkel, David, to Symbiosis Corporation. Coaxial bone marrow biopsy needle assembly. 5,385,151, Cl. 128-754.000.
Schaap, Arthur P., to Board of Governors of Wayne State University. Alkenes for producing chemiluminescent 1, 2-dioxetane compounds. 5,386,017, Cl. 536-18.100.
Schablonentechnik, Kufstein, Gesellschaft: *See*—
Ruckl, Siegfried, 5,386,097, Cl. 219-121.680.
Schaefer, Ronald J.; and Kyllingstad, Vernon L., to Zeon Chemicals U.S.A., Inc. Curable halobutyl rubber/poly-epihalohydrin rubber blends. 5,385,980, Cl. 525-187.000.
Schaeffner, Pierre: *See*—
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Schafer, Horst: *See*—
Merkt, Thilo; Schafer, Horst; Feldle, Gunter; and Gabler, Oskar, 5,385,448, Cl. 416-229.00R.
Scharf, Michael W.; Veillon, Joseph N., Jr.; and Yatsko, Thomas, to Baxter International Inc. Port closure. 5,385,253, Cl. 215-296.000.
Schausberger, Wolfgang; Manier, Monika; and Thoma, Martin, to MTU Motoren-und Turbinen-Union Munchen GmbH. Process for the production of a composite coating of a functional substance in a metal matrix on the surface of an article. 5,385,760, Cl. 427-443.100.
Schatz, Steven V.; Ritchie, Thomas W.; Merich, Barry J.; Bonta, Jeffrey D.; and Akinniy, Akingbade, to Motorola, Inc. Method of reducing audio gap in downlink during handoff of cellular radiotelephone. 5,386,456, Cl. 379-60.000.
Scheibelhoffer, Anthony S.: *See*—
Chundury, Deenadayalu; Scheibelhoffer, Anthony S.; Leonard, Berdine L.; Thompson, Ronald E.; McAllister, Randall S.; Wimolkiatisak, Surachai; and Dean, Anthony F., Jr., 5,385,781, Cl. 428-330.000.
Schell, Frank: *See*—
Nixon, Henry M., Jr.; Schell, Frank; and MacDonald, Keith, 5,385,003, Cl. 53-471.000.
Schell, Mark S., to Berg Technology, Inc. Solderable hold-down. 5,385,489, Cl. 439-571.000.
Schell, Ronald F.; and Callister, Steven M., to Gundersen Medical Foundation, Ltd. Diagnostic assay for lyme disease. 5,385,826, Cl. 435-7.320.
Schellekens, Ronald M. A. M.; and Van Dijk, Hans K., to DSM N.V. Method for the preparation of a polymer composition containing an electrically conductive polymer. 5,385,956, Cl. 522-116.000.
Schelter, Wolfgang: *See*—
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Scheper, Robert M.: *See*—
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Schering Aktiengesellschaft: *See*—
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Steppuhn, Karin G.; Bressler, Karin; Gieseler, Martin; Stephens, David N.; and Turski, Lechoslaw, 5,385,903, Cl. 514-249.000.
Tilstam, Ulf; Borner, Helmut; Nickisch, Klaus; Gries, Heinz; and Platzek, Johannes, 5,386,028, Cl. 540-474.000.
Scheuten, Peter, to Eastman Kodak Company. Sheet-stapling device. 5,385,287, Cl. 227-155.000.
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Nelson, Frances C.; and Schiehser, Guy A., 5,385,908, Cl. 514-291.000.
Nelson, Frances C.; and Schiehser, Guy A., 5,385,909, Cl. 514-291.000.
Ocain, Timothy D.; and Schiehser, Guy A., 5,385,910, Cl. 514-291.000.
Schilling, James W., Jr.: *See*—
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Schindler, Fred: *See*—
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Ziegler, Herbert; and Schindler, Peter, 5,386,367, Cl. 364-431.080.
Schlamp, Hans, to Accumulata Verwaltungsgesellschaft mBH. Vending device. 5,385,265, Cl. 221-7.000.
Schlamp, Hans, to Accumulata Verwaltungsgesellschaft mbH. Vending system with a given number of compartments. 5,386,462, Cl. 379-106.000.
Schluckebier, David K.: *See*—
Corzine, Alan J.; Dippold, Jack D.; and Schluckebier, David K., 5,385,100, Cl. 102-507.000.
Schmalz, Richard J.: *See*—
McCauley, Donald W.; Schmalz, Richard J.; Smith, Ronald M., Sr.; and Stillman, Susan B., 5,386,560, Cl. 395-650.000.
Schmidt, Caitlyn R. Flashlight toy. 5,385,500, Cl. 446-73.000.
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Schmitt, Peter J., to Meadox Medicals, Inc. Self-supporting woven vascular graft. 5,385,580, Cl. 623-1.000.
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Schnabel, James P., Jr.: *See*—
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Schneck, Elden E., to Chrysler Corporation. Vehicle tire-to-body coverage checking fixture and method of using same. 5,384,965, Cl. 33-203.000.
Schneider, Helmut: *See*—
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Schneider, Michael; Kochloefl, Karl; and Maletz, Gerhard, to Sud-Chemie AG. Catalyst and process for hydrogenation of carboxylic acid alkyl esters to higher alcohols. 5,386,066, Cl. 568-885.000.
Schneider, Peter; and Ramos, Gerardo, to Ciba-Geigy Corporation. Process for the manufacture of 4-acyloxy-3-hydroxyethyl-azetidinones. 5,386,029, Cl. 544-88.000.

Schneider, Stephan: *See*—
Connell, Richard D.; Osterman, David G.; Katz, Michael E.; Hanko, Rudolf; and Schneider, Stephan, 5,385,918, Cl. 514-330.000.
Schneider, Walter H.: *See*—
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Schnieders, Lawrence J.: *See*—
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Schnittgrund, Gary D., to Rockwell International Corporation. Diffusion resistant refractory for containment of fluorine-rich molten salt. 5,385,710, Cl. 422-184.000.
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Schoettl, Johannes, to Siemens Aktiengesellschaft. Valve control unit and method for its production. 5,386,337, Cl. 361-622.000.
Schofield, Edward; and Szajewski, Richard P., to Eastman Kodak Company. Photographic elements containing loaded ultraviolet absorbing polymer latex. 5,385,815, Cl. 430-512.000.
Scholl, Hans J.; Muller, Hanns-Peter; and Welte, Rainer, to Bayer Aktiengesellschaft. Process for the purification of polyisocyanates, the polyisocyanates thus purified and use thereof. 5,386,054, Cl. 560-352.000.
Schotter, Daniel K., to Hughes Missile Systems Company. Missile with inside payout optical fiber canister. 5,385,319, Cl. 244-3.120.
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Schroth, Milton N.; Lee, Yung-Ann; and Chong, Mavis D., to University of California, The Regents of the. Methods for preventing precipitation of copper from copper based bactericidal compositions containing iron. 5,385,934, Cl. 514-500.000.
Schubring, Norman W.: *See*—
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Schuller, Edmund, to Rieter Ingolstadt Spinnereimaschinenbau AG. Process for piecing and cleaning in an open-end spinning device. 5,385,009, Cl. 57-263.000.
Schultz, Thomas J., to Gas Research Institute. Control system for a soft vacuum furnace. 5,385,337, Cl. 266-81.000.
Schulze, Manfred, to Jetmarine AG. Arrangement for the drive of a watercraft, in particular for an inflatable boat. 5,385,111, Cl. 114-345.000.
Schulze, Walter A.: *See*—
Bayya, Shyam S.; Synder, Robert L.; Gopalakrishman, Sudhakar; and Schulze, Walter A., 5,385,882, Cl. 505-501.000.
Schumacher, Hans; Huff, Hans P.; and Hacker, Erwin, to Hoechst Aktiengesellschaft. Herbicidal agents. 5,385,881, Cl. 504-136.000.
Schumacher, Karl-Heinz: *See*—
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Schwantje, Gerd: *See*—
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Schwark, Joanne M.: *See*—
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Schwarm, Michael: *See*—
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Schwartz, Robert E.: *See*—
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Schwarz, Hans V.: *See*—
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Schwarz, James A.; Putyera, Karol; Jagiello, Jacek; and Bandosz, Teresa J., to Syracuse University. Activated carbons molecularly engineered. 5,385,876, Cl. 502-80.000.
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Science Incorporated: *See*—
Kriesel, Marshall S.; and Thompson, Thomas N., 5,385,545, Cl. 604-82.000.
Kriesel, Marshall S.; and Thompson, Thomas N., 5,385,546, Cl. 604-85.000.
SciMed Life Systems, Inc.: *See*—
Adams, Daniel O.; and Penny, William H., 5,385,562, Cl. 604-280.000.
Scios Nova Inc.: *See*—
Benson, Bradley J.; White, Robert T.; Schilling, James W., Jr.; Buckley, Douglas I.; and Scarborough, Robert M., 5,385,840, Cl. 435-240.200.
Kyle, Donald J.; and Hiner, Roger N., 5,385,889, Cl. 514-15.000.
Scotese, Anthony C.: *See*—
Neuenschwander, Kent; Amin, Dilip; Scotese, Anthony C.; and Morris, Robert L., 5,385,912, Cl. 514-305.000.
Scott, Timothy C., to Martin Marietta Energy Systems, Inc. Electric field controlled emulsion phase contactor. 5,385,658, Cl. 204-305.000.
Scripps Research Institute, The: *See*—
Bradshaw, Curt W.; Wong, Chi-Huey; and Shen, Gwo-Jenn, 5,385,833, Cl. 435-156.000.
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Seligman, Scott P., 5,385,496, Cl. 441-115.000.
Seaman, Michael J.: *See*—
Crook, Neal A.; Seaman, Michael J.; and Brash, David L. A., 5,386,523, Cl. 395-400.000.
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De Jong, Randall L.; Seamans, Ronald E.; and Zeller, James R., 5,386,031, Cl. 544-280.000.
Sebastiani, Enrico; and Fogliani, Giuseppe, to Worgas Bruciatori S.r.l. Methods and apparatus for gas combustion. 5,385,467, Cl. 431-326.000.
Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom and Northern Ireland, The: *See*—
Snell, Michael B., 5,385,219, Cl. 188-378.000.
Seebach, Dieter; Drauz, Karlheinz; Kottenhahn, Matthias; Lotter, Hermann; and Schwarm, Michael, to Degussa Aktiengesellschaft. Method of producing optically active 1,3-imidazolidine-4-ones. 5,386,035, Cl. 548-316.400.
Seeger, George T.: *See*—
Blohm, Margaret L.; Brown, Sterling B.; Seeger, George T.; and Anderson, Patricia P., 5,385,984, Cl. 525-393.000.
Seely, Warren L.; Kao, Joseph H.; and Fleming, James H., to Motorola, Inc. High isolation microwave module. 5,386,204, Cl. 333-208.000.
Seeman, Nadrian C.; Chen, Junghuei; and Kallenbach, Neville R., to New York University. Multiply connected, three-dimensional nucleic acid structures. 5,386,020, Cl. 536-23.100.
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Hou, Mean-Jeng; and Seenivasan, Narayanasamy, 5,385,639, Cl. 162-5.000.
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Kusumoto, Shoichi; Hase, Sumihiro; and Fukase, Koichi, 5,386,033, Cl. 546-309.000.
Seiko Epson Corporation: *See*—
Komatsu, Hiroshi, 5,386,172, Cl. 313-309.000.
Shirotori, Hiroshi; Nishizawa, Katsuhiko; Mizuno, Shigeki; and Takahashi, Teturo, 5,385,414, Cl. 400-124.020.
Seiko Instruments Inc.: *See*—
Masaki, Hiroyuki, 5,386,399, Cl. 368-110.000.
Seikosha Co., Ltd.: *See*—
Kubota, Maki, 5,386,220, Cl. 345-184.000.
Sejnoha, Vladimir: *See*—
Wilson, Brian H.; Yegnanarayanan, Girija; Sejnoha, Vladimir; and Ganong, William F., 5,386,492, Cl. 395-2.610.
Sekine, Makoto: *See*—
Okano, Haruo; Noguchi, Sadahisa; and Sekine, Makoto, 5,385,763, Cl. 427-572.000.
Sekine, Masayoshi; Nakajima, Toshiyuki; Kai, Takashi; Yoshimura, Katsuji; and Toyama, Masamichi, to Canon Kabushiki Kaisha. Image shake detecting device. 5,386,264, Cl. 354-430.000.
Sekiya, Kazuo: *See*—
Lien, Yeong-Chang; Sone, Hironao; Sekiya, Kazuo; and Kanada, Yoshihisa, 5,386,567, Cl. 395-700.000.
Seligman, Scott P., to Sea Quest, Inc. Buoyancy compensator with lateral expansion and method therefor. 5,385,496, Cl. 441-115.000.
Senco Products, Inc.: *See*—
Johnson, Paul L., Jr., 5,385,286, Cl. 227-8.000.
Sergent, Rodney H.: *See*—
Howarth, Jonathan N.; Dadgar, Ahmad; and Sergent, Rodney H., 5,385,650, Cl. 204-103.000.
Serpelloni, Michel; and Croisier, Alain, to Roquette Freres. Directly compressible pulverulent composition and a process for obtaining the same. 5,385,749, Cl. 426-658.000.
Set-O-Matic, Inc.: *See*—
Keret, Jacob, 5,386,362, Cl. 364-406.000.
Seto, Kaoru: *See*—
Kashihara, Atsushi; Kawana, Takashi; Saito, Tetsuo; Maso, Hiroshi; Kanaiwa, Kiyoshi; and Seto, Kaoru, 5,386,302, Cl. 358-441.000.
Sexton, Douglas A.: *See*—
Russell, Stephen D.; Sexton, Douglas A.; and Orazi, Richard J., 5,385,633, Cl. 156-693.000.
SGS-Thomson Microelectronics, Inc.: *See*—
McClure, David C., 5,386,377, Cl. 364-787.000.
Shafer, Kirk E.; Dinwiddie, Aaron H.; and Duffield, David J., to Thomson Consumer Electronics, Inc. Video display having progressively dimmed video images and constant brightness auxiliary images. 5,386,247, Cl. 348-687.000.
Shannon, Mervyn D.: *See*—
Casci, John L.; and Shannon, Mervyn D., 5,385,718, Cl. 423-718.000.

Shanok, Daniel: *See—*
Shanok, William; Shanok, Daniel; Shanok, Frederick; Good, Ronald; Limansky, Joseph; Shanok, Victor; and Shanok, Jesse P., 5,385,703, Cl. 264-145.000.
Shanok, Frederick: *See—*
Shanok, William; Shanok, Daniel; Shanok, Frederick; Good, Ronald; Limansky, Joseph; Shanok, Victor; and Shanok, Jesse P., 5,385,703, Cl. 264-145.000.
Shanok, Jesse P.: *See—*
Shanok, William; Shanok, Daniel; Shanok, Frederick; Good, Ronald; Limansky, Joseph; Shanok, Victor; and Shanok, Jesse P., 5,385,703, Cl. 264-145.000.
Shanok, Victor: *See—*
Shanok, William; Shanok, Daniel; Shanok, Frederick; Good, Ronald; Limansky, Joseph; Shanok, Victor; and Shanok, Jesse P., 5,385,703, Cl. 264-145.000.
Shanok, William; Shanok, Daniel; Shanok, Frederick; Good, Ronald; Limansky, Joseph; Shanok, Victor; and Shanok, Jesse P., to Silvatrim Associates. Forming extruded molding trim for vehicles and appliances. 5,385,703, Cl. 264-145.000.
Sharkey, Hugh R.: *See—*
Edwards, Stuart D.; Sharkey, Hugh R.; Lundquist, Ingemar H.; Lax, Ronald G.; and Strul, Bruno, 5,385,544, Cl. 604-22.000.
Sharp, Gordon P.; and Desrochers, Eric, to Phoenix Controls Corporation. Pressure maintenance system for substantially sealed space. 5,385,505, Cl. 454-238.000.
Sharp Kabushiki Kaisha: *See—*
Isono, Hitoshi; and Takemori, Hirotoshi, 5,385,638, Cl. 156-663.000.
Nakayama, Junichiro; Miyake, Tomoyuki; Katayama, Hiroyuki; and Ohta, Kenji, 5,386,400, Cl. 369-13.000.
Watanabe, Takashi, 5,385,860, Cl. 437-53.000.
Shaw, Thomas J. Nonreusable medical device with front retraction. 5,385,551, Cl. 604-110.000.
Shearer, Wanda N.; and Holden, Barbara, to Hewlett-Packard Company. Conversion of data and objects across classes in an object management system. 5,386,564, Cl. 395-650.000.
Sheeler, William H.: *See—*
Nygard, James C.; Thompson, Dorman N.; Sheeler, William H.; Miles, Alden R.; Windorski, David C.; Carlson, Bruce W.; and Crawford, Dennis L., 5,385,230, Cl. 206-214.000.
Sheih, Pong S.: *See—*
Dubois, Robert A.; Malzman, Allyson; Treybig, Duane S.; Sheih, Pong S.; and Whetten, Alan R., 5,386,008, Cl. 528-87.000.
Sheinman, Yehoshua: *See—*
Pomerantz, Itzchak; Gilad, Shaley; Dollberg, Yehoshua; Ben-Ezra, Barry; Sheinman, Yehoshua; Barequet, Gill; and Katz, Matthew, 5,386,500, Cl. 395-119.000.
Shelestak, Larry J.: *See—*
Gulotta, Joseph A.; and Shelestak, Larry J., 5,385,872, Cl. 501-71.000.
Shell Oil Company: *See—*
Tryon, John F.; and Ledbetter, Jennings M., 5,386,357, Cl. 362-362.000.
Shen, David T. M.: *See—*
Booth, Richard B.; Gephard, Robert H.; Grembban, Bradley S.; Poetzinger, Janet E.; and Shen, David T. M., 5,384,955, Cl. 29-430.000.
Shen, Gwo-Jean: *See—*
Bradshaw, Curt W.; Wong, Chi-Huey; and Shen, Gwo-Jenn, 5,385,833, Cl. 435-156.000.
Shen, Paul; Krause, Edward A.; and Tom, Adam, to General Instrument Corporation. Double buffer scheme for variable length decoder. 5,386,212, Cl. 341-67.000.
Sherwood Industries, Inc.: *See—*
Gatcomb, James, 5,385,260, Cl. 220-415.000.
Sherwood Tool, Inc.: *See—*
Varano, Richard F.; and Kramer, Donald, 5,385,255, Cl. 220-306.000.
Sheth, Jayesh V.; Harris, Craig W.; White, Theodore C.; Nguyen, Kha; Wong, Chung W.; and Cowgill, Richard A., to Unisys Corporation. Dual bus communication system connecting multiple processors to multiple I/O subsystems having a plurality of I/O devices with varying transfer speeds. 5,386,517, Cl. 395-275.000.
Shetterly, Donivan M.; and Schnabel, James P., Jr., to Glasstech, Inc. Apparatus and method for controlling stresses in laminated automotive glass. 5,385,786, Cl. 428-432.000.
Shiba, Haruo: *See—*
Ikebe, Masaru; Shiba, Haruo; and Miyazaki, Yukio, 5,385,235, Cl. 206-308.100.
Shibano, Yoshihide. Method of ultrasonically grinding workpiece. 5,384,989, Cl. 451-36.000.
Shibata, Akihiro: *See—*
Konno, Fujiko; Shibata, Akihiro; Matsuda, Hideaki; Asaoka, Takemitsu; Kawahara, Ryuichi; Taido, Naokata; Kuraishi, Tadayuki; and Takeda, Sunao, 5,385,900, Cl. 514-218.000.
Shibata, Eiji, to Brother Kogyo Kabushiki Kaisha. Image recording apparatus for adjusting density of an image on a recording medium. 5,386,225, Cl. 347-55.000.
Shibazaki, Hiroshi, to Dainippon Screen Mfg. Co. Method of and apparatus for processing image data to produce additional regions on the boundary of image regions. 5,386,483, Cl. 382-22.000.
Shichijo, Keiko: *See—*
Yamamoto, Koji; Ikemo, Hajime; and Shichijo, Keiko, 5,385,972, Cl. 524-579.000.
Shida, Jun: *See—*
Shigeno, Chitoshi; Katada, Naoki; Shida, Jun; Iwase, Norikazu; Sato, Hirotaka; and Yorozu, Hidenori, 5,385,737, Cl. 424-451.000.
Shida, Zenichiro: *See—*
Hashimura, Yoshiaki; Okihara, Masakazu; Miyazaki, Yusaku; Shida, Zenichiro; and Kogure, Tomohiko, 5,385,192, Cl. 152-454.000.
Shidoji, Eiji: *See—*
Gunjima, Tomoki; Yuki, Masanori; Kunigita, Masaya; Hirai, Yoshinori; Yoshikawa, Yukio; and Shidoji, Eiji, 5,386,306, Cl. 359-52.000.
Shields, James A., to Northern Telecom Limited. Clock recovery. 5,386,311, Cl. 359-189.000.
Shigeno, Chitoshi; Katada, Naoki; Shida, Jun; Iwase, Norikazu; Sato, Hirotaka; and Yorozu, Hidenori, to Kao Corporation. Surfactant-containing seamless capsules. 5,385,737, Cl. 424-451.000.
Shih, Da-Yuan: *See—*
Beaman, Brian S.; Doany, Fuad E.; Dudek, Thomas J.; Lanzetta, Alphonso P.; Shih, Da-Yuan; Tkazyik, William J.; and Walker, George F., 5,386,344, Cl. 361-785.000.
Shih, Kung: *See—*
Pan, Jing-Jong; Liang, Frank Y. F.; Shih, Ming M.; Mao, Zhong M.; and Shih, Kung, 5,386,490, Cl. 385-134.000.
Shih, Ming M.: *See—*
Pan, Jing-Jong; Liang, Frank Y. F.; Shih, Ming M.; Mao, Zhong M.; and Shih, Kung, 5,386,490, Cl. 385-134.000.
Shihoh, Makoto: *See—*
Ikuma, Susumu; and Shihoh, Makoto, 5,386,406, Cl. 369-77.200.
Shilogane Kasei Co., Ltd.: *See—*
Noguchi, Kanji, 5,385,419, Cl. 402-75.000.
Shimizu, Hirokazu: *See—*
Naito, Hiroki; Kume, Masahiro; Sugiura, Hideyuki; Takayama, Toru; Itoh, Kunio; Ohta, Isei; and Shimizu, Hirokazu, 5,386,429, Cl. 372-46.000.
Shimizu, Kanae: *See—*
Yamagishi, Yasuo; Shimizu, Kanae; Mizutani, Daisuke; Owada, Tamotsu; Ishizuki, Yoshikatsu; and Hashii, Hideya, 5,386,430, Cl. 372-57.000.
Shimizu, Kazuo: *See—*
Mitani, Masao; and Shimizu, Kazuo, 5,386,281, Cl. 355-290.000.
Shimizu, Kentaro; Fujiki, Osamu; and Hitotsuyanagi, Mitsuru, to Toyo Tire & Rubber Co., Ltd. Strip winder for a tire building machine. 5,385,626, Cl. 156-406.400.
Shimizu, Noboru: *See—*
Itonori, Katsuhiko; and Shimizu, Noboru, 5,386,508, Cl. 395-161.000.
Shimizu, Shigenori: *See—*
Murata, Hiroki; and Shimizu, Shigenori, 5,386,511, Cl. 395-200.000.
Shimizu, Shuji; Isogawa, Toshiaki; and Sato, Joichi, to Sony Corporation. Video camera. 5,386,231, Cl. 348-296.000.
Shimizu, Tamotsu: *See—*
Terasaka, Yoshihisa; Ohtani, Junji; Machida, Junji; Shimizu, Tamotsu; Murasaki, Hiroshi; and Mizuno, Hiroshi, 5,385,801, Cl. 430-122.000.
Shimizu, Toshio: *See—*
Idei, Yasuo; and Shimizu, Toshio, 5,386,139, Cl. 257-466.000.
Shimohigashi, Katsuhiro: *See—*
Nakazato, Shinji; Uchida, Hideaki; Saito, Yoshikazu; Yamamura, Masahiro; Kobayashi, Yutaka; Ikeda, Takahide; Hori, Ryoichi; Kitsukawa, Goro; Itoh, Kiyoo; Tanba, Nobuo; Watanabe, Takao; Shimohigashi, Katsuhiro; and Homma, Noriyuki, 5,386,135, Cl. 257-369.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Ichinohe, Shoji, 5,385,730, Cl. 424-78.020.
Kishita, Hirofumi; Sato, Shinichi; Yamaguchi, Kouichi; Koike, Noriyuki; and Matsuda, Takashi, 5,386,049, Cl. 556-434.000.
Shin-Etsu Handotai Co., Ltd.: *See—*
Kitagawara, Yutaka; Kubota, Hiroshi; Tamatsuka, Masaro; Takenaka, Takao; and Takamizawa, Kazuhisa, 5,386,118, Cl. 250-338.100.
Shinchi, Takashi: *See—*
Hara, Fumio; and Shinchi, Takashi, 5,385,517, Cl. 477-169.000.
Shinjo, Kenji: *See—*
Nohira, Hiroyuki; Kumano, Yuuta; Katagiri, Kazuharu; Shinjo, Kenji; and Yoshinaga, Kazuo, 5,385,691, Cl. 252-299.010.
Shinkai, Michinori; and Sakaguchi, Katsuhiko, to Canon Kabushiki Kaisha. Electronic apparatus and method for detecting the value of voltage supplied by a power source during the operation of an input and/or output device on the basis of test data sent to the input and/or output device. 5,386,575, Cl. 395-750.000.
Shinohara, Kibatsu: *See—*
Kawamura, Takanori; and Shinohara, Kibatsu, 5,385,463, Cl. 425-143.000.
Shinomoto, Mitsuhiro: *See—*
Matsumoto, Yoshihiro; Shinomoto, Mitsuhiro; and Yagi, Yasunori, 5,385,611, Cl. 118-642.000.
Shinomura, Toshihiko: *See—*
Higuchi, Hiroyuki; Matsushita, Kiichiro; Ezoe, Minoru; and Shinomura, Toshihiko, 5,385,777, Cl. 428-316.600.
Shioda, Yoshihiko. Device attached to a steering wheel for supporting objects thereon. 5,385,283, Cl. 224-276.000.
Shirahata, Hirokatsu: *See—*
Nakamura, Satoshi; and Shirahata, Hirokatsu, 5,385,878, Cl. 502-167.000.

Shirai, Takeshi; and Pawlak, Andrzej M., to General Motors Corporation. Variable reluctance integral bearing sensor. 5,385,410, Cl. 384-446.000.
Shirai, Takeshi; and Pawlak, Andrzej M., to General Motors Corporation. Variable reluctance integral bearing sensor. 5,385,411, Cl. 384-446.000.
Shiraishi, Takashi: *See—*
Kinouchi, Satoshi; Shiraishi, Takashi; Hiruta, Koichi; and Kimura, Kazuhisa, 5,386,286, Cl. 355-326.00R.
Shiratori, Akira; Takagi, Hiroshi; and Kobayashi, Shozo, to Murata Manufacturing Co., Ltd. Solid oxide fuel cell. 5,385,792, Cl. 429-32.000.
Shirota, Riichiro: *See—*
Endoh, Tetsuo; Shirota, Riichiro; Ohuchi, Kazunori; Kirisawa, Ryouhei; Aritome, Seiichi; Tanaka, Tomoharu; and Tanaka, Yoshiyuki, 5,386,422, Cl. 371-21.500.
Shirotori, Hiroshi; Nishizawa, Katsuhiko; Mizuno, Shigeki; and Takahashi, Tetuo, to Seiko Epson Corporation. Printing head and its drive timing control circuit for impact printer. 5,385,414, Cl. 400-124.020.
Shook, William B., to Thurston, Inc. Headset locking mechanism. 5,385,360, Cl. 280-279.000.
Shor, Joseph S.: *See—*
Kurtz, Anthony D.; Shor, Joseph S.; and Ned, Alexander A., 5,386,142, Cl. 257-690.000.
Shorter, Jerry W.: *See—*
Vaynkof, Yakov F.; Zimmermann, Karl F.; Shorter, Jerry W.; and Bond, Joseph K., 5,385,477, Cl. 439-66.000.
Shtirmer, Gennady: *See—*
Addeo, Eric J.; Desmarais, Joseph J.; and Shtirmer, Gennady, 5,386,465, Cl. 379-202.000.
Shur, David H.: *See—*
Chou, Ching-Roung; Rupsis, Paul A.; and Shur, David H., 5,386,414, Cl. 370-60.000.
Shutoh, Shin'ichi: *See—*
Hamanaka, Naoki; Nakagoshi, Junji; Higuchi, Tatsuo; Chiba, Hiroyuki; Shutoh, Shin'ichi; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, 5,386,566, Cl. 395-700.000.
Shuttleworth, William J.: *See—*
Graves, Daniel F.; Hall, James E.; and Shuttleworth, William J., 5,385,994, Cl. 526-181.000.
Shyn, Der-Clng: *See—*
Liu, Hsiung-Hao; Shyn, Der-Clng; Cheng, Lioa-Shun; and Chiu, Chen-Tsu, 5,386,217, Cl. 345-99.000.
Shyu, Chih-Yes. Automatic massager and washer. 5,385,532, Cl. 601-160.000.
Shyu, Chih-Yes: *See—*
Hsu, Chi-Hsueh; Shyu, Chih-Yes; and Shyu, Jong-Yes, 5,385,519, Cl. 482-54.000.
Shyu, Jong-Yes: *See—*
Hsu, Chi-Hsueh; Shyu, Chih-Yes; and Shyu, Jong-Yes, 5,385,519, Cl. 482-54.000.
Sibigtroth, James M.; Viot, J. Greg; Langan, John A.; and Broseghini, James L., to Motorola, Inc. Data processing system for generating symmetrical range of addresses of instructing-address-value with the use of inverting sign value. 5,386,534, Cl. 395-400.000.
Sicom, Inc.: *See—*
Cochran, Bruce A.; and McCallister, Ronald D., 5,386,202, Cl. 332-100.000.
Siczek, Bernard W., to Fischer Imaging Corporation. Mammographic screening and biopsy apparatus. 5,386,447, Cl. 378-37.000.
Sidney Diamond/Imaginings 3, Inc.: *See—*
Diamond, Sidney; and Kupperman, Dennis, 5,385,267, Cl. 221-248.000.
Siebe North, Inc.: *See—*
Granatiero, Nino M., 5,385,141, Cl. 128-201.190.
Siebke, Michael: *See—*
Behrens, Michael; and Siebke, Michael, 5,386,419, Cl. 370-105.100.
Siegel, Karl-Heinz, to Minigrip, Inc. Closure device for bags and a method and a tool for producing same. 5,384,942, Cl. 24-587.000.
Siemens Aktiengesellschaft: *See—*
Bichler, Helmut; and Herfurth, Michael, 5,386,187, Cl. 323-222.000.
Droszdziok, Armin; and Zorner, Walter, 5,385,202, Cl. 165-1.000.
Gumbrecht, Walter; Schelter, Wolfgang; and Montag, Bernhard, 5,385,659, Cl. 204-435.000.
Murphy, Brian; and Zibert, Martin, 5,386,157, Cl. 326-33.000.
Oppermann, Klaus-Guenter; Roesner, Wolfgang; and Hofmann, Franz, 5,385,852, Cl. 437-40.000.
Schoettl, Johannes, 5,386,337, Cl. 361-622.000.
Ziegler, Herbert; and Schindler, Peter, 5,386,367, Cl. 364-431.080.
Siemens Atiengesellschaft: *See—*
Noren, Kjell; Hagel, Pia; and Hoegnelid, Kurt, 5,385,576, Cl. 607-6.000.
Siemens Energy & Automation, Inc.: *See—*
Cronvich, James T.; Farag, Samir F.; De Cicco, Daniel J.; and Culligan, John J., 5,386,183, Cl. 318-434.000.
Siemens Pacesetter, Inc.: *See—*
Helland, John R., 5,385,579, Cl. 607-130.000.
Sienack, Desideratus, to Atlas Copco Airpower. Device for drying a gas. 5,385,603, Cl. 96-125.000.
Siggelin, Lars E., to AB UVA. Method and grinding machine for the internal grinding of bores. 5,384,983, Cl. 451-65.000.
Sigrist, Albert; and Rizzolo, Roberto, to Fabriques de Tabac Reunies, SA. Apparatus and method for packaging blanks. 5,385,526, Cl. 493-14.000.
Silaski, Grayson C.: *See—*
Birck, Jonathan D.; and Silaski, Grayson C., 5,386,475, Cl. 381-68.000.
Silicon Storage Technology, Inc.: *See—*
Wang, Ping, 5,386,158, Cl. 327-51.000.
Silicon Systems, Inc.: *See—*
Chiou, Chii-Fa; and Isobe, Yuji, 5,386,328, Cl. 360-68.000.
Siliconix Incorporated: *See—*
Williams, Richard K.; and Cornell, Michael E., 5,386,136, Cl. 257-409.000.
Silvatrim Associates: *See—*
Shanok, William; Shanok, Daniel; Shanok, Frederick; Good, Ronald; Limansky, Joseph; Shanok, Victor; and Shanok, Jesse P., 5,385,703, Cl. 264-145.000.
Silverman, Matthew H. Child's automotive safety booster seat with a view. 5,385,385, Cl. 297-250.100.
Silvestri, Victor J.: *See—*
Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Silvestri, Victor J., 5,386,121, Cl. 250-341.800.
Sime, Iain R. F., to NCR Corporation. System and method for detecting user fraud in automated teller machine transactions. 5,386,104, Cl. 235-379.000.
Simeone, Giovanni: *See—*
Mascia, Leno; Tonelli, Claudio; and Simeone, Giovanni, 5,386,005, Cl. 528-110.000.
Simmons, Dana P.: *See—*
Snowden, Roger L.; Mahaim, Cyril; and Simmons, Dana P., 5,386,039, Cl. 568-355.000.
Simon, Bernard, to Mavil, a french Societe Anonyme. Fishplates for treilliswork composed of welded wire. 5,384,937, Cl. 24-295.000.
Simond, Ludger: *See—*
LeFebvre, Patrick; and Simond, Ludger, 5,384,943, Cl. 24-600.100.
Simpson, Charles: *See—*
McKibben, Richard D.; McGraw, Patrick M.; Simpson, Charles; McKibben, Kenneth D.; and Minor, Daniel D., 5,385,233, Cl. 206-386.000.
Sims, Earnest, Jr. Plant watering device. 5,385,300, Cl. 239-74.000.
Singhi, Dilip: *See—*
Sudman, David; Ulowetz, Joseph; Singhi, Dilip; and Pajerski, Maureen, 5,385,475, Cl. 434-307.00R.
Single, Arthur W., II; Steiner, Thomas J.; Cristiano, James J.; Macek, Matthew J.; Yeager, Debra; and Farah, Riad A., to Ford Motor Company. Combination seat frame and ventilation apparatus. 5,385,382, Cl. 297-180.130.
Skelnik, Debra L.; and Lindstrom, Richard L. Non-primate vitreal replacement process. 5,385,723, Cl. 424-9.000.
Skipper, Bobby R.: *See—*
Kunkle, Albert C.; Hardy, Robert E.; and Skipper, Bobby R., 5,385,239, Cl. 209-164.000.
Slater, Glenn L.; Woods, Jerry; Alford, Steve; Updyke, Dave; and Methe, Rick, to Fresenius USA, Inc. System for preparation and use of dialysis solution. 5,385,564, Cl. 604-416.000.
Sledge, Harry M. Hydroponic planter. 5,385,590, Cl. 47-62.000.
Slovinsky, Manuel; Tarizzo, Jeffrey R.; Fisher, Dennis K.; and Briddell, Brian J., to Adco Products, Inc. Pressure-sensitive adhesive systems with filler. 5,385,772, Cl. 428-220.000.
Smedley, William H.: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,385,552, Cl. 604-167.000.
Smith, Collin M., to Lindrew Pty Limited. Aerosol inhalation device. 5,385,140, Cl. 128-200.230.
Smith, Daniel N.: *See—*
Bates, Dale; Smith, Daniel N.; and Little, Richard F., 5,385,179, Cl. 141-312.000.
Smith, Dennis N.: *See—*
Szegedi, Nicholas J.; Garett, Lawrence I.; Maki, Theodore R.; and Smith, Dennis N., 5,386,313, Cl. 359-280.000.
Smith, Dennis R., to TDW Delaware, Inc. Pig for use in cleaning the interior wall of a pipeline. 5,384,929, Cl. 15-104.061.
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Tsou, Andy H.; Greener, Jehuda; Smith, Gary D.; and Moschauer, Gary M., 5,385,704, Cl. 264-210.700.
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Cassford, Keith L., 5,385,534, Cl. 602-15.000.
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Rawlings, David A., 5,385,542, Cl. 604-14.000.
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McCauley, Donald W.; Schmalz, Richard J.; Smith, Ronald M., Sr.; and Stillman, Susan B., 5,386,560, Cl. 395-650.000.
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Jordan, William D.; and Smithers, Matthew C., 5,386,338, Cl. 361-704.000.

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Kimura, Fuminori; Mitsuda, Shinjiro; and Matsuda, Yoshiaki, 5,385,836, Cl. 435-177.000.

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Pasquale, Lino, 5,385,250, Cl. 215-1.00C.

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Societe Anonyme Dite Regie Nationale des Usines Renault: *See—*
Hornewer, Jean-Marc; and Cozler, Daniel, 5,385,130, Cl. 123-416.000.

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Lehe, Jean-Robert; Beaurain, Andre ; Bosson, Rene ; and Tiret, Etienne, 5,385,442, Cl. 415-104.000.

Societe Francaise Hoechst: *See—*
Didier, Wilhelm; and Antonio, Gelabert, 5,385,680, Cl. 252-8.600.

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Le Goff, Philippe; Dewilde, Daniele; Tsubomiwa, Noriyuki; and Urano, Satoshi, 5,386,057, Cl. 562-871.000.

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Dougnier, Francois; Guth, Jean-Louis; Patarin, Joel; and Anglerot, Didier, 5,385,717, Cl. 423-702.000.

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Malaspina, Giorgio; and Francone, Nicola, 5,385,376, Cl. 294-1.300.

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Kaneko, Yuji; and Ito, Shinji, 5,386,095, Cl. 219-69.180.

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Sohn, Malcolm. Locking mechanism for pontoon boat trailer. 5,385,362, Cl. 280-414.100.

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Boyer, Ernest W.; and Byng, Graham S., 5,385,837, Cl. 435-221.000.

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Lien, Yeong-Chang; Sone, Hironao; Sekiya, Kazuo; and Kanada, Yoshihisa, 5,386,567, Cl. 395-700.000.

Sony Corporation: *See—*
Machida, Tetsuo, 5,385,461, Cl. 425-130.000.
Maekawa, Tomohiro; Yui, Yasuji; and Kamoda, Hitoshi, 5,385,416, Cl. 400-308.000.
Nikami, Akira, 5,386,182, Cl. 318-293.000.
Shimizu, Shuji; Isogawa, Toshiaki; and Sato, Joichi, 5,386,231, Cl. 348-296.000.
Suzuki, Kiyosuke, 5,386,304, Cl. 358-458.000.
Tokita, Takeshi, 5,386,499, Cl. 395-85.000.
Uetake, Akihiro, 5,386,334, Cl. 360-132.000.
Veltman, Markus H.; and Iwamura, Ryuichi, 5,386,234, Cl. 348-409.000.
Yasuda, Hiroshi, 5,386,588, Cl. 455-33.100.
Yasuda, Nobuyuki, 5,386,437, Cl. 375-120.000.
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Yuzawa, Keji, 5,386,587, Cl. 455-3.200.

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Taylor, Jeffrey E.; Stewart, Lane R.; Tate, Thomas; Weisman, Richard; Wood, Dana; and Reese, LeRoy H., 5,386,256, Cl. 352-27.000.

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Richards, John W.; and Soloff, Jonathan M., 5,386,245, Cl. 348-629.000.

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Sotack, John D.: *See—*
Swales, Michael G.; and Sotack, John D., 5,386,276, Cl. 355-246.000.

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Keough, William J.; Saunders, Gregory J.; Smith, Neil L.; and Stratychuk, Mark, 5,385,602, Cl. 75-766.000.

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Kulig, Frank M.; and Spacek, Paul J., 5,385,019, Cl. 60-599.000.

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Spector, George: *See—*
Freeman, Jimmy; Freeman, Richard; and Spector, George, 5,385,390, Cl. 297-380.000.
Karas, Miroslav A.; and Spector, George, 5,385,127, Cl. 123-299.000.

Spencer, Harvey M., to Hughes Aircraft Company. Collimating lens having doublet element between positive-power elements. 5,386,312, Cl. 359-215.000.

Spiewak, John W.; Yuh, Huoy-Jen; Thornton, Constance J.; Abramsohn, Dennis A.; Nichol-Landry, Deborah; Mammino, Joseph; Ziolo, Ronald F.; Yu, Robert C. U.; Carmichael, Kathleen; and Patterson, Neil S., to Xerox Corporation. Electrophotographic imaging member having unmodified hydroxy methacrylate polymer charge blocking layer. 5,385,796, Cl. 430-64.000.

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Spingler, Rolf A., to United States Surgical Corporation. Device for Forming drilled needle blanks. 5,384,945, Cl. 29-33.00R.

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Haruch, James, 5,385,304, Cl. 239-431.000.

Springer, Linda L.; and Carelli, Charles E., to AlliedSignal Inc. Splicing for fluoropolymer coated belts. 5,385,765, Cl. 428-36.100.

Sprunk, Darren K. Modular chemical reactor. 5,385,712, Cl. 422-190.000.

Spurgeon, John E. Heat storage system utilized in heat engine drive system. 5,385,214, Cl. 180-304.000.

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Buda, Paul R.; and Hinton, Mark A., 5,386,096, Cl. 219-110.000.

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Tuse, Daniel; Marquez, Leticia; and Hokama, Leslie A., 5,385,832, Cl. 435-101.000.

Sriram, Saptharishi: *See—*
Freidhoff, Carl B.; Young, Robert M.; and Sriram, Saptharishi, 5,386,115, Cl. 250-281.000.

SS Pharmaceutical Co., Ltd.: *See—*
Konno, Fujiko; Shibata, Akihiro; Matsuda, Hideaki; Asaoka, Takemitsu; Kawahara, Ryuichi; Taido, Naokata; Kuraishi, Tadayuki; and Takeda, Sunao, 5,385,900, Cl. 514-218.000.

Stafford, Fred, III: *See—*
Hussey, David A.; and Stafford, Fred, III, 5,385,504, Cl. 434-169.000.

Stagga, Kevin P.; and Clawson, Laurence A., to Honeywell Inc. Method for controlling window displays in an open systems windows environment. 5,386,503, Cl. 395-157.000.

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Kupfer, Rainer; Hille, Martin; Bohm, Roland; and Staiss, Friedrich, 5,385,674, Cl. 210-708.000.

Staley, Jack B., to Safelite Glass Corporation. Apparatus and methods for curing an adhesive promoter on a windshield. 5,385,755, Cl. 427-379.000.

Staller, Craig O.: *See—*
Fossum, Eric R.; Cunningham Thomas J.; Krabach, Timothy N.; and Staller, Craig O., 5,386,128, Cl. 257-183.100.

Stalport, Gerard; Giraud, Benoit; and Andujar, Valerie, to Framatome. Device for adjusting a supply water flowrate in a steam generator tube. 5,385,122, Cl. 122-511.000.

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McCaul, Joseph P., 5,385,982, Cl. 525-310.000.

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Calandra, Frank, Jr.; Stankus, John C.; Stewart, Eugene H.; and Cricelli, Dominic, 5,385,433, Cl. 405-302.100.

Stanley, Paul L. R.; and Tsoi, Siu C., to Eastman Kodak Company. Photographic silver halide color materials with sulfonylhydrazine color developer. 5,385,816, Cl. 430-544.000.

Stant Manufacturing Inc.: *See—*
Brown, David M., 5,385,256, Cl. 220-323.000.

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Demeter, Michael L.; and Stanton, Robert F., 5,385,490, Cl. 439-579.000.

State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon: *See—*
Keana, John; and Weber, Eckard, 5,385,946, Cl. 514-634.000.

Stearns, Brian D.: *See—*
Leighton, Lisa M.; and Stearns, Brian D., 5,384,918, Cl. 4-255.050.

Stedman, Shelly A.: *See—*
Vroman, Albert L.; Benner, Pamela K.; and Stedman, Shelly A., 5,385,675, Cl. 210-728.000.

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Faiks, Frederick S.; Forslund, Carl V., III; Scheper, Robert M.; Anderson, Craig M.; Knoblock, Glenn A.; and Groendal, Dale M., 5,385,388, Cl. 297-301.000.
Feldpausch, Thomas G.; Branc, Joseph R.; and Lubinskas, Robert B., 5,385,039, Cl. 70-78.000.

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Steele, Wesley M. Method and apparatus for coating interior surfaces. 5,385,752, Cl. 427-140.000.

Steger, William R. Apparatus for the purification of shower water. 5,385,667, Cl. 210-198.100.

Steiner, Gerd: *See—*
Muenster, Peter; Freund, Wolfgang; Steiner, Gerd; Walter, Helmut; Westphalen, Karl-Otto; and Gerber, Matthias, 5,386,036, Cl. 548-453.000.

Steiner, Thomas J.: *See—*
Single, Arthur W., II; Steiner, Thomas J.; Cristiano, James J.; Macek, Matthew J.; Yeager, Debra; and Farah, Riad A., 5,385,382, Cl. 297-180.130.

Steinmetz, Hans W.; and Petry, Dirk A., to Georg Fischer Rohrleitungssysteme AG. Method and apparatus for welding tubular parts. 5,386,101, Cl. 219-535.000.

Stephens, David N.: *See—*
Steppuhn, Karin G.; Bressler, Karin; Gieseler, Martin; Stephens, David N.; and Turski, Lechoslaw, 5,385,903, Cl. 514-249.000.

Stephens, Michael C., Jr., to Texas Instruments Inc. Method and apparatus for preventing invalid operating modes and an application to synchronous memory devices. 5,386,385, Cl. 365-189.050.

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Bell, James A. E.; and Stephenson, Thomas F., 5,385,195, Cl. 164-66.100.

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Lippisch, Hangwind F.; and Kruger, Cory J., 5,385,261, Cl. 220-572.000.

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Bron, Jan; Sterk, Geert J.; Timmerman, Hendrik; and Van Der Werf, Jan. F., 5,385,922, Cl. 514-365.000.

Sterling, Timothy J.: *See—*
Wickenheiser, Francis J.; Sterling, Timothy J.; and Ngo, Tom T., 5,385,370, Cl. 280-808.000.

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Baker, Edward J.; Lee, Robert W.; Illig, Carl R.; Douty, Brent D.; and Toner, John L., 5,385,720, Cl. 424-5.000.
Baker, Edward J.; Josef, Kurt A.; Bacon, Edward R.; Estep, Kimberly G.; Illig, Carl R.; Douty, Brent D.; Toner, John L.; and Lee, Robert W., 5,385,721, Cl. 424-5.000.
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Latimer, Lee H.; and Dunlap, Richard P., 5,385,923, Cl. 514-373.000.

Stevens, E. Henry: *See—*
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Stevens, Jeremy R.: *See—*
Kinghorn, John R.; Stevens, Jeremy R.; and Tarrant, David R., 5,386,238, Cl. 348-468.000.

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Childs-Goodrich, Whitney E.; and Stevens, William S., 5,386,454, Cl. 379-27.000.

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Willetts, Carl V.; Klausner, Cynthia F.; Brault, Donald A.; Crosbie, Bryan W. M.; Stewart, Alan F.; and Taylor, Dene H., 5,385,771, Cl. 428-211.000.

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Stewart, Eugene H.: *See—*
Calandra, Frank, Jr.; Stankus, John C.; Stewart, Eugene H.; and Cricelli, Dominic, 5,385,433, Cl. 405-302.100.

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Stifle, Kirk E.: *See—*
Zhang, Burt X.; Ganni, Venkatarao; and Stifle, Kirk E., 5,385,026, Cl. 62-50.700.

Stillman, Susan B.: *See—*
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Stills, James T.: *See—*
Nair, Parameswaran B.; Choudhuri, Kumar S.; Hamilton, James H.; Philmon, Gregory A.; and Stills, James T., 5,386,458, Cl. 379-91.000.

Stinski, Mark F., to University of Iowa Research Foundation. Transfer vectors and microorganisms containing human cytomegalovirus immediate-early promoter regulatory DNA sequence. 5,385,839, Cl. 435-240.200.

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Stone, Mark L.: *See—*
Peterson, Eric S.; Orme, Christopher J.; and Stone, Mark L., 5,385,672, Cl. 210-637.000.

Stone, Richard A.: *See—*
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Chikira, JoEtta S.; Hill, Fletcher L.; and Jurestovsky, Nancy R., 5,386,551, Cl. 395-575.000.

Stouffer, Ronald D.; and Chesnutis, Ernest W., Jr., to Bowles Fluidics Corporation. Temperature controller air outlet. 5,385,503, Cl. 454-153.000.

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Keough, William J.; Saunders, Gregory J.; Smith, Neil L.; and Stratychuk, Mark, 5,385,602, Cl. 75-766.000.

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Bogdanovic, Borislav; and Wilczok, Ursula, 5,385,716, Cl. 423-463.000.

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Sauer, Thomas; and Stutzel, Bernhard, 5,385,971, Cl. 524-558.000.

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Paul, Frank W.; Avigdor, Shlomo; and Subba-Rao, Kishore, 5,385,278, Cl. 223-2.000.

Sud-Chemie AG: *See—*
Schneider, Michael; Kochloefl, Karl; and Maletz, Gerhard, 5,386,066, Cl. 568-885.000.

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Young, Randolph G.; Bradshaw, James L.; Batchler, Bobby W.; Sudduth, Barry C.; and Walrath, Craig A., 5,386,540, Cl. 395-425.000.

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Fujita, Takashi; Sugano, Toshihiko; and Uchino, Hideshi, 5,385,877, Cl. 502-103.000.

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Yamamoto, Takaharu; and Sugimura, Masahiro, 5,385,317, Cl. 242-583.000.

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Bittmann, Peter; Tanner, Fredy; and Muller-Glauser, 5,385,229, Cl. 206-210.000.

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Rangaswamy, Subramaniam; and Miller, Robert A., 5,385,789, Cl. 428-570.000.

Sum, Phaik-Eng; Lee, Ving J.; Hlavka, Joseph J.; and Testa, Raymond T., to American Cyanamid Company. 7-(substituted)-8-(substituted)-9-[(substituted glycyl) amido]-6-demethyl-6-deoxytetracyclines. 5,386,041, Cl. 552-205.000.

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Tokoh, Akira; Sashida, Nobuyuki; Takeuchi, Etsu; and Hirano, Takashi, 5,385,808, Cl. 430-283.000.

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Furuta, Motonobu; Abe, Hiroomi; Fujii, Takeshi; and Yamamoto, Masashi, 5,385,976, Cl. 525-68.000.
Higashii, Takayuki; Kurimoto, Isao; Toda, Shoji; Minai, Masayoshi; Tani, Takeshi; Kawakami, Chizu; Fujisawa, Koichi; and Imamura, Kiyoshi, 5,385,693, Cl. 252-299.650.
Ohmae, Tadayuki; Tanaka, Hisao; and Hara, Sumio, 5,385,974, Cl. 525-58.000.

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Awazu, Tomoyuki; Tsuzuki, Yasushi; Komura, Osamu; and Yamakawa, Akira, 5,385,701, Cl. 264-86.000.
Hattori, Yasuhiro; Mizoguchi, Akira; and Kubata, Michiru, 5,385,116, Cl. 117-5.000.
Kanamori, Hiroo; Urano, Akira; Aikawa, Haruhiko; Ishikawa, Shinji; Hirose, Chiisai; and Saito, Masahide, 5,385,594, Cl. 63-60.200.
Ooka, Akihiro; Kawamura, Kenji; Nishiura, Yozo; Itoh, Katsuaki; Iwashita, Takaki; Nishi, Yasuhiko; Kuroda, Noritaka; and Hasegawa, Hayato, 5,386,484, Cl. 385-11.000.
Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, 5,386,485, Cl. 385-17.000.

Sumitomo, Miyuki; and Uchimura, Katsunori, to Nuchia Kagaku Kogyo K.K. Cathode-ray tube containing an indium borate phosphor. 5,386,176, Cl. 313-468.000.

Sumitomo Pharmaceuticals Company, Ltd.: *See*—
Yamahira, Yoshiya; Fujioka, Keiji; Sato, Shigeji; and Takada, Yoshihiro, 5,385,738, Cl. 424-489.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Kajiwara, Shinzo; Konii, Yoshio; and Yanase, Minao, 5,385,187, Cl. 152-209.00R.
Saito, Yuichi; and Kikuchi, Naohiko, 5,385,969, Cl. 524-496.000.
Sato, Kazuo; and Kondo, Kazuaki, 5,385,620, Cl. 156-131.000.
Suzuki, Shigehiko; and Yasui, Itsuo, 5,385,193, Cl. 152-525.000.

Sumitomo Wiring Systems, Ltd.: *See*—
Kume, Kiyotaka; and Tanaka, Takuya, 5,385,321, Cl. 248-74.300.

Summers, Martin D.: *See*—
Melnicoff, Meryle J.; Jensen, Bruce D.; Muirhead, Katharine A.; Horan, Paul K.; Summers, Martin D.; and Wong, William, 5,385,822, Cl. 435-5.000.

Sumter Transport, Inc.: *See*—
Rumph, Robert M., 5,385,402, Cl. 366-196.000.

San Company, Inc. (R&M): *See*—
Durante, Vincent A.; Lyons, James E.; and Walker, Darrell W., 5,386,074, Cl. 585-658.000.

Sun Microsystems, Inc.: *See*—
Mitra, Samir; Raman, Renukanthan; and Petolino, Joseph, 5,386,526, Cl. 395-400.000.
Sodos, Martin, 5,386,532, Cl. 395-425.000.

Sundberg, Brian C.: *See*—
Bernstein, Michael S.; Sundberg, Brian C.; and Crossley, David W., 5,385,259, Cl. 220-404.000.

Sundstedt, Per; and Ode, Bengt, to AB Volvo. Expandable, stowable vehicle seat for children. 5,384,946, Cl. 297-238.000.

Sundstrand Corporation: *See*—
Haak, David A.; Owens, William R.; and Roettger, Thomas D., 5,386,363, Cl. 364-424.010.

Sunkara, Sai P.; Liu, Paul S.; Tyms, A. Stanley; and Taylor, Debra L., to Merrell Dow Pharmaceuticals Inc. Anti-herpes castanospermine esters. 5,385,911, Cl. 514-299.000.

Sunpower, Inc.: *See*—
Beale, William T., 5,385,021, Cl. 62-6.000.

Sunroc Corporation: *See*—
Eddy, John W.; and Needham, Kelley S., 5,385,273, Cl. 222-185.000.

Surgical Safety Products, Inc.: *See*—
Swor, G. Michael, 5,385,569, Cl. 606-148.000.

Surprenant, Richard P.: *See*—
Economikos, Laertis; and Surprenant, Richard P., 5,384,953, Cl. 29-846.000.

Sutherlin, David A. Animal resistant trash container and method. 5,385,258, Cl. 220-334.000.

Suzuki, Hideki: *See*—
Yamanaka, asushi; Kakehashi, Nobuharu; Numazawa, Shigeo; Nishi, Yasuyuki; Kishita, Hiroshi; and Suzuki, Hideki, 5,385,029, Cl. 62-133.000.

Suzuki, Hiroaki; and Ueda, Naofumi, to Ricoh Company, Ltd. Graphic data processing apparatus for producing a tone for an edge pixel and reducing aliasing effects. 5,386,509, Cl. 395-162.000.

Suzuki, Hisaya, to Dai Nippon Printing Co., Ltd. Printing plate contaminant removing device for printing press. 5,385,096, Cl. 101-425.000.

Suzuki, Katsumi: *See*—
Yokota, Tsuneshi; and Suzuki, Katsumi, 5,386,409, Cl. 369-116.000.

Suzuki, Katsunori: *See*—
Takeuchi, Hiroyuki; and Suzuki, Katsunori, 5,386,190, Cl. 324-309.000.

Suzuki, Kisoko; Kitagawa, Hidemasa; Endo, Koichiro; and Mori, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Multimedia data editing apparatus including visual graphic display of time information. 5,386,581, Cl. 395-800.000.

Suzuki, Kiyosuke, to Sony Corporation. Quantizing circuit. 5,386,304, Cl. 358-458.000.

Suzuki, Masao, to Canon Kabushiki Kaisha. Image pickup device with white balance function. 5,386,229, Cl. 348-227.000.

Suzuki, Shigehiko; and Yasui, Itsuo, to Sumitomo Rubber Industries, Ltd. Motorcycle radial tire having a spirally wound belt. 5,385,193, Cl. 152-525.000.

Suzumori, Kohichi, to Kabushiki Kaisha Toshiba. Actuator with flexible cylinders. 5,385,080, Cl. 92-171.100.

Suzumura, Toshihiro: *See*—
Ikuta, Kenji; Isomura, Shigenori; and Suzumura, Toshihiro, 5,385,133, Cl. 123-585.000.

Swales, Michael G.; and Sotack, John D., to Xerox Corporation. Detecting and correcting for low developed mass per unit area. 5,386,276, Cl. 355-246.000.

Swapp, Mavin C.; and Frisbie, Milo W., to Motorola, Inc. Method and apparatus for picking and placing an article. 5,385,441, Cl. 414-627.000.

Swartwood, Troy. Apparatus for aligning the optical system of a lamphouse and a movie projector. 5,386,257, Cl. 352-198.000.

Swearingen, Terry L.; and Mueller, David W., to Martin Engineering Company. Twist tensioner with selectively engageable coupling. 5,385,507, Cl. 474-92.000.

SWF Auto-Electric GmbH: *See*—
Bruhn, Rainer; and Walther, Bernd, 5,386,165, Cl. 310-75.00R.
Hofmann, Georg, 5,386,090, Cl. 200-308.000.

Swimline Holdings Limited: *See*—
Khoury, Edward J., 5,384,928, Cl. 15-1.700.

Switalski, Steven C.; Uerz, David S.; Lowne, Alan J.; Sandifer, James R.; and Liu, Hsue-Yang, to Eastman Kodak Company. Postacquired spectrophotometers. 5,386,295, Cl. 356-418.000.

Swor, G. Michael, to Surgical Safety Products, Inc. Surgical suturing accessory. 5,385,569, Cl. 606-148.000.

Syammach, Mustafa A.: *See*—
Renlund, Gary M.; and Syammach, Mustafa A., 5,385,874, Cl. 501-103.000.

Symbiosis Corporation: *See*—
Scarfone, Frank A.; and Turkel, David, 5,385,151, Cl. 128-754.000.

Symbol Technologies, Inc.: *See*—
Dvorkis, Paul; and Katz, Joseph, 5,386,107, Cl. 235-472.000.

Synder, Robert L.: *See*—
Bayya, Shyam S.; Synder, Robert L.; Gopalakrishman, Sudhakar; and Schulze, Walter A., 5,385,882, Cl. 505-501.000.

Sypula, Donald S.: *See*—
Hays, Dah A.; Mammino, Joseph; Pai, Damodar M.; Sypula, Donald S.; Wayman, William H.; Yanus, John F.; and DeFeo, Paul J., 5,386,277, Cl. 355-259.000.

Syracuse University: *See*—
Schwarz, James A.; Putyera, Karol; Jagiello, Jacek; and Bandoaz, Teresa J., 5,385,876, Cl. 502-80.000.

Syrimek, Allen R., to Nalco Chemical Company. Synergistic antimicrobial compositions comprising methylene(bisthiocyanate) and 2-bromo-2-nitro-propane-1,3-diol. 5,385,605, Cl. 106-18.330.

Szablikowski, Klaus: *See*—
Kiesewetter, Rene ; Reinhardt, Eugen; Kniewske, Reinhard; and Szablikowski, Klaus, 5,385,585, Cl. 8-562.000.
Kiesewetter, Rene ; Szablikowski, Klaus; and Lange, Werner, 5,385,607, Cl. 106-197.100.

Szaflarski, Diane M.: *See*—
Anderson, Leslie D.; Bartlett, Janeth M.; Szaflarski, Diane M.; and Widder, Kenneth J., 5,385,147, Cl. 128-662.020.

Szajewski, Richard P.: *See*—
Schofield, Edward; and Szajewski, Richard P., 5,385,815, Cl. 430-517.000.

Szegedi, Nicholas J.; Garett, Lawrence I.; Maki, Theodore R.; and Smith, Dennis N. Reflective magneto-optic spatial light modulator assembly. 5,386,313, Cl. 359-280.000.

T&N Technology Limited: *See*—
Atkinson, Alan W.; Bridge, David R.; and James, Alan, 5,385,790, Cl. 428-593.000.

Tabor, Marilyn, to Blue Tiger Corporation. Convenience flashlight. 5,386,351, Cl. 362-201.000.

Tachikura, Masao: *See*—
Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, 5,386,485, Cl. 385-17.000.

Tadokoro, Hiroyuki: *See*—
Saitoh, Masahiko; and Tadokoro, Hiroyuki, 5,386,223, Cl. 346-157.000.

Taft, Edward P., 3rd; and Cook, Thomas C., to Electric Power Research Institute, Inc. Water intake fish diversion apparatus. 5,385,428, Cl. 405-81.000.

Tagami, Katsuya: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.

Taido, Naokata: *See*—
Konno, Fujiko; Shibata, Akihiro; Matsuda, Hideaki; Asaoka, Takemitsu; Kawahara, Ryuichi; Taido, Naokata; Kuraishi, Tadayuki; and Takeda, Sunao, 5,385,900, Cl. 514-218.000.

Taiho Kogyo Co., Ltd.: *See*—
Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kakuta, Hirotaka, 5,385,354, Cl. 277-235.00B.

Taiwan Semiconductor Manufacturing Company, Ltd.: *See*—
Chao, Ying-Chen; Lin, Ting-Hwang; and Lee, Jin-Yuan, 5,385,868, Cl. 437-195.000.

Takada, Katsuhiro, to Olympus Optical Co., Ltd. Wide angle zoom lens system. 5,386,320, Cl. 359-689.000.

Takada, Seiji: *See*—
Kotani, Takaaki; Takada, Seiji; Goto, Shigenori; and Saito, Tatsuo, 5,386,263, Cl. 354-403.000.

Takada, Yoshihiro: *See*—
Yamahira, Yoshiya; Fujioka, Keiji; Sato, Shigeji; and Takada, Yoshihiro, 5,385,738, Cl. 424-489.000.

Takagi, Daisuke: *See*—
Amano, Toshinori; Sakai, Seiji; Fujiki, Yasuo; Ueyama, Masanori; Sakamoto, Yukio; and Takagi, Daisuke, 5,386,335, Cl. 361-56.000.

Takagi, Hiroshi: *See*—
Shiratori, Akira; Takagi, Hiroshi; and Kobayashi, Shozo, 5,385,792, Cl. 429-32.000.

Takagi, Shiro: *See*—
Yoda, Nobuhisa; Watanabe, Hiroshi; Ogaki, Takeshi; Iwase, Akinori; and Takagi, Shiro, 5,386,504, Cl. 395-157.000.

Takahashi, Isao: *See*—
Makino, Syozaburo; Takahashi, Isao; and Kishigami, Masanori, 5,385,008, Cl. 57-81.000.

Takahashi, Kunio: *See*—
Kiyomiya, Osamu; Minami, Kenichiro; Takahashi, Kunio; and Sato, Koichi, 5,385,432, Cl. 405-204.000.

Takahashi, Mamoru; and Ueda, Shigeru, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of assaying for acyl-L-carnitines and short-chain acyl-carnitines. 5,385,829, Cl. 435-19.000.

Takahashi, Teturo: *See*—
Shirotori, Hiroshi; Nishizawa, Katsuhiko; Mizuno, Shigeki; and Takahashi, Teturo, 5,385,414, Cl. 400-124.020.

Takamizawa, Kazuhisa: *See*—
Kitagawara, Yutaka; Kubota, Hiroshi; Tamatsuka, Masaro; Takenaka, Takao; and Takamizawa, Kazuhisa, 5,386,118, Cl. 250-338.100.

Takao, Masatoshi: *See*—
Ohno, Eiji; Yamada, Noboru; and Takao, Masatoshi, 5,385,806, Cl. 430-270.000.

Takase, Susumu; Fukunaga, Koji; and Nakamura, Kazuhiro, to Canon Kabushiki Kaisha. Information processing apparatus with discriminating communication and distinguishing display functions. 5,386,572, Cl. 395-725.000.

Takashima, Koichi: *See*—
Inaba, Yoshihiro; Kubo, Tsutomu; and Takashima, Koichi, 5,385,802, Cl. 430-137.000.

Takasu, Yoshio: *See*—
Fukui, Tetsuro; Yoshinaga, Kazuo; Mitsutake, Hideaki; Oikawa, Katsuya; Takeuchi, Shinsuke; Miyazaki, Takeshi; Takasu, Yoshio; Mouri, Akihiro; Katayama, Masato; and Isaka, Kazuo, 5,385,810, Cl. 430-351.000.

Takata Corporation: *See*—
Fujimura, Yoshiichi; and Matsuura, Shizutaka, 5,385,313, Cl. 242-377.000.
Tanaka, Toshihiko; and Chikaraishi, Tsuneo, 5,385,367, Cl. 280-733.000.
Teramura, Katsuhiko; Chikaraishi, Tsuneo; and Hamada, Kiyokazu, 5,385,584, Cl. 8-149.100.

Takayama, Toru: *See*—
Naito, Hiroki; Kume, Masahiro; Sugiura, Hideyuki; Takayama, Toru; Itoh, Kunio; Ohta, Isei; and Shimizu, Hirokazu, 5,386,429, Cl. 372-46.000.

Takeda, Naohiro: *See*—
Otani, Yuzo; and Takeda, Naohiro, 5,385,768, Cl. 428-141.000.

Takeda, Sunao: *See*—
Konno, Fujiko; Shibata, Akihiro; Matsuda, Hideaki; Asaoka, Takemitsu; Kawahara, Ryuichi; Taido, Naokata; Kuraishi, Tadayuki; and Takeda, Sunao, 5,385,900, Cl. 514-218.000.

Takeichi, Toru: *See*—
Kimura, Kazuya; Hidaka, Shigeyuki; Mizutani, Hideki; and Takeichi, Toru, 5,385,450, Cl. 417-269.000.

Takekoshi, Tohru; and Pearce, Eric J., to General Electric Company. Trisstannoxanes useful for polymerizing macrocyclic poly(alkylene dicarboxylate) oligomers. 5,386,037, Cl. 549-206.000.

Takemori, Hirotoshi: *See*—
Isono, Hitoshi; and Takemori, Hirotoshi, 5,385,638, Cl. 156-663.000.

Takenaka, Takao: *See*—
Kitagawara, Yutaka; Kubota, Hiroshi; Tamatsuka, Masaro; Takenaka, Takao; and Takamizawa, Kazuhisa, 5,386,118, Cl. 250-338.100.

Takeuchi, Etsu: *See*—
Tokoh, Akira; Sashida, Nobuyuki; Takeuchi, Etsu; and Hirano, Takashi, 5,385,808, Cl. 430-283.000.

Takeuchi, Hiroyuki; and Suzuki, Katsunori. Selective excitation method of nuclear spins in magnetic resonance imaging and MRI apparatus using the same. 5,386,190, Cl. 324-309.000.

Takeuchi, Masako: *See*—
Ono, Hitoshi; Ando, Osamu; and Takeuchi, Masako, 5,385,799, Cl. 430-110.000.

Takeuchi, Shigeo: *See*—
Hamanaka, Naoki; Nakagoshi, Junji; Higuchi, Tatsuo; Chiba, Hiroyuki; Shutoh, Shin'ichi; Takeuchi, Shigeo; Ogata, Yasuhiro; and Tobe, Taturu, 5,386,566, Cl. 395-700.000.

Takeuchi, Shinsuke: *See*—
Fukui, Tetsuro; Yoshinaga, Kazuo; Mitsutake, Hideaki; Oikawa, Katsuya; Takeuchi, Shinsuke; Miyazaki, Takeshi; Takasu, Yoshio; Mouri, Akihiro; Katayama, Masato; and Isaka, Kazuo, 5,385,810, Cl. 430-351.000.

Takiguchi, Takao: *See*—
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, 5,385,692, Cl. 252-299.620.

Takikawa, Hiroyoshi; Yoshio, Yoshida; Kakimoto, Nobuko; and Ise, Shinsuke, to Mitsubishi Denki Kabushiki Kaisha. Cooker. 5,386,102, Cl. 21-620.000.

Takizawa, Kiyoto: *See*—
Kodama, Takashi; and Takizawa, Kiyoto, 5,385,462, Cl. 425-135.000.

Takizawa, Makoto; and Kanebako, Kazunori, to Kabushiki Kaisha Toshiba. Mask read only memory (ROM) for storing multi-value data. 5,386,381, Cl. 365-104.000.

Talbot, Geoffrey: *See*—
Cain, Frederick W.; Hughes, Adrian D.; and Talbot, Geoffrey, 5,385,744, Cl. 426-89.000.

Talbot, Marie M. B.; Talbot, Marie M. J.; and Urbaniak-Hedley, Francis D., to Adoock Ingram Self Medication (Proprietary) Limited. Magnesium hydroxide recovery. 5,385,671, Cl. 210-636.000.

Talbot, Marie M. J.: *See*—
Talbot, Marie M. B.; Talbot, Marie M. J.; and Urbaniak-Hedley, Francis D., 5,385,671, Cl. 210-636.000.

Talbot, Mark: *See*—
Aflague, Allen; and Talbot, Mark, 5,385,191, Cl. 152-340.100.

Talbot, Robert E.: *See*—
Bryan, Edward; Veale, Malcolm A.; Talbot, Robert E.; Cooper, Kenneth G.; and Matthews, Nigel S., 5,385,896, Cl. 514-129.000.

Tamada, Tokuji: *See*—
Tanaka, Natsuro; Tamada, Tokuji; and Nakajima, Yoshihiro, 5,386,297, Cl. 358-402.000.

Tamai, Hideo; Ueda, Kinzo; and Hsu, Yung-sheng, to Kissei Pharmaceutical Co., Ltd. Method for the inhibition of restenosis associated with coronary intervention. 5,385,935, Cl. 514-535.000.

Tamarkin, Semyon. Method of and device for industrial waste water treatment. 5,385,653, Cl. 204-150.000.

Tamatsuka, Masaro: *See*—
Kitagawara, Yutaka; Kubota, Hiroshi; Tamatsuka, Masaro; Takenaka, Takao; and Takamizawa, Kazuhisa, 5,386,118, Cl. 250-338.100.

Tamemasa, Hiroshi; and Wang, Carl B., to Du Pont de Nemours, E. I., and Company. Method of making plasma display apparatus. 5,385,631, Cl. 156-628.000.

Tammisalo, Erkki; and Kyllonen, Tuomas, to Orion-Yhtyma Oy. Method for imaging an object by means of a panoramic apparatus equipped with exposure automatics. 5,386,448, Cl. 378-38.000.

Tanabe, Chishiro: *See*—
Aoki, Namito; Ichiki, Yasufumi; and Tanabe, Chishiro, 5,385,189, Cl. 152-209.00R.

Tanabe Seiyaku Co., Ltd.: *See*—
Moriya, Tamon; Kurita, Hironori; Otake, Toru; Mori, Haruyo; and Morimoto, Motoko, 5,385,891, Cl. 514-58.000.

Tanaka, Akira: *See*—
Tanaka, Etuzi; Yamada, Motoshige; and Tanaka, Akira, 5,385,820, Cl. 430-595.000.

Tanaka, Etuzi; Yamada, Motoshige; and Tanaka, Akira, to Mitsubishi Paper Mills Limited. Silver halide photographic light-sensitive material. 5,385,820, Cl. 430-595.000.

Tanaka, Hidehiko: *See*—
Kawai, Hideki; and Tanaka, Hidehiko, 5,386,094, Cl. 219-69.140.

Tanaka, Hisao: *See*—
Ohmae, Tadayuki; Tanaka, Hisao; and Hara, Sumio, 5,385,974, Cl. 525-58.000.

Tanaka, Keishin; Hikichi, Toichiro; and Kumagai, Chiaki, to Honda Giken Kogyo Kabushiki Kaisha. Device for calculating coefficient of friction of road surface. 5,385,393, Cl. 303-106.000.

Tanaka, Mamoru; and Kaneda, Shinichi, to Kokuyo Co., Ltd. Curved panel. 5,384,998, Cl. 52-630.000.

Tanaka, Masashi: *See*—
Fukami, Toshiyuki; and Tanaka, Masashi, 5,386,279, Cl. 355-271.000.

Tanaka, Natsuro; Tamada, Tokuji; and Nakajima, Yoshihiro, to Hitachi, Ltd.; and Hitachi Software Engineering Co., Ltd. Combined output

system for code data and image data in a message handling processor. 5,386,297, Cl. 358-402.000.
Tanaka, Satoru: *See—*
Yanagisawa, Shuichi; Tanaka, Satoru; and Matsui, Fumio, 5,386,411, Cl. 369-275.400.
Tanaka, Shunji; Asai, Takayoshi; Inoue, Taro; Umeno, Hidenori; and Watanabe, Tsuyoshi, to Hitachi, Ltd. Method and system for controlling/monitoring computer system having plural operating systems to run thereon. 5,386,565, Cl. 395-700.000.
Tanaka, Takuya: *See—*
Kume, Kiyotaka; and Tanaka, Takuya, 5,385,321, Cl. 248-74.300.
Tanaka, Tomoharu: *See—*
Endoh, Tetsuo; Shirota, Riichiro; Ohuchi, Kazunori; Kirisawa, Ryouhei; Aritome, Seiichi; Tanaka, Tomoharu; and Tanaka, Yoshiyuki, 5,386,422, Cl. 371-21.500.
Tanaka, Toshihiko; and Chikaraishi, Tsuneo, to Takata Corporation. Inflatable seatbelt system. 5,385,367, Cl. 280-733.000.
Tanaka, Yoshiyuki: *See—*
Endoh, Tetsuo; Shirota, Riichiro; Ohuchi, Kazunori; Kirisawa, Ryouhei; Aritome, Seiichi; Tanaka, Tomoharu; and Tanaka, Yoshiyuki, 5,386,422, Cl. 371-21.500.
Tanba, Nobuo: *See—*
Nakazato, Shinji; Uchida, Hideaki; Saito, Yoshikazu; Yamamura, Masahiro; Kobayashi, Yutaka; Ikeda, Takahide; Hori, Ryoichi; Kitsukawa, Goro; Itoh, Kiyoo; Tanba, Nobuo; Watanabe, Takao; Shimohigashi, Katsuhiro; and Homma, Noriyuki, 5,386,135, Cl. 257-369.000.
Tandem Computers Incorporated: *See—*
Kotyuk, Kenneth A., 5,385,481, Cl. 439-378.000.
Tani, Takeshi: *See—*
Higashii, Takayuki; Kurimoto, Isao; Toda, Shoji; Minai, Masayoshi; Tani, Takeshi; Kawakami, Chizu; Fujisawa, Koichi; and Imamura, Kiyoshi, 5,385,693, Cl. 252-299.650.
Tanigawa, Hiroto, to Daicel Chemical Industries, Ltd. Method for stabilizing rhodium compound. 5,385,875, Cl. 502-24.000.
Tanizaki, Tetsushi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device including additional memory cell block having irregular memory cell arrangement. 5,386,387, Cl. 365-200.000.
Tannenbaum, Robert J.: *See—*
Cataneo, Ralph J.; and Tannenbaum, Robert J., 5,385,270, Cl. 222-134.000.
Tanner, Fredy: *See—*
Bittmann, Peter; Tanner, Fredy; and Muller-Glauser, 5,385,229, Cl. 206-210.000.
Tanrikulu, Nilufer: *See—*
Patel, Bharat; Bianchini, Phil; and Tanrikulu, Nilufer, 5,385,783, Cl. 428-353.000.
Taoka, Hideho, to Fujitsu Limited; and Fujitsu VLSI Limited. Semiconductor memory device having a time variable sense amplifier. 5,386,389, Cl. 365-230.060.
Tapeswitch Corporation of America: *See—*
Lovell, Walter C., 5,385,785, Cl. 428-408.000.
Tarizzo, Jeffrey R.: *See—*
Slovinsky, Manuel; Tarizzo, Jeffrey R.; Fisher, Dennis K.; and Briddell, Brian J., 5,385,772, Cl. 428-220.000.
Tarnawskyj, Ihor W.: *See—*
Law, Kock-Yee; and Tarnawskyj, Ihor W., 5,385,798, Cl. 430-106.600.
Tarr, Robert E.: *See—*
Bunger, John R.; Keller, Brenda L.; and Tarr, Robert E., 5,385,748, Cl. 426-590.000.
Tarrant, David R.: *See—*
Kinghorn, John R.; Stevens, Jeremy R.; and Tarrant, David R., 5,386,238, Cl. 348-468.000.
Tarshiani, Yassin Y.; and Weber, Steven A., to Essilor of America, Inc. Organosilane coating composition for ophthalmic lens. 5,385,955, Cl. 522-31.000.
Tarulli, Joseph R. X-ray positioner and restraining device. 5,385,119, Cl. 119-755.000.
Tate, Thomas: *See—*
Taylor, Jeffrey E.; Stewart, Lane R.; Tate, Thomas; Weisman, Richard; Wood, Dana; and Reese, LeRoy H., 5,386,256, Cl. 352-27.000.
Tatsumi, Toru; and Sakai, Akira, to NEC Corporation. Method of manufacturing polysilicon film including recrystallization of an amorphous film. 5,385,863, Cl. 437-109.000.
Taylor, Debra L.: *See—*
Sunkara, Sai P.; Liu, Paul S.; Tyms, A. Stanley; and Taylor, Debra L., 5,385,911, Cl. 514-299.000.
Taylor, Dene H.: *See—*
Willetts, Carl V.; Klausner, Cynthia F.; Brault, Donald A.; Crosbie, Bryan W. M.; Stewart, Alan F.; and Taylor, Dene H., 5,385,771, Cl. 428-211.000.
Taylor, Jeffrey E.; Stewart, Lane R.; Tate, Thomas; Weisman, Richard; Wood, Dana; and Reese, LeRoy H., to Sony Dynamic Digital Sound, Inc. Printer module for recording a digital soundtrack. 5,386,256, Cl. 352-27.000.
Taylor, Russell D.: *See—*
Stephenson, Stanley V.; Farabee, Mark; Phillippi, Max L.; Dant, Ronald E.; and Taylor, Russell D., 5,386,361, Cl. 364-184.000.
Taylor, Thomas C.: *See—*
Butler, Douglas; Stevens, E. Henry; Bailey, Richard A.; and Taylor, Thomas C., 5,385,634, Cl. 156-644.000.
TDK Corporation: *See—*
Ikebe, Masaru; Shiba, Haruo; and Miyazaki, Yukio, 5,385,235, Cl. 206-308.100.
Kaneda, Hiroshi; Okamura, Masatoshi; and Katoh, Hisao, 5,385,312, Cl. 242-347.000.
TDW Delaware, Inc.: *See—*
Smith, Dennis R., 5,384,929, Cl. 15-104.061.
Techco Corporation: *See—*
Phillips, Edward H., 5,385,329, Cl. 251-77.000.
Technibilt, Ltd.: *See—*
Trubiano, Antoine, 5,385,357, Cl. 280-33.993.
Tee-Lok Corporation: *See—*
Williams, Thomas H., 5,385,339, Cl. 269-37.000.
Teig, Steven L.; and Kahn, Scott D. Computer graphics system for selectively modelling molecules and investigating the chemical and physical properties thereof. 5,386,507, Cl. 395-161.000.
Teijin Limited: *See—*
Sasaki, Yoshiyuki; Kobayashi, Shigenobu; Kasaoka, Katsuyuki; Matsubara, Tomio; and Asada, Kaoru, 5,385,784, Cl. 428-369.000.
Teitzel, Robin L.: *See—*
Allen, Paul C.; Jolley, Matthew J.; Teitzel, Robin L.; Rieger, Michael; Bohan, Michael; and Thomas, Timothy, 5,386,221, Cl. 346-108.000.
Tejada, John: *See—*
Amon, Max; and Tejada, John, 5,386,315, Cl. 359-350.000.
Tektronix, Inc.: *See—*
Deur, Ted E.; Crawford, Clark W.; Wood, Brian J.; Marantz, Richard; and Buehler, James D., 5,386,224, Cl. 347-7.000.
Telefonaktiebolaget L M Ericsson: *See—*
Pruitt, Leonard E., 5,386,464, Cl. 379-201.000.
Ripstrand, Kristér I.; and Nygren, Thorsten, 5,386,198, Cl. 330-52.000.
Teles, Joaquim H.; Melder, Johann-Peter; Gehrer, Eugen; Harder, Wolfgang; Ebel, Klaus; Groening, Carsten; and Meyer, Regina, to BASF Aktiengesellschaft. Catalytic preparation of condensation products of formaldehyde. 5,386,062, Cl. 568-463.000.
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Andersson, Carl-Magnus A.; Bergstrand, Hakan S. A. M.; Jakupovic, Edib; Josefsson, Bo-Goran; Lindvall, Magnus L.; Sarnstrand, Bengt O.; and Teneberg, Eric N. G., 5,385,904, Cl. 514-255.000.
Tengan, Curtis S., to Rockwell International Corporation. Self filling and emptying data pipeline. 5,386,513, Cl. 395-250.000.
Teramoto, Shuji: *See—*
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Teramoto, Yoshihiko: *See—*
Mills, Michael E.; Teramoto, Yoshihiko; Faley, Timothy L.; and Nakagawa, Masaru, 5,385,702, Cl. 264-103.000.
Teramura, Katsuhiko; Chikaraishi, Tsuneo; and Hamada, Kiyokazu, to Takata Corporation. Method of dyeing a webbing of a seat belt device. 5,385,584, Cl. 8-149.100.
Terasaka, Yoshihisa; Ohtani, Junji; Machida, Junji; Shimizu, Tamotsu; Murasaki, Hiroshi; and Mizuno, Hiroshi, to Minolta Camera Kabushiki Kaisha. Method of developing electrostatic latent image. 5,385,801, Cl. 430-122.000.
Terc, Michael: *See—*
Hegarty, David; and Terc, Michael, 5,385,327, Cl. 248-442.200.
Tesa Tape Inc.: *See—*
Patel, Bharat; Bianchini, Phil; and Tanrikulu, Nilufer, 5,385,783, Cl. 428-353.000.
Tessler, Martin M.: *See—*
Martino, Gary T.; and Tessler, Martin M., 5,386,040, Cl. 568-483.000.
Testa, Raymond T.: *See—*
Sum, Phaik-Eng; Lee, Ving J.; Hlavka, Joseph J.; and Testa, Raymond T., 5,386,041, Cl. 552-205.000.
Tetra Pak Holdings S.A.: *See—*
Andersson, Par; and Ruetschi, Werner, 5,385,294, Cl. 229-125.170.
Teutsch, Jean-Georges; Bonnet, Alain; Aszodi, Jozsef; and Gouin d'Ambrieres, Solange, to Roussel-UCLAF. 4-thia-1-aza-bicyclo[4,2,-0]oct-2-ene derivatives. 5,385,897, Cl. 514-210.000.
Tevaarwerk, Joseph L., to Gas Research Institsute. Rocker tip roller hydrodynamic bearing oil slots. 5,385,408, Cl. 384-115.000.
Texaco, Inc.: *See—*
Cook, Fred R., Sr., 5,385,207, Cl. 166-363.000.
Kruse, Charles J.; Preston, Kyle L.; and Benac, Brian L., 5,386,065, Cl. 568-698.000.
Texas Instruments Incorporated: *See—*
Bosshart, Patrick W., 5,386,527, Cl. 395-400.000.
Morris, John O., 5,386,533, Cl. 395-425.000.
Nye, Jeffrey L., 5,386,538, Cl. 395-425.000.
Stephens, Michael C., Jr., 5,386,385, Cl. 365-189.050.
Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft: *See—*
Minichshofer, Klaus, 5,384,944, Cl. 28-115.000.
Tezuka, Yoshitaka: *See—*
Satoh, Kenji; Tsuchiya, Miki; Akimori, Giichiro; and Tezuka, Yoshitaka, 5,386,506, Cl. 395-160.000.
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Rizzardo, Ezio; Meijs, Gordon F.; and Thang, San H., 5,385,996, Cl. 526-240.000.
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Theeuwes, Felix: *See—*
Haak, Ronald P.; Gyory, J. Richard; Theeuwes, Felix; and Myers, Robert M., 5,385,543, Cl. 604-20.000.

Thermalloy, Inc.: *See—*
Jordan, William D.; and Smithers, Matthew C., 5,386,338, Cl. 161-704.000.
Thermo Separation Products Inc.: *See—*
Kelly, Lenore; Burgi, Dean S.; and Nelson, Robert J., 5,385,654, Cl. 204-180.100.
Thermotech Systems Corporation: *See—*
Brashears, David F., 5,386,080, Cl. 588-208.000.
Thiel, David: *See—*
Lary, Richard; Willard, Robert; van Ingen, Catharine; Thiel, David; Watson, William; Rubinson, Barry; Gardner, Edward A.; and Boaen, Verell, 5,386,514, Cl. 395-250.000.
Lary, Richard; Willard, Robert; Van Ingen, Catharine; Thiel, David; Watson, William; Rubinson, Barry; and Boaen, Verell, 5,386,524, Cl. 395-400.000.
Thieler, Stephen M.: *See—*
Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., 5,386,466, Cl. 379-220.000.
Tholander, Lars H. G., to Iro AB. Thread feed device. 5,385,310, Cl. 242-47.010.
Thoma, Frank: *See—*
Tonhauser, Wilhelm; Kellermann, Gunter; and Thoma, Frank, 5,385,170, Cl. 137-625.430.
Thoma, Martin: *See—*
Schassberger, Wolfgang; Manier, Monika; and Thoma, Martin, 5,385,760, Cl. 427-443.100.
Thomas, Alan V.: *See—*
Cady, John B.; Howard, Mark S.; Fisher, Stephen A.; Lloyd, Robert C. W.; and Thomas, Alan V., 5,385,212, Cl. 180-69.210.
Thomas, Alasdair R. P., deceased (by Chadwick, Gerard W. A., administrator), to Advanced Risc Machines Limited. Register substitution during exception processing. 5,386,563, Cl. 395-650.000.
Thomas, Bruce A., to Archery Dynamics, Inc. Impulse stabalizer capable of asymmetrical response. 5,385,136, Cl. 124-89.000.
Thomas, Dennis A., to Proctor & Gamble Company, The. Process of making a refastenable mechanical fastening system with substrate having protrusions. 5,385,706, Cl. 264-519.000.
Thomas, E. B.: *See—*
Rose, James L.; and Homes, Samuel J., 5,385,609, Cl. 118-119.000.
Thomas, John E.; Toetschinger, Jody A.; and McCall, John E., Jr., to Ecolab Inc. Method of using a thermo-chromatic detergent level indicator. 5,385,044, Cl. 73-295.000.
Thomas, Timothy: *See—*
Allen, Paul C.; Jolley, Matthew J.; Teitzel, Robin L.; Rieger, Michael; Bohan, Michael; and Thomas, Timothy, 5,386,221, Cl. 346-108.000.
Thomas, Todd R., to Clearwater, Inc. Iterated foam process and composition for well treatment. 5,385,206, Cl. 166-269.000.
Thomas, Winston M. H. Cluster alarm monitoring system. 5,386,209, Cl. 340-539.000.
Thome, Roland; Tisaler, Arno; Schmidt, Hubertus; Winkhaus, Gunter; and Unger, Klaus, to Vereinigte Aluminium-Werke Aktiengesellschaft. Synthetic, crystalline aluminosilicate, method for its preparation as well as use. 5,385,714, Cl. 423-328.200.
Thompson, Clarence J. Shielding device for a syringe needle. 5,385,557, Cl. 604-198.000.
Thompson, David M. Automatic transom scupper valve. 5,385,108, Cl. 114-183.00R.
Thompson, Dorman N.: *See—*
Nygard, James C.; Thompson, Dorman N.; Sheeler, William H.; Miles, Alden R.; Windorski, David C.; Carlson, Bruce W.; and Crawford, Dennis L., 5,385,230, Cl. 206-214.000.
Thompson, James H., to Kings III of America, Inc., North America. Low noise multi-elevator communication system and method. 5,386,463, Cl. 379-182.000.
Thompson, Roger A.: *See—*
Albright, Scot P.; Chamberlin, Rhodes R.; and Thompson, Roger A., 5,385,614, Cl. 136-244.000.
Thompson, Ronald E.: *See—*
Chundury, Deenadayalu; Scheibelhoffer, Anthony S.; Leonard, Berdine L.; Thompson, Ronald E.; McAllister, Randall S.; Wimolkiatisak, Surachai; and Dean, Anthony F., Jr., 5,385,781, Cl. 428-330.000.
Thompson, Thomas C.: *See—*
Abbott, Martyn S.; Thompson, Thomas C.; Jones, Kenneth A.; Davis, Albert M.; and Mattson, Andrew P., 5,385,540, Cl. 604-4.000.
Thompson, Thomas N.: *See—*
Kriesel, Marshall S.; and Thompson, Thomas N., 5,385,545, Cl. 604-82.000.
Kriesel, Marshall S.; and Thompson, Thomas N., 5,385,546, Cl. 604-85.000.
Thomson Consumer Electronics, Inc.: *See—*
Shafer, Kirk E.; Dinwiddie, Aaron H.; and Duffield, David J., 5,386,247, Cl. 348-687.000.
Wang, Tian J.; and Christopher, Lauren A., 5,386,239, Cl. 348-472.000.
Thomson Consumer Electronics S.A.: *See—*
Knee, Michael, 5,386,237, Cl. 348-458.000.
Thomson-CSF: *See—*
Michel, Claude; and Le Pesant, Jean-Pierre, 5,386,308, Cl. 359-83.000.
Thorland, Rodney H., to Honeywell Inc. Case mounted readout for providing a ring laser gyro with low backscatter. 5,386,289, Cl. 356-350.000.
Thornton, Constance J.: *See—*
Spiewak, John W.; Yuh, Huoy-Jen; Thornton, Constance J.; Abramsohn, Dennis A.; Nichol-Landry, Deborah; Mammino, Joseph; Ziolo, Ronald F.; Yu, Robert C. U.; Carmichael, Kathleen; and Patterson, Neil S., 5,385,796, Cl. 430-64.000.
Thornton, Robert L.; and Beernink, Kevin J., to Xerox Corporation. Stacked active region laser array for multicolor emissions. 5,386,428, Cl. 372-50.000.
Thudium, Karl: *See—*
Michael, Wolfgang; Thudium, Karl; Hofele, Hans; Rieger, Walter; Klemm, Peter; and Schumann, Burkhardt, 5,385,040, Cl. 72-405.000.
Thurston, Inc.: *See—*
Shook, William B., 5,385,360, Cl. 280-279.000.
Tichenor, Clyde L.: *See—*
Bierend, Steven J.; Tichenor, Clyde L.; and Ginsburgh, Irwin, 5,385,271, Cl. 222-153.000.
Tiedemann, William H.; and Newman, John, to Globe-Union Inc. Thermal management of battery systems. 5,385,793, Cl. 429-62.000.
Tierney, John W.; Wender, Irving; and Palekar, Vishwesh M., to University of Pittsburgh. Alkali or alkaline earth metal promoted catalyst and a process for methanol synthesis using alkali or alkaline earth metals as promoters. 5,385,949, Cl. 518-700.000.
Tilstam, Ulf; Borner, Helmut; Nickisch, Klaus; Gries, Heinz; and Platzek, Johannes, to Schering Aktiengesellschaft. Process for the production of N-β-hydroxyalkyl-tri-N-carboxyalkyl-1,4,7,10-tetraazacyclododecane and N-β-hydroxyalkyl-tri-N-carboxyalkyl-1,4,8,11-tetraazacyclotetradecane derivatives and their metal complexes. 5,386,028, Cl. 540-474.000.
Timko, Joseph M.: *See—*
Gammill, Ronald B.; Bisaha, Sharon N.; Timko, Joseph M.; Judge, Thomas M.; Barbachyn, Michael R.; and Kim, Kyoung S., 5,385,906, Cl. 514-258.000.
Timm, Heinrich: *See—*
Kreis, Gundolf; Enning, Norbert; Klages, Ulrich; and Timm, Heinrich, 5,385,383, Cl. 296-202.000.
Timmerman, Hendrik: *See—*
Bron, Jan; Sterk, Geert J.; Timmerman, Hendrik; and Van Der Werf, Jan. F., 5,385,922, Cl. 514-365.000.
Tiret, Etienne: *See—*
Lehe, Jean-Robert; Beaurain, Andre ; Bosson, Rene ; and Tiret, Etienne, 5,385,442, Cl. 415-104.000.
Tisdale, Michael J.; and Beck, Susan A., to Cancer Research Campaign Technology Limited. Biologically active material characterized by catabolic activity generally associated with cachexia-inducing tumors, preparations, production and uses thereof. 5,385,740, Cl. 424-573.000.
Tisaler, Arno: *See—*
Thome, Roland; Tisaler, Arno; Schmidt, Hubertus; Winkhaus, Gunter; and Unger, Klaus, 5,385,714, Cl. 423-328.200.
Tkazyik, William J.: *See—*
Beaman, Brian S.; Doany, Fuad E.; Dudek, Thomas J.; Lazzetta, Alphonso P.; Shih, Da-Yuan; Tkazyik, William J.; and Walker, George F., 5,386,344, Cl. 361-785.000.
Toastmaster Inc.: *See—*
Huggler, Peter; and Martin, Charles, 5,385,082, Cl. 99-328.000.
Toba, Taturu: *See—*
Hamanaka, Naoki; Nakagoshi, Junji; Higuchi, Tatsuo; Chiba, Hiroyuki; Shutoh, Shin'ichi; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, 5,386,566, Cl. 395-700.000.
Tobias, Russell H.; and Davies, Nicholas A., to Videojet Systems International, Inc. Hotmelt ink jet comprising ionomers having melting points from about 50° C. to about 130° or a softening point below about 80° C., and an image-forming agent. 5,385,957, Cl. 523-161.000.
Toda, Akihito: *See—*
Amemiya, Yutaka; and Toda, Akihito, 5,385,624, Cl. 156-345.000.
Toda, Akitoshi, to Olympus Optical Co., Ltd. Method of making cantilever chip for scanning probe microscope. 5,386,110, Cl. 250-216.000.
Toda, Shoji: *See—*
Higashii, Takayuki; Kurimoto, Isao; Toda, Shoji; Minai, Masayoshi; Tani, Takeshi; Kawakami, Chizu; Fujisawa, Koichi; and Imamura, Kiyoshi, 5,385,693, Cl. 252-299.650.
Toetschinger, Jody A.: *See—*
Thomas, John E.; Toetschinger, Jody A.; and McCall, John E., Jr., 5,385,044, Cl. 73-295.000.
Togano, Takeshi: *See—*
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, 5,385,692, Cl. 252-299.620.
Tokai Rubber Industries, Ltd.: *See—*
Kato, Rentaro; and Nagasawa, Masahiko, 5,386,275, Cl. 335-219.000.
Toki, Yusuke, to Kabushiki Kaisha Toshiba. Method and apparatus for helical scan imaging in X-ray computed tomography. 5,386,452, Cl. 378-146.000.
Tokita, Takeshi, to Sony Corporation. Controller and process for effecting a shorter path trajectory in robot movement. 5,386,499, Cl. 395-85.000.
Tokiwa, Yoji: *See—*
Mukai, Yoshiaki; Tokiwa, Yoji; and Miyamoto, Seiji, 5,385,369, Cl. 280-788.000.
Toko Tekko Kabushiki Kaisha: *See—*
Abukawa, Sakio, 5,385,423, Cl. 403-245.000.
Tokoh, Akira; Seshida, Nobuyuki; Takeuchi, Etsu; and Hirano, Takashi, to Sumitomo Bakelite Company Limited. Photosensitive resin composition and semiconductor apparatus using it. 5,385,808, Cl. 430-283.000.

Tokunaga, Toshimichi: *See*—
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Goto, Hirofumi; Yoshida, Chisato; and Yokouchi, Kazuhiro, 5,386,218, Cl. 345-129.000.

Tokuno, Kazushige: *See*—
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Tokyo Electron Limited: *See*—
Amemiya, Yutaka; and Toda, Akihito, 5,385,624, Cl. 156-345.000.

Tolson, Sidney S., to Ossid Corporation; and Ibaraki Seiki Machinery Company. Packaging machine having a conveyor of controllable length. 5,385,004, Cl. 53-548.000.

Tom, Adam: *See*—
Shen, Paul; Krause, Edward A.; and Tom, Adam, 5,386,212, Cl. 341-67.000.

Tom, Glenn M.; and McManus, James V., to Novapure Corporation. Process and composition for purifying semiconductor process gases to remove Lewis acid and oxidant impurities therefrom. 5,385,689, Cl. 252-194.000.

Tominaga, Michiaki: *See*—
Fujioka, Takafumi; Teramoto, Shuji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,385,914, Cl. 514-312.000.

Tomioka, Junsuke; Akagi, Tetsuro; and Yoshino, Shiro, to Komatsu Electronic Metals Co., Ltd. Semiconductor wafer heat treatment method. 5,385,115, Cl. 117-2.000.

Tomiya, Masaki: *See*—
Sato, Soichi; Tomiya, Masaki; and Itabashi, Tatsuo, 5,386,291, Cl. 156-156.000.

Tonelli, Claudio: *See*—
Mascia, Leno; Tonelli, Claudio; and Simeone, Giovanni, 5,386,005, Cl. 528-110.000.

Toner, John L.: *See*—
Baker, Edward J.; Lee, Robert W.; Illig, Carl R.; Douty, Brent D.; and Toner, John L., 5,385,720, Cl. 424-5.000.
Baker, Edward J.; Josef, Kurt A.; Bacon, Edward R.; Estep, Kimberly G.; Illig, Carl R.; Douty, Brent D.; Toner, John L.; and Lee, Robert W., 5,385,721, Cl. 424-5.000.
Baker, Edward J.; Lee, Robert W.; Bacon, Edward R.; Daum, Sol J.; Estep, Kimberly G.; Josef, Kurt A.; Douty, Brent D.; Illig, Carl R.; and Toner, John L., 5,385,722, Cl. 424-5.000.

Tong-Lung Metal Industry Co., Ltd.: *See*—
Fann, Yaw-Shin; Lin, San-Yi; Wu, Rong-Fsa; Kuo, Ching-Chuan; and Don, Lan-Kun, 5,385,374, Cl. 292-336.300.

Tonhauser, Wilhelm; Kellermann, Gunter; and Thoma, Frank, to Mercedes-Benz AG. Multiway valve. 5,385,170, Cl. 137-625.430.

Tooi, Shuichi, to Mitsumi Electric Co., Ltd. Track ball coordinate data inputting device. 5,386,089, Cl. 178-18.000.

Topf, Henry E., Jr., to Miller Pipeline Corporation. Flow conduit for traversing a traffic way. 5,385,431, Cl. 405-157.000.

Toriyabe, Keiji: *See*—
Miyazaki, Masahiro; Matsuzawa, Masafumi; Toriyabe, Keiji; and Hirata, Michiya, 5,385,880, Cl. 504-243.000.

Torrey, Stephen A. Electronic neuron simulation with more accurate functions. 5,386,497, Cl. 395-27.000.

Torrington Company, The: *See*—
Murphy, Richard F.; Van Horne, James; and Gist, Walter R., Jr., 5,385,413, Cl. 384-564.000.

Tottenham, John E. Nail clipper. 5,384,960, Cl. 30-28.000.

Toyama, Masamichi: *See*—
Sekine, Masayoshi; Nakajima, Toshiyuki; Kai, Takashi; Yoshimura, Katsuji; and Toyama, Masamichi, 5,386,264, Cl. 354-430.000.

Toyama, Yasunari: *See*—
Kage, Shingo; Yamano, Yoshikazu; and Toyama, Yasunari, 5,386,330, Cl. 360-96.500.

Toyo Ink Mfg. Co., Ltd.: *See*—
Arai, Yoshifumi; and Nakano, Yoshiki, 5,386,496, Cl. 395-22.000.

Toyo Tire & Rubber Co., Ltd.: *See*—
Shimizu, Kentaro; Fujiki, Osamu; and Hitotsuyanagi, Mitsuru, 5,385,626, Cl. 156-406.400.

Toyokura, Yasuhiro, to Kurarich Co. Ltd. Production plant for cereal powder. 5,385,083, Cl. 99-355.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kakuta, Hirotaka, 5,385,354, Cl. 277-235.00B.
Harada, Kenichi, 5,385,017, Cl. 60-284.000.
Ota, Atsushi; Uozumi, Minoru; and Onishi, Hirokazu, 5,385,198, Cl. 164-254.000.
Yuki, Isamu; and Uozumi, Minoru, 5,385,200, Cl. 164-457.000.

TransLogic Corporation: *See*—
Tyler, Tommy N., 5,386,364, Cl. 364-424.020.

Tranter, Jeff J.: *See*—
Veeneman, Ron C.; Fullarton, Sonya G.; Peters, Dana C.; Rehder, Michael C.; Rose, K. Timothy; Tranter, Jeff J.; and Weatherson, Andrew J., 5,386,459, Cl. 379-93.000.

Traylor, Roger L., to Intel Corporation. Self-timed data pipeline apparatus using asynchronous stages having toggle flip-flops. 5,386,585, Cl. 395-800.000.

Treybig, Duane S.: *See*—
Dubois, Robert A.; Malzman, Allyson; Treybig, Duane S.; Sheih, Pong S.; and Whetten, Alan R., 5,386,008, Cl. 528-87.000.

Tribolet, Charles S.: *See*—
Eisenberg, Neal R.; Huddleston, Robert L.; Karasiuk, Gary R.; Lehner, Mary C.; and Tribolet, Charles S., 5,386,559, Cl. 395-600.000.

Trimberger, Stephen M.: *See*—
Goetting, F. Erich; Parlour, David B.; and Trimberger, Stephen M., 5,386,154, Cl. 326-44.000.

Trinova Limited: *See*—
Cleasby, Kenneth G., 5,385,171, Cl. 137-625.640.

Triox Technologies, Inc.: *See*—
Renlund, Gary M.; and Syammach, Mustafa A., 5,385,874, Cl. 501-103.000.

Troetscher, Gerhard; and Hecht, Anton, to Lindauer Dornier Gesellschaft mbH. Apparatus for drying bulk material with a filter for a drying gas flowing through the bulk material. 5,384,969, Cl. 34-82.000.

Trokhan, Paul D.: *See*—
Van Phan, Dean; Trokhan, Paul D.; and Hippe, David C., 5,385,642, Cl. 162-112.000.

Trompenaars, Petrus H. F.: *See*—
Van Gorkom, Gerardus G. P.; Trompenaars, Petrus H. F.; De Zwart, Siebe T.; and Lambert, Nicolaas, 5,386,175, Cl. 313-422.000.

Trubiano, Antoine, to Technibilt, Ltd. Rear folding backrest for seat compartment of an over-the-counter shopping cart. 5,385,357, Cl. 280-33.993.

Truemner, Dale; and Booms, Richard. Apparatus for perforating corrugated tubing at high speeds. 5,385,073, Cl. 83-322.000.

Truong, Tri T.: *See*—
Zimlich, Glenn A.; Orzel, Daniel V.; and Truong, Tri T., 5,385,016, Cl. 60-274.000.

TRW Inc.: *See*—
Kim, Jason S.-M.; and Anderson, James M., 5,386,336, Cl. 361-93.000.

Tryon, John F.; and Ledbetter, Jennings M., to Shell Oil Company. Light box. 5,386,357, Cl. 362-362.000.

Tsaur, Liang S.; and Aronson, Michael P., to Lever Brothers Company, Division of Conopco, Inc. Capsule which comprises a component subject to degradation and a composite polymer. 5,385,959, Cl. 523-201.000.

Tseng, Shih-Ming. Brake handle. 5,385,070, Cl. 74-502.200.

Tsoi, Siu C.: *See*—
Stanley, Paul L. R.; and Tsoi, Siu C., 5,385,816, Cl. 430-544.000.

Tsou, Andy H.; Greener, Jehuda; Smith, Gary D.; and Mosehauer, Gary M., to Eastman Kodak Company. Process of making polyethylene terephthalate photographic film base. 5,385,704, Cl. 264-210.700.

Tsuboniwa, Noriyuki: *See*—
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Tsuchiya, Mikako: *See*—
Moss, Joel; Mishima, Koichi; Nightingale, Maria S.; and Tsuchiya, Mikako, 5,386,021, Cl. 536-23.100.

Tsuchiya, Miki: *See*—
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Tsuchiya, Paul F.: *See*—
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Tsuchiya, Shouichi: *See*—
Kohno, Satoshi; Morishita, Tatsuya; and Tsuchiya, Shouichi, 5,385,018, Cl. 60-338.000.

Tsuji, Haruyuki: *See*—
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Tsuji, Hitoshi: *See*—
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Tsuzuki, Yasushi: *See*—
Awazu, Tomoyuki; Tsuzuki, Yasushi; Komura, Osamu; and Yamakawa, Akira, 5,385,701, Cl. 264-86.000.

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Weber, Steven A.: *See*—
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Weimer, Paul J.; Odom, James M.; Cooling, Frederick B., III; and Anderson, Albert G., to Du Pont de Nemours, E. I., and Company. Anthraquinones as inhibitors of sulfide production from sulfate-reducing bacteria. 5,385,842, Cl. 435-262.000.
Weinert, Lawrence E., to James River Paper Company, Inc. Apparatus for forming a plurality of rows of articles from a single row of articles during conveying of the articles. 5,385,226, Cl. 198-441.000.
Weinstein, Daniel: *See*—
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Weiss, Roger A.: *See*—
Bowman, Wayne A.; Weiss, Roger A.; Klein, Gerald W.; Keevert, John E., Jr.; and Weber, Shane C., 5,385,819, Cl. 430-569.000.
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Wender, Irving: *See*—
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Western Wire Works Inc.: *See*—
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Westinghouse Air Brake Company: *See*—
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Erin, Lawrence E.; Catullo, William J., Jr.; Paris, Richard E.; and Gallagher, John M., 5,386,441, Cl. 376-216.000.
Freidhoff, Carl B.; Young, Robert M.; and Sriram, Saptharishi, 5,386,115, Cl. 250-281.000.
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Demeter, Michael L.; and Stanton, Robert F., 5,385,490, Cl. 439-179.000.
Grabbe, Dimitry G., 5,384,954, Cl. 29-876.000.
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White, Hollis N., to White Hydraulics, Inc. Removable shaft seal. 5,385,351, Cl. 277-12.000.
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White, James E.; and Zdanys, John, Jr., to CTS Corporation. Electronic accelerator pedal assembly with pedal force sensor. 5,385,068, Cl. 74-512.000.

White, Robert T.: *See*—
Benson, Bradley J.; White, Robert T.; Schilling, James W., Jr.; Buckley, Douglas I.; and Scarborough, Robert M., 5,385,840, Cl. 435-240.200.
White, Theodore C.: *See*—
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Whitney, Theodore R. High resolution imagery systems and methods. 5,386,319, Cl. 359-575.000.
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Widder, Kenneth J.: *See*—
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Wieck, Andreas: *See*—
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Wiedeman, Paul E.; Kawai, Megumi; Luly, Jay R.; Or, Yat S.; and Wagner, Rolf, to Abbott Laboratories. Hexapeptide anaphylatoxin-receptor ligands. 5,386,011, Cl. 530-329.000.
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Wilhelm & Dauster: *See*—
Kurz, Manfred; and Saur, Roland, 5,385,296, Cl. 236-34.500.
Wilhelmi, Gene. Foot brace and leveraged turning apparatus for surfboards. 5,385,494, Cl. 441-74.000.
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Crump, David P.; and Williams, Edward C., 5,385,759, Cl. 427-430.100.
Williams, James L.; and Phillips, Gene. Scaffolding jack system. 5,385,215, Cl. 182-179.000.
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Williams, Richard A.: *See*—
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Williams, Richard K.; and Cornell, Michael E., to Siliconix Incorporated. Lightly-doped drain MOSFET with improved breakdown characteristics. 5,386,136, Cl. 257-409.000.
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Williamsen, Mark S.: *See*—
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Williamson, Gary S.: *See*—
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Wilson, Brian H.; Yegnanarayanan, Girija; Sejnoha, Vladimir; and Ganong, William F., to Kurzweil Applied Intelligence, Inc. Speech recognition system utilizing vocabulary model preselection. 5,386,492, Cl. 395-2.610.
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Lin, San L., 5,386,207, Cl. 340-146.200.
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Rogge, Gunter; and Rogge, Uwe, 5,385,093, Cl. 101-247.000.
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Bauer, Gerhard; Schumacher, Karl-Heinz; Fricke, Hans-Joachim; Wistuba, Eckehardt; and Neumann, Hans J., 5,385,967, Cl. 524-458.000.
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Wood, Dana: *See*—
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Cohen, Leon R., 5,384,981, Cl. 43-114.000.

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Bjorge, Susan M.; Black, Ann E.; Roth, Bruce D.; and Woolf, Thomas, 5,385,929, Cl. 514-422.000.

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Sebastiani, Enrico; and Fogliani, Giuseppe, 5,385,467, Cl. 431-326.000.

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White, David H.; Woulfe, Steven R.; Lia, Youlin; and Kneller, Mills T., 5,385,724, Cl. 424-9.000.

Wright, Barry M. Infant teether and hand puppet combination. 5,385,573, Cl. 606-235.000.

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Marsh, Lawrence B.; and Wright, John D., 5,385,056, Cl. 73-861.000.

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Unger, Evan C.; and Wu, Guanli, 5,385,719, Cl. 528-272.000.

Wu, Huey S.; and Kaler, Eric W., to W. L. Gore & Associates, Inc. Microemulsion polymerization systems and coated materials made therefrom. 5,385,694, Cl. 252-312.000.

Wu, Otto. Electrode massaging apparatus. 5,385,530, Cl. 601-21.000.

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Wu, Stephen H.: *See*—
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Wu, Tsun-Zong. Umbrella having automatically closed water collector. 5,385,162, Cl. 135-48.000.

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Wu, Zhan: *See*—
Fitch, James C.; and Wu, Zhan, 5,385,043, Cl. 73-61.730.

Wulf, Thomas, to Ethicon Endo-Surgery. Reducer for cannulae. 5,385,560, Cl. 604-264.000.

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Michel, Philippe; Cossement, Eric; Gobert, Jean; and Wulfert, Ernst, 5,385,927, Cl. 514-397.000.

Wurdack, Kirk, to Renovisions, Inc. Method for lifting modular furniture. 5,385,335, Cl. 254-1.000.

Xerox Corporation: *See*—
Bhagwat, Anil; and Howard, Alan, 5,385,181, Cl. 141-364.000.
Crump, David P.; and Williams, Edward C., 5,385,759, Cl. 427-430.100.
Duff, James M.; Goodbrand, H. Bruce; and Hecht, David L., 5,385,803, Cl. 430-138.000.
Hays, Dah A.; Mammino, Joseph; Pai, Damodar M.; Sypula, Donald S.; Wayman, William H.; Yanus, John F.; and DeFeo, Paul J., 5,386,277, Cl. 355-259.000.
Herbert, William G.; Hendrix, Loren E.; Maier, Gary J.; and Matyi, Ernest F., 5,385,660, Cl. 205-67.000.
Hubble, Fred F., III; Martin, James P.; Powers, Edward A.; and Osman, Kenneth R., 5,386,123, Cl. 250-561.000.
Law, Kock-Yee; and Tarnawskyj, Ihor W., 5,385,798, Cl. 430-106.600.
O'Neill, James F., 5,385,635, Cl. 156-647.000.
Palmer, John M.; Walker, Kris J.; Eidem, Dennis P.; and Dunham, Bernard J., 5,386,282, Cl. 355-299.000.
Spiewak, John W.; Yuh, Huoy-Jen; Thornton, Constance J.; Abramsohn, Dennis A.; Nichol-Landry, Deborah; Mammino, Joseph; Ziolo, Ronald F.; Yu, Robert C. U.; Carmichael, Kathleen; and Patterson, Neil S., 5,385,796, Cl. 430-64.000.
Swales, Michael G.; and Sotack, John D., 5,386,276, Cl. 353-246.000.
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Xilinx, Inc.: *See*—
Goetting, F. Erich; Parlour, David B.; and Trimberger, Stephen M., 5,386,154, Cl. 326-44.000.

Xu, Tianning: *See*—
DeBan, Abdou F.; Xu, Tianning; Tumey, David M.; and Arndt, Craig M., 5,386,103, Cl. 235-379.000.

Y. T. Li Engineering, Inc.: *See*—
Li, Yao-Tzu, 5,385,645, Cl. 202-175.000.

Yabe, Toshihiro: *See*—
Akiyama, Ryota; Yabe, Toshihiro; and Motohashi, Kazutoshi, 5,386,468, Cl. 380-25.000.

Yabuuchi, Yoichi: *See*—
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Yagi, Yasunori: *See*—
Matsumoto, Yoshihiro; Shinomoto, Mitsuhiro; and Yagi, Yasunori, 5,385,611, Cl. 118-642.000.

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Komuro, Yasuko; Yajima, Noboru; and Yoshida, Hiroshi, 5,386,418, Cl. 370-103.000.

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Danishefsky, Samuel J.; Dushin, Russell; and Hait, William N., 5,386,019, Cl. 536-18.600.

Yamada, Hiroshi: *See*—
Nakajima, Yukio; Yoshida, Muneaki; Yamada, Hiroshi; and Kawakami, Satoshi, 5,386,180, Cl. 315-241.00S.

Yamada, Motoshige: *See*—
Tanaka, Etuzi; Yamada, Motoshige; and Tanaka, Akira, 5,385,820, Cl. 430-595.000.

Yamada, Noboru: *See*—
Ohno, Eiji; Yamada, Noboru; and Takao, Masatoshi, 5,385,806, Cl. 430-270.000.

Yamada, Toshiyuki: *See*—
Kizawa, Yoshihiro; Fukushima, Toshimitsu; Katsuyama, Hiroyoshi; Makino, Isamu; and Yamada, Toshiyuki, 5,385,031, Cl. 62-186.000.

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Yamagata, Shigeo, to Canon Kabushiki Kaisha. Recording and reproducing apparatus. 5,386,327, Cl. 360-66.000.

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Yamaguchi, Akio: *See*—
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Maekawa, Kazunobu; Hirata, Sumiaki; and Yamaguchi, Ikunori, 5,386,271, Cl. 355-204.000.

Yamaguchi, Kenichi: *See*—
Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kakuta, Hirotaka, 5,385,354, Cl. 277-235.00B.

Yamaguchi, Kouichi: *See*—
Kishita, Hirofumi; Sato, Shinichi; Yamaguchi, Kouichi; Koike, Noriyuki; and Matsuda, Takashi, 5,386,049, Cl. 556-434.000.

Yamaguchi, Susumu: *See*—
Ishiwata, Tetsuo; and Yamaguchi, Susumu, 5,386,323, Cl. 360-19.100.

Yamaguchi, Yoshihisa; Suga, Shinjiro; Morikawa, Masatoshi; Kubo, Kunimichi; Watanabe, Motokazu; and Sano, Yasuhiko, to Nippon Petrochemicals Company, Limited. Method for producing polyolefin. 5,385,991, Cl. 526-74.000.

Yamaha Corporation: *See*—
Higashi, Iwao, 5,386,082, Cl. 84-630.000.
Kawamura, Kiyoshi, 5,386,083, Cl. 84-719.000.
Nakada, Takuya; Iwase, Hiroyuki; and Miyamoto, Hiromu, 5,386,081, Cl. 84-609.000.
Wold, Erling; and Blum, Thomas L., 5,386,568, Cl. 395-700.000.

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Oyaizu, Takeshi; and Iikura, Masahiko, 5,385,125, Cl. 123-90.270.
Sakurai, Hiroshi; Onodera, Hitoshi; and Ohta, Hiroyuki, 5,384,956, Cl. 29-834.000.

Yamahira, Yoshiya; Fujioka, Keiji; Sato, Shigeji; and Takada, Yoshihiro, to Sumitomo Pharmaceuticals Company, Ltd. Sustained-release injection. 5,385,738, Cl. 424-489.000.

Yamakawa, Akira: *See*—
Awazu, Tomoyuki; Tsuzuki, Yasushi; Komura, Osamu; and Yamakawa, Akira, 5,385,701, Cl. 264-86.000.

Yamakawa, Hiroshi; Ikegami, Masayuki; and Hano, Tsuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Gas flow type angular velocity sensor. 5,385,046, Cl. 73-516.0LM.

Yamamoto, Koichi: *See*—
Sugishima, Noboru; Ikeda, Noriaki; Yamamoto, Koichi; and Kizu, Yasuhiko, 5,385,648, Cl. 204-59.00R.

Yamamoto, Koji; Ikeno, Hajime; and Shichijo, Keiko, to Mitsubishi Petrochemical Co., Ltd. Filler-containing resin composition and stretched films using same. 5,385,972, Cl. 524-579.000.

Yamamoto, Masakazu: *See*—
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Yamamoto, Masashi: *See*—
Furuta, Motonobu; Abe, Hiroomi; Fujii, Takeshi; and Yamamoto, Masashi, 5,385,976, Cl. 525-68.000.

Yamamoto, Naoki; Nakata, Akira; Hatakeyama, Hiroki; and Watanabe, Hiroyuki, to Mitsubishi Rayon Co., Ltd. Composite composition having high transparency and process for producing same. 5,385,988, Cl. 525-479.000.

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Yamamoto, Toshihiro: *See*—
Kitagawa, Koichi; Saito, Kazuo; Otaka, Toshio; Yamamoto, Toshihiro; and Ito, Yoshihiro, 5,385,030, Cl. 62-160.000.

Yamamura, Masahiro: *See*—
Nakazato, Shinji; Uchida, Hideaki; Saito, Yoshikazu; Yamamura, Masahiro; Kobayashi, Yutaka; Ikeda, Takahide; Hori, Ryoichi; Kitsukawa, Goro; Itoh, Kiyoo; Tanba, Nobuo; Watanabe, Takao; Shimohigashi, Katsuhiro; and Homma, Noriyuki, 5,386,135, Cl. 257-369.000.

Yamanaka, asushi; Kakehashi, Nobuharu; Numazawa, Shigeo; Nishi, Yasuyuki; Kishita, Hiroshi; and Suzuki, Hideki, to Nippondenso Co., Ltd. Method and apparatus for calculating torque of variable capacity type compressor. 5,385,029, Cl. 62-133.000.

Yamanaka, Michinari: *See*—
Ueda, Tetsuya; Yano, Kousaku; Murakami, Tomoyasu; Yamanaka, Michinari; Hirao, Shuji; and Nomura, Noboru, 5,385,867, Cl. 437-195.000.

Yamanaka, Takashi: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.

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Yamanishi, Tohru: *See*—
Saito, Kazuhito; Nishimura, Masayuki; Yamanishi, Tohru; Kobayashi, Hideo; Katagiri, Toshiaki; and Tachikura, Masao, 5,386,485, Cl. 385-17.000.

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Kage, Shingo; Yamano, Yoshikazu; and Toyama, Yasunari, 5,386,330, Cl. 360-96.500.

Yamasita, Yukio: *See*—
Yuasa, Hitoshi; Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; and Otsuki, Yutaka, 5,385,795, Cl. 430-7.000.

Yamatsu, Isao: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.

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Ogawa, Yukio; and Yamaura, Tatsuo, 5,385,499, Cl. 445-24.000.

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Fujiwara, Toru; Yanagi, Shigeyuki; and Ikeda, Toru, 5,386,405, Cl. 369-59.000.

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Kajiwara, Shinzo; Konii, Yoshio; and Yanase, Minao, 5,385,187, Cl. 152-209.00R.

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Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Goto, Hirofumi; Yoshida, Chisato; and Yokouchi, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. Display system. 5,386,218, Cl. 345-129.000.

Yano, Kousaku: *See*—
Ueda, Tetsuya; Yano, Kousaku; Murakami, Tomoyasu; Yamanaka, Michinari; Hirao, Shuji; and Nomura, Noboru, 5,385,867, Cl. 437-195.000.

Yanus, John F.: *See*—
Hays, Dah A.; Mammino, Joseph; Pai, Damodar M.; Sypula, Donald S.; Wayman, William H.; Yanus, John F.; and DeFeo, Paul J., 5,386,277, Cl. 355-259.000.

Yao, Chun-I. Mechanism for binding nails. 5,385,087, Cl. 100-9.000.

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Pedroni, Volnei A.; Yariv, Amnon; and Agranat, Aharon J., 5,386,384, Cl. 365-183.000.

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Yasuda, Hiroshi, to Sony Corporation. Transmission power control of mobile radiotelephone station in response to base station control signal where base station data is collected by the mobile radiotelephone station. 5,386,588, Cl. 455-33.100.

Yasuda, Nobuyuki, to Sony Corporation. Phase-locked loop circuit. 5,386,437, Cl. 375-120.000.

Yasui, Itsuo: *See*—
Suzuki, Shigehiko; and Yasui, Itsuo, 5,385,193, Cl. 152-525.000.

Yasunaga, Soichiro, to Riken Denshi Co., Ltd. Detector for activity direction of magma. 5,386,114, Cl. 250-253.000.

Yasuyuki, Tsuchiya: *See*—
Noriyuki, Tsuboniwa; Satoshi, Urano; Hirotoshi, Umemoto; Hiroyuki, Sakamoto; Kenshiro, Tobinaga; and Yasuyuki, Tsuchiya, 5,385,985, Cl. 525-420.000.

Yatabe, Takayuki; Goto, Fusesuke; Aoki, Norihiro; and Imamura, Yoichi, to NSK Ltd. Rolling bearing. 5,385,412, Cl. 384-492.000.

Yatsko, Thomas: *See*—
Scharf, Michael W.; Veillon, Joseph N., Jr.; and Yatsko, Thomas, 5,385,253, Cl. 215-296.000.

Yau, Cheuk C.; and Cherry, Clinton, to Eastman Chemical Company. Copolyester of cyclohexanenedimethanol and process for producing such polyester. 5,385,773, Cl. 428-221.000.

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Iino, Tadashi, 5,386,216, Cl. 345-7.000.

Yeager, Debra: *See*—
Single, Arthur W., II; Steiner, Thomas J.; Cristiano, James J.; Macek, Matthew J.; Yeager, Debra; and Farah, Riad A., 5,385,382, Cl. 297-180.130.

Yearsley, Gyle; and Richards, Grant, to Zilog, Inc. Firmware encryption for microprocessor/microcomputer. 5,386,469, Cl. 380-3.000.

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Wilson, Brian H.; Yegnanarayanan, Girija; Sejnoha, Vladimir; and Ganong, William F., 5,386,492, Cl. 395-2.610.

Yen-Tang, Lin. Liquid dispenser for pet bottles. 5,385,276, Cl. 222-400.800.

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Jung, Il N.; Yoo, Bok R.; Lee, Bong W.; and Yeon, Seung H., 5,386,050, Cl. 556-435.000.

Yim, Kalvin W. K.; Huberty, Michael C.; Northey, Richard P., Jr.; and Schrier, Jay A., to Genetics Institute, Inc. Formulations for delivery of osteogenic proteins. 5,385,887, Cl. 514-12.000.

Yip, Kin F.; Chu, Amy H.; and Tudor, Brenda, to Miles Inc. Method for the determination of urinary protein and creatinine. 5,385,847, Cl. 436-534.000.

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Mandler, Daniel; and Turyan, Iva, 5,385,708, Cl. 422-82.030.

Yoda, Nobuhisa; Watanabe, Hiroshi; Ogaki, Takeshi; Iwase, Akinori; and Takagi, Shiro, to Kabushiki Kaisha Toshiba. Information display apparatus having multiwindow system. 5,386,504, Cl. 395-157.000.

Yoffe, Gideon W.: *See*—
Dell, John M.; and Yoffe, Gideon W., 5,386,137, Cl. 257-458.000.

Yokohama, Hiromitsu: *See*—
Abe, Shinya; Okamoto, Yasushi; Tagami, Katsuya; Hibi, Shigeki; Nagakawa, Junichi; Hirota, Kazuo; Hishinuma, Ieharu; Miyamoto, Kaname; Yamanaka, Takashi; Yokohama, Hiromitsu; Yoshimura, Tsutomu; Horie, Tohru; Akita, Yasunori; Katayama, Koichi; and Yamatsu, Isao, 5,385,942, Cl. 514-568.000.

Yokohama Rubber Co., Ltd., The: *See*—
Hashimura, Yoshiaki; Okihara, Masakazu; Miyazaki, Yusaku; Shida, Zenichiro; and Kogure, Tomohiko, 5,385,192, Cl. 152-454.000.
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Yokota, Tsuneshi; and Suzuki, Katsumi, to Kabushiki Kaisha Toshiba. Optical information reproducing apparatus having improved laser oscillation. 5,386,409, Cl. 369-116.000.

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Yokoyama, Keiichi; Hiwara, Akio; Fujita, Shigeru; and Omaru, Atsuo, to Mitsui Petrochemical Industries Ltd.; and Sony Corp. Cell electrolyte solvent, cell electrolyte comprising the solvent and non-aqueous electrolyte battery comprising the electrolyte. 5,385,794, Cl. 429-194.000.

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Yonekawa, Yoshiaki: *See*—
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Yoshida, Toyohiko; and Matsuo, Masahito, to Mitsubishi Denki Kabushiki Kaisha. Data processor. 5,386,580, Cl. 395-800.000.
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Young, Randolph G.; Bradshaw, James L.; Batchler, Bobby W.; Sudduth, Barry C.; and Walrath, Craig A., to NCR Corporation. Method and apparatus for transferring data within a computer using a burst sequence which includes modified bytes and a minimum number of unmodified bytes. 5,386,540, Cl. 395-425.000.
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Lesieur, Daniel; Yous, Said; Depreux, Patrick; Adam, Gerard; Renard, Pierre; Pfeiffer, Bruno; and Guardiola-Lemaitre, Beatrice, 5,385,944, Cl. 514-585.000.
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Yu, Ruey J.; and Van Scott, Eugene J. Method of using glycolic acid for treating wrinkles. 5,385,938, Cl. 514-557.000.
Yuasa, Hitoshi; Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; and Otsuki, Yutaka, to Nippon Oil Co., Ltd. Method for producing color filter. 5,385,795, Cl. 430-7.000.
Yuasa, Kazuhiro; and Koike, Kazumasa, to Ricoh Company, Ltd. Apparatus for producing a bilevel image suitable for a printing characteristic of a printing unit. 5,386,301, Cl. 358-445.000.
Yuh, Huoy-Jen: *See*—
Spiewak, John W.; Yuh, Huoy-Jen; Thornton, Constance J.; Abramsohn, Dennis A.; Nichol-Landry, Deborah; Mammino, Joseph; Ziolo, Ronald F.; Yu, Robert C. U.; Carmichael, Kathleen; and Patterson, Neil S., 5,385,796, Cl. 430-64.000.
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Yuki, Masanori: *See*—
Gunjima, Tomoki; Yuki, Masanori; Kunigita, Masaya; Hirai, Yoshinori; Yoshikawa, Yukio; and Shidoji, Eiji, 5,386,306, Cl. 359-52.000.
Yumioka, Tatsuya; Kaizawa, Toshiharu; Hamada, Kenichi; and Uesaka, Takeshi, to Fujitsu Limited. Pseudo-LSI device and debugging system incorporating same. 5,386,550, Cl. 395-575.000.
Yuran, Joseph J. Overhead door apparatus. 5,384,975, Cl. 49-203.000.
Yuzawa, Keji, to Sony Corporation. Satellite broadcasting receiving system with reception level indicator using control signal from receiver. 5,386,587, Cl. 455-3.200.
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Schaefer, Ronald J.; and Kyllingstad, Vernon L., 5,385,980, Cl. 525-187.000.
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Zhu, Yong H.: *See*—
Kirsch, Wolff M.; and Zhu, Yong H., 5,385,541, Cl. 604-8.000.
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Zilog, Inc.: *See*—
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Zimlich, Glenn A.; Orzel, Daniel V.; and Truong, Tri T., to Ford Motor Company. Air/fuel control system responsive to duo upstream EGO sensors with converter monitoring. 5,385,016, Cl. 60-274.000.
Zimmerman, H. Allen. Optical detection of water droplets using light refraction with a mask to prevent detection of unrefracted light. 5,386,111, Cl. 250-227.250.
Zimmerman, Joseph E.; and Haun, Edward C., to UOP. Integrated hydrocracking-catalytic dewaxing process for the production of middle distillates. 5,385,663, Cl. 208-58.000.

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Zynaxis, Inc.: *See*—
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3Com Ireland: *See*—
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF JANUARY, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Arzneimittel GmbH Apotheker Vetter & Co.: *See*—
Vetter, Helmut; and Geprags, Re. 34,845, Cl. 604-243.000.

Duffers Scientific, Inc.: *See*—
Ferguson, Hugo S., Re. 34,843, Cl. 360-5.000.

Ejiri, Koichi; Jeng, Tina; Roth, Rithy; and Lam, Lak M., to Ricoh Corporation. Facsimile remote diagnostic system. Re. 34,842, Cl. 356-406.000.

Ekholm, Pertti: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; and Partanen, Paul, Re. 34,841, Cl. 356-244.000.

Ferguson, Hugo S., to Duffers Scientific, Inc. Signal controlled waveform recorder. Re. 34,843, Cl. 360-5.000.

Geprags: *See*—
Vetter, Helmut; and Geprags, Re. 34,845, Cl. 604-243.000.

Ito, Hiroshi; and Nakase, Ryoichi, to Sanshin Kogyo Kabushiki Kaisha. Power tilt device. Re. 34,844, Cl. 440-61.000.

Jeng, Tina: *See*—
Ejiri, Koichi; Jeng, Tina; Roth, Rithy; and Lam, Lak M., Re. 34,842, Cl. 356-406.000.

Labsystems Oy: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; and Partanen, Paul, Re. 34,841, Cl. 356-244.000.

Lam, Lak M.: *See*—
Ejiri, Koichi; Jeng, Tina; Roth, Rithy; and Lam, Lak M., Re. 34,842, Cl. 356-406.000.

Matsuda, Susumu: *See*—
Yamaguchi, Yasuyoshi; and Matsuda, Susumu, Re. 34,840, Cl. 355-297.000.

Mohri, Kaneo; and Yamasaki, Jiro, to TDK Corporation. Permanent magnet and method for producing same. Re. 34,838, Cl. 148-302.000.

Nakase, Ryoichi: *See*—
Ito, Hiroshi; and Nakase, Ryoichi, Re. 34,844, Cl. 440-61.000.

Ossid Corporation: *See*—
Tolson, Sidney S., Re. 34,839, Cl. 177-5.000.

Partanen, Paul: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; and Partanen, Paul, Re. 34,841, Cl. 356-244.000.

Ricoh Corporation: *See*—
Ejiri, Koichi; Jeng, Tina; Roth, Rithy; and Lam, Lak M., Re. 34,842, Cl. 356-406.000.

Roth, Rithy: *See*—
Ejiri, Koichi; Jeng, Tina; Roth, Rithy; and Lam, Lak M., Re. 34,842, Cl. 356-406.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Ito, Hiroshi; and Nakase, Ryoichi, Re. 34,844, Cl. 440-61.000.

Suovaniemi, Osmo A.; Ekholm, Pertti; and Partanen, Paul, to Labsystems Oy. Micro-cuvette unit for facilitating the identification of samples. Re. 34,841, Cl. 356-244.000.

TDK Corporation: *See*—
Mohri, Kaneo; and Yamasaki, Jiro, Re. 34,838, Cl. 148-302.000.

Tokyo Electric Co., Ltd.: *See*—
Yamaguchi, Yasuyoshi; and Matsuda, Susumu, Re. 34,840, Cl. 355-297.000.

Tolson, Sidney S., to Ossid Corporation. Weighing and labeling apparatus and method. Re. 34,839, Cl. 177-5.000.

Vetter, Helmut; and Geprags, to Arzneimittel GmbH Apotheker Vetter & Co. Hypodermic syringe. Re. 34,845, Cl. 604-243.000.

Yamaguchi, Yasuyoshi; and Matsuda, Susumu, to Tokyo Electric Co., Ltd. Electrophotographic apparatus with manual and programmable blade cleaner. Re. 34,840, Cl. 355-297.000.

Yamasaki, Jiro: *See*—
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TO WHOM

CERTIFICATES WERE ISSUED

Bennett, Ronald, to Ultra Creative Corp. Plastic film package with a hanger. B1 4,834,553, 1-31-95, Cl. 383-23.000.

Chaleff, Edward: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; Sharpe, Jeffrey G.; and Wurz, David A., B1 5,124,538, Cl. 235-467.000.

Citicorp North America, Inc.: *See*—
Dalebout, William T.; Measom, S. Ty; and Watterson, Scott R., B1 5,192,255, Cl. 482-54.000.

Cox, James: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; Sharpe, Jeffrey G.; and Wurz, David A., B1 5,124,538, Cl. 235-467.000.

Dalebout, William T.; Measom, S. Ty; and Watterson, Scott R., to Citicorp North America, Inc. Adjustable incline system for exercise equipment. B1 5,192,255, 1-31-95, Cl. 482-54.000.

Eckert, Charles: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; Sharpe, Jeffrey G.; and Wurz, David A., B1 5,124,538, Cl. 235-467.000.

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Inbar, Dan; Klein, Yitzhak; and Yam, Kirvat, B1 4,095,108, Cl. 250-369.000.

Inbar, Dan; Klein, Yitzhak; and Yam, Kirvat, to Elscint, Ltd. Signal processing equipment for radiation imaging apparatus. B1 4,095,108, 1-31-95, Cl. 250-369.000.

Klein, Yitzhak: *See*—
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Laitram Corporation: *See*—
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Lapeyre, James M., to Laitram Corporation. Modular center drive conveyor belt. B1 4,934,518, 1-31-95, Cl. 198-853.000.

Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; Sharpe, Jeffrey G.; and Wurz, David A. Scanner. B1 5,124,538, 1-31-95, Cl. 235-467.000.

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Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; Sharpe, Jeffrey G.; and Wurz, David A., B1 5,124,538, Cl. 235-467.000.

Sharpe, Jeffrey G.: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; Sharpe, Jeffrey G.; and Wurz, David A., B1 5,124,538, Cl. 235-467.000.

Skokowski, Richard: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; Sharpe, Jeffrey G.; and Wurz, David A., B1 5,124,538, Cl. 235-467.000.

Ultra Creative Corp.: *See*—
Bennett, Ronald, B1 4,834,553, Cl. 383-23.000.

Watterson, Scott R.: *See*—
Dalebout, William T.; Measom, S. Ty; and Watterson, Scott R., B1 5,192,255, Cl. 482-54.000.

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Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; Sharpe, Jeffrey G.; and Wurz, David A., B1 5,124,538, Cl. 235-467.000.

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Weatherford, Javier V.; and Valls, William H., 354,911, Cl. D9-415.000.

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Alpha Enterprises, Inc.: *See*—
Davis, Gregg M.; and DeBord, Jeffrey T., 354,861, Cl. D6-407.000.
Davis, Gregg M.; and BeBord, Jeffery T., 354,877, Cl. D6-629.000.

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Anchor Hocking Corporation: *See*—
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Arad, Avi; and Tornquist, Finn, to Toy Biz Inc. Toy weapon housing. 354,997, 1-31-95, Cl. D21-146.000.

Arad, Avi; and Turnquist, Finn, to Toy Biz, Inc. Toy weapon primary weapon. 354,998, 1-31-95, Cl. D21-146.000.

Arad, Avi, to Toy Biz, Inc. Toy weapon. 354,999, 1-31-95, Cl. D21-147.000.

Arad, Avi; and Turnquist, Finn, to Toy Biz, Inc. Toy weapon pistol. 355,000, 1-31-95, Cl. D21-147.000.

Atkins, Helen I.; and Coito, Lucia B. Pedicure slipper. 354,843, 1-31-95, Cl. D2-916.000.

Baldwin, Gene R. Resuscitator valve. 355,030, 1-31-95, Cl. D24-1106.000.

Barre, Rene , to Verreries Brosse & Cie. Container. 354,908, 1-31-95, Cl. D9-315.000.

Barzani, Uri. Plastic link toy. 354,995, 1-31-95, Cl. D21-108.000.

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69.12 5,386,093
69.14 5,386,094
69.18 5,386,095
86.32 5,386,092
110 5,386,096
121.68 5,386,097
203 5,386,098
413 5,386,099
437 5,386,100
535 5,386,101

CLASS 220
299 5,385,254
308 5,385,255
323 5,385,256
324 5,385,257
334 5,385,258
404 5,385,259
415 5,385,260
572 5,385,261
589 5,385,262
5,385,263
710 5,385,264

CLASS 221
7 5,385,265
76 5,385,266
248 5,385,267

CLASS 222
105 5,385,268
5,385,269
134 5,385,270
153 5,385,271
185 5,385,272
5,385,273
327 5,385,274
399 5,385,275
400.8 5,385,276
474 5,385,277

CLASS 223
2 5,385,278
114 5,385,279

CLASS 224
42.45 R 5,385,280
148 5,385,281
252 5,385,282
276 5,385,283
321 5,385,284
5,385,285

CLASS 227
8 5,385,286
155 5,385,287

CLASS 228
1.1 5,385,288
103 5,385,289
180.22 5,385,290
5,385,291

CLASS 229
120 5,385,292
122 5,385,293
125.17 5,385,294

CLASS 233
35 5,385,295

CLASS 235
379 5,386,103
5,386,104
462 5,386,105
5,386,106
467 B1 5,124,538
472 5,386,107

CLASS 236
34.5 5,385,296
49.3 5,385,297

CLASS 237
1 R 5,385,298
55 5,385,299

CLASS 239
74 5,385,300
88 5,385,301
333 5,385,302
394 5,385,303
431 5,385,304
533.9 5,385,305
663 5,385,306

CLASS 241
41 5,385,307
101.7 5,385,308
235 5,385,309
266 5,385,311

CLASS 242
87.01 5,385,310
347 5,385,312
377 5,385,313
397.3 5,385,314
552 5,385,316
586 5,385,315
595 5,385,317
597.8 5,385,318

CLASS 244
3.12 5,385,319

CLASS 248
62 5,385,320
74.3 5,385,321
118 5,385,322
161 5,385,323
231.7 5,385,324
313 5,385,325
346.1 5,385,326
442.2 5,385,327

CLASS 250
208.1 5,386,108
214 R 5,386,109
216 5,386,110
227.25 5,386,111
234 5,386,112
253 5,386,114
281 5,386,115
288 5,386,116
292 5,386,113
330 5,386,117
338.1 5,386,118
338.2 5,386,120
341.1 5,386,119
341.8 5,386,121
368 5,386,122
369 B1 4,095,108
561 5,386,123
585 5,386,124
589 5,386,125

CLASS 251
30.04 5,385,328
77 5,385,329
148 5,385,330
149.1 5,385,331
283 5,385,332
308 5,385,333
335.3 5,385,334

CLASS 252
8.6 5,385,680
8.7 5,385,681
18 5,385,682
35 5,385,683
47.5 5,385,684
54 5,385,686
56 R 5,385,687
73 5,385,688
174.17 5,385,685
194 5,385,689
299.01 5,385,690
5,385,691
299.62 5,385,692
299.65 5,385,693
312 5,385,694
344 5,385,695
900 5,385,679
546 5,385,696

CLASS 254
1 5,385,335

CLASS 257
15 5,386,126
48 5,386,127
183.1 5,386,128
207 5,386,129
275 5,386,130
301 5,386,131
316 5,386,132
344 5,386,133
360 5,386,134
369 5,386,135
409 5,386,136
458 5,386,137
466 5,386,139
551 5,386,138
592 5,386,140
676 5,386,141
690 5,386,142
715 5,386,143
718 5,386,144

CLASS 261
41.1 5,386,145
70 5,385,697

CLASS 264
53 5,385,698
57 5,385,699
59 5,385,700
86 5,385,701
103 5,385,702
145 5,385,703
210.7 5,385,704
219 5,385,705
519 5,385,706

CLASS 266
74 5,385,336
81 5,385,337
234 5,385,338

CLASS 269
37 5,385,339

CLASS 270
53 5,385,340

CLASS 271
265 5,385,341
274 5,385,342

CLASS 273
26 R 5,385,343
29B 5,385,350
67 B 5,385,345
79 5,385,346
142 R 5,385,347
171 5,385,348
187.4 5,385,349
460 5,385,344

CLASS 277
12 5,385,351
37 5,385,352
188 R 5,385,353
235 B 5,385,354

CLASS 280
1.5 5,385,355
11.22 5,385,356
33.993 5,385,357
33.995 5,385,358
234 5,385,359
279 5,385,360
284 5,385,361
414.1 5,385,362
911 5,385,363
607 5,385,364
627 5,385,365
728 B 5,385,366
733 5,385,367
5,385,368
788 5,385,369
908 5,385,370

CLASS 283
34 5,385,371

CLASS 285
332 5,385,372

CLASS 290
55 5,386,146

CLASS 291
307 B 5,385,373
336.3 5,385,374

CLASS 293
109 5,385,375

CLASS 294
1.3 5,385,376

CLASS 296
36 5,385,377
37.12 5,385,378
84.1 5,385,379
5,385,380
117 5,385,381
202 5,385,383

CLASS 297
180.13 5,385,382
238 5,384,946
5,385,384
250.1 5,385,385
256.16 5,385,386
5,385,387
301 5,385,388
339 5,385,389
380 5,385,390

CLASS 298
17 R 5,385,391

CLASS 303
20 5,385,392
106 5,385,393
115.2 5,385,394
116.1 5,385,395
119.2 5,385,396

CLASS 307
66 5,386,147
89 5,386,148

CLASS 310
49 R 5,386,161
51 5,386,162
5,386,163
71 5,386,164
75 R 5,386,165
90.5 5,386,166
237 5,386,167
323 5,386,169
365 5,386,168

CLASS 312
9.45 5,385,397
9.48 5,385,398
190 5,385,399
205 5,385,400

CLASS 313
17 5,386,170
125 5,386,171
309 5,386,172
318 5,386,173
408 5,386,174
422 5,386,175
468 5,386,176

CLASS 318
5.39 5,386,177
15 5,386,178
169.3 5,386,179
241 S 5,386,180
287 5,386,181

CLASS 318
293 5,386,182
434 5,386,183
701 5,386,184
762 5,386,185
798 5,386,186

CLASS 323
222 5,386,187

CLASS 324
126 5,386,188
158.1 5,386,189
309 5,386,190
318 5,386,191
439 5,386,192
547 5,386,193
650 5,386,194
662 5,386,195
667 5,386,196
757 5,386,197

CLASS 326
33 5,386,157
34 5,386,153
37 5,386,155
5,386,156
44 5,386,154

CLASS 327
51 5,386,158
141 5,386,150
143 5,386,152
310 5,386,159
513 5,386,160
536 5,386,151

CLASS 330
52 5,386,198
279 5,386,199
288 5,386,200

CLASS 331
176 5,386,201

CLASS 332
100 5,386,202

CLASS 333
129 5,386,203
208 5,386,204

CLASS 335
119 5,386,275
255 5,386,205

CLASS 336
200 5,386,206

CLASS 340
146.2 5,386,207
461 5,386,208
539 5,386,209
567 5,386,210

CLASS 341
51 5,386,211
67 5,386,212
5,386,213

CLASS 343
700 MS 5,386,214
795 5,386,215

CLASS 345
7 5,386,216
99 5,386,217
129 5,386,218
174 5,386,219
184 5,386,220

CLASS 346
108 5,386,221
157 5,386,223

CLASS 347
7 5,386,224
85 5,386,225
89 5,386,222

CLASS 348
10 5,386,226
61 5,386,227
218 5,386,228
227 5,386,229
241 5,386,230
296 5,386,231
391 5,386,232
407 5,386,233
409 5,386,234
427 5,386,235
445 5,386,236
458 5,386,237
488 5,386,238
472 5,386,239
473 5,386,240
565 5,386,241
607 5,386,243
610 5,386,244
629 5,386,245
687 5,386,247
699 5,386,248
701 5,386,249
734 5,386,251
745 5,386,253
746 5,386,252
770 5,386,250

CLASS 351
60 5,386,256

CLASS 353
5 5,386,255
27 5,386,256
198 5,386,257

CLASS 354
94 5,386,259
289.12 5,386,260
324 5,386,261
400 5,386,258
402 5,386,262
403 5,386,263
430 5,386,264
484 5,386,265

CLASS 358
7 5,386,267
43 5,386,269
67 5,386,266
70 5,386,268
202 5,386,270
304 5,386,271
207 5,386,272
112 5,386,273
215 5,386,274
146 5,386,276
259 5,386,277
271 5,386,278
5,386,279
282 5,386,280
290 5,386,281
297 Re.34,840
299 5,386,282
308 5,386,283
311 5,386,284
326 R 5,386,286

CLASS 356
1 5,386,285
244 Re.34,841
326 5,386,287
350 5,386,288
5,386,289
356 5,386,290
376 5,386,291
397 5,386,292
401 5,386,293
406 Re.34,842
418 5,386,294
5,386,295

CLASS 358
316 5,386,296
5,386,297
403 5,386,298
406 5,386,299
426 5,386,300
445 5,386,301
448 5,386,302
453 5,386,303
458 5,386,304
518 5,386,305

CLASS 359
52 5,386,306
53 5,386,307
83 5,386,308
88 5,386,309
189 5,386,311
215 5,386,312
280 5,386,313
326 5,386,314
350 5,386,315
365 5,386,316
386 5,386,317
394 5,386,318
575 5,386,319
689 5,386,320
692 5,386,321
872 5,386,322

CLASS 360
5 Re.34,843
19.1 5,386,323
33.1 5,386,325
53 5,386,324
66 5,386,326
5,386,327
68 5,386,328
94 5,386,329
96.5 5,386,330
104 5,386,331
126 5,386,332
128 5,386,333

132 5,386,334

CLASS 361
56 5,386,335
93 5,386,336
622 5,386,337
704 5,386,338
719 5,386,339
737 5,386,340
749 5,386,341
5,386,342
761 5,386,343
785 5,386,344
799 5,386,346
816 5,386,345

CLASS 362
31 5,386,347
61 5,386,348
66 5,386,349
83.3 5,386,350
201 5,386,351
206 5,386,352
224 5,386,353
258 5,386,354
267 5,386,355
5,386,356
362 5,386,357
431 5,386,358

CLASS 363
21 5,386,359

CLASS 364
146 5,386,360
184 5,386,361
406 5,386,362
424.01 5,386,363
424.02 5,386,364
424.05 5,386,365
426.01 5,386,366
431.08 5,386,367
432 5,386,368
464.01 5,386,369
516 5,386,370
571.08 5,386,371
574 5,386,372
5,386,393
577 5,386,373
578 5,386,374
748 5,386,375
767 5,386,376
787 5,386,377
822 5,386,378

CLASS 365
49 5,386,379
94 5,386,380
104 5,386,381
107 5,386,310
174 5,386,382
183 5,386,384
189.05 5,386,383
5,386,385
200 5,386,386
5,386,387
201 5,386,388
208 5,386,394
230.06 5,386,389
5,386,390
233 5,386,391
5,386,392

CLASS 366
7 5,385,401
196 5,385,402
297 5,385,403

CLASS 367
137 5,386,395
139 5,386,397
150 5,386,396

CLASS 368
10 5,386,398
110 5,386,399

CLASS 369
13 5,386,400
32 5,386,402
37 5,386,403
44.23 5,386,404
59 5,386,405
77.2 5,386,406
5,386,407
100 5,386,408
116 5,386,409
275.4 5,386,410
5,386,411

CLASS 370
13.1 5,386,416
53 5,386,412
54 5,386,413
5,386,417
60 5,386,414
5,386,415
103 5,386,418
105.1 5,386,419

CLASS 371
1 5,386,420
21.2 5,386,421
21.5 5,386,422
22.3 5,386,423
36 5,386,424
37.4 5,386,425

CLASS 372
20 5,386,426
34 5,386,427
46 5,386,429
50 5,386,428
57 5,386,430
88 5,386,431
94 5,386,432
96 5,386,433
103 5,386,434

CLASS 374
161 5,385,404

CLASS 375
1 5,386,435
10 5,386,495
106 5,386,436
120 5,386,437
121 5,386,438

CLASS 376
209 5,386,439
210 5,386,440
216 5,386,441
245 5,386,442
260 5,386,443
261 5,386,444

CLASS 378
10 5,386,445
30 5,386,446
37 5,386,447
38 5,386,448
5,386,449
88.2 5,386,450
131 5,386,451
146 5,386,452
196 5,386,453

CLASS 379
27 5,386,454
58 5,386,455
60 5,386,456
61 5,386,457
91 5,386,458
93 5,386,459
96 5,386,460
102 5,386,461
106 5,386,462
182 5,386,463
201 5,386,464
202 5,386,465
220 5,386,466
5,386,467

CLASS 380
3 5,386,469
25 5,386,468
48 5,386,470
49 5,386,471

CLASS 381
24 5,386,473
28 5,386,474
68 5,386,475
69 5,386,476
71 5,386,472
5,386,477
103 5,386,478
190 5,386,479

CLASS 382
1 5,386,480
8 5,386,481
9 5,386,482
22 5,386,483

CLASS 383
23 B1 4,834,553

CLASS 384
19 5,385,405
45 5,385,406
97 5,385,407
115 5,385,408
124 5,383,409
446 5,385,410
5,385,411
492 5,385,412
564 5,385,413

CLASS 385
11 5,386,484
17 5,386,485
59 5,386,486
5,386,487
92 5,386,488
100 5,386,489
134 5,386,490

CLASS 391
800 5,386,584

CLASS 392
818 5,386,491

CLASS 395
2.61 5,386,492
2.76 5,386,493
2.84 5,386,494
22 5,386,496
24 5,386,149
27 5,386,497
75 5,386,498
85 5,386,499
119 5,386,500
140 5,386,501
141 5,386,502
157 5,386,503
5,386,504
138 5,386,505
160 5,386,506
161 5,386,507
5,386,508
162 5,386,509
163 5,386,510
200 5,386,511
5,386,512
250 5,386,513
5,386,514
275 5,386,515
5,386,516
5,386,517
325 5,386,518
375 5,386,519
5,386,520
5,386,521
801 5,386,522
5,386,523
5,386,524
5,386,525
5,386,526
5,386,527
5,386,528
5,386,529
5,386,530
5,386,534
5,386,531
5,386,532
5,386,533
5,386,535
5,386,536
5,386,537
5,386,538
5,386,539
5,386,540
5,386,541
5,386,546
5,386,547
5,386,548
5,386,466
500 5,386,543
550 5,386,542
575 5,386,544
5,386,545
5,386,549
5,386,550
5,386,551
5,386,552
600 5,386,553
5,386,554
5,386,555
5,386,556
5,386,557
5,386,558
5,386,559
650 5,386,560
5,386,561
5,386,562
5,386,563
5,386,564
700 5,386,565
5,386,566
5,386,567
5,386,568
5,386,569
5,386,570
5,386,571
725 5,386,572
5,386,573
5,386,574
750 5,386,575
5,386,576
5,386,577
800 5,386,578
5,386,579
5,386,580
5,386,581
5,386,582
5,386,583
CLASS 400
124.02 5,385,414
124.22 5,385,415
208 5,385,416
472 5,385,417

CLASS 401
92 5,385,418

CLASS 402
75 5,385,419

CLASS 403
245 5,385,423
272 5,385,421
299 5,385,420
369 5,385,424
371 5,385,422

CLASS 404
72 5,385,425
75 5,385,426

CLASS 408
68 5,385,427
81 5,385,428
129 5,385,429
157 5,385,430
5,385,431
204 5,385,432
302.1 5,385,433

CLASS 406
73 5,385,434

CLASS 409
201 5,385,436
5,385,435

CLASS 411
386 5,385,439

CLASS 414
204 5,385,437
608 5,385,440
627 5,385,441
786 5,385,438

CLASS 415
104 5,385,442
116 5,385,443
182.1 5,385,444
199.2 5,385,445
202 5,385,446
220 5,385,447

CLASS 416
229 R 5,385,448

CLASS 417
243 5,385,449
269 5,385,450
5,385,451
403 5,385,452
410.5 5,385,453
423.12 5,385,454
505 5,385,455
510 5,385,456

CLASS 418
58 5,385,457
255 5,385,458

CLASS 422
69 5,385,707
82.03 5,385,708
98 5,385,709
184 5,385,710
186.07 5,385,711
190 5,385,712

CLASS 423
11 5,385,713
328.2 5,385,714
446 5,385,715
463 5,385,716
702 5,385,717
718 5,385,718

CLASS 424
5 5,385,720
5,385,721
5,385,722
9 5,385,723
5,385,724
5,385,725
10 5,385,726
49 5,385,727
54 5,385,728
70.11 5,385,729
78.02 5,385,730
85.1 5,385,731
94.64 5,385,732
195.1 5,385,733
434 5,385,734
442 5,385,735
448 5,385,736
451 5,385,737
489 5,385,738
494 5,385,739
573 5,385,740

CLASS 425
52 5,385,459
115 5,385,460
130 5,385,461
135 5,385,462
143 5,385,463
145 5,385,464
308 5,385,465
522 5,385,466

CLASS 426
13 5,385,741
19 5,385,742
42 5,385,743
89 5,385,744
392 5,385,745
447 5,385,746
573 5,385,747
590 5,385,748
658 5,385,749

CLASS 427
4 5,385,750
126.2 5,385,751
140 5,385,752
215 5,385,753
221 5,385,754
379 5,385,755
380.9 5,385,756
420 5,385,757
421 5,385,758
430.1 5,385,759
443.1 5,385,760
448 5,385,761
526 5,385,762
572 5,385,763

CLASS 428
34.4 5,385,764
36.1 5,385,765
5,385,766
36.91 5,385,767
141 5,385,768
5,385,769
195 5,385,770
211 5,385,771
220 5,385,772
221 5,385,773
247 5,385,774
284 5,385,775
297 5,385,776
316.6 5,385,777
319.7 5,385,778
323 5,385,779
325 5,385,780
330 5,385,781
332 5,385,782
333 5,385,783
369 5,385,784
408 5,385,785
432 5,385,786
447 5,385,787
458 5,385,788
570 5,385,789
593 5,385,790
621 5,385,791

CLASS 429
32 5,385,792
62 5,385,793
194 5,385,794

CLASS 430
7 5,385,795
64 5,385,796
67 5,385,797
106.6 5,385,798
110 5,385,799
5,385,800
122 5,385,801
137 5,385,802
138 5,383,803
195 5,385,804
257 5,385,805
270 5,383,806
283 5,385,807
5,385,808
311 5,383,809
351 5,385,810
438 5,385,811
449 5,385,812
503 5,385,813
504 5,385,814
512 5,385,815
544 5,385,816
567 5,385,817
5,385,818
569 5,385,819
595 5,385,820

CLASS 431
326 5,385,467

CLASS 433
40 5,383,469
77 5,385,468
153 5,385,471

CLASS 434
126 5,385,472
205 5,385,473
267 5,385,474
307 R 5,385,475

CLASS 435
1 5,385,821
5 5,385,822
6 5,385,823
5,385,824
7.23 5,385,825
7.32 5,385,826
9 5,385,827
11 5,385,828
19 5,385,829
29 5,385,830
69.1 5,385,831
101 5,385,832
156 5,385,833
172.3 5,385,834
5,385,835
177 5,385,836
221 5,385,837
240.2 5,385,839
5,385,840
252.35 5,385,841
262 5,385,842
283 5,385,843

CLASS 436
13 5,385,844
70 5,385,846
534 5,385,847

CLASS 437
2 5,385,848
3 5,385,849
31 5,385,850
40 5,385,851
5,385,852
41 5,385,853
5,385,854
5,385,855
43 5,385,856
44 5,385,857
52 5,385,858
5,385,859
53 5,385,860
67 5,385,861
107 5,385,862
109 5,385,863
132 5,385,864
133 5,385,865
186 5,385,866
195 5,385,867
5,385,868
209 5,385,869

CLASS 439
38 5,385,476
66 5,385,477
67 5,385,478
144 5,385,479
157 5,385,870
310 5,385,480
378 5,385,481
409 5,385,482
419 5,385,485
424 5,385,483
468 5,385,484
517 5,385,486
540 5,385,487
557 5,385,488
571 5,385,489
579 5,385,490
595 5,385,491
877 5,385,492

CLASS 440
Re.34,844
63 5,385,493

CLASS 441
74 5,385,494
79 5,385,495
115 5,385,496
129 5,385,497
5,385,498

CLASS 443
57 5,385,470

CLASS 448
24 5,385,499

CLASS 446
73 5,385,500
154 5,385,501

CLASS 488
93 5,385,502

CLASS 481

36	5,384,989
38	5,384,990
41	5,384,987
42	5,384,988
57	5,384,991
65	5,384,983
344	5,384,985
357	5,384,984
444	5,384,986

CLASS 484

153	5,385,503
169	5,385,504
238	5,385,505

CLASS 485

3.2	5,386,587
33.1	5,386,588
	5,386,589
	5,386,590

CLASS 464

117	5,385,506

CLASS 474

92	5,385,507
148	5,385,508

CLASS 475

14	5,385,509
132	5,385,511
153	5,385,512
203	5,385,513
336	5,385,514

CLASS 477

75	5,385,515
107	5,385,516
169	5,385,517

CLASS 482

27	5,385,518
54	5,385,519
	5,385,520
B1	5,192,255
55	5,385,521
83	5,385,523
113	5,385,524
121	5,385,525

CLASS 493

14	5,385,526
135	5,385,527

CLASS 501

25	5,385,871
71	5,385,872
95	5,385,873
103	5,385,874

CLASS 502

24	5,385,875
80	5,385,876
103	5,385,877
167	5,385,878

CLASS 503

213	5,385,879

CLASS 504

136	5,385,881
243	5,385,880

CLASS 505

182	5,385,883
501	5,385,882

CLASS 514

11	5,385,884
12	5,385,885
	5,385,887
	5,385,888
13	5,385,889
21	5,385,890
58	5,385,891
63	5,385,892
80	5,385,893
	5,385,894
12	5,385,895
129	5,385,896
210	5,385,897
	5,385,898
217	5,385,899
218	5,385,900
221.5	5,385,901
257.5	5,385,902
249	5,385,903
255	5,385,904
256	5,385,905
258	5,385,906
291	5,385,907
	5,385,908
	5,385,909
	5,385,910
299	5,385,911
305	5,385,912
312	5,385,913
	5,385,914
313	5,385,915
321	5,385,916
325	5,385,917
330	5,385,918
339	5,385,919
356	5,385,920
365	5,385,921
	5,385,922
373	5,385,923
382	5,385,925
383	5,385,926
397	5,385,927
403	5,385,928
422	5,385,929
432	5,385,930
443	5,385,931
460	5,385,932
499	5,385,933
500	5,385,934
535	5,385,935
548	5,385,936
557	5,385,937
	5,385,938

561	5,385,939
565	5,385,940
567	5,385,941
568	5,385,942
574	5,385,943
585	5,385,944
613	5,385,945
634	5,385,946
654	5,385,947
788	5,385,948

CLASS 518

700	5,385,949

CLASS 521

45.5	5,385,950
98	5,385,951
109.1	5,385,953
131	5,385,952

CLASS 522

29	5,385,954
31	5,385,955
116	5,385,956
170	5,385,958

CLASS 523

161	5,385,957
201	5,385,959
205	5,385,960
213	5,385,961
414	5,385,962
436	5,385,963

CLASS 524

266	5,385,964
272	5,385,965
426	5,385,966
458	5,385,967
493	5,385,968
496	5,385,969
538	5,385,970
558	5,385,971
579	5,385,972
730	5,385,973

CLASS 525

58	5,385,974
68	5,385,976
101	5,385,975
113	5,385,977
	5,385,978
145	5,385,979
187	5,385,980
276	5,385,981
310	5,385,982
330.1	5,385,983
393	5,385,984
420	5,385,985
420.5	5,385,986
445	5,385,987
479	5,385,988
502	5,385,989
534	5,385,990

CLASS 526

74	5,385,991

79	5,385,992
119	5,385,983
181	5,385,994
216	5,385,995
240	5,385,996
259	5,385,997
348.6	5,385,998

CLASS 528

4	5,386,006
12	5,386,007
21	5,385,999
87	5,386,008
110	5,386,005
170	5,386,002
272	5,385,719
	5,386,003
354	5,386,004
362	5,386,000
373	5,386,001

CLASS 530

317	5,386,009
	5,386,010
329	5,386,011
331	5,386,012
350	5,386,013
385	5,386,014

CLASS 534

637	5,386,015

CLASS 536

18.1	5,386,016
	5,386,017
18.6	5,386,019
23.1	5,386,020
	5,386,021
23.5	5,386,025
24.32	5,386,022
25.3	5,386,023
25.4	5,386,024
123.1	5,386,027
185	5,386,018

CLASS 540

474	5,386,028

CLASS 544

88	5,386,029
243	5,386,030
280	5,386,031

CLASS 546

271	5,386,032
309	5,386,033

CLASS 548

169	5,386,034
316.4	5,386,035
453	5,386,036

CLASS 549

206	5,386,037
262	5,386,038

CLASS 552

205	5,386,041
239	5,386,042

CLASS 554

68	5,386,043
149	5,386,045

CLASS 556

13	5,386,044
89	5,386,046
416	5,386,047
430	5,386,048
434	5,386,049
435	5,386,050

CLASS 558

343	5,386,051

CLASS 560

205	5,386,052
344	5,386,053
352	5,386,054

CLASS 562

512.2	5,386,055
526	5,386,056
871	5,386,057

CLASS 564

330	5,386,058
331	5,386,059
450	5,386,060

CLASS 568

12	5,386,061
355	5,386,039
663	5,386,062
483	5,386,040
494	5,386,063
683	5,386,064
698	5,386,065
885	5,386,066

CLASS 570

122	5,386,068
147	5,386,069
211	5,386,067

CLASS 585

241	5,386,070
313	5,386,071
456	5,386,072
464	5,386,073
658	5,386,074
800	5,386,075
802	5,386,076

CLASS 588

1	5,386,077
18	5,386,078
205	5,386,079
208	5,386,080

CLASS 600

18	5,385,528
22	5,385,529

CLASS 601

21	5,385,530
99	5,385,531
160	5,385,532
165	5,385,533

CLASS 602

15	5,385,534
18	5,385,535
20	5,385,536
21	5,385,537
26	5,385,538

CLASS 604

4	5,385,539
	5,385,540
8	5,385,541
14	5,385,542
20	5,385,543
22	5,385,544
82	5,385,545
85	5,385,546
87	5,385,547
96	5,385,548
100	5,385,549
110	5,385,550
	5,385,551
167	5,385,552
	5,385,553
168	5,385,554
192	5,385,555
	5,385,556
198	5,385,557
208	5,385,558
211	5,385,559
243	Re.34,845
266	5,385,560
	5,385,561
280	5,385,562
284	5,385,563
416	5,385,564

CLASS 606

61	5,385,565
95	5,385,566
96	5,385,567
144	5,385,568
148	5,385,569
170	5,385,570
181	5,385,571
185	5,385,572
235	5,385,573

CLASS 607

4	5,385,574
5	5,385,575
8	5,385,576
41	5,385,577
122	5,385,578
130	5,385,579

CLASS 623

1	5,385,580
3	5,385,581
12	5,385,582
17	5,385,583

D2—	612	354,840	D7—	309	354,878		523	354,916		141	354,955		13	354,993		110	355,029
	842	354,841		317	354,879		560	354,917		151	354,956		88	354,994		113	355,031
	891	354,842		319	354,880	D10—	30	354,926		156	354,957		108	354,995		169	355,032
	916	354,843		401.2	354,881		32	354,918		205	354,958			354,996		190	355,033
	923	354,844		515	354,882			354,919		218	354,959		146	354,997			355,034
	957	354,845		536	354,883		46.1	354,920		248	354,960			354,998		206	355,035
	969	354,846		564	354,884		78	354,921		253	354,961		147	354,999		232	355,036
	970	354,847		605	354,885		80	354,923		258	354,962			355,000	D25—	48	355,037
D3—	205	354,848		671	354,886		104	354,924	D15—	5	354,963		191	355,001	D26—	2	355,038
	216	354,849		694	354,887		106	354,922		17	354,964			355,002		37	355,040
	226	354,850		695	354,888			354,925		141	354,965			355,003		63	355,041
	234	354,851	D8—	1	354,889	D11—	40	354,927		145	354,966			355,004			355,042
	255	354,852		5	354,890		118	354,928			354,967			355,005		89	355,043
D5—	53	354,853		8	354,891		126	354,929	D16—	101	354,968		195	355,006		85	355,044
		354,854			354,892		130.1	354,930		203	354,973		197	355,007		110	355,045
		354,855		14	354,893		223	354,931		301	354,974		204	355,008		134	355,046
		354,856			354,894	D12—	100	354,932		309	354,969		215	355,009		139	355,039
D6—	318	354,857		16	354,895		106	354,933		312	354,970		220	355,010	D28—	9	355,047
	334	354,858		19	354,896		111	354,934		314	354,971		222	355,011		13	355,048
		354,866		52	354,897		191	354,935			354,972		239	355,012		48	355,049
	335	354,867		71	354,898		344	354,936	D17—	22	354,975		246	355,013		54.1	355,050
	356	354,868			354,899		400	354,937	D18—	4	354,976			355,014	D29—	100	355,052
	368	354,859		99	354,900		425	354,938			354,977	D22—	141	355,015		110	355,053
	379	354,860		310	354,901	D13—	133	354,939		12	354,978			355,016		119	355,051
	407	354,861		323	354,902			354,940		43	354,980			355,017		129	355,054
	457	354,864		356	354,903		138	354,941		54	354,981			355,018	D30—	124	355,055
	461	354,862			354,904		140	354,942		56	354,982	D23—	207	355,019		132	355,056
	465	354,863		387	354,905		143	354,943	D19—	32	354,983		213	355,020		160	355,057
	474	354,870	D9—	305	354,906		158	354,944		36	354,979		254	355,021	D32—	18	355,058
	511	354,864		307	354,907		159	354,945			354,984		260	355,022		33	355,059
	518	354,865		315	354,908	D14—	100	354,947		50	354,985		290	355,023		37	355,060
	522	354,871		341	354,909			354,948		65	354,986		292	355,024		41	355,061
	552	354,872		415	354,910			354,949		73	354,987		295	355,025		53	355,062
	566	354,873			354,911		106	354,950		85	354,988		304	355,026	D34—	27	355,063
	567	354,874		434	354,912		107	354,951			354,989		377	355,027		38	355,064
	569	354,875		500	354,913		113	354,952	D20—	2	354,990			355,028	D99—	5	355,065
	601	354,876		503	354,914		114	354,953		42	354,991			355,030		37	355,066
	829	354,877		504	354,915		130	354,954	D21—	5	354,992	D24—	106				

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PATENTS

01 :	5,385,215	5,385,251	5,385,965	5,386,370		5,386,454	5,385,330
	5,385,266	5,385,263	5,385,966	5,386,374		5,386,466	5,385,347
	5,385,523	5,385,271	5,386,000	5,386,376		5,386,514	[illegible]
	5,385,621	5,385,273	5,386,022	5,386,384		5,386,524	5,385,360
	5,385,677	5,385,280	5,386,023	5,386,388		5,386,551	[illegible]
	5,386,086	5,385,318	5,386,024	5,386,420	09 :	5,384,960	5,385,434
	5,386,574	5,385,322	5,386,046	5,386,426		5,384,978	5,385,493
04 :	5,384,994	5,385,324	5,386,085	5,386,428		5,385,019	5,385,495
	5,385,011	5,385,325	[illegible]	5,386,434		5,385,054	5,385,501
	5,385,191	5,385,344	5,386,092	5,386,442		5,385,123	5,385,533
	5,385,319	5,385,355	5,386,128	5,386,445		5,385,255	5,385,538
	5,385,359	5,385,372	5,386,132	5,386,455		5,385,260	5,385,559
	5,385,441	5,385,435	5,386,134	5,386,471		5,385,334	[illegible]
	5,385,623	5,385,438	5,386,136	5,386,478		5,385,413	[illegible]
	5,385,719	5,385,446	5,386,140	5,386,479		5,385,427	5,385,693
	5,385,869	5,385,457	5,386,141	5,386,480		[illegible]	5,385,955
	5,386,201	5,385,477	5,386,143	5,386,481		5,385,627	[illegible]
	5,386,202	5,385,481	5,386,144	5,386,486		5,385,640	5,386,315
	5,386,204	5,385,492	5,386,150	5,386,489		[illegible]	[illegible]
	[illegible]	5,385,494	5,386,151	5,386,490		5,385,735	[illegible]
	5,386,230	5,385,496	5,386,153	5,386,493		5,385,913	[illegible]
	5,386,324	5,385,497	5,386,154	5,386,494		5,385,916	5,386,561
	5,386,438	5,385,521	5,386,155	5,386,507		5,385,918	13 : 5,384,993
	5,386,503	5,385,534	5,386,158	5,386,513		5,385,958	[illegible]
	5,386,516	5,385,541	5,386,160	5,386,517		5,385,978	5,385,105
05 :	5,385,045	5,385,543	5,386,191	5,386,518		5,386,019	[illegible]
	5,385,363	5,385,544	5,386,207	5,386,520		5,386,030	5,385,231
06 :	5,384,918	5,385,552	5,386,210	5,386,525		5,386,047	[illegible]
	5,384,919	5,385,553	5,386,211	5,386,526		5,386,119	[illegible]
	5,384,921	5,385,570	5,386,212	5,386,532		5,386,443	[illegible]
	5,384,959	5,385,572	5,386,242	5,386,547		5,386,461	[illegible]
	5,385,006	5,385,578	5,386,243	5,386,548		5,386,482	[illegible]
	5,385,042	5,385,579	5,386,251	5,386,549		5,386,497	[illegible]
	5,385,050	5,385,630	5,386,254	5,386,558	10 :	5,385,085	[illegible]
	5,385,072	5,385,633	5,386,255	5,386,559		5,385,694	[illegible]
	5,385,075	5,385,637	5,386,256	5,386,562		[illegible]	[illegible]
	5,385,076	5,385,654	5,386,257	[illegible]		5,386,001	[illegible]
	5,385,078	5,385,666	[illegible]	[illegible]		[illegible]	5,385,651
	[illegible]	5,385,710	[illegible]	5,386,579		[illegible]	5,385,775
	[illegible]	5,385,733	5,386,312	5,386,584		[illegible]	5,385,834
	5,385,103	5,385,745	5,386,313	5,386,590	12 :	5,384,922	[illegible]
	5,385,133	5,385,764	5,386,316	08 : 5,385,113		[illegible]	[illegible]
	5,385,142	5,385,791	5,386,317	5,385,156		5,384,979	[illegible]
	5,385,146	5,385,832	5,386,319	5,385,180		[illegible]	[illegible]
	5,385,147	5,385,833	5,386,326	5,385,245		5,385,015	15 : 5,384,930
	5,385,148	[illegible]	5,386,328	5,385,274		5,385,110	[illegible]
	5,385,153	5,385,861	5,386,332	5,385,365		5,385,119	[illegible]
	5,385,157	[illegible]	5,386,336	5,385,472		5,385,151	16 : 5,385,194
	5,385,166	[illegible]	5,386,339	5,385,634		5,385,165	[illegible]
	5,385,168	5,385,917	[illegible]	5,385,827		5,385,185	[illegible]
	5,385,211	5,385,934	5,386,355	[illegible]		[illegible]	5,385,672
	5,385,214	5,385,945	5,386,358	5,386,364		[illegible]	5,385,854
	5,385,226	5,385,953	[illegible]	5,386,447		5,385,295	[illegible]

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